BIRDS OF RIO GRANDE DO SUL, BRAZIL
PART 1. RHEIDAE THROUGH FURNARIIDAE

WILLIAM BELTON

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Part 2, to be published subsequently, will include species accounts from the Formicariidae through the Corvidae, and the following supplementary material: Appendix A—Annotated Checklist of Species; Appendix B—Species Eliminated from List; Appendix C—Extinct or Endangered Species; Appendix D—Gazetteer; Appendix E—Author's Itinerary; Literature Cited; and Indices of scientific, English, and Brazilian names.

ABSTRACT

Rio Grande do Sul, Brazil's southernmost state, occupies a transitional zone comprising the southern end of the forested coastal mountains of southeastern Brazil and the northern reaches of the open, rolling or hilly grassland typical of Uruguay. It has additional geographic diversity from its Atlantic beaches, bits of chaco-type terrain in the extreme west, and more tropical type forests along the upper reaches of the Rio Uruguay. The bird life of the region reflects this variety.

So far, 586 species have been registered for the state, 457 of them treated here as confirmed, probable, or potential nesters in the area. Of these nesters, 349 are known or assumed to have full-time resident populations in the state, while another 70 are migrants that spend the winter months elsewhere. The status of the other 38 remains to be clarified.

Only 166 of these breeding species have ranges that extend beyond Rio Grande do Sul on all land sides, the remaining 291 encountering an edge to their ranges somewhere within. As a consequence, each section of the state has its own unique combination of bird species, and no one area is likely to have much more than half the total.

Of the remaining 129 species, 14 are probably extinct, 53 are vagrants, and 62 are regular nonbreeding migrants. This last group includes pelagic visitors, winter migrants from the southern cone of South America, North American species spending the northern winter months, and species in transit one or both ways between nesting and wintering grounds.

Sporadic scientific collecting activity has occurred in Rio Grande do Sul since the early 1820s, but this is the first attempt at a comprehensive survey of the avifauna of the state. Information obtained from literature, museums, other observers, and my own fieldwork extending from 1970 to 1983 is compiled in individual accounts for each species. Data are usually provided on distribution, relative abundance, migration, habitat, field marks, size, soft part colors, voice, breeding, behavior, and museum specimens. A number of suggestions are made for future ornithological investigation. Conservation action is urged to save such favored sites as the espinilho parkland and the Lagoa do Peixe, and to protect additional roosting areas of the menaced Red-Spectacled Parrot, *Amazona pretrei.*

RESUMO

O Rio Grande do Sul é o estado mais austral do Brasil e ocupa uma zona de transição que abrange a ponta sulina das montanhas e matas costeiras do sudeste desse pais e o limite norte dos campos abertos e ondulados típicos do Uruguai. O Estado possui uma diversidade geográfica adicional devido às praias atlânticas, às manchas de terra de tipo chaquenho no estremo oeste, e às matas do interior ao longo do curso superior do rio Uruguai. A avifauna da região reflete essa variedade.

Até agora foram registradas 586 espécies como ocorrentes no Estado, das quais, 457 são aqui reconhecidas como sendo nidificantes confirmadas, prováveis ou em potencial na área. Das espécies reconhecidas como nidificantes, 349 são conhecidas ou presume-se que tenham populações permanentes residentes no Estado, enquanto que 70 são migrantes que passam alhures os meses de inverno, e a situação das outras 38 espécies falta ser esclarecida.

Por sua vez, dessas nidificantes, somente 166 têm distribuições que se estendem en todas as direções para além das fronteiras terrestres do Rio Grande do Sul. Cada uma das 291 restantes ocorre em área restrita dentro do Estado e por conseqüência, em qualquer região no Estado ocorre uma combinação única de espécies. É provável que nunca ocorram nessas regiões individuais mais do que a metade do total das aves registradas para o Estado inteiro.

Das 129 espécies não classificadas como nidificantes, 14 provavelmente acham-se extintas, 53 são vagantes, e 62 são migrantes regulares. Entre essas espécies migrantes há visitantes pelágicos, e outros são invernais provenientes do cone sul da América do Sul; há espécies norte-americanas que passam aqui os meses do inverno setentrional, e ocorrem espécies em trânsito entre os territórios de nidificação e de invernada.

A coleta e o estudo de espécimens da avifauna com fins científicos tem ocorrido esporadicamente no Rio Grande do Sul desde aproximadamente 1820. Esta é a primeira tentativa de um estudo abrangente. Para cada espécie são fornecidos detalhados dados obtidos da bibliografia, em museus, e de comunicações pessoais de outros observadores, além do meu próprio trabalho de campo que se estendeu de 1970 a 1983. Normal-

mente, os dados fornecidos referem-se á distribuição, abundância relativa, migração, habitat, identificação no campo, tamanho, cores das partes desnudas, voz, procriação, comportamento, e espécimens de museu. Varias sugestões são feitas para investigações futuras. A ação conservacionista é recomendada, especialmente para a preservação de áreas privilegiadas, tais como a região do espinilho e a Lagoa do Peixe, e sugere-se a preservação de areas adicionais onde costuma pousar o papagaio-charão, ameaçado de extinção.

INTRODUCTION

The present study is a long-range result of my assignment during 1946–1948 as American Consul at Porto Alegre, capital of Rio Grande do Sul. Having recently been introduced to bird-watching as a hobby, I spent many happy but often frustrating leisure hours attempting to identify birds without field guides or any other satisfactory source of basic information. I accomplished little of significance, but saw species not recorded for the state in Pinto's recently issued catalogue (1938, 1944). If species a beginner could easily find in the outskirts of Porto Alegre were not recorded, obviously the state was overdue for a thorough avifaunal survey.

My diplomatic career brought me back to Brazil in 1967, assigned to Rio de Janeiro. As my retirement in 1970 approached, I thought of Rio Grande do Sul as a logical place to pursue the full-time ornithological work I had long before selected as a second career. In 1969 my wife and I, accompanied by Brazilian ornithologist, Helmut Sick, visited Rio Grande do Sul to learn whether the field was still as wide open as in 1948. It was, so in June 1970 we established a home in Gramado, an attractive resort town on a spur of the escarpment at 825 m altitude and about 115 km by road northeast of Porto Alegre. I then started to gather the information presented here.

The basic aim of my project was to elucidate the distribution of birds throughout the state by obtaining information on the degree of confinement of individual species to special areas or habitats, the geographic range of subspecies, the amount and dates of migratory movement, and the extent to which the ecological difference between the northern and southern portions of the state serves as a barrier to birds. While much remains to be learned, I believe I have made substantial progress toward my goal, as reflected in the species accounts forming the bulk of this work. In the process, the preliminary list of 496 species for the state, which I drew up from information available in 1970, has now been expanded to 586, a figure that includes several independent findings of other workers but omits about an equal number of species erroneously included on the preliminary list.

Other information is included in the species accounts, but often in less complete form than that for distribution and migration. I am particularly aware of the absence of much behavioral data that I would like to have gathered but did not, due mostly to my own lack of training in the subject and also in part to some skepticism about human ability to interpret bird behavior.

Circumstances beyond my control make it impossible to publish this entire monograph at one time. It is anticipated that Part 2, including the material mentioned for it in the Contents of this volume, will be available in the near future.

METHODS AND MATERIALS

To obtain data on distribution of species within the state as well as their seasonal occurrence, I tried to visit representative areas at least once in each of the four seasons, which I defined as: June–August = winter; September–November = spring; December–February = summer; and March–May = fall. I was able to make more than four visits in several areas, but in the extreme north I missed a mid-winter trip that might have revealed useful information on the migration of several species. During the bulk of my fieldwork I had a four-wheel drive vehicle and a small

trailer that enabled me to reach remote areas and remain without depending on outside supply or wasting time pitching and breaking camp. Appendix E gives an account of my travels.

Observations on geographic distribution of species were recorded on daily check lists. Separate lists were maintained for each sector of 30′ of latitude and 30′ of longitude whenever I was in a sector. This included during travel, both on my frequent stops for observation and while driving, when my field assistant recorded sightings as I called them. Lists were kept on a daily basis, but occasionally when several days were spent in one sector with little variety of habitat, one list served longer. Data from the check lists were transferred each month to specially prepared McBee Keysort cards with a superimposed state map divided into approximate rectangles measuring 30′ of latitude × 30′ of longitude, with both date and sector entered on the card and the appropriate sector marked on the map. A separate card was maintained for each month for each species, with information on the monthly cards consolidated on an annual card. Maps accompanying the species accounts herein were prepared from these annual cards, whereas the monthly cards provided the data on migratory movement.

Field notes were transferred to a different set of Keysort cards and provided the basis for comments in the Species Accounts on behavior, breeding, field marks, and other similar material. All Keysort cards are now in the ornithology section of the Museu de Ciências Naturais, located at the Parque Zoológico, Sapucaia do Sul. Specimens were collected to assist identification or to provide other required data. Each was labeled with date and place of collection, including geographic coordinates, habitat, weight, length, soft part colors, sex, condition of gonads, and skull ossification. Specimens were weighed and measured and soft part colors recorded as soon as possible after collecting. Normally specimens were frozen until an opportunity for skinning arose. Weights were taken with Pesola 100 gr or 300 gr scales calibrated at 1 and 2 gr, respectively. Length measurements normally were made with a moderately stretched specimen laid on top of a flat ruler or on a paper which was then marked to indicate ends of tail and bill. My field assistant, Lauri Model, prepared almost all the museum skins. Their present location is given in the Species Accounts.

Ocular observations were made with the assistance of Trinovid 10 × 40 and Zeiss 8 × 30 binoculars and a Bausch and Lomb zoom 60× spotting scope. Tape recordings of voices were made using either a Uher 4000 Report L or Uher 4000 Report IC recorder, with a Uher M516 or Melodium microphone and 36′ or 24′ aluminum parabolic reflector, or with a Gibson P650 microphone and reflector.

ABBREVIATIONS, DEFINITIONS, AND PRONUNCIATION

AMNH, American Museum of Natural History, New York
E, east
Faz, Fazenda
MAE, Museu de Aves Empalhadas, Camaquã
MCN, Museu de Ciências Naturais, Porto Alegre
MN, Museu Nacional, Rio de Janeiro
Mun, municipality
N, north
NE, northeast
NW, northwest
RGS, Rio Grande do Sul
S, south
SE, southeast
SW, southwest
USNM, National Museum of Natural History, Smithsonian Institution, Washington
W, west

Brazilian terms that do not have good English equivalents or are integral parts of Brazilian place names, and certain English words used with special meaning, are as follows:

Araucaria frond: The Brazilian araucaria, or Paraná pine, has its foliage bunched in large (approximately 60 cm to 1 m in diameter), round, dense, spiny clusters at the ends of long, often horizontal branches. I refer to the clusters as "pompons," and to the individual spiny scale-covered branches within them as "fronds."
Araucaria pompon: See araucaria frond.
Cabanha: Cattle ranch, usually one raising purebred animals.
Campanha: Extensive region of mostly open country in western and southwestern Rio Grande do Sul. See section on Geography.

FIG. 1. High capoeira at Itapuã where Rio Guaíba enters Lagoa dos Patos.

Campo: Open country with grasslands, usually some scattered trees or riverine forests, and now, crops.

Capoeira: Brushy second growth on land cleared of forest, then abandoned.

Espinilho: Low, spiny trees growing in open, park-like stands. See section on Geography.

Estância: A Spanish term often used instead of "fazenda" for a ranch.

Fazenda: Ranch, usually but not always implying cattle or sheep raising.

Lagoa: Lake or lagoon.

Granja: Farm, involving cropland, but also may include grazing.

Planalto: Literally a plateau, but in Rio Grande do Sul referring to extensive upland region in northern part of state, much of which is not flat. See section on Geography.

Resident: A species that breeds in the state and has at least a portion of its population normally there all year.

Rio: River.

Sarandi: Woody bushes of various species growing in shallow water or marshy areas.

Summer resident: A species that breeds in the state during the normal spring and summer nesting season but is not normally present during the winter months.

Visitor: A species which regularly is found during a portion of each year within the state but does not breed there.

Many of the bird and place names used herein involve pronunciation of Brazilian sounds which do not come easily to tongues trained in English. A reasonable approxi-

mation of some of the more difficult sounds may be achieved by adopting the following suggestions:

São: use the "soun" of "sound," replacing the "d" with "g" to nasalize it.
lh: this is the same as "ll" in Spanish, pronounced as "million" in English.
nh: this is the same as "ñ" in Spanish, pronounced as "onion" in English.
ch: pronounced as "sh" in English.
m and ns at the end of a word are nasalized as in the following examples: Belém = beleng; Mirim = meereeng; mutum = mootoong.
ã at the end of a word is nasalized as in Camaquã = Camaquahng.

ACKNOWLEDGMENTS

The number of persons to whom I am grateful for encouragement or assistance is very great and the names of most, especially those in Rio Grande do Sul who facilitated my fieldwork, are listed in my book on the common birds of the state recently published in Porto Alegre (Belton, 1982). Here, however, I must mention Dr. Helmut Sick, who arranged the Brazilian sponsorship of my project by the National Museum, Rio de Janeiro, made himself available for advice and assistance during the entire period of my fieldwork, and also made useful suggestions on my manuscript; the staff of the Department of Ornithology of the American Museum of Natural History, particularly Drs. Dean Amadon, John Bull, the late Eugene Eisenmann, John Farrand, Ms. Ivy Kuspit, Dr. Wesley Lanyon, Ms. Mary LeCroy, Mr. Allan O'Connell, Drs. Lester Short, and François Vuilleumier, who were unfailingly helpful and generous with their time during my visits; Dr. George Watson, who recommended my appointment as a Research Collaborator of the Smithsonian and has always been readily available for consultation; Dr. Philip Humphrey, who made a series of valuable suggestions for field procedures; Mr. Melvin Traylor, who made sense out my collection of elaenia specimens and reviewed portions of my manuscript; the late Dr. Paul Schwartz, who taught me the rudiments of bird song recording; Dr. James Gulledge, for his interest in and support of my recording activities; Mr. Roger Pasquier, who reviewed my manuscript and made many useful suggestions; Prof. Flávio Silva, who shared his information, his equipment, and his gourd of mate tea on countless occasions; Sr. Walter Voss for generously letting me include his own discoveries and data; Sr. Lauri Model, my always dependable and hard-working field assistant; and Judy, my wife, who very cheerfully supported it all. Others whose contributions were important include Sr. Gilberto Brockstedt, Dr. Oswaldo Camargo, Srta. Haidi Dal'Ri, Dr. Olegário Diefenbach, Mr. John Dunning, Dr. Norton Gianuca, Dr. Renato Petry Leal, Dr. José Lutzenberger, Mr. Roberto MacArdle, Dr. Alceo Magnanini, Dr. Carlos Enrique Menke, Dr. Hermann U. Nelz, Dr. Maria Teresa Jorge Padua, Srta. Elizabeth Radtke, Sr. Erico Rosenfeld, the late Dr. Álvaro Soares, Dr. J. Willibaldo Thomé, Dr. Edwin Willis, and Dr. Richard Zusi. The Frank M. Chapman Memorial Fund, the National Museum of Natural History, Smithsonian Institution, the National Geographic Society, the Cornell Laboratory of Ornithology, and the Pan American Section, International Council for Bird Preservation all gave me valued material or financial support.

DESCRIPTION OF RIO GRANDE DO SUL

CLIMATE

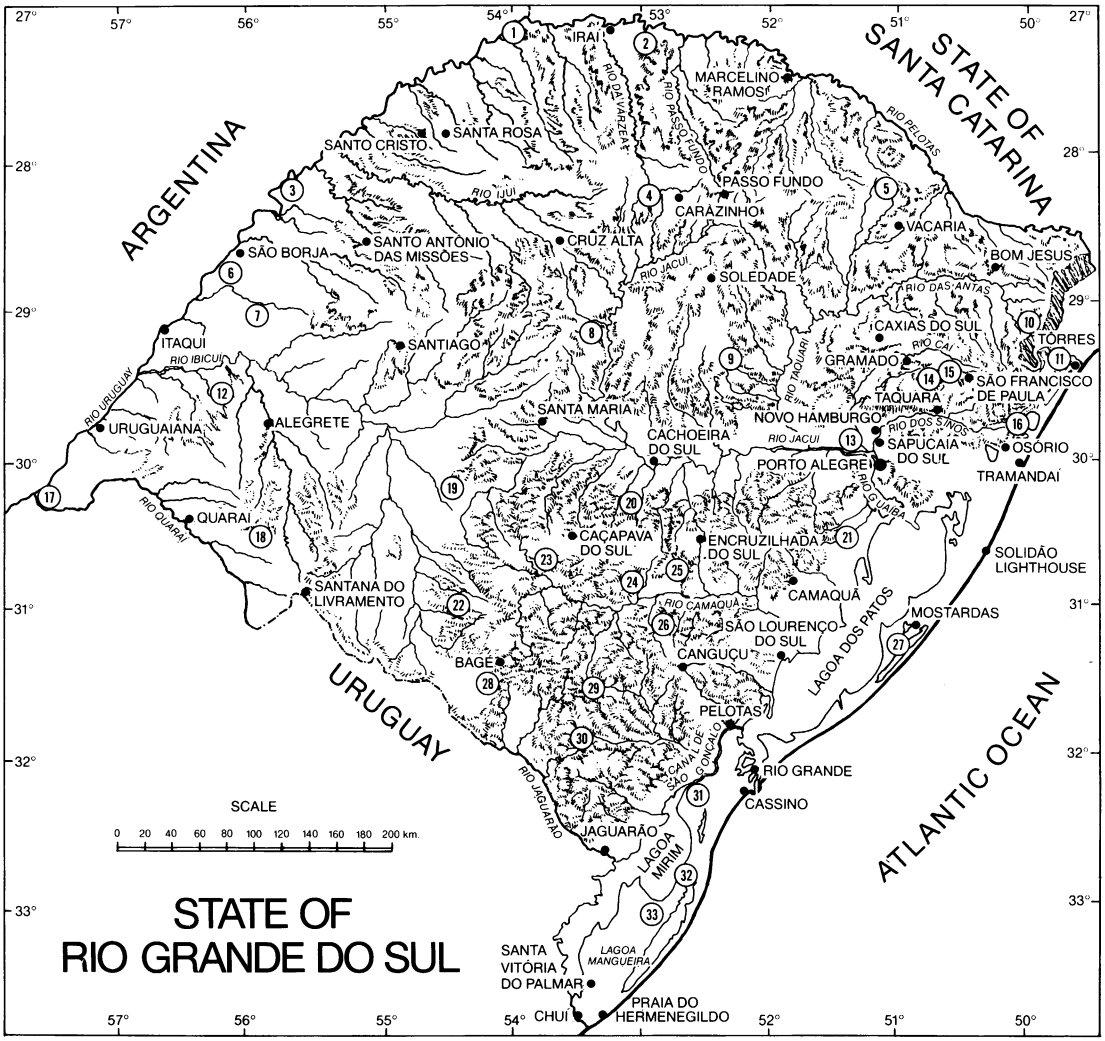
The climate of Rio do Sul varies from subtropical to temperate. Rainfall is well distributed throughout the year in all parts of the state, although slightly more than average falls during late winter and early spring (July–September), and slightly less in the remaining months of spring and early summer (October–December). Amounts vary from an average of about 2000 mm (79 inches) per year in the northeast planalto to approximately 1300 mm (51 inches) along the coast, with other parts of the state receiving quantities between these extremes.

Summers are usually hot, with average January temperatures ranging from 26.9°C (80.4°F) along the Uruguay River to 22.3°C (72°F) in the northeast planalto. Occasional extremes reach 40°C (104°F) or above along the Rio Uruguay and in the central trough. July averages vary from 13.6°C (56.5°F) in the central trough to 9.9°C (50°F) in the high northeast. Winter frosts are fairly common all over the state, with high humidity accentuating the briskness of the morning atmosphere. Snow falls infrequently, perhaps once every two or three years, but all the higher regions have experienced it.

GEOGRAPHY AND VEGETATION

GENERAL: Rio Grande do Sul, the southernmost state in Brazil, is bounded by Argentina, Uruguay, and the Atlantic Ocean and connected to the rest of Brazil only on the north, where it adjoins the state of Santa Catarina. With an area of approximately 282,000 sq km (108,900 sq mi), it is slightly larger than Colorado in the United States, and almost exactly the size of the Republic of Ecuador.

FIG. 2. Atlantic Ocean beach near Lagoa do Peixe, Mostardas.



MAP 1. Rio Grande do Sul, showing location of selected cities and localities mentioned in text. Places indicated by numbered circles are as follows (number in circle follows name): Amoreiras, Fazenda das 15; Aparados da Serra National Park 10; Ari Xavier farm 4; Casa Branca, Fazenda 12; Casuarinas, Fazenda das 20; Garruchos (Rincão do Faxinal) 3; Inhatium, Banhado de 19; Invernada, Fazenda da 26; Ipiranga, Estância 33; Jacaré, Lagoa do 11; Morro Pelado 14; Nonoai State Forest Reserve 2; Pedreira, Fazenda da 22; Peixe, Lagoa do 27; Pompéu, Fazenda do (Aracuri-Esmeralda Ecological Station) 5; Pontal, Banhado do 13; Pontal, Fazenda do 16; Quaraí-chico, Arroio 17; Quatro Irmãos, Granja 31; Rincão dos Pereira 24; São Donato, Banhado 6; São Francisco, Fazenda 30; São José, Fazenda 25; São Roberto, Fazenda 18; Seival, Passo do 23; Sete Leguas 9; Silêncio, Fazenda do 7; Taim Ecological Station 32; Tarumã, Fazenda 29; Timbaúva, Fazenda 21; Turvo State Forest Reserve 1; Umbu, Fazenda do 8; Valente, Fazenda do 28.

On a standard map the state has roughly the shape of a squat diamond with the top point rounded. Almost all this rounded north side is defined by the Rio Uruguay, known as the Rio Pelotas in its mountainous upper reaches toward the coastal escarpment. Across the Uruguay/Pelotas to the north and northeast lies Santa Catarina, while downstream the river forms the boundary with Argentina all the way to the Uruguayan border at the

FIG. 3. Dune and grasslands typical of littoral. Lagoa do Peixe in background, *Ficus* sp. tree in foreground.

western tip of Rio Grande do Sul. The frontier with Uruguay is partially a land boundary but is mostly marked by rivers. In one place it cuts through Lagoa Mirim. The fourth, southeastern, side of the state is all ocean beach.

The southern end of the Brazilian coastal range, extending down from northeastern Brazil, occupies the northern half of Rio Grande do Sul. An abrupt escarpment, rising from a narrow coastal plain, marks the eastern edge of these western sloping mountains. The escarpment reaches its southern terminus at the town of Osório, from where it turns inland and runs west, gradually decreasing in height until it fades into the rolling hills of the far west between Santiago and São Borja. At the foot of its southern face two major rivers, the Jacuí, running east, and the Ibicuí, running west, combine to bisect the state and separate the northern planalto from the more typically Uruguayan geography to the south.

The coastal plain, with two major lagoons and uncounted smaller lakes, has as much water as land surface, but inland there are no significant large natural water areas. Here, however, abundant marshy habitat and frequent artificial lakes and ponds formed for power, irrigation, and livestock watering provide excellent conditions for waterfowl, waders, and shorebirds, except in the planalto, where these species are relatively scarce.

Close to 60 percent of the state was originally grassland and about 40 percent forest. The two habitats are complexly intermingled in most sections. Woodlands line watercourses almost everywhere except in some portions of the littoral and the far west. Forests or their remnants predominate almost to the exclusion of grassland along the escarpment.

FIG. 4. Interior of wet, coastal forest at Fazenda do Pontal, Osório.

They once occupied extensive areas of the planalto in the central north and the northwest. Grasslands predominate throughout the campanha, especially in the far west, and occupy important amounts of terrain in the high northeast and the central north.

Practically no unoccupied or virgin areas remain in Rio Grande do Sul, although it was settled relatively late. Except for the Jesuit settlements for Indians that flourished in the northwest in the seventeenth and eighteenth centuries, the region was historically utilized almost entirely as cattle range and for skirmishes between the forces of Spain and Portugal, with minimal incursion in the northern forested areas. Some Portuguese colonial settlement was sponsored late in the eighteenth century, but not until German and Italian colonization started in the middle half of the nineteenth century did true occupation and exploitation begin. The state now has some eight million inhabitants and has been sending emigrants to other parts of Brazil for many years.

Population is densest in the metropolitan area of Porto Alegre and to the north and west of that city, where a combination of small farming and industrialization has concentrated people in the lower reaches of the valleys penetrating the planalto, as well as on its elevations such as in Caxias do Sul, and also up the Jacuí valley. Another industrial, commercial, and transportation center, based on Pelotas and Rio Grande, lies at the south end of Lagoa dos Patos. Colonization schemes have concentrated many small farmers in the extreme northwest. Elsewhere, stockraising and more extensive agriculture thin the population, so along almost the entire southwestern frontier and the southern half of the border with Argentina its density is very low.

For detailed study, Rio Grande do Sul can be divided into a large number of regions, but the five identified by Rambo (1956): the

FIG. 5. Eastern edge of escarpment in distance across lake from Fazenda do Pontal, Osório.

littoral, occupying about 10 percent of the state, the planalto with 47 percent, the central trough 9 percent, the southeastern hills 16 percent, and the campanha 18 percent, provide a good basis for comprehending the peculiarities of the state's geography. While these divisions do not correspond entirely to zoogeographic areas as revealed by bird distribution, they conform in considerable measure and do not divide any homogeneous regions.

LITTORAL: The term littoral is used here, as in Brazil, to designate the full width of the Atlantic coastal plain rather than in its more limited meaning of a narrow strip directly associated with the ocean (Delaney, 1965). The coastal region of Rio Grande do Sul, varying in width from only about 10 km at some points in the north to almost 100 km near the head of Lagoa dos Patos, is a flat, occasionally rolling, sandy area of Quaternary origin dominated by two great lagoons, Lagoa dos Patos and Lagoa Mirim, and having hundreds of lesser bodies of water varying from sizable lagoons to pothole lakes. About half the surface of the region is water. The ocean shore is one extremely long beach with no indentations, stretching 620 km from the Rio Mampituba, which separates Rio Grande do Sul from Santa Catarina, to the Arroio Chuí, which forms the boundary with Uruguay. There are only two non-fordable interruptions to this beach, one at Tramandaí, where the Rio Tramandaí drains the chain of lakes at the foot of the escarpment, and one at Rio Grande where the channel connecting Lagoa dos Patos and the Atlantic provides drainage for all the remaining interior rivers running toward the coast. A shallowly covered continental shelf provides some protection for the coastline. The only off-shore island, Ilha dos Lobos, off the town of Tôrres,

FIG. 6. Grassland and forest combination at top of eastern escarpment, with typical canyon eroded into planalto, near Fortaleza da Serra, Cambará do Sul.

is small and consists of rocks rising only about 2 m above sea level. Headlands jutting into the sea exist only at the extreme northern tip, in and near Tôrres.

Dunes and marshy flatlands with low vegetation, mostly grasses, sedges, and reeds, dominate a large portion of the littoral. Farther from the sea some woodlands, often of low, scrubby trees but in favored areas amounting to real forests, feature members of the laurel (Lauraceae) and myrtle (Myrtaceae) families and impressively large fig trees (*Ficus* sp.) with enormous spreading branches bearing a spectacular burden of epiphytes. Shores of lakes and lagoons are usually sandy beaches or reedy marshes. Mangroves do not occur. The tallest, wettest forests flourish in the narrow northern sector at the foot of the escarpment, whereas in some areas, especially near Tapes and Santa Vitória do Palmar, grasslands are dotted with palms (*Cocos* sp.). Man has altered this picture appreciably with grazing, rice, and specialized vegetable crops, as well as by drainage, forest clearing, and planting of eucalyptus and slash pine (*Pinus ellioti*), but in general the littoral remains one of the relatively less disturbed portions of the state.

Areas within the littoral of special ornithological interest include remnant coastal forests from Osório north, which provide the only habitat in Rio Grande do Sul where several characteristic species have so far been found. The long, nameless peninsula separating Lagoa dos Patos from the sea, which I refer to as the Mostardas peninsula after the community near its center, is interesting because of its paucity of passerine species. However, it compensates with excellent water habitats inviting to many non-passerines. Of particular note is the long, narrow, extremely shallow Lagoa do Peixe, south of Mostardas,

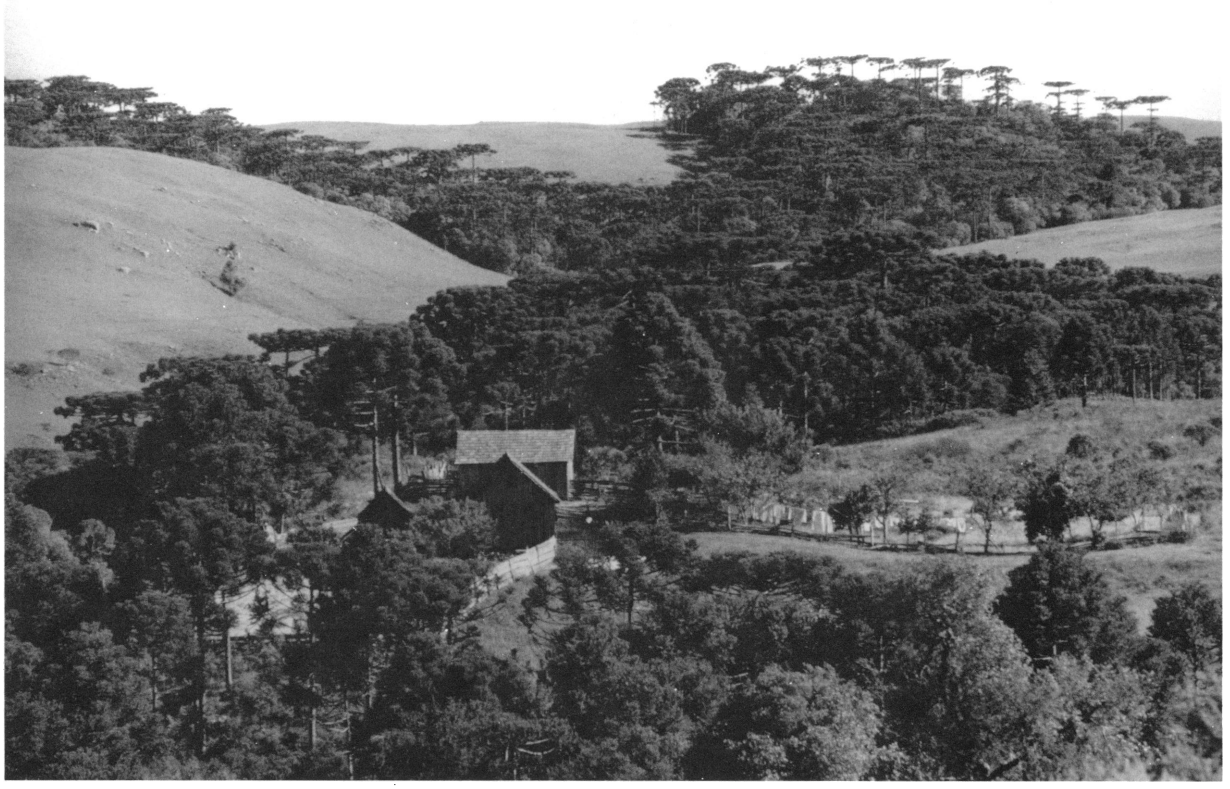


FIG. 7. Araucaria forest and grassland combination near Cambará do Sul.

which harbors flamingos and is a notable center for shorebirds. Ocean beaches and offshore waters near the Rio Grande channel (the mouth of the Lagoa dos Patos) are the most likely sites for pelagic species. In the south, where the north end of Lagoa do Mangueira is close to Lagoa Mirim, the Taim marsh harbors abundant waterfowl and other marsh species. This area has recently been established as a federal ecological station. Low-lying areas to the west of the two great lagoons reflect the influence of the nearby southeastern hills, with some mingling of species typical of each area.

PLANALTO: The planalto is an elevated area including all that portion of the state north of the central trough and the campanha. It is separated from the littoral and most of the area to the south by the high, abrupt escarpment, while on the west and north the Rio Uruguay/Pelotas divides it from Argentina and Santa Catarina. Characterized by thick basalt layers which cover underlying sandstone, the region slopes west from the eastern escarpment, gradually descending from altitudes up to about 1300 m just above the littoral to only about 100 m at the southwest extreme near São Borja. In this latter area the planalto blends into the campanha with no clearcut separation between the two regions. In addition to its westerly tilt, the planalto has an ill-defined divide running east–west, with water on the north draining into the Uruguay-Pelotas, and that on the south flowing into the Jacuí and Ibicuí. Although usually spoken of as a plateau, the planalto has relatively few extensive flat areas and is deeply cut by rugged canyons, particularly in the eastern half where major streams drain much of the abundant rainfall into the central depression.

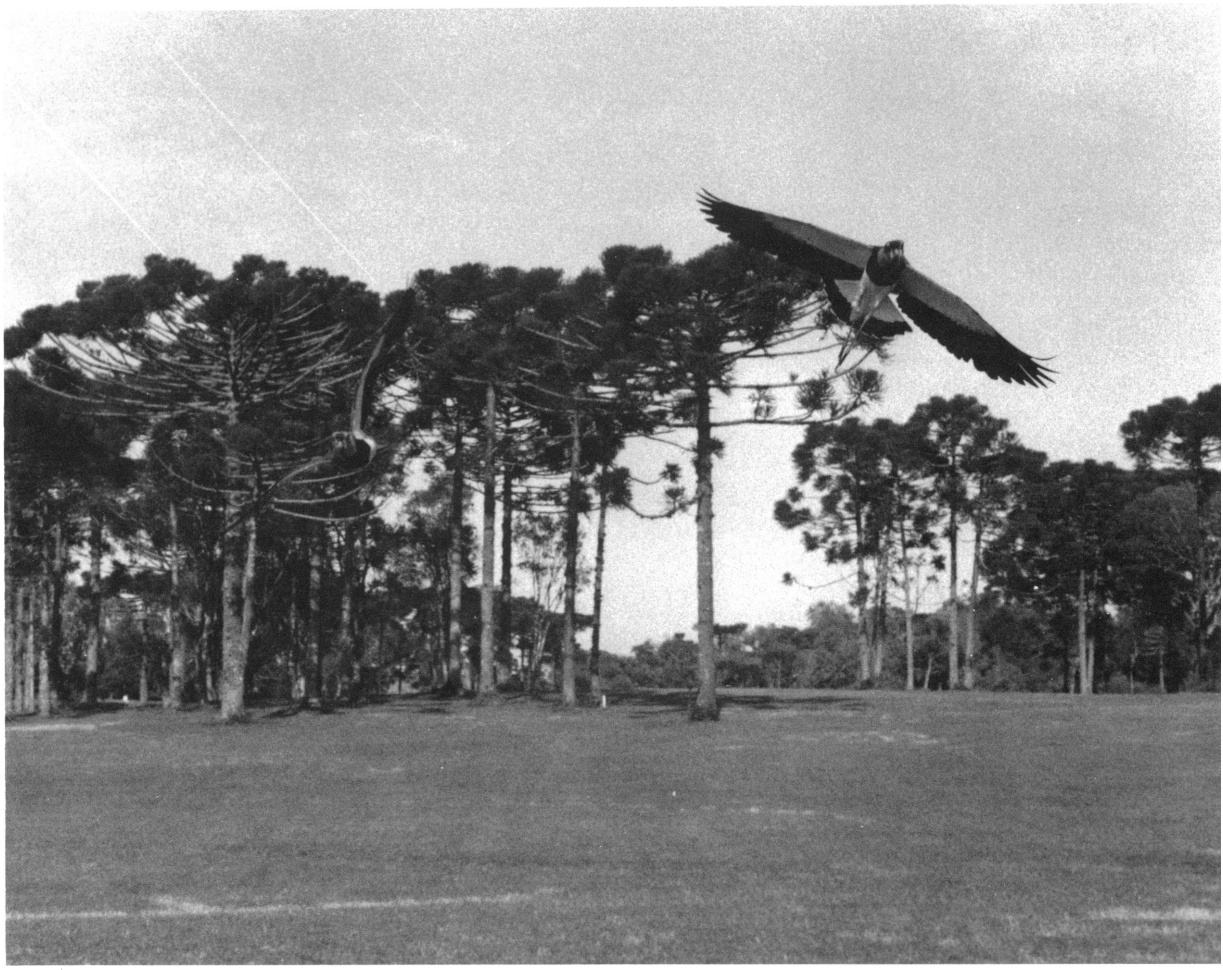


FIG. 8. Gramado golf course, Gramado, showing natural araucaria stands with understory cleared. Grove at left is nesting site of *Syrigma sibilatrix*. Birds in foreground are *Vanellus chilensis* defending nest.

Originally, the planalto was a well-balanced mixture of open grasslands occupying much of the higher terrain between drainages, and of forests covering the steep slopes of the escarpment, the river valleys, some extensive upland areas in the east, and most of the extreme northern and western areas that drain into the Rio Uruguay. Man has drastically altered this picture. Most forests are now reduced to remnants as a result of logging in the east and clearing for agriculture, especially in the north and west. Where remaining forest lands are in private hands, cattle or pigs are usually free to roam, so ground cover and the understory in general suffer severely. Fortunately, the state and federal governments have saved some limited forest areas, whereas portions of some of the canyons are so steep and inhospitable that even the most assiduous practitioners of slash and burn agriculture have left the natural cover relatively untouched.

Paraná Pine (*Araucaria angustifolia*), known in Brazil as *pinheiro,* is the outstanding feature of forests in the eastern half of the planalto. It occurs sporadically farther west, practically to the Rio Uruguay. While now difficult to find in abundant virgin stands, the

FIG. 9. View of Banhado do Pontal, about 25 km NW of Porto Alegre.

majesty of these huge, flat-topped conifers can still be appreciated in the remaining patches. They do not grow in solid stands but are associated with many broadleaved species, especially of the myrtle and laurel families. Other characteristic forest species include the *pinheirinho* (*Podocarpus lambertii* Klotsch), tree ferns (*Dicksonia sellowiana* [Pr.] Hook.), and *erva mate* (*Ilex domestica* Ressi), of renown as the source of maté tea.

Two federal reserves—Aparados da Serra National Park and the Aracuri-Esmeralda Ecological Station—include good araucaria stands. Ornithologically, the high country of the northeast and similar areas in southeastern Santa Catarina are significant because they make up the extremely limited range of the endemic Long-tailed Cinclodes, *Cinclodes pabsti*. More widespread, but living in close symbiosis with the araucarias in this region is the Araucaria Tit-Spinetail, *Leptasthenura setaria*.

In the extreme north and northwest, where araucarias are scarce or absent, forest cover includes a wide range of broadleaved species, reflecting the more typically subtropical climate. Here, two important state forest reserves, Turvo and Nonoai, hold the only significant tracts of forest left in this region, with Nonoai including some good araucaria stands. Several bird species of the continental interior reach the southern edge of their range in this area.

CENTRAL TROUGH: This low area lies between the southern escarpment of the planalto and the northern edge of the southeastern hills. It runs from the divide between the Ibicuí and Jacuí watersheds on the west at around 54°W to the littoral on the east. Its principal geographic feature is the Rio Jacuí with its

FIG. 10. Foothills of escarpment near Santa Maria, with mixed patches of cultivated land, pasture, capoeira, and second growth forest.

major affluents from the north, from the points where they appear through the escarpment until the Jacuí joins Lagoa dos Patos through the short estuary known as the Rio Guaíba.

This central depression has the same geological origin as the campanha (described below), but has lost practically all its basaltic cover through erosion. Only vestiges remain where promontories from the escarpment intrude into the valley or where isolated sandstone towers still capped with basalt stand out from the edge of the escarpment and loom over the surrounding lowlands. Except for these scenic monuments, altitudes throughout the central trough vary only from about 10 to 100 m. Although the Jacuí meanders somewhat, it does not have an extensive flood plain. Rolling hills often come to the river edges. These hills blend gradually into the higher southeastern mass, but on the north side of the Jacuí they run into the steep escarpment of the planalto or extend somewhat into the openings cut by the major rivers. The original mixture of grasslands, riverine forests, and forests linked with the escarpment and planalto is now vastly altered by human occupation and utilization. The central depression includes not only the earliest agricultural settlements in the state, but the principal centers of population, industry and coal mining. As a result, for the most part only scrubby remnants of original forest cover exist, and many natural grazing areas have been plowed, particularly in recent years, for wheat and soybeans. Extensive plantings of exotic trees, especially eucalyptus and acacia, occupy less fertile sectors.

Native vegetation in the central trough reflects the influence of the surrounding re-

FIG. 11. Rolling, tree-studded grasslands of southern hills near Pedras Altas, Pinheiro Machado.

gions, as does the avifauna, with little distinctive to the area. This, however, is the only region of the state where the Comb Duck, *Sarkidiornis melanotos,* has recently been found. Significant quantities of land devoted to rice culture and the accompanying irrigation reservoirs, together with natural marshlands dotted through the valley, all provide good habitat for aquatic birds. A small marshy lake, Banhado do Pontal, close enough to Porto Alegre for the tall buildings of the city to be seen from it, often harbors thousands of ducks at a time. Unfortunately, it is now seriously endangered by a vast petrochemical complex being developed immediately adjacent to it.

The metropolitan area of Porto Alegre, near the eastern end of the trough, spreads from the Jacuí delta and the Guaíba north to the lower edge of the escarpment. In spite of the proximity of this area of more than a million people, the delta islands have so far remained relatively untouched. Efforts are being made to preserve them from further incursions of civilization.

SOUTHEASTERN HILLS: The southeastern hills occupy a roughly triangular area bounded on the north by the southern edge of the Jacuí valley and its western affluents to near São Gabriel, on the southeast by the lowlands west of Lagoas Mirim and dos Patos, and on the southwest by a line from Jaguarão to São Gabriel. A short spur of this formation crosses the Rio Guaíba and extends into the area east of Porto Alegre. Rolling and round topped granitic hills of archeozoic origin are typical, with average altitudes probably near 300 m, although extreme heights rise close to 600 m. In a few areas where Algonquian, Silurian, or Triassic sediments cover the granite, there

FIG. 12. Typical open grasslands of Fazenda São Roberto, Quaraí. Nest of *Rhea americana* in foreground.

FIG. 13. Riparian woodland in small gully in grasslands of Fazenda São Roberto, Quaraí.

are barren tablelands, mesas, and cliffs. The region is almost bisected by the Rio Camaquã, which rises near the western edge and flows east into Lagoa dos Patos. Most other drainage also reaches the coastal lagoons, but from the southwest corner some water flows into the Rio Negro and the Rio Ibicuí, both major affluents of the Rio Uruguay.

Watercourses in the region are normally bordered by gallery forests of mixed broadleaf species, with those along the Rio Camaquã being the most impressive. The hills are variously covered with scattered trees, low scrub, or grasses, although occasional patches of forest occur. In some small basins in the highest areas, araucaria makes its most southerly Brazilian appearance, accompanied usually by abundant stands of *pinheirinho* (*Podocarpus lamberti*). Grazing has been the traditional rural land use, with corn, millet, other field crops, and orchards playing a relatively minor role. However, much land in suitable areas has recently been plowed for wheat and soybeans. This process continues.

No reserves or other areas of special note exist in the southeast hills although there is need for at least one to protect the Red-spectacled Parrot (*Amazona pretrei*) during the season when large flocks are feeding in the region. The Seival valley, on the road between Caçapava do Sul and Lavras do Sul, and the nearby reaches of the Rio Camaquã provide a rich mixture of habitats and bird species. No species are unique to the region,

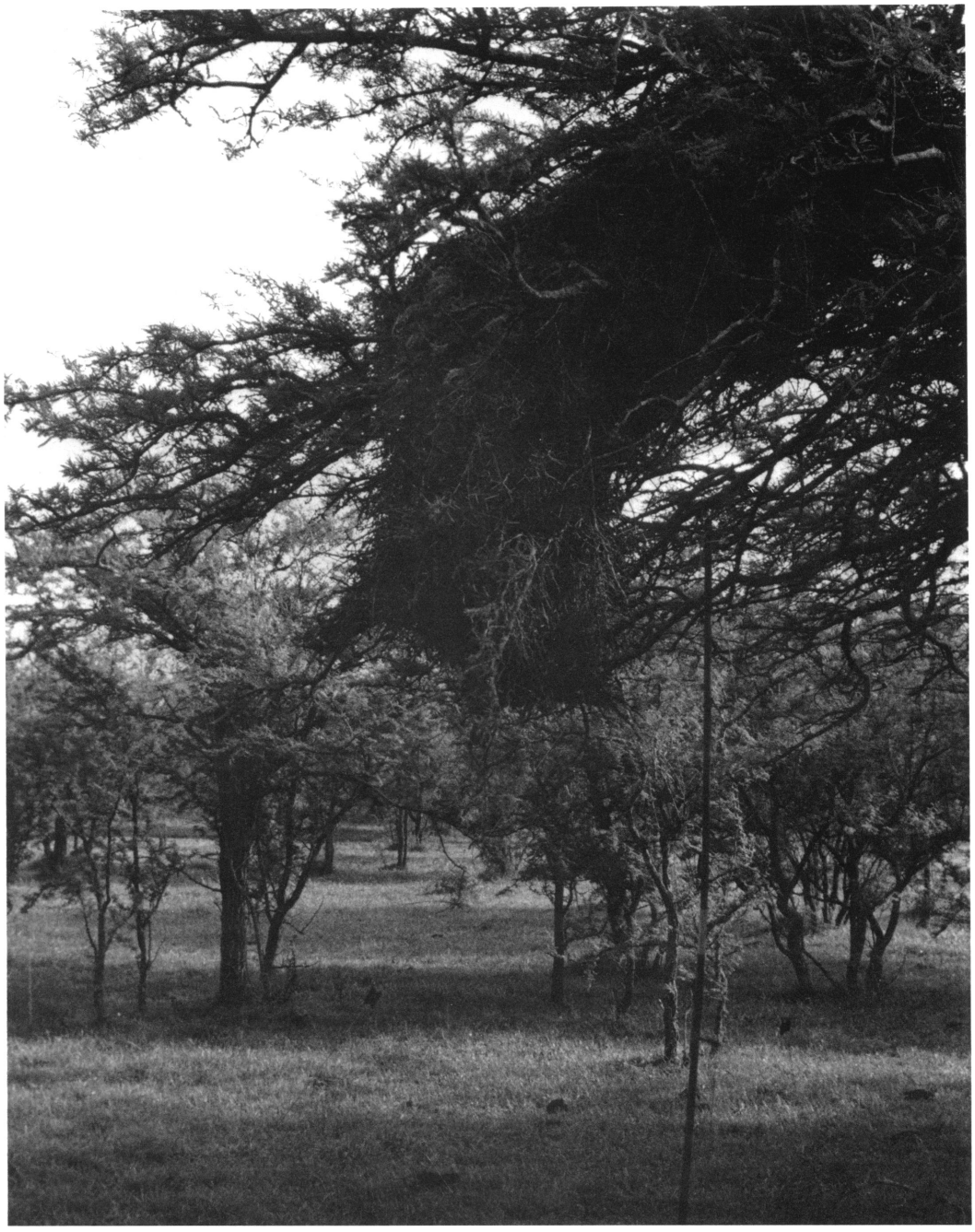


FIG. 14. Typical espinilho parkland vegetation in portion grazed by livestock. *Myiopsitta monachus* nest which was occupied by *Anas flavirostris* in foreground.

but the Monk Parakeet (*Myiopsitta monachus*), the Chalk-browed Mockingbird (*Mimus saturninus*), and the Red-crested Cardinal (*Paroaria coronata*), are typical and abundant in many places.

CAMPANHA: The campanha includes that

portion of the state south and west of the southeastern hills and west of the central trough, from the Uruguayan border up to the escarpment. Where this barrier fades out in the west, the planalto and campanha areas blend into one another between São Borja and Santiago. Altitudes vary from 60 to 300 m, with the lower levels predominant. Permian sediments of both glacial and aquatic origin underlie portions of the area, but Triassic sandstone of granitic origin, formed largely from solidified dunes, is the most important formation. Lava flows covered the sandstone in the Jurassic and Cretaceous periods. This basalt has been eroded away in much of the region, but predominates west of about 55°40′W. The region slopes entirely toward the Rio Uruguay. The Rio Ibicuí drains by far the greatest portion of the campanha, but the Rio Quaraí forming the boundary with Uruguay in the west, is also an important channel.

Some relatively low tablelands and mesas exist, but rolling hills are more characteristic. The terrain becomes quite flat in the wider river valleys and as it approaches the Rio Uruguay in the extreme west. Marshlands providing excellent habitat for water birds are found near the Rio Uruguay and in the upper reaches of the Rio Ibicuí, especially near Dom Pedrito. Most of the area is, or was, natural grassland, with only a few places having significant tree cover. Gallery forests are narrow, usually low, and frequently fade out entirely. Many eucalyptus groves, planted for fuel and for protection of livestock, attract birds that would otherwise shun the open terrain. This is traditional cattle and sheep country, but much land has recently been plowed for extensive agriculture. Rice, wheat, and soybeans are important crops.

A section of special ornithological interest lies in the westernmost tip, southwest of Uruguaiana. This is espinilho parkland, a vegetational complex of small leguminous trees, principally *algarrobo* (*Prosopis algarobilla*), and *nhanduvaí* (*Acacia farnesiana*), which, as a result of clearing, is now limited to 200 hectares or less. It is an extension of similar regions in neighboring Corrientes Province, Argentina, and contains several species of birds not found elsewhere in Rio Grande do Sul, or, in some cases, in Brazil.

ANALYSIS OF RIO GRANDE DO SUL AVIFAUNA

BREEDING AND MIGRATION: I accept a total of 586 bird species as having been found in Rio Grande do Sul up to January 1, 1982. Of this number, I treat 457 as breeders, either confirmed, assumed, or potential. Another 62 are regular non-breeding migrants that spend varying amounts of time in the state during their annual period of sexual repose. Fifty-three species are arbitrarily classified as vagrants, having been registered very rarely and not normally being present in any given season or locale. The remaining 14 were found here in the past, but owing to a total lack of recent information they are presumed to be extinct within the boundaries of this state.

Of the 457 species treated as breeders, reasonable evidence of actual reproductive activity is available for 350, and 69 more are assumed to nest in Rio Grande do Sul. The remaining 38 species are particularly uncommon or have an extremely limited distribution in the state. It is not yet known whether they are full-time residents or migrants, but they are occasionally encountered. Further fieldwork is expected to reveal details of their status, with the likelihood that most will be proven to be members of the breeding community.

Of the 419 known and assumed breeding species, 308 are definitely full-time residents, whereas 41 more are assumed to remain here throughout the year, for a total of 349. Forty-three species are known to leave the state after the nesting season and another 27 are assumed to leave, for a total of 70 summer residents.

The 62 non-breeding migrant visitors include 27 North American species that come here regularly for the northern winter. Twenty-four species arrive from more southerly

portions of South America to spend the relatively milder winter months. Additionally, seven vagrants from North America and four from the south have been registered. Sixteen of the visitors are pelagic species, many found seasonally in off-shore waters or washed up dead or dying on Rio Grande do Sul beaches. Three visitor species only pass through the state in transit to or from breeding and wintering grounds. This breakdown of migrant visitors adds to more than the 62 species because some fit into more than one category. For instance, two of the three "in transit" species, *Limosa haemastica* and *Calidris canutus,* are also on the North American visitor list.

The list of 24 southern migrant species does not provide a full indication of the volume of migratory movement from the south into Rio Grande do Sul in the winter. There are other species that have small breeding populations resident in the state and are therefore treated here as resident species, but whose numbers are substantially augmented each winter. *Netta peposaca,* for example, which only within recent years has been recognized as breeding here, has its numbers increased many thousandfold by a large winter influx from Argentina. It is likely that the number of southern species known strictly as nonbreeders in Rio Grande do Sul may diminish, for it is reasonable to anticipate that small local breeding populations of *Charadrius falklandicus, Hymenops perspicillata,* or *Tachuris rubrigastra* may eventually be found.

Appendix A lists all the species known for Rio Grande do Sul, with appropriate designators to indicate which of the above-mentioned categories applies to each of them.

In addition to the species accepted for the list, 17 others have been attributed to Rio Grande do Sul in the literature, by labels on museum specimens of doubtful origin, or otherwise. I have been unable to find convincing evidence that these properly belong on the list. They are named in Appendix B and each is discussed briefly in its place in the species accounts, with the names in brackets to separate them from listed species.

Because of the importance of prompt conservation measures to protect rare and endangered species, I include in Appendix C a list of 28 especially endangered species that require quick and vigorous action to safeguard them. For the sake of convenience and emphasis, I repeat in that Appendix those species noted as presumably extinct in Appendix A.

Any information about the appearance in Rio Grande do Sul of any of the species in Appendices B or C, or about any of the vagrant (V) species mentioned in Appendix A, is of special interest and should be reported to the Museu de Ciências Naturais with full details. The author would also appreciate being advised.

DISTRIBUTION: The basic hypothesis underlying this study was that Rio Grande do Sul occupies a transition zone of considerable diversity which its bird life might be expected to reflect. The results amply support this assumption. Of the 457 breeding species, only 166, or 36.7 percent, have ranges that extend beyond the land boundaries of the state on all three sides, whereas 291 species, or 63.3 percent, have an edge of their distributional range within the state. These range edges occur in a wide variety of situations but, in general, result from species' ranges broadly grouped to the northeast, north, west, and southwest. The break near the escarpment between the forested north and the more open country to the south is the most obvious point of transition, but its effect on bird distribution is not precise. Most species with ranges to the south and west are limited by this barrier, but many from the north are not affected by it, either not reaching it in significant numbers, or if they do, passing beyond it into the central trough or southeastern hills.

The effect of distribution ranges projecting into the state from all sides and terminating at varying points within is to create corners holding species not found elsewhere. For example, the coastal forests of the northeast corner are the only place to find the Black-capped Foliage-gleaner (*Philydor atricapillus*), the Unicolored Antwren (*Myrmotherula unicolor*), the Squamate Antbird (*Myrmeciza squamosa*), the Rufous-capped Antthrush (*Formicarius colma*), the Russet-winged Spadebill (*Platyrinchus leucoryphus*), and the Eye-ringed Tody-Tyrant (*Hemitriccus orbitatus*). The extreme north and adjacent forested parts downstream along the Rio Uruguay showing influence of interior tropical

Brazil is the only region having the Chestnut-eared Araçari (*Pteroglossis castanotis*), the Saffron Toucanet (*Baillonius bailloni*), the Ferruginous Antbird (*Drymophila ferruginea*), the Long-tailed Tyrant (*Colonia colonus*), the Vermilion-crowned Flycatcher (*Myiozetetes similis*), the Southern Antpipit (*Corythopis delalandi*), and the Red-rumped Cacique (*Cacicus haemorrhous*).

In the western tip, distinctive species not found elsewhere include the Bay-winged Hawk (*Parabuteo unicinctus*), the Scimitar-billed Woodcreeper (*Drymornis bridgesii*), the Lark-like Bushrunner (*Coryphistera alaudina*), the Scrub Flycatcher (*Sublegatus modestus*), and others typical of the Chaco region to the northwest. As ecological factors are less unique in the extreme south, typically southern species are likely to be encountered farther into the state than are those characteristic of other corners. However, as one moves south along the littoral toward the Uruguayan border there is an appreciable increase in numbers of the Black-necked Swan (*Cygnus melancoryphus*), the Coscoroba Swan (*Coscoroba coscoroba*), the Curve-billed Reedhaunter (*Limnornis curvirostris*), the Sulphur-bearded Spinetail (*Certhiaxis sulphurifera*), the Spectacled Tyrant (*Hymenops perspicillata*), and many others.

With many of the state's species restricted in their range and suitable habitat often not available in large portions of any given range, the total number of species in the state is far above that to be found in any given area. Even a particularly favored region is unlikely to have appreciably more than half the species listed for the entire state, and 250 species is probably an extreme limit for most regions.

Although the avifauna of southern and western sectors is strongly affected by the presence of many species with ranges centered in various Argentine biotopes, for the state as a whole the connection with Brazilian avifauna is the predominant influence, manifested most strongly, of course, in the northern half. Of the 291 breeding species with an edge of their range in Rio Grande do Sul, 222, or 76.3 percent, have the center of their range to the north, compared with only 46 species, or 15.8 percent, centered to the southwest, and 23 species, or 7.9 percent, with ranges centered to the west. This northern predominance is emphasized by the fact that neighboring Uruguay, which shares a quite uniform geographic and ecological situation with much of Rio Grande do Sul south of 30°S latitude, lacks 236 of the 585 species found here, but has only 26 native species not also found in Rio Grande do Sul—all but two of them listed as vagrant or rare, and only nine as possible resident breeders (Gore and Gepp, 1978).

It would be of special interest to define with precision those species with ranges reaching into Rio Grande do Sul from the north that are essentially restricted to Brazil's coastal and escarpment forests lying northeast of Rio Grande do Sul. This will not be possible until state avifaunal surveys recently initiated by Sick and colleagues (Sick, do Rosário, and Azevedo, 1981) in Santa Catarina, and by Scherer (1980) in Paraná, are further advanced. For now, some idea of what are strictly coastal species can be obtained by separating out those found exclusively in the northeast quarter of Rio Grande do Sul and eliminating from them those known to occur in the Misiones Province of Argentina (Olrog, 1963). The resulting 28 species amount to 9.6 percent of the total breeding species, leaving 194, or 66.7 percent, with their principal ranges more directly north, primarily in the Brazilian interior. The short northeastern list should perhaps be augmented by two species, *Columba plumbea* and *Hemitriccus obsoletus,* which in my experience are primarily northeastern Rio Grande do Sul species and do not appear on Olrog's list for Misiones. However, they have also been registered in the extreme north adjacent to Misiones, so do not conform to the criterion of being exclusively northeastern here. The most notable omission from the northeastern list, as seen from Rio Grande do Sul experience, is *Philydor atricapillus,* found here only in the wet forests of the northeastern littoral at the foot of the escarpment. However, it occurs in Misiones, so must cross to the interior somewhere in Santa Catarina or Paraná.

Of the 69 species with range centers in the south and west, all but seven occur in Uruguay and, according to Short (1975), all but 14 are found in the Chaco. With the southeast corner of the Chaco only about 125 km west of the western tip of Rio Grande do Sul, it is

interesting to compare the avifaunal situation of the very homogeneous 1,000,000 sq km of the Chaco with the much more diverse 282,000 sq km of Rio Grande do Sul. Short listed 409 actual or suspected breeding species, which compares with 457 here. All 23 Rio Grande do Sul species with range centers to the west are found there. In addition, 32 out of the 46 species with range centers southwest of Rio Grande do Sul are also found in the Chaco, as well as 76 of the species centered to the north and northeast and 147 of the 166 species whose ranges entirely overlap Rio Grande do Sul. Thus the two regions share a total of 278 breeding species, this being 68 percent of all those in the Chaco and 61 percent of all those in Rio Grande do Sul.

As might be expected of an essentially ecotonal area, none of the 166 breeding species whose ranges extend beyond Rio Grande do Sul on all land sides gives evidence that the state is its center of dispersion. No species or subspecies are exclusively endemic to Rio Grande do Sul, although the Long-tailed Cinclodes (*Cinclodes pabsti*), with its extremely limited range in the high northeast campos and similar areas of southeastern Santa Catarina, is nearly so. However, as Sick (1968) has shown, this species is a relict population, separated from its origins by glaciation, rather than a manifestation of any center of endemism. Perhaps the species next closest to being endemic is the Striolated Tit-Spinetail (*Leptasthenura striolata*), found only from northern Rio Grande do Sul into Paraná. Although the Red-spectacled Parrot (*Amazona pretrei*), now is almost entirely confined to Rio Grande do Sul, this is only the remainder of a much broader range only a few decades ago from which it has now been extirpated. In any event, the existence of its allospecies, *A. tucumana,* in northwestern Argentina indicates some more distant origin for the superspecies. Other species with limited ranges touching Rio Grande do Sul, such as the Mottled Piculet (*Picumnus nebulosus*), the Straight-billed Reedhaunter (*Limnornis rectirostris*), the Araucaria Tit-Spinetail (*Leptasthenura setaria*), and the Bay-capped Wren-Spinetail (*Spartonoica maluroides*), all seem to have their centers of endemism to the north or south of Rio Grande do Sul.

NOTE: Information received too late for inclusion above or in species accounts adds four species to the state list: *Catharacta maccormicki* at sea off Cassino in winter, and *Sula capensis* and *Cochlearius cochlearius* once each on the beach at Cassino (Vooren et al., 1982), and *Egretta caerulea* once just east of Porto Alegre (Voss, *in litt.*).

HISTORY OF ORNITHOLOGICAL INVESTIGATION IN RIO GRANDE DO SUL

Ornithological investigation in Rio Grande do Sul seems to have begun with the French explorer Auguste Sainte Hilaire who traveled extensively in the region in 1820–1821. According to the portion of his diary relating to Rio Grande do Sul, published in translation (1935), he entered the state at Tôrres on June 5, 1820, left at Chuí on October 4, reentered near Barra do Quaraí at the western tip on January 17, 1821, and after crossing back to Porto Alegre, departed by ship via Lagoa dos Patos and Rio Grande on June 19, 1821. His diary mentions collecting and packing bird specimens for shipment, but provides no useful details as to species involved. Apparently he did not label his specimens as to place of origin or date of collection, for one type specimen in the Paris Museum (see species account for *Campephilus leucopogon*) collected on this expedition, now bears only a label prepared and dated after his return to Paris. His co-types of *Rollandia rolland,* also presumably collected in the state and now in Paris, are also without date or other locality indication other than "Brésil" (Hellmayr and Conover, 1948). Sellow, a botanist, visited Rio Grande do Sul in 1823–1824 and 1827 and collected specimens now in the Humboldt University Natural History Museum in East Berlin (Sick, personal commun.) which I have not seen.

Occasionally other specimens attributed to

Rio Grande do Sul found their way into European museums during the nineteenth century. Little or no information is available on the exact origin of most of these, so they must be viewed with caution. Specimens in the British Museum originating with Joyner, a civil engineer employed in São Paulo in 1881–1883, many of which are labeled "Pelotas, Rio Grande do Sul," were questioned by Ihering (1899a, 1899b) who commented that 33 of Joyner's species probably did not exist in the state at all, and certainly not in Pelotas. (Many have subsequently been found in the state, but not in Pelotas.) There is also room for doubt about British Museum specimens provided by Rogers and labeled "Lagoa dos Patos, Rio Grande do Sul." Doubtless many of the specimens furnished by these two collectors did originate in the state, but the uncertainties involved make it difficult to accept as authentic their specimens of any species whose presence here cannot be verified from other sources.

The first serious ornithological study of the region was that of Hermann von Ihering, a German medical doctor and naturalist who, from 1880 to 1893, lived successively in Taquara, Porto Alegre, Pedras Brancas (now Guaíba), Rio Grande, São Lourenço (two locations), and on Ilha do Doutor, an island at the mouth of the Rio Camaquã (Voss, 1974). Ihering had collaborators who collected for him at other points in the eastern portion of the state, but he apparently never traveled in the west or north and had little contact there, so produced little information on the avifauna of those regions.

Ihering's specimens were usually sent to Count Hans von Berlepsch in Germany. Their joint study appeared in 1885 and was the first publication dealing with birds of Rio Grande do Sul. Shortly after Ihering left Rio Grande do Sul he became director of the São Paulo Museum. There he prepared "As Aves do Estado do Rio Grande do Sul," published in 1899, but most of his subsequent work was related to other parts of Brazil. The most important portion of the Ihering collection is now in the Senkenburg Museum in Frankfurt.

More or less concurrent with Ihering's activity in Rio Grande do Sul, Carlos Ritter, a brewer of German origin resident in Pelotas and an amateur naturalist respected by Ihering (1899b) for his knowledge of the local avifauna, assembled a substantial collection of specimens. Most, if not all, of this collection is now in the Museum of the Federal University of Pelotas, but the specimens lack information on date or place of origin.

Walter Garbe, also of German birth and a contemporary of Ihering, who employed him as a collector for the São Paulo Museum, worked in Rio Grande do Sul during parts of 1914 and 1915, especially in the Uruguaiana/Itaqui region. He added a number of species to the state list, specimens of which are in the São Paulo Museum (Pinto, 1938, 1944).

The next significant contribution to Rio Grande do Sul ornithology was made in 1930 by Rodolfo Gliesch, a German-born veterinarian. His paper was based on observations and collections made principally between 1914 and 1927, almost entirely near Porto Alegre and along the littoral, but with some material from the foot of the escarpment and from Larangeira, near the present city of Santo Cristo, close to the Rio Uruguay. The Gliesch collection was originally housed in the School of Engineering in Porto Alegre but later was shifted from place to place without adequate care or control. When I tried to find it in 1977 it had almost entirely disappeared.

In late 1928, Emilie Snethlage, an ornithologist who specialized in Amazonia, spent some time collecting in the municipalities of Uruguaiana and Novo Hamburgo. Some of her specimens are in the National Museum in Rio de Janeiro, including the only example known for the state of *Myiarchus tyrannulus*.

The largest collection, 2813 Rio Grande do Sul specimens, was made by Emil Kaempfer and his wife for Mrs. Elsie Naumburg of the American Museum of Natural History as part of a broad survey of Brazilian avifauna that took him to many parts of the country. From July 1928 until April 1929 he worked in the northeastern quarter of the state, including points on the littoral, central trough, escarpment, high campo of the northeast and northern planalto forests. He returned in 1931 and from early July to early December ranged along the southern littoral from São Lourenço to the Uruguayan border, with one incursion into the southeastern hills at Candiota.

Mrs. Naumburg donated the Kaempfer collection to the American Museum of Natural History and started to study it, but she completed only four relatively brief papers (Naumburg, 1932, 1933, 1937, 1939) and a publication on Kaempfer's collecting localities (Naumburg, 1935). Some time after her death the collection was incorporated into the general collection of the museum without having been fully studied, or, in the case of some specimens, conclusively identified. In the course of my research at the Museum I have located practically all the Kaempfer specimens from Rio Grande do Sul. They form the bulk of the AMNH collection from that state. Specimens listed in the species accounts herein bearing AMNH catalogue numbers between 313701 and 316570, or between 321221 and 322130, were collected by Kaempfer.

Little attention was given to Rio Grande do Sul ornithology between Kaempfer's departure and the late 1950s. During my residence in Porto Alegre from late 1946 until late 1948, I collected a few specimens now in the National Museum of Natural History, Washington. Augusto Ruschi (1956) reported collecting 17 species of trochilid during eight days between June 28 and July 8, 1956 in the vicinity of Porto Alegre.

The next extensive work was done by Oswaldo Camargo, an employee of the Rio Grande do Sul Department of Agriculture, who from 1956 to 1961 collected 734 specimens and published (1962) a list of these and other specimens in the museum of the Fish and Wildlife Service of the Agriculture Department in Porto Alegre. Camargo was not an ornithologist, so sent his material to the São Paulo Museum for identification. Unfortunately, the collection has not been well cared for. When I last saw it, about 1974, it was heavily infested and already partially destroyed by insects.

During the past 20 years Moisés Beltrão has accumulated a collection of specimens for public exhibition in his "Museu de Aves Empalhadas" in Camaquã. These are not well labeled or identified, but the collection contains individual items of interest.

During the 1960s Helmut Sick, ornithologist of the National Museum, Rio de Janeiro, made two visits to Rio Grande do Sul. Most notable was that of early 1966 when he collected the type specimen of *Cinclodes pabsti*. Although it subsequently developed that the species had been collected earlier by both Kaempfer and Camargo, no action had been taken to describe it in either case, so the honors were left to Sick. He has continued periodic visits up to the present. He accompanied me on trips covering most parts of the state, giving valued support to my project.

My own activity, aside from casual collecting and note-taking in 1946–1948, began in mid-1970 and is described herein. Parallel with my own research, Flávio Silva, first with the University of the Rio dos Sinos and subsequently with the Museu de Ciências Naturais of the Rio Grande do Sul Zoobotanical Foundation, has done valuable work with emphasis on game species and banding. Walter Voss, an amateur observer who later assumed professional status as curator of birds at the Zoological Park, has maintained notes of his findings for nearly 20 years and published several studies with particular emphasis on wild birds in cities and at the Zoological Park. Both Silva and Voss have been extremely cooperative in exchanging information with me. The results are laced throughout this book. Other, younger individuals are also now beginning to make worthwhile contributions, among them Eduardo Albuquerque, Maria Alice Fallavena, and Martin Sander.

CHALLENGES FOR THE FUTURE

The present study raises more questions than it answers and will, I hope, provide a basis for new or additional work on Rio Grande do Sul ornithological problems by the increasing number of enthusiastic "gauchos" who are finding this a rewarding field of research.

URGENT CONSERVATION PRIORITIES: Col-

lection of more complete and accurate information on the present situation of species which are endangered or presumed extinct is a priority matter. This is of particular interest with regard to the Red-spectacled Parrot (*Amazona pretrei*). It is now almost entirely confined to Rio Grande do Sul, and during the period of my fieldwork it was observed to suffer a further serious decline in numbers. Fortunately Dr. Paulo Nogueira Neto, Special Secretary for the Environment, took a personal interest in this problem and one of the species' known roosting spots has now been safeguarded as an Ecological Station. Additional action to set aside reserves for the species in other areas where it spends a portion of the year, such as the southeastern hills, is now badly needed.

Ornithologists and conservationists must work actively to assure the establishment of further reserves to protect unique habitats or species. Most obvious among such needs is the urgency to preserve the small remaining amount of espinilho parkland at the western tip near Barra do Quaraí, which within two or three square kilometers contains species unique not only to Rio Grande do Sul but to Brazil.

Formal action to preserve the important values to shorebirds, waders, and waterfowl of the Lagoa do Peixe is also imperative. This area is regularly cited as needing improved roads, and a salt works on the lake is periodically proposed. Unless undertaken with conservation requirements among the top priorities, either kind of development would destroy the remoteness and isolation on which the integrity of the lake presently depends.

ORNITHOLOGICAL OPPORTUNITIES: The most obvious challenge is to remove as quickly as possible the "unknown," "assumed," and "unconfirmed" categories from the species list in Appendix A and to add any other species that may still be lurking unfound in remote pockets. Certainly there are yet some of these in the extreme north and northwest.

I belatedly discovered after my fieldwork was essentially over that nests are not described for some species relatively easy to locate and observe. The possibility that two *Cranioleucas, obsoleta* and *pyrrhophia,* may be only one species requires careful study, which I hope to undertake myself. The fascinating, but as yet completely unexplained, relationship between the Saffron-cowled Blackbird (*Xanthopsar flavus*), and the Black-and-white Monjita (*Xolmis dominicana*), presents a particularly attractive subject for investigation. The ecological niches occupied by the four *Turdus* thrushes, which each summer lived side by side in the small patch of woods behind my first home in Gramado, merit investigation.

If started immediately, it is probably not too late to investigate the effect on other heron species of the appearance in the state during the past 10 years of the Cattle Egret (*Egretta ibis*). Discovery of the full facts regarding the breeding season of the Common Snipe (*Gallinago paraguaiae*) would be of great use to game management authorities and contribute to safeguarding this species from being hunted while nesting. An explanation of the varying shield color of the White-winged Coot (*Fulica leucoptera*) would be interesting.

Study of the significance to the Paraná Pine (*Araucaria angustifolia*), of the almost completely dependent Araucaria Tit-Spinetail (*Leptasthenura setaria*), could have economic importance. In collaboration with entomologists and botanists, an examination could be made of differences between trees in those areas where the bird is a common and constant associate of the tree and in those areas of the southeastern hills where the tree grows but the bird is not present. Another difficult but rewarding task will be to learn more about the Biscutate Swift (*Streptoprocne biscutata*). It associates with and resembles so closely its congener, the White-Collared Swift (*S. zonaris*), that it is difficult to avoid wondering whether all that is needed is known about their relationship. Whether the two subspecies of the Fuscous Flycatcher (*Cnemotriccus fuscus*) are in fact separate species, as I suspect, will be another interesting study, though solution of the problem will involve tracing the two subspecies northward into areas well beyond Rio Grande do Sul.

GUIDE TO THE SPECIES ACCOUNTS

NAMES: Each account is headed by the scientific name for the species following Morony, Bock, and Farrand (1975) or a more

recent volume of Peters Check List (Mayr and Cottrell, 1979; Traylor, 1979) when available. The order in which families and species are presented also follows these authorities. Where the scientific name used by Meyer de Schauensee (1970) is different, this is inserted in parentheses. The English name, taken from Meyer de Schauensee (1970), is provided below and to the left of the scientific name, followed by the Brazilian name, taken from Belton (1978b). In parentheses immediately below the Brazilian name is my free translation into English when translatable, sometimes supplemented by other explanatory comment. Except in a few selected instances, no effort has been made to verify the subspecific identity of specimens collected during this survey. For convenience, however, when a species is polytypic, subspecies in whose range Rio Grande do Sul lies are mentioned at the end of the section on Distribution and Status. Botanical names used follow Schultz (1975).

DATA: In those cases in which information on a species is severely limited, or when, as in the case of many of the species that breed in North America, certain data are already abundantly available, all my material is grouped in one or two general paragraphs. With the vast majority of species it is separated by headings as follows:

DISTRIBUTION AND STATUS: All available information on the Rio Grande do Sul range of the species has been assembled and expressed in terms of the geography of the state. A map accompanies most species accounts but has been omitted when a species is found throughout the state, or when its accidental occurrence or known range is sufficiently limited so this can be accurately expressed without reference to a map. Habitats in which I have found the species are mentioned, and available information on migration is given, including earliest and latest seasonal dates for known or presumed migrants. Statements on abundance are based on subjective impressions gained during my years of Rio Grande do Sul fieldwork. I did not normally census or otherwise attempt to count the individuals of a species except in cases specifically mentioned in the species accounts. All abundance indicators represent what one might expect during typical fieldwork in appropriate habitat and, in the case of migrants, in suitable season, throughout the Rio Grande do Sul range of the species. Terms used are:

Abundant: Normally found in substantial numbers.

Common: Normally present.

Uncommon: Found irregularly but with reasonable consistency.

Scarce: Found only infrequently, at substantial intervals.

Rare: Found with great infrequency, once or twice a year or less.

FIELD MARKS: Information under this heading is not intended to substitute for that found in a field guide. Rather, it attempts to provide supplemental hints on identification and, especially where confusion may exist, to assist in distinguishing one Rio Grande do Sul species from another in the field.

SIZE: Data provided here include maximum and minimum lengths and weights for each sex of all adult specimens collected for which sex could be determined. If the range of measurements of unsexed specimens was appreciably greater than that for sexed specimens, it is also given. Under each species, length precedes weight measurement, and male precedes female measurement. In a few instances measurements are provided for specimens collected by others.

SOFT PART COLORS: Colors were usually determined subjectively. When a range of colors appeared on one feature of several specimens, the range is mentioned. When feasible, colors were compared directly to color chips on ISCC-NBS Color-Name Charts Illustrated with Centroid Colors (Kelly and Judd, 1955). In these cases the initial letter of the color names is capitalized. These charts use standardized color terminology easily recognizable by non-specialists in color and are therefore useful even in the absence of sample chips. They were the only charts available at the time I began my survey. In a few cases where chips from Smithe (1974) more closely approximated the bird color than did ISCC-NBS chips, they were used. In these cases the color name is capitalized, followed by (AMNH).

VOICE: Most described voices were recorded on tape. Wherever the voice description is preceded by (R), at least one of my recordings of the voice of the species is on file in the Library of Natural Sounds, Laboratory of Ornithology, Cornell University, Ithaca,

New York and is available for research and other non-commercial use. If the recording was made by someone else or elsewhere than Rio Grande do Sul, that information is included in parentheses. I have attempted by a variety of methods, depending on the character of each voice, to convey some idea of its sound. I know it is impossible to describe most bird voices accurately in words, and that one person's perception of a bird voice may be substantially different from another's. Nevertheless, I found my gradually increasing ability to recognize many of these voices so useful and so rewarding I feel justified in attempting to convey, however imperfectly, something of what I learned to others who might use it. My own experience in recognizing voices from descriptions encourages me to think this is feasible. At least it will enable those unfamiliar with these voices to narrow appreciably the range of possible sources of many they may hear.

BREEDING: Dates are reported on which I observed copulation, nesting, young, or other manifestations of breeding activity. These are usually listed chronologically through the breeding season without regard to the year in which the observation was made. Also included are occasional field observations on nest types, clutch sizes, and similar data.

BEHAVIOR: This heading covers various observations of miscellaneous behavior and some information on food preferences. Stomachs of many of my specimens were preserved and are on deposit at the American Museum of Natural History for eventual investigation of their contents.

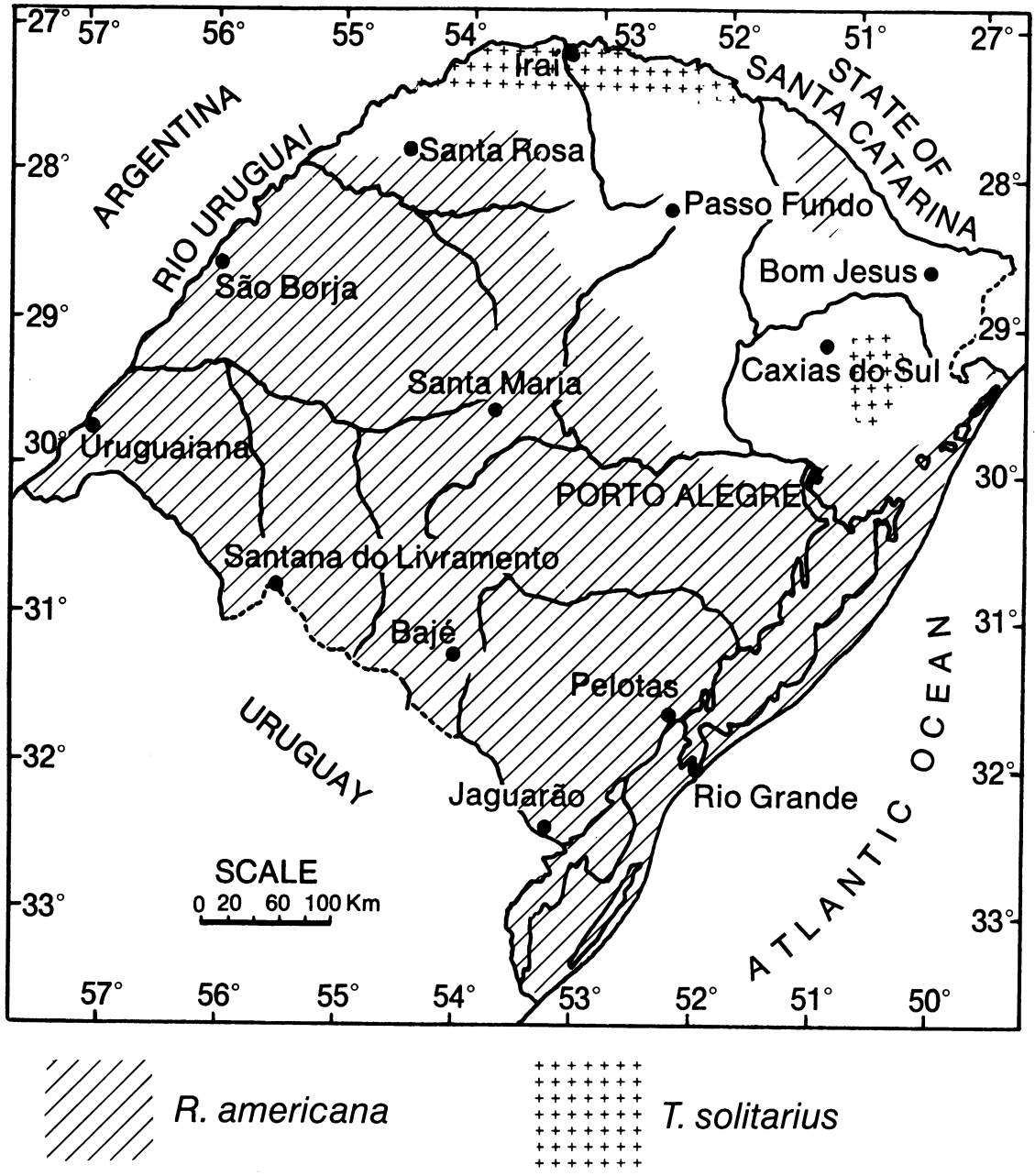
SPECIMENS: Specimens collected during my survey are now dispersed among the collections of the Museu de Ciências Naturais, Porto Alegre (MCN); the Museu Nacional, Rio de Janeiro (MN); and the American Museum of Natural History, New York (AMNH). I have listed here, by catalogue number, all Rio Grande do Sul specimens in the MCN catalogues and identified through 1981; all AMNH Rio Grande do Sul specimens from the Kaempfer collection and my own, as well as all others from the state which I encountered while seeking the Kaempfer specimens; and all those Rio Grande do Sul specimens in the MN identified in their catalogue through May 20, 1970 plus those I furnished and a few other recent ones. (Some specimens I furnished the MCN or MN have not yet been catalogued there. In such cases, the number given is that of my own catalogue, preceded by (WB).) In addition, a few specimens I collected in 1947–1948 or during my survey and furnished to the National Museum of Natural History, Washington (USNM) are listed. All specimens originating from my collection are marked with an asterisk (*).

FAMILY RHEIDAE

Rhea americana
Map 2

Greater Rhea
Ema

DISTRIBUTION AND STATUS: Uncommon resident inhabiting range land throughout most of state, but absent from escarpment area and other forested or formerly forested regions, especially in N, and from most high campo regions of NE, where highest point I have found it is 45 km W of Vacaria at about 800 m altitude. It appears to prosper equally well in flat, sandy open country of littoral, rocky hill country of S, and rolling to flat campo in far W. Numbers, and even its existence in any given area, hinge on attitude of land owners, for rheas are easy targets of casual hunters or plume gatherers and require active protection. Although no statistics are available, certainly rheas have suffered appreciably during a recent intensive and successful official campaign to encourage planting of wheat and soybeans on lands historically devoted to pasture. Substantial decline in range land has resulted. Perhaps even more serious is the fact that many soybean planters consider rheas pests, so deliberately eliminate them from properties where there still is appropriate habitat. Where actively protected, rheas can still be seen in encouraging numbers, such as at Estância Ipiranga, Santa Vitória do Palmar, where 50 to 60 adults or subadults can be seen at one time, and on property of Euclides Evangelista in Caçapava do Sul, where bands of 30 or more can sometimes be seen from adjoining



MAP 2. Geographical distribution of *Rhea americana* and *Tinamus solitarius* in Rio Grande do Sul.

highway. More often, however, they occur in small family groups of from three to eight adults. *Rhea a. intermedia.*

FIELD MARKS: Males larger and more distinctively marked and reputed to have black completely encircling base of neck, whereas females have black on sides but not in front or back of neck base.

BREEDING: On November 28, 1974 at Fazenda São Roberto we found eight eggs in nest in completely open campo, in small depression with few low weeds nearby differentiating area from surrounding short grass pasture. Another egg was found on open ground about 6 m from nest. On various occasions between November 28 and March 27 I have seen adults, almost always single, apparently males, with small young. Twice we saw one juvenal that was considerably larger than its companions and had obviously hatched some time before them. Number of young with one adult has varied from four to 19.

BEHAVIOR: Lauri Model unsuccessfully tried to catch one from flock of eight juvenals about 30 cm high. They ran in eight directions and were adept at disappearing in low vegetation of open field. Accompanying adult made no aggressive moves but ran successively in several directions on zigzag course, holding wings out and head forward and down.

Naldo Corrêa of Cachoeira do Sul, rancher and reliable lay observer, informed me he watched a rhea save its nest from approaching grass fire by constantly running around the nest with outstretched wings dragging on the ground so that the combined action of feet and wings eliminated enough dry grass from the area to form an effective fire break. He also reported seeing an adult with newly hatched young break unhatched eggs, both in nest and scattered nearby. Insects attracted to these served as initial source of food for young.

SPECIMEN: AMNH: 321725.

FAMILY TINAMIDAE

Tinamus solitarius
Map 2

Solitary Tinamou
Macuco

DISTRIBUTION AND STATUS: Rare forest inhabitant. I found it only in state forest reserves in extreme N and along escarpment between São Francisco de Paula and Canela. Ihering (1899a) had specimen without date, probably around 1883, from near Taquara. He said range did not extend S of 30°S. Formerly considered a game bird and still hunted by country people ignorant or unimpressed that it is now included on Brazilian official list of endangered birds. Practical disappearance of this species contrasts with continued success of *Crypturellus obsoletus* in the 100 years since Ihering found them both common on slopes of escarpment. Perhaps contributing to this difference is possibility of more hunting pressure against larger *T. solitarius* or it may require larger areas of contiguous forest than now exist in most parts of state. *Tinamus s. solitarius*

VOICE: (R) Clear, leisurely whistles with mournful, hollow quality. Sometimes delivered in pairs, second lower than first, other times singly and slurring off on minor key at end. Also, short, limpid whistles with rapid tremolo.

BEHAVIOR: As we drove through Turvo Forest Reserve on late afternoon of March 2, 1971, Solitary Tinamou appeared on road ahead of us, walking in same direction in front of car. As we approached within about 10 m, it flew low along road, first beating wings and then gliding strongly until it touched down and started walking again. This repeated several times within approximately 1 km before bird disappeared into woods. As it walked ahead, the impression was of a short-legged, miniature rhea, with very broad back and rounded body standing out bustle-like on sides well beyond legs.

SPECIMEN: AMNH: 313701

Crypturellus obsoletus
Map 3

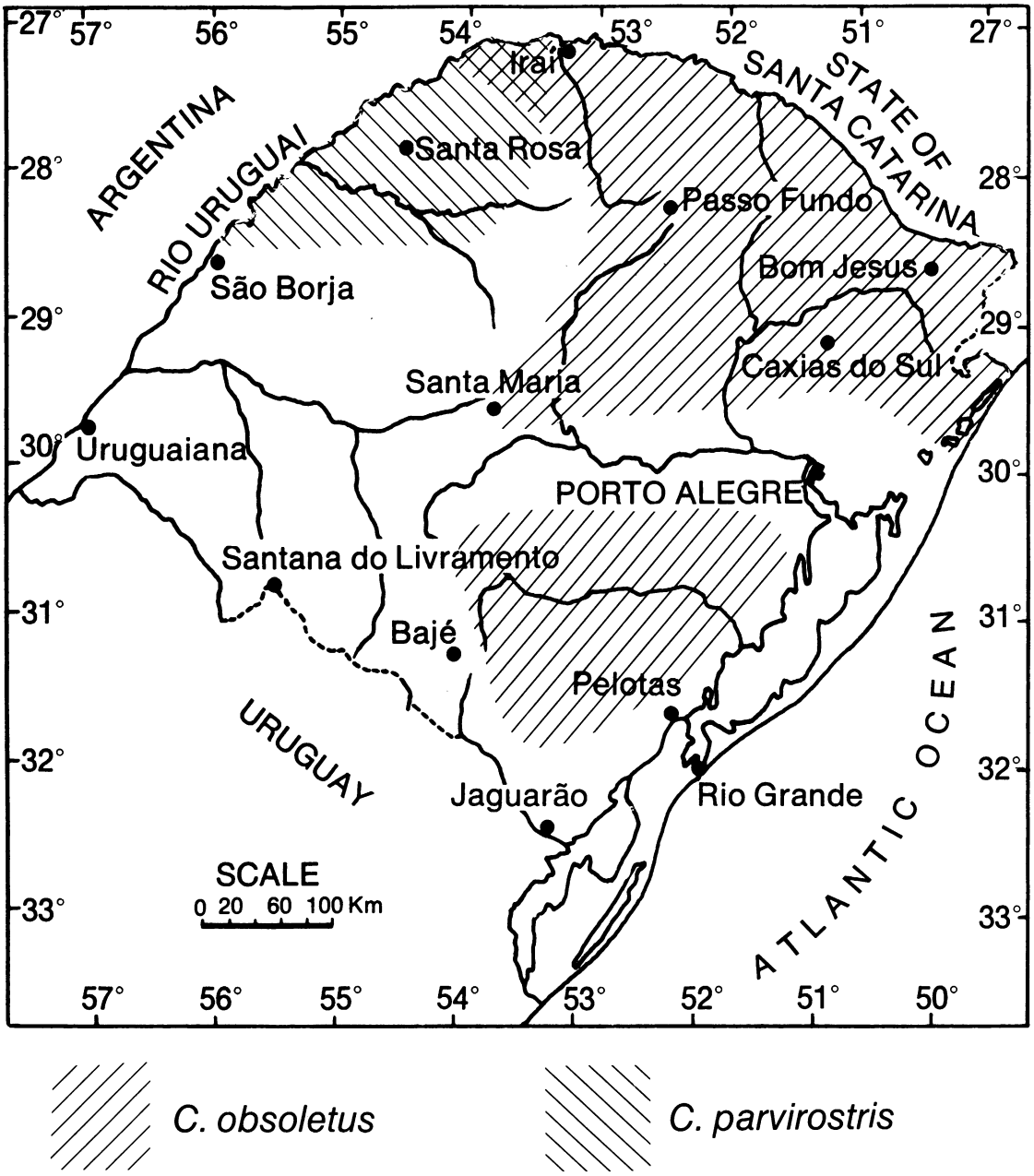
Brown Tinamou
Inambuguaçu
(Great Inambu)

DISTRIBUTION AND STATUS: Common resident on floor of forests, including relatively small areas such as woodlots and remnants, in northern highlands and southern hill country, including foothills and escarpment, E of 54°W and N of 32°S, with very occasional occurrences on littoral and in central trough. *Crypturellus o. obsoletus.*

FIELD MARKS: Various shades of brown give appearance in forest shadows of all dark bird.

SIZE: Two females: 320–333 mm, 490–600 gr.

SOFT PART COLORS: Tarsus greenish; maxilla black; mandible light gray; iris light orange.



MAP 3. Geographical distribution of two species of *Crypturellus* in Rio Grande do Sul.

VOICE: (R) Loud, prolonged series of short, piping trills, gradually ascending scale, or one low trill followed by several high ones on same pitch. Also, a single, whistled, two-note trill, slurring downward, and a single, piercing trill very much like loud police whistle.

BREEDING: Two females collected in late November 1970 and 1974, had well-developed ovarian follicles.

BEHAVIOR: Secretive forest bird, difficult to see but easy to hear. Usually found walking quietly along forest floor, singly or in pairs.

SPECIMENS: MCN: 625*, 628*. AMNH: 55331, 313703–313712, 321727.

Crypturellus noctivagus
Map 4

Yellow-legged Tinamou
Jaó-do-litoral
(Coastal Jao. *Jaó* is onomatopoetic)

DISTRIBUTION AND STATUS: Rare resident of forest floor, also appears in grassy clearings. Recently known from only one valley in southern escarpment, but a visitor there did not find any in February 1981 (Brockstedt, *in litt.*). It may exist in other similar, isolated locations. Specimens collected 50 and more years ago indicate distribution at that time along escarpment from Tôrres possibly as far W as Santa Maria. *Crypturellus n. noctivagus.*

FIELD MARKS: Largest member of genus in state, distinguished from others by size, heavy barring on rump, tail, and wings, and by very light upper throat and belly.

SIZE: One male: 372 mm, approximately 800 gr.

SOFT PART COLORS: One male: tarsus Medium Yellow, toes Dark Grayish Yellow; maxilla black; mandible Grayish Yellow with tip darker; iris Medium Yellowish Brown, light on inner rim, darker on outer rim.

VOICE: (R) Low, slow, mournful, two-syllable, hollow song, first syllable slurring slightly to minor key, second syllable lower. Character of this voice similar to that of *Tinamus solitarius* and not at all like those of other Rio Grande do Sul species of *Crypturellus.*

BREEDING: Male collected November 17, 1974 had enormously enlarged testes. In 1974 Gilberto Brockstedt of Soledade had pair from above-mentioned valley in captivity for about a year. Female had laid eggs without hatching success.

BEHAVIOR: In mid-November 1974, calls of this species echoed through valley during most of day, but like other tinamous they were difficult to find. In mid-afternoon a flock of five or six wandered through our campsite. One male called while standing in open.

SPECIMENS: MCN: 629*. AMNH: 313713, 313714.

Crypturellus parvirostris
Map 3

Small-billed Tinamou
Inambuxororó

DISTRIBUTION AND STATUS: Resident of NW corner, N of 28°30′S and W of 53°30′W, where reasonably common in forest edges, capoeira, and crop lands.

FIELD MARKS: Much smaller than *C. tataupa,* with much shorter bill in relation to size of head, and bright red legs.

SIZE: One unsexed: 242 mm, 225 gr.

SOFT PART COLORS: Tarsus and bill red; iris reddish brown.

VOICE: (R) Clear, ringing, piped individual notes, accelerating and rising in pitch, then turning suddenly downward and ending in rough, low trill.

SPECIMENS: MCN: 279, 627*.

Crypturellus tataupa
Map 4

Tataupa Tinamou
Inambuxintã

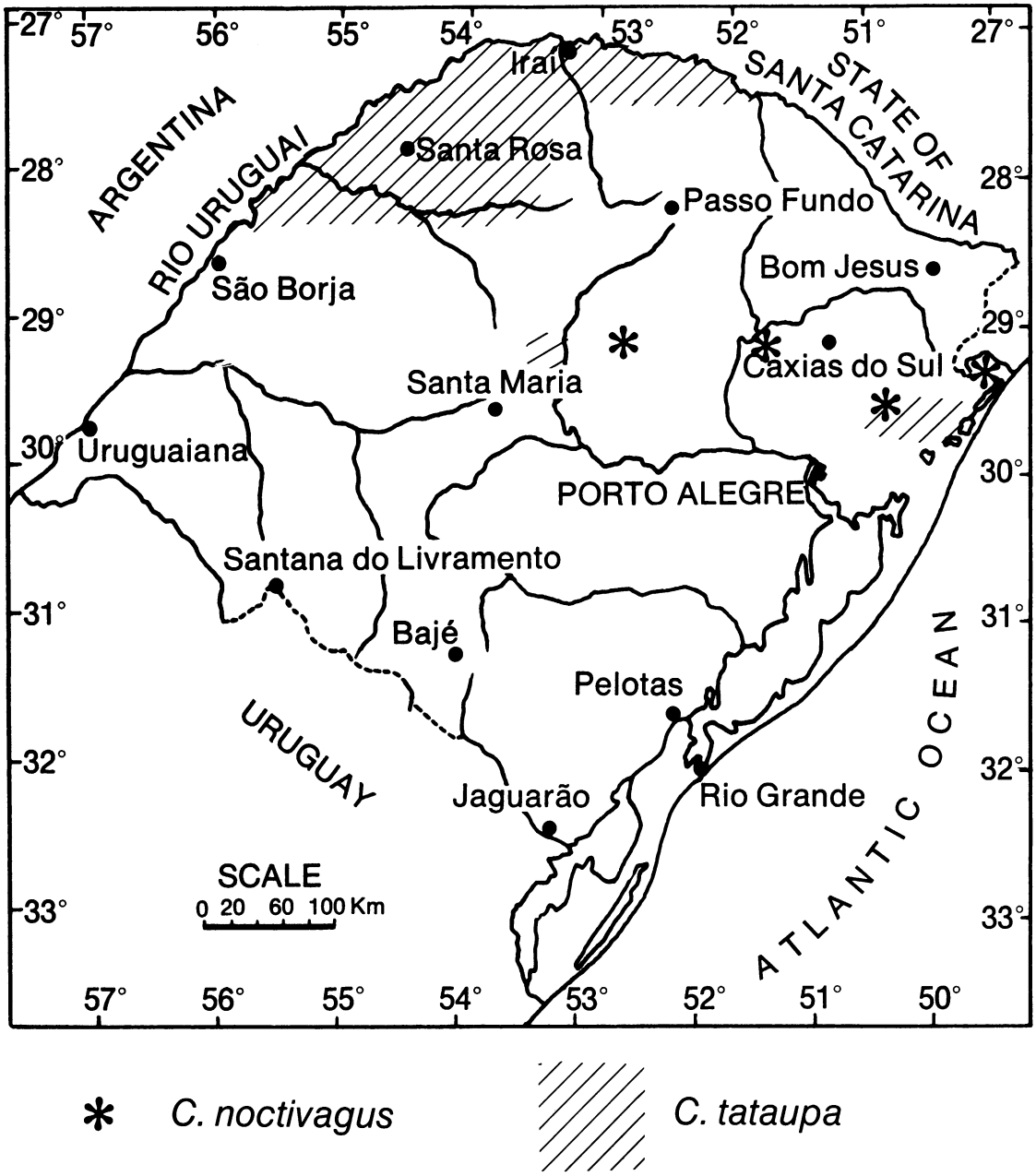
DISTRIBUTION AND STATUS: Common resident of forests, woodland edges, capoeira, and cropland of NW and extreme N, north of 28°30′S and W of 52°W; very scarce in NE coastal area. Ihering (1899a) cited it for Taquara, and residents in upper Jacuí watershed E of Julio de Castilhos recognized recordings of its voice and stated it occurs there, but we found no evidence of it in mid-January 1977. High altitudes of NE appear to constitute barrier between those in NW and small coastal population. They were probably once linked via lower elevations of escarpment and through valleys penetrating it in central part of state, but this connection now likely severed. *Crypturellus t. tataupa.*

FIELD MARKS: Similar to but larger than *C. parvirostris,* with proportionally larger, bright red bill, but inconspicuous, reddish gray legs.

SIZE: Two unsexed: 252–260 mm, 376–421 gr.

SOFT PART COLORS: Tarsus Reddish Gray; bill Strong Reddish Orange with dirty white tip; iris Moderate to Strong Reddish Brown.

VOICE: (R) Quick, downward trending se-



MAP 4. Geographical distribution of two species of *Crypturellus* in Rio Grande do Sul.

ries of rough, ringing trills, accelerating toward end; or three or four such short trills: "swttt sweet swutt."

SPECIMENS: MCN: 277, 626*, AMNH: 823992*.

Rhynchotus rufescens
Map 5

Red-winged Tinamou
Perdigão
(Great Partridge)

DISTRIBUTION AND STATUS: Uncommon, resident, terrestrial, grassland species, preferring fairly high growth with weeds and scrub. Found primarily in rolling range country of high NE, southern and SW hills, and central W. There are early records for Osório, Pelotas, and vicinity of Porto Alegre, but only recent records for these sectors are from near Viamão (Voss, personal commun.). I have no records for W of 56°W. In my experience, species is scarce but fairly uniformly scattered in NE and southeastern hills. Hunters inform me it is common in region around Rosário. *Rhynchotus r. rufescens.*

FIELD MARKS: Basically buff, with emphatic black barring on back and wing coverts. Much smaller *Nothura maculosa* shares same general coloration but *R. rufescens,* in addition to larger size, has much more prominent bill and shows bright rufous primaries in flight.

SIZE: One female: 415 mm, 900 gr (from frozen specimen).

VOICE: (R) Far carrying, attractive four syllable whistle: "We'll -- wheel-it-here ----- we'll -- wheel-it-here."

BREEDING: Captive individuals under study by Museu de Ciências Naturais, Porto Alegre, laid eggs from October through December (Silva, *in litt.*).

BEHAVIOR: Keeps to cover, rarely seen in open.

NOTE: A highly prized game species in the state, but year-round closed season is currently in effect while study undertaken to determine if it is endangered. For recent problems of habitat disappearance and insecticides, see Note under *Nothura maculosa.*

SPECIMENS: MCN: 351, 417, 418, 423, 462, 523, 536, 540, 623*, 1808, 1809. AMNH: 313729, 313730.

Nothura maculosa
Map 5

Spotted Nothura
Perdiz or *Codorna*
(Partridge) (Quail)

DISTRIBUTION AND STATUS: Common to abundant resident in grassland and open country such as espinilho parkland, wherever ground cover reasonably low and not too dense, present virtually throughout the state where moderate amounts of open campo available; records lacking for some areas of extreme N, particularly where forests were converted directly to cropland. *Nothura m. maculosa.*

FIELD MARKS: Buffy with black and rufous mottling on upperparts; quail-like in size and appearance, with very small head usually carried on well-outstretched neck when in motion or alert.

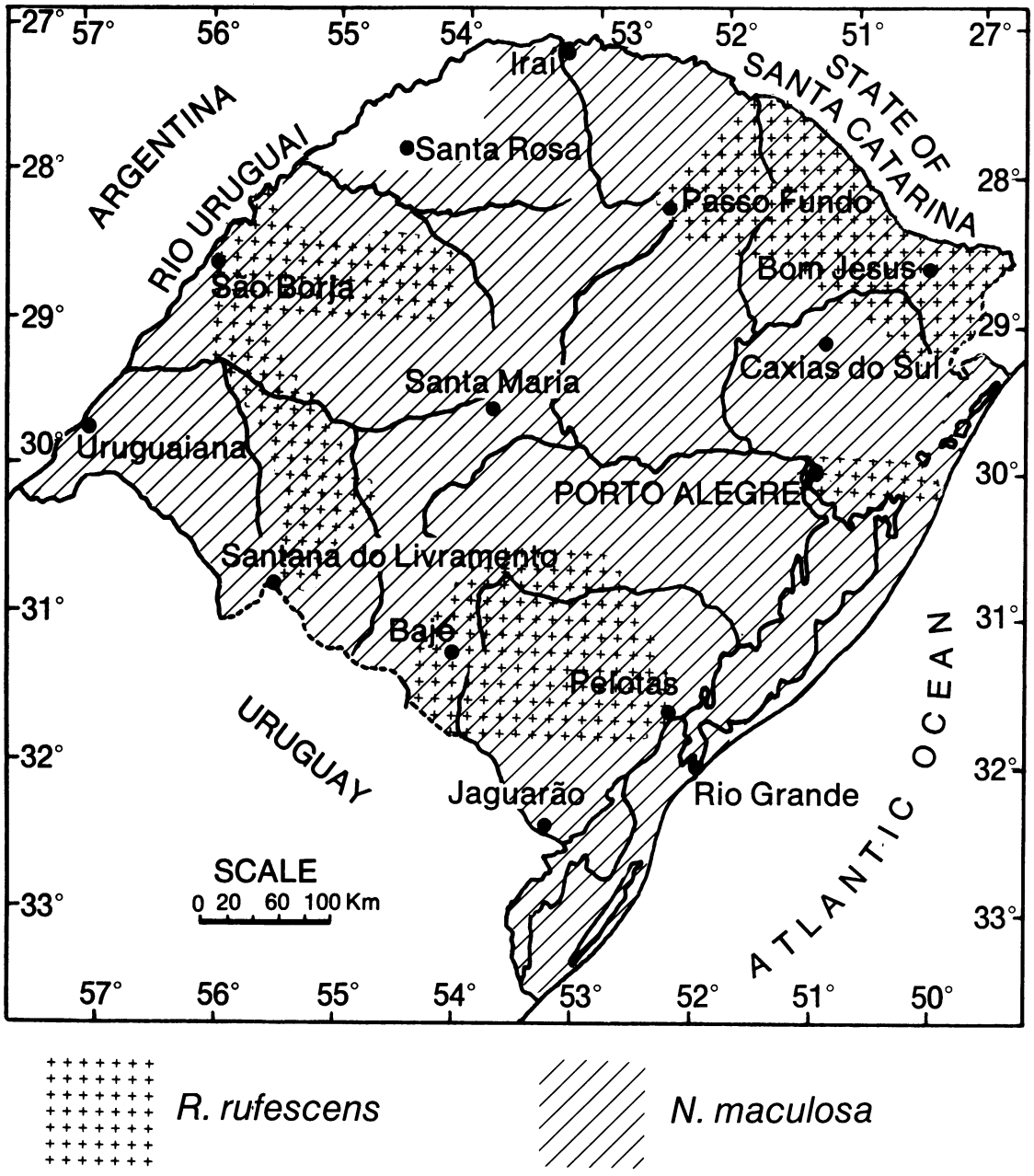
SIZE: One female: 275 mm, 300 gr.

SOFT PART COLORS: Tarsus yellow; bill yellow with upper portion of maxilla brown; iris orange-brown.

VOICE: (R) Series of brief, high, piping notes on same pitch which speed up, drop in pitch, and fade in intensity toward end. One individual whistled long, irregularly-timed series of similar but more nervous and quicker notes as I approached, and ended with one sharp, much more intense and louder note on taking flight.

BREEDING: Downy young seen as early as October 17 and feathered fledgling only about one-sixth adult size as late as May 6. Nests on ground, sometimes entirely in open but often under or close to clump of grass or weeds. Usual clutch three or four chocolate-brown eggs. Nidifugous young either become independent very early or often stray, judging from number of times I have seen tiny chicks without accompanying parent.

BEHAVIOR: Found singly or more usually as pairs, but in latter case they normally feed some meters apart. Usually flush only when closely approached. When flushed, usually utter sharp cry or quick trill, fly strongly for brief interval reaching height of 2 to 4 m and distance of 15 or 20 m after which they glide, interspersing two or three brief bursts of wing power, for 200 to 300 m, preferably downhill, to another landing. Frequently seen crossing



MAP 5. Geographical distribution of *Rhynchotus rufescens* and *Nothura maculosa* in Rio Grande do Sul.

highways on foot where, at approach of vehicle, they often squat and freeze as if protected by natural cover. On occasion of outbreak of flying termites in São Francisco de Paula, nothuras were common in open, picking them off of road surface. On February 12, 1974, N of Santa Vitória do Palmar I watched two in confrontation while third stood off as

observer. They faced each other with necks stretched high until one lowered head, stooped, and ran low at adversary. Latter jumped so attacker ran under it just as bodily contact about to occur. This procedure continued for several minutes until oncoming truck scared them off highway.

Silva and Sander (1981) report that of 178 Spotted Nothura crops obtained from Rio Grande do Sul birds killed by hunters in the May 15–July 31 periods of 1977 and 1978, 82 contained only vegetable material, eight only animal material, and 88 had a mixture. Insects accounted for 83 percent of the animal material, and seeds for 83 percent of the vegetable material. Grasses constituted 38 percent and papilionaceas 27 percent of the vegetable matter.

NOTE: Extensive plowing of rangeland during past few years has eliminated significant amount of natural habitat for this species and *Rhynchotus rufescens.* Probably much more harmful to these species is widespread and often careless and excessive use of insecticides, especially on soybeans. This not only affects birds which venture into fields, but hits those that would find adequate food and cover in marginal areas if these were not poisoned along with crop areas. I have not personally verified any incident, but each year during crop season newspapers carry reports of massive kills of birds and fish, and of deaths of livestock and occasionally humans from crop dusting.

Spotted Nothura is by far most hunted upland game bird in Rio Grande do Sul. Hunting regulations during past few years have restricted bag limits to reasonable numbers, but enforcement inadequate. State divided into three groups of municipalities (similar to U.S. counties) with open season permitted in only one group each year. While not based on any scientific survey of populations, this measure probably has generally beneficial effect in protecting species. Work currently under way to obtain facts on populations and reproductive success should provide improved basis for future regulations on hunting this species and *Rhynchotus rufescens.*

SPECIMENS: MCN: 301, 305, 422, 443–454, 479, 484–486, 496, 506, 509–513, 515–519, 521–535, 537–539, 624*, 1769, 1777, 1781, 1794, 1795, 1816. MN: 4279, 4284, 4285. AMNH: 313719–313728, 321221, 321222, 321495–321500, 321729, 321730.

FAMILY DIOMEDEIDAE

Diomedea exulans

Wandering Albatross
Albatroz-errante
(Wandering Albatross)

Reported by Paessler (1911) from 31.5°S, 48.6°W, approximately 110 nautical miles ESE of Quintão, on November 25, 1910. Given difficulty of distinguishing this species from *D. epomophora* and fact that Paessler's observation was only visual from on board ship, caution should be used in accepting it as definitive. However, one in juvenal plumage was found alive with broken wing on beach near Conceição lighthouse and photographed in November 1971 by Gianuca (*in litt.*), who states Vooren has seen species on rare occasions on high seas off RGS since about 1979.

Diomedea epomophora

Royal Albatross
Albatroz-real
(Royal Albatross)

Corpse of individual banded on October 27, 1976 at Campbell Island, New Zealand found on beach 6 km S of Tramandaí in early August 1977 (Silva, personal commun.). Another found alive on beach near Cidreira was brought to Zoo on September 6, 1977, but subsequently died (Voss, personal commun.). A third found dead on beach 20 km S of Cassino on October 6, 1980. Photos and skeleton in collection of Carolus Vooren (Norton Gianuca, *in litt.*) who has also seen species rarely on high seas off Rio Grande do Sul.

Diomedea melanophris

Black-browed Albatross
Albatroz-de-sobrancelha
(Browed Albatross)

Alexander (1921) reported more than 20 off Rio Grande, May 5, 1921. I saw one fly

by oceanographic vessel *Almirante Saldanha* April 17, 1973 about 7 miles offshore opposite Solidão lighthouse. Dead birds have been found at various points along Rio Grande do Sul beaches in July, October, and November. One found November 27, 1972 SW of Cassino measured 875 mm long and weighed 4450 gr. Flightless juvenal banded in Falkland Islands February 1, 1967 found dead near Rio Grande in September 1980 (Bird Banding Laboratory, 1981). *Diomedea m. melanophris.*

SPECIMEN: MCN: 310.

Diomedea chlororhynchos

Yellow-nosed Albatross
Albatroz-de-nariz-amarelo
(Yellow-nosed Albatross)

DISTRIBUTION AND STATUS: As with *D. melanophris,* Alexander (1921) reported more than 20 off Rio Grande on May 5, 1921. During period April 14–17, 1973, I saw many, one 125 miles E of Capão da Canoa, but most—from 25 to 30 at one time—only about 7 miles offshore, due S of Solidão lighthouse where female entangled wing in fishing line and was collected.

FIELD MARKS: Yellow to orange culmen and bill tip. Although various authorities (Alexander, 1963; Escalante, 1970a; Murphy, 1936; Watson, 1966) state back much lighter than wings, none I saw in flight showed this. To contrary, I found no noticeable difference and observed that sooty brown appearance, as seen in sunlight, continued unmodified from one wing across back to other wing.

SIZE: One female: 780 mm, 2150 gr, wingspread 1985 mm.

SOFT PART COLORS: Tarsus blue-gray with white patches, webs white; maxilla black with yellow culmen, turning orange pink at distal end, tip translucent whitish; mandible black with translucent whitish tip, narrow fleshy deep yellow line extends vertically at sides of base to within 3 mm of bottom edge; iris brown.

BEHAVIOR: Individual resting on water surface dressed feathers by repeatedly dipping bill into water and preening after each dip.

SPECIMEN: MNC: 1757*.

FAMILY PROCELLARIIDAE

Macronectes giganteus

Giant Fulmar
Pardelão-gigante
(Giant Great Petrel)

Occasional winter visitor along coast. Records extend from July 2 to September 27. I saw one flying offshore near Cassino and found two dead specimens on beach, one near Cassino, one near Tramandaí. MAE at Camaquã has mounted specimen found alive and swimming with bullet wound along W shore of Lagoa dos Patos SE of Camaquã (Moisés Beltrão, personal commun.).

SPECIMENS: MCN: 1762. MAE: One specimen.

Fulmarus glacialoides

Southern Fulmar
Pardelão-prateado
(Silvery Great Petrel)

DISTRIBUTION AND STATUS: Often found dead along beach between Cassino and Uruguayan border during winter and spring. One found dead N of Mostardas lighthouse. Occasionally seen flying offshore. Recorded dates extended from July 27 to November 27. On July 31, 1974, 6 km SW of Cassino I caught one by hand as it ravenously ate fish on beach at water's edge. Sex not determined.

SIZE: One specimen: 449 mm.

SOFT PART COLORS: Tarsus pinkish gray; maxilla light gray with black tip and pink commissure and pink band behind tip; mandible pink with black tip; iris brown.

SPECIMENS: MCN: 640*, 642*, 1812, 1813. MN: 32394*, 32395*, 32532–32534*.

Daption capense

Cape Petrel
Pomba-do-cabo
(Cape Pigeon)

DISTRIBUTION AND STATUS: Regularly found dead along ocean beaches in winter and spring, mostly S of Cassino. Can be seen in flight from Rio Grande jetty. Ihering reported finding it at sea before crossing Rio Grande bar. Registered from July 22 to November 27. On July 31, 1974 I found one dying on

beach 7 km SW of Cassino. Sex could not be determined. *Daption c. capense.*

SIZE: One specimen: 394 mm, 300 gr.

SOFT PART COLORS: Tarsus and bill black; iris brown.

SPECIMENS: MCN: 646*, 1811. MN: (WB)1369*.

Pterodroma incerta

Hooded Petrel
Furabuxo-de-capuz
(Hooded Belly-piercer)

DISTRIBUTION AND STATUS: Seen, usually singly or in pairs, April 13–16, 1973, from 65 to 125 miles off Rio Grande do Sul coast. Ten individuals counted at 110 miles. Dead birds occasionally wash up along coast; I found three SW of Cassino, one on November 27, 1972 and two on March 1, 1973.

MOLT: George Watson examined March birds and informed me (*in litt.*) MCN no. 643 was "molting the wings and tail. Outer two right and outer three left are still old, central rectrices are missing, body plumage is old and worn." He said USNM no. 536444 "has progressed farther, with only outer primaries in growth, the rest are new. The tail is mostly in growth. Body and head are still mostly old, but lower back and scapulars are new."

SPECIMENS: MCN: 643*, (WB)860*. USNM: 536444*.

Pterodroma mollis

Soft-plumaged Petrel
Furabuxo-de-coroa
(Crowned Belly-piercer)

Paessler (1911) saw this species on November 25, 1910 approximately 110 nautical miles ESE of Quintão at 31.5°S, 48.6°W. No other Rio Grande do Sul record known.

Pachyptila belcheri

Slender-billed Prion
Faigão-de-bico-fino
(Slender-billed Faigão)

Dead specimen now in MN found by Silva on beach between Rio Grande jetty and Cassino on June 20, 1969. Four found dead between Mostardas and Quintão on August 8, 1980 and several other corpses found along Mostardas peninsula beaches July 22–27, 1981. Seven specimens found dead on beach at Cassino in October of 1979, 1980, and 1981 are in collection of Carolus Vooren, Rio Grande, who has also seen them on rare occasions on high seas off Rio Grande do Sul (Gianuca, *in litt.*).

SPECIMENS: MCN: 1826. MN: One specimen.

Pachyptila vittata

Broad-billed Prion
Faigão-de-bico-largo
(Broad-billed Faigão)

Specimen found dead on beach at Cassino October 16, 1979. Details in possession of Carolus Vooren, Rio Grande (Gianuca, *in litt.*) who has also seen it on rare occasions on high seas off RGS. These are apparently first records for species in Brazil and, perhaps, on South American continent.

Pachyptila desolata

Dove Prion
Faigão-rola
(Dove Faigão)

Specimen found dead on beach at Cassino in October 1981. Skull in collection of Carolus Vooren of Rio Grande, who has also observed species rarely on high seas off Rio Grande do Sul (Gianuca, *in litt.*). On August 8, 1969 Gianuca also found eight dead prions which he believes, but is not certain, were this species, on beach at Cassino shortly after severe storm.

Procellaria aequinoctialis

White-chinned Petrel
Pardela-preta
(Black Petrel)

DISTRIBUTION AND STATUS: Observed at various points along coast of Rio Grande do Sul in July, September, November, December, April, and May so it may be present year-round in vicinity. During April 12–18, 1963, it was most abundant species seen at sea, appearing not only close to shore but up to 110 miles out. This coincided with period of molt, for occasionally bird with missing primaries was seen. More than 60 individuals counted at one time on April 18 few miles NE of Rio Grande bar. On July 31, 1974 near Cassino I saw a few White-chinned Petrels flying over

beach at water's edge, and others close in over breakers. *Procellaria a. aequinoctialis.*

SIZE: Two females: 475–505 mm, 1000–1050 gr, wingspread 1345–1370 mm.

SOFT PART COLORS: Two females: Tarsus black; bill grayish green with black markings; iris dark.

VOICE: About 7 A.M. April 18, 1963 I heard passerine-like "cheep cheep cheep cheep cheep" several times, originating from flock loafing on ocean surface few hundred m from ship.

BREEDING: Female that entangled wing in fishing line April 17, 1963 had inactive ovary. On November 27, 1972 SW of Cassino sick female found on beach had fully developed egg with hard shell, 8 cm × 5 cm, in oviduct. This bird had no white on chin.

SPECIMENS: MCN: 636*, 637*.

Procellaria cinerea (*Adamastor cinereus*)

Gray Petrel
Pardela-cinza
(Gray Petrel)

Paessler (1911) saw this species on November 25, 1910 about 110 nautical miles ESE of Quintão, whereas Alexander (1921) reported more than 20 off Rio Grande on May 5, 1921. I know of no recent record.

Calonectris diomedea

Cory's Shearwater
Bobo-grande
(Big Booby)

Zino (*in litt.* to Sick) reported specimen found dead at Tramandaí February 16, 1971 that had been banded on Ilha Salvagem between Madeira and Canary Islands and identified as *C. d. borealis.* According to Gianuca (*in litt.*) another specimen found dead at Cassino on February 20, 1982. This skin in collection of C. Vooren, who has found species relatively abundant during southern hemisphere summers on high seas off Rio Grande do Sul.

Puffinis gravis

Greater Shearwater
Bobo-grande-de-sobre-branco
(Great White-rumped Booby)

DISTRIBUTION AND STATUS: Observed frequently during period April 13–17, 1973, both offshore and well out to sea off Rio Grande do Sul coast. Closest individuals were about 7 miles out on April 17, near Solidão Light. Dead specimens have been found on beach SW of Capão da Canoa on December 14, 1971, and SW of Cassino between November 27 and March 1. George Watson (*in litt.*) examined March 1, 1972 specimen and found it had begun molting scapulars, but body, wing, and tail feathers were very old and worn.

SIZE: Three specimens: 477–518 mm length; two specimens: 1110–1212 mm wingspread; one specimen: 650 gr weight.

SPECIMENS: MCN: 466, 508, 639*, 641*. MN: (WB)861*.

Puffinus griseus

Sooty Shearwater
Bobo-escuro
(Dark Booby)

DISTRIBUTION AND STATUS: One found dead on beach SW of Capão da Canoa on May 13, 1971 and others along Mostardas peninsula ocean beach July 25–27, 1981. Dark bird with white underwings fishing among *Sterna* sp. and *Spheniscus magellanicus* outside surf line at Praia do Hermenegildo on July 21, 1971 may have been this species. Frequently after alighting on water it would hold wings open.

SIZE: One specimen: Length 445 mm, wingspan 965 mm.

SPECIMENS: MCN: 638*, 1814.

Puffinis puffinis

Common Shearwater
Bobo-pequeno
(Little Booby)

DISTRIBUTION AND STATUS: One caught alive on surf fishing line near Capão da Canoa October 9, 1970. Species also found dead on beach between Cassino and Uruguayan border in September and November, and in Tramandaí area in May. Gliesch (1930) reported specimen from Tôrres collected in winter. *Puffinis p. puffinis.*

SIZE: One specimen: 365 mm, 240 gr, wingspread 795 mm.

SPECIMENS: MCN: 644*, 645*. MN: 32401*.

FAMILY HYDROBATIDAE

Oceanites oceanicus

Wilson's Storm-Petrel
Alma-de-mestre
(Bo'sun's Soul)

Seen at sea every day during April 12–17, 1973, usually in small flocks, from Rio Grande bar to beyond 100 miles from coast and as far N as 29°42'S. Gliesch (1930) reported specimen from Tôrres collected in winter. *Oceanites o. oceanicus.*

FAMILY SPHENISCIDAE

Eudyptes chrysocome (*crestatus*)

Rockhopper Penguin
Pingüim-de-penacho-amarelo
(Yellow-crested Penguin)

Unsexed specimen on display in museum of Federal University of Pelotas found alive on beach between Cassino and Uruguayan border on unknown date was held in Pelotas city park zoo until it succumbed in 1956. On August 8, 1980 Silva found one dead on beach between Mostardas lighthouse and Quintão. Information on this specimen provided below. Third specimen found at Cassino in June 1981 now in Rio Grande Oceanographic Museum (Norton Gianuca, personal commun.). *Eudyptes c. chrysocome.*

SIZE: 564 mm, 1660 gr.
SOFT PART COLORS: Tarsus pink; bill red.
SPECIMEN: MCN: 612.

Eudyptes chrysolophus

Macaroni Penguin
Pingüim-de-testa-alaranjada
(Orange-fronted Penguin)

Specimen in São Paulo University Zoology Museum (Pinto, 1978) was collected at mouth of Rio Chuí, southernmost point of Brazil, from group of 11 exhausted birds found there July 5, 1964 (Sick, personal commun.). No other record for Brazil. *Eudyptes c. chrysolophus.*

Spheniscus magellanicus

Magellanic Penguin
Pingüim-de-magalhães
(Magellanic Penguin)

Occurs in winter and spring along entire length of state's ocean beaches, most frequently in dead or dying condition. Earliest recorded date is May 15, latest November 27. On October 4 and 6, 1972 on two stretches of northern beach totaling more than 30 km, dead birds averaged about 1 per km. On November 27, 1972 we found occasional dead Magellanic Penguins scattered along more than 200 km of beach from Cassino nearly to Uruguayan border. Dead birds abundant along Mostardas peninsula ocean beach July 22–27, 1981, averaging about 3 per km from Pinhal to Lagoa do Peixe and much more farther S. Some birds showed clear signs of oiling, but most presented no external evidence of cause of death.

Only record I have of normal activity is from Hermenegildo Beach, about 20 km N of Uruguayan border on July 21, 1971, when flock of from 100 to 200 Magellanic Penguins just beyond surf line were actively swimming and diving, apparently in pursuit of school of fish. About 1000 *Sterna hirundinacea* and *S. trudeaui* and a few other birds, one possibly a *Puffinus griseus,* were diving at same school.

FAMILY PODICIPEDIDAE

Rollandia (*Podiceps*) *rolland*
Map 6

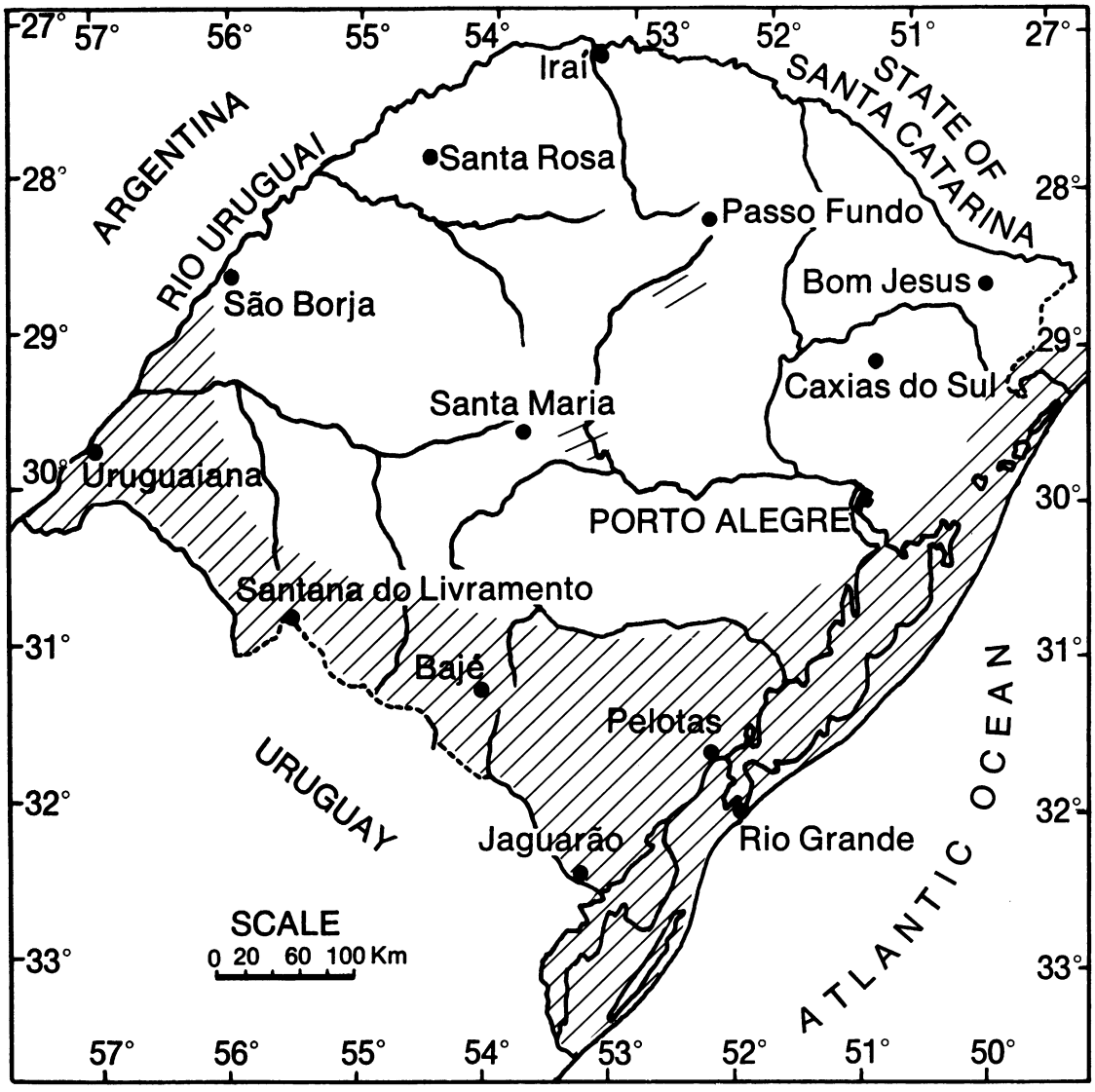
White-tufted Grebe
Mergulhão-orelhas-brancas
(White-eared Diver)

DISTRIBUTION AND STATUS: Occurs along littoral and in S and SW hills; occasionally at scattered locations in far W, central depression, and northern highlands, usually occupying reedy lakes and other bodies of water with cover, but sometimes open ponds and reservoirs. Uncommon except in extreme S where found routinely, sometimes in small flocks. Present along littoral throughout year, but inland records all concentrated between October 16 and March 29. *Rollandia r. chilensis.*

FIELD IDENTIFICATION: White patches on sides of head and small size distinguish it from other Rio Grande do Sul grebes.

SIZE: Two males: 279–296 mm, 225–239 gr. One female: 224 mm, 265 gr.

SOFT PART COLORS: Male in breeding plumage (September 21); tarsus blackish on outer side, stained light green on inside; bill black. Male in molt (remiges one-third nor-



MAP 6. Geographical distribution of *Rollandia rolland* in Rio Grande do Sul.

mal length, February 11): tarsus gray with creamy white patches on toe lobes; maxilla dark brown with light spot on side near base; mandible whitish with brown tomial line. Young female (skull not ossified, May 16): tarsus dark gray on outer side, inner side light green; mandible and sides of maxilla light greenish gray, culmen brown, very dark around nares. All three; iris bright carmine to bright red.

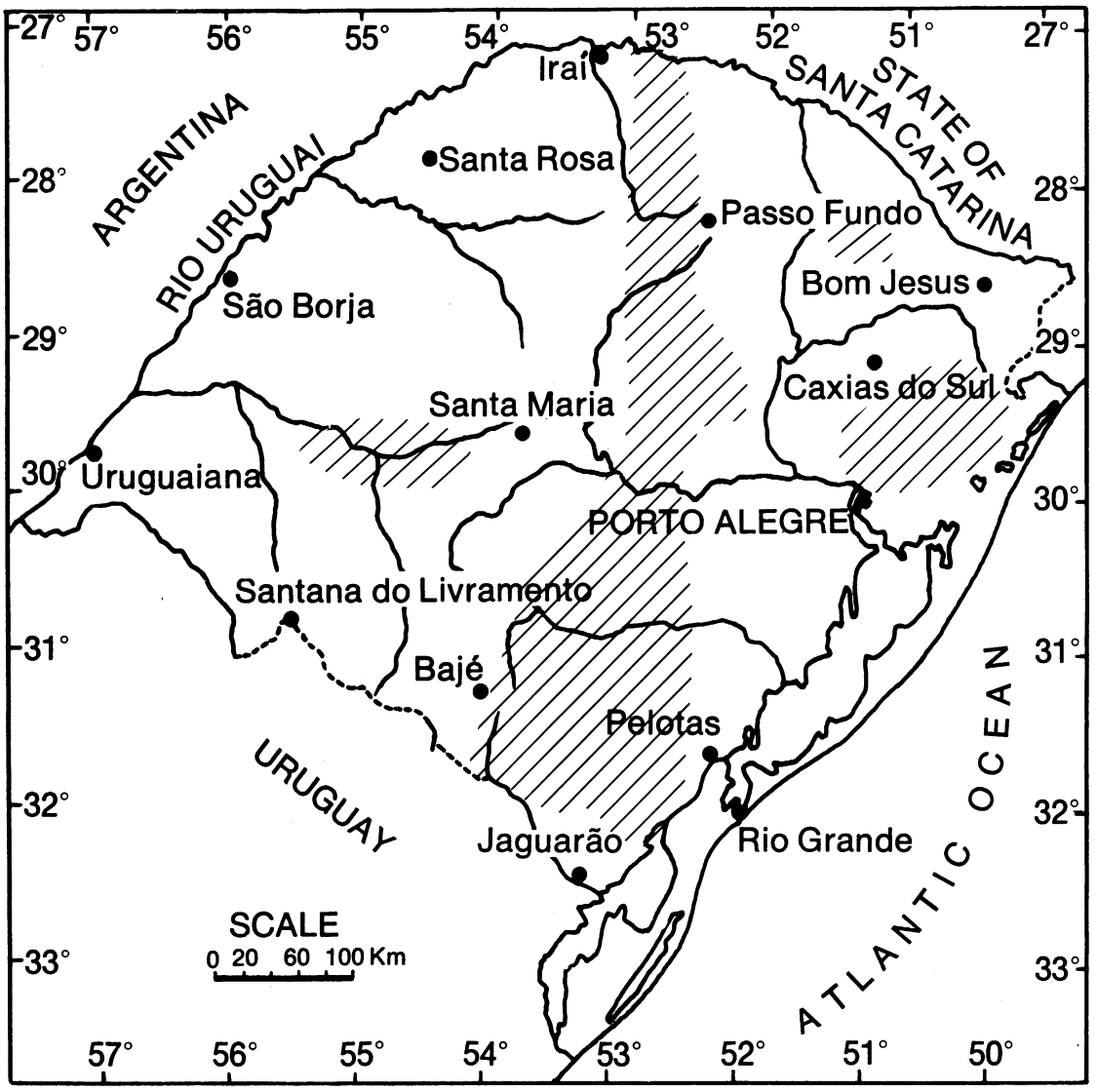
BREEDING: Male collected September 21, 1974 had well enlarged testes; another of February 11, 1974 had them partially enlarged. Female of May 16, 1973 had inactive ovary.

SPECIMENS: MCN: 631*, 632*. MN: 31840*. AMNH: 321227, 321516–321523.

Tachybaptus (*Podiceps*) *dominicus*
Map 7

Least Grebe
Mergulhão-pequeno
(Little Diver)

DISTRIBUTION AND STATUS: Uncommon occupant of small-to-medium ponds and res-



MAP 7. Geographical distribution of *Tachybaptus dominicus* in Rio Grande do Sul.

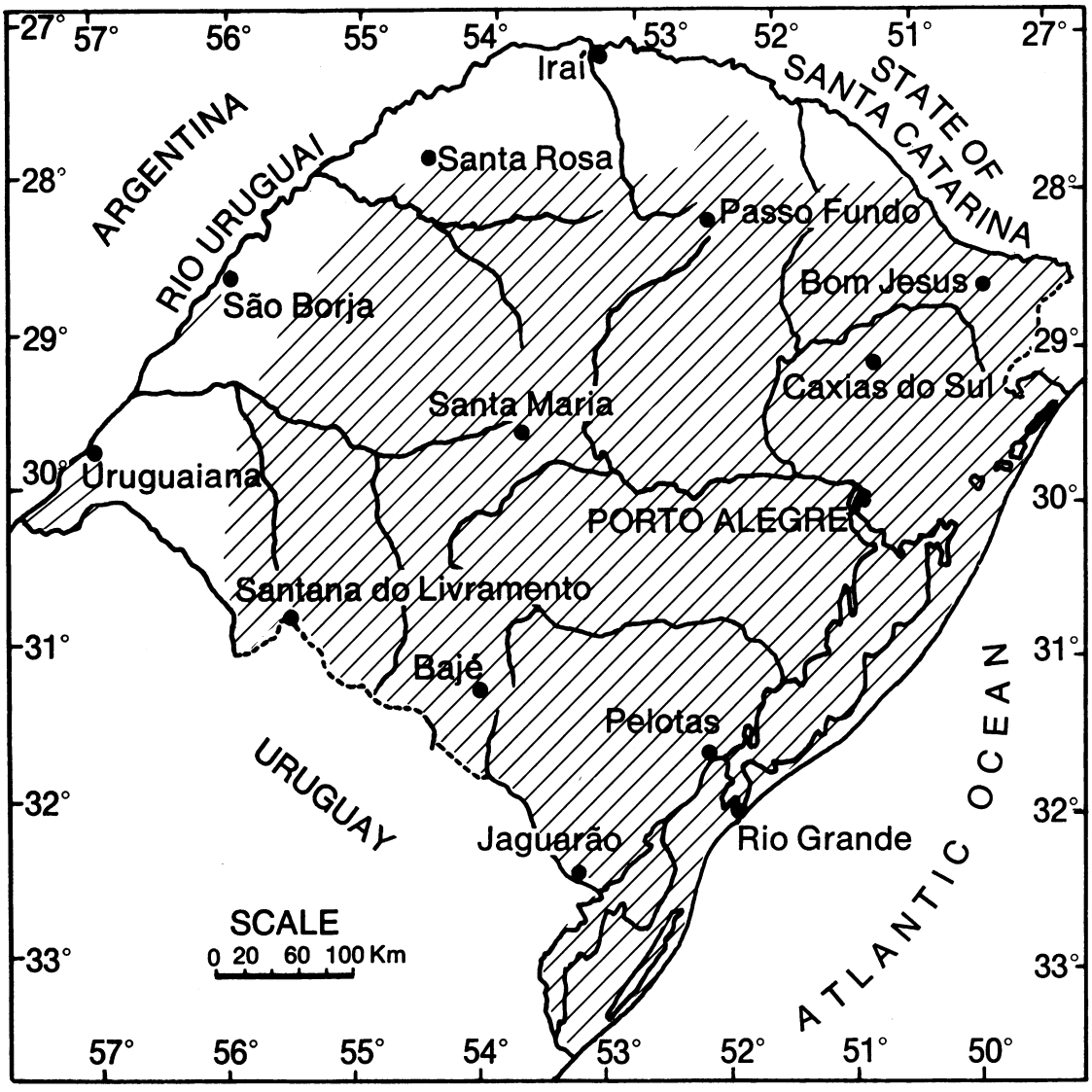
ervoirs. Most records concentrated from N to S through central sector, but species also occurs in central trough from coast W to 55°30'W. Thus, although lacking in many places, known distribution covers wide variety of regions, and altitudes up to 900 m. Registered in all seasons in several different regions. *Tachybaptus d. brachyrhynchus.*

FIELD MARKS: Smallest and darkest Rio Grande do Sul grebe, with slender, sharp bill and bright orange-yellow eye contrasting sharply with blackish head.

SIZE: One male: 240 mm, 180 gr.

SOFT PART COLORS: One male: tarsus grayish black on outer side, inside gray; bill black with gray tip; iris bright orange-yellow.

BREEDING: Least Grebes have prolonged breeding season here. I saw young about one-third to one-half adult size with striped heads on October 16, 1971, and chicks probably only two or three days out of shell on March 24, 1974. In latter case, two adult pairs with young were on small (1 to 2 hectare) grassy lake entirely surrounded by forest at 600 m altitude. One pair had two almost fully grown young with striped heads, as well as two tiny



MAP 8. Geographical distribution of *Podilymbus podiceps* in Rio Grande do Sul.

chicks that remained under wings of one adult which stayed mostly on nest. Other pair had only one set of young, still very small but about twice as large as new chicks of first pair. Nest, placed in about 1 m of water, was freely floating platform of tightly woven grasses 37 cm in diameter with 15 cm dish-shaped depression in center. It extended from 25 to 30 cm below surface and only from 3 to 5 cm above.

SPECIMENS: MCN: 312, 633*.

Podilymbus podiceps
Map 8

Pied-billed Grebe
Mergulhão
(Diver)

DISTRIBUTION AND STATUS: Abundant resident of ponds, marshes, lakes, reservoirs, throughout most of state but not registered in extreme N or in many sectors of far W. *Podilymbus p. antarcticus.*

FIELD MARKS: Only small Rio Grande do Sul grebe with relatively stout whitish bill, usually crossed with black band. Neck shorter, head bulkier than other local grebes.

SIZE: One female: 336 mm, over 400 gr.

SOFT PART COLORS: One female: tarsus dark gray on outer side, inner side greenish gray; bill grayish white with vertical black band across middle; iris brown; eye ring white.

VOICE: Loud, resonant "puk puk puk puk puk puk poe puk poe puk poe puk puk."

BREEDING: I have seen this species sitting on nest as early as August 19 (1974), and with young on October 11, 1972. Juvenals from two-thirds to three-quarters adult size with heavily streaked black and white heads and bright pink on proximal half of black-tipped maxilla were seen October 17, 1973. Breeding activity can be observed commonly throughout spring and summer, but after turn of year it is concentrated in northern highlands. Latest record for stripe-headed juvenals with adults is March 26, 1974. What was apparently a second nesting was observed in small stock pond near Itaimbezinho: on November 5, 1978 newly hatched young seen with adults on nest; on January 17, 1979 three well-grown young were on same pond while one of two adults present was brooding eggs on same nest.

BEHAVIOR: Sometimes feeds with neck and head stretched directly forward and held just under water surface.

SPECIMENS: MCN: 630*. AMNH: 321741.

Podiceps major
Map 9

Great Grebe
Mergulhão-grande
(Big Diver)

DISTRIBUTION AND STATUS: Common along entire littoral, uncommon at scattered localities in central depression, SE hills, and far W. Present throughout year, usually on larger lakes and reservoirs, and in ocean surf, but also on canals and marshes with more restricted amounts of open water.

FIELD MARKS: Only large grebe in state.

SIZE: One adult male: 642 mm. One unsexed immature: 620 mm.

SOFT PART COLORS: One adult male: tarsus black with yellow-green splotches; maxilla black with light streaks on side; mandible black between gray base and white distal third; iris gray-brown. Immature (unsexed): tarsus black on outer side, inner side yellowish; bill white with black culmen.

BREEDING: My information provides confusing picture of breeding period. I have seen almost full-size juvenal with mottled black-and-white cap being fed by adult on August 10, 1971. Presumably this bird was hatched late in previous summer. Kaempfer collected few-day-old downy young August 25, 1928 at Osório. On October 13, 1971 several immature birds were seen in large reservoir. One, accompanied by adult, was only about one-half size. Two young about one-quarter size were seen with adults on November 26, 1972. Half-size juvenals were seen on March 20, 1972, two-third size young on March 30, 1971, and juvenals with striped necks and streaked crowns, but close to adult size, were seen May 12, 1973. Number of young seen with adults usually two. For some interpretation this and Uruguayan information, see Escalante (1980b).

BEHAVIOR: Pair of Great Grebes loafing in Rio Grande channel on September 27, 1974 lay heads and necks back in tight Z as described by Escalante (1970a, p. 34). I was unable to see whether they maintained their position with only one foot, as he describes, but in spite of strong current resulting from heavy rains in southern littoral, birds stayed in approximately same position relative to my observation point for 20 minutes I was watching them. On several occasions between June and September I have seen Great Grebes sitting on beach at edge of water looking sick in fashion of dying pelagic species, but when approached each ran into water and swam away.

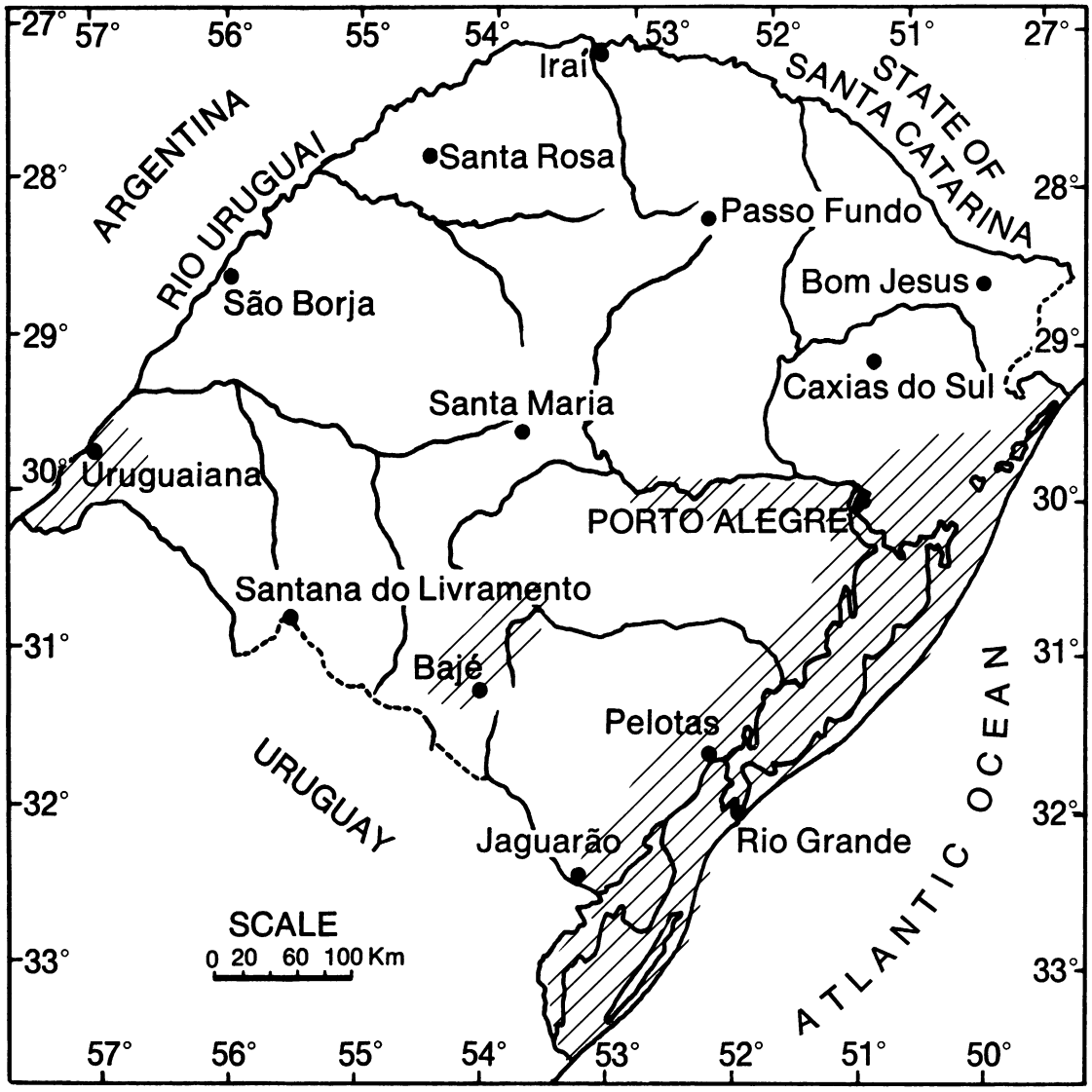
SPECIMENS: MCN: 370, 634–635*, 1768. AMNH: 313796–313803.

FAMILY FREGATIDAE

Fregata magnificens

Magnificent Frigatebird
Tesourão
(Super-scissors)

Rare visitor, appearing irregularly along



MAP 9. Geographical distribution of *Podiceps major* in Rio Grande do Sul.

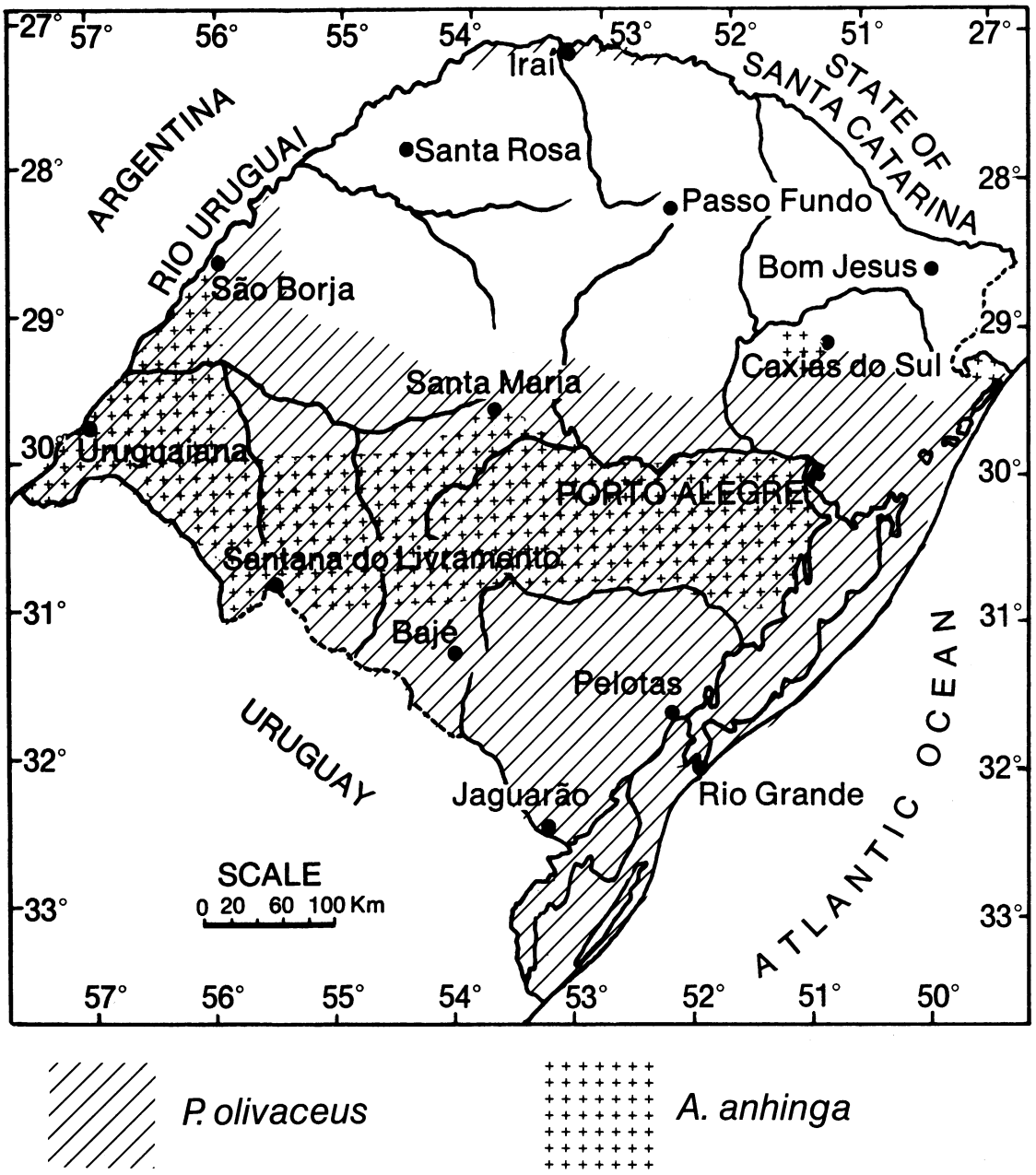
northern littoral. Gliesch (1930) reported collecting specimens at Tôrres and Cidreira between January and March, Voss saw it December 22, 1972 at Osório, and I saw a female flying across Mostardas peninsula some distance from water on May 25, 1974. Specimen in Camaquã MAE was reported to have been collected along W shore of Lagoa dos Patos, S of Camaquã, on May 20, 1973. Considering frequency with which seen in Uruguay (Escalante, 1970a), it probably more common in Rio Grande do Sul than above records indicate.

FAMILY PHALACROCORACIDAE

Phalacrocorax olivaceus
Map 10

Neotropic Cormorant
Biguá
(Cormorant)

DISTRIBUTION AND STATUS: Abundant in



MAP 10. Geographical distribution of *Phalacrocorax olivaceus* and *Anhinga anhinga* in Rio Grande do Sul.

southern two-thirds of state. Occurs rarely along southern edge of northern highlands and in upper reaches of Rio Uruguay. Utilizes marshes, flooded pastures, rice plantings, canals, reservoirs and, singly or in pairs, upland lakes and streams during spring and summer. Present in all months, but winter records scarce and mostly concentrated along littoral.

Many individuals must leave state, for only most favored habitats occupied during cold season. Argentine banding results show movement of some cormorants hatched in Santiago del Estero into Rio Grande do Sul (Olrog, 1975). *Phalacrocorax o. olivaceus.*

FIELD MARKS: Only cormorant found in state.

SIZE: One female: 750 mm.

SOFT PART COLORS: Female in breeding season: tarsus blackish; bill yellowish white with blackish culmen; facial skin and gular pouch yellow; iris grayish.

BREEDING: Silva (personal commun.) found cormorants nesting on October 17, 1980 in large mixed colony, which included herons and spoonbills, in Capivari marsh just N of Lagoa do Casamento. Female collected September 26, 1974 had enlarged ovary.

BEHAVIOR: Tend to congregate in substantial groups. I estimated 3000 at Lagoa do Peixe on January 28, 1974. That large body of water had mostly dried so fish and cormorants concentrated in small sector. In tree-filled swamps or flooded woodland they perch high on branches and dead snags. Alongside highway through Taim marsh they often line canals in scattered fashion for kilometers, some swimming, some sunning on dikes. When sunning they often, or even usually, hold wings outstretched. One swam in Taim canal while simultaneously flapping wings.

SPECIMENS: MCN: 35, 197, 203–205, 656*. AMNH: 313861, 313862, 321801.

FAMILY ANHINGIDAE

Anhinga anhinga

Map 10

Anhinga
Biguatinga
(White-marked Cormorant)

DISTRIBUTION AND STATUS: Through central trough W to western tip, S of this at lower elevations, but not S of 31°S. Also near Tôrres, and rarely in valleys cutting into northern highlands. Uncommon resident of lakes and swampy areas with bushes, dead stumps, posts, or other perches. *Anhinga a. anhinga.*

FIELD MARKS: Long, sharp bill at end of slender, sinuous, almost "headless" neck. On infrequent occasions when crest raised, head takes on more profile. Distinctly cross-shaped when seen flying overhead, with arm formed by neck very thin as compared with those represented by wide wings and spread tail.

BREEDING: Fledgling being fed on February 16, 1975 near São Gabriel.

BEHAVIOR: One perched on post in swamp at sunset slowly flapping wings, presumably to dry them in absence of sunshine. This was under way when I first saw bird and continued without interruption during five minutes I watched.

FAMILY ARDEIDAE

Syrigma sibilatrix

Whistling Heron
Maria-faceira
(Prissy Mary)

DISTRIBUTION AND STATUS: Very common resident throughout except in extreme NW where I have not found it. Although it occurs in marshy and other wet habitats typically occupied by other Rio Grande do Sul herons, it is distinctive due to regular presence also in upland campo, often well away from water. *Syrigma s. sibilatrix.*

FIELD MARKS: In flight has short, mincing wing stroke, with wings held below horizontal even at peak of upswing. Fledgling plumage generally similar to adult, but throat and breast vertically streaked with brown, cap and partially developed plumes light gray, colorful wing coverts lacking.

SIZE: One female: 577 mm, 370 gr.

SOFT PART COLORS: Tarsus blackish; bill bright pink on proximal two-thirds, black on distal third, sometimes with white band between; facial skin light blue; iris white.

VOICE: (R) Typical high, throaty whistle of three long, identical notes, for which species named, usually given in flight, at which time neck, normally retracted while flying, is momentarily outstretched. I have also heard this call, as well as one with only two notes, given from perch high on a snag. Similar, but somewhat shriller vocalization consisting of one long note with modulation near end, followed by two shorter notes, may be warning or bother call. Once when I approached tree with fledglings perched in it, adults nearby emitted

semi-whistled high double screech: "whee - huuuh," while young made low snorting noises. Twice I have encountered displays involving palatal, rasping gag.

BREEDING: At Estância Ipiranga on September 22, 1974 one of a pair in high eucalyptus was carrying nesting material into tree, but I did not see nest. At Gramado Golf Club a pair nested annually in same araucaria. When I first observed their solitary nest on December 4, 1976, two fledglings were perched on high branch of another araucaria within nesting grove but did not move when I approached closely. Nearby adults, however, took flight and gave distress calls described above. By December 6 young were flying. On November 13, 1979 juvenal with wispy down still on head was pecking at, and then ate, earthworm found in dry portion of golf course. When chased it flew reluctantly and only short distance.

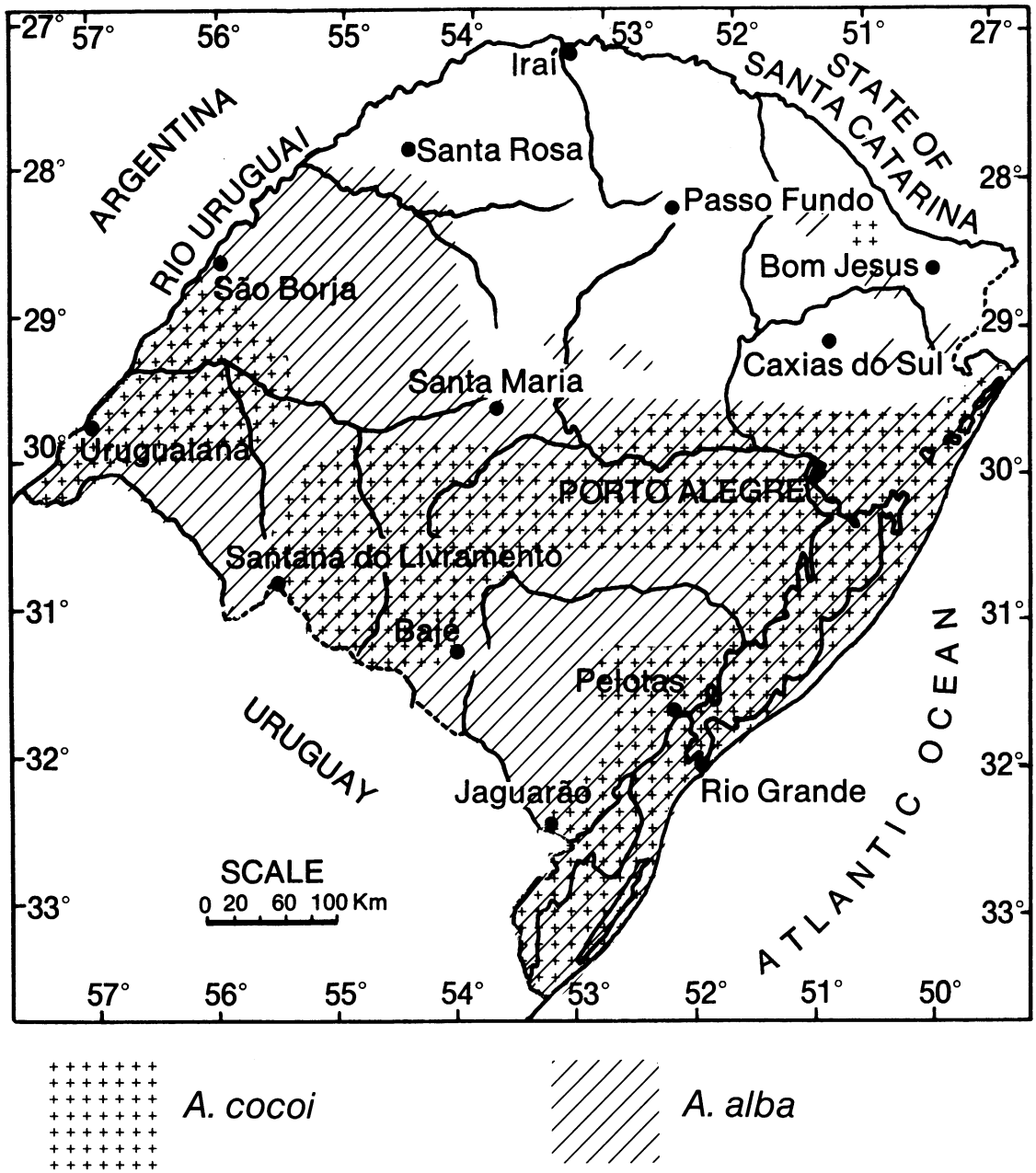
On January 8, 1977, Naldo Corrêa pointed out to me nest about 10 or 11 m up in exotic Slash Pine (*Pinus ellioti*), one of many trees in his garden situated in middle of open campo at Fazenda das Casuarinas. Nest was thin platform of sticks placed on branches slightly out from tree trunk. From ground we could only see head, necks, and humped-up backs of two nestlings, but they appeared to be still in down and about one-half adult size. Corrêa said nest in adjoining Slash Pine in previous season had produced only one young. On December 9, 1979, juvenal raised in one of these same trees was standing on branch near nest but not yet flying.

BEHAVIOR: In upland habitat Whistling Herons, usually singly or in pairs, often stalk quietly across dry fields in search of prey, but they also frequent edges of stock ponds and are common near the many marshy swales that occupy dips between rolling hills; they seldom wade. Largest feeding assemblage I have noted held about 25, grouped around stock pond in upland campo during extremely dry period. On another occasion near Tapejara, 20 or so were foraging in field where recently cut hay was not yet gathered. Abundant small grasshoppers seen near edge of field were presumably attraction inside. NW of São Francisco de Paula I saw one stab at long green water snake, but it took no other action as snake glided away into nearby pond. In highland campos of NE the birds often roost in araucarias, but not in flocks. However, in late afternoon of April 17, 1972 in marsh-dotted pastureland behind ocean beaches of northern littoral, I saw two flocks of from 100 to 200 individuals flying into eucalyptus grove to roost.

On November 15, 1971 at edge of small grassy pond in rolling grasslands between São Francisco de Paula and Canela, three Whistling Herons were displaying. All participated in same way and I was unable to determine whether more than one sex was involved. Head feathers were erected so they were almost on end. Entire body was held quite vertically, with lower feathers of neck fluffed out so it took on cone shape. Holding this position, birds strutted with bills pointed high in air. Two normal whistling calls would be given, followed by third which degenerated into rasping gag. They strutted in circles and around each other, sometimes assuming lopsided stance leaning to one side with one wing held out semi-open and other closed. Interspersed with this strutting they bowed and bobbed, with heads going to the ground and up again, either partially or full way. Twice, two faced each other holding outstretched heads and necks low and parallel to ground while they uttered rasping gag. Performance ended as I unsuccessfully tried to record voices.

At Fazenda São Roberto on February 14, 1978 distant sounds of many birds making rasping gag vocalization, intermingled with typical whistling call, drew me to scattered gathering of at least 35 Whistling Herons, all but two on ground in brushy open grassland with scattered trees. By the time I could see them all were silent. As I approached, closest birds constantly flew low and silently to far side of assemblage. Only one that remained stationary was perched to top of low tree as if on sentinel duty. Several individual birds, without seeming to interact with any other, gave a peculiar display in which as they walked along they moved lower part of neck from side to side while holding lower neck feathers fluffed out.

SPECIMENS: MCN: 13, 191, 648*, 1807. AMNH: 313837–313843, 321539, 321540. (321787 and 321788 are from Uruguayan side of mouth of Rio Jaguarão.)



MAP 11. Geographical distribution of the two species of *Ardea* found in Rio Grande do Sul.

Ardea cocoi
Map 11

White-necked Heron
Garça-moura or *Socó-grande*
(Spotted Egret) (Great Heron)

DISTRIBUTION AND STATUS: Common resident of marshes, lakes, weedy reservoirs, flooded pastures, and ocean beaches all along littoral, through central depression and W to western tip, and at lower elevations in S center. One vagrant near Vacaria. Usually scattered and solitary, but on January 28, 1974

there were from 100 to 200 in what remained of drying Lagoa do Peixe.

FIELD MARKS: Much the largest RGS heron; black breast and belly.

VOICE: Harsh, prolonged croak, often given in flight.

BREEDING: Small nesting colony at Fazenda Timbaúva on September 13, 1973 had 12 nests from 2 to 6 m above water surface in high bushes and trees dead from flooding at head of reservoir with small patch of woods in background. From two to four nestlings in each nest. Most advanced were partially feathered but lacked rectrices or remiges visible from ground. Youngest still had long, fuzzy down. Silva (personal commun.) found nesting colony at Taim Ecological Station in early November 1980, and at Lagoa do Casamento August 4, 1981. In a mixed nesting colony including this species at Capivari marsh, young were already walking about on October 20, 1981 and by November 21 only a few young were not flying.

BEHAVIOR: Poses statue-like for long periods apparently waiting for prey to approach, rather than searching for it. At times individuals station themselves at regular intervals near water line of ocean beaches for surf fishing.

Ardea alba
(*Casmerodius albus*)
Map 11

Great Egret
Garça-branca-grande
(Great White Egret)

DISTRIBUTION AND STATUS: Abundant resident of marshes, reservoirs, lakes, flooded pastures, rice fields across state from central trough S to Uruguayan border, N along littoral to Tôrres and N to 28°S in region W of 54°W. Individuals appear from time to time in northern highlands; six were in small pond at 900 m NE of São Francisco de Paula on October 16, 1978. Usually well scattered as individuals or small groups, but concentrations of 1000 or more occasionally occur. Scarce in winter in southern hills. *Ardea a. egretta.*

FIELD MARKS: All white, with yellow bill, black legs and feet. Usually stands with neck well out-stretched, in contrast to *Egretta thula,* which frequently has hunched-up stance. Has hump in back of neck about one-third down length. Neck swivels at this point and much more slender from there up.

VOICE: Non-musical squawk.

BREEDING: Heronries exist at various places throughout lower elevations of Rio Grande do Sul where marshes are common. These usually contain mixture of species and are among dense patches of low, woody shrubs, or small trees known locally as *sarandi* growing in marshes or lakes. I have seen breeding activity as early as September 13 and as late as November 19. At Capivari marsh in 1981 Silva (personal commun.) found many nests with eggs on November 3–5, but some held nestlings with sprouting remiges. On November 21–23, most nestlings were large, but some nests still had eggs.

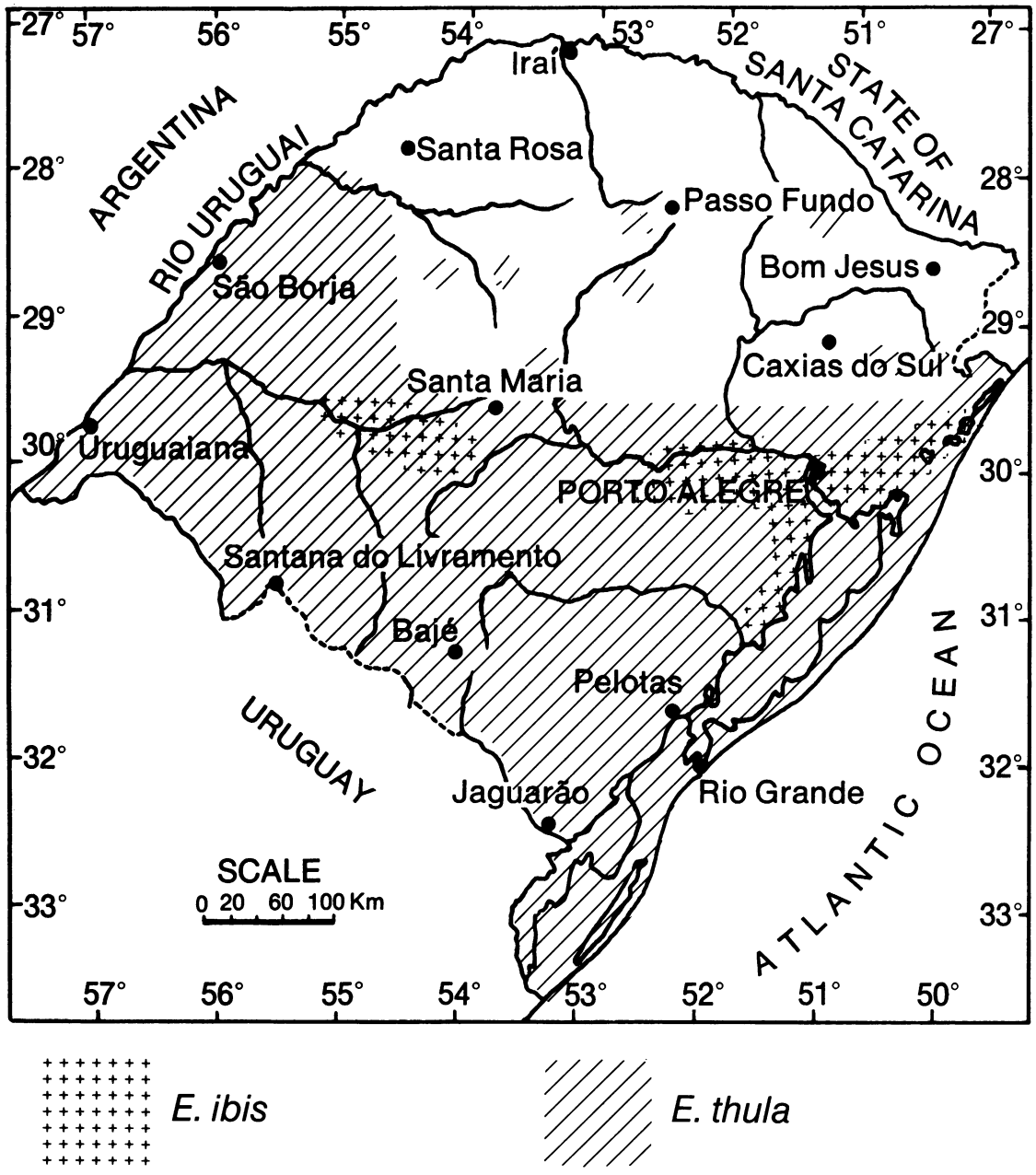
BEHAVIOR: At Fazenda Timbaúva on September 13, 1973 I watched courting Great Egret in midst of *Ardea cocoi* nesting area take sticks from abandoned nest of latter species and present them to presumed female some 10 m away. She would drop each one after moment and he would go back for another. On November 19, 1974 I watched display in heronry in *sarandi* E of Santa Maria. With plumes that encircled base of neck erected, head and neck were stretched upward to limit, at which time legs would dip, bringing whole body lower and imparting strange, rubbery look to bird. Similar action followed with head lowered. I heard no vocal accompaniment to this activity. Great Egrets do not usually exhibit flocking behavior, but I saw flocks moving to evening roosts along Rio Ibicuí on February 20, 1975, with largest group having about 30 individuals.

SPECIMENS: MCN: 23. AMNH: 321538, 321786.

Egretta (*Bubulcus*) *ibis*
Map 12

Cattle Egret
Garça-vaqueira
(Cattle Egret)

DISTRIBUTION AND STATUS: First discovered in Rio Grande do Sul in September 1973 (Belton, 1974c) in cattle and rice area S of Camaquã near W edge of Lagoa dos Patos, from where it has spread N and W. In December 1976, Jacques Vielliard (personal commun.) found it near Tapes, and in early



MAP 12. Geographical distribution of two species of *Egretta* found in Rio Grande do Sul.

spring of 1977 Silva (personal commun.) saw it SW of Porto Alegre along highway to Uruguaiana. In mid-October 1978 Lamm and I found several in low-lying pastures W of Lagoa dos Quadros, and on November 15, 1978, it was W of Santo Antonio. On March 17, 1980 Silva (personal commun.) estimated 800 to 1000 at Banhado do Pontal, and Ridgely (*in litt.*) saw well up in the hundreds S of Porto Alegre toward Camaquã, but few S of there on November 9 and 11, 1980. I saw 40 approximately 270 km W of Porto Alegre on

August 2, 1981. On November 4, 1983 I saw about 20 among cattle SW of Uruguaiana near western tip of state, and on November 5 two were seen about 20 km W of Livramento.

BREEDING: Silva (*in litt.*) observed nesting in Capivari marsh together with *E. thula, Ardea alba, Nycticorax nycticorax,* and *Platalea ajaja* between mid-October and late December in 1980–1983. Nests were very similar to those of *E. thula* with sticks, reeds and grass stalks, and timing of eggs and young also similar.

SPECIMENS: MCN: 1804, 1805.

Egretta thula
Map 12

Snowy Egret
Garça-branca-pequena
(Little White Egret)

DISTRIBUTION AND STATUS: Abundant resident in identical regions and habitat as *Ardea alba,* which see, but also found on ocean beaches where at times they are spaced every 200 or 300 m along water's edge for many kilometers when there may be practically no other species of bird present. Occasional individuals appear briefly in northern highlands, seven being at one pond at about 900 m elevation on October 16, 1978 NE of São Francisco de Paula. One banded at Santa Fé, Argentina on January 9, 1968 was recovered January 28, 1969 near São Jerónimo (Olrog, 1969).

FIELD MARKS: All white plumage with black bill and legs, yellow feet.

BREEDING: I found two nearly full-sized, well-feathered nestlings with whitish bills in what seemed to be only nest in small patch of *sarandi* at edge of reservoir between São Vicente do Sul and Jaguari on November 20, 1974. It more often nests in mixed colonies, as observed by Silva (personal commun.) at Taim Ecological Station in early November 1980 and at Capivari marsh from 1980 to 1983, where eggs found from mid-October to mid-November and young from mid-November through December.

BEHAVIOR: Near mouth of Rio Gravataí small fish were regularly emerging from water and skittering or flying along surface. I saw Snowy Egret snatching many just as they appeared above surface. While wading, one shuffled each foot in turn just before shifting weight to it, thus stirring up bottom. This species follows grazing cattle to catch insects they stir up, as does *E. ibis,* but it is less bold and aggressive than that species and I have never seen it ride an animal's back. Although *E. thula* and *Ardea alba* share same habitat and are most often seen together, on numerous occasions one species is abundant and the other scarce or absent, presumably indicating different availability of their preferred prey.

SPECIMENS: MCN: 7, 38, 40, 647*, 1802, 1803, 1806.

Ardeola striata
(*Butorides striatus*)
Map 13

Green (Striated) Heron
Socozinho
(Little Heron)

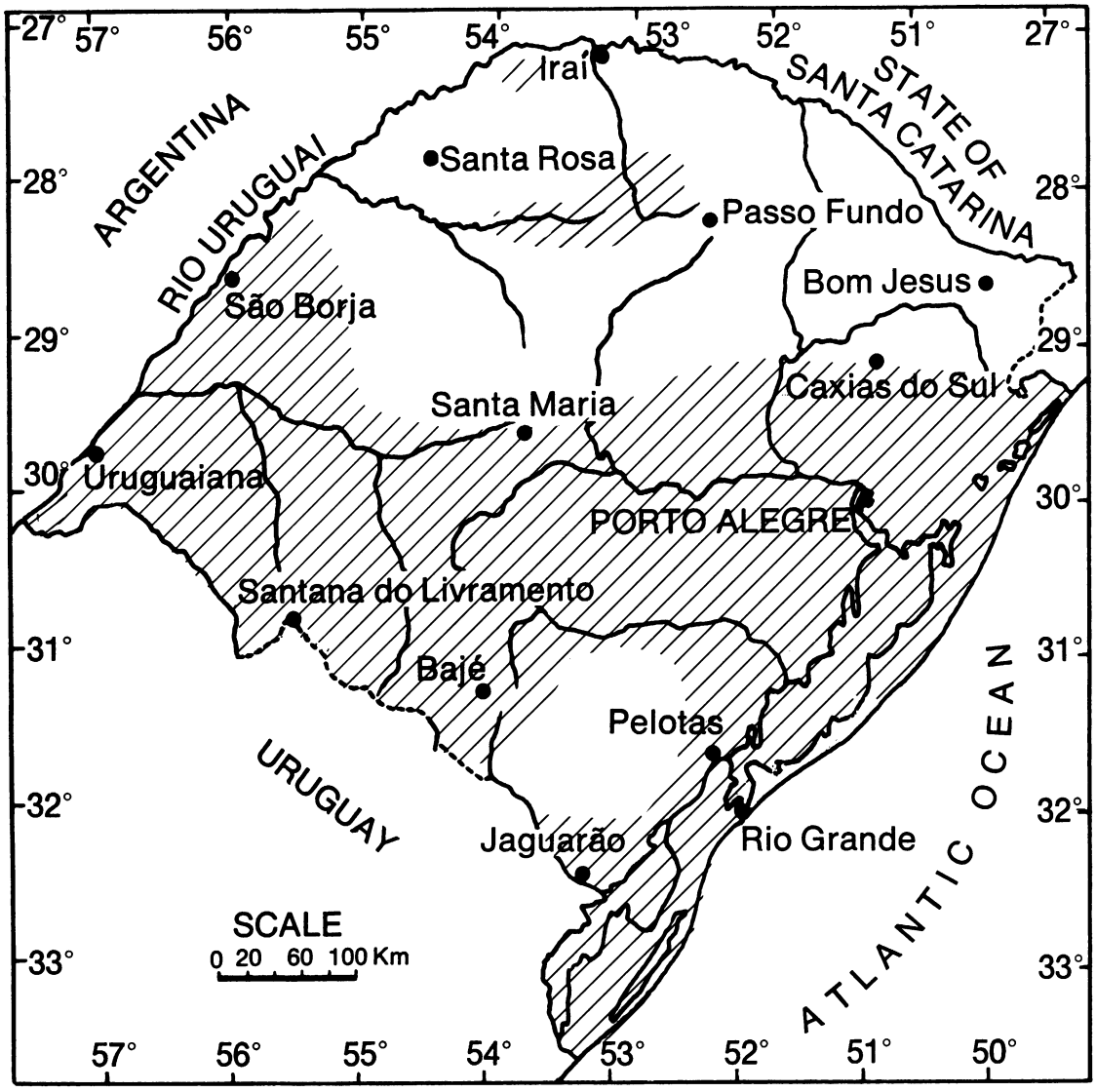
DISTRIBUTION AND STATUS: Common in marshes, weedy and brushy edges of lakes and reservoirs, and in rice fields, across southern half of state S of central trough except in some higher sectors of southern hills. Also N along littoral to Tôrres and to Garruchos in W. Strays appear occasionally in N central highlands, and it occurs infrequently along top of escarpment in E. No records for S half of Mostardas peninsula. Disappears almost entirely during winter, becoming scarce in April and reappearing in September. However, present in reduced numbers throughout year in northern littoral. *Ardeola s. striata.* The *fuscicollis* race may occur in S part of state, but available specimens still insufficient to determine this.

FIELD MARKS: Greenish black cap and back, gray belly, white throat. Neck rufous below and gray on side and back. When flying directly toward observer, white leading edges of wings are striking.

SIZE: Two unsexed (live): 442–454 mm, 202–210 gr.

SOFT PART COLORS: One of pair seen in field in late September had bright red to carmine legs, legs of other much duller, reddish yellow.

BREEDING: Silva (*in litt.*) found nest of sticks near Pantano Grande on December 9, 1979 with two feathered young already exercising wings, and two other nests at Banhado do Pontal on December 17, 1979, one with two



MAP 13. Geographical distribution of *Ardeola striata* in Rio Grande do Sul.

downy young, other with two young and one egg hatching.

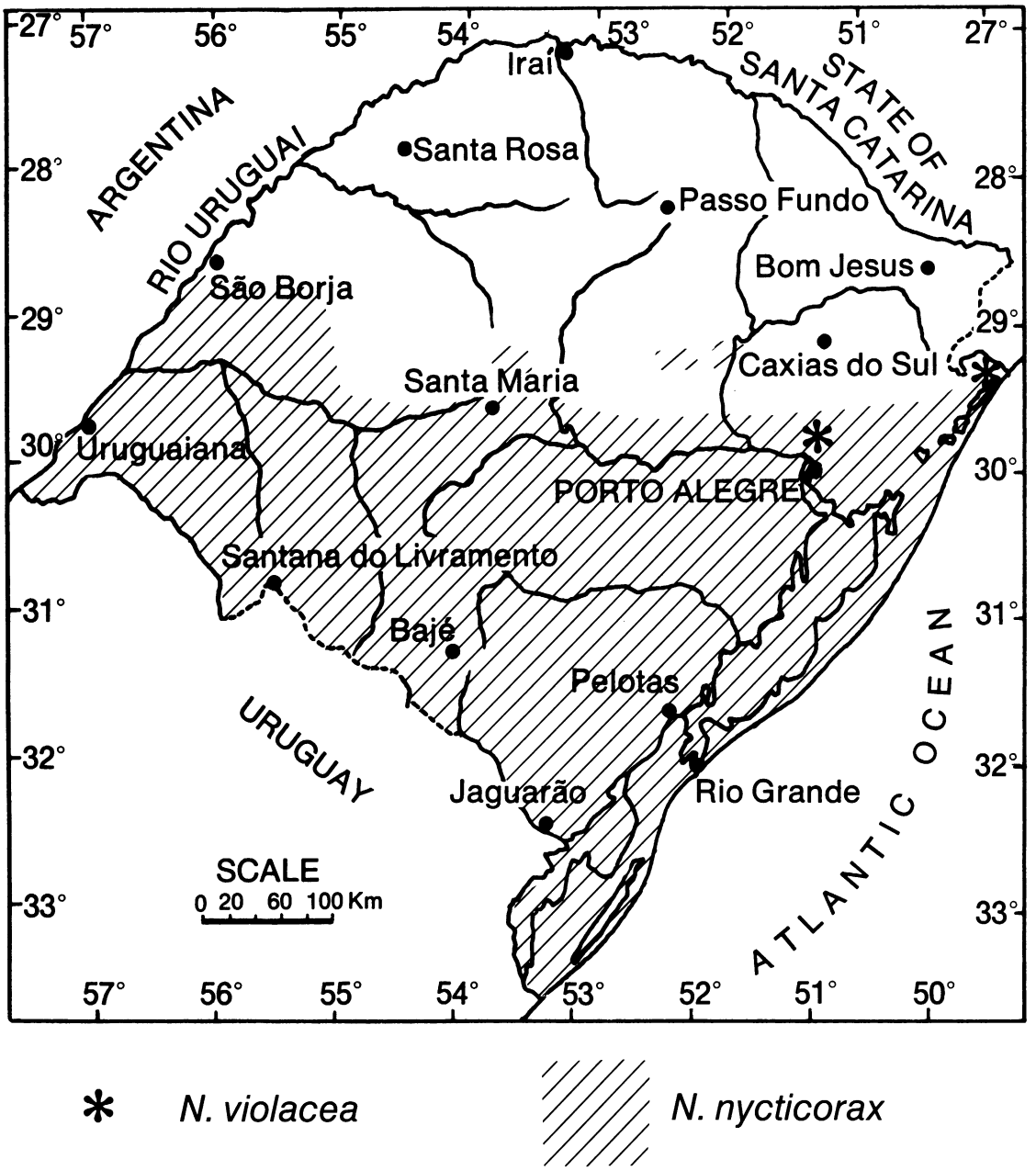
BEHAVIOR: Often found among concealing vegetation but perches on trees, bushes, and posts and in those circumstances is quite visible. One perched bird vibrated tail vertically very rapidly.

SPECIMENS: MCN: 652*. AMNH: 313846, 313847, 321789–321792. (321793 was collected on Uruguayan side of mouth of Rio Jaguarão.)

Nyctanassa violacea
Map 14

Yellow-crowned Night-Heron
Savacu-de-coroa
(Crowned Night-Heron)

Only records of this species in Rio Grande do Sul are those of Gliesch (1930), who collected one at Tôrres in February 1924, and Voss (1977a, p. 42, 1977b), who saw one near São Leopoldo in November 1974 and October and November 1975.



MAP 14. Geographical distribution of *Nyctanassa violacea* and *Nycticorax nycticorax* in Rio Grande do Sul.

Nycticorax nycticorax
Map 14

Black-crowned Night-Heron
Savacu

DISTRIBUTION AND STATUS: Fairly common in marshes and wetlands of lower parts of state, with occasional occurrence in wooded valleys of escarpment but not in planalto. Often roosts in dry situations. Present all year, with scarce winter records concentrated at

few spots along littoral and in E portion of central trough. Voss (1977b) reports flocks roosting during winter in eucalyptus grove at Zoo in Sapucaia do Sul. It seems likely many individuals leave state at that season. *Nycticorax n. nycticorax.*

FIELD MARKS: Short neck gives hunched appearance. Mostly black above, gray on wings, and white below, with white forehead. Immature birds, brown streaked with white above, and white streaked with brown below, can be mistaken for *Botaurus pinnatus* but lack its horizontal barring on neck.

SOFT PART COLORS: One immature: tarsus light green blotched with brown (adults have very yellow tarsus); maxilla: culmen and commissure black with green streak between; mandible green with black commissure and black on sides near tip; iris orange-yellow.

BREEDING: Silva (personal commun.) found it nesting in mixed colony of other herons, cormorants, and spoonbills at Capivari marsh during 1980–1983, with eggs in nests during September and young in October and November. It was nesting with other herons at Taim Ecological Station in early November 1980. About 25 percent of flock of 50 or more birds seen roosting in *Ardea cocoi* nesting site at Fazenda Timbaúva on September 13, 1973 were in immature plumage.

BEHAVIOR: During day most frequently seen in roosting flocks of up to about 50 birds, often in quite exposed position. Individuals also very commonly seen in daylight hours foraging or flying in marshy areas. Winter flock at zoo arrived in dawn hours, left at dusk, and spent day preening and observing surroundings. Regurgitated fish were often found under roosting area (Voss, personal commun.).

SPECIMENS: MCN: 651*. AMNH: 313836, 321241.

Tigrisoma fasciatum
Map 15

Fasciated Tiger-Heron
Socó-boi-escuro
(Dark Ox-Heron)

Known in Rio Grande do Sul only from juvenal collected by Ihering near Taquara on June 11, 1882. It is certainly rare and perhaps extinct here. Gliesch (1930) questioned identification of specimen he listed under this name which he found in Porto Alegre market, saying its measurements did not conform to those available to him for this species. It seems likely to have been *T. lineatum,* species not included in his list. *Tigrisoma f. fasciatum.*

Tigrisoma lineatum
Map 15

Rufescent Tiger-Heron
Socó-boi-verdadeiro
(Common Ox-Heron)

DISTRIBUTION AND STATUS: Uncommon, inhabiting marshy areas and weedy lakes, usually in wooded or protected situations in scattered localities from E to W across central portion of state. Resident status uncertain. I have no records from between June 25 and October 14, but two June records indicate at least some individuals probably remain here during winter. *Tigrisoma l. marmoratum.*

FIELD MARKS: Only large, dark heron likely to be found in Rio Grande do Sul. No other has rufescent head and sides of neck.

Ixobrychus involucris
Map 16

Stripe-backed Bittern
Socoí-amarelo
(Little Yellow Heron)

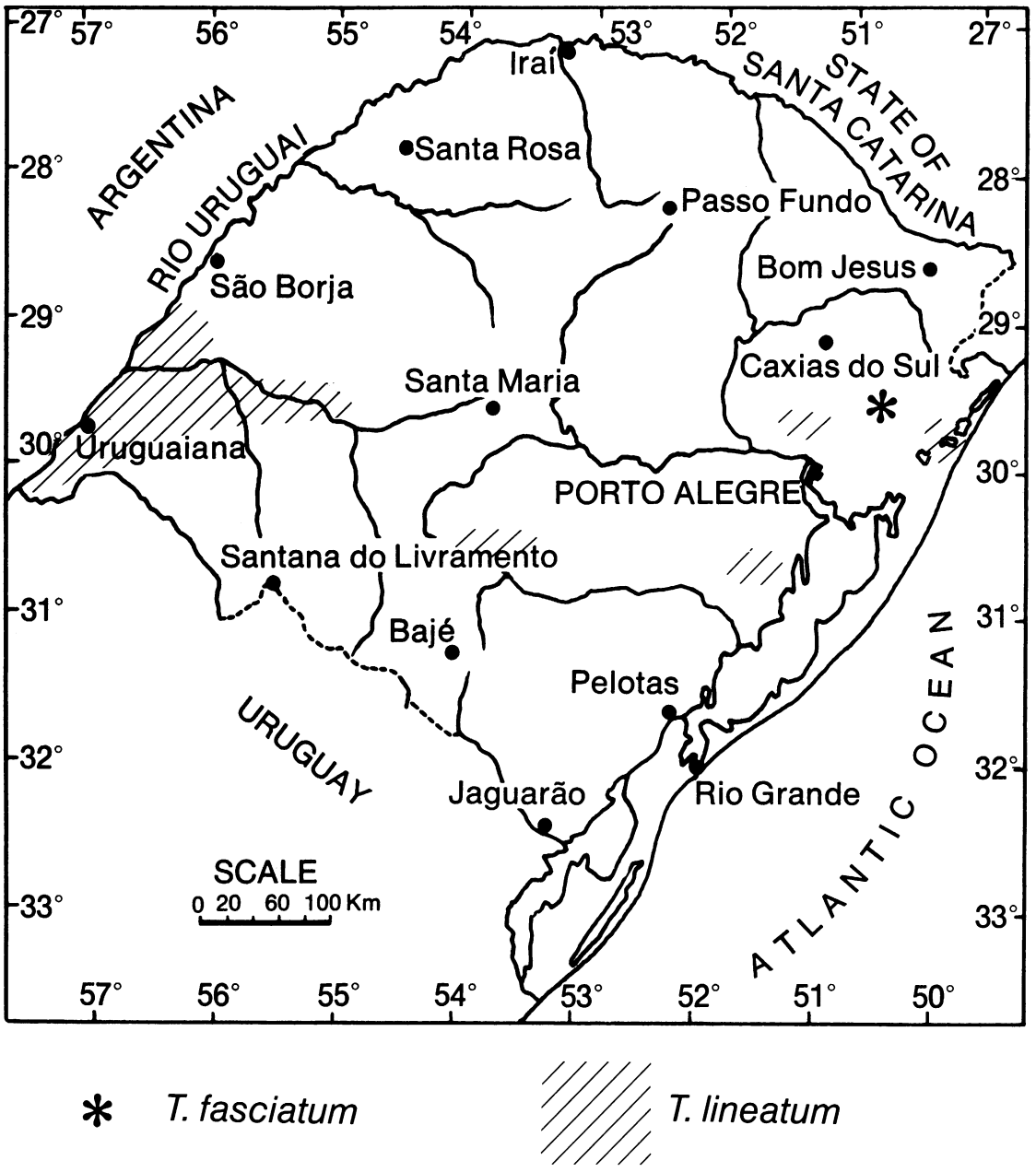
DISTRIBUTION AND STATUS: Scarce, presumably resident, in marshes with tall grass and reeds, and in rice fields, along entire littoral and in Banhado São Donato. Size, behavior, and inaccessible habitat make it extremely hard to find, so it may be more common than records indicate. Registered in most months, including July and August, so at least some individuals remain during winter.

FIELD MARKS: Smallest Rio Grande do Sul heron; mostly light brown with white streaks below, light brown above with narrow black cap and wide black streaking on back.

SIZE: One unsexed (live): 356 mm, 104 gr. One female, extremely weak and emaciated: 375 mm, 63 gr.

SOFT PART COLORS: Tarsus apple green on front edge, yellow on back; bill: culmen dark brown, sides of maxilla and distal end of mandible deep yellow, proximal end of mandible light green; flesh in front of eye light green; iris light yellow.

BREEDING: Emaciated female collected

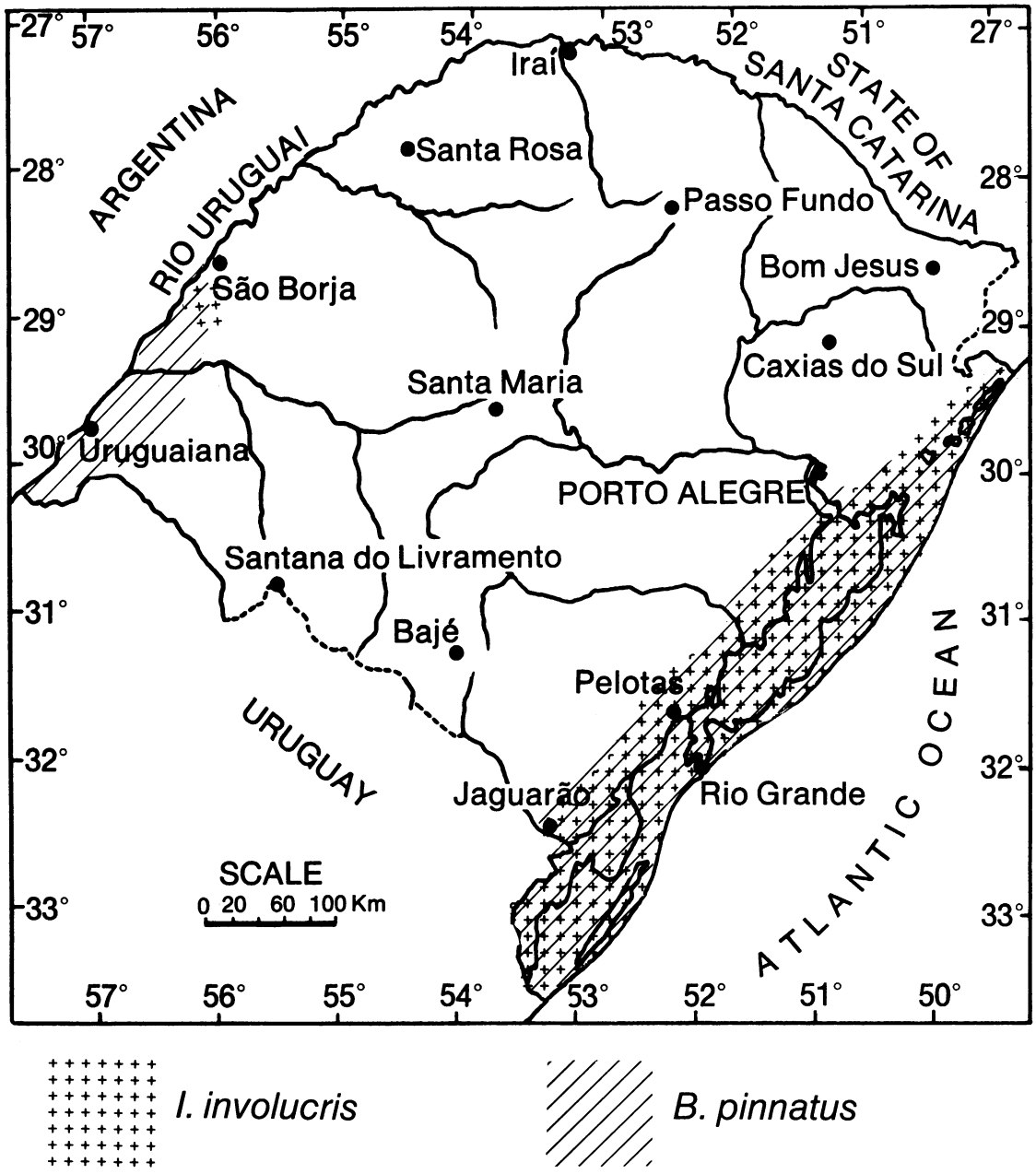


MAP 15. Geographical distribution of the two species of *Tigrisoma* found in Rio Grande do Sul.

August 31, 1973 not in breeding condition. Silva (*in litt.*) found nest in reeds at Capivari marsh November 22, 1981, constructed of dry reeds and containing three recently hatched young which already adopted frozen vertical stance typical of adults.

BEHAVIOR: Lives within tall grasses and reeds of marshlands, seldom exposing self except to make short flights low over top of vegetation and drop back in again. One in field of high, green rice behaved same way and was only seen during flight.

SPECIMENS: MCN: 384, 653*. AMNH: 321794–321799.



MAP 16. Geographical distribution of *Ixobrychus involucris* and *Botaurus pinnatus* in Rio Grande do Sul.

Botaurus pinnatus
Map 16

Pinnated Bittern
Socó-boi-baio
(Bay-colored Ox-Heron)

DISTRIBUTION AND STATUS: Uncommon occupant of shallow marshes and flooded areas with high grass or reeds, usually in flat, open country along littoral and in far W. Due to difficulty of observation, may be more abundant than records indicate. Apparently summer resident, but insufficient data for

certainty. Latest fall record is May 17 and earliest spring date September 16. *Botaurus p. pinnatus.*

FIELD MARKS: Large, light brown finely barred with black, buff, and whitish, and with some streaking on back and underparts; top of head blackish. Immature *Tigrisoma lineatum* more coarsely barred with more sharply contrasting colors and has little streaking, while immature *Nycticorax nycticorax* entirely streaked and lacks barring.

VOICE: I have not heard voice I could directly associate with this species, but have heard calls in marshlands sufficiently reminiscent of "bog-pumping" of *B. lentiginosus* to make me assume they originated with this congener.

BEHAVIOR: Secretive resident of wetlands with tall vegetation, seldom seen and when flushed usually flies only short distance before dropping back into cover. It also freezes in vertical stance which increases difficulty of finding it. Probably more frequently observed than *Ixobrychus involucris* only because of much larger size.

FAMILY CICONIIDAE

Mycteria americana
Map 17

Wood Stork
Cabeça-seca
(Dry Head)

DISTRIBUTION AND STATUS: Summer visitor, possibly summer resident, generally distributed along littoral, across state S of central trough, and in extreme W north of Banhado São Donato; in wetlands and flooded pastures, usually in flatter, more open areas at low elevations. Disappears from state during winter. Latest fall record, June 4, 1972, was of small flock soaring high over NE highlands near Canela. Flock of about 80 of what, judging from second hand descriptions, must almost certainly have been this species, seen flying N over Gramado golf course on May 8, 1974. Earliest spring record is specimen collected on unspecified September date near Mostardas (Camargo, 1962), but species not commonly seen here until November.

FIELD MARKS: At distance under poor viewing conditions might be confused with *Ciconia maguari* but *M. americana* normally holds neck somewhat retracted in more hunched stance, shows little black when wing is folded, and has distinctively downcurved bill, whereas *C. maguari* stands erect, has straight bill, and shows large amount of black wing against white body plumage.

SOFT PART COLORS: Bare skin of head has black band extending over top from behind eyes. On either side of this band skin varies from whitish to brownish gray. In flock of about 50 seen May 5, 1973, most had black bills, but some were quite white. Feet were pink.

BREEDING: No information. Not seen in nesting colonies with other waders. Silva (*in litt.*) found flocks of up to 50 individuals in juvenal plumage between November 16 and 24, 1981.

BEHAVIOR: Most frequently seen as scattered individuals, but migrates in flocks, and I once saw concentration of about 400 in partially drained reservoir.

SPECIMEN: AMNH: 321783.

Ciconia (Euxenura) maguari
Map 17

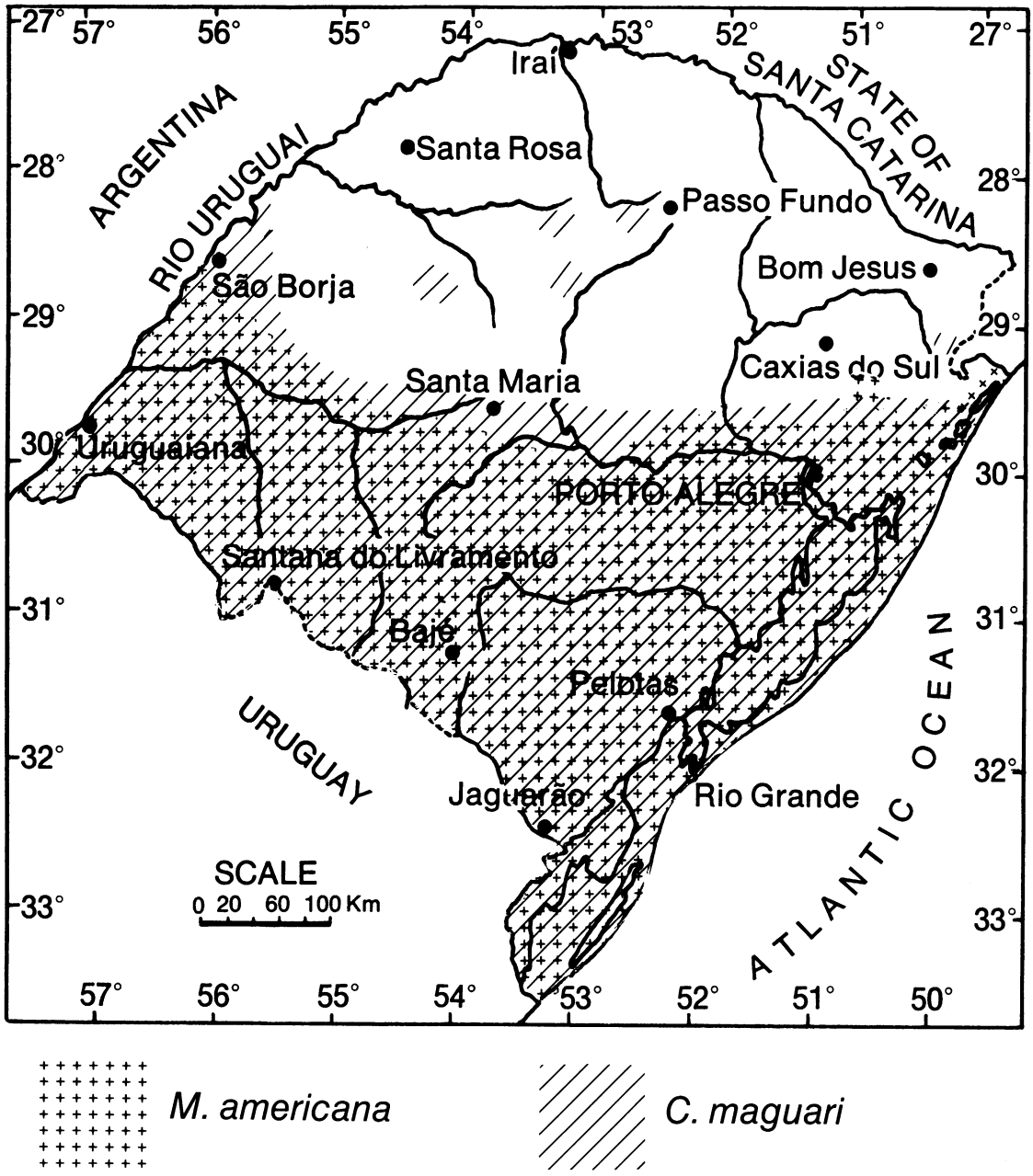
Maguari Stork
João-grande
(Big John)

DISTRIBUTION AND STATUS: Common resident occurring mostly in same areas as *Mycteria americana* but more frequent on N side of central trough and also, rarely, in northern highlands. No records from Tôrres area. Occupies flooded pastures, rice fields, and other shallow wetlands. Once seen on ocean beach.

FIELD MARKS: See *Mycteria americana.*

SOFT PART COLORS: Tarsus reddish; bill pinkish red; skin around eyes pinkish flesh. Some juvenals have black around eyes, bill is whitish on basal half and blackish on distal portion.

BREEDING: Well-spaced nests in marshes along Canal de São Gonçalo were occupied September 16, 1970, when I overflew area. On September 25, 1971, I saw one standing on what appeared to be very exposed nest built in center of small marshy lake NW of Passo Fundo at 550 m, well out of usual range of species. Silva (personal commun.) found it in mixed nesting colony at Capivari marsh during 1980–1983, with eggs as early as early August and large young in October.



MAP 17. Geographical distribution of *Mycteria americana* and *Ciconia maguari* in Rio Grande do Sul.

BEHAVIOR: Sometimes small flocks of dozen or so birds soar with outstretched necks high in the sky. I watched one consume snake almost 1 m long that it had picked out of standing water in roadside ditch. To disable snake, stork repeatedly picked it up somewhat behind head, let it slide through bill until head was between mandibles, then clamped down on head several times and dropped it. After few minutes of this proce-

dure it swallowed still living snake head first. While slowly being engulfed, that part of snake not yet swallowed thrashed around stork's neck.

SPECIMEN: AMNH: 321537.

[*Jabiru mycteria*]

[Jabiru]
[*Jabiru*]

Specimen in museum of Federal University of Pelotas apparently acquired with Ritter collection assembled in nineteenth century. Museum has no information on date or place specimen collected, so it cannot be taken as of Rio Grande do Sul origin. Jabiru occurs occasionally in adjacent parts of Uruguay and is also found in Corrientes, Argentina. It probably appears in S or W sectors of state as vagrant, but this remains to be confirmed.

FAMILY THRESKIORNITHIDAE

Phimosus infuscatus
Map 18

Bare-faced Ibis
Maçarico-de-cara-pelada or *Chapéu-velho*
(Bare-faced Tubebill) (Old Hat)

DISTRIBUTION AND STATUS: Common in rice fields, flooded pastures, marsh edges, and other shallow wetlands along littoral S of 30°S and W to beyond Santa Maria. Also along Rio Uruguay N to Banhado São Donato. Present throughout this range during entire year, but sighted more often at more widely scattered points during non-winter months, so there may be some movement out of state in cold season. *Phimosus i. infuscatus.*

NOTE: My two specimens have purple reflections on hind neck and appear to be *infuscatus* (Blake, 1977). Since this species does not appear in NE littoral, an area attractive to all other wading birds of state, that area may be southernmost edge of hiatus separating nominate *infuscatus* from *P. i. nudifrons* of more northerly Brazil.

FIELD MARKS: All black with entirely bare face.

SIZE: One male: 562 mm, approx. 575 gr. One female: 488 mm, approx. 550 gr. One unsexed (live): 560 mm, 600 gr.

SOFT PART COLORS: One male: tarsus dark pink; bill grayish red, sides much lighter than culmen; iris brown, white, and red concentric circles; forehead Pale Yellowish Pink; cheeks Pale Yellowish Pink with Deep Purplish Red in folds and around eyes; gular pouch Strong Yellowish Pink. One female: tarsus slightly browner than Cream (AMNH) washed pink; bill and forehead slightly browner than Cream (AMNH), with pink culmen and gonys; cheek and eye skin Moderate Red; pouch Strong Yellowish Pink. Many juvenals seen at Granja Quatro Irmãos January 6, 1976 had white lores and black bills with pink stains in center of maxilla. Juvenal seen near Pantano Grande January 31, 1975, approximately adult size, had shorter-than-adult bill with dark tip and dark band around middle.

BREEDING: One seen October 6, 1971 W of Rosário in mixed colony with *Phalacrocorax olivaceus, Ardea alba, Nycticorax nycticorax, Plegadis chihi,* and *Platalea ajaja,* gave impression it may have been nesting. However, Silva (personal commun.) has found monospecific nesting colonies of *P. infuscatus* at Banhado do Pontal and Banhado do Capivari and believes this may be typical. At Capivari in 1981 he found them at early stages of nesting on October 23. By November 21–23 some nests still had eggs but most had small nestlings and some young were walking about. On October 6, 1971, one was collecting nesting material and carrying it into flooded area with low bushes W of Pantano Grande. Male collected November 19, 1975 had much enlarged gonads, while female of January 6, 1976, in company with juvenals, had large ovary.

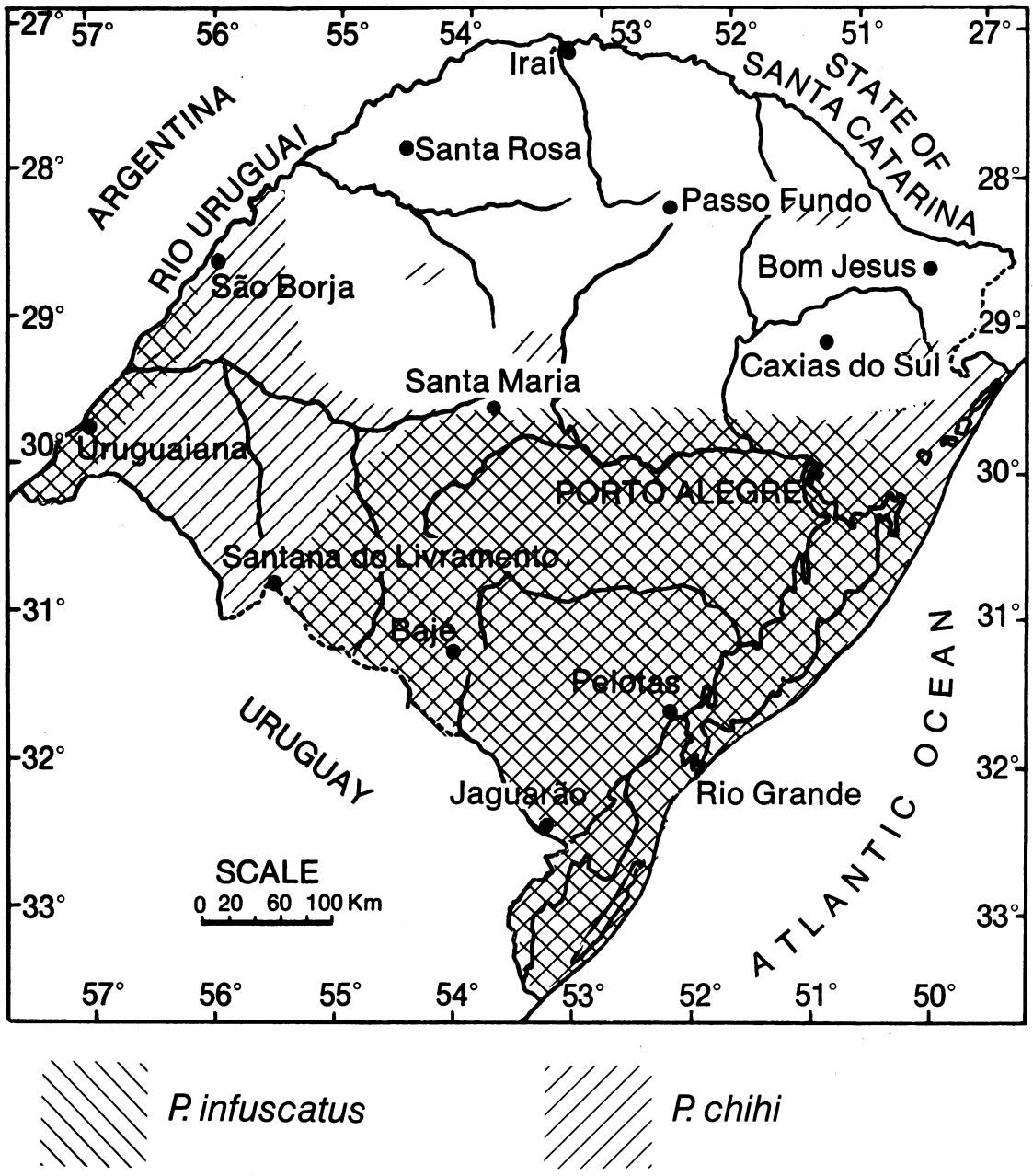
BEHAVIOR: Usually found in small to moderate-size flocks, never in such large bands as *Plegadis chihi,* but often feeds among larger flocks of latter. Specimen collected November 19, 1975 in marsh on island near mouth of Rio Jacuí had fragments of freshwater clams, many fragments of aquatic insects, and some "wormlike animals, probably annelids," in stomach (Olegário Diefenbach, *in litt.*).

SPECIMENS: MCN: 198, 206, 302, 353, 654–655*. AMNH: 321775–321779.

Plegadis chihi
Map 18

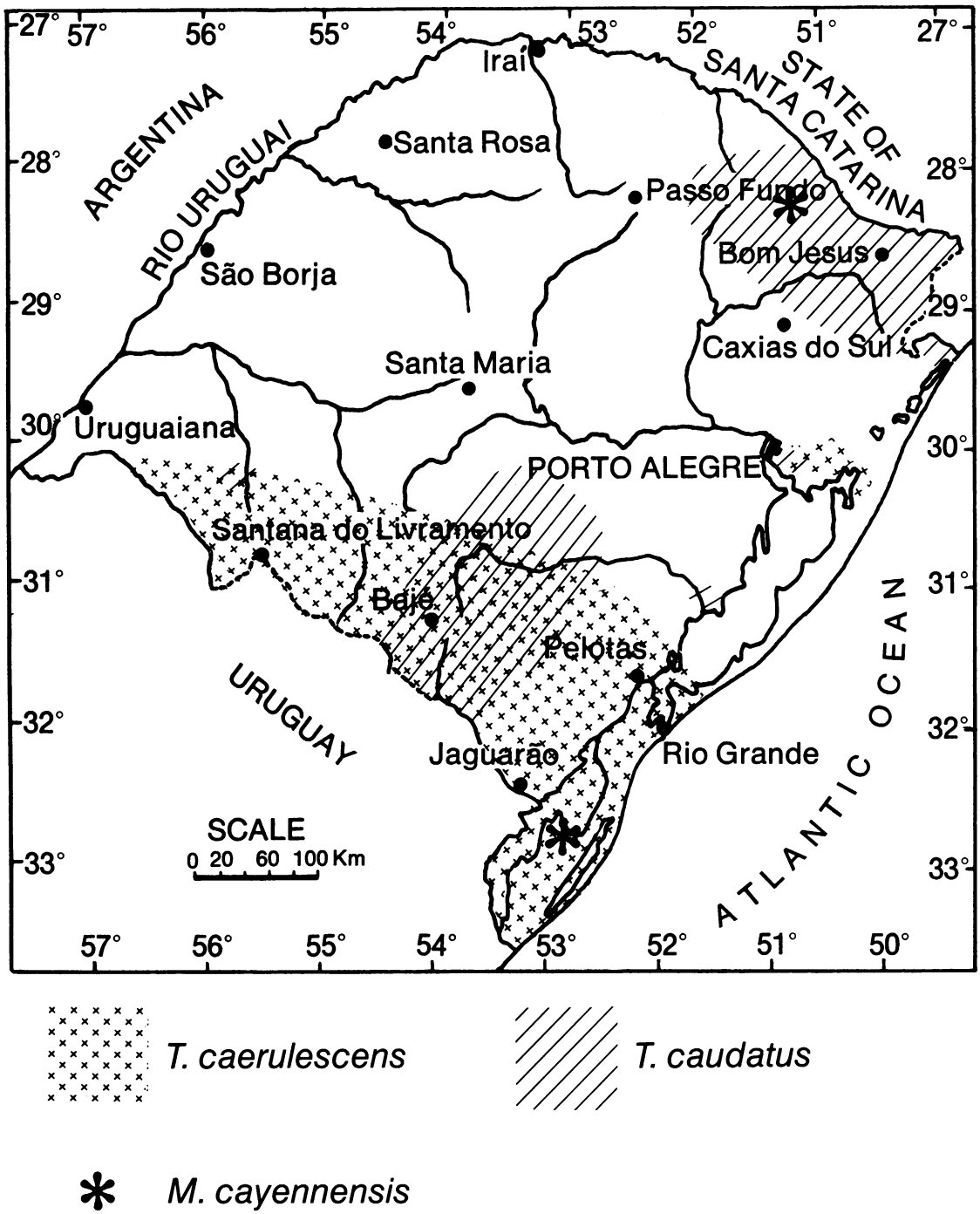
White-faced Ibis
Maçarico-preto
(Black Tubebill)

DISTRIBUTION AND STATUS: Found along



MAP 18. Geographical distribution of *Phimosus infuscatus* and *Plegadis chihi* in Rio Grande do Sul.

entire littoral and W across state S of escarpment, thence N to Garruchos, with occasional occurrences in northern highlands. Prefers flat areas of littoral, especially in winter, but in spring and summer spreads, perhaps for some nesting, to stock ponds and less extensive boggy areas of southern hill country. Almost always occurs in rice fields, marshes, flooded pastures, wet lands in general, but one flock of about 200 seen in perfectly dry field. Very abundant, often forming large flocks numbering 1000 or more. Many times on littoral several flocks visible in sky at one time, but only two individuals seen along



MAP 19. Geographical distribution of two *Theristicus* species and *Mesembrinibis cayennensis* in Rio Grande do Sul.

length of Mostardas peninsula in late July 1981. Present in most areas throughout year in sufficient numbers so any significant migration seems unlikely. However, Olrog

(1975) speculates, on basis Argentine banding returns, that some Rio Grande do Sul individuals move regularly to southern Santa Fé in summer. Two individuals, banded at Murphy, Santa Fé, Argentina January 9, 1968, were recovered same year in Rio Grande do Sul, one at Tapes September 22, the other at Pantano Grande November 25. There is extensive local movement, as indicated by horizon to horizon flights which occur daily on littoral.

FIELD MARKS: Similar in size and general outline to *Phimosus infuscatus,* but with rich chestnut neck, underparts, back, and wing coverts, bronzy-green wings and tail, and grayish head. White facial outline not present during most of year. In poor light appears very dark and is then best separated from *P. infuscatus* by face, which is fully feathered except between eyes and maxilla.

SIZE: Two males: 528–548 mm.

SOFT PART COLORS: Tarsus dark brownish gray to black; bill pinkish to light reddish gray, ramus pink; iris bright red; eyeskin and gular pouch pinkish.

BREEDING: Silva (personal commun.) in early November 1980, found extensive nesting colony of this species at Taim Ecological Station, one section shared with *Egretta thula* and another section with *Larus maculipennis,* containing estimated 12,000 *P. chihi* nests with both eggs and young in area about 1800 m × 800 m. Nests constructed in Cyperaceae above water level. Adult male collected February 11, 1974 had well-enlarged testes.

BEHAVIOR: Flies in very broad, open, only slightly V-shaped flocks with straggling front, alternately flapping and soaring. Although considered game bird in Rio Grande do Sul, and easy target because of slow flight, it is not much sought by sportsmen.

SPECIMENS: MCN: 303, 304, 354, 366–369, 649–650*. AMNH: 321240, 321240bis, 321536.

Theristicus (*Harpiprion*) *caerulescens*
Map 19

Plumbeous Ibis
Maçarico-real
(Royal Tubebill)

DISTRIBUTION AND STATUS: Uncommon resident, primarily in S and SW within strip about 150 km wide paralleling Uruguayan border, but not N of 30°S nor much W of 56°W. Voss has seen it few miles E of Porto Alegre in February, and it occurs regularly around N end of Lagoa dos Patos. Found in marshes, swamps, moist or flooded pastureland, and in upland range country not too far removed from ponds or boggy terrain.

FIELD MARKS: Brownish gray with narrow white forehead and plumes extending 10 cm down neck from back of head.

SIZE: One unsexed: 764 mm.

SOFT PART COLORS: Tarsus light pinkish orange; bill and facial skin black; iris brownish yellow.

VOICE: (R) Rapid, high, loud "pi pi pi pi pi pi pi pi"; also slower, more determined "k k kuh kuh KEE KEE KEE KEE KEE KEE-kehkuh kuh."

BEHAVIOR: Found almost always singly or in pairs, usually on ground in low-lying or slightly flooded pasture, or in drier, rolling upland grasslands, but I have also seen it perched in trees in marshes. My specimen, collected near marshy spot in upland range country, had been feeding on small snails.

SPECIMENS: MCN: 1760*. AMNH: 321239, 321534, 321535.

Theristicus caudatus
Map 19

Buff-necked Ibis
Curicaca

DISTRIBUTION AND STATUS: Common resident in two disjunct areas—NE highlands and granitic hills of SE—characterized by rolling to rough grass-covered terrain with intermittent forests and plenty of moisture in streams, swales, and stock ponds, but no significant marshes. It normally patrols drier hillsides, well away from water, but has been seen in wet rice fields in valley among hills. Rarely, it appears in lowland regions—Gliesch (1930) collected one in Porto Alegre and saw it in Tôrres, and Voss (personal commun.) saw some E of Porto Alegre in February 1978. Pair at Fazenda São Roberto on February 13, 1978 must have been accidental, for local residents were unfamiliar with it. *Theristicus c. hyperorius.*

FIELD MARKS: Almost as large as *T. caerulescens,* but much more colorful, having gray back and wings, large white wing patches visible in flight, and blackish tail, lower breast, and belly.

SIZE: One female: 700 m, 1550 gr.

SOFT PART COLORS: Tarsus deep pink; bill greenish; iris orange. Juvenals have black bills and pinkish white tarsus.

VOICE: (R) "Bo PEEP," first syllable low, harsh, and guttural, the second loud, harsh, and penetrating; sometimes only single "EEP" or double "EEP IP," often uttered in flight. At a roost, several individuals contributed to loud clucking "kukukukukuku" or sometimes "kukukukukukehkehkeh," and an occasional smooth snoring sound.

BREEDING: Nest about 10 m aboveground in broadleaved tree at forest edge at Fazenda das Amoreiras on October 13, 1973 had two young about three-quarters size with well-advanced feathering but notably shorter bills than two adults in constant attendance. When adult female accidentally killed, male continued to care for nestlings, which successfully fledged.

BEHAVIOR: Usually found in small, loose flocks or family groups. When disturbed, birds fly off as unit, alternately flying and soaring low across hills, often giving loud, penetrating cry on wing. On one occasion two soared at estimated height of 300 m. Birds in NE highlands usually roost on high, bare limbs of mature araucarias.

SPECIMENS: MCN: 1758*. MN: 202. AMNH: 313833–313835.

Mesembrinibis cavennensis
Map 19

Green Ibis
Corocoró

Sick (personal commun.) saw one individual January 19, 1966, near mouth of Arroio del Rei where it enters Lagoa Mirim. Voss (*in litt.*) saw "some flying and singing at sunrise" in October 1982 at Aracuri-Esmeralda Ecological Station.

Platalea (*Ajaia*) *ajaja*
Map 20

Roseate Spoonbill
Colhereiro
(Spooner)

DISTRIBUTION AND STATUS: Common in same areas as *Plegadis chihi,* except does not appear in northern highlands. Occurs in marshes, flooded pastures, rice fields, stock ponds and reservoirs. Seen regularly as scattered individuals or small groups, and occasionally in flocks of 80 or more. Largest concentration observed included about 150 at Lagoa do Peixe on January 28, 1974, when water level extremely low. Present throughout year, but scarcer during winter and more restricted to littoral area. Spreads out over S beginning in October, presumably after breeding.

FIELD MARKS: Flat, spatulate bill; general pink cast to plumage.

BREEDING: Silva (personal commun.) found spoonbills nesting in mixed colony with *Phalacrocorax olivaceus* and *Ardeidae* sp. at Capivari marsh in 1980–1983. In 1981 nests with eggs and small young were found October 20, and by November 3–5 some young were fully feathered and already flying. Young birds with no bright pink anywhere in plumage become quite common by December.

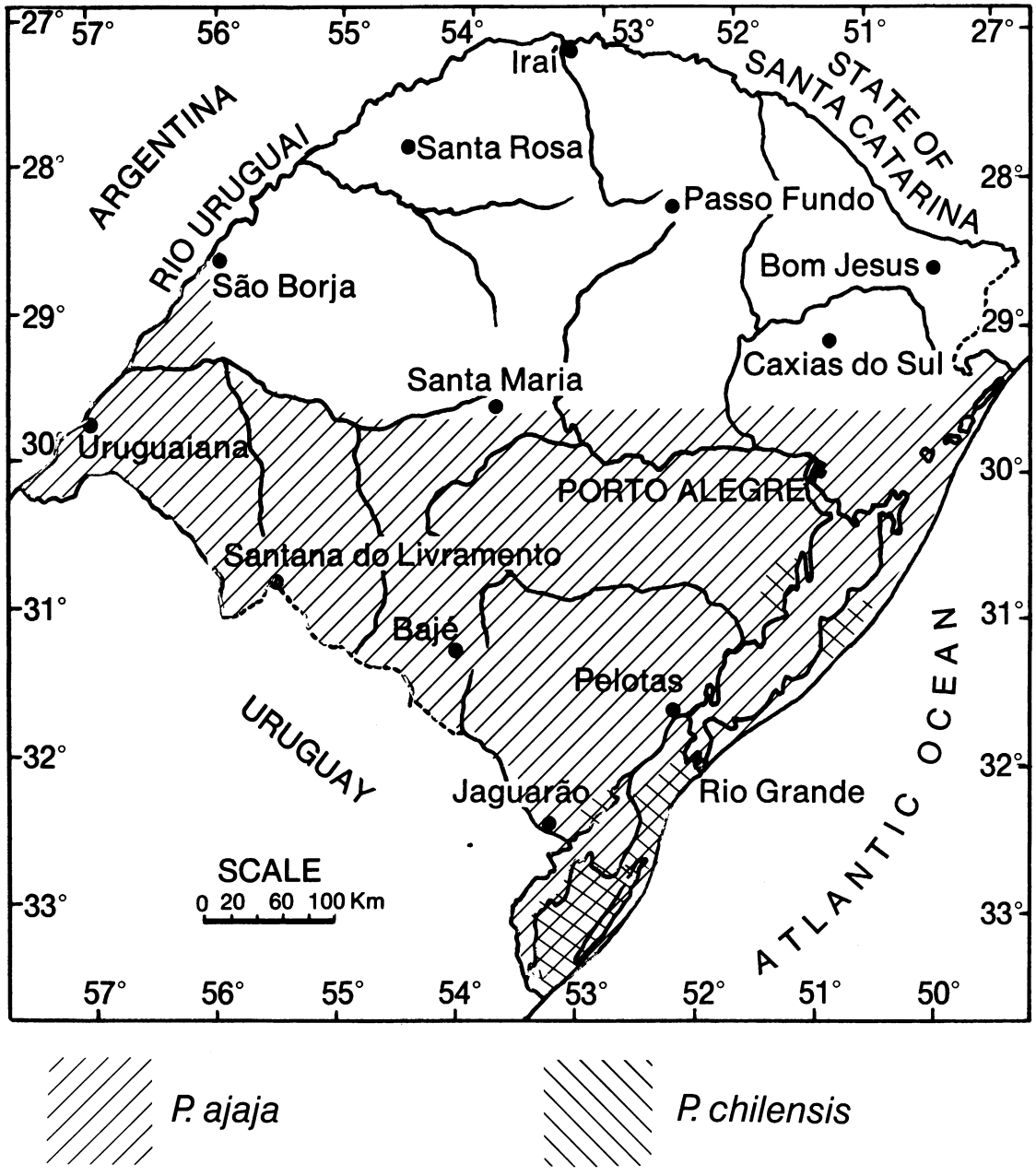
SPECIMENS: MCN: 199. AMNH: 321780–321782.

FAMILY PHOENICOPTERIDAE

Phoenicopterus chilensis
Map 20

Chilean Flamingo
Flamingo

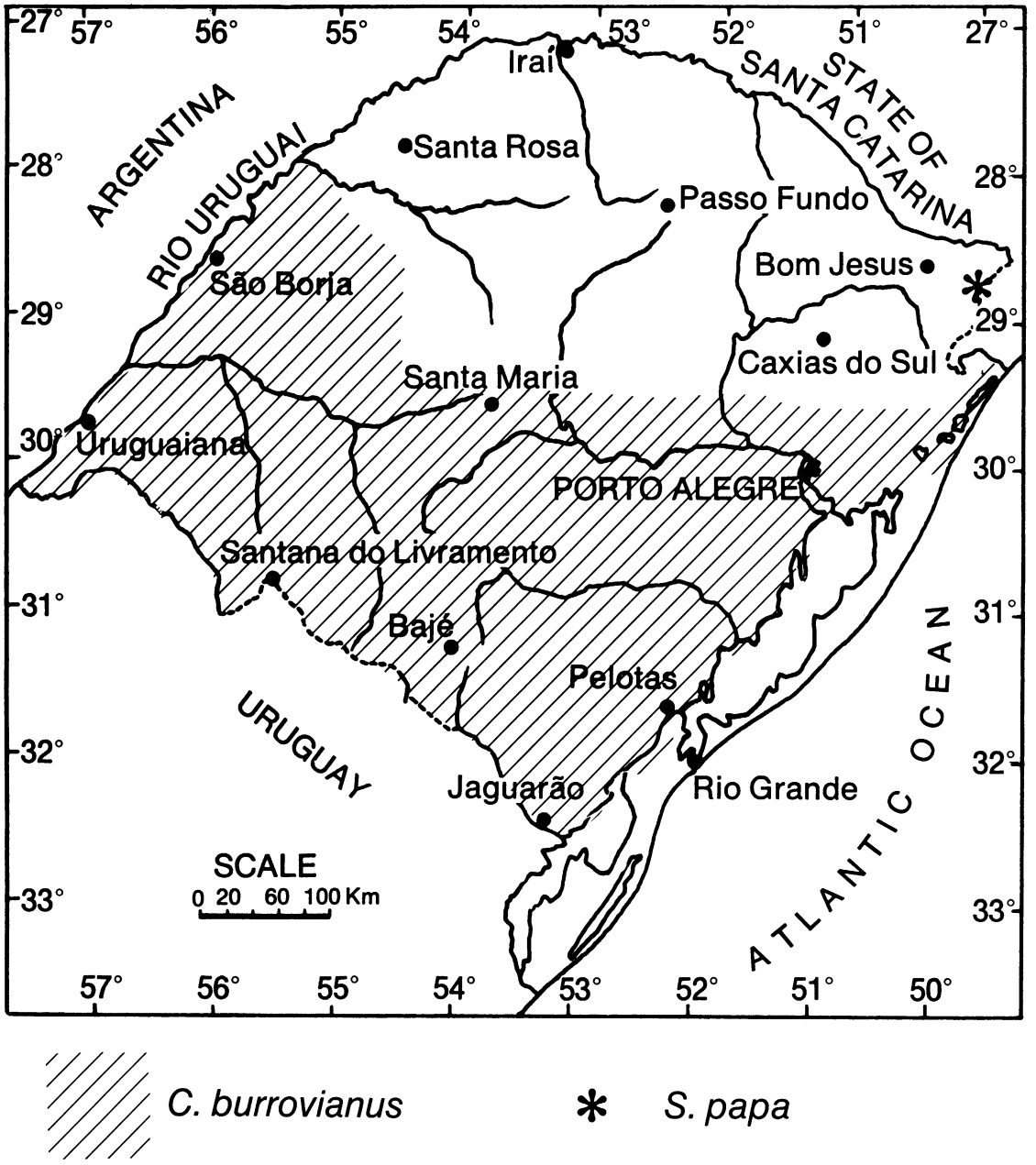
Found principally in shallow coastal lagoons of Mostardas peninsula and area between Cassino and Uruguayan border, but also registered at points on W side of Lagoa dos Patos and Lagoa Mirim. Due to remoteness and difficulty of access to favorite sites, little yet known about movements and abundance of this species in Rio Grande do Sul. On October 11, 1972 I visited one point on Lagoa do Peixe and counted 239 flamingos well scattered over part of lagoon visible to me. Vast majority, if not all, were in pink plumage. On January 27–28, 1974 lagoon dry except for pool about 1 km in diameter at N end. There I counted 15 flamingos, none appearing very young. Local resident said they disappear each year with drying up of lake. On May 28, 1974 I counted 190 flamingos in three or four groups slightly N of 1972 site. Fifty-six had pink or bright pink in plumage, while remainder, as seen from considerable distance, were dirty white with dark wings. Most of these looked smaller than pink ones.



MAP 20. Geographical distribution of *Platalea ajaja* and *Phoenicopterus chilensis* in Rio Grande do Sul.

Flock of about 40 seen in distance flying over lagoon July 24, 1981. High water then made access to many parts of lake impracticable, so others may have been present.

Local person familiar with W shore of Lagoa Mirim across from Taim told me approximately 500 flamingos had spent some months during latter half of 1973 on beach there. Few other records of which I know are all for period May through September. From



MAP 21. Geographical distribution of *Cathartes burrovianus* and *Sarcoramphus papa* in Rio Grande do Sul.

above facts and absence any evidence of nesting here, I assume flamingos winter in state but, except for few stragglers, depart to nest elsewhere during spring and summer.

Bodies of water known to be utilized by flamingos here are fresh or brackish, mostly with sandy bottoms with some admixture of mud.

FAMILY CATHARTIDAE

Coragyps atratus

Black Vulture
Urubu-de-cabeça-preta
(Black-headed Vulture)

Common to abundant resident over most of state, but infrequent in Uruguayan border region and far W. I have never registered it S of 32°S. However, I have been told by ranchers it was common in extreme S until mid-sixties, when Asuntol poison began to be used against it due to reputation for killing newborn lambs and ewes weakened by parturition. This and other *Cathartidae* species also reputed to be spreaders of livestock diseases which, it is claimed, they pick up from carcasses of disease victims. One cost of this radical solution to a problem of questionable dimensions is that the region where the Black Vulture has been eliminated is also the area where the sight and smell of decaying dead livestock is most frequently encountered.

Specimen in MCN from Casuza Ferreira, São Francisco de Paula, of October 13, 1971, has following measurements: tail 198 mm, chord of wing 434 mm, culmen 56 mm to tip, 37 mm to nail, and is presumably *C. a. foetens.* Additional collecting required to determine whether *brasiliensis* may also be represented in state, and how two are distributed.

SPECIMEN: MCN: 231.

Cathartes aura

Turkey Vulture
Urubu-de-cabeça-vermelha
(Red-headed Vulture)

Common to abundant resident in most portions of state, but *C. atratus* more consistently encountered in N and NE, whereas present species most likely to be seen in S and W. Not recorded on Mostardas peninsula and only rarely S of 32°S. Undoubtedly it has been affected by poisoning discussed under *C. atratus,* it being unlikely ranchers make any distinction between them. Absence of Turkey Vulture from Mostardas peninsula while *C. atratus* persists may possibly be explained by extremely flat nature of terrain and possible consequent lack of updrafts to provide good soaring conditions. *Cathartes a. ruficollis.*

Cathartes burrovianus
Map 21

Lesser Yellow-headed Vulture
Urubu-de-cabeça-amarela
(Yellow-headed Vulture)

Resident in most parts of state except extreme N, central and NE highlands, Mostardas peninsula, and S of 32°30′S. In last two areas considerations regarding poisoning and updrafts discussed under *Coragyps atratus* and *C. aura* may apply. No specimen known to have been collected in Rio Grande do Sul but I have identified perched individuals through 8× binoculars at less than 10 m.

This species often soars much closer to ground than *C. aura* and is frequently seen over moist terrain, such as wet meadows and rice fields. At Fazenda São Roberto I have seen it, *C. aura* and *Coragyps atratus* all perched together on same dead tree. *Cathartes b. urubitinga.*

Sarcoramphus papa
Map 21

King Vulture
Urubu-rei
(King Vulture)

Ihering (1899a) reported having heard of specimens collected in Taquari, São Leopoldo, and Vacaria, but said he had never seen one although it "did not appear to be rare" in NE highlands. Specimen collected in Erechim said to exist, but I have not located it. I saw one soaring high over precipitous canyons of coastal escarpment E of Cambará do Sul on January 2, 1975. Voss (*in litt.*) saw two at Aparados de Serra National Park October 7, 1980, and he and Scott saw adult with immature there on January 12, 1982.

FAMILY PANDIONIDAE

Pandion haliaetus
Map 23

Osprey
Águia-pescadora
(Fisher Eagle)

Osprey is rare visitor to NE littoral. Gliesch collected one in summer near Lagoa Itapeva,

S of Tôrres, and Willis and I saw one at Lagoa do Jacaré, SW of Tôrres, on January 25, 1976, and another two days earlier over lake at Fazenda do Pontal. One was fishing on same lake November 15, 1978. *Pandion h. carolinensis.*

FAMILY ACCIPITRIDAE

Leptodon cayanensis
Map 24

Gray-headed Kite
Gavião-de-cabeça-cinza
(Gray-headed Kite)

Only record is specimen reported from São Lourenço by Ihering (1899). *Leptodon c. monachus.*

[*Gampsonyx swainsonii*]

[Pearl Kite]

Ihering (1898, p. 363) mentioned report of this species in Rio Grande do Sul but did not get specimen. He omitted it from his subsequent state list (1899). I have found no basis for including it now.

Elanoides forficatus
Map 22

Swallow-tailed Kite
Gavião-tesoura
(Scissor Hawk)

DISTRIBUTION AND STATUS: Uncommon migrant, appearing primarily in central highlands from extreme N down to and especially along escarpment. Registered as far W as Garruchos, in E behind Tôrres, and once over zoo, Sapucaia do Sul (Voss, personal commun.). Sometimes found above open campo, but more frequently soaring over woodland, with flock even concentrated above isolated patch of forest in open country. Steep forested slopes and cliffs along escarpment also attract it. Earliest spring record September 16, in extreme N, last fall date, at zoo, March 10. *Elanoides f. yetapa.*

FIELD MARKS: Black and white plumage; deeply forked tail.

VOICE: (R) Often vocalizes while swooping, with high-pitched, rapidly repeated "whee-whee-whee-whee... ." or "tsee-tsee-tsee-tsee. . . . ." Also has sharper, more penetrating "whee-whee-wheep."

BEHAVIOR: Usually in small flocks or family groups. On one occasion I saw approximately 20 soaring in circles above open campo. On November 10, 1978 near Caràzinho eight perched on snag in middle of forest, with four more flying nearby. I saw one dodge and flee from pursuing *Tyrannus melancholicus.*

SPECIMENS: MCN: 614. AMNH: 313887.

Elanus leucurus
Map 22

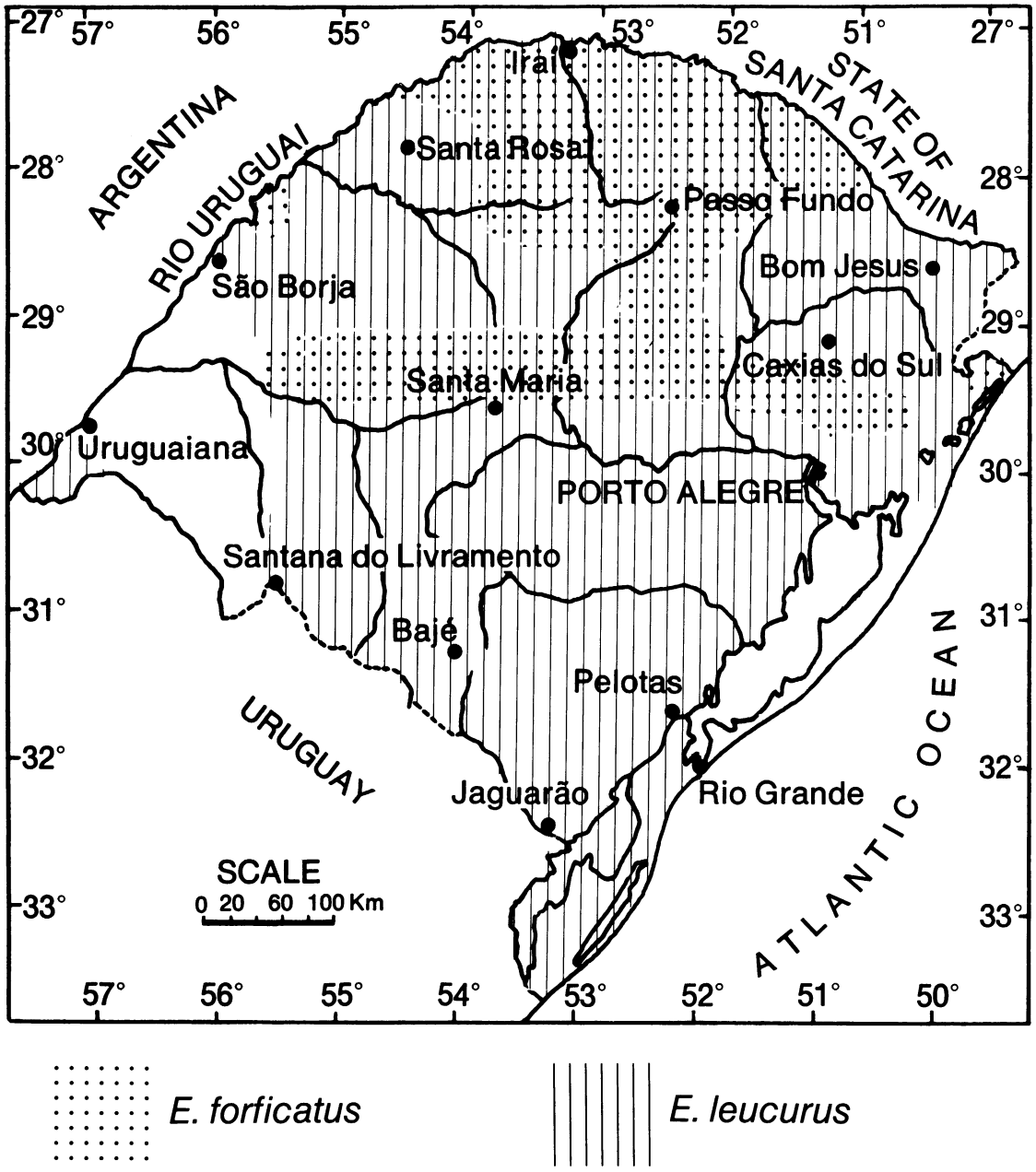
White-tailed Kite
Gavião-peneira
(Hovering Hawk)

DISTRIBUTION AND STATUS: Fairly common resident in most of state, not yet registered from Mostardas peninsula nor from substantial area around Alegrete in far W, although it does occur in extreme western tip. Some evidence exists it may have invaded at least some parts of Rio Grande do Sul, especially the NE, within last 50 years (Belton, 1972). Occurs in scattered pairs in open campo, small clearings, and agricultural areas. *Elanus l. leucurus.*

FIELD MARKS: Very light with white face and tail, black shoulder patches. Hovers while searching for prey.

VOICE: One made musical chirp during courtship.

BREEDING: On August 24, 1974 near Cachoeira do Sul during two-hour period I observed a male make three attempts at copulation, two within 15 minutes, all apparently unsuccessful. Female remained on same exposed perch before and after, while male approached without preliminaries from another perch about 100 m away, then returned to perch or to fly nearby. Only apparent display was when male once flew, moving its wings as during typical hovering flight but advancing as it did so. This was not immediately connected with copulation attempt. While flying, male often let legs dangle vertically. On December 12, 1979 nest 3 m aboveground near top of small *Podocarpus lambertii* tree in overgrown field near forest edge at Rincão dos Pereira contained four eggs



MAP 22. Geographical distribution of *Elanoides forficatus* and *Elanus leucurus* in Rio Grande do Sul.

heavily marked with chocolate brown on medium brown background. One egg examined was nearly ready to hatch. Moderately deep, open-cupped nest made of sticks, lined with grass.

BEHAVIOR: One carried an unidentified

animal the size of a medium rat in claws as it flew; another held mouse in feet while perched on fence post.

Rostrhamus sociabilis
Map 23

Snail Kite
Gavião-caramujeiro
(Snail Hawk)

DISTRIBUTION AND STATUS: Abundant resident of marshes, flooded fields, reservoirs and lakes with vegetation, along entire littoral, through central depression to W tip and N to Banhado São Donato, and in lowland portions of SW. However, very scarce on Mostardas peninsula in late July 1981. I saw pair of immatures at 300 m S of Nova Petrópolis March 11, 1975 and Camargo (1962) collected male near Passo Fundo, but these clearly vagrants. *Rostrhamus s. sociabilis.*

FIELD MARKS: Blackish with conspicuous white patch at base of tail, orange cere, facial skin, and legs. Females and young most easily separated from streaked young of other species by exceedingly long, sharply decurved black maxilla.

VOICE: (R) Non-musical, almost metallic, guttural gagging: "oouick ick ick ick ick ick ....." prolonged from about 12 to 25 "icks," sometimes accompanied by slow, desultory beating of wings.

BREEDING: Copulation observed on several occasions between August 16 and December 3. Adult male seen feeding three-quarter size fledglings on February 14, 1975. Nesting in Rio Grande do Sul most often occurs in sarandi or other low, woody or brushy vegetation in or surrounded by water. During copulation about 5:30 P.M. on August 16, 1971, mounted male spread wings in arc over female, as if supporting himself by wing tips on branch on which she stood. Process leisurely, lasting 30 to 45 or more seconds, after which male flew to branch some 3 m away to perch and occasionally preen himself, while female remained in place.

BEHAVIOR: It is common to see lines of fence and telephone posts covered with these birds. Where such perches not available, I have seen groups of 100 or more on dikes and clods sticking up through water of flooded, recently plowed rice fields.

SPECIMENS: MCN: 12, 21, 200–202, 678*. AMNH: 313893. (321804 from Uruguayan side of mouth of Rio Jaguarão.)

Harpagus diodon
Map 24

Rufous-thighed Kite
Gavião-bombachinha
(Bombachinha Hawk. *Bombachas* are knicker-type trousers used by Rio Grande do Sul cattlemen. *inha* is diminutive.)

Rare. Berlepsch and Ihering (1885) reported two females collected in Taquara area without date. Sick and I saw it at Fazenda das Amoreiras October 23, 1971, and I saw it at Sete Leguas November 13, 1974. I have questionable record of November 23, 1973 from near Caràzinho.

Ictinea plumbea
Map 24

Plumbeous Kite
Sovi

DISTRIBUTION AND STATUS: Uncommon summer resident found in forests, forest edges, and clearings across state N of 28°30'S and also S to foothills of escarpment from Santa Maria to Tôrres, but not registered in higher regions of NE. Earliest record September 15, latest March 7.

FIELD MARKS: Uniformly gray underparts and head, large rufous patches in long wings, which when folded, extend well beyond long tail.

SIZE: One adult male: 230 mm; 279 gr.

SOFT PART COLORS: Tarsus orange; bill black; iris red; claws black.

BREEDING: On November 26, 1971 at Espigão Alto Forest Reserve two adults were feeding undetermined number of nestlings by catching large insects and carrying them to small, thin-walled, flimsy-looking nest some 10 to 12 m aboveground in forest tree by roadside. Male collected September 20, 1971 had enlarged testes.

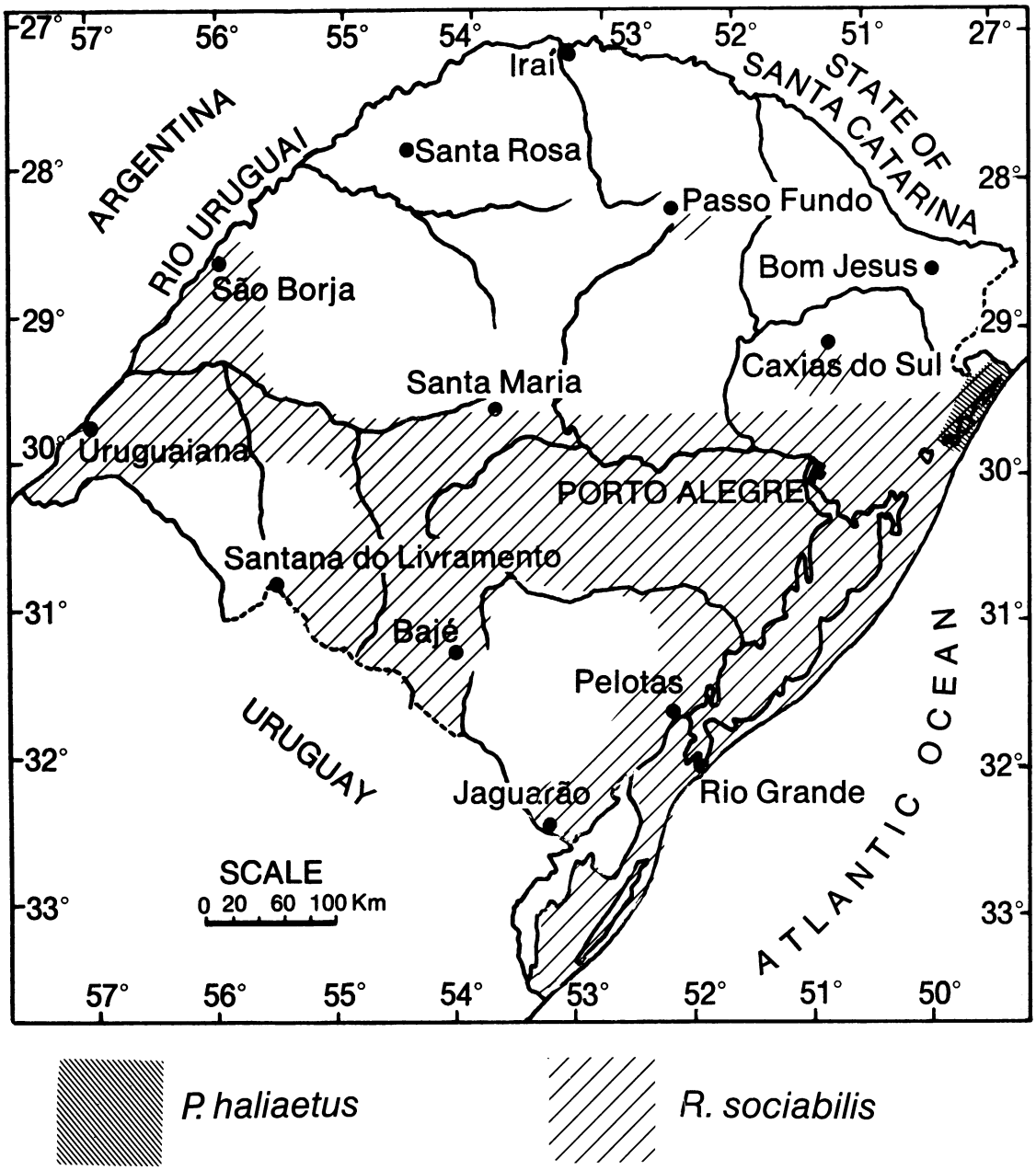
BEHAVIOR: Small flocks assemble to swoop and soar over recently plowed or burning fields where insects may be abundant in air.

SPECIMENS: MCN: 822*. AMNH: 313892.

Circus cinereus
Map 25

Cinereous Harrier
Gavião-cinza
(Gray Hawk)

Rare. May migrate into Rio Grande do Sul



MAP 23. Geographical distribution of *Pandion haliaetus* and *Rostrhamus sociabilis* in Rio Grande do Sul.

from S in winter. I have recorded only three individuals: July 7, 1974, October 22, 1974, and November 16, 1970. Ridgely (*in litt.*) saw two males flying low over marshes and open country near Taim November 10, 1980. Kaempfer collected one September 8, 1931.

Two undated specimens and one of my sight records from littoral, others found in SW and central W.

SPECIMEN: AMNH: 321803.

Circus buffoni
Map 25

Long-winged Harrier
Gavião-do-mangue
(Mangrove Hawk)

DISTRIBUTION AND STATUS: Common resident of marshes, rice growing areas, and other wet terrain along littoral, especially from Porto Alegre S, and in SW and far W. Gliesch collected one in Tôrres, but I have not seen it in NE coastal region, nor on Mostardas peninsula, although it seems reasonable to expect it there.

FIELD MARKS: Light-rumped, with unusually long tail and wings.

SOFT PART COLORS: One immature male: tarsus Brilliant Orange Yellow; toes between Brilliant and Strong Orange Yellow; bill black, light gray at base; cere between Vivid and Brilliant Greenish Yellow; iris Strong Yellowish Brown.

BREEDING: Male in immature plumage collected November 24, 1974, had moderately enlarged testes.

BEHAVIOR: Above individual had just eaten egg. On October 14, 1971 at Banhado São Donato one was removing feathers from *Sturnella superciliaris* it had captured. Normally flies low and slowly over marshy terrain.

SPECIMENS: MCN: 138, 464. MN: 32300*.

Accipiter poliogaster
Map 26

Gray-bellied Hawk
Tauató-pintado
(Spotted Tauató)

Only record is specimen reported by Gliesch (1930) obtained at Poço das Antas on undetermined date.

Accipiter striatus
Map 26

Sharp-shinned Hawk
Gaviãozinho
(Little Hawk)

DISTRIBUTION AND STATUS: Registered from NE, both in lowlands and highlands, and from S hills. One record W of central trough. Very uncommon occupant of forests, gallery woodlands, and open areas with trees. One perched off and on for some days in large araucaria in our Gramado garden. Although Ihering collected juvenal male July 27, 1883, all other records for state fall within October to February period, indicating possibility most individuals spend winter elsewhere. *Accipiter s. erythroemius*

FIELD MARKS: Tiny size, rufous thighs, finely barred underparts. Presumed male netted near Bagé had gray and white barring on thighs, with rufous wash; feathers fluffed out behind leg in streamlined fashion so rufous edges gave impression of solid rufous. Photographed by Dunning.

SIZE: One male: 280 mm, 89 gr. One presumed male, netted and released: 285 mm, 87 gr.

SOFT PART COLORS: Tarsus, iris and cere yellow; bill black with gray base; skin above eye light greenish.

VOICE: Territorial pair cackled when I approached area, while pair attracted by mechanical squeaker emitted high, whining, three-or-four noted "seep seep seep."

BREEDING: Pair in scrubby, semi-open gallery woodland S of Bagé October 22, 1974 strongly territorial and became agitated every time I approached, but I did not find nest. Male collected January 12, 1974 in Gramado had only slightly enlarged testes.

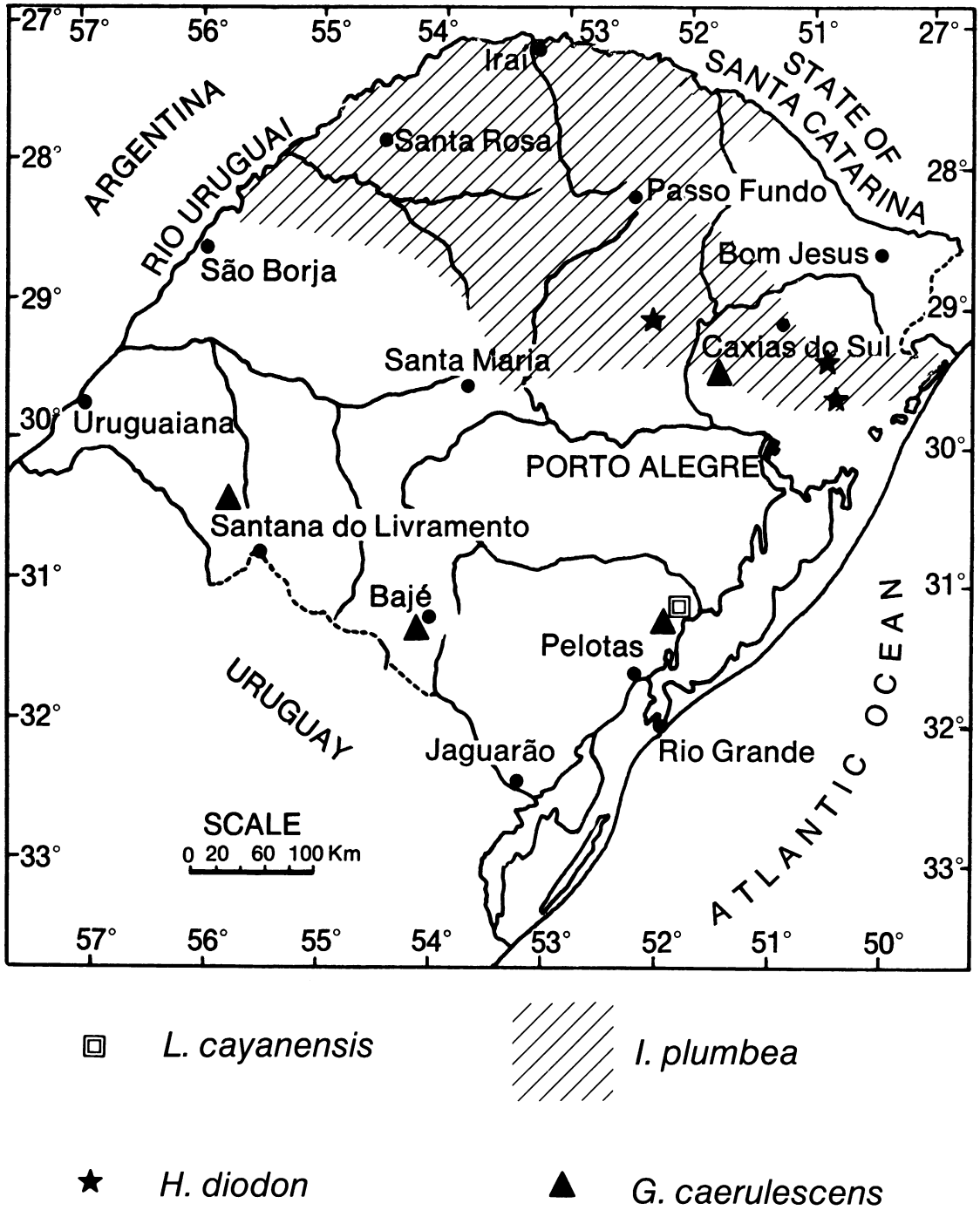
BEHAVIOR: Small to medium-sized passerines entangled in net within territory of Bagé pair mentioned above not attacked, although eventually one hawk was netted close to one of the entangled birds.

SPECIMENS: MCN: 823*. AMNH: 313885, 313886.

Accipiter bicolor
Map 26

Bicolored Hawk
Gavião-bombachinha-grande
(Great Bombachinha Hawk—see *Harpagus diodon*)

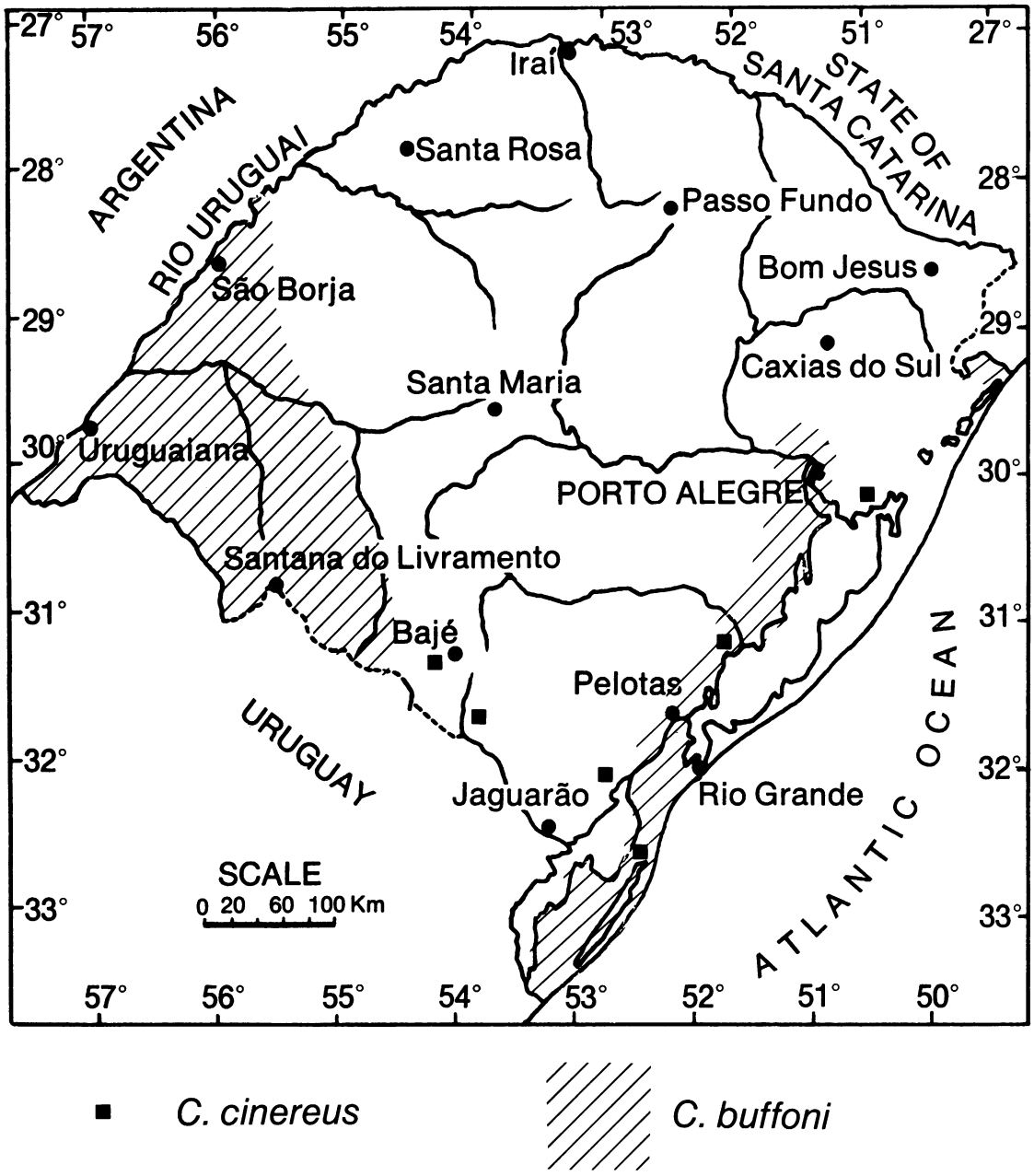
DISTRIBUTION AND STATUS: Records for this rare to uncommon woodland species scattered from N border to S hills and from near Lagoa dos Patos to Garruchos. Presumably non-migratory, based on sightings in July, October, November, December, and March. *Accipiter b. pileatus.*



MAP 24. Geographical distribution of *Leptodon cayanensis, Harpagus diodon, Ictinea plumbea* and *Geranospiza caerulescens* in Rio Grande do Sul.

FIELD MARKS: Absence of vertical streak down center of whitish throat separates it from similar but smaller *Harpagus diodon.*

SOFT PART COLORS: Live bird observed through binoculars: tarsus whitish, bill dark but not black; iris and eye ring pale orange.



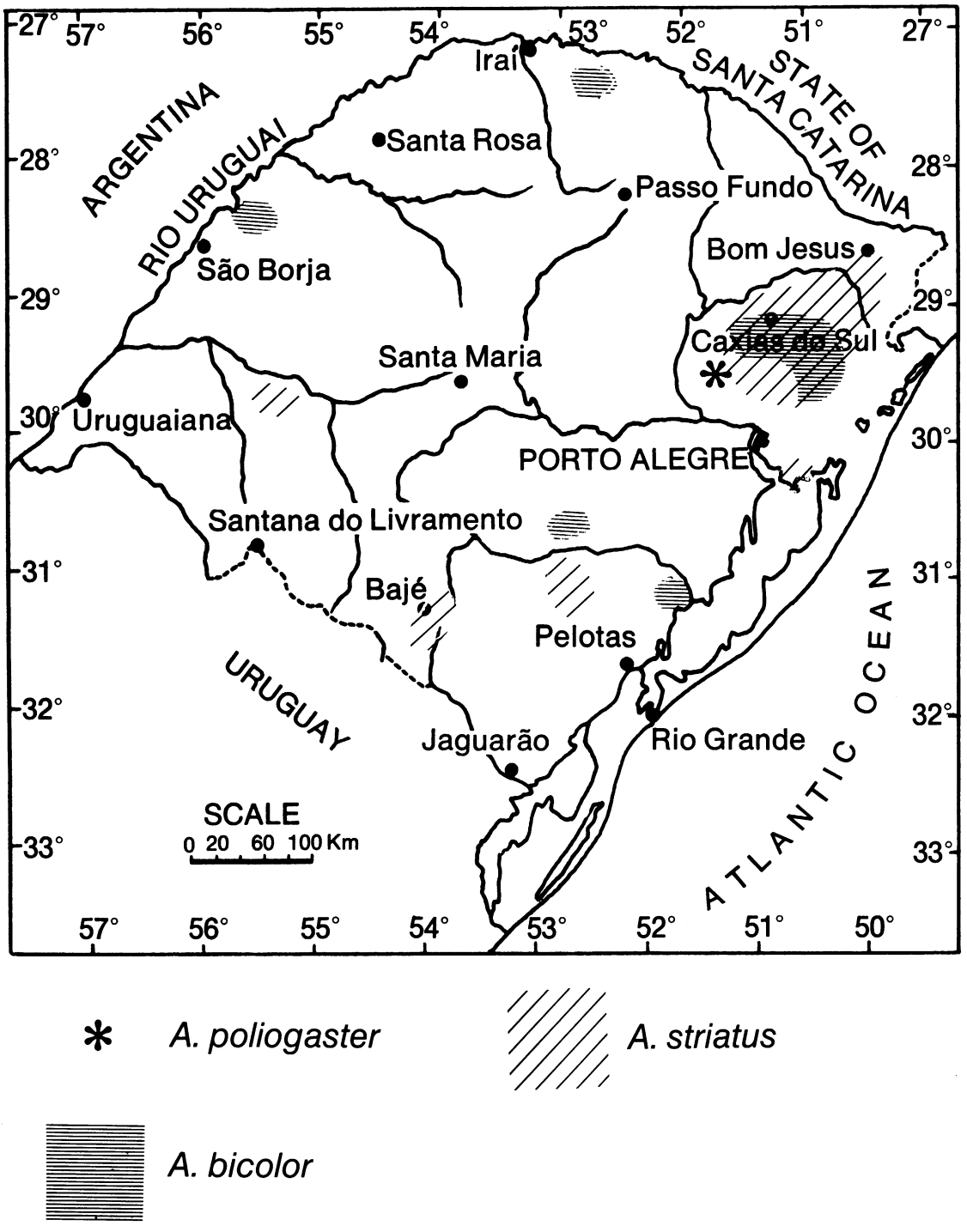
MAP 25. Geographical distribution of the two species of *Circus* found in Rio Grande do Sul.

VOICE: (R) Prolonged "khow khow khow khow khow khow. . . ." by both male and female in response to invasion of nesting territory. Smaller of two, presumed male, called at somewhat faster rate than did its mate. Occasionally they gave short, whining slurred sound.

BREEDING: Strongly territorial mated pair vocalized strenuously and occasionally dove at me as I observed them and recorded voices on December 11–13, 1979 at Rincão dos Pereira.

SPECIMEN: AMNH: 313884.

NOTE: Ihering (1899a, p. 139) mentioned



MAP 26. Geographical distribution of the three species of *Accipiter* found in Rio Grande do Sul.

obtaining *A. guttatus* = *A. bicolor guttifer* in "Rio Grande do Sul," his way of referring to muncipality of Rio Grande. Hellmayr and Conover (1949, p. 58) noted that Pinto (1938)

omitted reference to it. Hellmayr did not find it among Ihering's specimens in Berlepsch collection so said it "must be a mistake." Possibly so, but it would be interesting to know to what species Ihering referred. He apparently had specimens of both sexes and described species as "hawk with grayish color above and blackish head, reddish-brown below. The wing of the male measures 21 cm. and that of the female 26 cm."

Geranospiza caerulescens
Map 24

Crane Hawk
Gavião-pernilongo
(Long-legged Hawk)

I have seen this rare hawk only twice, on both occasions near SW frontier in gallery forests. Ihering reported collecting one at mouth of Rio Camaquã. Gliesch listed specimen from Poço das Antas on southern escarpment. My observations were in June and November, but no dates available for early specimens. White crescent visible in outer wing in flight excellent field mark. *Geranospiza c. flexipes.*

Leucopternis polionota

Mantled Hawk
Gavião-pombo-branco
(White Pigeon Hawk)

Ihering (1899a) included this species in his list on basis of Rio Grande do Sul specimen he was informed was in Lisbon Museum. Confirmed as Rio Grande do Sul species by Voss (personal commun.) who saw it few miles E of Porto Alegre in February 1978, and found primary feather there that Sick identified as of this species.

Buteogallus urubitinga
Map 27

Great Black Hawk
Gavião-preto
(Black Hawk)

DISTRIBUTION AND STATUS: Year-round resident, inhabiting forest edges, agricultural country, and campo, often near water. Occurs in central depression, occasionally along littoral and in S hills. Also seen in NE highlands and one collected at Itaqui (Pinto, 1938). *Buteogallus u. urubitinga.*

SIZE: One immature female: 655 mm.

SOFT PART COLORS: One immature female: tarsus yellow; bill black with gray at base of mandible; cere yellow; iris brown.

SPECIMEN: MCN: 662*.

Buteogallus (Heterospizias) meridionalis
Map 27

Savanna Hawk
Gavião-caboclo
(Copper-colored Hawk)

DISTRIBUTION AND STATUS: Fairly common resident throughout most of state, but found only at widely scattered localities in NE highlands and extreme N. Few records S of 31°30'S confined to littoral. Most frequently seen large hawk, usually in grasslands, harvested rice fields, or pastures.

FIELD MARKS: In flight black tips of flight feathers contrast sharply with predominantly rufous plumage.

VOICE: I have heard musical call, consisting of wavering notes going up scale and ending in questioning tone.

BREEDING: I was unable to determine contents of occupied nest high in tree at Fazenda Casa Branca in November 1974, but on February 20, 1975 large juvenal of this species, which looked possibly capable of flight, was sitting on nest.

BEHAVIOR: These hawks often perch with very upright stance on ground or on low mounds or dikes. I once saw one carrying snake.

SPECIMENS: MCN: 17. AMNH: 313881, 313882.

Parabuteo unicinctus
Map 28

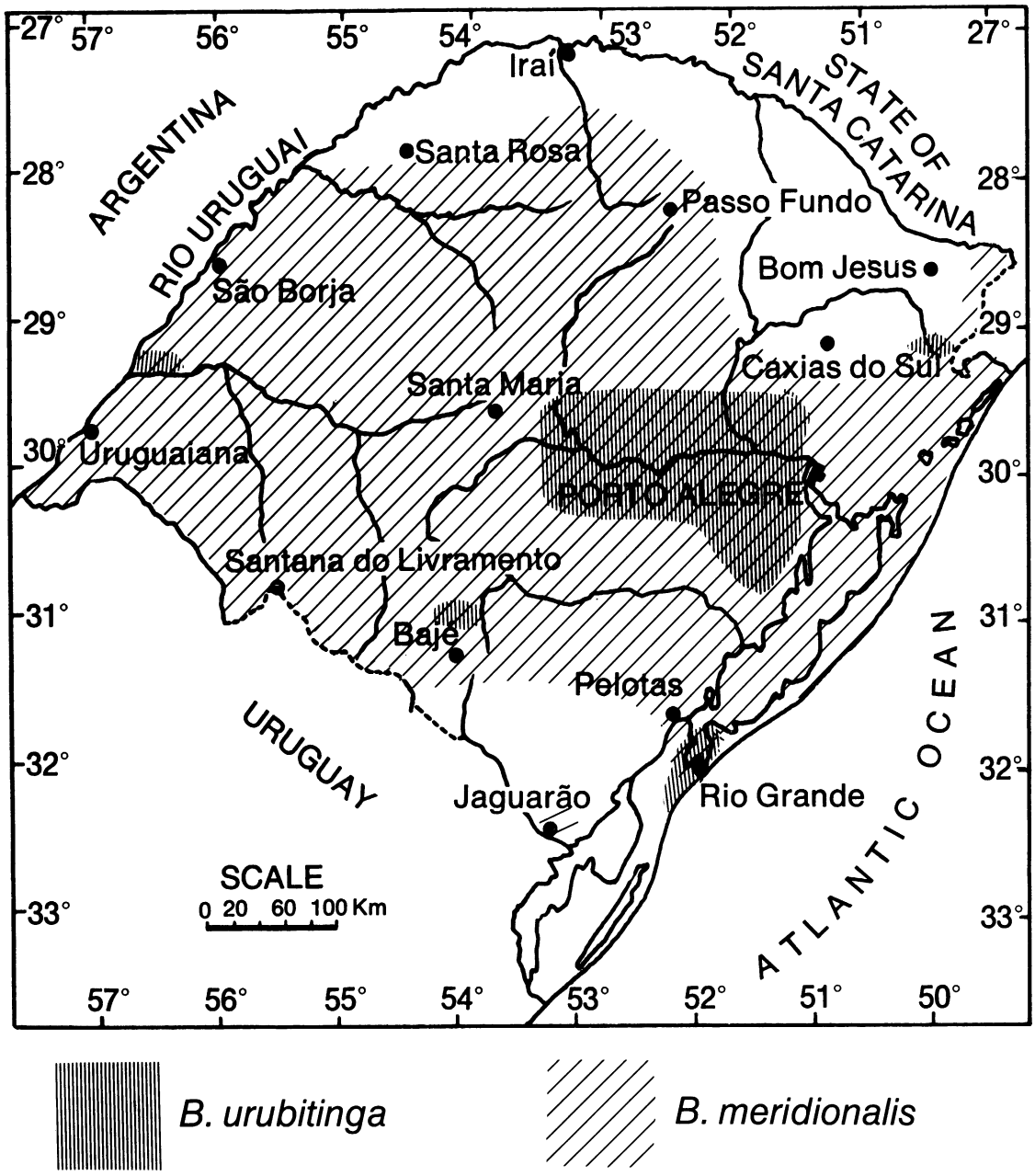
Bay-winged Hawk
Gavião-asa-de-telha
(Tile-winged Hawk)

Found only in extreme western tip, where Sick and I first saw it in October 1971 (Belton, 1974a). I found adult and immature in same place in July 1973, but did not see species there in May 1974 or November 1977. *Parabuteo u. unicinctus.*

Busarellus nigricollis
Map 28

Black-collared Hawk
Gavião-velho
(Old Hawk)

On November 19, 1977, Silva and I saw hawk in distance, perched above Arroio Quaraí-chico near western tip at same place



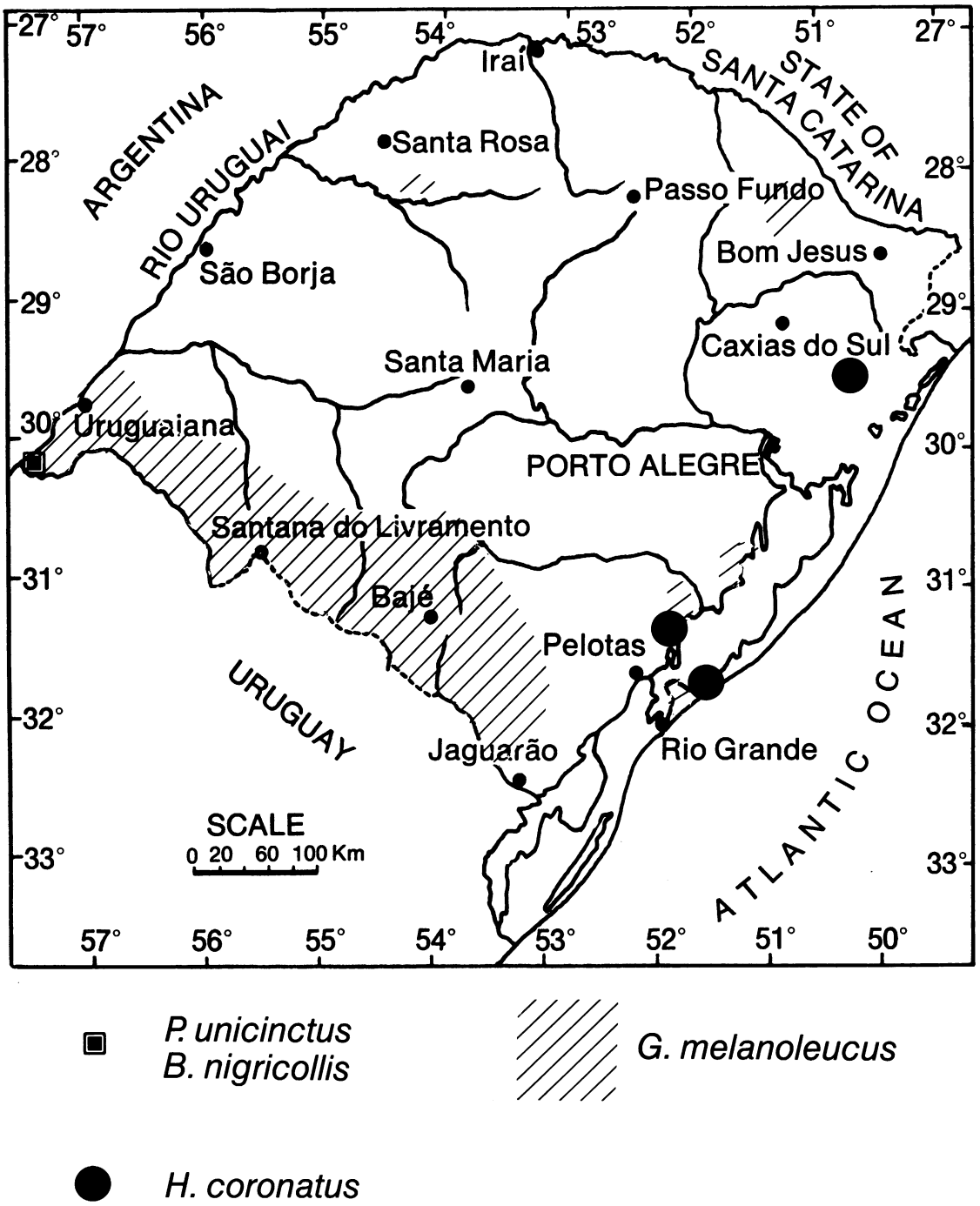
MAP 27. Geographical distribution of the two species of *Buteogallus* found in Rio Grande do Sul.

Parabuteo unicinctus discovered. We were unable to approach it and did not identify it then, but in retrospect, on basis our notes, it seems highly likely to have been this species. Presumption fortified by its having been found in adjacent Uruguay and Corrientes, Argentina. *Busarellus n. leucocephalus.*

Geranoaetus melanoleucus
Map 28

Black-chested Buzzard-Eagle
Aguia-chilena
(Chilean Eagle)

DISTRIBUTION AND STATUS: Uncommon resident, usually found in rolling, open grass-



MAP 28. Geographical distribution of *Parabuteo unicinctus, Busarellus nigricollis, Geranoaetus melanoleucus* and *Harpyhaliaetus coronatus* in Rio Grande do Sul.

land in hills of S and SW, extending into far W. Sick and I once had distant view of what was probably this species S of Santo Angelo, while Voss (*in litt.*) saw pair chasing a *Bu-*

teogallus meridionalis at Aracuri-Esmeralda Ecological Station in February 1983. Ihering and Gliesch each collected it on littoral and Voss saw two sub-adults at Arambaré on April 28, 1973. No other recent records for littoral. *Geranoaetus m. melanoleucus.*

FIELD MARKS: Very long, broad wings coupled with extremely short, broad tail. Dark breast feathers often look quite gray, not black as usually described.

BEHAVIOR: Usually found singly or in pairs. At Fazenda São Francisco October 20, 1974 one was soaring over campo, hotly pursued by several *Vanellus chilensis,* when it suddenly swooped and snatched from ground a *V. chilensis* about adult size but apparently young and not yet flying. It flew off with it, with other *V. chilensis* still in pursuit. Ranch hands told me species frequently takes young lambs, and that it is shot whenever opportunity offers.

SPECIMENS: MCN: 140, 244.

Harpyhaliaetus coronatus
Map 28

Crowned Eagle
Águia-cinzenta
(Gray Eagle)

Gliesch (1930) reported collecting specimen at S end of Mostardas peninsula in winter of 1914, and Ihering (1899a) reported one from São Lourenço. He commented that species hunts skunks and smells like them. Although generally considered to have become extinct in state, dead specimen now in MCN was found alongside road 5 km N of São Francisco de Paula March 26, 1978.

SPECIMEN: MCN: 379.

Buteo magnirostris

Roadside Hawk
Gavião-carijó
(Mottled Hawk)

DISTRIBUTION AND STATUS: Abundant resident everywhere in state. Certainly most widespread hawk in Rio Grande do Sul and rivals *Rostrhamus sociabilis* as most abundant. Tolerant of practically every type of habitat, but especially found in woodlands, campo, and areas of small, mixed farming. Specimens from N, collected by Kaempfer and me, are *B. m. magniplumis,* whereas ones from Canguçu, Lavras do Sul, and Uruguayan border region are *B. m. pucherani.* Specimens from Porto Alegre and Viamão intermediate between these races.

FIELD MARKS: Blackish hood extends ventrally to light brown vertically streaked upper breast, with remaining underparts distinctly barred brown and dull white. Light upper tail coverts and rusty patch in wing visible in flight.

SIZE: One male: 381 mm, 284 gr.

SOFT PART COLORS: Two adult males: tarsus yellow; bill light gray with black splotches, or black with gray near base; cere bright yellow; iris light yellow.

VOICE: (R) Most commonly, a single screech, rising in middle and falling at end: "eEEEEEEEEEee," particularly intense and penetrating at start. Also a series of rapidly repeated, scratchy screeches, upward trending in pitch: "iic iic iic iic iic," and, in flight, a rapidly repeated series of sharp, short screeches rising upscale at end: "whee eee eee eee eee eee."

BREEDING: One seen carrying nesting material on October 4, 1972. Male collected September 13, 1975 had inactive testes, those of one collected October 28, 1975 moderately enlarged. Voss (personal commun.) found nesting in progress in tall eucalyptus on December 1, 1977 at zoo in Sapucaia do Sul.

BEHAVIOR: Unusual amount of soaring accompanied by flight vocalization takes place around end of March and early in April in Gramado and Aparados da Serra National Park areas.

SPECIMENS: MCN: 9, 28, 79, 117, 121, 139, 173, 285, 620*. MN: 3061. AMNH: 313869–313875, 321557, 823993*.

Buteo leucorrhous
Map 29

White-rumped Hawk
Gavião-de-sobre-branco
(White-rumped Hawk)

This rare species has been only infrequently registered, always in NE quarter. Berlepsch and Ihering (1885) reported four undated specimens taken near Taquara. I saw one, not conclusively identified, in extreme N in late August 1975, but three other definitive

records, including two recent ones, are for January–March period.

SPECIMEN: AMNH: 44880.

Buteo brachyurus
Map 29

Short-tailed Hawk
Gavião-de-rabo-curto
(Short-tailed Hawk)

Specimens were reported by Ihering and Gliesch, but there was no recent record until E. Willis visited state briefly in January/February 1976, during which time he reported (personal commun.) having seen it in three different places along southern escarpment. In view of this, it may be more common here than previously supposed. Voss and da Silva (unpub. ms.) observed it at zoo in Sapucaia do Sul once each in November 1976 and March 1977, and Voss (*in litt.*) saw pair engaging in apparent courtship behavior in flight over canyon above Barra de Ouro on October 31, 1981. *Buteo b. brachyurus.*

Buteo swainsoni
Map 29

Swainson's Hawk
Gavião-papa-gafanhoto
(Grasshopper-eating Hawk)

Rare summer visitor to Rio Grande do Sul. Ihering (1899a) obtained specimen near Rio Grande. I have one questionable sight record from Santa Vitória do Palmar on February 9, 1974. On October 26, 1975 at Garruchos I saw flock of 28 *Buteo* sp. soaring in distance, first circling, then moving S. They were too distant to make positive identification, but no other *Buteo* sp. here flocks in this way, so it seems probable they were this species. On November 28, 1977 immature banded individual was found exhausted in industrial area of Porto Alegre and taken to Zoological Park from where it was released in apparent good health on December 28, 1977. It had been banded as flightless young near Rose Lynn, Alberta on August 2, 1977. Another specimen, also banded as flightless young in Alberta, Canada at 51°10′N, 111°30′W on July 8, 1977 found dead near 28°S, 54°20′W without exact date, but reported in January 1978 (Silva, personal commun.).

Buteo albicaudatus
Map 30

White-tailed Hawk
Gavião-de-rabo-branco
(White-tailed Hawk)

DISTRIBUTION AND STATUS: Uncommon resident widely scattered across state, but only one record in extreme N and none from Mostardas peninsula. Occupies open country or woodland edges, most commonly found on utility posts in range land. After *Buteogallus meridionalis* probably most frequently seen large hawk. *Buteo a. albicaudatus.*

FIELD MARKS: Tail entirely white except for subterminal black band.

VOICE: One seen in Brasilia National Park December 3, 1978 called "cuwAA cuwEH cuwEH."

BEHAVIOR: Often lethargic. One on telephone post only about 12 m from highway across water-filled ditch could not be frightened into flying by shouts and gestures.

SPECIMENS: MCN: 159. AMNH: 313883.

Morphnus guianensis
Map 31

Crested Eagle
Uiraçu-falso
(False Uiraçu)

Specimen reported by Ihering (1899a) from near Taquara is only Rio Grande do Sul record. If it still exists in state, most likely to be found in Turvo Forest Reserve in extreme NW.

Harpia harpyja
Map 31

Harpy Eagle
Gavião-real
(Royal Hawk)

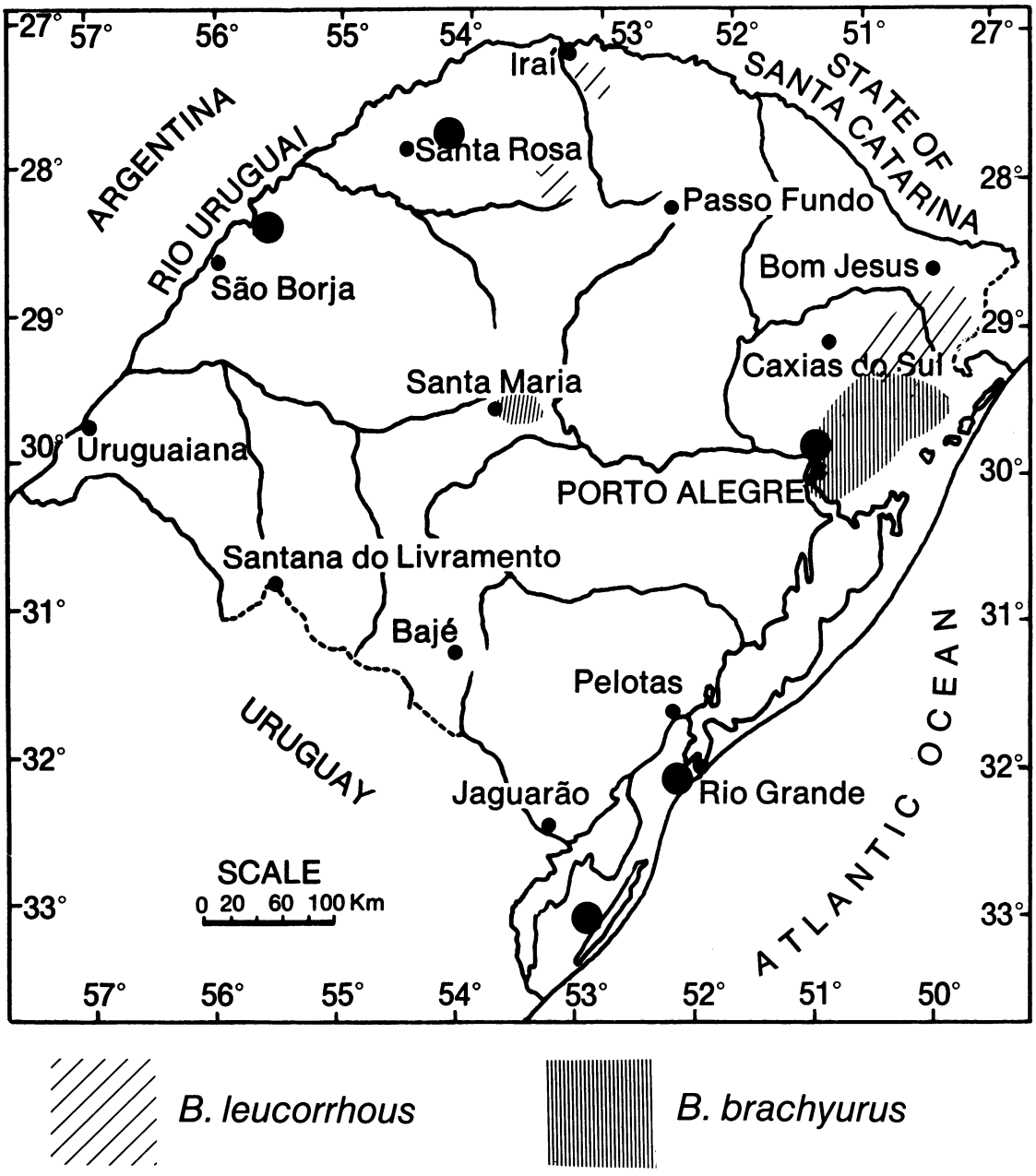
Specimens from near Taquara and Porto Alegre collected more than 40 years ago (Belton, 1978), but no recent records. If not extinct in state, it would most likely be found in Turvo Forest Reserve.

SPECIMEN: MCN: 272.

Spizastur melanoleucus
Map 31

Black-and-white Hawk-Eagle
Gavião-pato
(Duck Hawk)

Ihering collected male at Taquara on June



MAP 29. Geographical distribution of three species of *Buteo* in Rio Grande do Sul.

22, 1883 (Berlepsch and Ihering, 1885) and reported another (Ihering, 1899) from São Lourenço. On April 3, 1973 I watched one soar high over forests and campo of Aparados

da Serra National Park. When first seen it was in immediate vicinity of group of *Coragyps atratus,* but then soared on alone, pursuing very level course and sailing for considerable distances between occasions when it would flap wings three or four times. Voss saw pair there July 3, 1978, one perched on dead araucaria, the other soaring.

Spizaetus tyrannus
Map 31

Black Hawk-Eagle
Gavião-pega-macaco
(Monkey-snatching Hawk)

Female collected by Ihering on July 20, 1882 at Taquara, and Gliesch reported one from Poço das Antas without date. On August 16, 1974 I saw one soaring high above substantial forested area, broken by clearings, near Sete Leguas. This one of few regions still having even moderate amount of habitat similar to that then existing in areas where specimens were collected. Voss saw one at Aparados da Serra National Park September 10, 1978, and a pair soaring there two days later. *Spizaetus t. tyrannus.*

Spizaetus ornatus
Map 31

Ornate Hawk-Eagle
Gavião-penacho
(Plumed Hawk)

No recent records. Three from Nova Petrópolis, collected in March, April, and May 1883, reported by Berlepsch and Ihering (1885), who said it nested in Taquara area. Pinto (1938) reported one collected in March 1915 from what is now Panambi. *Spizaetus o. ornatus.*

FAMILY FALCONIDAE

Polyborus plancus
Map 32

Crested Caracara
Caracará

DISTRIBUTION AND STATUS: Common resident of most of state, but dearth of records in NW quarter except close to Rio Uruguay. Most abundant along littoral. Found in open country, including not only grassland but marshes and cultivated areas formerly in forest. *Polyborus p. plancus.*

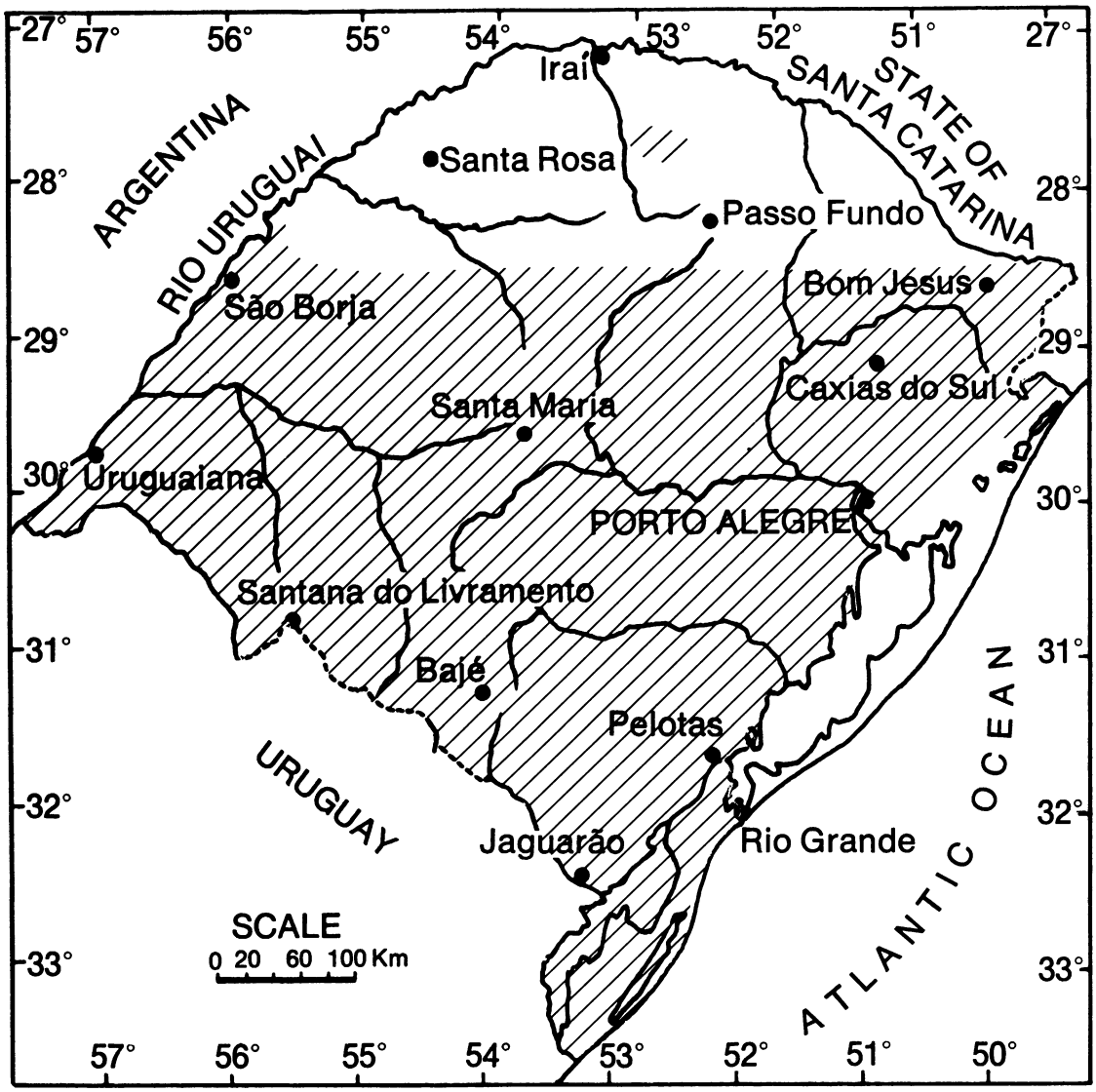
FIELD MARKS: Crested blackish cap, bare face, white wing patches and tail.

SIZE: One female: 635 mm.

SOFT PART COLORS: One adult female: tarsus yellow; bill light blue-gray with white tip; iris light brown; facial skin red, but yellow at base of mandible.

VOICE: During mating rituals I have heard both sexes utter "quok quok quok. . . ." which, when first heard, I assumed must be coming from heron in nearby marsh.

BREEDING: Although I have found no indication in literature of atypical breeding season for this species, three separate occasions on which I have witnessed attempted or successful copulations were all in autumn between April 15 and May 26. On May 8, 1973, near Pacheco, after pair exchanged "quok quok quok. . ." calls from about 100 m, female flew from perch on rice field dike to position near male on ground in field. After brief interval, male mounted without further ado and appeared to copulate successfully. They then stood near each other, bobbing heads and calling as previously. On April 15, 1974, W of Viamão, soaring individual came down directly onto back of another standing on ground. Attempt at contact appeared desultory and I had impression it was unsuccessful. After dismounting, male stood by side of mate without any display. Brown and Amadon (1968, p. 738) report when this species excited red facial skin turns yellow. In this instance male's face continued red, whereas other birds I have seen in copulatory activity all had yellow facial skin. On May 26, 1974, N of Mostardas, I found group of about 10 caracaras perched on fence posts or ground and watched two copulatory attempts between one pair. During first effort, female on fence post. Afterward both flew to ground where, while standing alongside one another they threw heads straight back so throats were skyward and called "quok quok quok. . . ." This gesture and call repeated several times, after which another, apparently unsuccessful, copulatory attempt made with female standing on ground. Female found in spring trap September 25, 1974 at edge of Taim marsh had small ovary with only slightly enlarged follicles, but on September 18, 1972, S of Vacaria, I saw individual fly by with nesting material and another disappear into araucaria where I had impression it was nesting.



MAP 30. Geographical distribution of *Buteo albicaudatus* in Rio Grande do Sul.

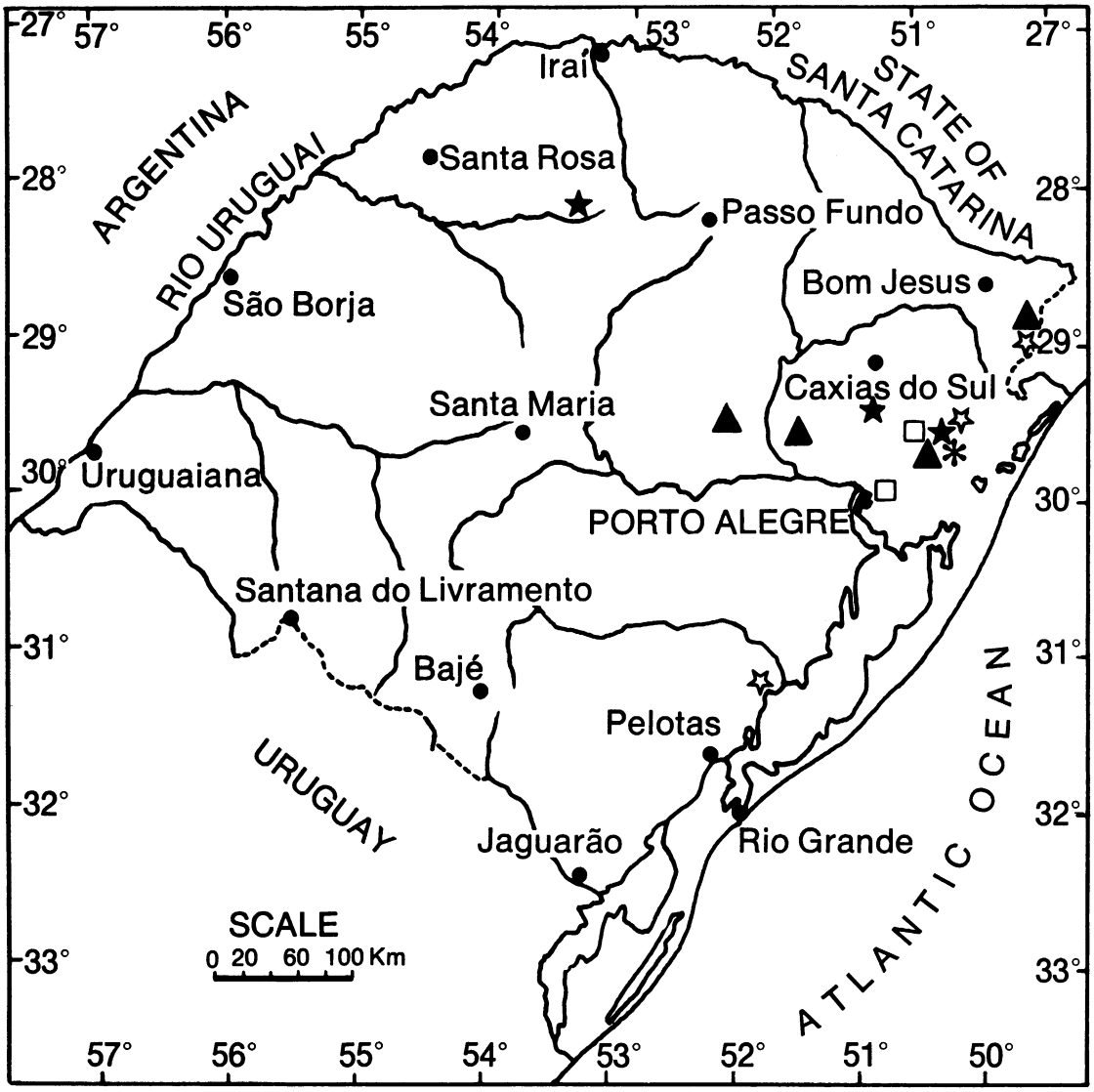
BEHAVIOR: I have watched a *P. plancus* walking on ground withstand attacks of pair of *Vanellus chilensis* repeatedly diving at it. At each attack, caracara would squat low, but otherwise it remained undisturbed. On the other hand, a pair flew off sand dune near ocean beach after only a brief attack by a pair of *Sterna superciliaris*. In Rio Grande do Sul species persecuted by ranchers for damage done to newborn lambs and weakened ewes at lambing time.

SPECIMENS: MCN: 102, 113, 127, 158, 177, 824*.

Milvago chimachima
Map 33

Yellow-headed Caracara
Carrapateiro
(Tick Bird)

DISTRIBUTION AND STATUS: Common resident in N half and in N portion of southern hills, becoming scarce to rare farther S and W, with only scattered occurrences in strip roughly 100 km wide paralleling Uruguayan border and none S of 32°S. Occupies forest edges, open country with nearby woods,



* *M. guianensis*

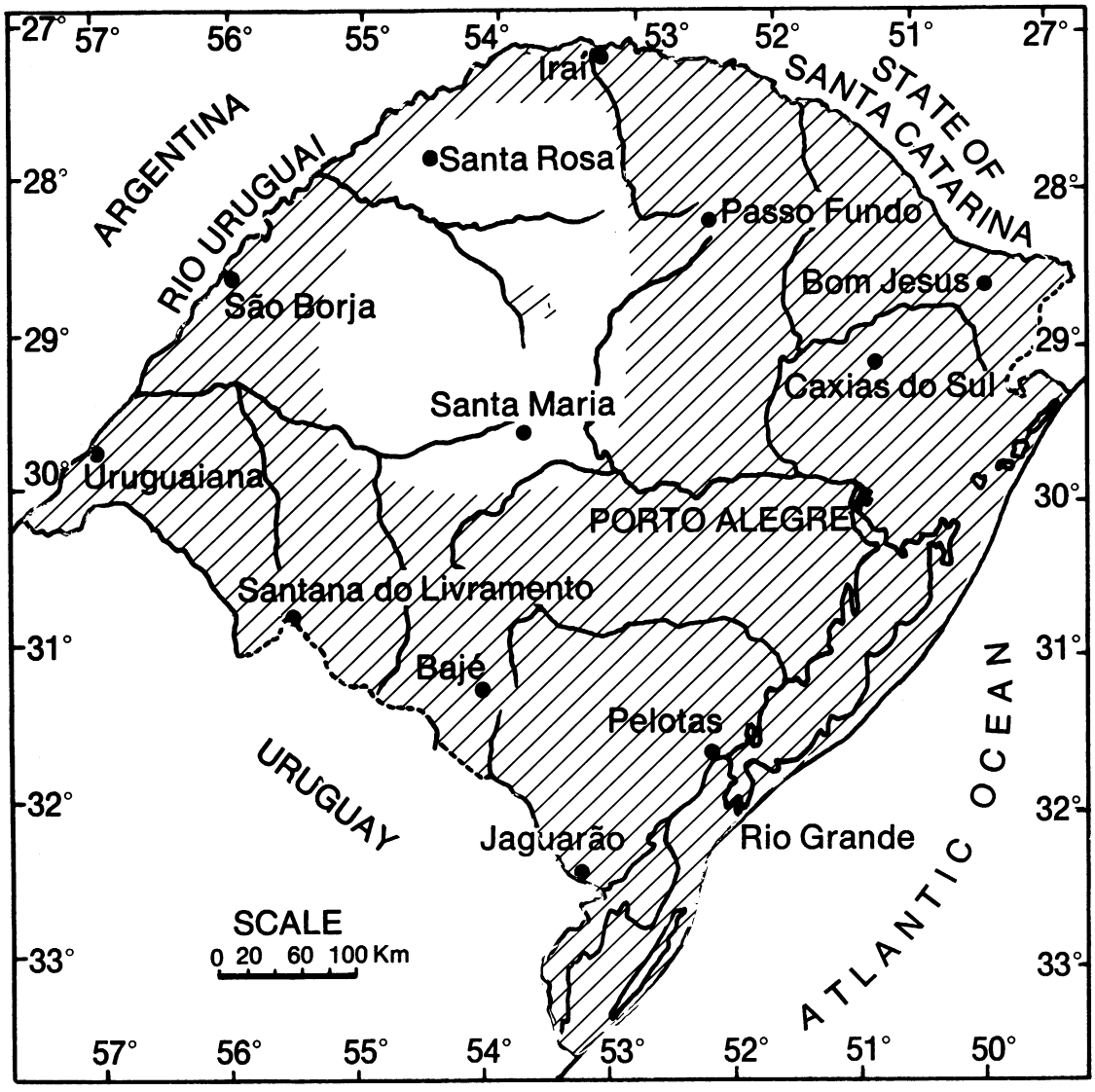
□ *H. harpyja*

☆ *S. melanoleucus*

▲ *S. tyrannus*

★ *S. ornatus*

MAP 31. Geographical distribution of *Morphnus guianensis, Harpia harpyja, Spizastur melanoleucus, Spizaetus tyrannus,* and *Spizaetus ornatus* in Rio Grande do Sul.



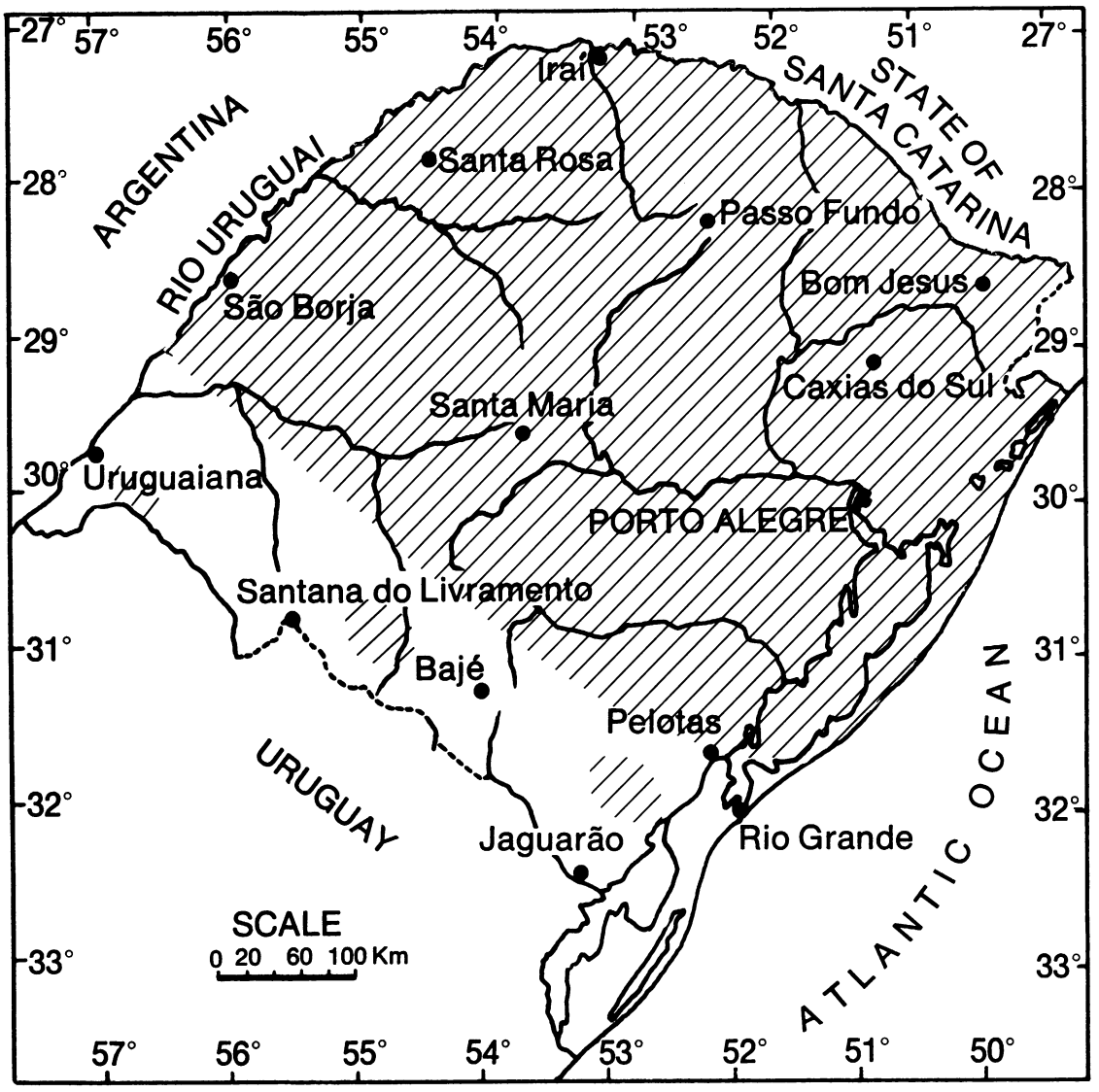
MAP 32. Geographical distribution of *Polyborus plancus* in Rio Grande do Sul.

clearings, suburban areas. In contrast with *M. chimango,* this species seldom found far from woodland. Despite reputation for association with cattle, in Rio Grande do Sul it is more attracted by wooded country than by livestock. *Milvago c. chimachima.*

FIELD MARKS: While easily separable from *M. chimango* when perched or seen head on, it is more difficult to distinguish these two species when flying away from observer. Whitish areas on wings and tail of *chimachima* are lighter and surrounding brown areas much darker than on *chimango,* creating sharp color contrast lacking in latter species. In addition, whitish area of tail much more extensive in *chimachima* than in *chimango.*

SIZE: One adult male: 396 mm, 256 gr. One immature female: 388 mm, 283 gr.

SOFT PART COLORS: Adult male: tarsus and bill light gray; iris, eye ring, and cere yellow-orange. Immature female; tarsus grayish



MAP 33. Geographical distribution of *Milvago chimachima* in Rio Grande do Sul.

white; bill bluish white with pale yellow culmen; cere and eye ring bluish white; iris brown.

VOICE: (R) Single, sharp, spitting cry: "pschEEEeh" dropping in pitch at end.

BREEDING: Individual carrying nesting material seen on September 10, 1971. Male collected in NE highlands on November 1, 1970 had only moderately enlarged testes; ovary of immature female of May 13, 1972 inactive. Adult accompanied by two birds in immature plumage seen October 25, 1970 at foot of NE escarpment.

BEHAVIOR: Although occasionally accompanies livestock and even perches on their backs, this species much less noted here for these traits than *Molothrus bonariensis* or *Machetornis rixosus*. Another factor in this connection is that principal cattle-raising areas of state are at limit of range of species. Yellow-headed Caracaras frequently feed on dead animals along highways, and individ-

uals often patrol roads on wing for carrion. They also occasionally appear on ocean beaches to feed on washed up animal refuse, but not in numbers *chimango* does. Immature individual collected at Fazenda do Pompéu had ball of hair and some very small insects in stomach.

SPECIMENS: MCN: 80, 81, 91, 119, 124–126, 136, 137, 157, 160, 161, 813–814*. AMNH: 313863–313865.

Milvago chimango
Map 34

Chimango Caracara
Chimango

DISTRIBUTION AND STATUS: Usually abundant resident in most parts of state, but found only occasionally and at scattered points N of 28°S. Other gaps exist in generally solid distribution. I have never found it in block bounded by 30°00'S, 30°30'S, 50°30'W and 56°00'W, although I have spent several periods of from two to four days each there at Fazenda São Roberto. Seemingly typical *chimango* habitat, this area of extremely shallow soils on basalt base presumably lacks some component important to it. Occupies open grasslands, agricultural country, forest edges. Although most abundant in open campo areas, *chimango* also accepts more sheltered situations. There are usually a few, along with *M. chimachima,* on small Gramado golf course which is entirely surrounded by forest. It sometimes appears in surprising numbers along ocean beach. On April 19, 1972, it was most common bird on shore for many kilometers N of Capão da Canoa. Although this species registered at widely scattered points in every season, my notes replete with comments on temporary scarcities in areas which appeared appropriate for them. As I have also seen them in very large concentrations, I speculate there is considerable local movement dictated by food supplies and that good temporary food source drains individuals from surrounding countryside for some distance. *Milvago c. chimango.*

FIELD MARKS: All brown except for white patches in wings and at base of tail. See also under *M. chimachima.*

SIZE: One male: 358 mm, 242 gr. Three females: 358–375 mm, 240–274 gr.

SOFT PART COLORS: One male: tarsus Light Yellow; bill Moderate Greenish Yellow; iris Strong Brown; eye skin orange-yellow; cere pink. Two females; tarsus light gray to gray; bill tannish gray to brownish gray with lighter tip; iris brown; eye skin and cere white to grayish white.

VOICE: (R) A single screech, quite similar to that of *Buteo magnirostris,* but less penetrating and with less modulation: "eeeeeeeee e e," and sometimes much flatter: "aaaaaaaaaa eh."

BREEDING: On September 30, 1974 I saw unsuccessful copulation attempt by individual which flew from some distance and without any apparent preliminaries mounted bird standing on tiny mound on ground. After getting no cooperation it slipped to ground where it walked around for few moments before flying away. On November 17, 1972 one was nest building at Fazenda São José. Two females and a male collected October 23, 1972 and November 4 and 3, 1975, respectively, had active gonads, while female of January 4, 1976 had inactive ovary.

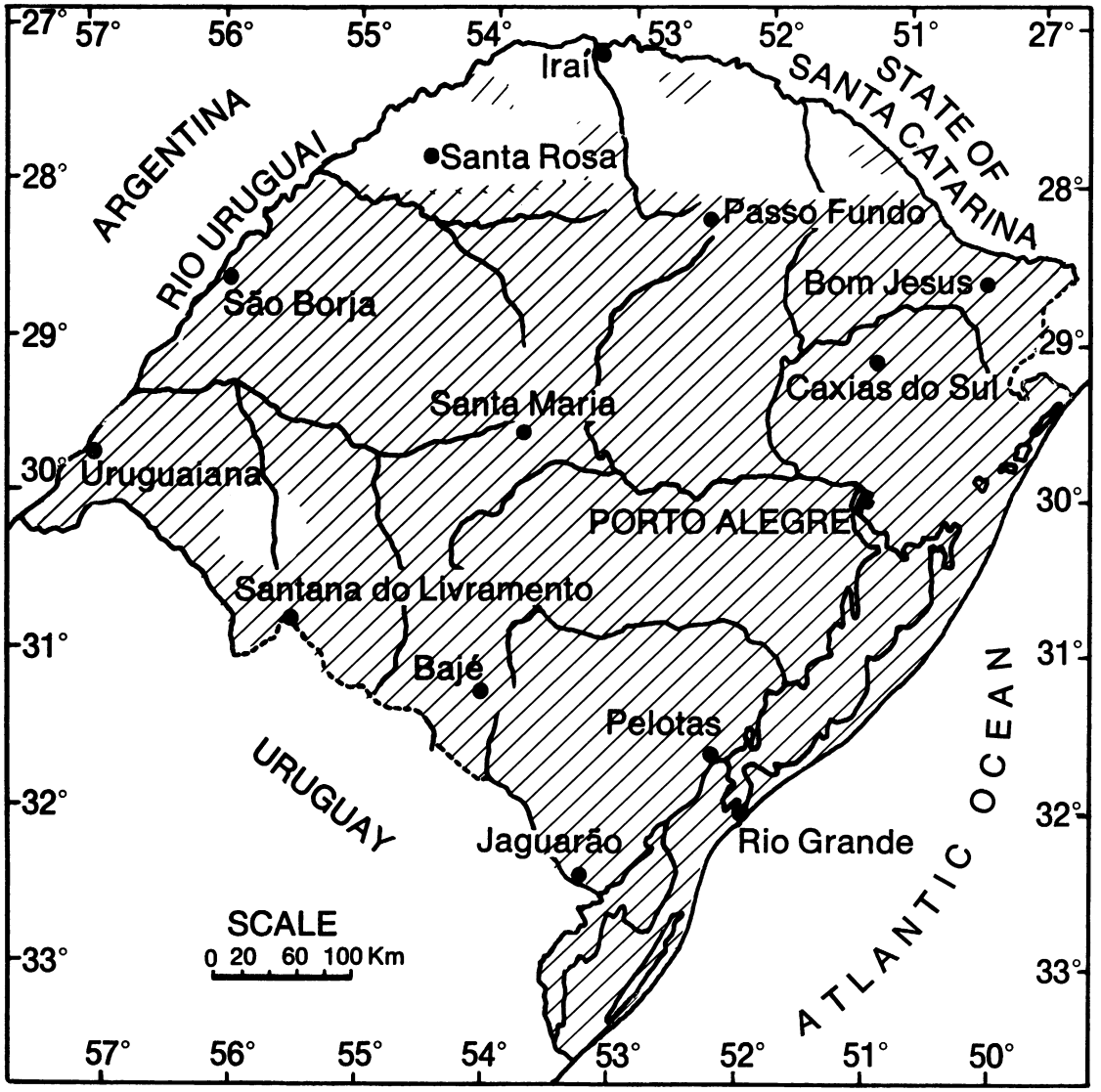
BEHAVIOR: Large concentrations often occur. On one occasion I saw from 30 to 40 in recently plowed field, while many more were on ground along edge and every fence post held one. I have not seen it patroling highways in fashion of *M. chimachima,* but it does scavenge animals killed on road. On beach S of Cassino one carried apparently dead *Charadrius collaris,* but I could not tell whether it alive or dead when taken. Voss (personal commun.) saw one catch small tyrannid in flight, and another carrying live *Nothura maculosa* chick. Although species may do some damage to sickly lambs, it generally tolerated by ranchers, in contrast to their attitude toward *Polyborus plancus.*

SPECIMENS: MCN: 10, 14, 16, 22, 41, 44, 45, 59, 60, 62–73, 82, 90, 93–101, 103–107, 114, 115, 118, 128–134, 156, 184, 185, 811, 812*. MN: 31850*. AMNH: 45091, 313866–313868, 823994*.

Herpetotheres cachinnans
Map 35

Laughing Falcon
Acauã

This species' voice recorded near Garruchos



MAP 34. Geographical distribution of *Milvago chimango* in Rio Grande do Sul.

August 5, 1973 (Belton, 1978a). No other record for state. *Herpetotheres c. cachinnans.*

Micrastur ruficollis
Map 35

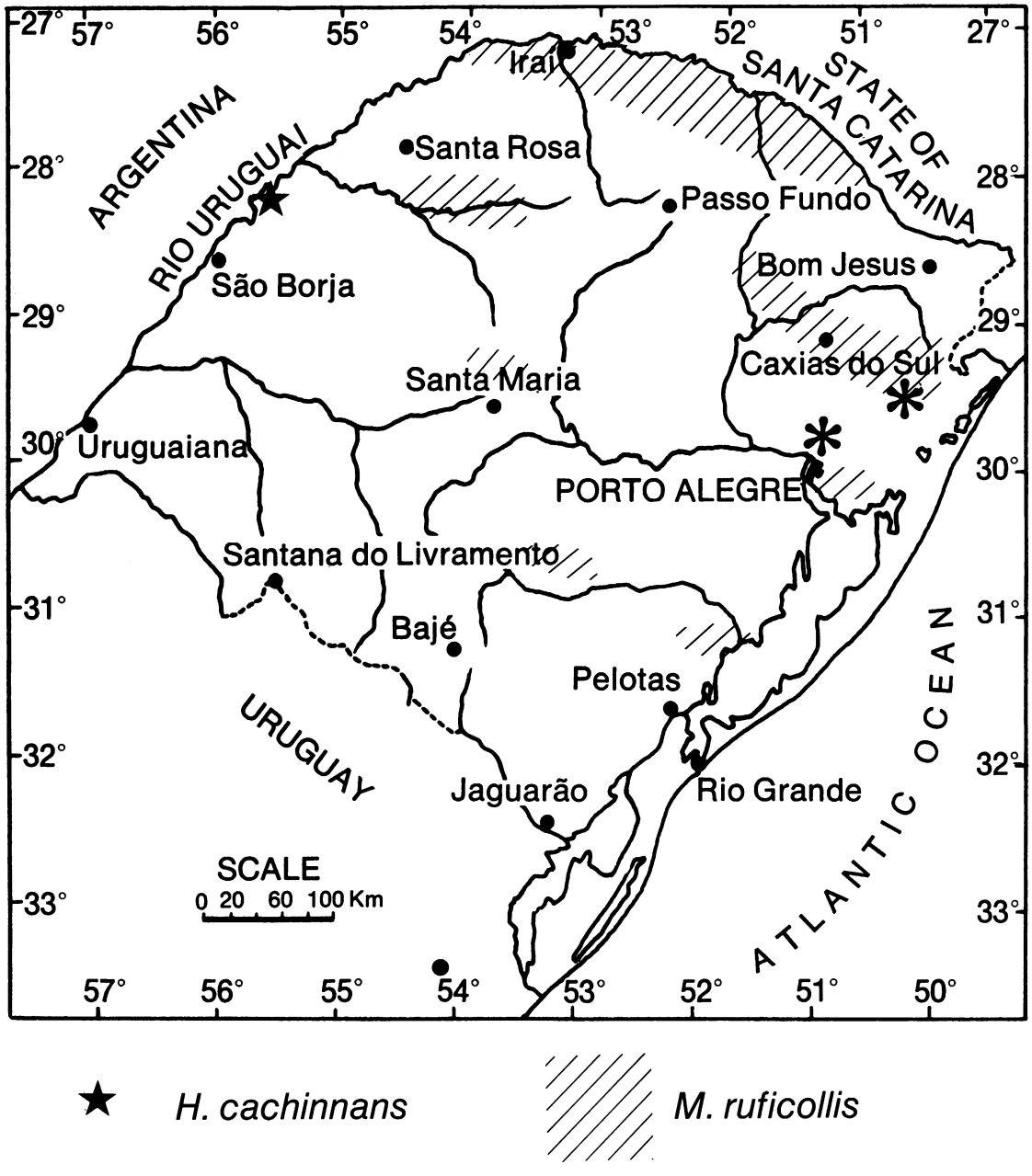
Barred Forest-Falcon
Gavião-caburé
(Pygmy-Owl Hawk)

DISTRIBUTION AND STATUS: Uncommon resident of forests, usually low and often in dense vegetation, found at scattered points in northern highlands, with one record for SE hills. There are old records for Porto Alegre and São Lourenço, but questionable whether species still exists in those areas. *Micrastur r. ruficollis.*

FIELD MARKS: Rufous upper breast; very fine black and white barring on remaining underparts; graduated, white tipped, cuckoo-like tail.

SIZE: Two males: each 340 mm, 138–144 gr.

SOFT PART COLORS: Tarsus yellow; bill black with yellow at base of mandible; orbital



MAP 35. Geographical distribution of *Herpetotheres cachinnans* and the two species of *Micrastur* found in Rio Grande do Sul.

skin yellow to orange-yellow; iris dull yellow to brownish white.

VOICE: (R) Has variety of vocalizations, including: short, staccato crescendo cackle

with wide variety of timing and pitch; long monotonous series of slow, well-spaced questioningly-inflected "keow's," which sometimes evolve gradually from slow series of two-or-three syllable desultory squawks; four syllable phrase in rhythm of "oh! look at that!" with first syllable lower and emphasis on second and fourth; and still another with three well-spaced calls going up scale to top fourth which starts rapid four-syllable descent. All loud and usually repeated tirelessly in early morning.

BREEDING: Male collected November 28, 1970 had moderately enlarged testes, while those of one of May 24, 1974 inactive.

SPECIMENS: MCN: 821*. MN: 31849*.

Micrastur semitorquatus
Map 35

Collared Forest-Falcon
Gavião-relógio
(Clock Hawk)

DISTRIBUTION AND STATUS: Rare. Ihering (1899a) reported it from near Taquara without date, and E. Willis (personal commun.) heard one calling at Fazenda das Amoreiras on February 1, 1976. Male was found dead close to wall of church near São Leopoldo on April 21, 1981. Information below supplied by MCN from that specimen.

SIZE: 555 mm, 555 gr.

SOFT PART COLORS: Tarsus yellow; bill gray; cere green; iris brown.

SPECIMEN: MCN: 1800.

Falco sparverius

American Kestrel
Quiriquiri (onomatopoetic)

DISTRIBUTION AND STATUS: Common to abundant resident in open campo, agricultural land, clearings, and marshes in all parts of state. Also found in cities. Pinto (1964) reported *F. s. cearae* from Bom Jesus, from where he also reported specimens of *F. s. cinnamominus*. I had two males from Tôrres which appeared to be intermediate between these races, having gray tips on tails, but long wings (191–193 mm) and with only black on inner web of outer remiges being the subterminal black band. Study of MCN skins required to determine boundaries and area of intermingling of these races in Rio Grande do Sul.

SIZE: Two males: 250–260 mm, 106–107 gr. One female: 285 mm, 120 gr.

SOFT PART COLORS: Tarsus yellow; bill gray, very light at base shading to black at tip; mandible of female white at base shading to gray at tip; iris brown; cere orange, facial skin pale orange in male, both yellow in female.

VOICE: High-pitched, scolding "quiri quiri," hence vernacular name.

BREEDING: On August 19, 1971, female of pair soaring and swooping at edge of patch of forest lit on exposed branch and shortly afterward male soared to her and mounted directly for neat and apparently successful copulation. Male then immediately flew away, leaving female on perch. I witnessed another copulation September 19, 1974. On October 18, 1974, pair was nesting in abandoned *Myiopsitta monachus* nest at Fazenda São Francisco. On December 3, 1973, one was utilizing hole in gatepost on Highway BR-290 west of Porto Alegre, and on December 18, 1974, one of pair nesting high in hollow of large tree at Fazenda das Amoreiras displayed strong agitation at my approach when I was still 20 m from tree. Male of October 5, 1972 had moderately enlarged testes, while female of February 19, 1975 had inactive ovary.

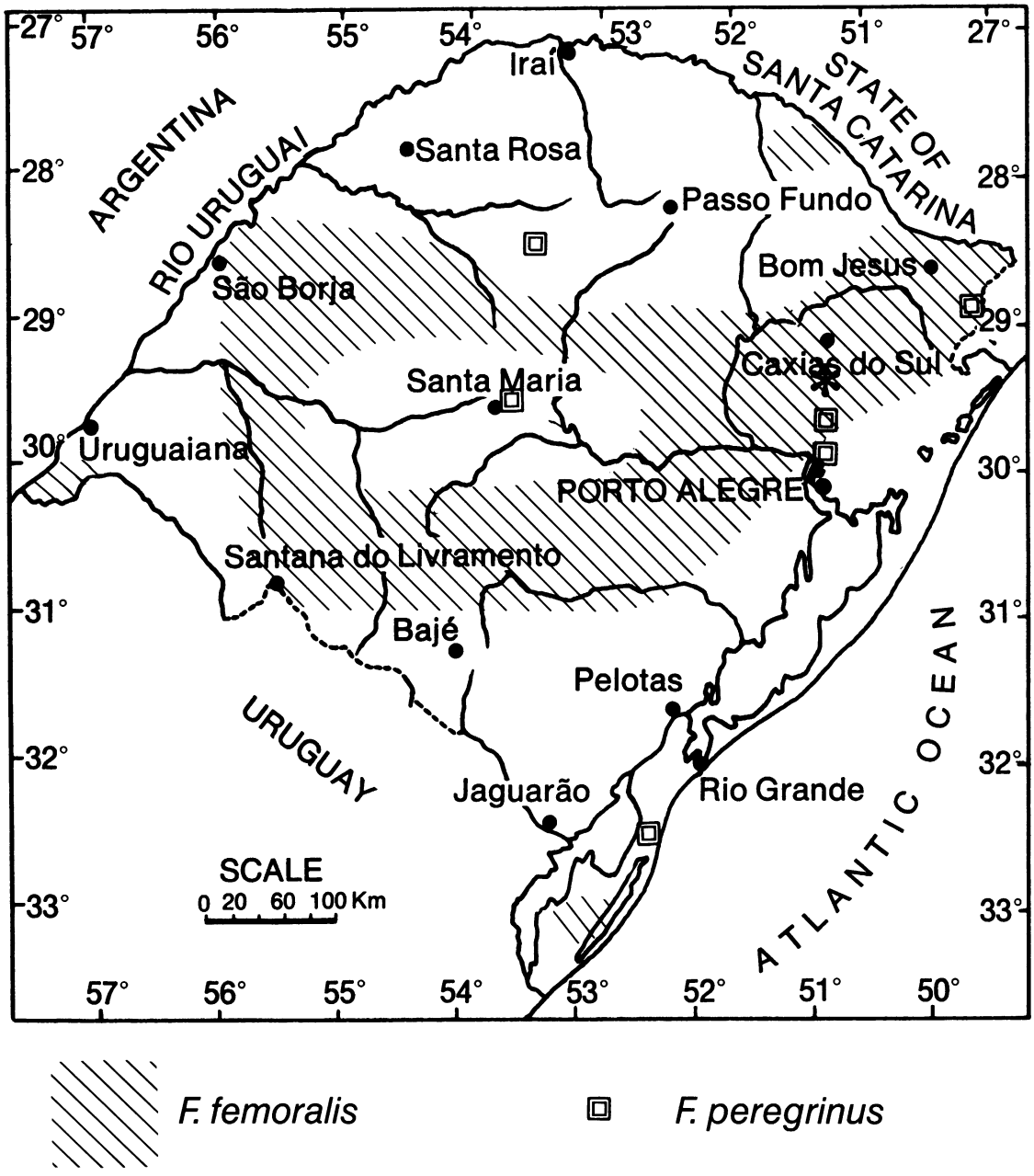
BEHAVIOR: Telephone poles and wires probably most frequently occupied perches during day by kestrels here. When traveling it is customary to find members of pair each occupying poles separated by 200 to 400 m. Stomach of one contained mainly insects and spiders. Voss (personal commun.) has seen them catching bats at dusk in Porto Alegre. One took dust bath in middle of dirt road N of Canela on March 9, 1971.

SPECIMENS: MCN: 27, 74, 75, 83–86, 108–112, 116, 122, 123, 135, 154, 155, 162–164, 172, 178–183, 193, 438, 439, 586, 819–820*. AMNH: 45012, 313895–313900, 321558, 321559, 321802, 823995*.

Falco femoralis
Map 36

Aplomado Falcon
Falcão-de-coleira
(Collared Falcon)

DISTRIBUTION AND STATUS: Uncommon resident of open grasslands, often near woods, widely scattered throughout much of state,



MAP 36. Geographical distribution of three species of *Falco* in Rio Grande do Sul.

but with littoral records only from far S, and only one record N of 28°S. *Falco f. femoralis.*

BREEDING: Near São Francisco de Paula on January 11, 1982, Voss and Scott (*in litt.*) saw in two different places one adult with two young that vocalized continuously while following adult or perched in low trees.

BEHAVIOR: One eating *Vanellus chilensis*

on roadside took all flesh off neck but left remainder intact when it abandoned it at approach our car.

Falco peregrinus
Map 36

Peregrine Falcon
Falcão-peregrino
(Peregrine Falcon)

Male of year banded October 10, 1973 at 26°N, 97°10'W in lower Rio Grande valley of Texas was shot November 14, 1973 near 28°30'S, 53°30'W in Mun. of Pejuçara (*in litt.*, CEMAVE, Brasília). One seen in late March 1974 at quarry on outskirts of Santa Maria (Belton, 1978a). Subspecies not determined. Subsequently, J. Albuquerque noted (personal commun.) appearances of this species among high buildings of downtown Porto Alegre, but I have not observed it there myself. It has also been reported several times in recent years from São Leopoldo, Sapucaia do Sul, Porto Alegre, and Aparados da Serra National Park between December 14 and April 8 by Voss and colleagues (Voss and da Silva, unpub. ms.; Voss, 1979; Voss, personal commun.), whereas Ridgely (*in litt.*) reported adult female N of Taim on November 10, 1980.

Falco deiroleucus
Map 36

Orange-breasted Falcon
Falcão-de-peito-vermelho
(Red-breasted Falcon)

Only record for this species is female collected near Nova Petrópolis August 28, 1882, reported by Berlepsch and Ihering (1885).

FAMILY ANATIDAE

Dendrocygna bicolor
Map 37

Fulvous Whistling-Duck
Marreca-caneleira
(Cinnamon Duck)

DISTRIBUTION AND STATUS: Common to moderately abundant resident in marshes, rice fields, grassy or weedy lakes, and less often in open water along entire littoral and through central trough to W tip. No records for Mostardas peninsula but probably occurs there. Compared with most other common species of Rio Grande do Sul ducks, relatively scarce in small bodies of water. However, I have found it in sizable numbers in larger marshes and in regions of extensive rice plantings, and hunters encounter substantial flocks during winter hunting season. Nelz (personal commun.) has seen surface of Banhado do Pontal in mid-September literally covered by this species. Wild individuals come regularly to open ponds at zoo, Sapucaia do Sul, where food supply constant. I question whether large winter numbers made up entirely of more scattered flocks found locally at other seasons and suspect migratory influx from oustide. This can only be verified when local banding started in 1979 produces information.

FIELD MARKS: Cinnamon-colored with black wings, showing prominent whitish rump in flight.

BREEDING: Wing-clipped pair in Nelz garden pond in Gramado hatched six out of seven eggs on October 7, 1975. Same pair hatched three out of seven eggs on December 30/31, 1974. Male and female collected February 7, 1974 had greatly enlarged gonads. Female with approximately 10 young, still partly in down, seen March 20, 1972.

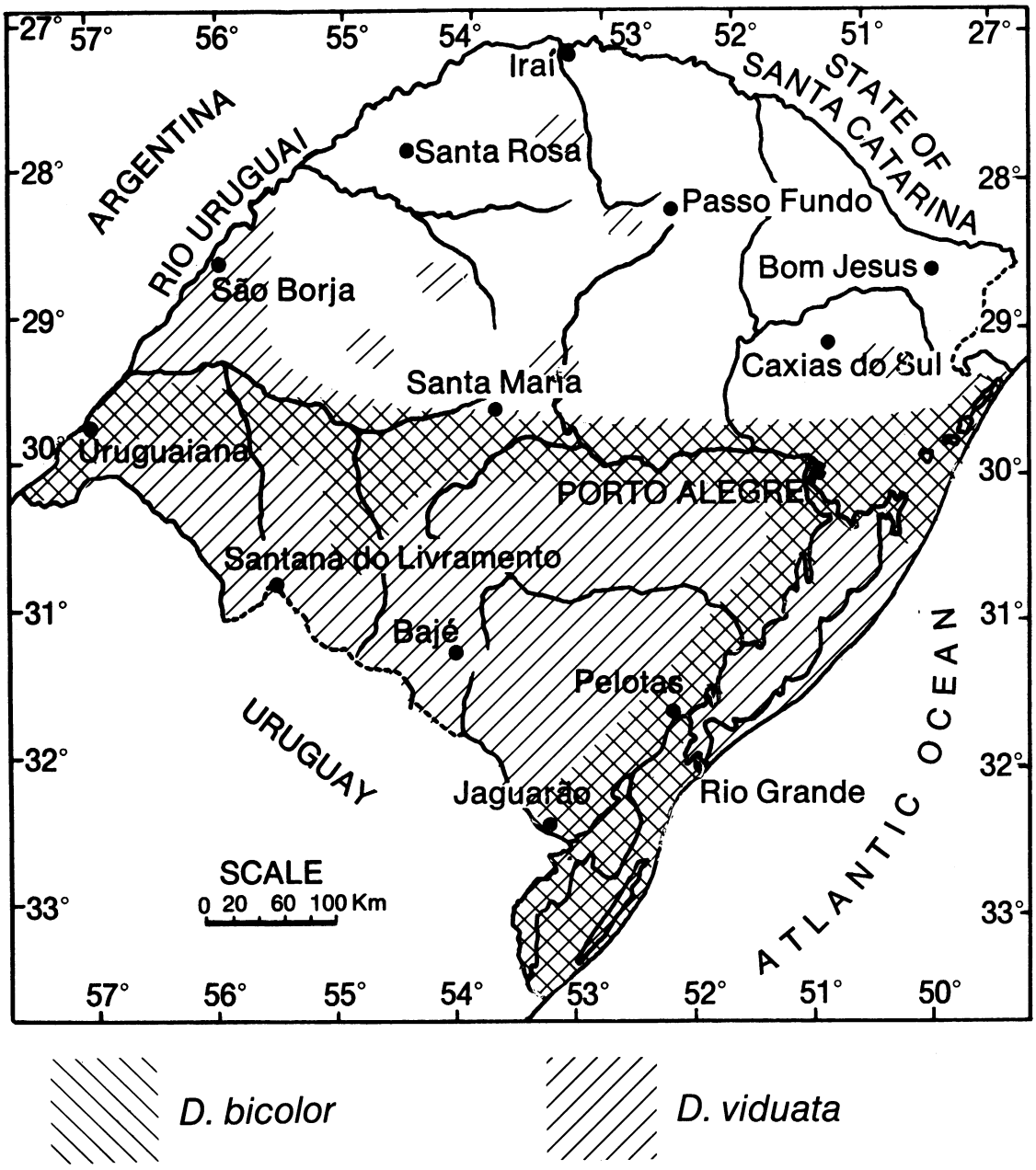
BEHAVIOR: December, 1974, nest in Nelz pond was placed in clump of elephant grass inside pond. About December 26 water level rose several inches overnight due to heavy rains. Nelz reported that during night ducks raised level of nest by bending grass stalks from clump and tucking them under so nest was elevated sufficiently to be above rising water.

SPECIMENS: MCN: 207, 208, 210, 212, 357, 667–668*.

Dendrocygna viduata
Map 37

White-faced Whistling-Duck
Marreca-piadeira or *Irerê*
(Whistling Duck) (onomatopoetic)

DISTRIBUTION AND STATUS: Very abundant resident in marshes, flooded fields, stock ponds and lakes, along entire littoral, across state S of escarpment, in far W north to beyond Garruchos, and occasionally at scattered localities in northern highlands. I once saw flock of about 12 on ocean beach between Cassino and Uruguayan border. Certainly most commonly seen and probably most



MAP 37. Geographical distribution of the two species of *Dendrocygna* found in Rio Grande do Sul.

abundant Rio Grande do Sul duck. It not unusual to see it in flocks of hundreds at any time of year. On October 10, 1974 at Banhado do Pontal, this small marshy lake of some 2 to 3 sq km had so many *D. viduata* I could only estimate their numbers as "tens of thousands."

FIELD MARKS: White of face, chin, and throat contrasts with black rear portions of head and neck. At times white of face heavily washed with rufous.

SIZE: One female: 483 mm.

SOFT PART COLORS: Tarsus gray with black on lower front; maxilla black with gray tip

and black nail; mandible black mottled with pinkish gray; iris chestnut; eye ring white.

VOICE: (R—captive) Rapid three syllable sharp whistle "see-see-sEEEEu," last syllable accented, more prolonged, and dropping slightly at end. Often emitted in flight. Alternative Brazilian name is onomatopoetic version of this call. Also short, not very sharp "wheep."

BREEDING: Nesting peaks in February. Most birds in pairs then, rather than in flocks common during most of year, although some flocks still encountered. On February 13, 1975 adult pair seen with nine downy young. Female collected February 11, 1974 had fully developed egg in oviduct. In nests under observation at Lagoa dos Quadros, eggs hatched between February 15 and 20. Adults with young are frequent sight during March and April. On April 28, 1974 I saw single adult with 21 young, all about one-half adult size. On May 6, 1973, I saw one flock of 12 about one-half size and an adult pair with single one-fifth size young. Two three-quarter sized young, still with dark faces, seen July 9, 1973.

BEHAVIOR: Common form of display of this species, not seemingly associated with feeding, involves submerging from normal swimming position by leaping slightly into air and doing sharp "jackknife" dive vertically into water. This behavior seems contagious and is often indulged in by many individuals together, each timing its dives at random.

SPECIMENS: MCN: 196, 209, 211, 355, 426, 427, 666*, 1776.

[*Dendrocygna autumnalis*]

[Black-bellied Whistling-Duck]

Although Pinto (1964) listed Porto Alegre among locations where this species has been found, he did not refer to a particular specimen. I have been unable to find any specific record of this duck in Rio Grande do Sul, and my inquiries among hunters convince me it is generally unknown here. Under these circumstances, I omit it from my state list.

Cygnus melanocoryphus
Map 38

Black-necked Swan
Cisne-de-pescoço-preto
(Black-necked Swan)

DISTRIBUTION AND STATUS: Uncommon resident of marshes, lakes, and lagoons in S half of littoral. I have recorded it as far N as 31°S. Sick, do Rosário, and Azevedo (1981) saw 157 on lake near coast in southern Santa Catarina on April 28, 1980, indicating possibility of species being found along entire Rio Grande do Sul littoral. Occasionally seen in substantial flocks, though Santa Catarina sighting is largest of which I know. Approximately 100 were swimming on surface of Lagoa dos Patos near S end on September 16, 1970, and about 80 were in one of two large flocks in Taim marsh on November 27, 1972. Although reputed to be migratory (Blake, 1977, p. 219), I have no evidence of other than local movement. Numbers may be augmented in winter by arrivals from S, but banding needed to verify.

FIELD MARKS: Black head and long black neck.

BREEDING: Kaempfer collected female on nest with six eggs at Arroio del Rei September 2, 1931. Sick (personal commun.) was informed that these swans nest in sarandi thickets on eastern edge of Lagoa Mirim.

BEHAVIOR: Utilize large expanses of open water more frequently than other state waterfowl.

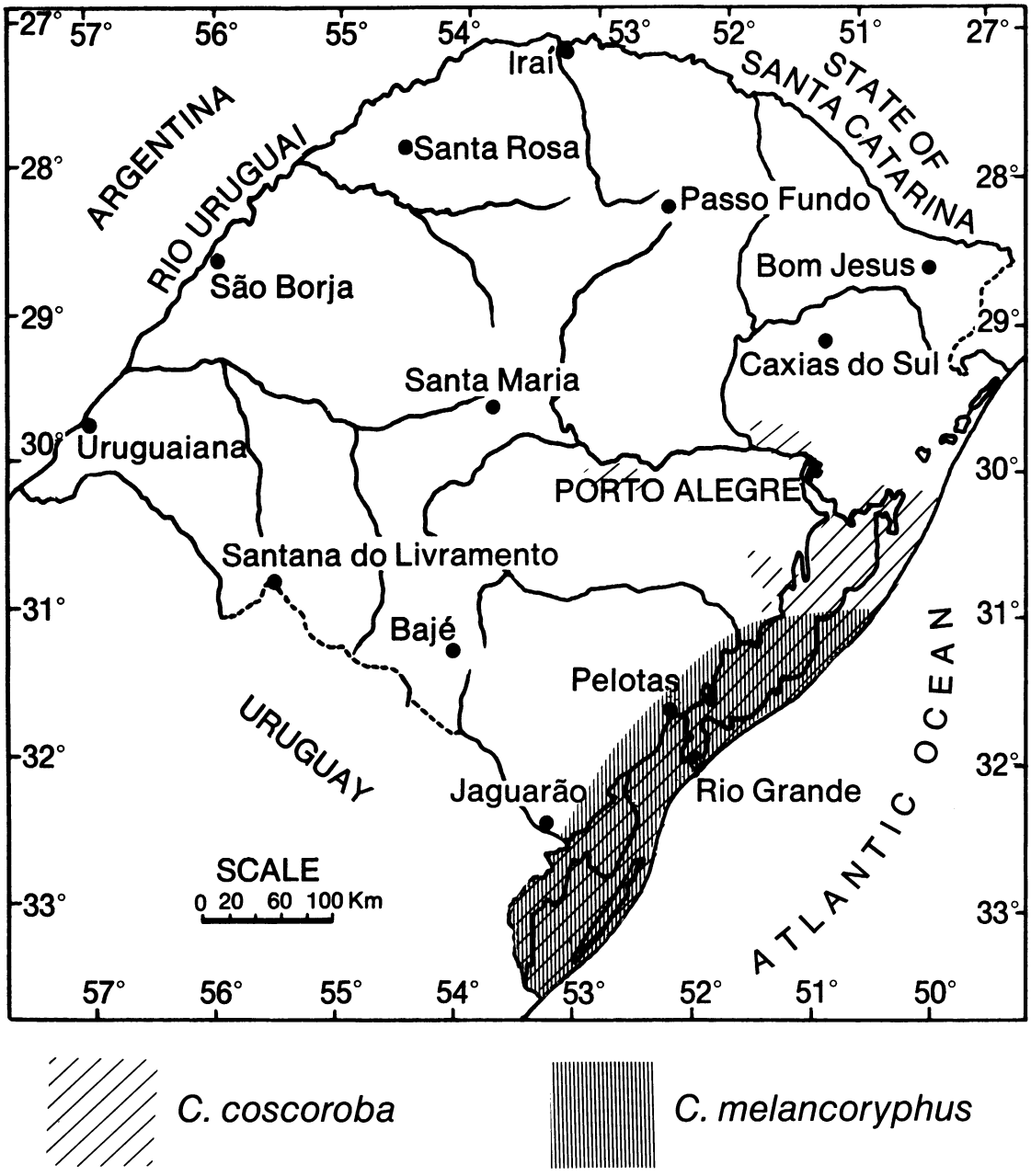
SPECIMENS: AMNH: 321541–321543.

Coscoroba coscoroba
Map 38

Coscoroba Swan
Capororoca

DISTRIBUTION AND STATUS: Uncommon, along littoral near larger marshes, lakes, lagoons and on moist pastures probably as far N as 30°S, although most northerly recent record is near Camaquã. Local residents of Cachoeira do Sul say in years past this species regularly seen near there, and hunters (personal commun.) saw it both E and W of Porto Alegre some 10 to 15 years ago. On July 29, 1974 near Cassino I saw three individuals flying N over ocean about 2 km offshore, presumably heading for S end of Mostardas peninsula. Although Cuello and Gerzenstein (1962) reported this species as winter migrant into Rio Grande do Sul, it is year-round resident, and as noted below, largest numbers have been seen in summer.

FIELD MARKS: All white except for black wing tips and pink bill and feet.



MAP 38. Geographical distribution of *Coscoroba coscoroba* and *Cygnus melancoryphus* in Rio Grande do Sul.

BREEDING: On February 13, 1974 two family groups seen in Taim marsh with almost full-sized young in immature plumage. One group included four young. Ridgely (*in litt.*) saw pairs at Taim with seven and five young respectively November 10, 1980.

BEHAVIOR: Usually found in scattered pairs or family groups, especially in extensive moist flatlands E of Lagoa Mirim, but occasionally occurs in concentrations. At Taim marsh on November 27, 1972 I counted approximately 20 in one flock and saw another large group

in distance. Largest concentration I have observed was 43 individuals in remnant of mostly dry Lagoa do Peixe January 28, 1974.

SPECIMENS: AMNH: 321242, 321544.

Cairina moschata
Map 39

Muscovy Duck
Pato-do-mato
(Forest Duck)

This very large resident black duck occurs in wooded areas along W side of Lagoa dos Patos from Rio Camaquã N through lower elevations to Tôrres, at scattered points in central trough and southern hills, and in W in Banhado São Donato. Now very uncommon due to destruction of habitat and overhunting, in July 1947 it was normal to see occasional groups of four or five fly by in Banhado do Colégio near Camaquã. I saw 12 shot in one day by five hunters. Banhado do Colégio has now been converted to rice and cattle land and for some years there has been permanent closed season on this species. With large size and all blackish plumage relieved only by white wing patches, it is unlikely to be confused with any other Rio Grande do Sul bird except its domesticated version.

SPECIMEN: USNM: 461535*.

Sarkidiornis melanotos
Map 40

Comb Duck
Pato-de-crista
(Crested Duck)

DISTRIBUTION AND STATUS: Scarce. Limited to central trough between Porto Alegre and Santa Maria. Usually seen alone or in pairs in flooded areas, rice fields, or marshes, but some years ago hunters found approximately 30 at one time in Banhado do Pontal (personal commun.). Registered in all seasons and apparently resident, although it does seem to move back and forth through lower Jacui valley. *Sarkidiornis m. sylvicola.*

FIELD MARKS: Male easily distinguished by large size and prominent fleshy growth rising from base of maxilla. Smaller female lacks comb, but is only local duck with heavily spotted white head and neck.

BREEDING: Adroaldo Ferreira (personal commun.) has seen species nesting in holes in trees near Cachoeira do Sul.

Callonetta (Anas) leucophrys
Map 40

Ringed Teal
Marreca-coleira
(Collared Duck)

DISTRIBUTION AND STATUS: Scarce. Found by Ihering (1899a) in Rio Grande market. More recent specimens taken in June and August near Santa Vitória do Palmar and Camaquã. Primarily winter visitor, but Ridgely (*in litt.*) found "a lovely pair, obviously mated, in big open grassy marsh S of Pelotas November 9, 1980."

SIZE: One male: 366 mm, 450 gr.

BREEDING: Male collected August 10, 1974, generously donated to my collection by Nair Lopes de Almeida, had partially enlarged testes.

SPECIMEN: MCN: 673*.

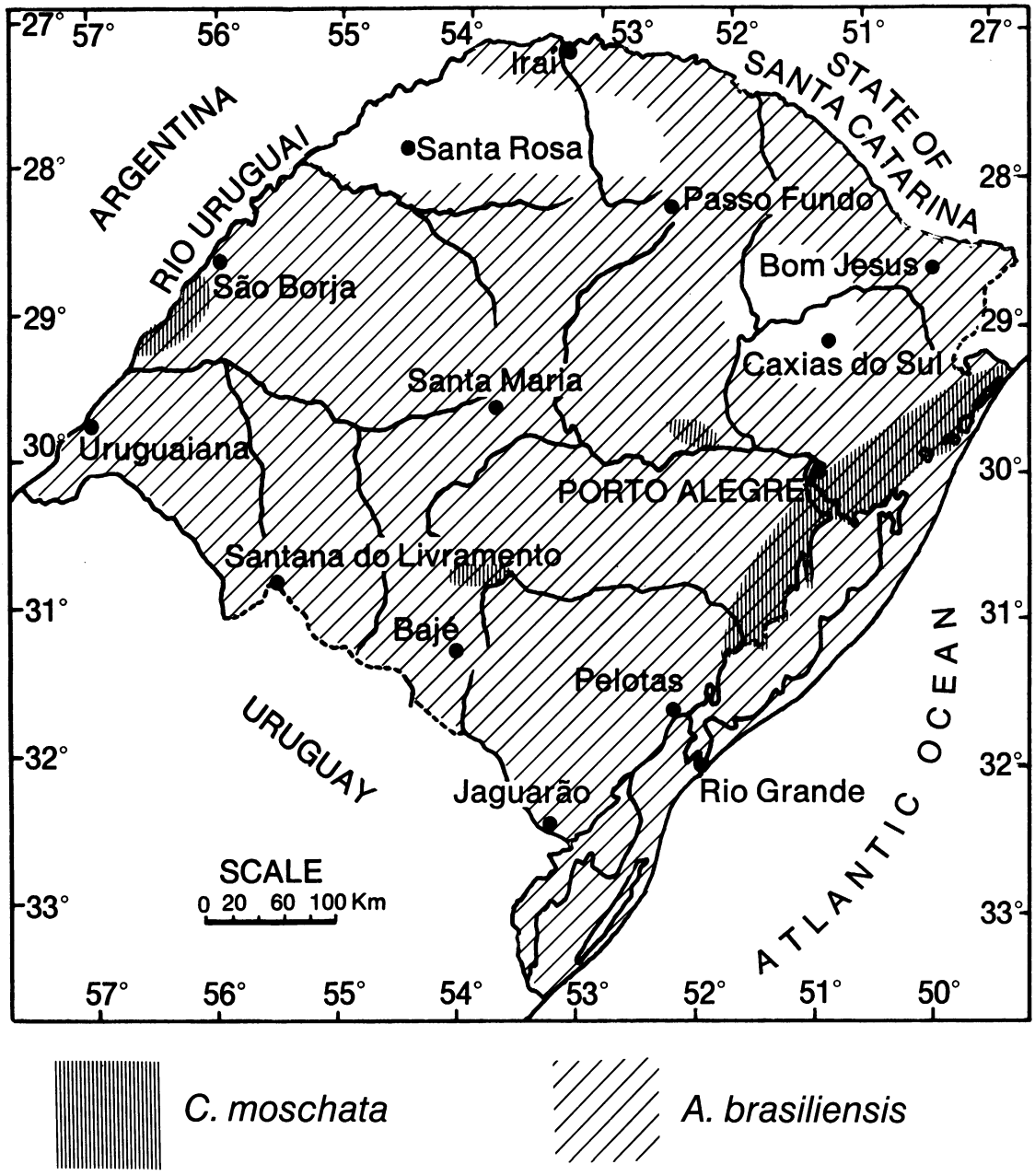
Amazonetta brasiliensis
Map 39

Brazilian Duck
Marreca-pé-vermelho
(Red-footed Duck)

DISTRIBUTION AND STATUS: Abundant resident, most widespread Rio Grande do Sul duck, being found in almost every section of state with occasional gaps in northern highlands and extreme N. Occupies marshes, ponds, lakes with vegetation. Only duck usually found in small lakes surrounded by forest which occur in northern highlands. *Amazonetta b. ipecuturi.*

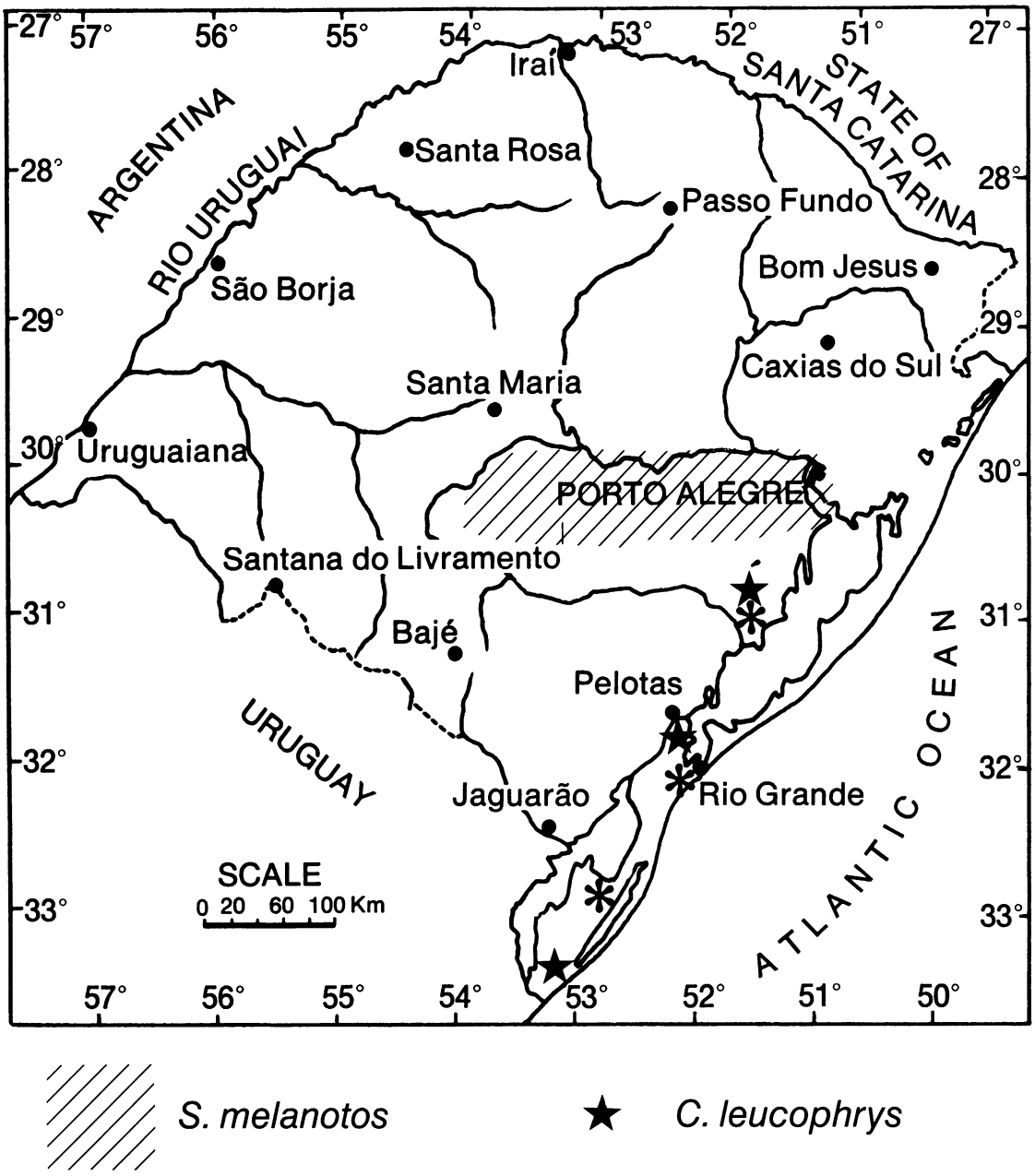
FIELD MARKS: Male has very light area on side of head behind eye and running down neck, plus dull red bill and feet. Female has two white spots between bill and eye. Both sexes show extensive white in trailing edge of wing in flight.

BREEDING: Appears to be practically year-round breeder in Rio Grande do Sul. I have noted copulation on July 14, September 9, and November 14, and have seen adults with ducklings on September 16, November 12, December 12, January 12, March 7, May 6, 10, 11, 13, 25, and June 17. On December 14, 1974 we found nest on ground in center



MAP 39. Geographical distribution of *Cairina moschata* and *Amazonetta brasiliensis* in Rio Grande do Sul.

of multistemmed bush in high-grass area at edge of short grass pasture, perhaps 100 m from slough in one direction and river in other. It contained 14 eggs, and was made of grass and leaves, with round "crown" of down around inner edge covering outer eggs, leaving only center ones visible. Male and female left immediate vicinity of nest as we



MAP 40. Geographical distribution of *Sarkidiornis melanotos, Calonetta leucophrys,* and *Anas bahamensis* in Rio Grande do Sul.

approached. Second female, which was apparently on nest, left only as we reached it.

BEHAVIOR: Usually seen in pairs or small flocks, almost as frequently as *Dendrocygna*

viduata, but in smaller numbers. Seldom forms large bands, but on January 29, 1976, near Montenegro there were approximately 300 around edge of small reservoir.

SPECIMENS: MCN: 300, 306, 307, 323, 407, 505, 1782. MN: MCN specimens 498, 499. AMNH: 321546, 321800.

Anas sibilatrix
Map 44

Southern Wigeon
Marreca-oveira
(Spotted Duck)

Scarce visitor. I know of only five records, but it probably occurs more frequently, for Cuello and Gerzenstein (1962) reported it abundant in winter in Uruguay. Found in SE near Camaquã, Bagé, and Lagoa do Peixe in July, October, and February, with no date available for one collected by Ihering (1899a) at Rio Grande. Pair on medium-sized pond NE of Bagé on October 23, 1974 might have been nesting, but no such evidence observed and they were not seen there on following December 1 or January 27.

SPECIMENS: MCN: 465. MN: MCN specimen 497.

Anas flavirostris
Map 41

Speckled Teal
Marreca-pardinha
(Little Brown Duck)

DISTRIBUTION AND STATUS: Common resident, across S half of state, in central and NE highlands N to 28°S, and rarely in central trough. Usually seen in pairs or small groups on small ponds in open grassland. In late summer assembles in flocks of up to 500 or more on larger bodies of water: more than 100 seen on reservoir N of Jaguarão January 24, 1975; about 500 at Lagoa do Peixe January 28, 1974; flocks totaling 500 to 1000 near highway at Taim marsh February 8, 1974. There is notable reduction in numbers found in ponds of NE highlands after spring breeding season. Perhaps these and birds from other regions make up late summer flocks. Implication by Blake (1977, p. 231) that this species only winters here clearly erroneous. I have seen no evidence of migratory influx from S in winter as Cuello and Gerzenstein (1962, p. 44) reported for Uruguay, but this can only be determined by banding. *Anas f. flavirostris.*

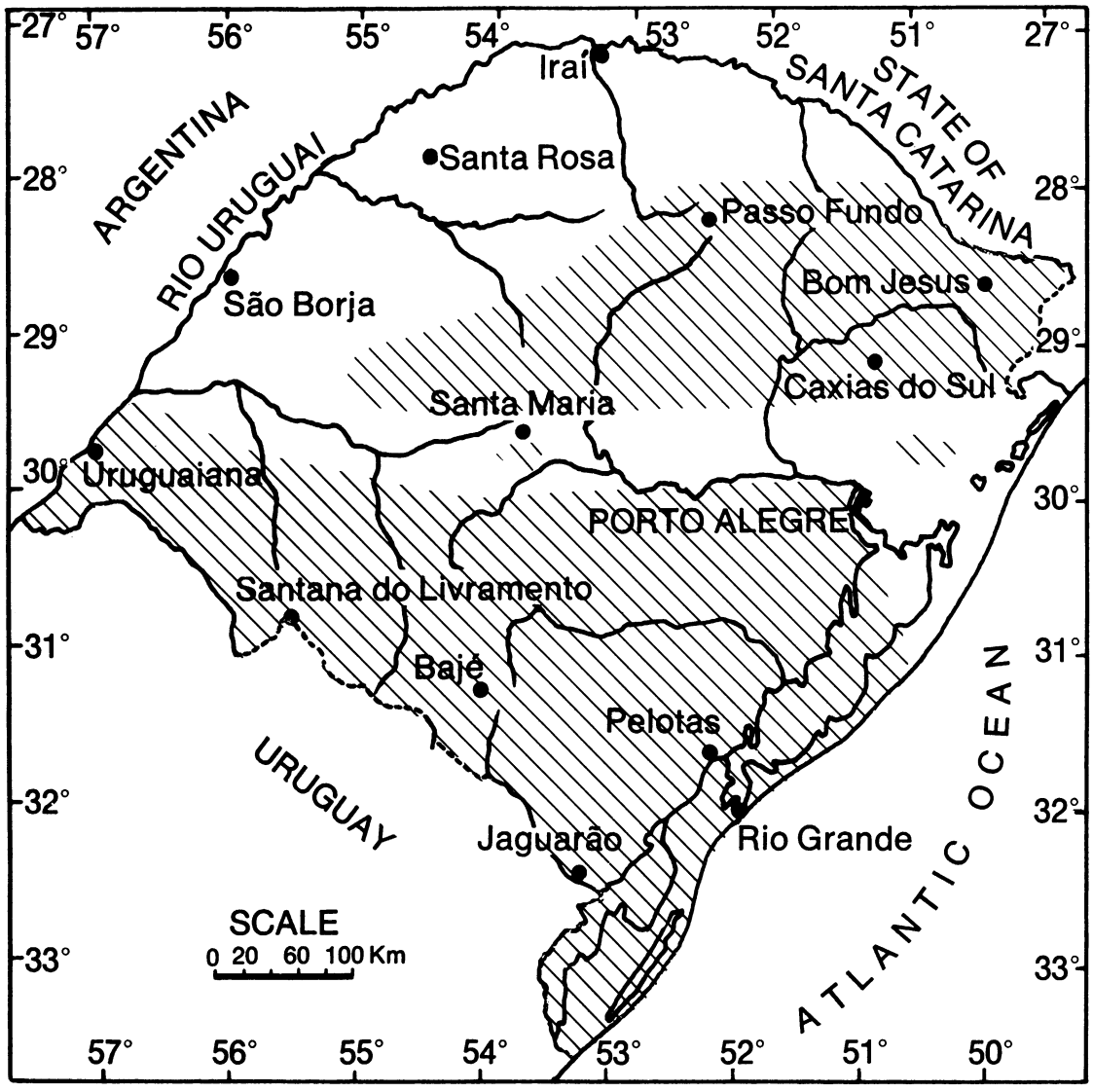
FIELD MARKS: Similar to *Anas georgica* but smaller with darker, shorter, more rounded head and shorter tail.

SIZE: One male: 406 mm, over 400 gr. One female: 375 mm, 374 gr.

SOFT PART COLORS: Tarsus greenish gray with black splotches; maxilla light greenish with culmen and leading edge black, proximal end yellow; mandible light greenish with dark (female) or greenish yellow (male) tip. Iris chestnut (male).

VOICE: (R—captive) Rattley "cricket cricket" and a semi-cackling "cut EEEEE c c c cut cut EEEEE cut." On July 22, 1974 two pair circling eucalyptus tree with *Myiopsitta monachus* nests they were either occupying or investigating, uttered low "cah cah cah . . . ."

BREEDING: During breeding season I have seen Speckled Teal perch on top of *Myiopsitta monachus* nests 20 m high or more in eucalyptus trees in S portion of state. I have been told by local residents of ducklings falling out of such nests when trees were cut. On September 22, 1974, at Estância Ipiranga, pair appeared to be occupying parakeet nest. On November 1, 1983 at Arroio Quaraí-chico in the middle of espinilho parkland and at least 500 m from any appreciable area of water, while we were approaching a *Myiopsitta monachus* nest placed only about 1.75 m aboveground in a spiny tree, a Speckled Teal burst forth from closest opening. By reaching into nesting chamber approximately 60 cm from nest opening, we found five eggs which apparently were being brooded. On October 27, 1972 at Fazenda São José, adult was being followed in small roadside pond by three very small and one almost full-grown young, whereas on October 31, 1970 pair with one still flightless young occupied pond at about 1300 m altitude near Bom Jesus. Local resident of Gramado found open nest with five eggs about 2.5 m up among bromeliads in fork of tree close to creek near São Francisco de Paula. Eggs were incubated under a hen and hatched December 15, 1973. On January 24, 1974 four survivors were about three-quarters adult size and fully feathered, but with especially dark cast to plumage of back and top of head. An adult with three flying



MAP 41. Geographical distribution of *Anas flavirostris* in Rio Grande do Sul.

juvenals about three-quarters size seen May 15, 1974.

BEHAVIOR: When I pursued flightless duckling, adults performed distraction display. When this was ineffective in deterring me, they returned to alight on water only 10 m away.

SPECIMENS: MCN: 166, 167, 293, 313, 315–317, 359, 405, 406, 672*. MN: 1797, 4974, 32293*, 32295*. AMNH: 313858, 313859, 321545.

Anas georgica
Map 42

Yellow-billed Pintail
Marreca-parda
(Brown Duck)

DISTRIBUTION AND STATUS: Very common

resident, on entire littoral, across S half of state, in most of central and NE highlands N to 28°S, and rarely in central trough; on small ponds, reservoirs, lakes and marshes, usually in open country. In NE highlands this species and *A. flavirostris* share potholes and puddles of campo, but many disappear from that area in summer and autumn. During most of year found in pairs and small bands, but hunters assure me enormous flocks often occur in mid-winter, especially in extreme S. Many of these probably originate outside state. Olrog (1971) reported three individuals banded in Argentina having been recovered in Rio Grande do Sul, as follows:

BANDED	RECOVERED
November 22, 1963 S. Clemente de Tuyú, B.A.	August 14, 1966 Jaguarão
July 19, 1968 Murphy, Santa Fé	September 9, 1969 Caràzinho
October 8, 1969 San Eduardo, Santa Fé	June 6, 1970 Cruz Alta

Near Cassino I once saw pintail on ocean beach, and twice saw flocks of 14 and 19 birds, respectively, flying parallel to beach over ocean beyond breaker line. *Anas g. spinicauda.*

FIELD MARKS: Light brown with long, sharp tail. Two light beige stripes in wing. More elongated head with rufous tones on crown help differentiate from *A. flavirostris.*

VOICE: (R—captive) Low, rattling "uehkkkkkkk uehkkkkkkk."

BREEDING: Nesting very prolonged. On September 20, 1974 I found nest with nine eggs in clump of grass near marshy area of roadside in extreme S, and from number of individuals rising suddenly out of heavy grass as we drove along, I judged there were many other nests in area. As early as October 6, 1971 I saw adults with four half-size young. Families with small ducklings seen regularly through spring and summer. My latest records are for March 30, 1971, when I saw pair with six ducklings in dark down and three or four much larger young from earlier brood, and for April 2, 1973, when I found family with six half-size young at Aparados da Serra National Park.

SPECIMENS: MCN: 309, 325, 358, 609. MN: 4976, 4977. AMNH: 313860, 321245bis, 321547.

Anas bahamensis
Map 40

White-cheeked Pintail
Marreca-toicinho
(Fat-back Duck)

Known in Rio Grande do Sul only from specimens collected by Ihering (1899a) at Rio Grande, one in MAE in Camaquã, reported to have been collected near that city on April 11, 1968, and uncatalogued specimen in MCN confiscated by game wardens from hunter who said he shot it July 23, 1978 at Curral Alto, Santa Vitória do Palmar.

Anas versicolor
Map 43

Silver Teal
Marreca-cri-cri
(Cri-cri Duck) (onomatopoetic)

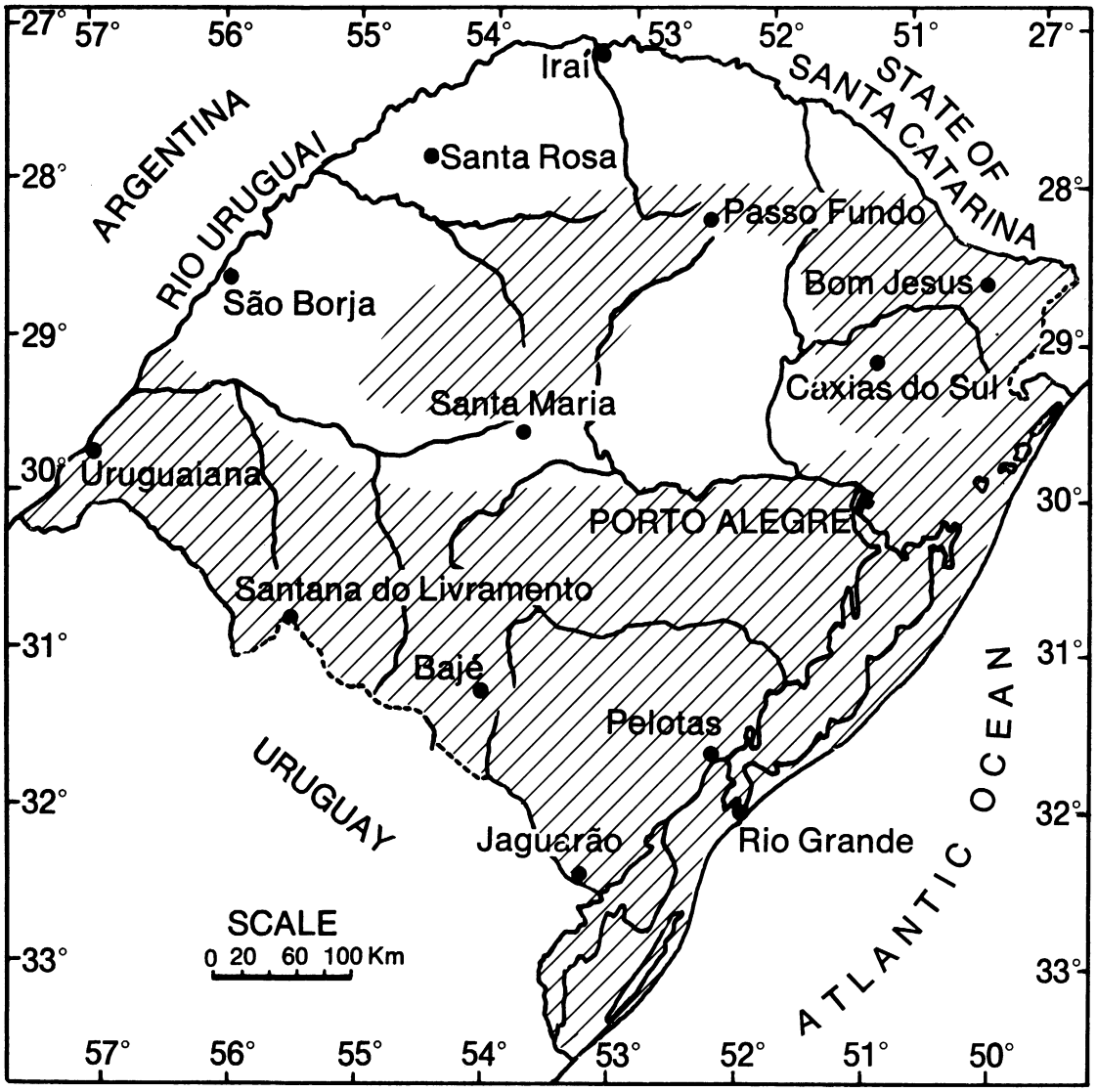
DISTRIBUTION AND STATUS: Fairly common, in marshes, lakes, and reservoirs with vegetation, along littoral, at points on S edge of central trough, in SW, and at scattered localities in far W. Present all year with no major fluctuations in population noted, but some migration occurs, for an individual banded in northern Buenos Aires Province, Argentina, November 20, 1962 was recovered in August 1967 near Tapes (Olrog, 1974b). *Anas v. versicolor.*

FIELD MARKS: Black cap extending below eye, finely barred rear flanks and tail.

BREEDING: From two to eight downy young seen with adults September 15 and 17, 1973, and October 14, 1971. Kaempfer collected two downy young at Palmares October 8, 1928.

BEHAVIOR: Usually seen in pairs or small flocks. This is one of tamest local species, usually permitting closer approach than other local ducks. On July 5, 1973, I observed group of four displaying with head bobbing, squeaky quacking, and very short flights which involved sort of aerial leap-frog.

SPECIMENS: MCN: 264, 265, 314, 352. MN: 4975, 32294*. AMNH: 313852–313857, 321244, 321244bis, 321245, 321548, 321549.



MAP 42. Geographical distribution of *Anas georgica* in Rio Grande do Sul.

Anas discors
Map 44

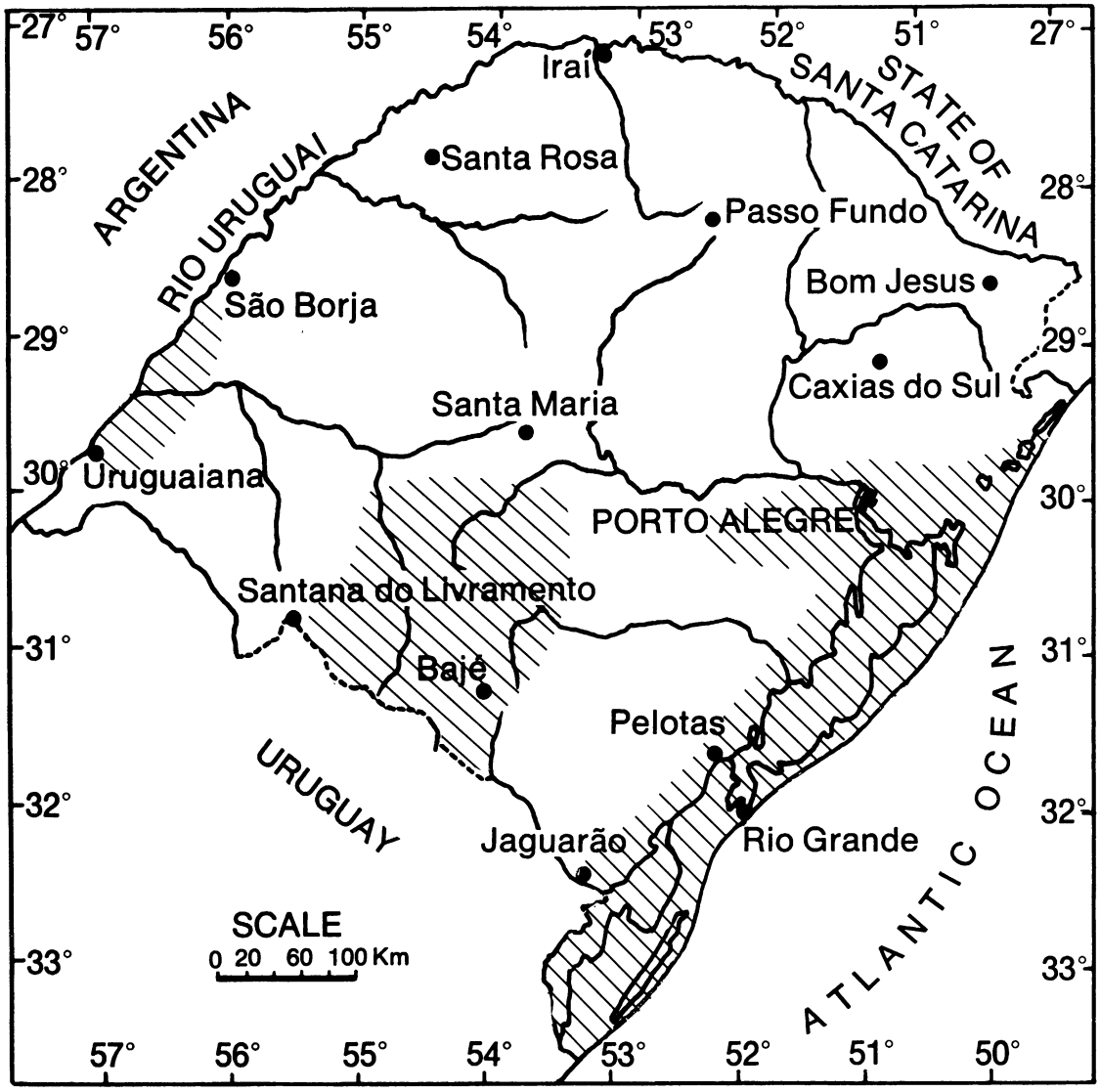
Blue-winged Teal
Marreca-de-asa-azul
(Blue-winged Duck)

Only Rio Grande do Sul record for this species is bird banded in Saskatchewan August 20, 1971 and found near Viamão in November 1972 (Belton, 1978a). *Anas d. discors.*

Anas cyanoptera
Map 44

Cinnamon Teal
Marreca-colorada
(Red Duck)

Only three records known. Ihering (1899a) collected it at Rio Grande, date not available, and Camargo (1962) reported it from Camaquã in July 1956. H. U. Nelz has mounted specimen shot July 13, 1968 at Banhado do



MAP 43. Geographical distribution of *Anas versicolor* in Rio Grande do Sul.

Pontal. Its breast is heavily spotted with black and is atypical of subspecies normally found in this portion of South America.

Anas platalea
Map 44

Red Shoveler
Marreca-colhereira
(Spoonbill Duck)

Scarce, primarily winter visitor in littoral marshes. Ihering (1899a) collected it in Rio Grande, date not available. Specimen in MAE, Camaquã, reported collected near that city May 10, 1972. Flock of five pairs and one single male, as well as other singles, seen near Lagoa do Peixe July 24, 1981. Male and female collected together August 24, 1978 at Banhado do Pontal generously donated by Lauri Bertolucci. Species may breed in extreme S of state, for Ridgely saw pair at Taim

November 10, 1980, and Silva reported banding young of this species in January 1981 at same place.

SPECIMENS: MCN: 365, 657–658*.

Netta peposaca
Map 45

Rosy-billed Pochard
Marrecão
(Great Duck)

DISTRIBUTION AND STATUS: Found along littoral, at lower elevations in S half of state, and in far W; in larger marshes, lakes with aquatic vegetation, and rice fields. Reported to assemble in open water of large lagoons during wing molt. Numbers vary; scarce to common in summer, common to abundant in winter. While cyclical fluctuations in numbers probably occur with several Rio Grande do Sul ducks, this species receives most attention and its variations thus better known. During winters of 1976 through 1979, especially the last, it appeared in greater quantities than ever before in memory of hunting fraternity. Herman Nelz (personal commun.) estimated more than one individual per sq m in one approximately 2 hectare spot, i.e., at least 20,000 birds, at Banhado do Pontal on August 24, 1978. Until recently species scarce enough in summer to support widely held but mistaken belief that only individuals present then were those unable to fly because of shot wounds. However, in January 1978, rice growers in Uruguaiana region complained bitterly of crop damage by flocks summering there. Summer numbers vastly augmented by winter influx which appears to reach peak late, in August or September. Although popularly believed to fly in from Patagonia—they are often referred to as "Patagonian Ducks"—banding in Argentina shows at least some arrive here from northern Argentina as part of roughly triangular route which takes them there from nesting grounds on Argentine littoral, and from here back to nesting grounds (Olrog, 1968b). Argentine banding reveals only vague outline of this movement and needs to be supplemented by more banding here.

FIELD MARKS: Male black with gray flanks; bill and shield bright rosy. Female uniform brown above, white undertail coverts distinctive and visible when swimming away from observer. Large white patch running length of wing in both sexes sometimes visible in repose and very evident in flight.

SIZE: One male: 525 mm, 1150 gr. One female: 507 mm.

BREEDING: Female with five three-quarter-size young, and another adult pair with 11 downy young about one-quarter size seen April 30, 1974 in marsh W of São Gabriel. Male collected August 10, 1974 had inactive testes.

BEHAVIOR: Wing-clipped male in garden pond of H. Nelz in Gramado on May 23, 1974 was floating quietly while holding neck stretched vertically. In this position it would repeatedly snap head abruptly from horizontal position to one in which beak was lifted to angle of about 75°, then snap it down again. Although sometimes referred to as "deep-water ducks" (Hellmayr and Conover, 1948, p. 365) this species normally found in fairly shallow areas and usually feeds by tip-tilting like puddle ducks. I have also seen individuals moving along surface with neck and head extended forward just under water.

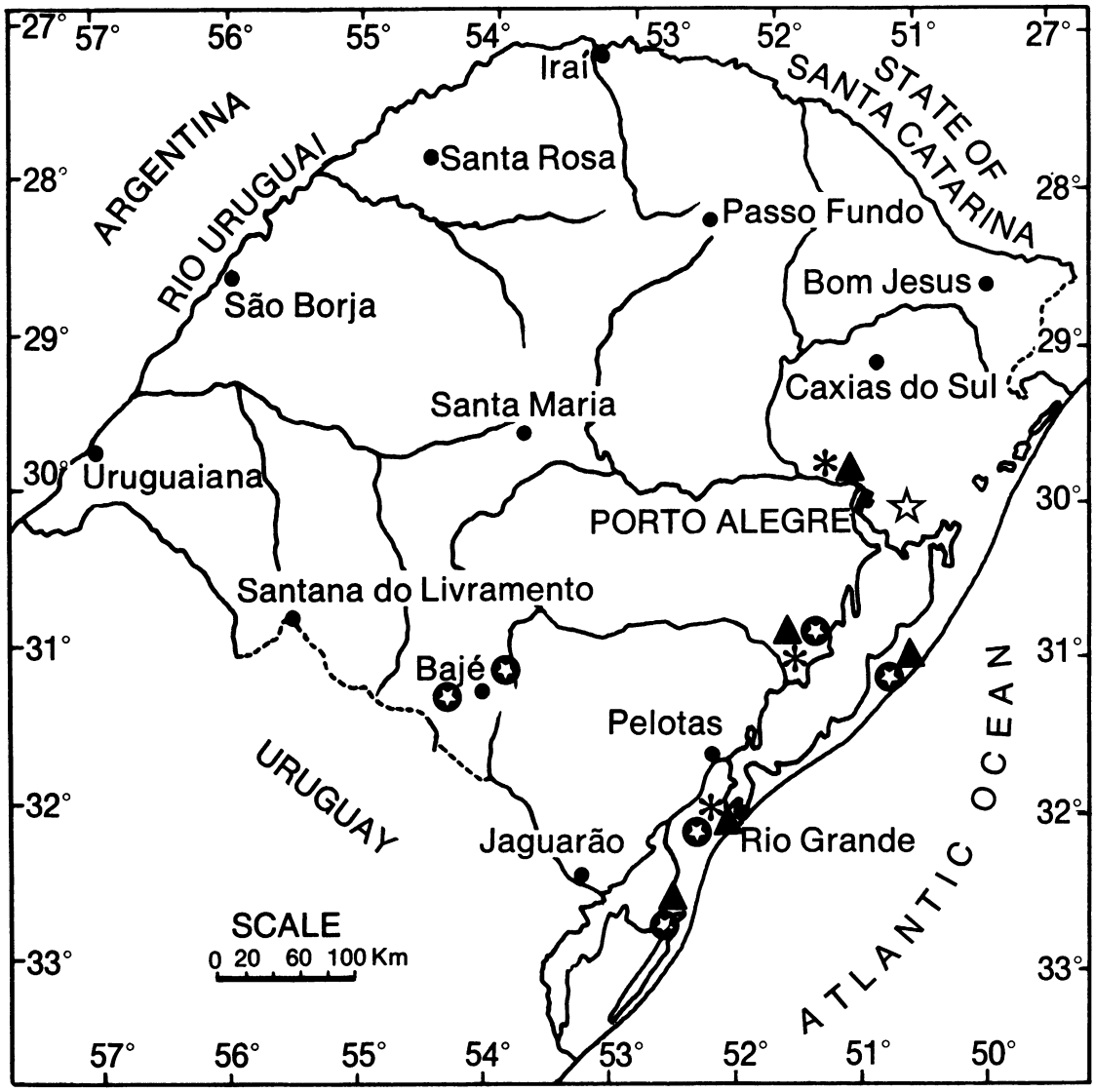
As heaviest and most flavorful of Rio Grande do Sul ducks legally open to hunting, swift flying *Marrecão* is prime target of marsh hunters. Its capacity for doing serious damage to rice—it is said to pull up young rice plants whole—also makes it target of agriculturists, some of whom use poison while others indulge in or permit illegal hunting during breeding season. Fortunately, so far none of these facts, not even legal daily bag limit of 30 birds (reduced in recent years from 50), has diminished numbers in Rio Grande do Sul.

SPECIMENS: MCN: 308, 326, 360, 363, 364, 409, 500–503, 674*, 675*. MN: 4954. AMNH: 45828, 321243, 321243bis, 321243ter, 321553, 321554.

Heteronetta atricapilla
Map 45

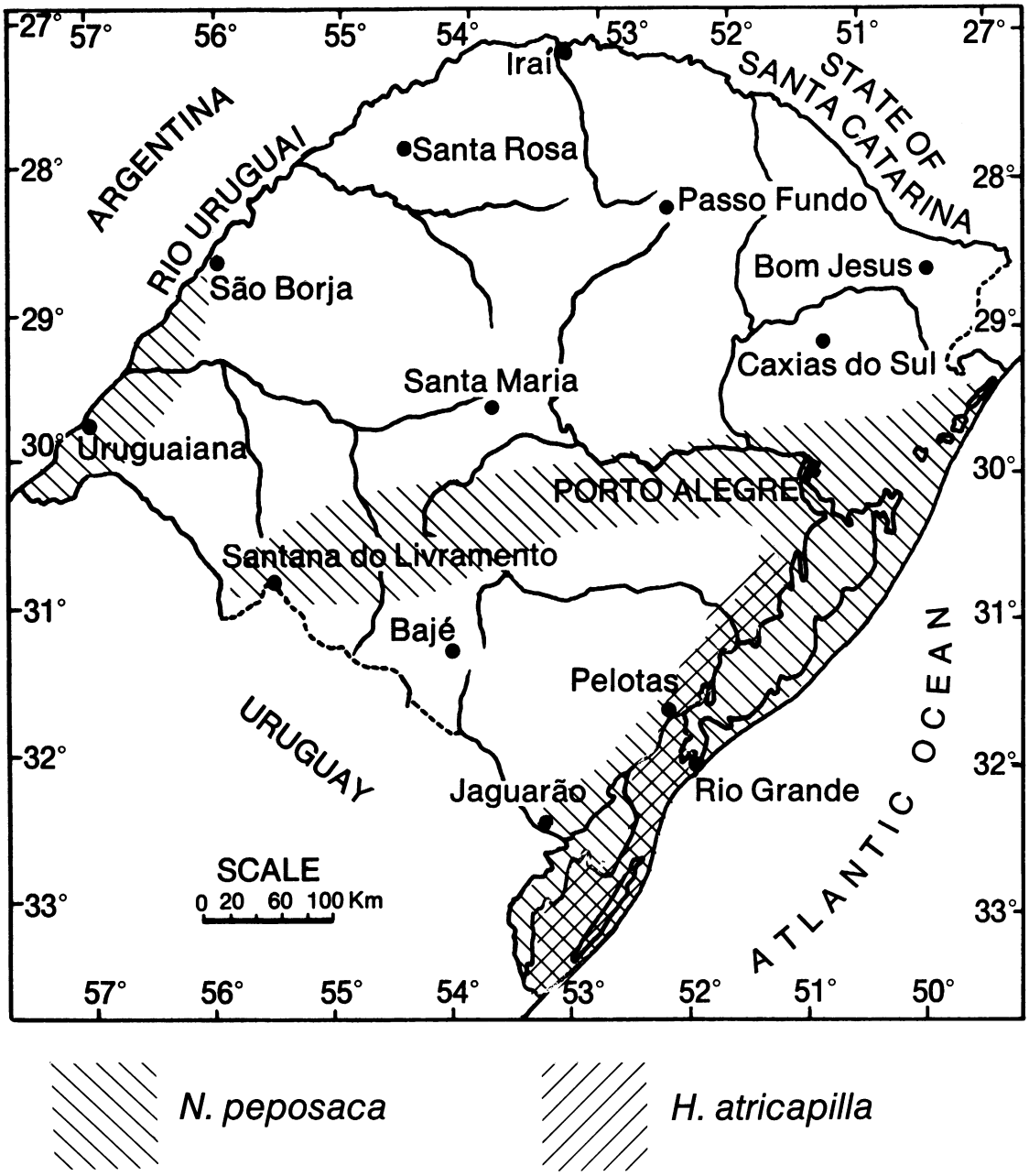
Black-headed Duck
Marreca-de-cabeça-preta
(Black-headed Duck)

DISTRIBUTION AND STATUS: Rare to uncommon in marshes and lakes along littoral N as far as Tapes, but more usually found in extreme S. Very seldom seen during spring and summer, but Sick and I saw 11 on No-



MAP 44. Geographical distribution of four species of *Anas* in Rio Grande do Sul.

vember 30 and December 1, 1971 near Santa Isabel. At Estância Ipiranga on May 16, 1973 I found flock of about 300 in patch of open water about 100 m × 40 m in midst of reeds.



MAP 45. Geographical distribution of *Netta peposaca* and *Heteronetta atricapilla* in Rio Grande do Sul.

Only three or four individuals were in male breeding plumage. I assume this band had migrated into region from outside state. Individuals banded in Santiago del Estero Province, Argentina on June 6 and 11, 1970 recovered near Pelotas on August 3 and 5, 1973 (Olrog, 1974b, 1975).

FIELD MARKS: Male in breeding plumage looks like miniature *Netta peposaca* with black head, pink at base of bill, and some

gray on flanks. Male in winter plumage and female resemble female *Oxyura vittata,* but single white line on side of head runs through eye rather than below it, head and bill profile more pochard-like, and tail normal rather than stiff. Species short necked and appears to sit very low in water.

SIZE: One male: 405 mm, 460 gr. One female: 432 mm, 605 gr.

SOFT PART COLORS: (Winter) tarsus light greenish gray with gray webs between toes; maxilla (male) dark gray with black tip and green tinge at sides of base, (female) culmen black, sides dark greenish gray, lighter near base; mandible flesh pink spotted black, iris brown. Male cere brown.

BREEDING: Pair collected May 16 had inactive gonads. Five mated pairs and one lone male seen November 30/December 1, 1971, all in breeding plumage.

BEHAVIOR: Flock of 300 permitted close approach of unconcealed collector. Although most flew at shot, large group stayed within 25 or 30 m while I waded into open water to retrieve specimens.

SPECIMENS: MCN: 669*, 670*, USNM: 461534*. AMNH: 321550–321552.

Oxyura dominica
Map 46

Masked Duck
Marreca-bico-roxo
(Purple-billed Duck)

DISTRIBUTION AND STATUS: Fairly common occupant of lakes and ponds with heavy, low vegetation, inland along littoral from Pelotas N, through central depression, and occasionally in far W, southern hills, and on heights of southern escarpment. Due to small size and ease with which individuals blend into habitat, it may be more common than is apparent. Presumably here throughout year, although I have only one record each for February and March, a questionable one for April, and none for May.

FIELD MARKS: Male has black mask on forward part of otherwise rufous head, blue bill. Female resembles *vittata,* but has two light facial stripes. Both sexes show prominent white wing patch in flight.

BREEDING: Young birds were with adults on December 2, 1972, and female with several one-quarter size downy young seen in small lake at 610 m altitude on March 31, 1974.

BEHAVIOR: Quiet and inconspicuous, usually seen well away from shore amid low aquatic vegetation that all but conceals them.

SPECIMEN: MCN: 607.

Oxyura vittata
Map 46

Lake Duck
Marreca-pés-na-bunda
(Feet-in-the-ass Duck)

DISTRIBUTION AND STATUS: Scarce winter visitor registered sparsely in southern littoral between April (no date) and August 19.

FIELD MARKS: While here males usually in dull gray-brown winter plumage so, like females, must be identified by stiff tail, small size, and single white line running below eye from bill to nape.

SIZE: One unsexed: 385 mm.

SOFT PART COLORS: Tarsus gray; maxilla dark gray; mandible pinkish with gray at sides of base; iris brown.

BREEDING: Not known to breed in state.

SPECIMENS: MCN: 671*. AMNH: 321555, 321556.

FAMILY ANHIMIDAE

Chauna torquata
Map 47

Southern Screamer
Tachã (onomatopoetic)

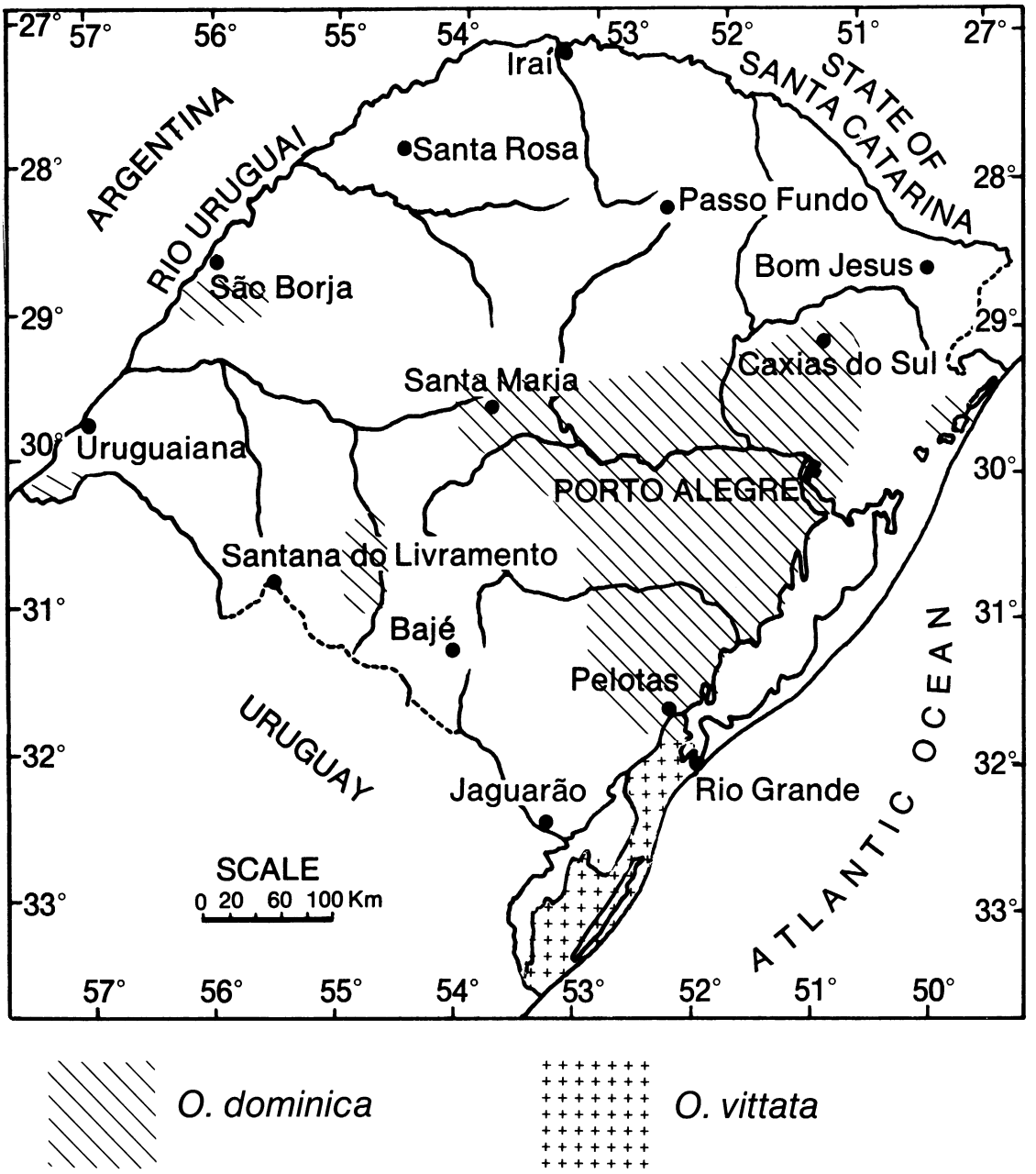
DISTRIBUTION AND STATUS: Common resident in marshes and weedy lakes of littoral and W along S side of central trough into lower elevations of SW, and at scattered locations near lower Rio Grande do Sul reaches of Rio Uruguay. None seen on Mostardas peninsula in late July 1981.

FIELD MARKS: Somewhat turkey-shaped with mostly gray plumage; velvety black "choker" low around neck below almost bare ring; chicken-like bill.

SIZE: One female: 855 mm, approximately 4400 gr.

SOFT PART COLORS: Tarsus pink; bill gray; cere pinkish gray; iris orange-brown; eye skin reddish pink.

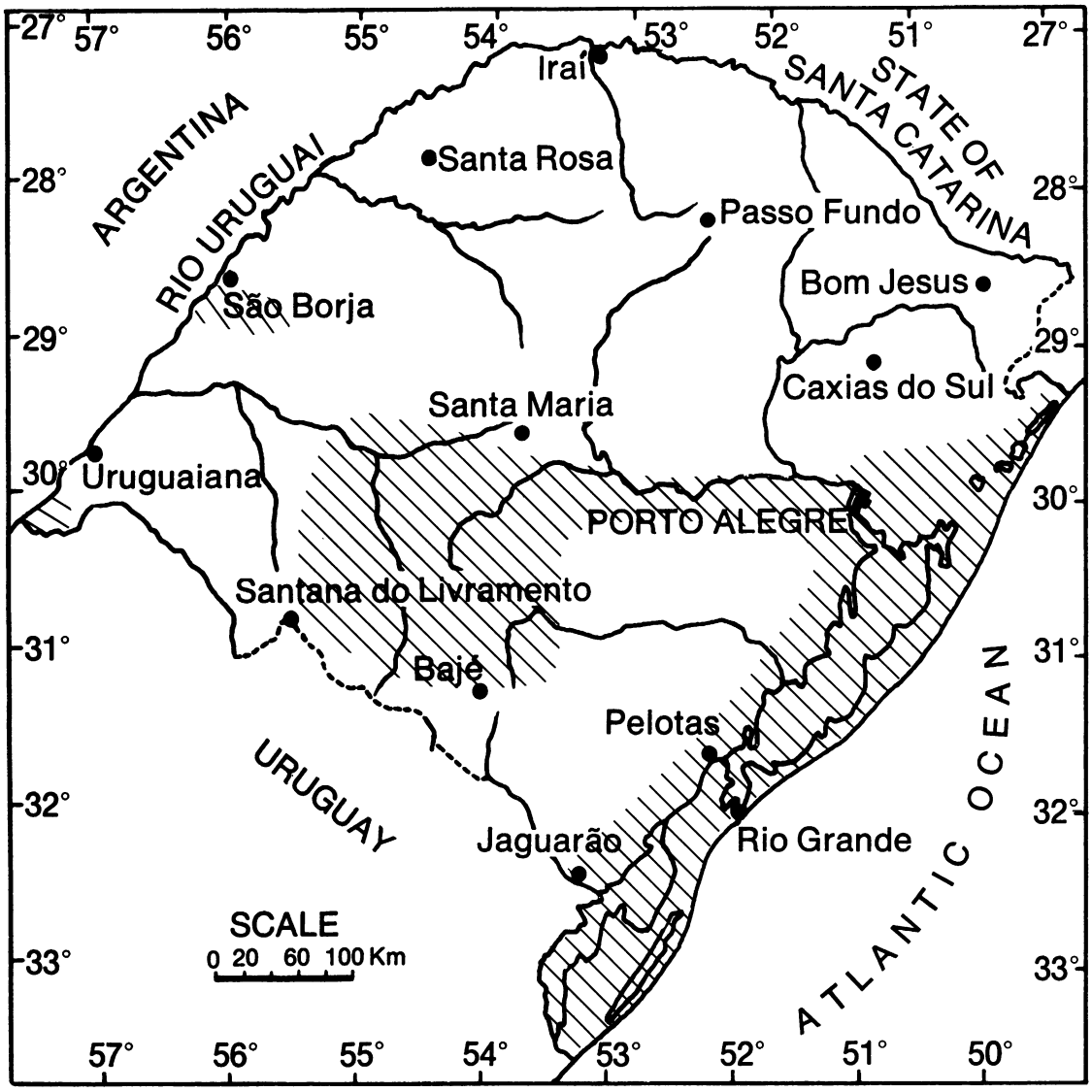
VOICE: (R) Both sexes have very loud, far carrying cries, and often duet. Sick assures me male has lower voice. It produces very



MAP 46. Geographical distribution of the two species of *Oxyura* found in Rio Grande do Sul.

low, throaty, almost barking, brief "oh-WOOOW" which also sounds sometimes as "be-SERK." Female higher but still starting low and rising "a-ta-HAAA" or "ta-HAAA," with final portion sounding nasalized.

BREEDING: Nests with eggs found as early as July 3 and as late as December 1. Last had four eggs, but not apparent whether clutch complete. Pair with one chick 15 to 20 cm tall, with rich brownish yellow down, seen at



MAP 47. Geographical distribution of *Chauna torquata* in Rio Grande do Sul.

Barra do Ribeiro January 24, 1979. On May 13, 1973 I caught and banded almost adult-sized juvenal not yet able to fly.

BEHAVIOR: Usually encountered in scattered pairs, but sometimes sizable assemblages gather. On one occasion I counted 181 individuals within few hectares. Southern Screamers stand erect, holding neck vertical, giving impression of alertness confirmed by readiness to call when disturbed, or to fly in spite of heavy, ungainly bodies. Normally found wading in shallow, open marshes or standing on dikes, low trees, or bushes where they have unimpeded view of surroundings. They take flight with thrashing, heavy wing-strokes until moderate elevation achieved, then glide to destination. On October 24, 1983 four individuals, immediately on coming ashore on small island after swimming in Capivari marsh, each paused to stretch each leg

forward and back several times before advancing to higher ground. My specimen had been feeding exclusively on marsh vegetation.

SPECIMENS: MCN: 1759*. AMNH: 313844, 313845, 321726.

FAMILY CRACIDAE

Ortalis motmot (guttata)
Map 48

Speckled (Variable) Chachalaca
Araquã (onomatopoetic)

DISTRIBUTION AND STATUS: Rather uncommon resident of forests with nearby clearings, and scrub, along slopes of escarpment from Tôrres almost to Santa Maria, down to sea level but not usually above about 800 m altitude. Also in N and E portions of southern hills. *Ortalis m. squamata.*

SIZE: One male: approximately 620 gr. One female: 498 mm.

FIELD MARKS: Differs from *Penelope obscura* by smaller size, rufous on tail and flanks, very scaly appearance of breast plumage, and bare patches only on sides rather than across entire throat.

SOFT PART COLORS: One adult female: tarsus dull brownish gray; bill light gray, darker at base; iris brown; orbital skin black; throat patches flesh.

VOICE: (R) Raucous, very noisy, variable phrase: "cacataPOOP," "cataPOOP," "cacataWHUMP," "cacataWEEcata," repeated many times, usually by several birds simultaneously but not in unison, thereby creating unmistakable racket. Also an irregular, sometimes rhythmic cackling, all on same pitch: "cuhcuh-cuhCAH cuhcuh-cucCAH cuhcuhcuhcuh. . . . ." Also repeated, brief series of throaty bubbling, moving up scale, as if warming up for "cacataPOOP" performance.

BREEDING: Female collected October 9, 1972 had ovary just becoming active. Male of November 25, 1973 had moderately enlarged testes.

BEHAVIOR: Often found in small family groups or flocks, making presence known by early morning vocalization. On November 19, 1975 two groups of chachalacas responded to each other across forested valley on escarpment N of Agudo.

SPECIMENS: MCN: 679*, 680*. MN: 9451, 9452. AMNH: 471503.

Penelope superciliaris
Map 48

Rusty-margined Guan
Jacu-velho or *Jacupemba*
(Old Jacu)

Ihering (1899a) reported collecting this species at Taquara June 19, 1883 and at mouth of Rio Camaquã without date. I know of no more recent records.

Penelope obscura
Map 48

Dusky-legged Guan
Jacu-açu
(Great Jacu)

DISTRIBUTION AND STATUS: Common resident of woodland patches, second-growth, scrub, agricultural lands, and gallery forests. Found throughout most of state except littoral, although Ihering reported specimen taken near Rio Grande. I have seen it not far from E shore of Lagoa dos Patos, but only in hilly forested country more properly considered extension of southern hills. Continued existence this large, edible, noisy species in substantial numbers over such wide extent of long-settled territory is strong indicator illegal hunting for food or sport by rural residents is not significant factor operating against survival of Rio Grande do Sul avifauna. Killing of raptors to prevent real or imagined damage to livestock and poultry is another story. *Penelope o. obscura.*

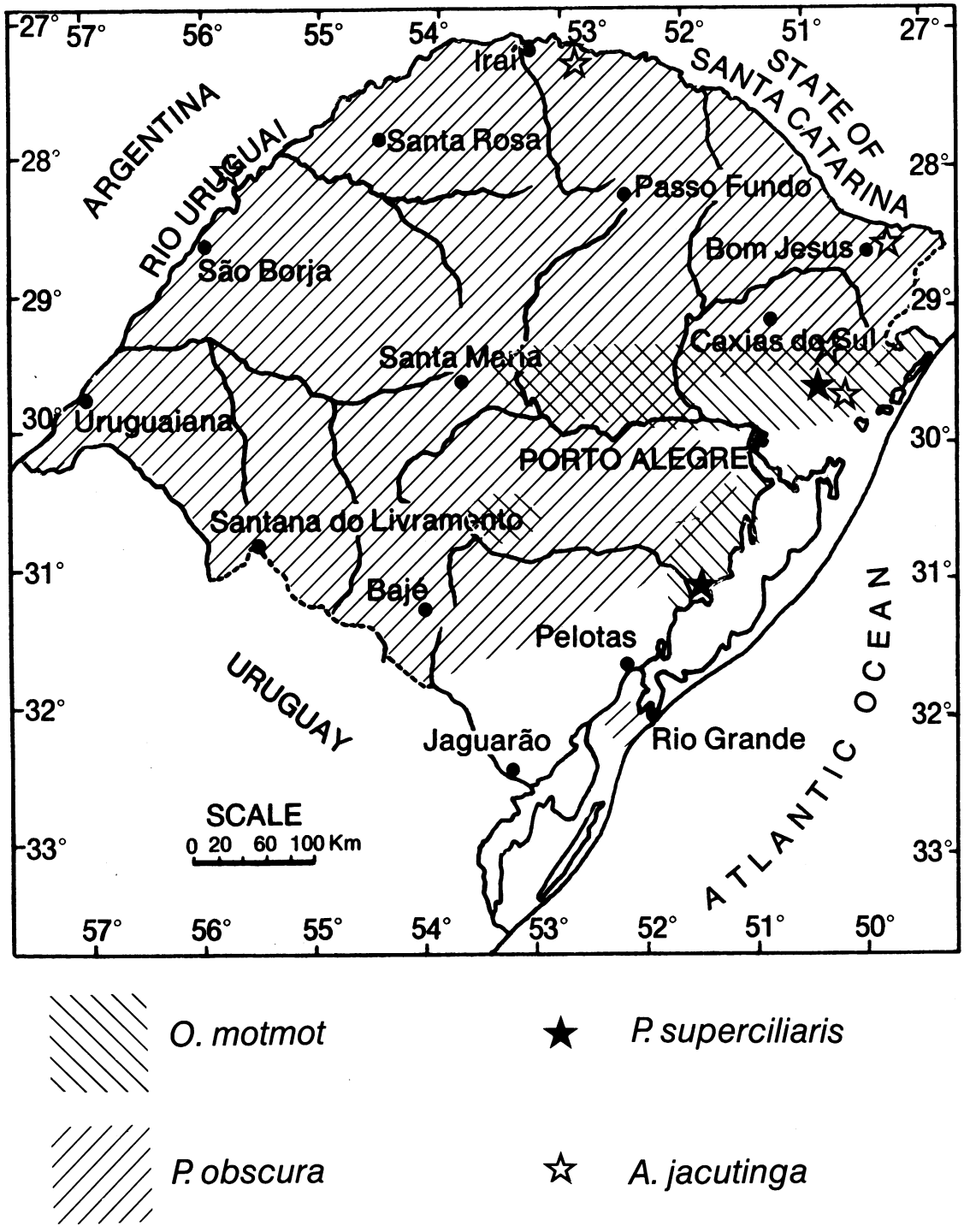
FIELD MARKS: All brown with bare throat, size of skinny turkey. See *Ortalis motmot* for differences from that species.

SIZE: One female: 660 mm.

SOFT PART COLORS: Tarsus very light brown washed rufous; bill black, with distal end of fleshy nostril light grayish brown; iris dark brown; facial skin black; eyelid yellow-green; throat dull orange.

VOICE: (R) Repeated, guttural "JAHkoo JAHkoo JAHkoo. . . ."

BREEDING: Female collected October 31, 1970 NE of Bom Jesus at 1150 m not in



MAP 48. Geographical distribution of *Ortalis motmot, Penelope superciliaris, Penelope obscura,* and *Aburria jacutinga* in Rio Grande do Sul.

breeding condition. One half-size immature seen with adult January 18, 1975 W of Encruzilhada do Sul.

BEHAVIOR: Calls most frequently in early morning and late afternoon. Rough-sounding, heavy drumming with wings often intermingled with vocalizations at early dawn. While usually found in woodland, it also ventures into open. Near Bom Jesus I saw pair in field of waist-high broom at least 300 m from closest woods, and N of Bagé in remote, recently-harvested wheat field near stream, Silva and I counted 14, some feeding in pairs well in open, others perched in high bushes and low trees at edge. At Fazenda da Invernada, individuals living in patch of hillside woods immediately behind ranch headquarters regularly invade poultry yard to feed on corn.

SPECIMENS: MCN: 682*. AMNH: 313731.

Aburria (Pipile) jacutinga
Map 48

Black-fronted Piping-Guan
Jacutinga

Ihering reported specimen from Arroio Grande, near Taquara, and said (1899a) he had heard it occurred S of Porto Alegre as far as Rio Camaquã. Camargo (1962) collected one near Bom Jesus in July 1961, and Herman Nelz (personal commun.) saw one about 1970 between Canela and São Francisco de Paula. Jordan Wallau (personal commun.) saw one at Nonoai Forest Reserve July 1, 1978, and Short's (1971) finding it along Rio Uruguay in Corrientes, Argentina just across from still forested areas in Rio Grande do Sul gives hope it may occur there.

Berlepsch and Ihering (1885, p. 82) quoted Bischoff, source of their specimen, as follows (in translation by M. Buny): "Jacutingas are migratory birds that arrive here [near Taquara] in May and June in flocks of from four to sixteen and nest here. They generally place their nests in trees in a fork formed by three or four branches, laying their eggs in the hollow thus produced, without any lining (Unterlage). The eggs, at most two or three per nest, are pure white, almost as big as a goose egg. I was only able to see Jacutingas brooding once, and it appeared to me that they took turns on the nest, because the male and the female were seen alternately flying around in the vicinity. At the end of November the young hatched and immediately began to follow the parents, being able not only to run but to flutter. In December they emigrate. They cannot be kept in domestication here in the Colony for they kill hens and roosters."

FAMILY PHASIANIDAE

Odontophorus capueira
Map 49

Spot-winged Wood-Quail
Uru (onomatopoetic)

DISTRIBUTION AND STATUS: Rare resident along southern escarpment, uncommon in extreme N where found in state forest reserves. Ihering obtained several specimens from Taquara area, but said (Berlepsch and Ihering, 1885) it appeared not to occur S of 30°S and lived only in forest, usually in bands of six to eight, perching at night preferably on thin horizontal branches. *Odontophorus c. capueira.*

VOICE: (R) Rapidly repeated "oorOO oorOO oorOO oorOO. . ." usually heard at dusk.

SPECIMENS: AMNH: 313733–313736.

FAMILY ARAMIDAE

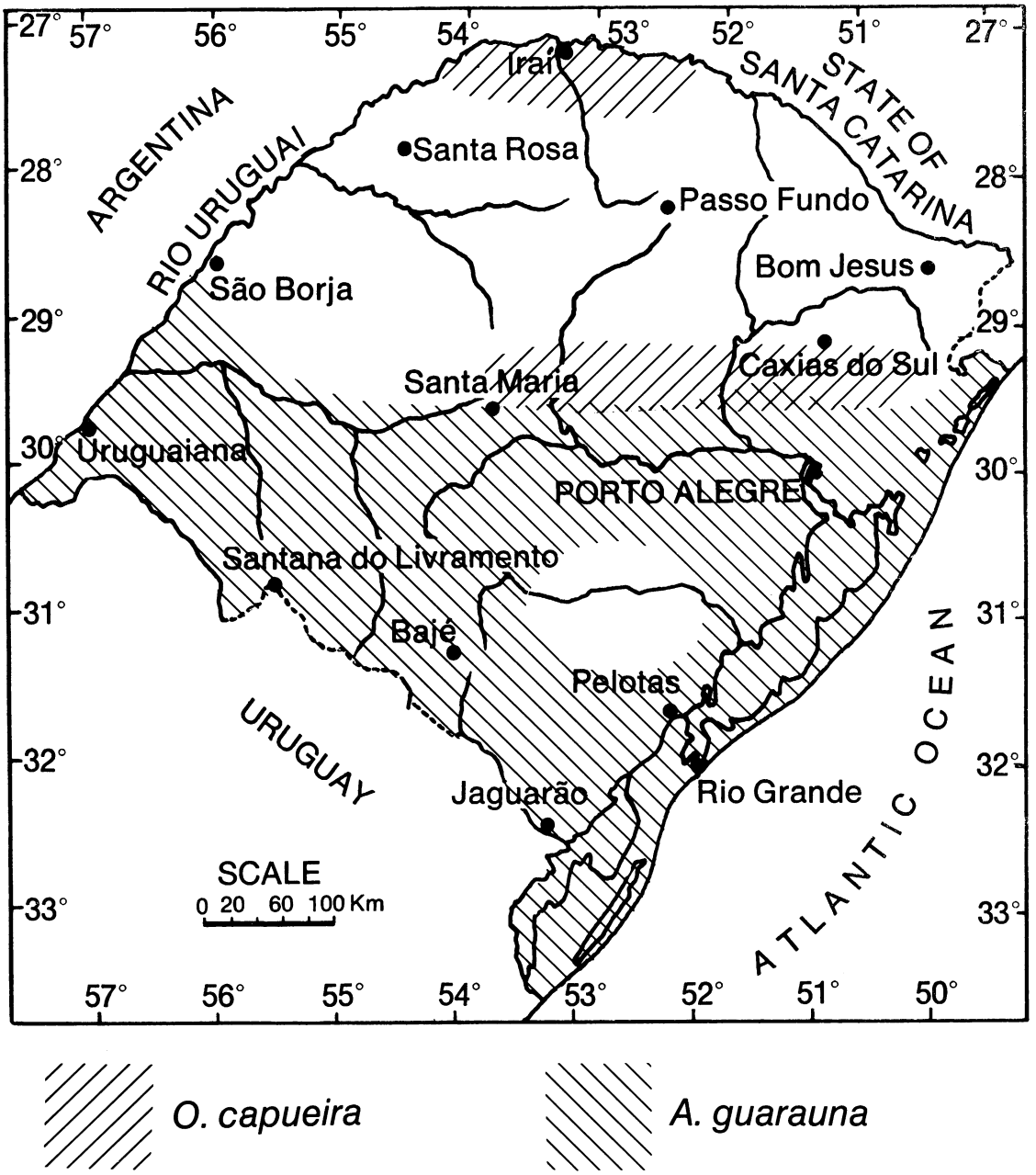
Aramus guarauna
Map 49

Limpkin
Carão (onomatopoetic)

DISTRIBUTION AND STATUS: Common resident of marshes, flooded pastures and rice fields, wet ditches, and stock ponds along entire littoral, across southern portion of state S of escarpment, except for highest and driest sections of southern hills, and in W north to Banhado São Donato. Along littoral limpkin usually found in larger marshes, often in some numbers, but in W it commonly occurs in pairs or trios occupying small waterholes in range country. *Aramus g. guarauna.*

FIELD MARKS: Only long-legged, long-billed marsh bird in Rio Grande do Sul with almost solid dark brown plumage, streaked white on neck. In flight, lifts wings on upbeat with sudden snap.

SIZE: Two females: 648–660 mm. One female: approximately 1500 gr.



MAP 49. Geographical distribution of *Odontophorus capueira* and *Aramus guarauna* in Rio Grande do Sul.

SOFT PART COLORS: One female: tarsus blackish gray; maxilla: greenish gray culmen, yellow on sides at base, distal end black; mandible yellow-green with black tip; iris brown. Second female: tarsus brownish gray; maxilla gray with darker tip and brownish culmen; mandible dull orange-yellow at base with gray tip; eye ring dull yellow; iris not registered.

VOICE: (R) High, very loud, nasal cry: "cwaow." Also lower, rubber-bulb horn type honking: "conkkkkaow."

BREEDING: On October 8, 1971 two adults were accompanying two half-size immatures with bit of down still on top of head and on backs. Bills yellowish with black tips, much shorter than those of adults.

BEHAVIOR: Distinctive flight mentioned above made more so by extended neck, held low, and long, slightly dangling legs. When disturbed on solid terrain it often runs some distance before taking flight, much farther than required simply to become airborne.

SPECIMENS: MCN: 676–677*. AMNH: 321533, 321774.

FAMILY RALLIDAE

Ortygonax (*Rallus*) *sanguinolentus*
Map 50

Plumbeous Rail
Saracura-do-banhado
(Marsh Rail)

DISTRIBUTION AND STATUS: Common resident throughout most of state in marshes of all sizes with ample vegetation. I have no records for W tip or extreme NW. More concentrated in S half than N of escarpment. *Ortygonax s. sanguinolentus.*

FIELD MARKS: Easily confused with *O. nigricans* and best separated from it by bright red spot at base of bill which *nigricans* lacks, and by voice. Immature birds less olivaceous on upperparts and much lighter below, being almost white on throat and grayish to brownish white on breast and belly.

SIZE: Three males: 280, 330, and 355 mm, 170, 208, and 213 gr.

SOFT PART COLORS: Tarsus dull orange to pinkish red; maxilla blue at base with red on commissure, light green in center darkening to gray or black at tip; mandible red at base, light green in center darkening to gray at tip; iris orange-red to bright carmine. Immature: tarsus reddish gray to reddish brown; bill black at base, greenish gray distally; iris brown.

VOICE: (R) High, penetrating "free your jeep. . . .treat your jeep. . . .yr jeep" plus seemingly totally unrelated but simultaneous deep, gentle moan or purring with occasional higher "coo" or "pook." Enciclopédia Barsa (1966), referring to an unspecified type of "saracura," doubtless this one, quotes belief of Camaiura Indians that it "sings with its mouth while at the same time with its rear end it makes another sonorous, intense, loud, but not very smelly tone. . . ."

BREEDING: Male collected November 6, 1971 had enlarged testes, while those of specimens of February 10, 1974 and April 24, 1972 inactive.

BEHAVIOR: Much more frequently heard than seen, species calls during both day and night, one song often giving rise to chorus within marsh. This characteristic facilitates finding them with taped recordings. They almost always respond and often approach source, even from some distance, by walking through concealing marsh vegetation, flying only when necessary to traverse any open area of more than 3 or 4 m width. On April 24, 1972, while netting birds at edge of marshy extension of Lagoa do Jacaré, I saw abundance of these rails moving between marsh and adjoining flooded field of nearly mature rice.

SPECIMENS: MCN: 684–685*. MN: (WB)705*, (WB)1094*. AMNH: 45665, 313789, 313790, 313795, 321223–321226, 321506, 321507, 321734–321739, 823996*.

Ortygonax (*Rallus*) *nigricans*
Map 50

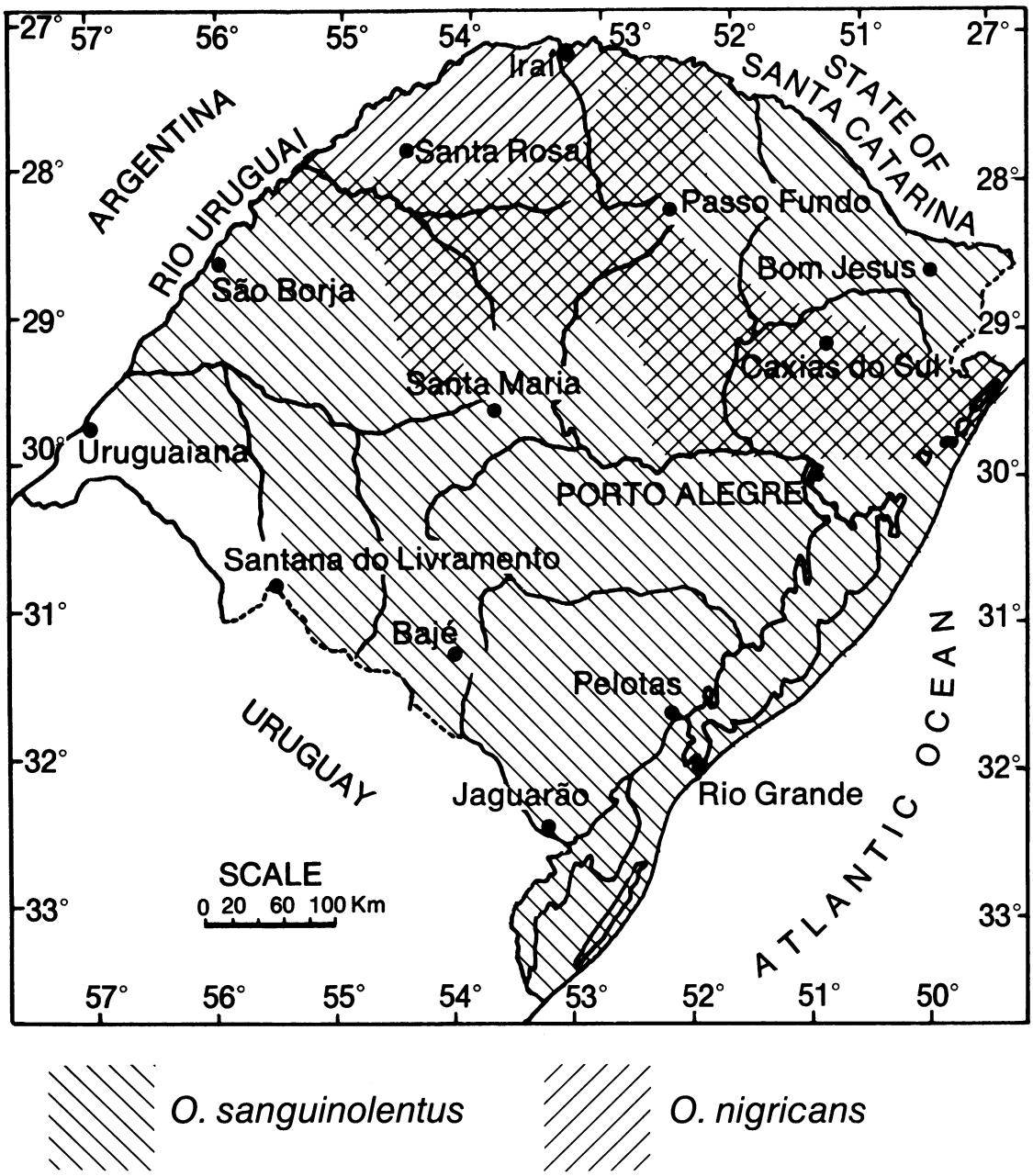
Blackish Rail
Saracura-sanã
(Sanah Rail)

DISTRIBUTION AND STATUS: Fairly common in marshes and swampy, lightly wooded areas over much of N half of state S to and including foothills of escarpment, but not S of 30°S. Missing from highest portions of NE and from far W south of 28°S. More numerous than *O. sanguinolentus* in N half of state, but less common there than *sanguinolentus* is in S. Blackish Rails were permanent feature of quarter-hectare open marsh 100 m in front of our home in Gramado until it was converted to building site. *Ortygonox n. nigricans.*

FIELD MARKS: Easily confused with *O. sanguinolentus,* which see.

SIZE: One male: 319 mm, 217 gr.

SOFT PART COLORS: Tarsus orange-red; bill



MAP 50. Geographical distribution of the two species of *Ortygonax* found in Rio Grande do Sul.

green, more yellow at base, grayer at tip; iris red.

VOICE: (R, in southern Paraná) Very sharp, penetrating, loud: "whuueeee whuueeee," or "wheeee wheeee wheeee chee chee chee chee che che chechch." Also, when out of marsh on nearby grassy area, very rapid, not very loud: "chchchee. . .chchchee. . . chchchee . . . ." Bother call, identified by Sick: high, sharp, double squeak.

BREEDING: Testes of male collected July 31, 1973 were somewhat enlarged. On morning of January 22, 1971 I found two chicks, one pipped egg, and one whole egg in cup-shaped nest placed on low stump amid several heavy second-growth shoots in swampy area of scrub and *Eryngium* behind our Gramado home. From fleeting glimpse of adult as it departed with chicks, I had impression it was this species, but as *O. sanguinolentus* was also in area I could not be sure. That afternoon I found single chick in nest with whole egg, and on morning of January 23 nest was empty. Third chick was all black, including bill, feet, and eyes except for some grayish or white filaments scattered among black down.

BEHAVIOR: Blackish Rails seldom venture far from marshy habitat. Those in marsh in front of our house went some 5 m into garden of adjoining restaurant for food scraps, but did not otherwise appear in open except within marsh in small spots where vegetation was sparse. Singing was often a late afternoon performance, but not confined to that time of day.

SPECIMENS: MCN: 683*. AMNH: 313791–313794.

Pardirallus (*Rallus*) *maculatus*
Map 51

Spotted Rail
Saracura-carijó
(Spotted Rail)

DISTRIBUTION AND STATUS: Very scarce occupant of marshes and lightly wooded swamps. There are so few records this species in Rio Grande do Sul that no clear distributional pattern evident. It has been found near Tôrres, São Lourenço and Pelotas along littoral, near Rio Pardo in central trough, and near Itaqui and São Donato marsh in W. Since it also occurs in Uruguay, these findings lead to assumption it might be found anywhere along littoral or across state through central depression. Specimens taken or sightings made in July, October and November. *Pardirallus m. maculatus.*

FIELD MARKS: Heavily spotted, streaked and barred with white.

SIZE: One male: 300 mm, 170 gr.

SOFT PART COLORS: Tarsus pink; maxilla greenish gray at tip, median portion light olive, base apple green, tomia red near base; mandible yellowish green, tip lighter, sides of base red; iris bright red.

SPECIMEN: MCN: 686*.

Aramides cajanea
Map 51

Gray-necked Wood-Rail
Tres-potes
(Three Pots—onomatopoetic)

DISTRIBUTION AND STATUS: Common resident of gallery forests, woodland patches near marshes, and swampy areas in most of state S of escarpment, and in far W north to São Donato marsh. Not registered from extreme N or S ends of littoral, nor from portion of SW, although probably exists there. *Aramides c. cajanea.*

FIELD MARKS: Gray neck and mantle.

SIZE: One male: 420 mm.

SOFT PART COLORS: Tarsus pinkish red; maxilla dark yellow at base, blending to green at top; mandible green, with yellow at sides of base; iris orange-red; eye ring pinkish red.

VOICE: (R) Vocalizes primarily at night, loud, far carrying "trAY po trAY po trAY po po po po. . . . . " "TrAY po" sometimes sounds closer to "trAY pot."

BREEDING: Male collected May 30, 1974 not in breeding condition.

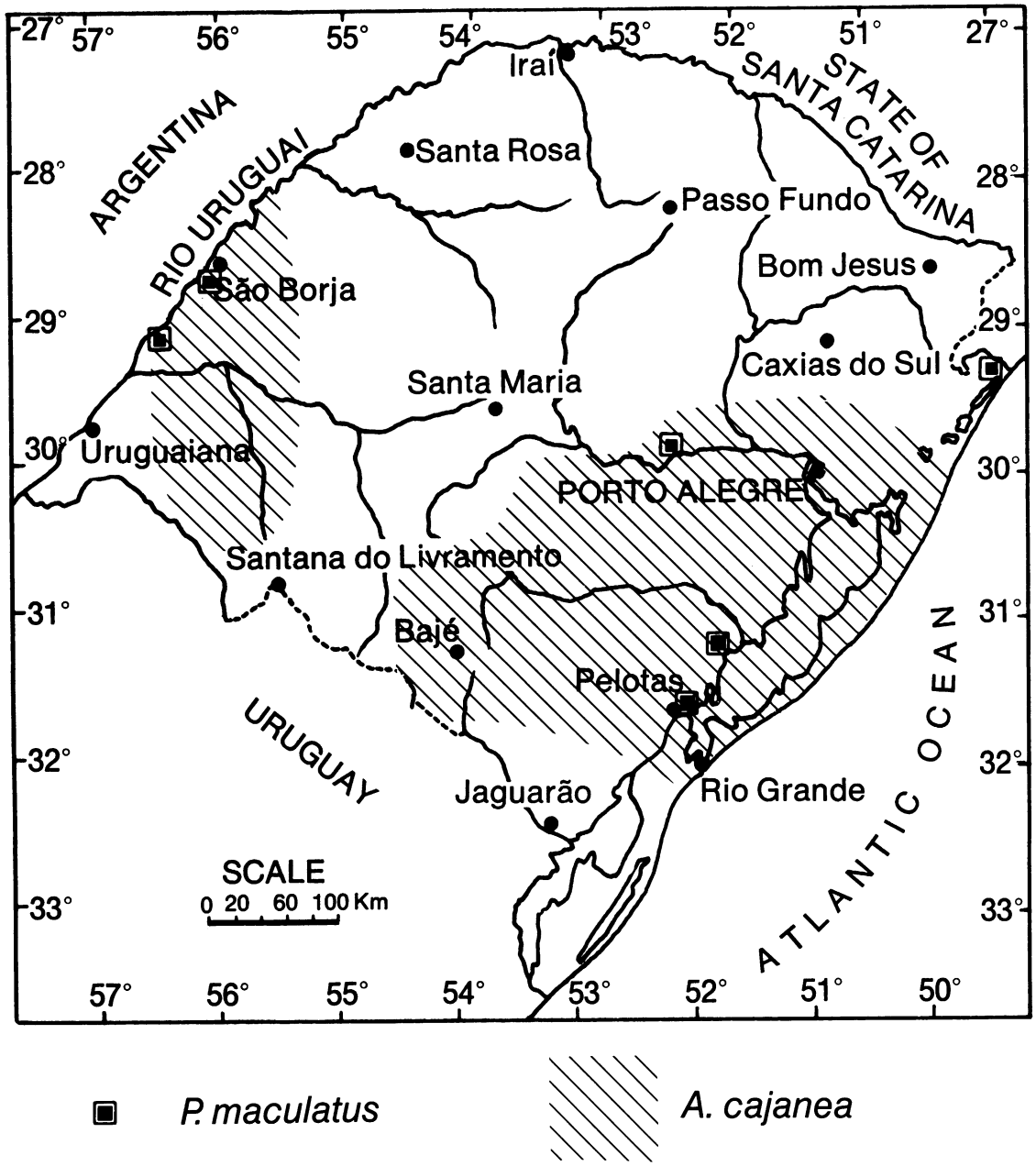
BEHAVIOR: Least likely to be seen of Rio Grande do Sul wood-rails, clinging to its woodland habitat where it quietly slips through often heavy ground cover, or sometimes perches few m up in trees.

SPECIMENS: MCN: 691*, 1798.

Aramides ypecaha
Map 52

Giant Wood-Rail
Saracuruçu
(Great Rail)

DISTRIBUTION AND STATUS: Common resident, in open marshes, lightly wooded swampy areas, fields and pastures near water and cover, gallery forests; almost entirely confined to S and far W. On littoral there are no records for Mostardas peninsula nor N of Rio Camaquã, except in late 1976 and early 1977 it was registered twice near Porto Alegre. There is sharp demarcation, with some



MAP 51. Geographical distribution of *Pardirallus maculatus* and *Aramides cajanea* in Rio Grande do Sul.

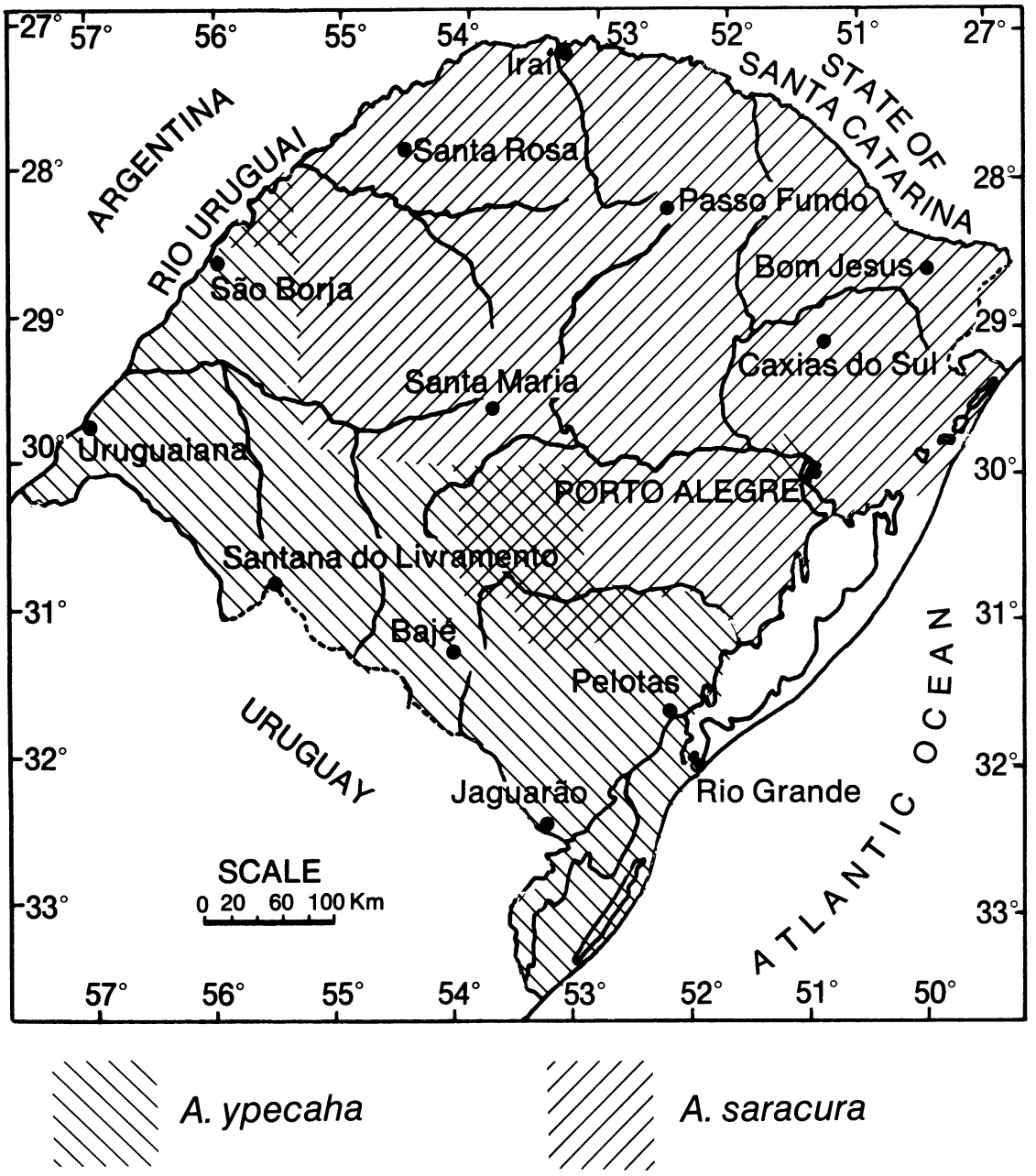
narrow zones of overlap, between range of this species and that of *A. saracura* in NE.

FIELD MARKS: Largest member of family in state; upper belly and flanks delicate brownish pink.

SIZE: One male: 485 mm.

SOFT PART COLORS: Tarsus, iris, and eye ring carmine pink; bill yellow at base, blending through apple green to gray-green at tip.

VOICE: (R) Reminiscent of hysterical hu-



MAP 52. Geographical distribution of two species of *Aramides* in Rio Grande do Sul.

man saying "all. . .wacky. . . . . .all. . .wacky." Also piercing, high, single "eeeeeeok," a bark, a low "keaaw," and an explosive "puk." Most frequently heard during day.

BREEDING: Testes of male collected May 7, 1974 inactive.

BEHAVIOR: Most prone of three Rio Grande do Sul members of genus to appear in open,

and least likely to take cover in face of potential danger. This species and *A. cajanea* frequent victims of steel traps set in marshes for fur-bearing animals.

SPECIMEN: MCN: 690.

Aramides saracura
Map 52

Slaty-breasted Wood-Rail
Saracura-do-brejo
(Bog Rail)

DISTRIBUTION AND STATUS: Common resident of N and E, occupying almost all that portion of state from which *A. ypecaha* absent, with extensions involving slight overlap with that species near Garruchos and in south central hills. Not registered for Mostardas peninsula. Occupies forests and woodland patches, preferring but not entirely dependent upon swampy or boggy areas or stream edges. Not usually seen in open marshes.

FIELD MARKS: Darkest of Rio Grande do Sul wood-rails, mostly olive above and dark gray below.

SIZE: One male: 415 mm, 540 gr.

SOFT PART COLORS: Tarsus pale red; bill green, lighter at tip, brownish yellow at base; iris pale red mottled with white; eye ring pale red.

VOICE: (R) Loud, resounding, noisy cries with variety of sounds including "po-quit kwaa kwaa kwaa. . . ," "po-peeek po-peeek po-peeek. . . ." "po-pereek," etc. often rendered for several minutes without stopping, and usually in duet but not in unison. Also an irritated "quir quir quir quir. . . ." rapidly repeated, sometimes with other sounds such as "pik pik pik pik" or "koke koke koke" leading up to "quir" series. Most frequently heard during day.

BREEDING: Male collected November 2, 1970 had only moderately enlarged testes. Voss (*in litt.*) found nest with four or five brown-spotted eggs 2 m aboveground in thick bush near Novo Hamburgo in spring of 1961.

BEHAVIOR: Often seen crossing or running along roads in moist forest. Occasionally invaded our Gramado garden from nearby woods. Shy, normally disappearing immediately it knows it is being observed.

SPECIMENS: MCN: 689*. AMNH: 45649, 313779–313784, 472025.

Porzana flaviventer
Map 53

Yellow-breasted Crake
Sanã-amarela
(Yellow Sanah)

Voss (1977b, p. 30) reported having seen this species in marsh on outskirts of São Leopoldo on November 9, 1975. This is only record for Rio Grande do Sul, but it has been found in São Paulo and Uruguay, so occurrence here not surprising. *Porzana. f. flaviventer.*

Porzana albicollis
Map 53

Ash-throated Crake
Sanã-carijó
(Spotted Sanah)

First discovered in state by Camargo (1962), who collected specimen near Farroupilha March 28, 1957. When traveling with me in mid-October 1971, Sick heard voice on two separate occasions W of Santa Maria. These are only state records to date. *Porzana a. albicollis.*

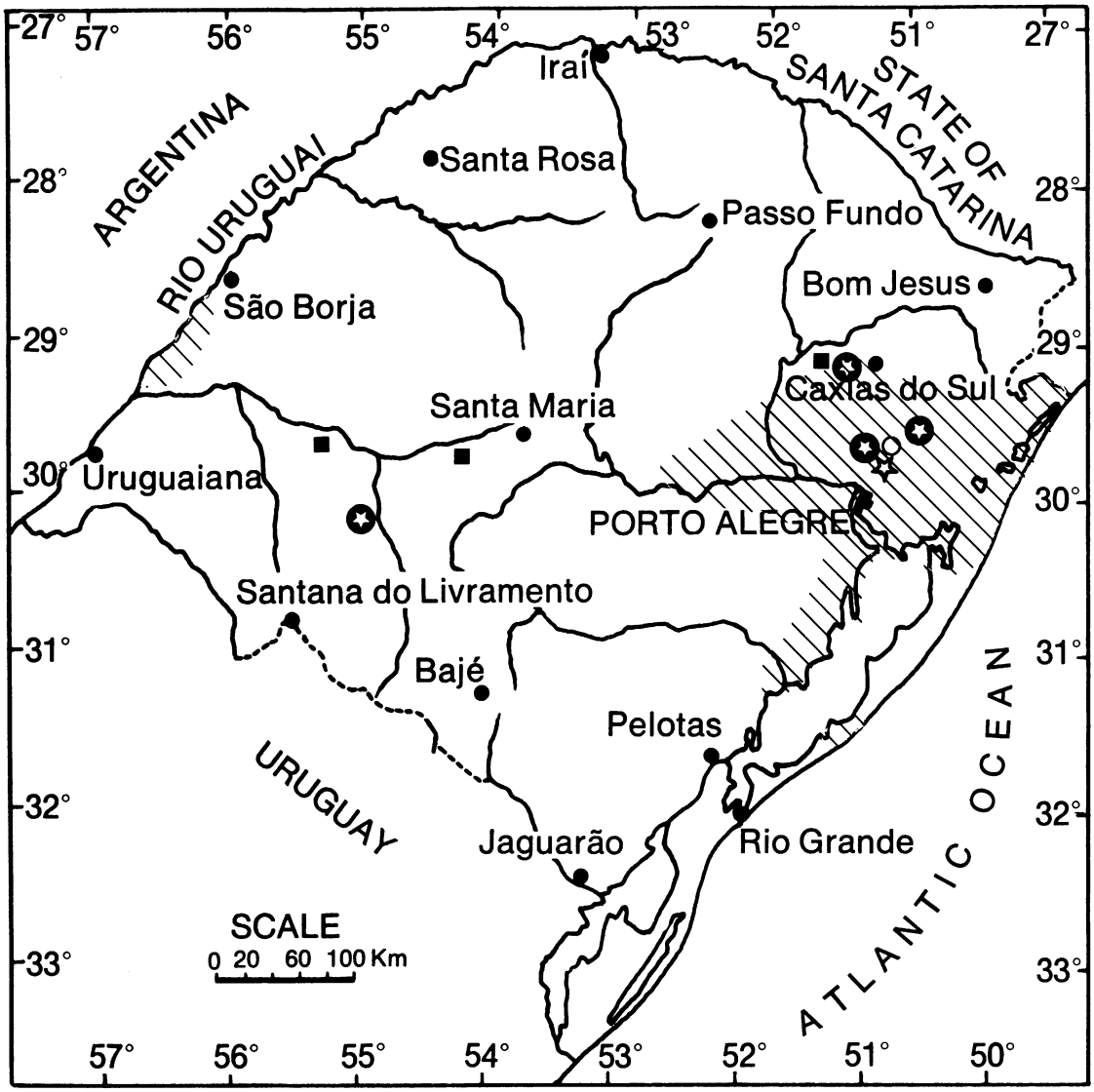
Laterallus melanophaius
Map 53

Rufous-sided Crake
Pinto-d'agua-comun
(Common Water-chick)

DISTRIBUTION AND STATUS: Resident, found primarily in E central portion of state, from Tôrres and Farroupilha S to São Lourenço and inland to Vera Cruz in central trough, and in W at Itaqui and São Donato marsh. Silva (personal commun.) saw one about 40 km NE of São José do Norte. Uncommon occupant of marshes, especially in heavy vegetation along edges. *Laterallus m. melanophaius.*

FIELD MARKS: Easily confused with *L. leucopyrrhus* with which it shares same habitat. Light rufous ear coverts and sides of breast of *melanophaius* contrast with blackish upperparts. Crissum is rufous. In *leucopyrrhus* crissum is white, ear-coverts grayish, and chestnut of sides of breast nearly uniform with color of adjoining upperparts.

SIZE: One unsexed specimen: 173 mm, 40 gr.



MAP 53. Geographical distribution of two *Porzana* and two *Laterallus* species and of *Cotunicops notata* in Rio Grande do Sul.

SOFT PART COLORS: One unsexed specimen: tarsus brownish gray; maxilla black with sides below nostril green; mandible gray with sides green at base; iris and eye ring gray.

BREEDING: Voss (personal commun.) saw two wild young at zoo, Sapucaia do Sul, November 18, 1976.

SPECIMEN: MCN: 698*.

Laterallus leucopyrrhus
Map 53

Red-and-white Crake
Pinto-d'agua-avermelhada
(Reddish Water-chick)

DISTRIBUTION AND STATUS: This rare species has been found near base of escarpment and in highlands near Farroupilha in NE. Silva obtained specimen in campanha SE of Rosario. All five records between June 8 and September 10.

FIELD MARKS: See under *L. melanophaius.*

SIZE: One female: 180 mm, 46.5 gr.

SOFT PART COLORS: One female: tarsus dull red; maxilla black with green sides from nares to base; mandible green with sides near tip black and tip of gonys gray; iris bright carmine.

BREEDING: Female collected June 30, 1974 had inactive gonads.

SPECIMENS: MCN: 386, 699*. AMNH: 45685.

Coturnicops notata
Map 53

Speckled Crake
Pinto-d'agua-pintalgado
(Speckled Water-chick)

This species on Rio Grande do Sul list by virtue of specimen collected in 1928 (no more precise date available) near Novo Hamburgo.

SPECIMEN: AMNH: 472183.

Porphyriops melanops
Map 54

Spot-flanked Gallinule
Frango-d'agua-carijó
(Spotted Water-hen)

DISTRIBUTION AND STATUS: Common resident in all of S and E and close to Rio Uruguay in far W, but registered only at scattered localities in other parts of far W and not at all in extreme N. Occurs in ponds, marshes and lakes having vegetation, but not usually in open water. *Porphyriops m. melanops.*

FIELD MARKS: Smallest Rio Grande do Sul rail likely to be seen swimming, and only one combining black face, gray and olive body plumage, with heavily spotted flanks. Frontal shield during breeding season very light bluish green. One seen at Tapes January 24, 1979 had red eye and green bill which was lightest at base.

SIZE: One unsexed (live): 270 mm, 154 gr.

BREEDING: Nesting prolonged. I have seen feathered young with adults as early as October 16 and as late as March 8. Immature male, not yet full size, collected April 24, 1972. Largest flock of young I have seen had five, all in black down.

BEHAVIOR: Usually found in pairs or family groups, almost never in large flocks such as those of *Gallinula chloropus.*

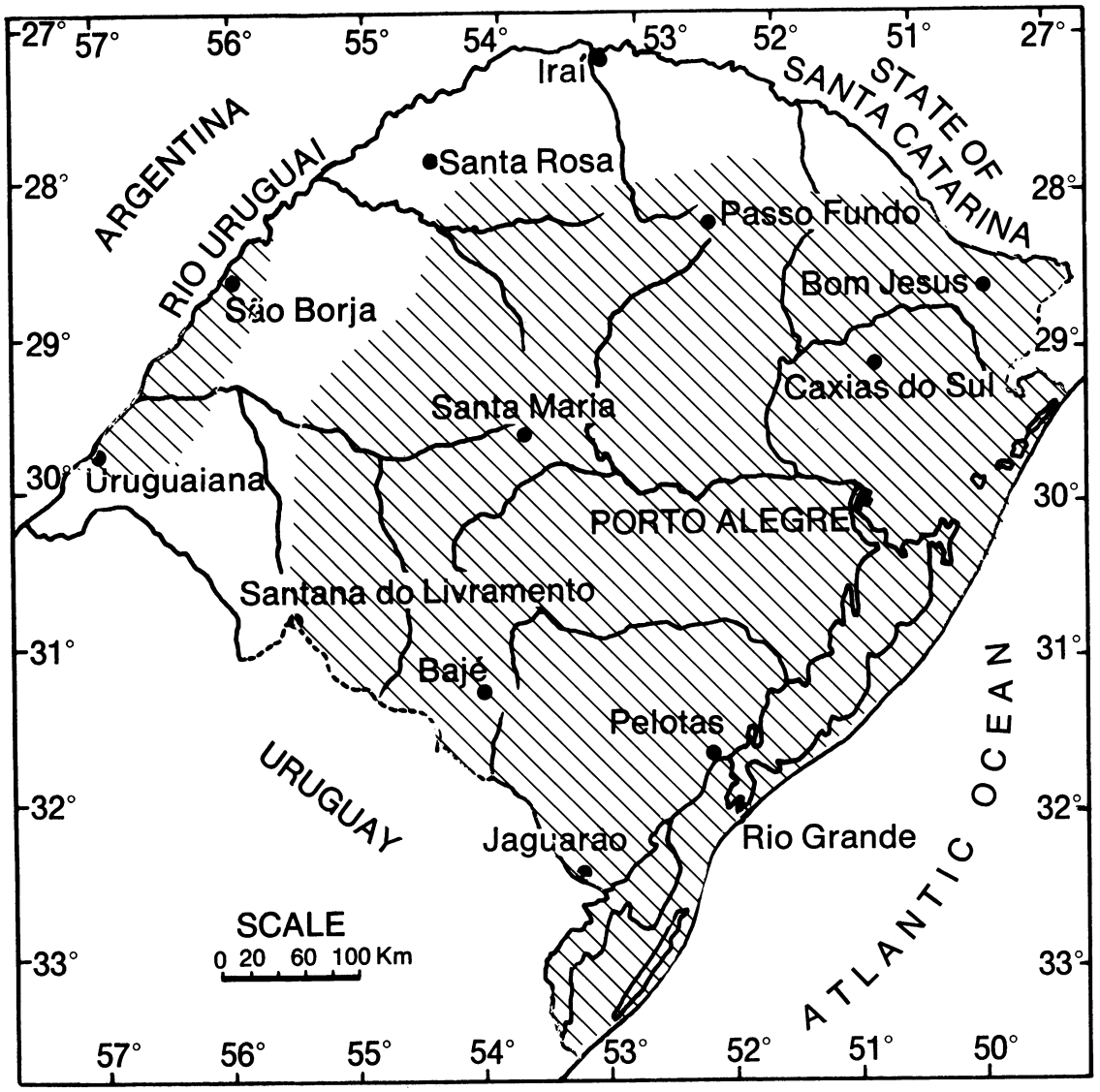
SPECIMENS: MCN: 415, 424, 428, 692*. AMNH: 321508–321512.

Gallinula chloropus

Common Gallinule
Galinhola or *Frango-d'agua*
(Gallinule or Water-hen)

DISTRIBUTION AND STATUS: Abundant throughout most of state, but scarce in extreme N and uncommon in highest areas of NE. Occurs in marshes, lakes, ponds, reservoirs, preferably with vegetation. Also moves onto dry areas surrounding these. In late July 1974 as we drove alongside Mundo Novo marsh on shore of Lagoa Mirim, fields ahead of us were alive with these gallinules which ran in droves toward marsh as we approached. Present throughout year, with some migratory movement, presumably winter influx from S. We saw only one individual at Mundo Novo on January 25, 1975. Fluctuations in numbers have also been noted in NE littoral. One of few returns from brief banding program in that area was of Common Gallinule banded near Capão da Canoa and recaptured approximately 100 km N in Santa Catarina. Dates on this not currently available. *Gallinula c. galeata.*

FIELD MARKS: In contrast to local coots, *G. chloropus* has white on flanks, larger and much brighter red frontal shield, with red extending out onto bill almost to yellow tip.



MAP 54. Geographical distribution of *Porphyriops melanops* in Rio Grande do Sul.

BREEDING: Adults with half-size young seen as early as November 16, and accompanying young with no shields on March 26. Camargo banded 476 individuals near Capão da Canoa from April to July 1972, great majority in May; young birds with greenish bills and incipient shields considerably outnumbered adults. On January 15, 1975 S of Vera Cruz I saw two adult-sized pairs in pond, each accompanied by downy young. One pair lacked noticeable shields. I do not know whether these were immatures which bred before acquiring shields, or whether they were young of earlier brood escorting contingent from parent's second brood.

BEHAVIOR: Utilize open water as much or more than coots, but quickly retreat to cover at approach of intruders. Often found in loose flocks of considerable size. Stomach of immature specimen collected April 24, 1972 contained rice and grasses.

SPECIMENS: MCN: 318–320, 361, 419–421, 587, 594, 687–688*, 1775. AMNH: 313806, 321740.

Porphyrula martinica
Map 55

Purple Gallinule
Frango-d'agua-azul
(Blue Water-hen)

DISTRIBUTION AND STATUS: Fairly common summer resident of marshes, streams choked with water hyacinth, and rice fields, most frequently found in central depression, but also occurs on littoral (mostly inland) S to 33°S, in southern hills, occasionally in N highlands, and in São Donato marsh. My earliest certain record is September 23, latest May 22, with number of sightings rising then falling between those dates. First record of species in higher altitudes of NE was in Gramado where, on foggy night in mid-April 1975, immature bird, apparently migrating N, flew onto lighted porch of home and walked in when door opened to investigate noise. Another specimen found in nearby garden the following day was also captured. One of these, wing-clipped, spent winter at Nelz duck pond and disappeared following spring after acquiring adult plumage.

FIELD MARKS: No other marsh bird here has purplish blue underparts.

SIZE: One immature female: 297 mm, 243 gr.

SOFT PART COLORS: One immature female: tarsus greenish tan; maxilla: base of culmen brown, distal half greenish, commissure lighter; mandible: light brown, base washed red, tip light green; shield slate gray; iris pale orange.

BREEDING: On March 30, 1971 adult was feeding two young only about one-third adult size.

BEHAVIOR: Usually found singly or in pairs. Although normally seen low in watery places walking on heavy aquatic vegetation, they also perch 2 or 3 m high in bushes. On one occasion several were feeding near marshy edge of pond and as we approached they flew into adjoining woods to avoid us, even though there was plenty of opportunity to fly into or across marsh.

SPECIMENS: MCN: 190, 693*.

Fulica armillata
Map 56

Red-gartered Coot
Carqueja-de-bico-maculado
(Spot-billed Coot)

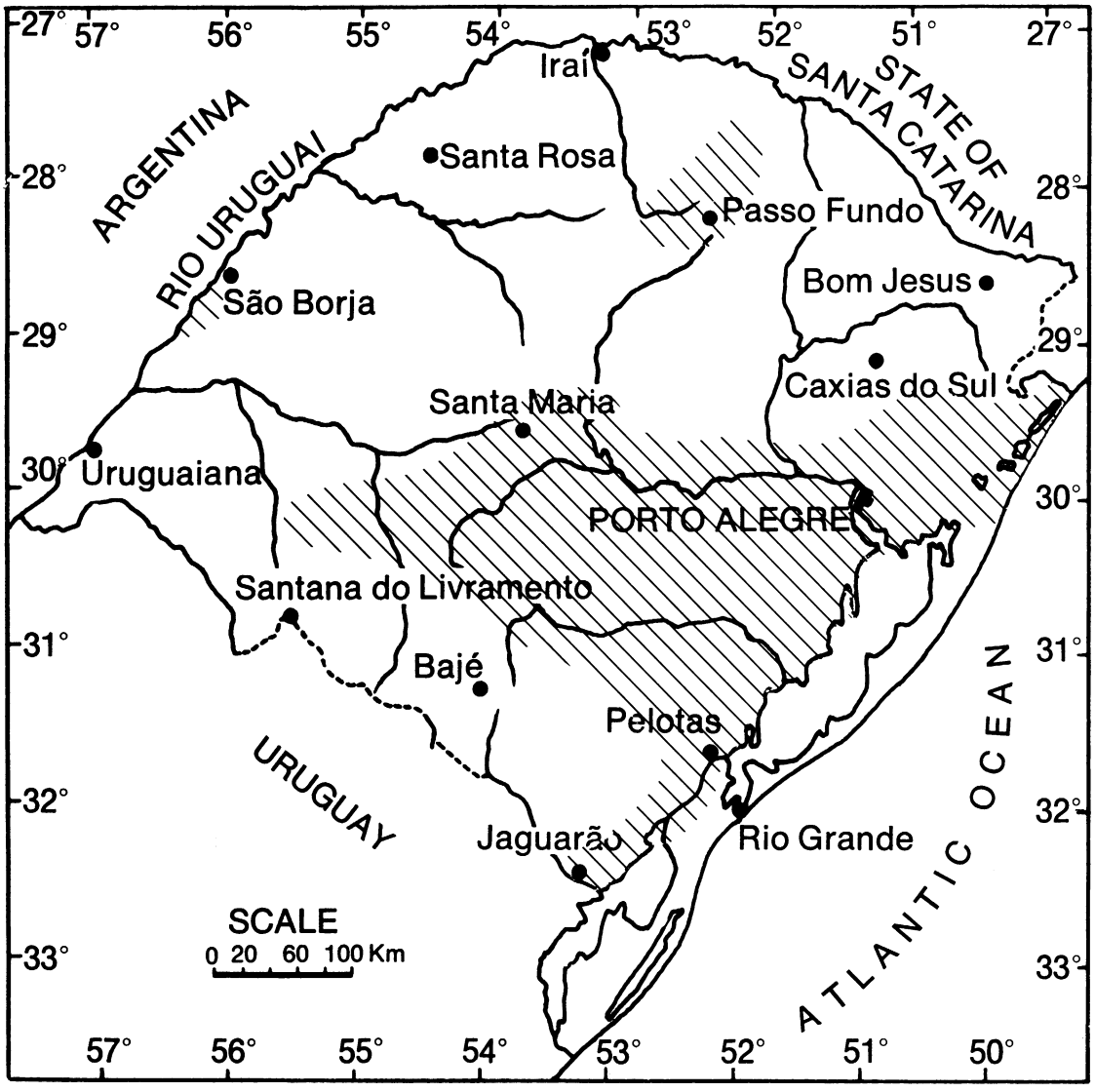
DISTRIBUTION AND STATUS: Occurs in marshes, lakes and reservoirs, including sizable areas of open water; uncommon along most of littoral and occasionally in Bagé-Dom Pedrito area, but sometimes quite common in extreme S below 32°S. Present throughout year, but given to considerable movement and local concentration. Near Santa Isabel, where at end of November 1972 and in May 1973 these and *F. leucoptera* were common, on February 16, 1974 I saw only one pair and none of other two *Fulica* species. About 50 km away on January 25, 1975 I saw several hundred coots in one reservoir, most, if not all, *armillata.*

FIELD MARKS: Although substantially larger than other two local coots, this not readily discernible unless they are in close proximity to each other; difference in bill and shield color is best means of separating them. Yellow shield and yellow of bill of *armillata* are separated by deep red at base of maxilla, which at any distance creates impression bill and shield not connected. Based on my observation of this species in Rio Grande do Sul, I find description of shield by several authorities as "red bordered with yellow" misleading.

SOFT PART COLORS: One female: tarsus greenish orange-yellow, garter deep red, toes yellowish green; bill greenish yellow with deep red on sides at base and at base of culmen, running into shield; shield light yellow except where it meets bill; iris dull red.

BREEDING: At end of November 1972 in deeply flooded pasture where number of *F. leucoptera* were nesting, Sick and I found apparently identical nest with considerably larger eggs (67 mm × 40 mm, 48 gr vs. 50 mm × 35 mm, 33 gr) which we subsequently concluded were probably those of *armillata,* although we did not notice one in immediate vicinity. On February 8, 1974 I saw pair of adults with four young about three-quarter size.

BEHAVIOR: Several times I have watched individuals swim up against line of floats supporting fishing nests in marsh. Rather than make effort to climb or fly over such apparently minor obstacle, birds always turned away. When swimming away from observer, heel and occasionally red garter visible alternately on each leg, giving impression of drive shafts of sternwheel river boat in operation.



MAP 55. Geographical distribution of *Porphyrula martinica* in Rio Grande do Sul.

These coots feed like puddle ducks, by tip-tilting.

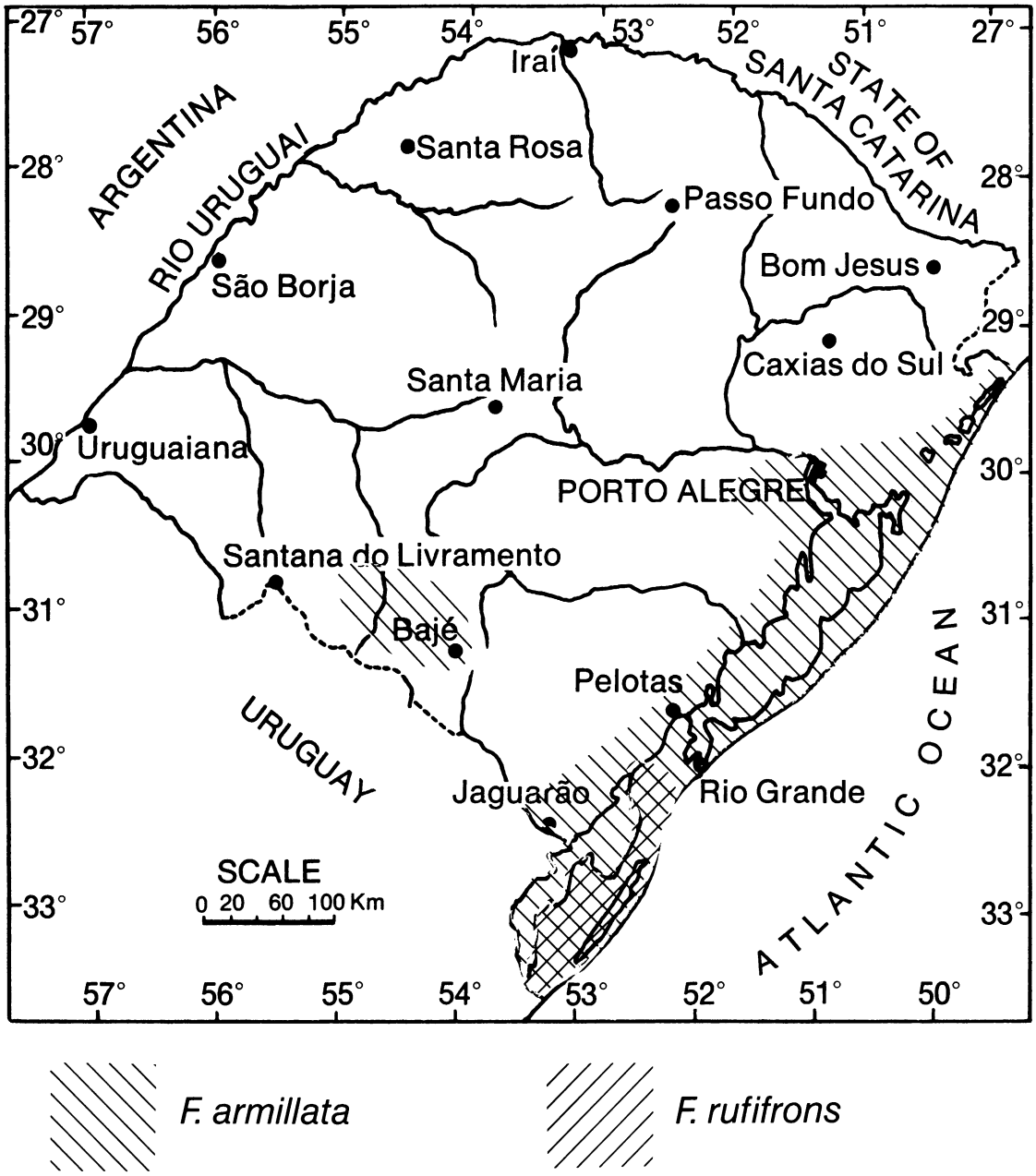
SPECIMENS: MCN: 694*. AMNH: 321228, 321229, 321514, 321515.

Fulica leucoptera
Map 57

White-winged Coot
Carqueja-de-bico-amarelo
(Yellow-billed Coot)

DISTRIBUTION AND STATUS: Common to locally abundant in marshes, lakes and reservoirs across S from coast to W tip, and N through center to 28°S. Rarely along NE littoral. Present all year, but with considerable local movement. At two widely separated locations where I have seen them nesting in abundance in spring, I have found only one individual, or none, in fall or winter.

FIELD MARKS: In flight narrow white line visible at tips of secondaries. However, bill and shield best means of separating from oth-

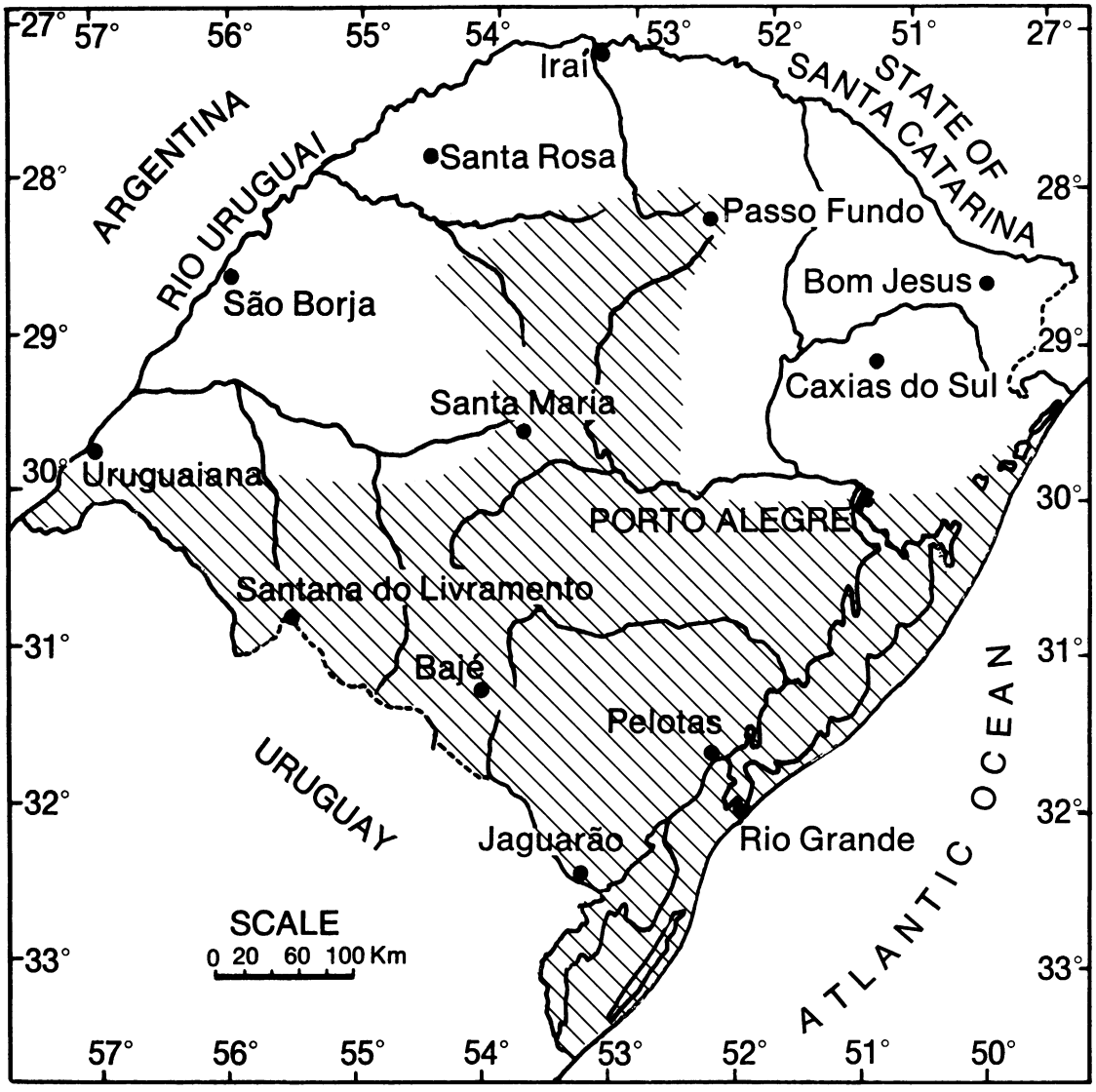


MAP 56. Geographical distribution of two *Fulica* species in Rio Grande do Sul.

er Rio Grande do Sul coots. Shield this species larger and more rounded at top than in other two species. Light colors of bill and shield blend so they appear as unit, in contrast to interrupted pattern of *F. armillata.*

SIZE: Four females: 320–370 mm, 400–500 gr.

SOFT PART COLORS: Two females: tarsus and garters greenish yellow, knee and base of toes dark gray, toes greenish gray; bill bluish



MAP 57. Geographical distribution of *Fulica leucoptera* in Rio Grande do Sul.

pink with greenish tip and orange-yellow spots on culmen behind tip and on sides at base of maxilla; shield vivid orange-yellow; iris dull red. Third female: tarsus yellowish green; bill pinkish gray with yellowish green band near tip; shield light yellow; iris dull red.

Although lemon-yellow bill and shield mentioned for this species by several authorities is accurate field mark for many Rio Grande do Sul individuals, others have shields varying in shade from vivid orange-yellow through pink to light reddish. Near Rio Pardo on October 20, 1971, Sick and I saw copulation between yellow-shielded male and reddish-shielded female. Difference not sexual, however, for I have collected females in prime breeding condition with both light yellow and vivid orange-yellow shields. Latter color sometimes appears reddish, depending upon how light strikes. Age could be factor in shield color. If there is some separation of age groups during fall, age hypothesis would be supported by fact that on two different trips to southern littoral in May and June 1973 I saw

less than 10 percent of reddish shields, whereas in spring and summer proportion would be close to 50 percent. Banding could probably solve this problem fairly quickly.

BREEDING: Breeding season very prolonged. Adult pair with three young of different sizes, ranging from one-quarter to one-third grown, seen as early as October 15; nesting and young observed throughout spring and summer; and as late as March 30 I saw bird on nest with three eggs. This nest, of green grasses and other aquatic vegetation, rose above water surface in completely exposed situation in roadside pond only about 5 m from highway embankment and 10 to 12 m from heavily traveled highway. Both parents feed young. See *F. armillata* re eggs.

SPECIMENS: MCN: 171, 696–697*. MN: 32296–32297*. AMNH: 321513.

Fulica rufifrons
Map 56

Red-fronted Coot
Carqueja-de-escudo-roxo
(Purple-shielded Coot)

DISTRIBUTION AND STATUS: Scarce occupant of marshes and reedy lakes, mostly in S tip below 32°S. Sick, do Rosário, and Azevedo (1981) reported about 500 individuals on southern Santa Catarina coast on April 29, 1980, and Silva (personal commun.) found it in Capivari marsh in October, so presumably it occurs occasionally along entire Rio Grande do Sul littoral. Registered in September, October, November (Ridgely), January, February, and May. Probably present throughout year.

FIELD MARKS: Purplish red shield relatively narrow and comes to rounded point near crown, where it sometimes rises above surrounding feathers sufficiently to give impression in distant profile of slight top-knot. Dark shade of shield extends onto base of otherwise mostly yellow bill.

SIZE: One male: 410 mm, 685 gr. One female: 364 mm, approximately 550 gr.

SOFT PART COLORS: Tarsus olive green, yellowish or with yellow spot at garter; bill light yellow with base—and culmen out to distal end of nostril—very dark purplish red, rest of culmen orange out to green tip; shield dark purplish red; iris brown.

BREEDING: On May 11, 1973 I saw two adults accompanying four almost full-grown juvenals whose bills less colorful than those of adults.

SPECIMENS: MCN: 695*. MN: 32307*.

FAMILY CARIAMIDAE

Cariama cristata
Map 58

Red-legged Seriema
Seriema

DISTRIBUTION AND STATUS: Uncommon resident of hilly grasslands with nearby woods, principally across southern hills and N to Garruchos, and in high NE, but also registered in upper Jacuí basin and on littoral in extreme S. Seldom encountered in forested or previously forested areas of N. I found one far inside large exotic acacia planting otherwise almost entirely devoid of bird life. Probably more frequently noticed than numbers justify, due to far-carrying voice.

FIELD MARKS: Long-legged, long-tailed, primarily terrestrial species 60 to 70 cm high, with red bill and legs and loose grayish crest on forehead.

VOICE: (R) Dramatic concert of loud, far-carrying, raucous cries. Full performance starts with individual or double whoops, works into several short, ascending series of whoops, then jumps to longer, descending series of high, ringing cries repeated continuously for several minutes. Pairs often duet, but not in unison.

BREEDING: Voss and Scott (personal commun.) saw juvenal not fully feathered near São Francisco de Paula on January 11, 1982.

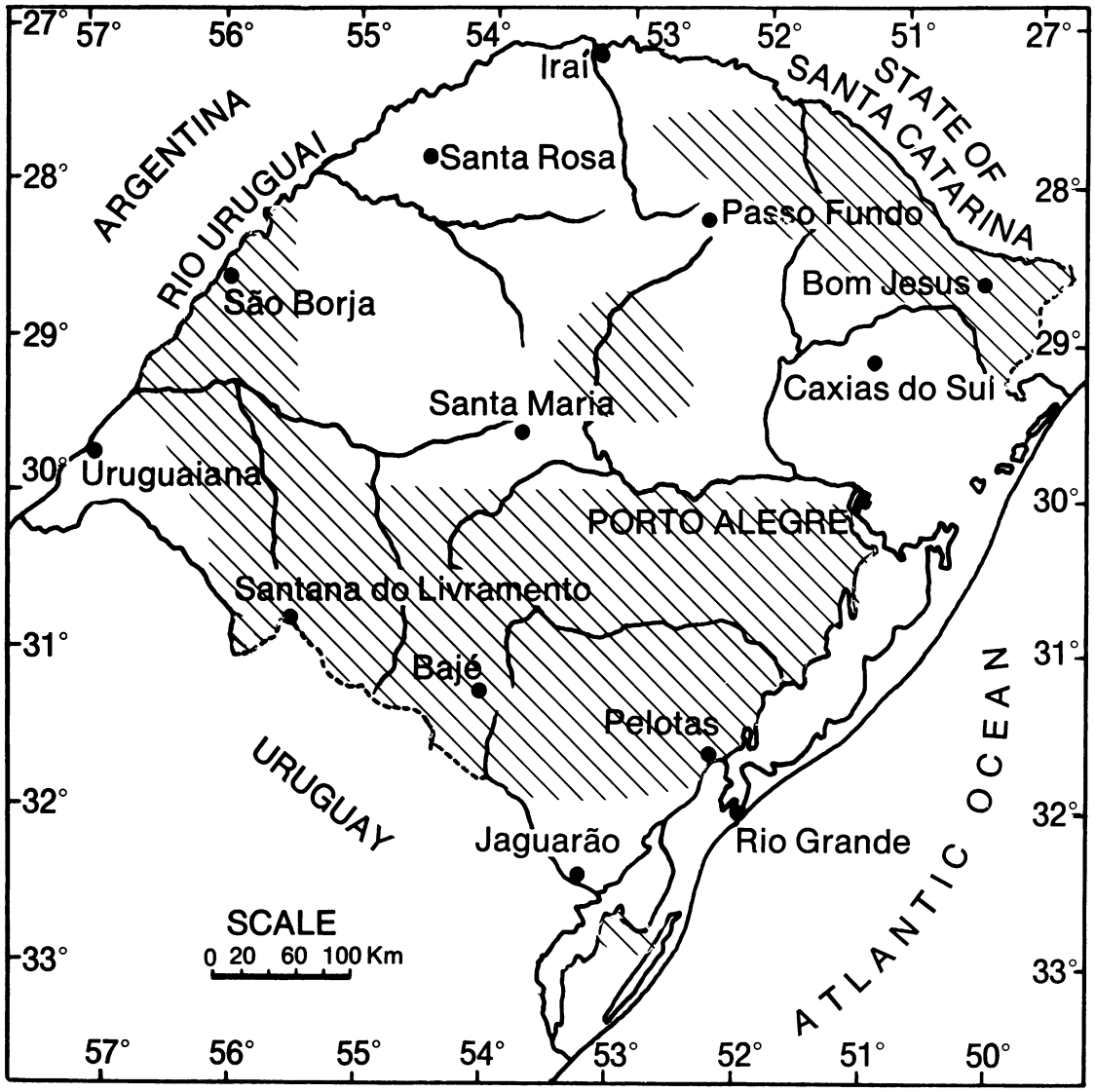
BEHAVIOR: Common feature of morning in hilly grasslands of Rio Grande do Sul is concert by pair of seriemas, often coming from top of grassy ridge, which they perhaps seek to provide maximum range for whooping cries.

FAMILY JACANIDAE

Jacana jacana

Wattled Jacana
Jaçanã

DISTRIBUTION AND STATUS: Resident throughout state in practically any body of water with aquatic vegetation. Abundant in most low areas, common to scarce elsewhere



MAP 58. Geographical distribution of *Cariama cristata* in Rio Grande do Sul.

as average temperatures drop, but breeding has occurred at Aparados da Serra National Park at 1000 m altitude. *Jacana j. jacana.*

FIELD MARKS: Black and rufous plumage, red frontal shield and extremely long toes. Immatures brown above, white below, with long white superciliary and black streak behind eye. Like adults, immatures have large yellow-green patch visible in open wing. Blake's description (1977) of immature *J. spinosa* is generally accurate for *J. jacana* in Rio Grande do Sul, but his description of immature *J. jacana* does not apply here. Immature plumage persists for some months. I have seen adult-size individuals in immature plumage as late as October 3.

SIZE: One unsexed (live): 250 mm, 155 gr.

SOFT PART COLORS: One immature male: tarsus greenish gray; maxilla grayish brown; mandible yellow with greenish tip; iris yellow; shield blue; wattles purple. One immature female: tarsus greenish gray; maxilla

green, brown at base; mandible yellow with brown tip; iris yellowish green; shield purplish blue; wattles purplish pink.

VOICE: (R) Repeated hiccuping: "jakuk jakuk jakik jakuk. . . ."

BREEDING: Silva (personal commun.) has studied this species at some length in Rio Grande do Sul but has not observed polyandry for which *J. spinosa* known. Breeding season extended. I have found nest with four eggs as early as October 3, pair copulating on January 28, and have seen young just out of downy stage on March 30. Copulation is prolonged procedure. Several times I have seen males mounted for up to full minute, flapping wings continuously to maintain position. On one occasion, female continued to feed and scarcely squatted or otherwise indicated she was party to performance.

BEHAVIOR: Although found mostly on floating aquatic vegetation, it also wanders in grassy meadows near water. Once I observed three immature individuals together with *Machetornis rixosus* accompanying grazing horse through field to catch insects it stirred up.

SPECIMENS: MCN: 15, 709–711*, 1801. AMNH: 313824–313832, 321770–321773.

FAMILY ROSTRATULIDAE

Nycticryphes semicollaris

Map 59

South American Painted-Snipe
Narceja-de-bico-torto
(Curve-billed Snipe)

DISTRIBUTION AND STATUS: Rare. First state record was of one shot by hunter at Banhado do Pontal January 1, 1964. Sick collected male at Estância Santo Antonio, 40 km E of Santana do Livramento, on February 3, 1966. Sick states (personal commun.) bird was in perfect nuptial plumage with well-enlarged testes. He concluded it was probably on breeding grounds. Silva captured male near Capivari in mist net November 4, 1980. Ridgely and Voss saw one near Pelotas November 11, 1980.

SIZE: One male: 218 mm, 66 gr.

BEHAVIOR: Ridgely (*in litt.*) said Pelotas bird "was very sluggish, evidently resting/sleeping and we never could flush. Moved very little, and then slowly and inconspicuously, low to the ground. Hunched posture, bill held angled down. Was resting in depression on an exposed mud bank, where it was very hard to see, blending in and shielded by tufts of grass; perhaps the mud is important and the key to finding the bird."

SPECIMENS: MCN: 1755. Sick's specimen deposited in Zoology Museum of University of São Paulo.

FAMILY HAEMATOPODIDAE

Haematopus palliatus

American Oystercatcher
Piru-piru

DISTRIBUTION AND STATUS: Abundant on ocean beaches and beaches of major lagoons full length of littoral. Present all year, but some local movement occurs, possibly to interior beaches, for species sporadically scarce on ocean front. *Haematopus p. palliatus.*

FIELD MARKS: Disproportionately long, straight, bright red-orange bill; white rump and wing patches in flight.

SIZE: One female: 425 mm, 550 gr.

SOFT PART COLORS: One female in breeding condition: tarsus bluish white; bill bright orange on basal half, red on distal half, tip yellowish; iris greenish yellow on inner side, orange-yellow on outer side; eye ring bright orange; bare throat skin yellow-orange. One downy young: tarsus dull grayish brown; maxilla black; mandible lighter with greenish patch near division of yellowish rami.

VOICE: Series of short, sharp, staccato, high-pitched, loud whistles.

BREEDING: One downy young on November 27, 1972 was attended by two adults about 100 km SW of Cassino. On following day juvenal estimated to be about one-third adult size found dead near Cassino. Female collected November 27, 1972 in breeding condition.

BEHAVIOR: Usually found in pairs or small flocks, but occasionally in groups of 30 to 40. Often stay high on beach away from water but also feed at surf edge. Usually vocalize noisily when disturbed.

SPECIMEN: MCN: 700*.

FAMILY RECURVIROSTRIDAE

Himantopus melanurus (himantopus)
Map 59

Common Stilt
Pernilongo
(Long Legs)

DISTRIBUTION AND STATUS: Abundant resident found throughout state with exception of NE highlands and extreme N, in flooded pastures, edges of marshes, lakes, reservoirs, and on ocean beaches. There is some local movement, it occasionally appearing in large flocks. Several bands of 100 or more each were at Fazenda Quatro Irmãos on November 30, 1972, and in two separate years I have found it in large numbers along ocean edge in NE in May or June, but it was almost entirely absent from NE littoral in early October 1972.

FIELD MARKS: Extremely long, slender legs; black and white body with some gray.

SIZE: One immature male: 385 mm, 196 gr. One immature female: 362 mm, 183 gr.

SOFT PART COLORS: Two immatures: tarsus orange-pink or light pinkish gray; bill black; iris light chestnut.

VOICE: (R) Irregular "yap. .yap. . . . yap. . .yap yap yap. .yap. . . ." Known locally also as "Cachorinho" = "Puppy" for barking quality of this vocalization.

BREEDING: On October 10, 1972, N of Mostardas, I saw pair of adults with three young about one-third adult size.

BEHAVIOR: Sometimes feeds by sweeping partly opened bill sideways through water.

SPECIMENS: MCN: 769–770*. AMNH: 313810, 321230.

FAMILY CHARADRIIDAE

Vanellus chilensis

Southern Lapwing
Quero-quero (onomatopoetic)

DISTRIBUTION AND STATUS: Abundant resident throughout, in pastures and other areas with low grass, preferably somewhat moist. Rarely on beaches. One of the "basic" species of Rio Grande do Sul. *Vanellus c. lampronotus.*

FIELD MARKS: Only species combining erect, plover stance and nuchal plume.

SIZE: One female: 325 mm, 277 gr.

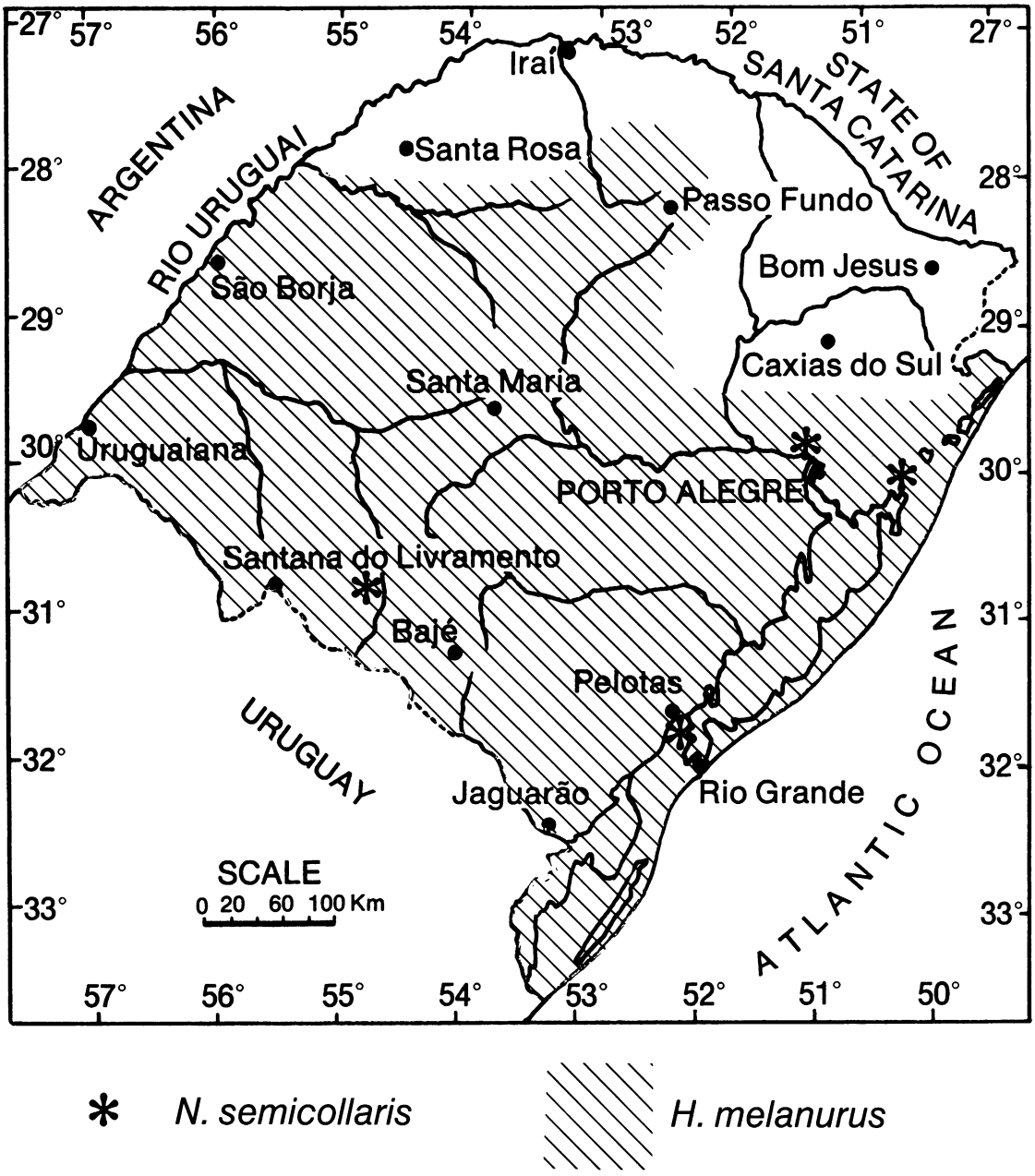
SOFT PART COLORS: Tarsus bluish gray; bare tibiotarsus dark pink; bill dull magenta with black tip; iris and eye ring magenta.

VOICE: (R) Shrill, sometimes, when whole flock calling, almost deafening "queru queru queru. . ." uttered in flight or on ground at any, or no, provocation. Makes short rattles like tic-tac of Halloween window rattle when at low part of dive against intruders in territory.

BREEDING: Nesting occurs in open grasslands, usually in small depression with living grass compressed into saucer shape, or with bit of dry grass added, insufficient to provide any significant lining. L. E. Martins Ribeiro (personal commun.) informed me of nest with two eggs seen near Livramento during last week of July 1981. Voss (personal commun.) found nest with four eggs August 29, 1963, at Novo Hamburgo. Four eggs is most common number. I have found eggs between September 7 and December 8. One nest had fourth egg added between 11:00 A.M. and 4:30 P.M. One adult found brooding apparently healthy chick in nest at edge of grassy pond with nestling's feet and belly in about one cm of water.

BEHAVIOR: This aggressive, noisy species always found on ground or in flight. I have never seen one perched above surface level. Highly territorial, it unhesitatingly "dive bombs" any intruder, sometimes coming close enough to knock a man's hat off, but I have not heard of human injury resulting from sharp wing spurs. I have seen *Phimosus infuscatus* driven away by diving tactic. Occasionally three or even four birds defend same territory. Broken-wing trick also used to lure intruders. Because they almost always call at human approach, wing-clipped individuals sometimes kept around ranch houses as sentinels.

Nidifugous chicks "freeze" when danger approaches. Downy plumage provides remarkably effective camouflage. When walking, chick has distinctive upright plover posture and from rear shows white patch on back of neck below black line of head plumage. Chick walking away from me at about 10 m suddenly disappeared from view. Much searching revealed it squatting in indentation of cow track. In that position white no longer visible and mottled gray, brown, and black



MAP 59. Geographical distribution of *Nycticryphes semicollaris* and *Himantopus melanurus* in Rio Grande do Sul.

of head and back blended perfectly with surrounding muddy ground.

Flight varies from strong and direct, with swift, low-angled swoops when intimidating interlopers, to loose, flapping, leisurely wing stroke which resembles that of *Podager nacunda* sufficiently to enable two species to be confused at distance on summer evening.

After nesting, lapwings tend to flock. From January through March bands of 30 or 40

move together around Gramado golf course which in previous months had few isolated pairs. Occasionally, probably induced by especially favorable food supply, hundreds assemble on small area, but these do not act as united flock. While partial to completely open terrain, on very hot days some individuals seek shade behind grassy clumps or cactus plants.

SPECIMENS: MCN: 19, 20, 37, 195, 701–702*.

Pluvialis dominica

American Golden Plover
Batuiruçu
(Great Plover)

Common to abundant non-breeding summer visitor from North America, with occasional few overwintering in state. Found along entire littoral and occasionally at scattered points inland, on ocean beaches, mud flats, and wet pasturelands. My earliest arrival record is August 26, 1975 when I saw six, still with much black on underparts and very prominent whitish superciliary and forehead, near small pond in NE highlands at about 1000 m altitude. All were nervous, did not stay long in one place, and shortly departed, giving impression they were still migrating. Latest date for birds clearly not wintering-over is March 1. Three individuals seen at Lagoa do Peixe May 27–29, 1974.

On beaches, Golden Plovers sometimes found with *P. squatarola,* whereas in wet meadows most common associate is *Tringites subruficollis.* When feeding in grasslands, loose flocks of 200 or more occur, usually well spread out with distance between individuals of 5 or 6 m. However, on wing they behave as tightly knit group, flying in fairly close formation. *Pluvialis d. dominica.*

SPECIMENS: MCN: 282, 716–717*, 1792. AMNH: 810495*, 823998*.

Pluvialis squatarola

Black-bellied Plover
Batuiruçu-de-áxila-preta
(Great Black-axillaried Plover)

Uncommon non-breeding summer visitor from North America found on ocean beaches and occasionally in wet meadows or mud flats near coast; one record from NE highlands. Relatively small numbers, and some birds overwintering in state, make it difficult to ascertain precise arrival and departure dates. My earliest spring record of birds still retaining definite indications of breeding plumage is September 18, and latest fall sighting April 11. Sparsely scattered individuals and pairs present along entire ocean beach from Pinhal to São José do Norte July 22–27, 1981.

SPECIMENS: MCN: 707*. MN: 31842*.

Charadrius semipalmatus

Semipalmated Plover
Batuíra-norteamericana
(North American Plover)

Scarce non-breeding summer visitor from North America found, usually as individuals or in small flocks, along littoral mostly close to coast on mud flats and ocean beaches. Earliest spring date registered is October 4. After several late January records, next is April 15. Several individuals seen on May 27–29, 1974 at Lagoa do Peixe probably overwintering.

SPECIMENS: MCN: 705–706.*

Charadrius collaris
Map 60

Collared Plover
Batuíra-de-coleira
(Collared Plover)

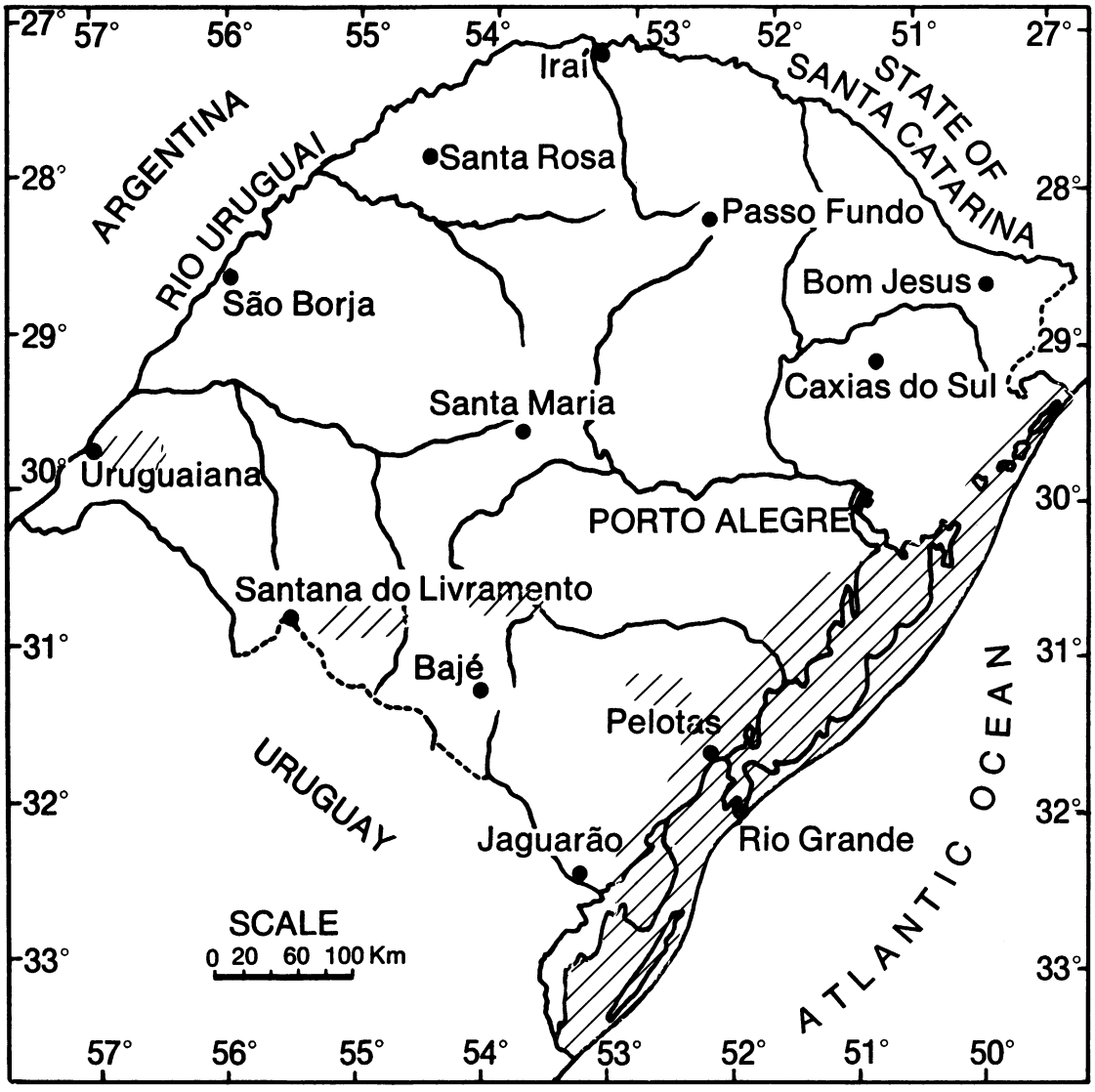
DISTRIBUTION AND STATUS: Common resident of ocean beaches and sandy or grassy flatlands along entire littoral and at scattered inland locations across southern portion of state. Seems more common on ocean beaches in winter than summer, but I have no other evidence of migratory movement.

FIELD MARKS: Smallest Rio Grande do Sul plover, and only one likely to be found here with single *black* breast band.

SIZE: One male: 159 mm, 42 gr. One female: 162 mm, 38 gr.

SOFT PART COLORS: Tarsus pinkish white; bill black, lighter at base of mandible; iris brown.

BREEDING: Nest at Capão da Canoa on October 4, 1972 was rather steep-sided cup hollowed out of sand with no lining of any kind, about 150 m inland from ocean edge in sandy area with scattered grass. Only egg, quite warm, was perhaps just laid, for bird had just spent about five minutes on nest. Female col-



MAP 60. Geographical distribution of *Charadrius collaris* in Rio Grande do Sul.

lected September 7, 1973 had inactive ovary, whereas male of December 14, 1971 had active testes.

BEHAVIOR: Almost always found in pairs or singly, and does not seem to flock. On June 27, 1974 when just shot *Charadrius modestus* fell dead, *C. collaris* standing about 2 m away ran over to it, vocalizing excitedly, and leaned forward, raising its wings. When man approached to pick specimen up, it fled but continued agitated vocalizing from distance.

SPECIMENS: MCN: 1, 3–6, 621*, 712–713*. MN: 2558. USNM: 461532*. AMNH: 823999*.

Charadrius falklandicus

Two-banded Plover
Batuíra-de-coleira-dupla
(Double-collared Plover)

DISTRIBUTION AND STATUS: Moderately common winter visitor from southern latitudes with few possibly resident. Found on

ocean beaches, sandy flats, and low lying pastures along outer littoral N as far as Tramandaí. Common at Lagoa do Peixe in late May 1974, with about 20 percent still in breeding plumage, but very scarce on beach from Pinhal to Lagoa do Peixe July 22, 1981. I have records for months of January, February, March, May, July, and October, and Martin Sander (*in litt.*) saw isolated individuals at Tramandaí in early April 1980. I attribute lack of June and August records to limited observation rather than lack of birds.

FIELD MARKS: Only plover in state with two broad bands, either black or gray-brown, across white underparts.

SIZE: One male: 187 mm, 68 gr.

SOFT PART COLORS: Tarsus gray to black; bill black; iris brown.

BREEDING: On October 11, 1972 at Lagoa do Peixe I collected male in breeding plumage with much enlarged testes, and at same place in late January 1974 I saw three or four flocks of from five to 10 birds, each of which included several in full nuptial plumage and others, apparently juvenals, with very faint or incomplete breast bands. Former individual might have been straggler and latter birds could have been very early arrivals from southern breeding grounds, but their presence raises possibility that some individuals may breed here, as they do at similar latitudes in Chile (Goodall, Johnson, and Philippi, 1951, pp. 209–210).

SPECIMENS: MCN: 714–715*. MN: 31896*, 32227*.

Charadrius (*Zonibyx*) *modestus*
Map 61

Rufous-chested Dotterel
Batuíra-de-peito-avermelhado
(Rufous-chested Plover)

DISTRIBUTION AND STATUS: Common winter visitor from high southern latitudes, found on ocean beaches, moist grasslands, and mud and sand flats along entire littoral and at scattered points in campo areas of W as far N as Banhado São Donato. My earliest record is April 16 and latest August 29, but Camargo (1962) reported specimen collected on northern littoral November 8, 1953.

FIELD MARKS: Distinguished by grayish brown breast, white throat and belly, and long superciliary extending well behind eye on arrival in state in autumn. By mid-July most individuals well into breeding plumage and easily told by rufous breasts separated from white belly by black band and by much broader superciliaries, which join on forehead.

SIZE: Three males: 209–217 mm, 79–94 gr. One unsexed: 208 mm, 75 gr.

SOFT PART COLORS: Tarsus varies from light greenish gray to greenish black; bill black; iris brown.

BEHAVIOR: Usually found singly, rather than in pairs or flocks.

SPECIMENS: MCN: 18, 704*, 708*. MN: 2662, 31845*. AMNH: 321232–321235, 823997*.

Eudromias (*Oreopholus*) *ruficollis*
Map 61

Tawny-throated Dotterel
Batuíra-de-papo-ferrugíneo
(Rusty-throated Plover)

DISTRIBUTION AND STATUS: Scarce winter visitor from high southern latitudes found along littoral. Small flock once seen inland NW of Canguçu at 180 m altitude. Normally utilizes open grasslands, but one flock lit briefly on low, rocky headland projecting into sea near Tôrres. My earliest record is May 11 and latest July 22, but specimen in MEA, Camaquã, labeled as collected near Camaquã March 15, 1968.

FIELD MARKS: Rufous throat and large black spot in center of buff belly.

SIZE: One female: 262 mm, 150 gr. One unsexed: 268 mm, 154 gr.

SOFT PART COLORS: Tarsus Light Grayish Purplish Red; bill black; iris brown.

BEHAVIOR: Occurs in loose flocks varying from few to as many as 100 individuals.

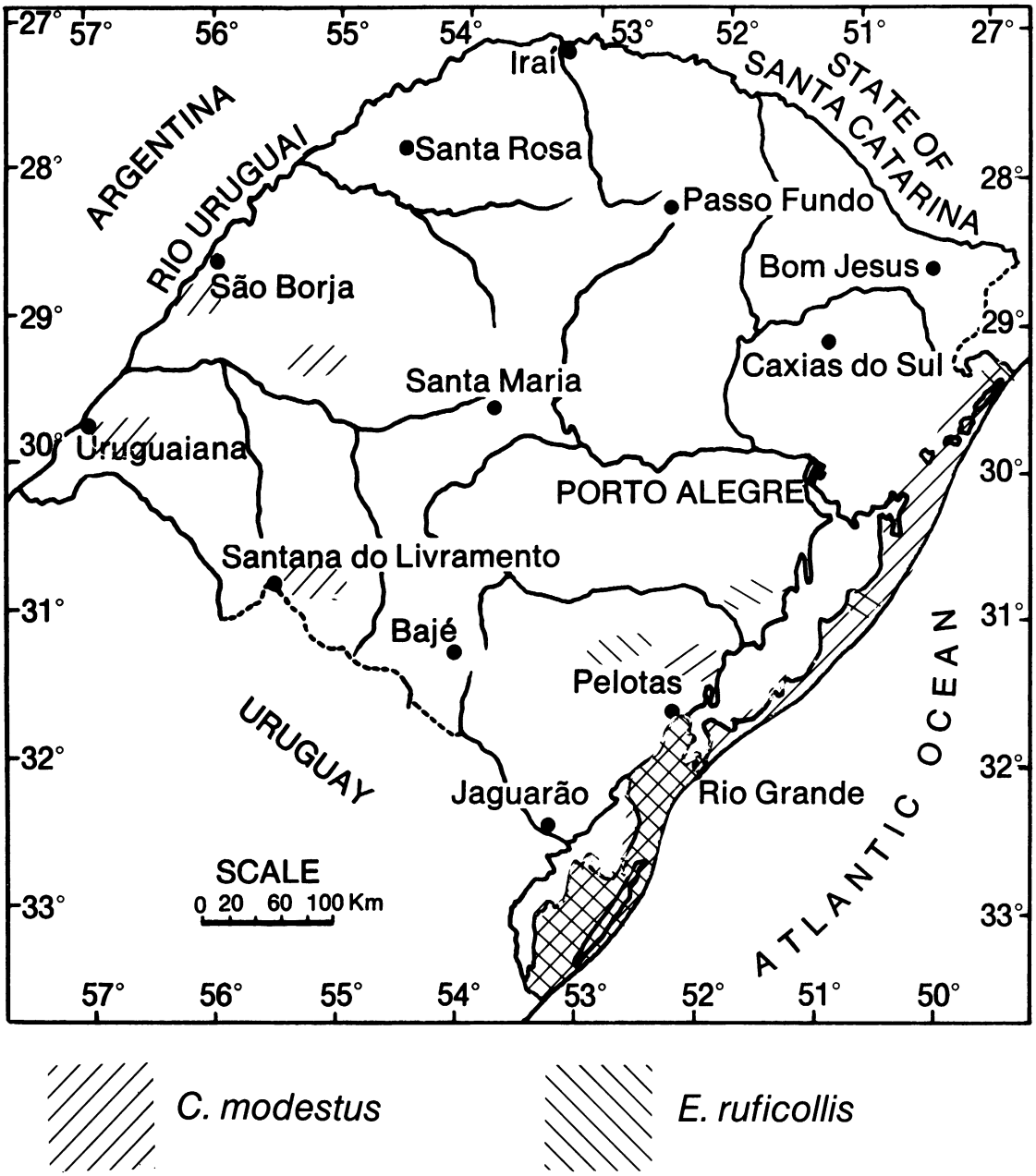
SPECIMENS: MCN: 703*. MN: 32908*. AMNH: 321231.

FAMILY SCOLOPACIDAE

Limosa haemastica

Hudsonian Godwit
Maçarico-de-bico-virado
(Tilt-billed Tubebill)

Very scarce non-breeding summer visitor from North America found at scattered points



MAP 61. Geographical distribution of *Charadrius modestus* and *Eudromias ruficollis* in Rio Grande do Sul.

on littoral, so far only in July, September–November, and May, indicating it probably here only en route to and from more southerly regions and to overwinter. This view reinforced by observations of Cuello and Gerzenstein (1962, p. 73) that it is common in Uruguay only from September through November, and those of Wetmore (1926, p. 159) who found it in Buenos Aires region only in November and March.

Aside from two isolated individuals I saw in late September and early October, Ihering (1899a) reported a specimen without date from Rio Grande; I saw two isolated individuals in late September and early October; and Ridgely (*in litt.*) saw a flock of eight on November 10, 1980. All other recorded observations have been at Lagoa do Peixe, where on October 11, 1972 I saw from one vantage point approximately 100 well-scattered individuals in winter plumage wading in shallow lake. None seen January 27–28, 1974, but on May 27–29, 1974 species quite common there, with several flocks of up to about 25 birds each. Most still in winter plumage, but male with unossified skull collected May 28 in almost complete breeding plumage and with moderately enlarged testes. On July 23, 1981 at Lagoa do Peixe flock of 150+ gathered at dusk on sand bar and grassy point in lake. Small groups and individuals seen during day. Most in full winter plumage, but some had rufous wash on underparts. As with *Calidris canutus,* it appears some birds not yet ready to breed move N from wintering grounds to pass breeding season in nearby area with suitable conditions, then move S again for second winter.

SPECIMENS: MCN: 727*, 729*. MN: 31956*.

Bartramia longicauda

Upland Sandpiper
Maçarico-do-campo
(Field Tubebill)

Scarce summer visitor from North America found in open grasslands at scattered points throughout state, from sandy regions of Mostardas peninsula to Gramado golf course and moist pastures edging rice fields in far W. Only a few occur even in most favored areas, but more often seen in far W than elsewhere. Earliest registered date September 21, latest February 24.

SPECIMEN: MCN: 728*.

Tringa melanoleuca
Map 62

Greater Yellow-legs
Maçarico-grande-perna-amarela
(Great Yellow-legged Tubebill)

Non-breeding visitor from North America; common, but much less so than *T. flavipes* in spring and summer; in winter many overwintering individuals concentrate along littoral. Found in that region throughout year, whereas between November and March it also occurs across southern portion of state, mainly S of central trough, at scattered localities in far W, and occasionally in N central highlands. Because of substantial number of overwintering individuals, it is not practicable to determine earliest arrival and latest departure dates for those migrating.

SPECIMEN: MCN: 721*.

Tringa flavipes
Map 63

Lesser Yellow-legs
Maçarico-perna-amarela
(Yellow-legged Tubebill)

Non-breeding visitor from North America; found here in every month, though winter records rare. Species becomes common during latter third of September and continues so through March. April and May records scarce. I cannot distinguish which may pertain to late migrants and which to overwintering individuals. Appears along entire littoral and across state S from escarpment, as well as at scattered locations in N highlands, but not registered in NW corner.

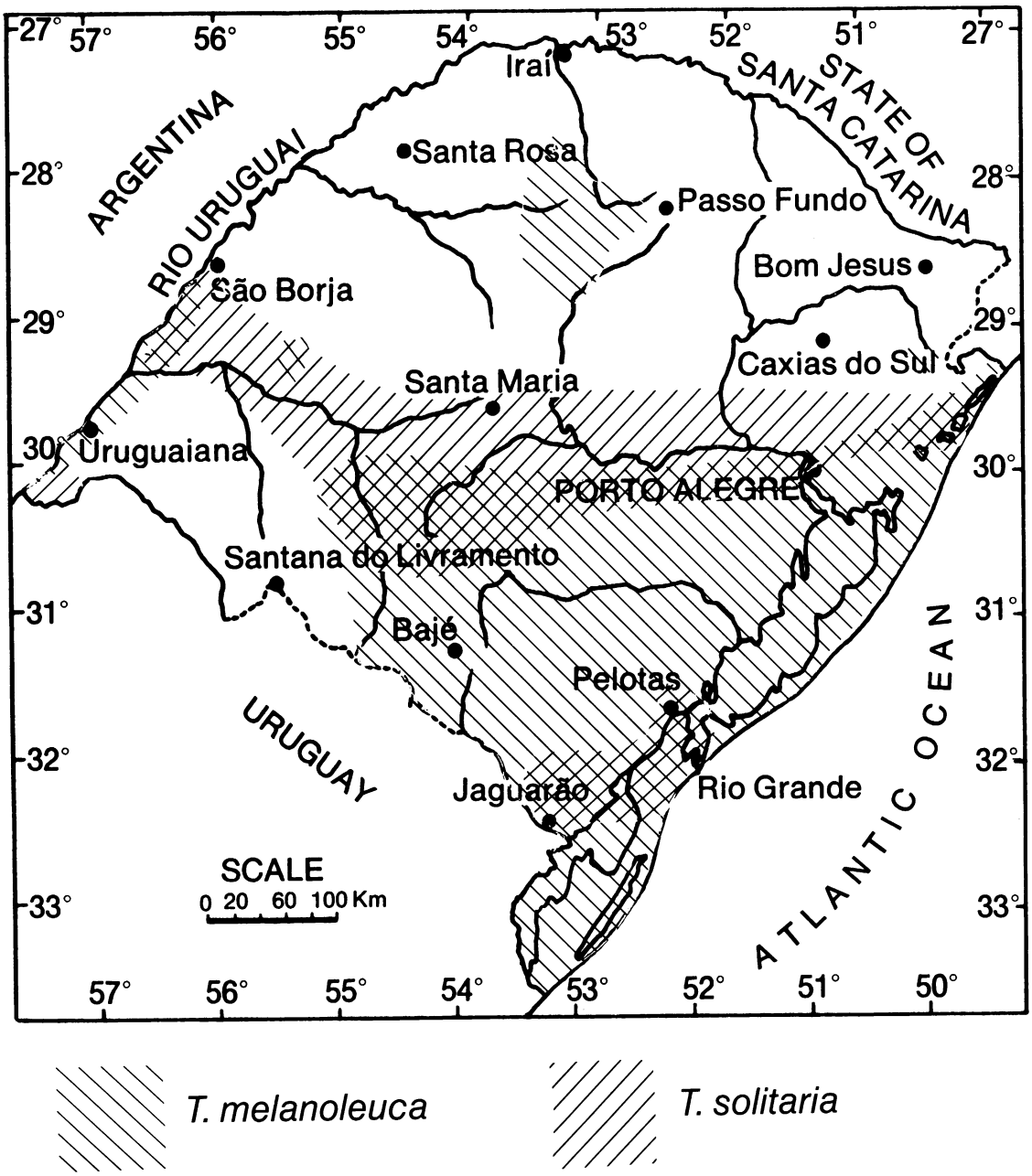
SPECIMENS: MCN: 722*, 719*. AMNH: 313816, 313817, 321529–321532, 321752, 321753, 321755, 321756, 824000*. (321754 from Uruguayan side of mouth of Rio Jaguarão.)

Tringa solitaria
Map 62

Solitary Sandpiper
Maçarico-solitario
(Solitary Tubebill)

Scarce summer visitor from North America found through central depression and beyond to W tip, occasionally in southern hills and southern littoral, frequenting margins of all types of water bodies, from wooded streams to ocean. Earliest spring record September 8, latest for fall late April. No overwintering noted. Rio Grande do Sul lies within range of *solitaria* subspecies, but because *cinnamomea* has been found both in Uruguay and farther N in Brazil, it should be watched for here.

SPECIMEN: MCN: 720*.



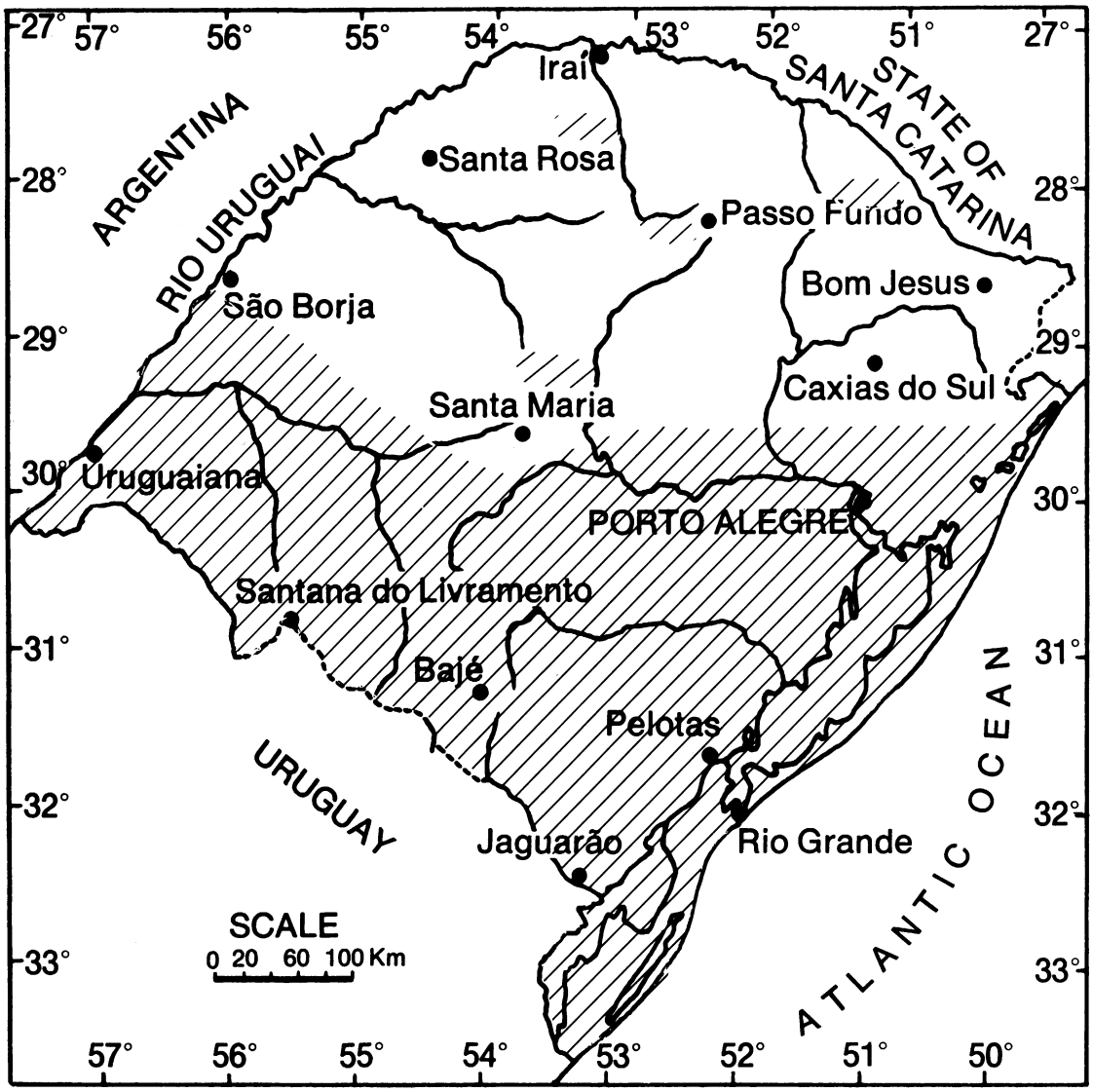
MAP 62. Geographical distribution of two species of *Tringa* in Rio Grande do Sul.

Catoptrophorus semipalmatus
Map 64

Willet
Maçarico-de-asa-branca
(White-winged Tubebill)

Pair found near Tôrres December 16, 1971 (Belton, 1973b) constitutes only certain record for state. Silva (*in litt.*) saw pair of birds in Taim marsh in late 1980 which he believes may have been this species. *Catoptrophorus s. semipalmatus.*

SPECIMEN: MCN 718*.



MAP 63. Geographical distribution of *Tringa flavipes* in Rio Grande do Sul.

Actitis macularia
Map 64

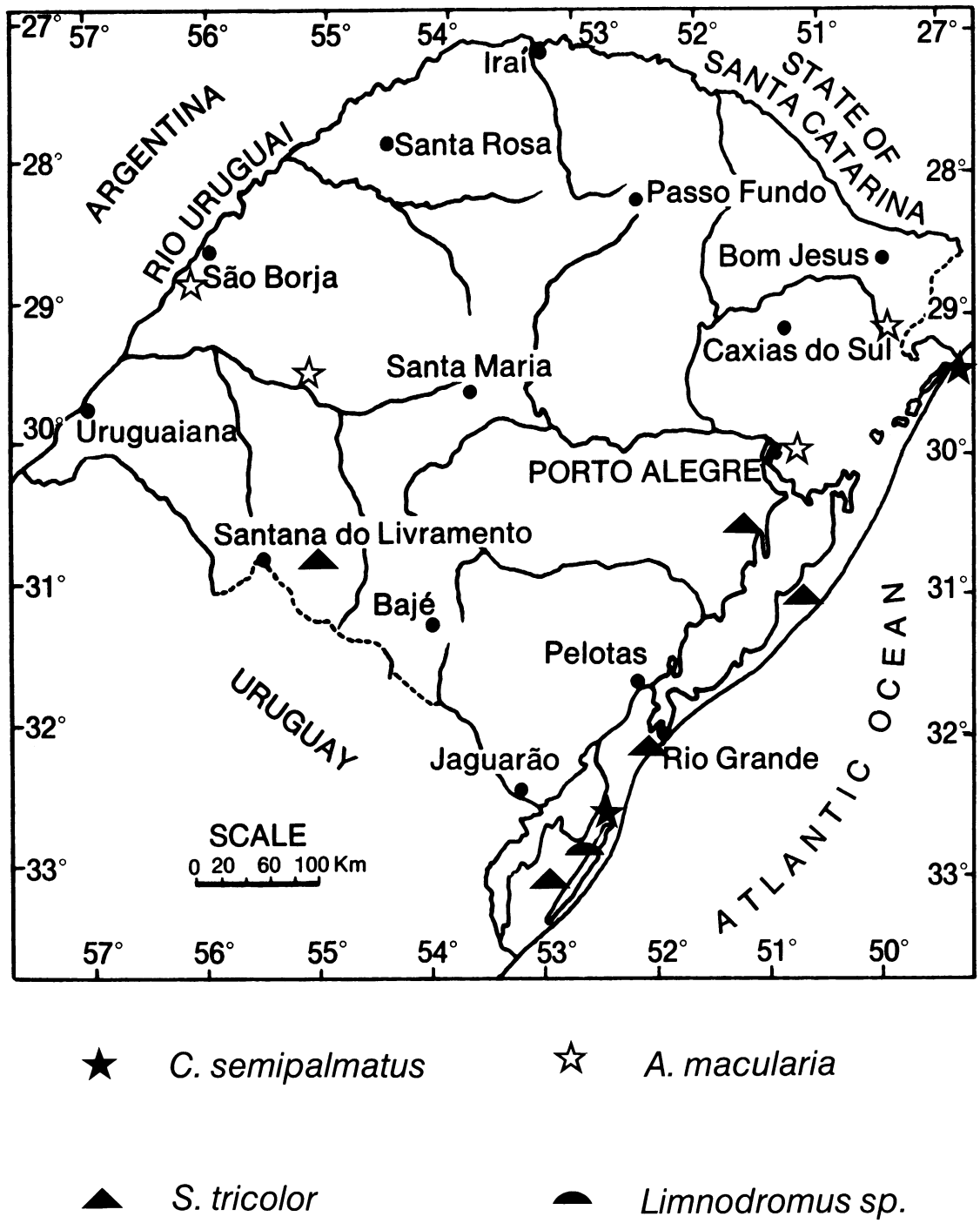
Spotted Sandpiper
Maçarico-pintado
(Spotted Tubebill)

Rare summer visitor from North America. Only four scattered records. However, since I have not discovered it at all and Sick found it twice on one trip with me, I may have blind spot for this particular species in winter plumage. Registered only in N half of state, between October 17 and March 6.

Arenaria interpres

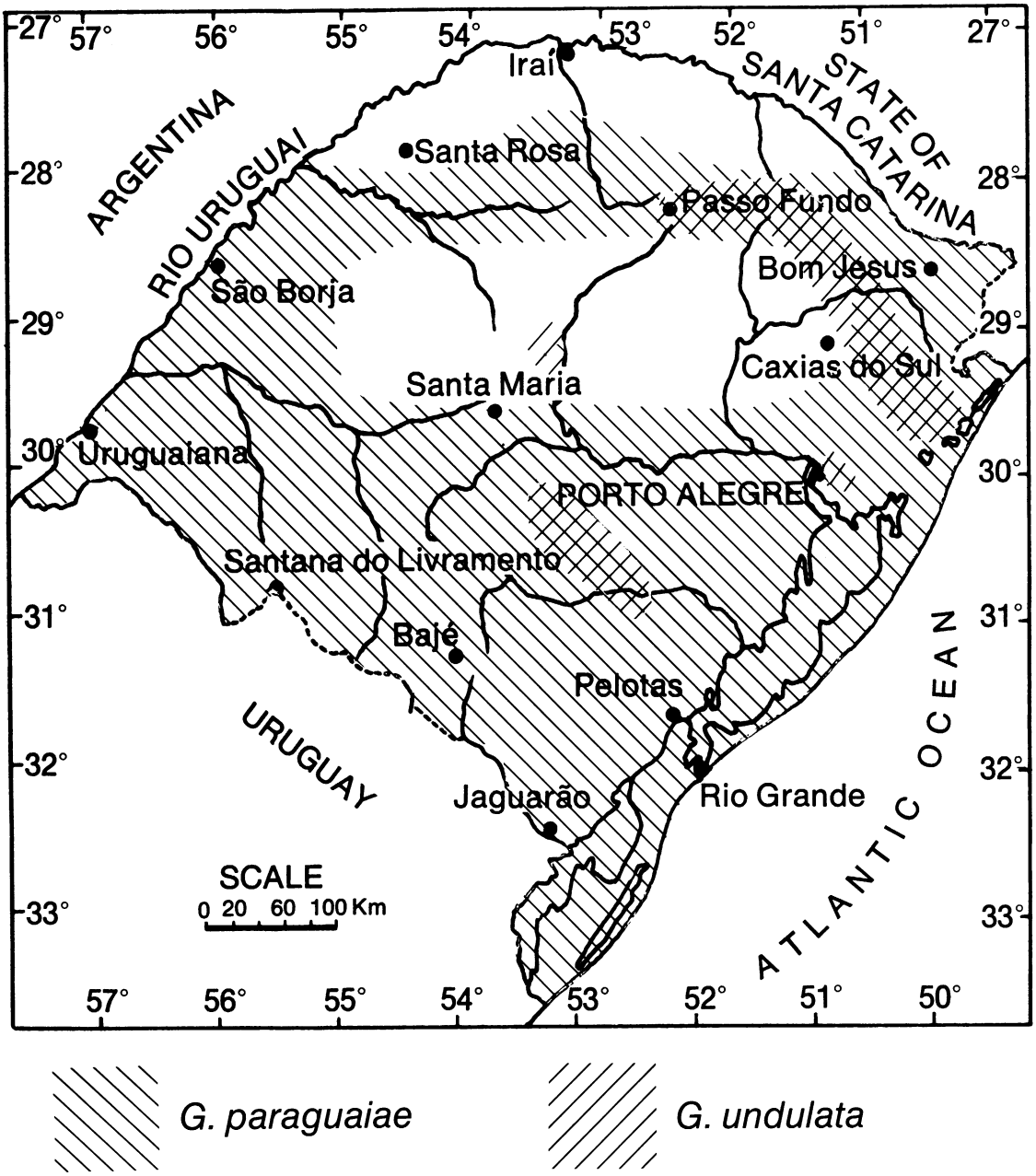
Ruddy Turnstone
Vira-pedra
(Turnstone)

DISTRIBUTION AND STATUS: Scarce visitor



MAP 64. Geographical distribution of *Catroptrophorus semipalmatus, Actitis macularia, Steganopus tricolor* and an unidentified *Limnodromus* sp. in Rio Grande do Sul.

from North America found on ocean beaches, coastal inlets, and wet grasslands close to coast. Earliest spring record September 19, latest fall March 1. Three presumably over-



MAP 65. Geographical distribution of the two species of *Gallinago* found in Rio Grande do Sul.

wintering individuals not in breeding plumage were at Lagoa do Peixe May 28, 1974, *Arenaria i. morinella.*

SIZE: One female: 241 mm, 112.5 gr.

SPECIMENS: MCN: 547.

Steganopus tricolor
Map 64

Wilson's Phalarope
Pisa-n'agua
(Walk-on-the-water)

Rare summer visitor from North America.

I have seen it four, perhaps five, times (one distant view not certain) along littoral, and Sick collected one E of Santana do Livramento. Usually alone, but on one occasion several were together in small tidal pool high on ocean beach near Cassino. Questionable record is earliest, September 15, next September 26, latest February 1.

SPECIMENS: MCN: 731*.

Gallinago paraguaiae (*gallinago*)
Map 65

Common Snipe
Narceja
(Snipe)

DISTRIBUTION AND STATUS: Common resident of littoral, portion of state S of escarpment, and campo areas of W and N highlands, in wet meadows, grassy edges of ponds and reservoirs. *Gallinago p. paraguaiae.* Subspecies *magellanica,* registered in winter in Uruguay, should be watched for here.

VOICE: (R) Very rapid, prolonged "kukukukukuku . . . . ," rising in volume in middle of phrase and diminishing toward end. Bleating of display flights also recorded.

SIZE: One unsexed (live): 269 mm, 136 gr.

BREEDING: Display flight can be heard in Rio Grande do Sul at almost any time of year, so may be unreliable indicator of breeding activity. Male collected October 17, 1970 at Lagoa do Jacaré showed moderate enlargement of testes, whereas female collected March 1, 1971 was well past breeding condition. I have not found nest, but these two specimens indicate spring nesting. However, local hunters claim this species nests in late fall or winter, and for years special summer season for snipe was stipulated in hunting regulations. There is now year-round closed season on snipe, adopted to eliminate two hunting seasons rather than because of altered views as to breeding period. Further work on this subject required to determine facts, but finding of nest in May in Uruguay (Barlow, 1967) lends substance to popular belief.

SPECIMENS: MCN: 378, 730*. AMNH: 45593, 45595, 313818–313823, 321236–321238, 321527, 321766–321768. (321769 from Uruguayan side of mouth of Rio Jaguarão.)

Gallinago undulata
Map 65

Giant Snipe
Narcejão
(Super-Snipe)

DISTRIBUTION AND STATUS: Rare to uncommon inhabitant of upland campo. Available records come from NE quarter and from northern portion of southern hills. However, it is notably difficult to find—I have never seen it—and may have considerably wider distribution than so far determined. Registered in May, July, August, and November. *Gallinago u. gigantea.*

FIELD MARKS: Very large version of *G. paraguaiae,* with bill about 125 mm long and total bulk perhaps five times that of its congener.

VOICE: (R) Four groups of three notes, middle note shorter than other two, followed by one lower, final single note, all clearly whistled at night. One version leisurely and mournful, another, presumably by bird of other sex and sung in duet but not in unison, is higher, faster, more deliberate. First time I heard song it was called to my attention by Sick and was preceded by sound of rushing air (caused, according to Sick, by both wings and tail), which could easily be mistaken for distant car on silent night in country. This lasted for few seconds before call began, and continued for much shorter time after call ended. On subsequent occasions I did not hear this.

BEHAVIOR: Locally reputed to prefer high grass where it finds good cover, and to be extremely difficult to flush, usually requiring dog to raise it.

SPECIMEN: Only documented specimen of which I know is property of Beromildt Lara of Rio Pardo who collected it near Maria Santa, Encruzilhada do Sul, on July 20, 1971.

Limnodromus sp.
Map 64

Dowitcher

On February 8, 1974 near where federal highway leaves S edge of Taim marsh I saw 15 to 20 unusually long-billed, heavy-set shorebirds feeding in grassy shallows where many *Anas flavirostris* loafing. Their plumage was that of dowitchers in winter dress and

they resembled no other shorebird I have seen in Rio Grande do Sul. While I watched, portion of group flew off in very tightly knit, rapidly moving flock, flashing lots of white both on rump and underparts. Birds were at some distance and inaccessible across a canal, but my view of them with 60× spotting scope and lack of any similar species with which they might be confused left me with strong impression they were *Limnodromus* sp.

Calidris canutus

Red Knot
Maçarico-de-papo-vermelho
(Red-breasted Tubebill)

Non-breeding visitor from North America registered on ocean beaches in every month except December and February. The one January record was of abnormal individual. Species uncommon in late September and early October when southbound wave might be expected, and virtually disappears again during summer. In April and May, however, northbound flocks appear in abundance. Several flocks of from 1000 to 2000 birds each, with most individuals in breeding plumage, seen on April 17, 1972 near Capão da Canoa, and another on April 19 between Capão da Canoa and Tôrres. I noted species as very abundant between Tramandaí and Capão da Canoa on May 13, 1971, with at least half in breeding plumage.

At Lagoa do Peixe on May 27–29, 1974, I estimated up to 1000 individuals, relatively few in breeding plumage. On July 22, 1981, I counted approximately 330 individuals along about 150 km of ocean beach from Pinhal to Lagoa do Peixe, in groups varying from singles up to flocks of about 60. Additional but lesser numbers seen from Lagoa do Peixe to São José do Norte July 24–25. At least one flock of about 12 birds seen on freshwater edge slightly inland from beach July 23. Due to large number of small streams crossing beach and availability of thousands of freshwater ponds and flooded sandy areas in dune region behind beach, number of individuals seen on beach may have been substantially less than total in area. Perhaps 10 to 15 percent of observed individuals had rufous wash on underparts, but none in anything close to full breeding plumage. I noted no orientation toward southward movement, for when flocks were disturbed, they as readily flew N as S, so I assume these birds were all overwintering individuals rather than early arrivals from North America. As in case of *Limosa haemastica,* due to absence in summer it appears these overwintering birds make a partial migration N from more southerly latitudes and return S along with spring arrivals from North America.

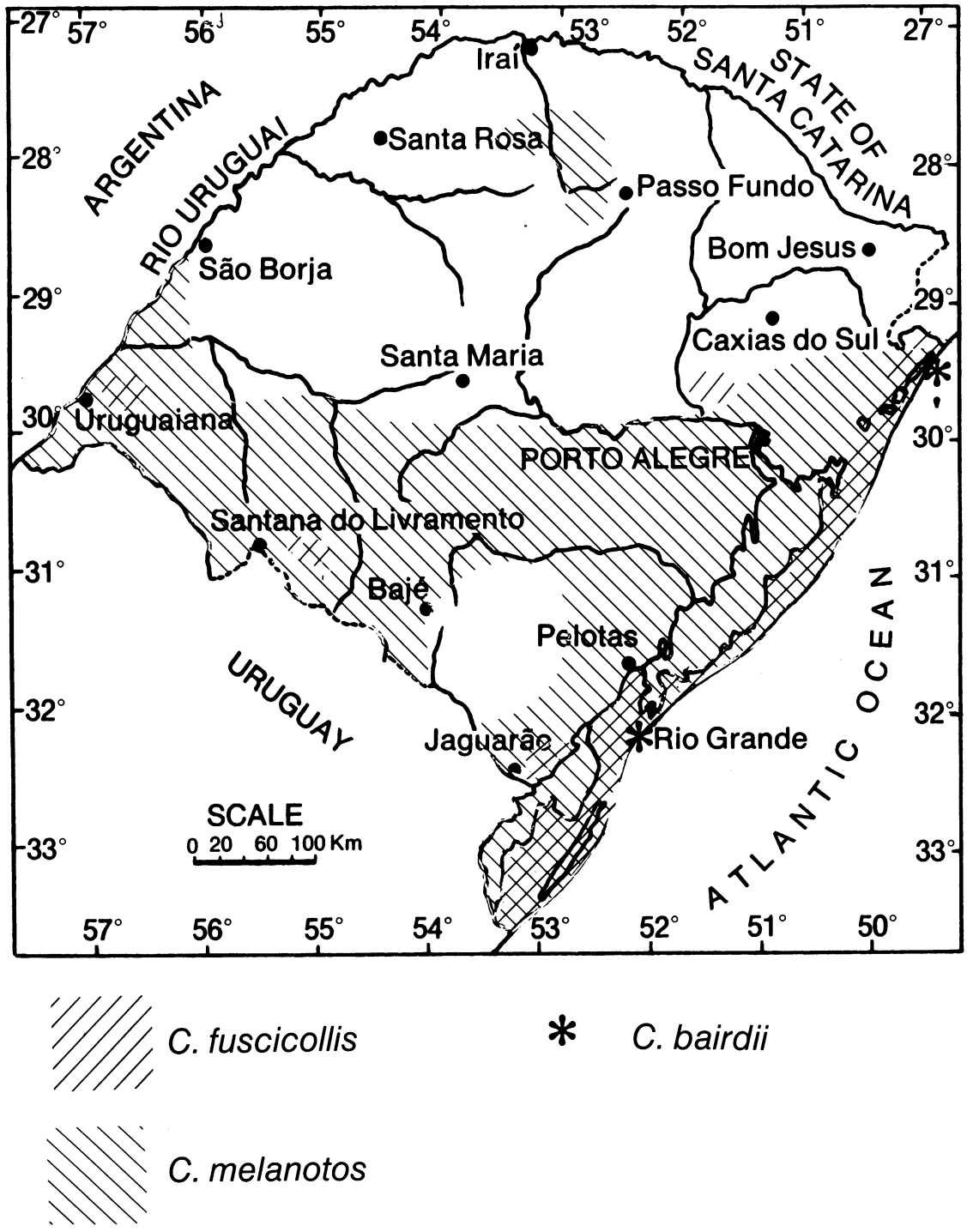
The January individual occurred on beach S of Cassino on January 8, 1976 and was one-legged, apparently due to congenital defect, for when collected no evidence could be found of its ever having had a left leg. Importance of two legs and feet in avian hygiene pointed up by fact that this specimen was swarming with ectoparasites. *Calidris c. rufus.*

SPECIMENS: MCN: 774–777*, 1790, 1791, 1793. MN: 31851*, 31852*. AMNH: 810494*, 824001*.

Calidris alba

Sanderling
Maçarico-branco
(White Tubebill)

Abundant visitor from North America which appears in substantial numbers considerably earlier than either *C. canutus* or *C. fuscicollis,* other two members this family which become abundant at one time or another along ocean beaches of state. I have recorded many large flocks, one of several thousand individuals, in late November between Cassino and Uruguayan border, as well as very large concentrations in January and March at various points on coast. It is still common as late as May 13 in NE. I saw none at Lagoa do Peixe in late May 1974 where other North American visitor species appeared to be starting to overwinter, but in late July 1981 many small flocks and one of about 80 individuals were seen along beach from Pinhal S almost to São José do Norte, with total number probably more than 1000. All were in winter plumage. Small numbers usually seen from late August on into September and October presumed to be arrivals



MAP 66. Geographical distribution of three species of *Calidris* in Rio Grande do Sul.

from N, but could be individuals which have overwintered. Found almost exclusively on ocean beaches, or tidal flats near few existing inlets, but single individuals seen twice on shore of Lagoa dos Patos near Itapuã November 19, 1983.

SPECIMENS: MCN: 732*, 1789.

Calidris fuscicollis
Map 66

White-rumped Sandpiper
Maçarico-de-sobre-branco
(White-rumped Tubebill)

This visitor from North America appears only in very modest numbers upon arrival in southern spring, but becomes more common during summer. From February well into April it is abundant along ocean beaches. A few individuals still present in May. My latest record is for three seen at Lagoa do Peixe May 27–29, 1974, possibly overwintering. No records for June, but one seen July 23, 1981 at Lagoa do Peixe. Earliest spring record August 30. In addition to ocean beaches, this sandpiper occasionally occurs near pond and reservoir edges at scattered inland points in southern half of state, and has been seen on W shore of Lagoa Mirim. A few small flocks were seen near N end of Lagoa dos Patos November 19, 1983.

SPECIMENS: MCN: 733*, 735–743*, 1788, 1796. MN: 31843*, 31844*, 31847, 31854. AMNH: 313815, 824003–824004*.

Calidris bairdii
Map 66

Baird's Sandpiper
Maçarico-de-bico-fino
(Slender-billed Tubebill)

First Brazilian record for this species established when one of flock of four was collected on ocean beach S of Tôrres on September 30, 1975 (Belton, 1978a). Flock of three seen SW of Cassino January 6, 1976.

SPECIMEN: MCN: 734*.

Calidris melanotos
Map 66

Pectoral Sandpiper
Maçarico-de-colete
(Bibbed Tubebill)

Uncommon summer visitor from Northern Hemisphere; occupies grassy edges of ponds and reservoirs, roadside ditches, and casual water in fields and pastures across most of southern half of state inland from ocean beaches. Also occurs in far W north to Banhado São Donato, and occasionally in N central highlands. Usually seen singly or in very small groups. First spring date September 22, in extreme S. Almost gone by end of March; no April sightings, but last fall record May 1, in SW.

SPECIMENS: MCN: 724*, 748–749*. MN: 31855*. AMNH: 313811–313814, 321528, 321759–321763, 321765, 810493*, 824002*. (321758 from Uruguayan side of mouth of Rio Jaguarão.)

Micropalama himantopus

Stilt Sandpiper
Maçarico-pernilongo
(Long-legged Tubebill)

Scarce visitor from North America. I have found it in marshy fields behind coast line of NE littoral in late September and early October, Ridgely (*in litt.*) saw two S of Pelotas on November 9, 1980, and I saw flock in mid-May 1973 at Granja Quatro Irmãos, and several small flocks of from eight to 12 individuals each in lake shallows at Lagoa do Peixe in late May 1974. Most were in winter plumage. One specimen collected May 27, 1974 was heavily barred across breast and belly and had some rufous on auriculars, but lacked other rufous in plumage.

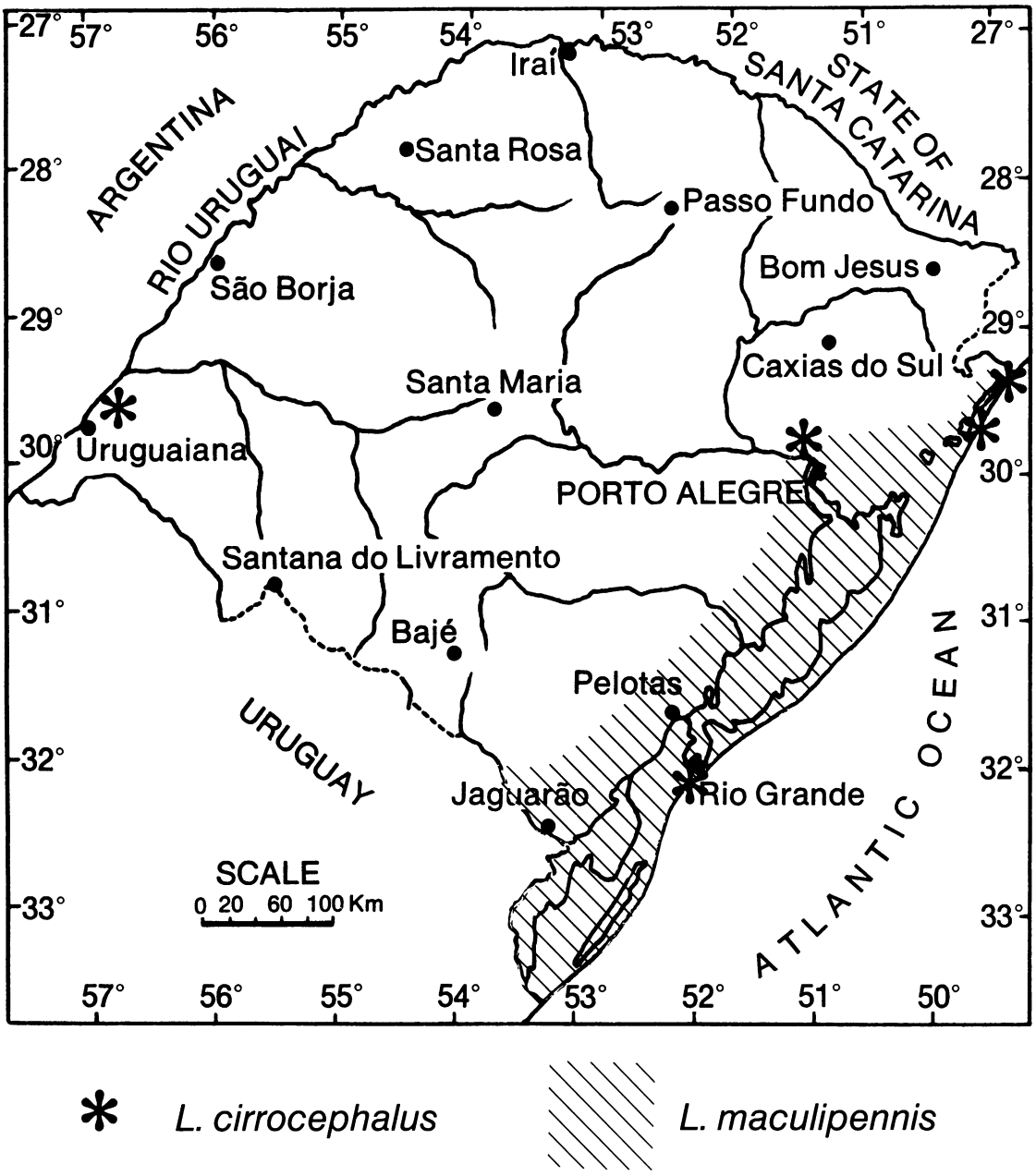
SPECIMENS: MCN: 622, 723*. MN: 31853*.

Tryngites subruficollis

Buff-breasted Sandpiper
Maçarico-acanelado
(Cinnamon Tubebill)

Summer visitor from North America, locally common on littoral in moist grassy areas, often in company with *Pluvialis dominica.* Only non-littoral record is also earliest of season, August 26 (1975), when three individuals, presumably on migration, seen with small flock of *P. dominica* near Vacaria at about 1000 m altitude. Sometimes occurs in flocks of 200 or more. Registered in every month from August to February, latest date February 14.

SPECIMENS: MCN: 725–726*. MN: 31846*.



MAP 67. Geographical distribution of two species of *Larus* in Rio Grande do Sul.

FAMILY CHIONIDIDAE

Chionis alba

Snowy Sheathbill
Pomba-antárctica
(Antarctic Pigeon)

DISTRIBUTION AND STATUS: First registered for state on beach SW of Cassino May 10, 1973 (Belton, 1974b). Gianuca (*in litt.*) saw two, apparently a pair, June 26, 1975 at East Jetty of Rio Grande bar.

FIELD MARKS: All white plumage. When associating with gulls, noticeable for very erect posture and short bill and tail.

SIZE: One female: 400 mm, over 400 gr.

SOFT PART COLORS: Tarsus light and dark gray; bill in four roughly equivalent color sectors, from light gray at base, through green, brownish, to black at tip; iris brown; eye ring pink.

BREEDING: Specimen had inactive ovary.

BEHAVIOR: Specimen was in small group of *Larus dominicanus* and *Haemotopus palliatus* when first seen. It stayed behind briefly when they flew, but shortly joined them. As I pursued it up beach it associated momentarily with other flocks without becoming integral part of any.

SPECIMEN: MCN: 772*.

FAMILY STERCORARIIDAE

Catharacta skua

Great Skua
Gaivota-rapineira-grande
(Great Robber Gull)

DISTRIBUTION AND STATUS: Appears offshore, but also very infrequently found sick or dead along ocean beaches. I know of no records for area N of Mostardas peninsula. At sea April 12–18, 1973, I found few near Rio Grande bar and in vicinity of Solidão lighthouse. Dead birds have been found near Cassino and close to Uruguayan border in July.

SIZE: One female: length, 615 mm; wingspread, 705 mm.

SOFT PART COLORS: Tarsus blackish with white splotches; bill black; iris brown.

BREEDING: Ovary inactive in apparently sick (only flew when closely approached) female collected near Cassino July 29, 1974.

SPECIMEN: MCN: 1756*.

Stercorarius pomarinus

Pomarine Jaeger
Gaivota-rapineira-pomarina
(Pomarine Robber Gull)

While I was aboard oceanographic vessel "Almirante Saldanha" on April 13, 1973 at 0845, when vessel was approximately 125 km from Rio Grande do Sul coast at 32°09'S, 50°09'W, light phase jaeger flew across wake of vessel and disappeared to E. It had pale band across chest, considerable white in wing, and two projecting tail feathers which were neither pointed nor streaming, but had heavy look about them. Having never seen live jaeger before, I was surprised by bulk and heavy flight of bird. Due to inexperience with genus and very few other sightings in SW Atlantic waters (Escalante, 1970a, p. 118; Olrog, 1967, pp. 297–298), I am not sure of my identification, but by process of elimination I conclude it was probably this species.

Stercorarius parasiticus

Parasitic Jaeger
Gaivota-rapineira-comun
(Common Robber Gull)

DISTRIBUTION AND STATUS: Ihering (1899a) reported this species from Rio Grande bar, without date. I collected unsexed specimen on ocean beach about 11 km SW of Cassino on May 10, 1973, while Sick and I found another near Tôrres August 14, 1969.

SIZE: 420 mm, 342 gr.

SOFT PART COLORS: Tarsus black with light gray splotches; bill black with culmen of supranasal saddle grayish; iris dark.

SPECIMEN: MCN: 771*.

FAMILY LARIDAE

Larus belcheri

Band-tailed Gull
Gaivota-de-rabo-preto
(Black-tailed Gull)

Gianuca (*in litt.*) informs me specimen captured live by fishermen on island in Lagoa dos Patos in front of Rio Grande during southern winter of 1971 and held in small zoo in city plaza until mid-1979. He points out that crabs, *Chasmagnathus granulatus* and *Cyrtograpsus angulatus,* mentioned by Escalante (1970a) as important food for this species, are found on salt-marsh covered island where specimen taken.

Larus dominicanus

Kelp Gull
Gaivotão
(Great Gull)

DISTRIBUTION AND STATUS: Resident along entire coast and in Lagoa Mirim and Lagoa dos Patos, usually within sight of large bodies of water, only infrequently venturing any distance inland from beaches. During my April 1973 voyage off Rio Grande do Sul coast, it was not seen after we left Rio Grande bar until we approached within 25 miles again

from NE. Scarce on NE littoral, common in large lagoons, and quite variable near Rio Grande bar, ranging from scarce to very abundant, without apparent seasonality.

FIELD MARKS: Only large gull likely to be seen in state, and only one with no black on bill.

SIZE: One third year female: 565 mm, 1100 gr.

SOFT PART COLORS: One third year female: tarsus very light yellowish gray; bill yellow with orange spot on mandible near tip; iris gray, eye ring yellow.

BEHAVIOR: Ranchers in flat lands between Lagoa Mirim and ocean say this species comes inland at lambing time to prey on newborn sheep. It also gathers along beach S of Cassino to feed on trash fish left by commercial surf netters.

SPECIMEN: MCN: 1761*.

Larus cirrocephalus
Map 67

Gray-hooded Gull
Gaivota-de-cabeça-cinza
(Gray-headed Gull)

DISTRIBUTION AND STATUS: Records of this gull in state are rare, but it may be more common than these indicate due to difficulty of differentiating it in field from abundant *L. maculipennis*. Of five widely scattered records, two are from NE beaches, and one each from Sapucaia do Sul, beach SW of Cassino, and far W, in April, May, September, and October, respectively, each record for only one or two birds. Sick has identified an immature collected SW of Capão da Canoa as *L. c. cirrocephalus*.

FIELD MARKS: Clues in literature for separating this species from *L. maculipennis* in non-breeding plumage on basis of head pattern are contradictory. Judging from my specimens, it cannot be done with assurance in field. It therefore depends on wings, in which *L. maculipennis* has much larger amount of white, especially at tips of primaries. Even this character is relative and not easy to discern with certainty.

SIZE: One immature female: 375 mm, 288 gr.

SOFT PART COLORS: Tarsus very pale orange washed black; bill very pale orange with black tip; iris brown.

SPECIMENS: MCN: 768*. MN: (WB)687*. USNM: 461533*.

Larus maculipennis
Map 67

Brown-hooded Gull
Gaivota-maria-velha
(Old Mary Gull)

DISTRIBUTION AND STATUS: Abundant resident along entire littoral region, including areas at some distance from larger bodies of water, with occasional incursions into rolling foothill country. One doubtful record for W corner. Primarily utilizes beaches and edges of large bodies of water, but also common around marshy lakes, flooded pastures, and in freshly plowed fields. On my April 1973 ocean voyage I found it near Rio Grande bar but not elsewhere at sea. Present all year, but considerable local movement dictated by food resources. Often scarce in spring and summer along NE beaches, but abundant there in April 1972.

Monotypic, but Allan Phillips (*in litt.*) informs me he is convinced, based upon studies reported in his unpublished manuscript, that *L. glaucodes* is valid species as determined by Saunders (1896) or at least subspecies of *L. maculipennis*, and that AMNH specimen no. 321229bis, female collected by Kaempfer at Uruguaya Cattle Ranch, N of Taim on July 28, 1931, is of that more southerly form.

FIELD MARKS: In breeding plumage blackish brown head with white semicircle around rear of eye separates it from *L. cirrocephalus*. See under that species for non-breeding plumage.

SIZE: One male: 380 mm, 308 gr. Two females: 370–381 mm, 290–361 gr.

SOFT PART COLORS: Male in breeding plumage: tarsus Dark Reddish Orange; bill Strong Reddish Brown; iris brown; eye ring Deep Reddish Orange. Female in breeding plumage: tarsus Deep Reddish Brown; bill between Very Dark and Very Deep Red; iris brown; eye ring Strong Reddish Brown.

BREEDING: Silva (personal commun.) found this species nesting in a monospecific colony at Capivari marsh on October 17, 1980 and together with *Plegadis chihi* at Taim Ecological Station in early November 1980. Although informed by local residents of breeding colony in vicinity of mouth of Lagoa

Mirim, Sick and I failed to find it at end of November 1972. In September and October 1973 islands in shallow lakes S and SW of Camaquã, which I saw from great distance, had paired *maculipennis* behaving in way—including one carrying weeds in bill—to indicate nesting in progress. Earliest record I have of nuptial plumage is June 27, 1974 when one individual seen among many others in non-breeding dress. By late July nuptial plumage common, and I have seen flocks at that time of year in extreme S made up almost exclusively of black-headed birds. However, it is more common to see flocks of mixed plumage right through spring. Two specimens whose soft part colors described above were collected July 29 and 30 SW of Cassino with gonads just beginning to be active. In February 1974 on trip from Porto Alegre to Chuí I did not see single individual in breeding plumage.

BEHAVIOR: Brown-headed Gulls in Rio Grande do Sul are aggressive followers of plow, often forming cloud immediately over tractor, with individuals continuously descending into furrow immediately after plow passes. They also catch insects on wing, as I observed during outbreak of flying termites when they joined many other species in pursuing these insects on their nuptial flights. In late July 1974, I saw several individuals scattered through rolling foothill sheep country during lambing time, and speculate that they, like *L. dominicanus,* may be attracted to sheep placenta and possibly helpless lambs. They participate with *dominicanus* in scavenging trash fish left along ocean beaches by commercial surf netters.

SPECIMENS: MCN: 764–766*, 1799. MN: 31617*, 32923*. AMNH: 46048, 46049, 313805, 321229bis, 321524, 321525.

Phaetusa simplex
Map 68

Large-billed Tern
Trinta-réis-grande
(Large Tern) (literally: Large Thirty Reals)

DISTRIBUTION AND STATUS: Resident along littoral and near lower Rio Grande do Sul reaches of Rio Uruguay, over or very near lagoons, rivers, large irrigation canals, ocean. Uncommon—rare in NE—most often seen in extreme S, usually singly or at most a few birds together.

FIELD MARKS: Very prominent yellow bill, large white wing patches contrast with black primaries.

SIZE: One female: 380 mm, 247 gr.

SOFT PART COLORS: Female in non-breeding plumage: tarsus yellow, bill yellow with brownish wash on culmen; iris brown.

VOICE: (R) Monotonous series of short, quick, very resonant "eh eh eh eh. . . ." with strong emphasis at outset of each sound.

BREEDING: Female collected January 28, 1974 had inactive ovary.

BEHAVIOR: Most often seen along large irrigation or drainage ditches, which it patrols methodically. During episode of flying termites at Taim marsh on September 25, 1974, this was among many species catching them in air.

SPECIMEN: MCN: 763*.

Gelochelidon nilotica
Map 68

Gull-billed Tern
Trinta-réis-de-bico-preto
(Black-billed Tern)

DISTRIBUTION AND STATUS: Uncommon; along littoral, principally in S and on Mostardas peninsula, usually inland from ocean in freshwater situations, although Ihering (1899a) reported it from ocean beach near Rio Grande. No records for far W along Rio Uruguay, and I have been unable to find basis on which several authors state it occurs along Rio Uruguay as far as Corrientes, Argentina. Olrog (1963) states only that it reaches Corrientes along Rio Paraná. Rio Grande do Sul records concentrated between September 20 and March 2, with one questionable sighting May 7. However, Escalante (1970a) has seen it in flocks in Uruguay in July, so likely to be found here in winter too, perhaps concentrated in especially favorable areas.

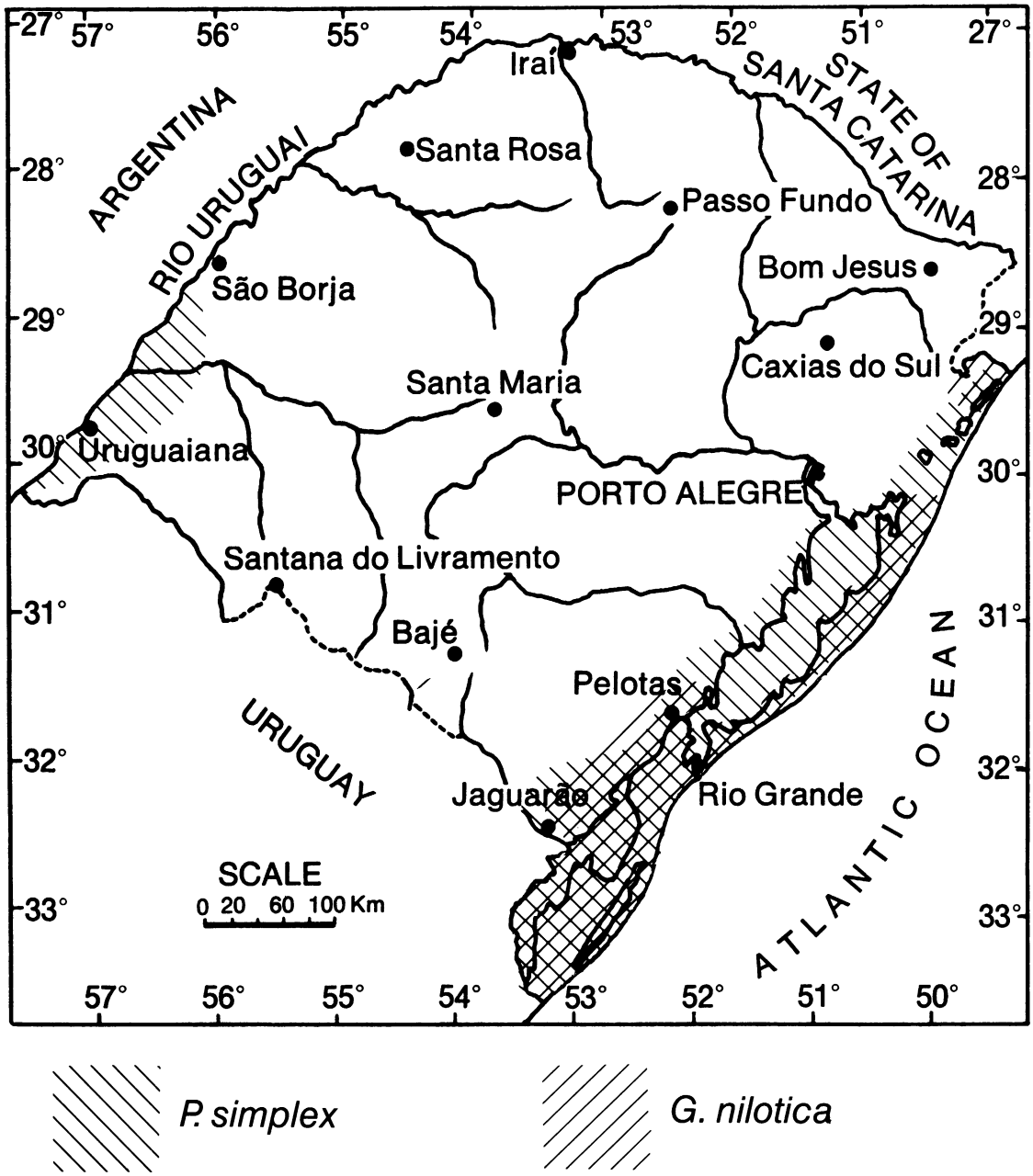
SIZE: One male: 355 mm, 197 gr.

SOFT PART COLORS: Tarsus reddish black; bill black.

BREEDING: Male collected January 4, 1976 near Lagoa Mirim had only slightly enlarged testes.

BEHAVIOR: Usually found singly or in pairs. My specimen was one of pair diving for minnows in flooded rice field.

SPECIMENS: MCN: 767*. AMNH: 321742–321744 are all from Uruguayan side of mouth of Rio Jaguarão.

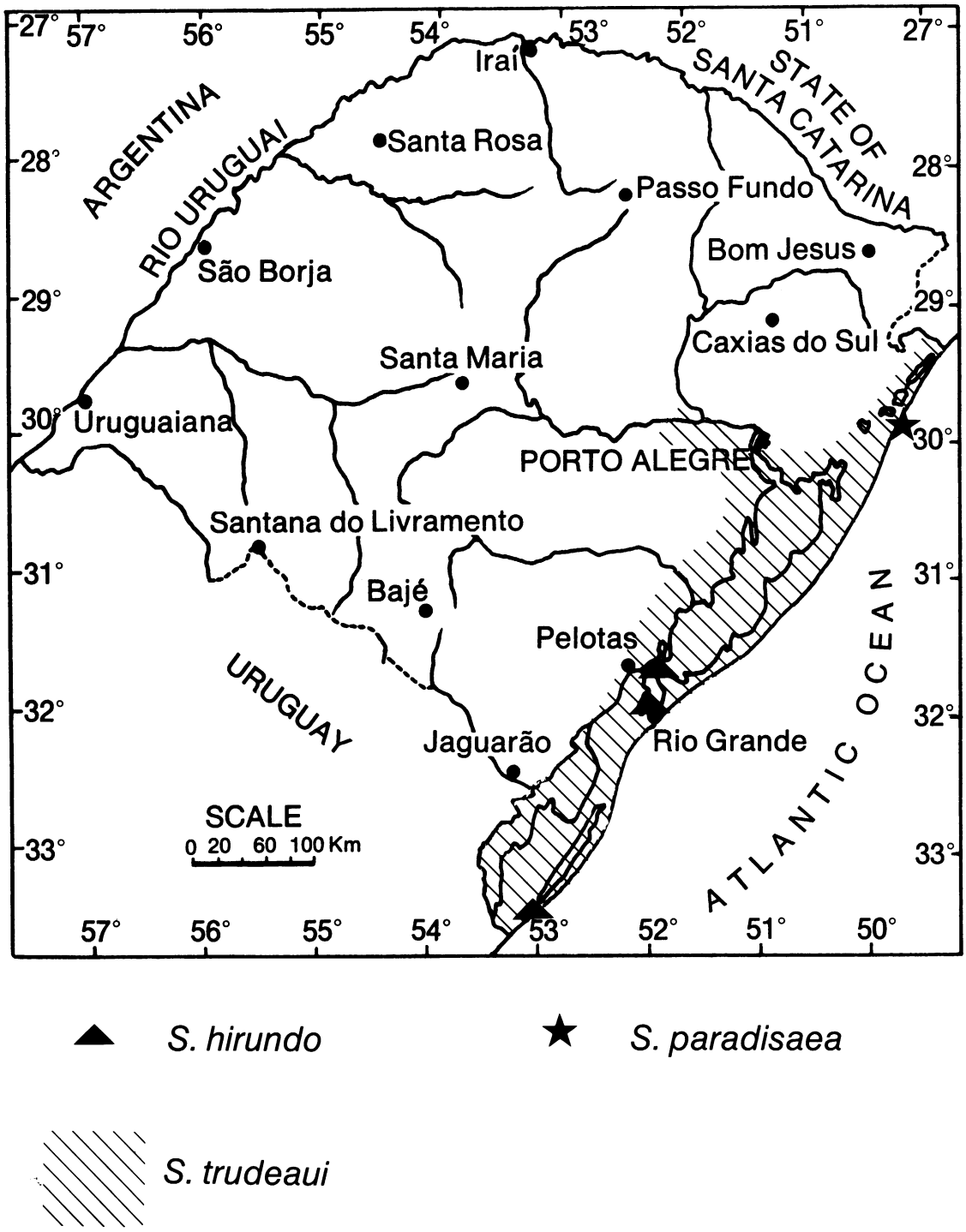


MAP 68. Geographical distribution of *Phaetusa simplex* and *Gelochelidon nilotica* in Rio Grande do Sul.

Sterna hirundinacea

South American Tern
Trinta-réis-de-bico-vermelho
(Red-billed Tern)

DISTRIBUTION AND STATUS: Sporadically common but often scarce or absent on ocean beaches of entire state and occasionally near fresh water marshes and lakes inland along littoral. With exception of one record for Lagoa do Peixe in late January, this tern appears to be absent from Rio Grande do Sul coast during summer months. I have records from April 17 until November 28, but only times



MAP 69. Geographical distribution of three species of *Sterna* in Rio Grande do Sul.

I found it present in any numbers was in July 1971 when numerous flocks of from 100 to 200 birds, almost entirely this species, seen near Cassino and close to Uruguayan border.

At latter point mixed flock of this species and *L. trudeaui* was fishing beyond surf line in association with school of *Spheniscus magellanicus*. In late July 1981 smaller flocks fairly common along ocean beaches of Mostardas peninsula. Lesser flocks of this species, and mixed flocks with this tern in minority, seen near Cassino in September 1974, but it more customary to find very small bands at widespread intervals along beaches.

FIELD MARKS: Only medium-sized tern with bright red bill and feet and long forked tail likely to be found in state.

SIZE: Four females: 380–427 mm, 172–196 gr.

SOFT PART COLORS: One female in nuptial plumage: tarsus deep reddish orange; bill very deep reddish orange; iris brown. Three females in non-breeding plumage: tarsus varied from bright reddish to dull orange with blackish wash; bill varied from carmine red with blackish tinges to black with carmine tinges; iris brown.

BREEDING: No nesting registered for state. Three females collected July 14 and 21 from Cassino and Hermenegildo Beach areas all had inactive ovaries and were in non-nuptial plumage. Female collected April 17, 1972 between Tramandaí and Capão da Canoa in full nuptial plumage had enlarged ovary with swollen follicles. It appears that July birds were austral summer breeders, perhaps from more southerly areas in continent, while April bird may have been winter breeder of type discovered by Sick and Leão (1965) N of Rio de Janeiro.

SPECIMENS: MCN: 750–754*. AMNH: 824006*.

Sterna hirundo
Map 69

Common Tern
Trinta-réis-boreal
(Boreal Tern)

Uncommon summer visitor from Northern Hemisphere. Presence first demonstrated by individual banded near SE corner of Cape Cod, Mass. on June 22, 1940 and recovered on shore of Lagoa dos Patos near Pelotas December 3, 1950. On January 29, 1974 I saw several at São José do Norte ferry landing across channel from Rio Grande, and on February 12, 1974 I saw at least one along beach near Uruguayan border. One banded as flightless juvenal June 6, 1972 at Peconic, N.Y. was recovered on island near mouth of Lagoa dos Patos in early January 1980 (Correio do Povo, Porto Alegre, April 9, 1980) and adult more than two years old banded on Long Island, N.Y. May 24, 1980 was found entangled in fishing line near mouth of Lagoa dos Patos on November 28, 1980 (Bird Banding Laboratory Recovery Report, April 13, 1981). Still another, banded July 16, 1977 on Virginia portion of Delmarva peninsula recovered near mouth of Lagoa dos Patos February 4, 1981 (Bird Banding Laboratory Recovery Report, May 29, 1981). *Sterna h. hirundo.*

Sterna paradisaea
Map 69

Arctic Tern
Trinta-réis-ártico
(Arctic Tern)

DISTRIBUTION AND STATUS: Known in Rio Grande do Sul only from male collected on ocean beach just N of Tramandaí on December 20, 1972 (Belton, 1974a). George Watson (*in litt.*) informed me "its plumage is peculiar in that its prebasic or postnuptial molt is very late. The forehead apparently began changing north of the Equator, but its gray body plumage and very worn tail and wings are old. It would have had to have hurried to have completed two molts in the southern hemisphere before heading north again in March or April."

SIZE: 328 mm, 108 gr.

SOFT PART COLORS: Tarsus dark coral; bill black, tipped yellow on maxilla and reddish on mandible; iris dark.

BREEDING: Testes were small.

SPECIMEN: USNM: 525977*. (Received by exchange from MN, to which I donated it.)

Sterna trudeaui
Map 69

Snowy-crowned Tern
Trinta-réis-de-coroa-branca
(White-crowned Tern)

DISTRIBUTION AND STATUS: Common resident of ocean beaches and inland lakes, marshes, and reservoirs for full length of littoral and W somewhat beyond Porto Alegre in central trough.

FIELD MARKS: In breeding plumage pure

white cap distinctive, this being only local tern which never has black crown.

SIZE: One male: 356 mm, 160 gr. One female (tail badly worn): 314 mm, 146 gr.

SOFT PART COLORS: Tarsus deep yellow washed brown or black; bill deep yellow with blackish band on distal half except at tip; iris brown. Immature bird had gray tarsus.

BREEDING: Sick and I tried unsuccessfully to find nesting area this species at end of November 1972 at Granja Quatro Irmãos, Rio Grande. On December 1, 1972 we saw several individuals flying overhead carrying small fish in their bills in direction of marshes near outlet of Lagoa Mirim into Canal de São Gonçalo. Female collected January 8, 1976 and male of June 27, 1974 had inactive gonads.

SPECIMENS: MCN: 757–758*. MN: 31841*.

Sterna superciliaris
Map 70

Yellow-billed Tern
Trinta-réis-anão
(Dwarf Tern)

DISTRIBUTION AND STATUS: Uncommon resident along littoral, on lower Rio Grande do Sul reaches of Rio Uruguay, and at various interior points in central depression and southern portion of state, near ocean, fresh water interior marshes, lakes, stock ponds, and rivers.

FIELD MARKS: Only really small tern in state, and only one with small yellow bill.

SIZE: One female: 225 mm, 56 gr.

SOFT PART COLORS: One winter female: tarsus greenish yellow; bill yellow with black tip; iris dark.

BREEDING: On December 20, 1972 "dive bombing" territorial behavior of pair on ocean beach just N of Tramandaí alerted us to presence of nest with three eggs on open, sandy beach about 75 m above water line. Eggs were in small, completely exposed depression in dry, white sand without any kind of lining or protection. Heavy wind caused depression to begin filling with sand each time incubating bird left nest. Female taken June 27, 1974 had inactive ovary and black on head heavily mottled with gray. Of three females collected October 9, 1970, only one was in breeding plumage and none had active ovary.

BEHAVIOR: On October 4, 1972 on beach SW of Capão da Canoa pair dove at two *Polyborus plancus* perched on sand dune at edge of beach and after minute or so drove them away.

SPECIMENS: MCN: 584, 759–761*. AMNH: 321745–321749, 842005*.

Thalasseus maximus
(*Sterna maxima*)

Royal Tern
Trinta-réis-real
(Royal Tern)

DISTRIBUTION AND STATUS: Scarce, probably resident, found at widely scattered points on ocean beaches. Registered in June, July, September, November, February and April. *Thalasseus m. maximus.*

FIELD MARKS: Largest of all local terns. Smaller *T. eurygnatha,* which most resembles it, has yellower, slimmer bill and much less prominent nuchal crest.

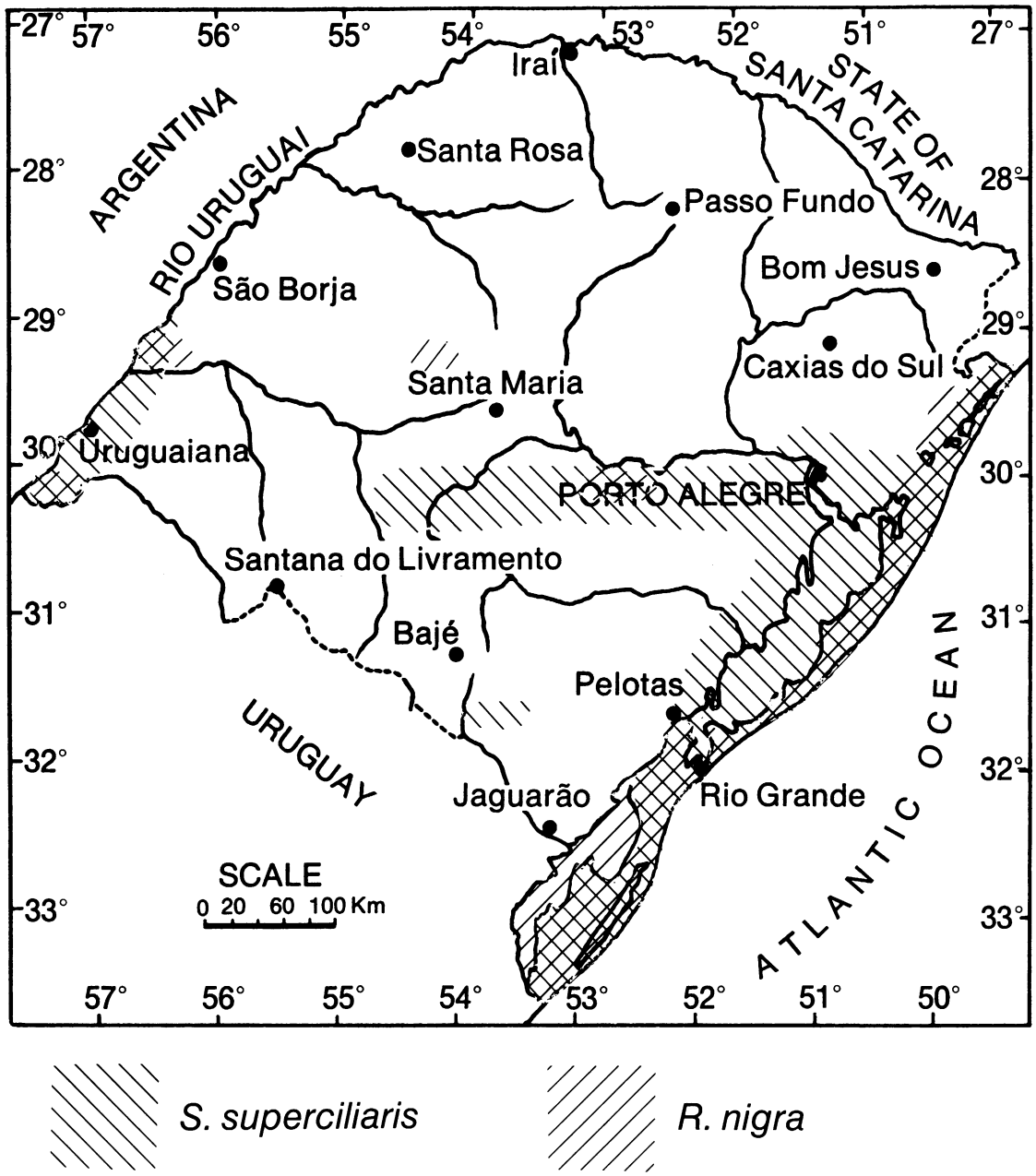
SIZE: One female: 513 mm, slightly more than 400 gr.

SOFT PART COLORS: Female in breeding plumage: tarsus black; bill Deep Reddish Orange; iris brown.

BREEDING: My data support findings of Escalante (1968, 1980a) that Royal Tern breeds in this general area. Female collected July 30, 1974 SW of Cassino in full, fresh, breeding plumage showed slightly enlarged ovarian follicles. A few in breeding plumage seen N of Mostardas lighthouse on July 22, 1981. Individual in full breeding plumage seen S of Tôrres September 30, 1975, but small flock S of Cassino on September 27, 1974 was composed mostly of individuals with white in crown. Escalante comments on paucity of this species in October–December, speculating that they have then retired to breeding colonies. During these months I have registered it only on November 27, 1972 when in course of trip down 220 km of beach from Rio Grande bar to Uruguayan border, one was seen near Cassino, with possible additional one seen too far away for sure identification near S end of beach.

BEHAVIOR: Flies with slow, leisurely, gentle motion of very long wings, rather gull-like and with some resemblance to flight of *Vanellus chilensis.* When seen in flight from side, combination of long, slow-moving wings and down-tilt of bill distinctive.

SPECIMEN: MCN: 762*.



MAP 70. Geographical distribution of *Sterna superciliaris* and *Rynchops nigra* in Rio Grande do Sul.

Thalasseus eurygnatha

Cayenne Tern
Trinta-réis-de-bico-amarelo
(Yellow-billed Tern)

DISTRIBUTION AND STATUS: Occurs along full length of state's ocean beaches and once registered in Taim marsh. Although usually scarce, it was most abundant tern in Cassino area in late September 1974. Registered in Rio Grande do Sul in June–September, November, and January–February. These dates coincide nicely with times of increase and

decline of population density in Uruguay reported by Escalante (1970b). My specimens from November were in immature dress and thus presumably did not disappear to breeding grounds with bulk of population. No breeding colonies found in Rio Grande do Sul, so possibly birds which winter here gather in flocks in late September and then move S to breed.

FIELD MARKS: Large, black-capped, with long, relatively slender yellow bill. See *T. maximus*.

SIZE: One male: 405 mm. One immature female: 400 mm, 300 gr.

SOFT PART COLORS: One male in nonbreeding plumage: tarsus orange with black at both extremes, toes black on upper side; bill yellow, washed orange; iris dark.

BREEDING: Male collected June 24, 1971 had small testes. Three unsexed birds and one female collected November 27, 1972 in breeding plumage but this female and another immature female of same date had inactive ovaries.

BEHAVIOR: Pair displaying September 27, 1974 strutted very close in front of each other, raising rear part of crests and lifting heads abruptly until bills about 30° above horizontal. Wings held out and down so bend of wing somewhat forward of body.

SPECIMENS: MCN: 755–756*. MN: 32936–32939*.

FAMILY RYNCHOPIDAE

Rynchops niger (nigra)
Map 70

Black Skimmer
Talha-mar
(Bowsprit or Sea-splitter)

DISTRIBUTION AND STATUS: Found on ocean beaches, sand bars, and mud flats along coast, inlets, and large lagoons of littoral, usually on ocean side, and occasionally on interior rivers and large reservoirs. All my September–December records are for individuals or small groups, whereas in January, February, and April I have seen large flocks. In absence evidence of any large breeding colonies, question remains whether flocks have come from out of state or are post-breeding assemblages of individuals that have bred or hatched at isolated points within Rio Grande do Sul. I have a few records for July, but none for May, June, or August.

FIELD MARKS: Bright red undershot mandible diagnostic.

BREEDING: No specific information. Among individuals I have registered, most likely possible breeders were few seen October 13, 1971 on sand bars in Rio Ibicuí, few km above confluence with Rio Uruguay.

BEHAVIOR: Large flocks seen at Lagoa do Peixe (about 500) on Janaury 28, 1974, Lagoa Mirim (300–400) on February 14, 1974, and across channel from Rio Grande harbor (about 150) on April 11, 1973, were all loafing on sand banks or mud flats during mid-day hours.

FAMILY COLUMBIDAE

Columba livia

Rock Dove
Pombo-doméstico
(Domestic Pigeon)

I did not keep records on this feral species, but it exists in many places, notably around dock areas of Porto Alegre.

Columba picazuro

Picazuro Pigeon
Asa-branca or *Pombão*
(White-wing or Great Pigeon)

DISTRIBUTION AND STATUS: Throughout state all year, but appears to move from region to region following food supply. Often abundant in S and W, much less common in N; in forests, grain fields, grasslands with scattered vegetation, and espinilho parkland. *Columba p. picazuro.*

FIELD MARKS: Largest Rio Grande do Sul pigeon, only one with white band in wing (visible both perched and in flight), and iridescent, heavily scaled pattern on sides and back of neck.

SIZE: Two males: 385–390 mm. One male: 430 gr (including 28 gr wheat in crop).

SOFT PART COLORS: Tarsus Moderate Red; bill and operculum light gray; iris Moderate Orange; orbital skin Moderate Red.

VOICE: (R) Constantly repeated, fairly loud, deep "cOO-cu-cuO-oo. . .cOO-cu-cuO-oo. . . ." Also single, growling "garrrUP."

BREEDING: Nesting observed at several places in S and W between October 22 and

December 12. Flimsy platforms of sticks varied from 2 to 6 m aboveground; sites included broadleaf tree in marshy, cut-over gallery forest, dry fencerow, spiny leguminous trees of espinilho parkland, and young araucaria tree. On November 30, 1974 at Fazenda da Pedreira, two nests had one egg each, another one nestling with well-advanced feathering.

BEHAVIOR: Usually found in flocks, at times of 200 or more where food abundant. Commonly feed on ground, roost and rest on tree tops and snags in gallery forest, woodlands, and eucalyptus groves; occasionally loaf at edge of stock ponds.

SPECIMENS: MCN: 239, 411, 412, 425, 775–777*. AMNH: 45388, 313739, 321501.

Columba maculosa
Map 71

Spot-winged Pigeon
Pomba-do-orvalho
(Dew Pigeon)

DISTRIBUTION AND STATUS: Abundant in espinilho parkland at western tip, where it outnumbers *C. picazuro.* Presumably present there all year, based on sightings in June, July, October, November, February, and May. Also registered in June and July in Uruguayan border area near Bagé and Herval. *Columba m. maculosa.*

FIELD MARKS: Heavily spotted effect created by white tips of wing coverts.

SIZE: Four males: 330–345 mm. Two males: 345 gr each.

SOFT PART COLORS: Tarsus purplish pink to reddish; bill, including operculum, light gray with black tip; iris light gray to white.

VOICE: (R) Typically pigeon-like, but very low and hoarse, with first syllable lower than others: "cuuuuu uh-cuh-cuuuh" repeated two or three times. Also low, hoarse, single-noted call.

BREEDING: Nesting activity noted at Arroio Quaraí-chico in October, November, and May. Males collected February 15 and May 5 in breeding condition. Flimsy nests of sticks, similar to those of *C. picazuro,* placed in spiny, leguminous trees from 1.5 to 3 m aboveground, with one white egg. One egg measured 41.5 mm in length. New chicks have long, light brown, furlike down and proportionately very large bill. Newly hatched chicks found October 10, 1971, November 14, 1970, and freshly laid eggs May 4, 1974. Chick also found May 6, 1974, but specific identity not certain—could have been *C. picazuro.*

BEHAVIOR: Adults not attending nests perch on high points of trees. When disturbed at nest, adult drops off nearly to ground level and flies away under cover of surrounding low, scattered vegetation of espinilho parkland. Crop of male collected February 15, 1971 contained 220 rice grains, with more in stomach.

SPECIMENS: MCN: 266, 267, 322, 481, 773–774*. MN: 32306*. AMNH: 812986*.

Columba cayennensis
Map 71

Pale-vented Pigeon
Pomba-galega
(Portuguese Pigeon)

DISTRIBUTION AND STATUS: Uncommon; found in forest and open wooded areas at scattered localities N of central trough and Ibicuí valley. Registered between October 25 and February 14, except for questionable Gliesch (1930) record of one collected at São José do Norte during winter, 1916. *Columba c. sylvestris.*

FIELD MARKS: Greenish hind neck and rich chestnut mantle.

SIZE: One male: 339 m, 340 gr.

SOFT PART COLORS: Tarsus Deep Purplish Red; bill and operculum black; iris between Strong and Vivid Purplish Red; orbital skin Deep Purplish Red.

BREEDING: Male collected October 26, 1975 in breeding condition.

SPECIMENS: MCN: 778*. AMNH: 313743, 313744, 313746–313748.

Columba plumbea
Map 71

Plumbeous Pigeon
Pomba-amargosa
(Sad Pigeon)

DISTRIBUTION AND STATUS: Scarce. Recent records limited to NE escarpment forests and Turvo Forest Reserve, but Kaempfer and Ihering (1899a) each found it near São Lourenço. Records fall between early July and mid-January. *Columba p. plumbea.*

FIELD MARKS: Smallest and darkest Rio Grande do Sul pigeon, lacking other distinctive characteristics.

VOICE: (R) Rather harsh, loud "co co co c-ooh. . . . . .co co co c-ooh," with last syllable dropping off, reminiscent of call of *Carpornis cucullatus.*

BEHAVIOR: Feeds on small wild fruits. Quite fearless, permitting closer approach than other Rio Grande do Sul pigeons.

SPECIMENS: AMNH: 45366, 321731.

Zenaida auriculata

Eared Dove
Pomba-de-bando
(Flock Pigeon)

DISTRIBUTION AND STATUS: Very abundant throughout year in open country of S and W. Uncommon in NE and unrecorded for few sectors, but probably occurs sporadically everywhere. Prefers fields or sparsely wooded country. *Zenaida a. chrysauchenia.*

FIELD MARKS: Medium-sized with two black marks on side of head, black spots on wings, and broad white tips to outer tail feathers.

SIZE: One male: 249 mm, 117 gr. One female: 230 mm, 149 gr.

SOFT PART COLORS: Tarsus pink to light red; bill black; operculum gray; orbital skin (live bird) blue-gray; iris (live bird) Brownish Black. Juvenal: tarsus light pinkish orange; bill gray; operculum dull pinkish; iris grayish brown.

VOICE: (R) Rapidly repeated, bisyllabic: "ulOO ulOO ulOO. . . ."

BREEDING: Nesting observed from October 10 (not determined whether egg or nestling) to February 19 (eggs). Nest height varies from 2 to 4 m in thickets, small trees, exotic pines.

BEHAVIOR: Usually occurs in flocks of 30 to 100 individuals, occasionally much larger, but during breeding season pairs more common. Often found on highway. Feeds on rice, wheat, and other grains and seeds.

SPECIMENS: MCN: 168, 170, 289, 297, 779–780*, 785*, 1778. AMNH: 45308, 313751–313754, 321732.

Columbina talpacoti
Map 72

Ruddy Ground-Dove
Rolinha-roxa
(Purple Dove)

DISTRIBUTION AND STATUS: Common to abundant year-round except in areas above about 750 m (registered once in Gramado in nine years), and rare within strip of approximately 100 km along Uruguayan border. Found on ground in wide variety of open and scrubby habitats, especially along unpaved roads, but has definite preference for humid situations near streams and marshes. *Columbina t. talpacoti.*

FIELD MARKS: Only small dove in Rio Grande do Sul with rufous (male) or brownish (female) body and wings, and black-spotted wing coverts.

SIZE: One male: 171 mm, 56 gr. One female: 166 mm, 46 gr.

SOFT PART COLORS: Tarsus pink; bill gray; iris red.

VOICE: (R) Rapidly repeated three-syllable phrase: "too too poe," nicely rendered in Portuguese as "*tudo bom*" = "all OK."

BREEDING: Voss (personal commun.) found one constructing nest in palm tree in July 1981. Other nests recorded from November 17 (two eggs) and November 20 (two recently hatched nestlings) to March 22 (two eggs). These latter nests, from 1.2 to 2 m aboveground in thick-foliaged, broadleaf bushes or low trees, more substantial than other Rio Grande do Sul columbid nests, with deep saucer shape, and fine roots and grasses providing minimal lining.

BEHAVIOR: Usually found in pairs with little tendency to flock. Voss and Sander (1980) reported it feeding on fruits of *mamica-de-cadela* (*Fagara rhoifolia* Lam. Engl.).

SPECIMENS: MCN: 783–784*.

Columbina picui
Map 72

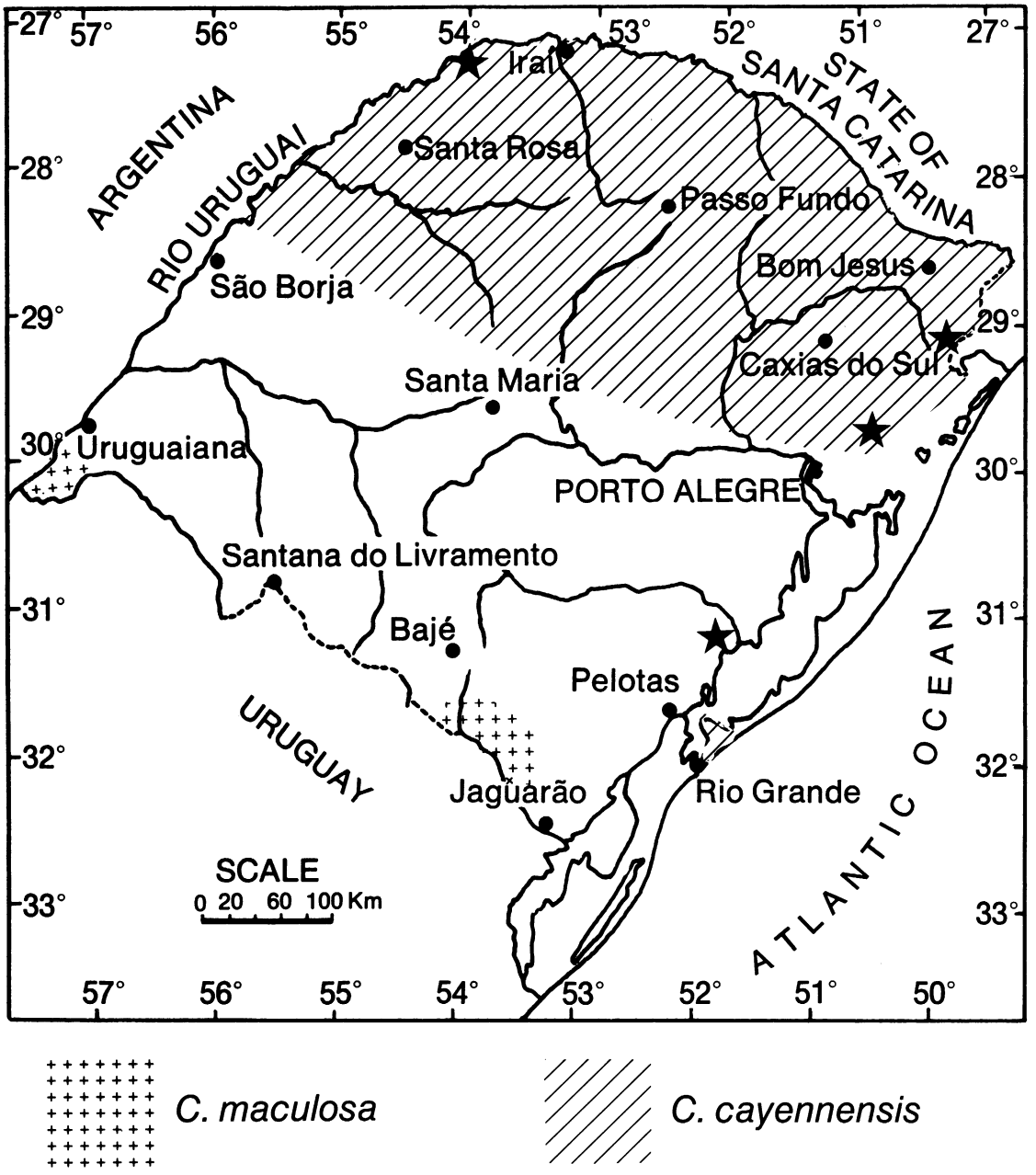
Picui Ground-Dove
Rolinha-picui
(Picui Dove)

DISTRIBUTION AND STATUS: Abundant all year in all sectors except NE above approximately 700 m where never registered. Found on ground or in low vegetation near small farms, scrub, grain producing areas, and along paved roads. Much less common in open grasslands without taller vegetation. *Columbina p. picui.*

FIELD MARKS: Small, gray, immediately recognizable in flight by extensive white in tail and black and white contrast in wing.

SIZE: Two males: 192–195 mm, 45–47 gr. One female: 190 mm, 45 gr.

SOFT PART COLORS: Tarsus dark red; bill

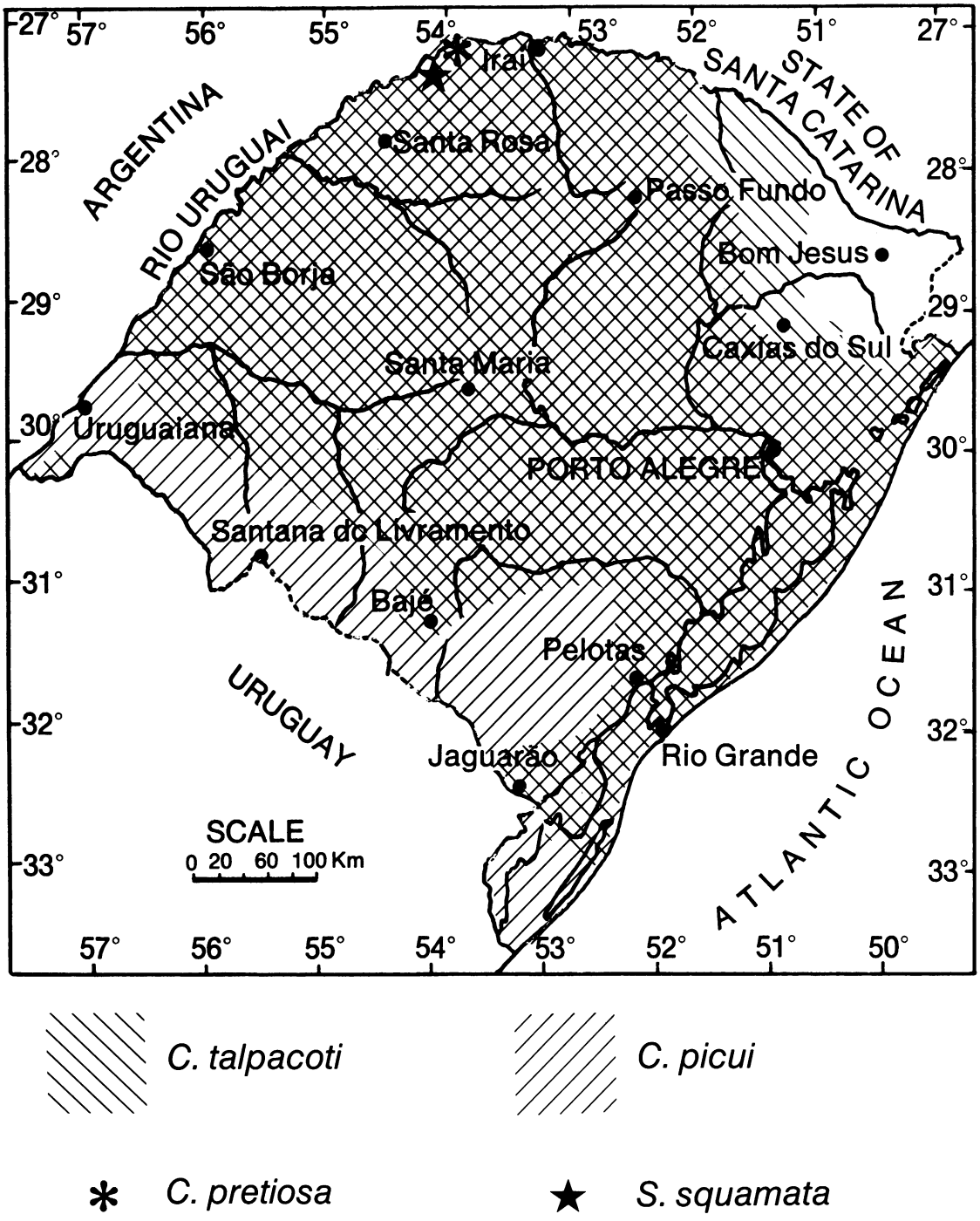


MAP 71. Geographical distribution of three species of *Columba* in Rio Grande do Sul.

black; iris (live male) concentric rings, from inside out, of off-white, bright blue, and carmine. Pupil not round, intruding into iris on anterior side; female iris whitish.

VOICE: (R) Rapidly repeated, hollow, two syllable: "go-up go-up go-up go-up. . . ." with second syllable higher than first.

BREEDING: Voss (personal commun.)



MAP 72. Geographical distribution of *Columbina talpacoti, Columbina picui, Claravis pretiosa* and *Scardafella squamata* in Rio Grande do Sul.

observed copulation July 27, 1962 and August 25, 1964 in Novo Hamburgo. On February 14, 1975 at Fazenda São Roberto, nest with two eggs was on top of older nest constructed partly on beam and partly on wires close under roof of open-sided cattle disin-

fecting shed. Local observers said older nest from previous year; present clutch several days old, having been laid shortly after young from earlier nesting had fledged. Nest unlined but had some feathers worked into structure of sticks. Bird remained on nest while workmen in immediate vicinity, and only fled when I approached within 60 cm. Males collected September 11, 1974 and January 23, 1972 in breeding condition.

BEHAVIOR: Usually found in pairs or small flocks of six to 12.

SPECIMENS: MCN: 194, 781–782*. AMNH: 313774–313777, 321503–321505, 321733, 812987*.

Claravis pretiosa
Map 72

Blue Ground-Dove
Rola-azul
(Blue Dove)

Male individual caught in net and subsequently released on January 26, 1979 at Salto de Yucumã, Turvo Forest Reserve (Albuquerque, 1980). It had been seen several times before in area but was not positively identified until netted. No other record known.

Scardafella squamata
Map 72

Scaled Dove
Fogo-apagou
(Fire Went Out—onomatopoetic)

On early morning of November 24, 1977 at crossing of Rio Turvo on road between Três Passos and Tenente Portela (27°24'S, 53°54'W), Silva and I each separately heard and identified unmistakable "*fogo apagou*" call of this species, apparently coming from trees in nearby pasture. Few minutes later call was repeated several times again, but we were unable to find bird. Previously recorded from Paraná and adjacent Misiones, Argentina. *Scardafella s. squamata.*

Leptotila verreauxi

White-tipped Dove
Juriti-pupu
(Poopoo Forest Dove—onomatopoetic)

DISTRIBUTION AND STATUS: Very common resident of floor and lower story of woodlands throughout state, often foraging in open fields, occasionally hundreds of meters from cover. *Leptotila v. chlorauchenia.*

FIELD MARKS: Medium size, no distinctive marking except white-tipped tail. When, as often seen, flying away from observer, cannot reliably be differentiated from *L. rufaxilla,* but otherwise blue orbital skin and darker, brownish forehead noticeable.

SIZE: Two males: 290–300 mm, 174–242 gr. One unsexed: 275 mm, 150 gr.

SOFT PART COLORS: Tarsus pink; bill black; iris pale orange. Fledgling: tarsus dark bluish pink; bill grayish brown; end of maxilla black behind light tip; iris brown; orbital skin gray.

VOICE: (R) Deep, hollow, echoing, leisurely, two-syllable "poo poooo," second syllable prolonged and dropping in pitch, or sometimes increasing in volume.

BREEDING: Nesting noted October 13, 1974 (two Pale Orange Yellow eggs) and November 1, 1975 (two well-feathered nestlings) and probably January 18, 1975 (one almost naked nestling), but last could have been *rufaxilla.* Nests 2 to 3 m aboveground in low trees with thicker platform than that of *C. picazuro.* One in small tangle of brush and vines among clump of bushes and trees on abandoned farm site was 400 m away from forest. Male collected near Tôrres October 17, 1970 had small testes, whereas those of one from Arroio Quaraí-chico February 13, 1971 much enlarged.

BEHAVIOR: Found singly and in pairs, though large numbers occasionally assemble in good feeding areas, as at Fazenda São Roberto on July 8, 1973 when at least 50 in one field. Usually shy and flees to woodland at first sight of intruder.

SPECIMENS: MCN: 165, 169, 294–296, 321, 385, 461, 786–788*. AMNH: 45332, 313760, 313763–313765, 321502, 812988*, and two unidentified juvenal *Leptotila* sp. 313766, 313767.

Leptotila rufaxilla

Gray-fronted Dove
Juriti-gemedeira
(Moaning Forest Dove)

DISTRIBUTION AND STATUS: Common resident in most regions with woodlands, but registered only once within approximately 100 km of Uruguayan border. My findings less complete than normal due to frequent

difficulty in visually distinguishing between this species and *L. verreauxi* and delay in learning vocalization. Occupies lower level and floor of woodland areas, but also feeds in nearby open, like *verreauxi. Leptotila r. reichenbachii.*

FIELD MARKS: See *L. verreauxi.* Reddish orbital skin and broad pearl gray, almost white forehead.

SIZE: One male: 305 mm, 190 gr. Three females: 276–293 mm, 168–175 gr.

SOFT PART COLORS: Tarsus red; bill black; iris pale yellow; orbital skin reddish.

VOICE: (R) Single low-pitched, hollow, unemphasized, fairly short "whoaooo," rising somewhat in volume in middle, then dropping again, with quality of sound produced by blowing gently over mouth of bottle.

BREEDING: Female collected October 13, 1973 had partially enlarged ovary.

BEHAVIOR: Similar to *L. verreauxi.*

SPECIMENS: MCN: 414, 618*, 789–791*. AMNH: 45323, 313755–313758, 812989*.

Geotrygon montana
Map 73

Ruddy Quail-Dove
Pariri

DISTRIBUTION AND STATUS: Uncommon resident in scattered sectors of NE and N, and occasionally in SE hills. Most frequently encountered along NE escarpment and adjoining lowlands. Inhabits forest floor but emerges at times on wing as evidenced by occasional window kills in Gramado and at zoo in Sapucaia do Sul. *Geotrygon m. montana.*

FIELD MARKS: No other Rio Grande do Sul columbid has distinctive whitish line below eye, less marked but still evident in female.

SIZE: Three males: 240–265 mm, 135–151 gr. Two females: 242–243 mm, 132–134 gr.

SOFT PART COLORS: Male: tarsus Moderate Purplish Red; bill grayish brown; operculum Dark Red; iris Moderate Orange Yellow; orbital skin Strong Red.

VOICE: (R) Single, low-volume moan, dropping slightly in pitch toward end. Higher pitched than voice of *Leptotila rufaxilla* and much less resonant.

BREEDING: Male collected November 29, 1975 had greatly enlarged testes. Male of March 26, 1975 and females of June 25, 1974 and August 28, 1972 had inactive gonads.

SPECIMENS: MCN: 283, 402, 437, 792–794*. AMNH: 812990–812991*.

FAMILY PSITTACIDAE

Anodorhynchus glaucus
Map 74

Glaucous Macaw
Arara-azul-pequena
(Little Blue Macaw)

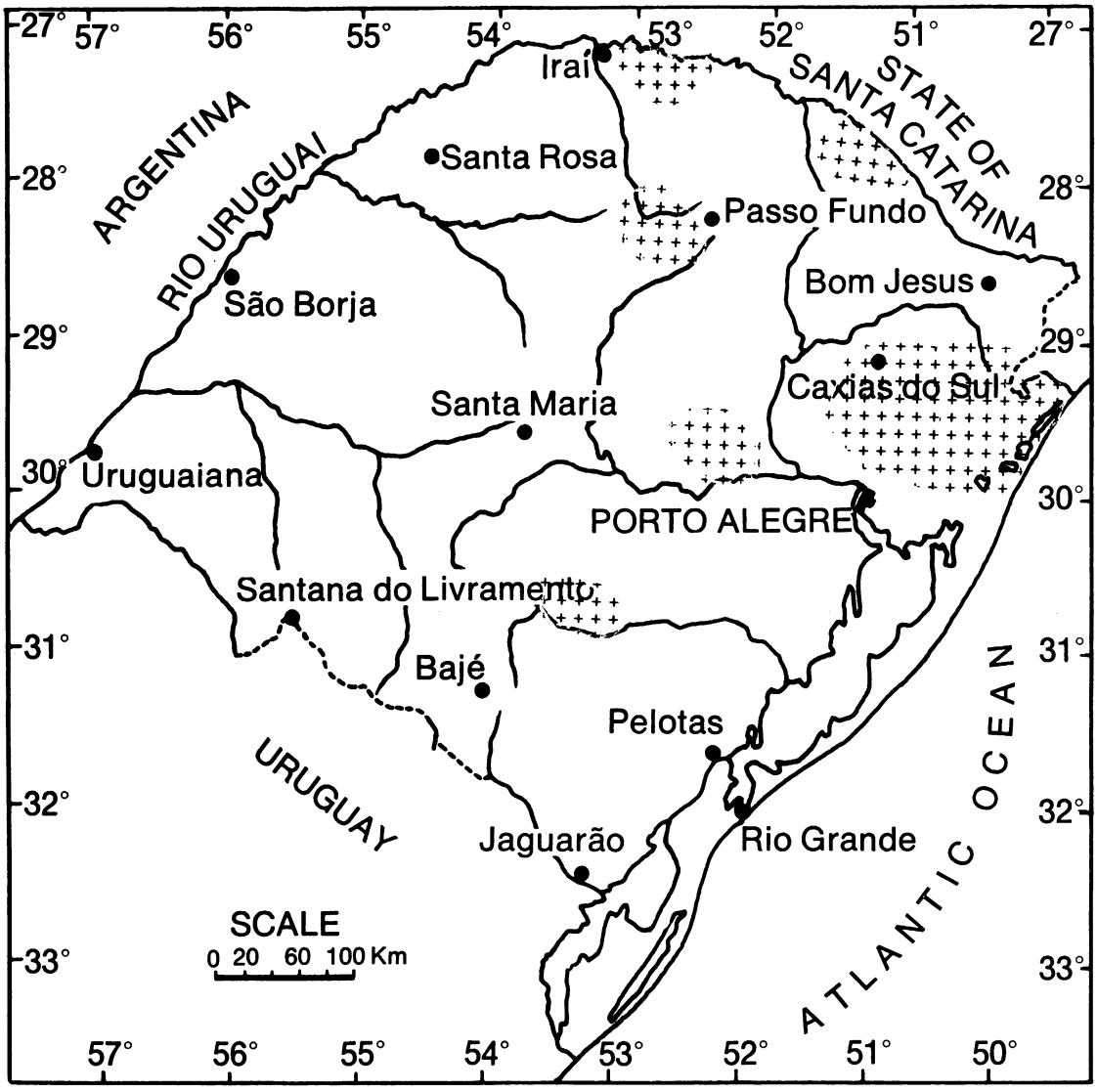
Almost certainly extinct in Rio Grande do Sul and perhaps entirely. Former occurrence here apparently confirmed by quote from journal of Sellow, cited by Stresemann (1948). Sellow left Guaíba December 15, 1823 for Caçapava do Sul where (presumably several days later, considering distance and travel conditions then) he wrote (in translation): "A blue Macaw nests here in holes in the rock cliffs." No large, blue parrot other than this one has range anywhere within several hundred kilometers of Rio Grande do Sul, so it is reasonable to assume Sellow's observation pertains to this species. I thank Helmut Sick for bringing Stresemann's citation to my attention.

Ara maracana
Map 74

Blue-winged Macaw
Maracanã

Formerly common but now rare if not extinct here. I have not seen it and have been unable to obtain verifiable information that it is still present. Name *Maracanã* well-known to rural residents but widely misapplied to other parrot species, so caution must be used in assessing local reports. Resident administrator of Aparados da Serra National Park in 1973 pointed out tree near his home that he said was nesting site of these birds, which he described as white-faced, but they did not appear during time of my visit, and more recent administrator informed me he had never seen them. Specimens, almost all collected more than 50 years ago, have been from forested areas along escarpment in NE, including foothills, as well as from extreme N and into NW. Most were from January to April, but Ihering also collected one in August in Taquara.

SPECIMEN: AMNH: 313923.



MAP 73. Geographical distribution of *Geotrygon montana* in Rio Grande do Sul.

Aratinga leucophthalmus
Map 74

White-eyed Parakeet
Maracanã-malhada
(Stained Maracanah)

I have not positively identified this species in wild since 1948 but am confident occasional fast-disappearing or distant flocks of long-tailed green parrots seen on wing in recent years near center of state and once in extreme NW were White-eyed Parakeets. Most numerous was band of about 60 which crossed high above highway NE of Bagé March 26, 1975. Ihering collected specimens near Taquara in February, July, and August, and Kaempfer collected two at Santa Cruz on September 23, 1928, so it apparently is here throughout year.

SPECIMENS: AMNH: 313932, 313933.

[*Aratinga solstitialis*]

[Sun Parakeet]

Salvadori (1891) attributed specimen of *A. s. auricapillus* to Rio Grande do Sul, but it

was from discredited Joyner collection. In absence better evidence of its occurrence here, this species cannot be accepted for state list.

[*Aratinga aurea*]

[Peach-fronted Parakeet]

Pinto (1937) mentioned this species for Rio Grande do Sul "*teste* Naumburg" (1930). Her information would presumably have come from Kaempfer collection, but there is no evidence of a Rio Grande do Sul specimen in it. Pinto (*in litt.*) believed she may have depended on Ihering and Ihering (1907) and suggested it time to "correct the old error." I agree and now delete species from my Rio Grande do Sul list.

Pyrrhura frontalis
Map 75

Reddish-bellied Parakeet
Tiriba-de-testa-vermelha
(Red-fronted Tiriba)

DISTRIBUTION AND STATUS: Common resident in forested or partially forested areas across N, especially in NE, and E half of central trough and SE hills. In N it is only common parrot, but in S, where appropriate habitat scarcer, *Myiopsitta monachus* outnumbers it. *Pyrrhura f. molinae.*

FIELD MARKS: No other long-tailed member of family in state has brick-red patch on belly nor such dark face.

SIZE: Three males: 255–284 mm, 82.5–94 gr. Two unsexed: 236–242 mm, both 72 gr.

SOFT PART COLORS: Tarsus blackish gray to gray; bill gray, sometimes lighter at base of mandible; iris dark brown; eye ring light gray to white; cere yellow to yellowish white.

VOICE: (R) Rapidly repeated, brief, harsh, high-pitched staccato screeches intermingled with some slightly longer, higher, even more penetrating shrieks, usually heard simultaneously from several members of swift-flying flock. Usually silent when perched.

BREEDING: On November 25, 1972 at Fazenda da Invernada, we found a nest in hollow of broadleaf tree in gallery forest. Opening, at point where branch had broken off trunk, less than 3 m aboveground. Hole about 60 cm deep and ran at angle of about 60° from horizontal. It contained five eggs and one chick, which in poor light appeared to be covered with fine grayish down. Eggs appeared cream color, without spots. About half of shell of hatched egg still present. Both adults remained in immediate vicinity as we investigated, one having flown out of nest as we approached. On October 26, 1972 at Fazenda São José I saw pair investigating *Furnarius rufus* nest, as if interested in taking over from owner still in occupancy. On January 18, 1979 at Aparados da Serra National Park we saw feeding operation, individual above pumping food into one below, seemingly a juvenal.

BEHAVIOR: Reddish-bellied Parakeets almost always found in small flocks of from about six to 12 individuals. Although wild fruits and nuts, especially araucaria nuts in season, are principal food, birds also enter gardens where I have seen them eat persimmons. Voss and Sander (1980) reported they also eat fruits of *guabirobeira* (*Campomanesia xanthocarpa* Berg.) and *pinheirinho* (*Podocarpus lambertii* Kotsch). They are sometimes accused of attacking growing corn, but such depredations slight in comparison with those made by *M. monachus.*

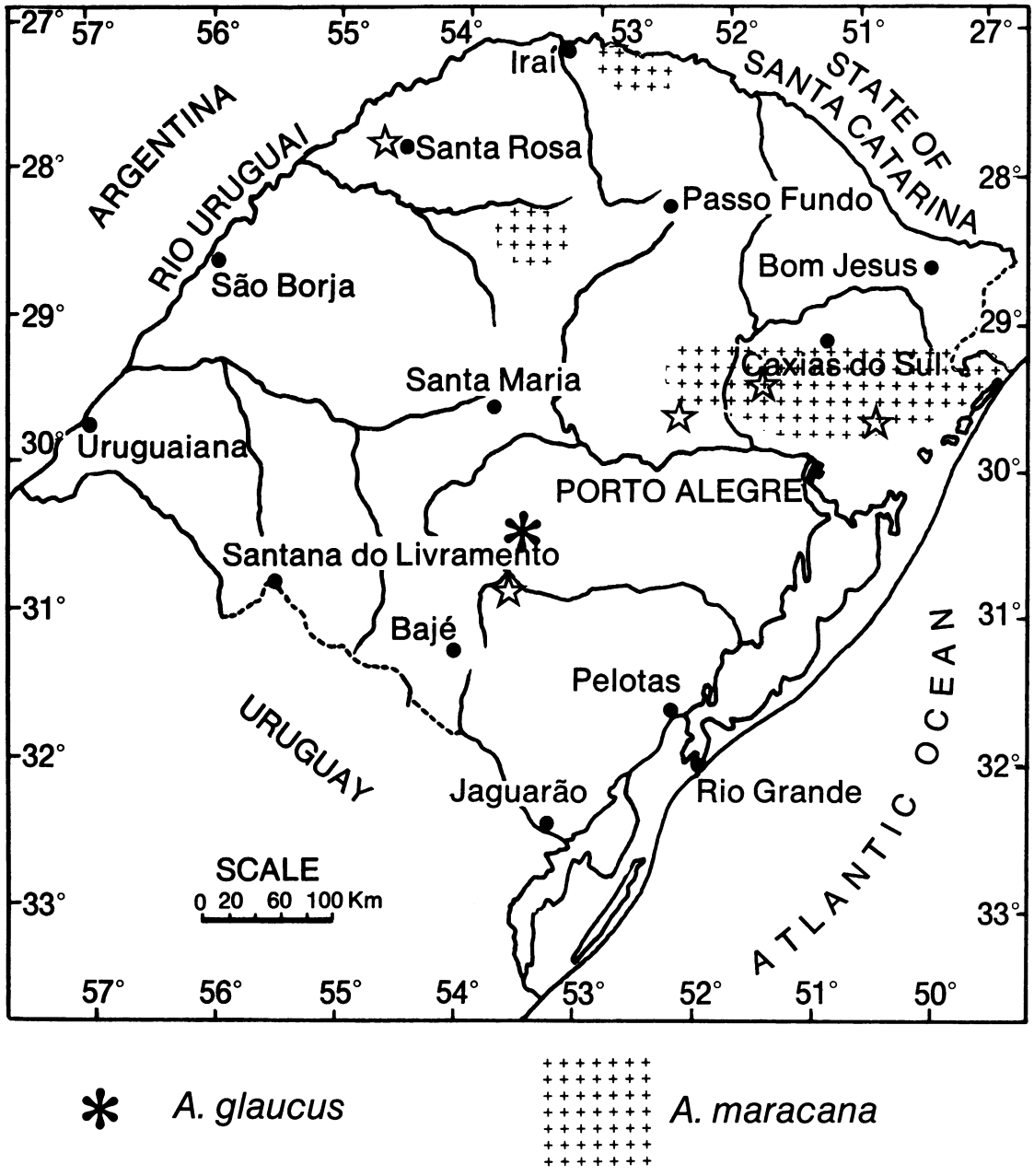
Twice on September 23, 1971 and once on January 20, 1977 I saw a pair interlock bills, one perched slightly above other, and pump heads back and forth violently as if one above were feeding other. However, in no case was it clear that lower bird was juvenal and it seems unlikely full-sized juvenals would have been present in September, so these may have been courtship or pair-bond activities.

SPECIMENS: MCN: 174–176, 258, 827–829*, 1820–1821*. MN: 3688, 3714, 3715. AMNH: 313904–313913, 313942–313954.

Myiopsitta monachus
Map 75

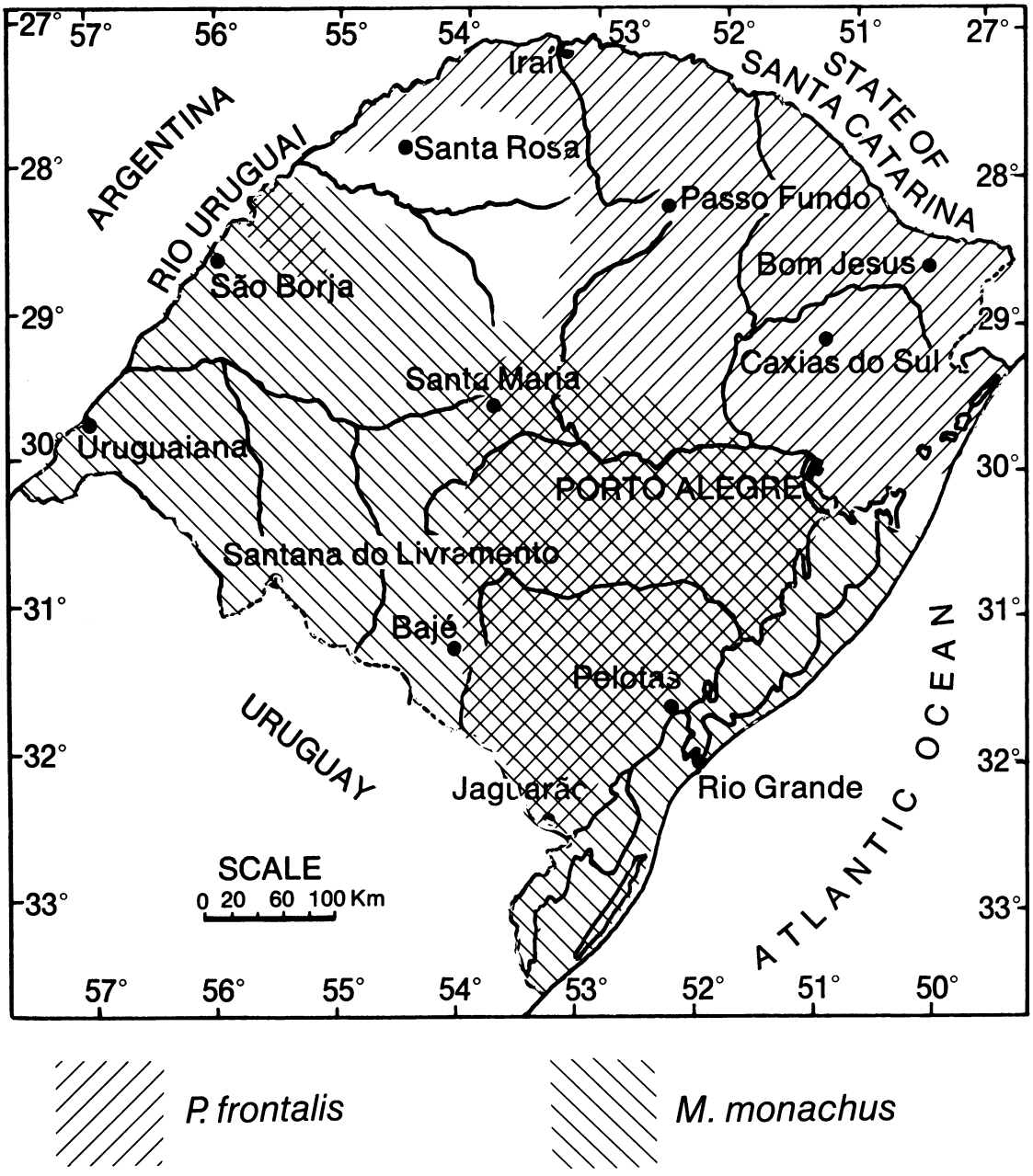
Monk Parakeet
Caturrita

DISTRIBUTION AND STATUS: Abundant resident in southern and western two-thirds of state. Occurs less frequently toward NE edge of range and not known beyond Porto Alegre, now that small colony which existed for few years during early 1970s in zoo at Sapucaia do Sul (apparently descended from zoo escapees) has disappeared. Also reported in vicinity of Passo Fundo, but this is well out of range and any wild birds there were probably also escaped cage birds. Prefers open country with scattered trees, planted groves,



MAP 74. Geographical distribution of *Anodorhynchus glaucus, Ara maracana,* and *Aratinga leucophthalmus* in Rio Grande do Sul.

or nearby gallery forest. Planting of eucalyptus groves, especially in extensive open country of extreme W and S has undoubtedly resulted in expansion of population by



MAP 75. Geographical distribution of *Pyrrhura frontalis* and *Myiopsitta monachus* in Rio Grande do Sul.

providing high, protected nesting sites where none previously available. Short (1975) attributes race *M. m. cotorra* to Rio Grande do Sul, but Forshaw (1973) includes state within range of *M. m. monachus*. My specimens conform to dimensions given by Forshaw for *monachus*.

FIELD MARKS: Primarily gray face and gray forecrown distinguish it from any other Rio Grande do Sul psittacid.

SIZE: One male: 300 mm, 127 gr. Two females: 288–316 mm, 130–140 gr.

SOFT PART COLORS: Tarsus gray with whitish net pattern; bill light reddish brown to brownish white; iris (live bird) Grayish Brown.

VOICE: (R) Repeated raucous, guttural outbursts at various pitches, which at highest levels become loud, penetrating screeches. Near nest sites vocalization within flock almost continuous during day.

BREEDING: Because bulky, woven, colonial nests are occupied all year for roosting as well as breeding and usually quite inaccessible, little authentic information available on exact breeding dates. Females collected October 20, 1974 and October 24, 1972 had moderately enlarged ovaries with number of swollen follicles. With large permanent population here, it is certain they breed within state. Forshaw (1973) expressed doubt about this, but he visited only extreme edge of range where species' hold tenuous, and colonization, let alone breeding success, probably uncertain in any given year. Nests most often in eucalyptus trees, sometimes several nests within one small grove, but also woven into fronds of araucaria pompons in rare places where araucarias grow in Monk Parakeet range. I have seen small nest in low *corticeira* (*Erythrina crista-galli*) in roadside ditch.

BEHAVIOR: Monk Parakeets move about in flocks, often of 30 to 50 individuals, and are exceedingly noisy, both in flight and when perched in vicinity of or on nests. They eat wide variety of foods, ranging from cactus stalks to grass seed, and are notorious pests in agricultural areas where they attack tree fruits and corn. I have seen corn field with practically all top ears destroyed by them. Story cited by Mitchell (1957) of farmers protecting corn from *Pyrrhura frontalis* by bending stalks over applies here to *Myiopsitta monachus,* which apparently only attacks ears growing upright. In response to protests from farmers unable combat species legally, for a few years it was included in list of game birds for winter hunting season, though an unlikely target for sportsmen. Poisoning illegal, but doubtless used in some areas.

SPECIMENS: MCN: 26, 32, 226, 227, 401, 825–826*. USNM: 461531. AMNH: 321247–321249, 321560–321563, 812992*. (321805 from Uruguayan side of mouth of Rio Jaguarão.)

Forpus xanthopterygius

Blue-winged Parrotlet
Tuim

No recent record. Gliesch (1930) cited only specimen for state, but this faulted by apparent misprint in his published list, which duplicated for this species collecting localities from immediately preceding species. This resulted in erroneous attribution of other specimens to Ihering, who did not see it at all, and leaves us without certain origin for Gliesch specimen. Ihering (1899a) mentioned secondhand report of this species from Taquara.

[*Brotogeris tirica*]

[Plain Parakeet]

Cited for Rio Grande do Sul by Peters (1937), apparently on basis of specimen in British Museum's Joyner collection. Due to doubtful origin that collection and in absence any other state record, it is omitted here.

Pionopsitta pileata

Map 76

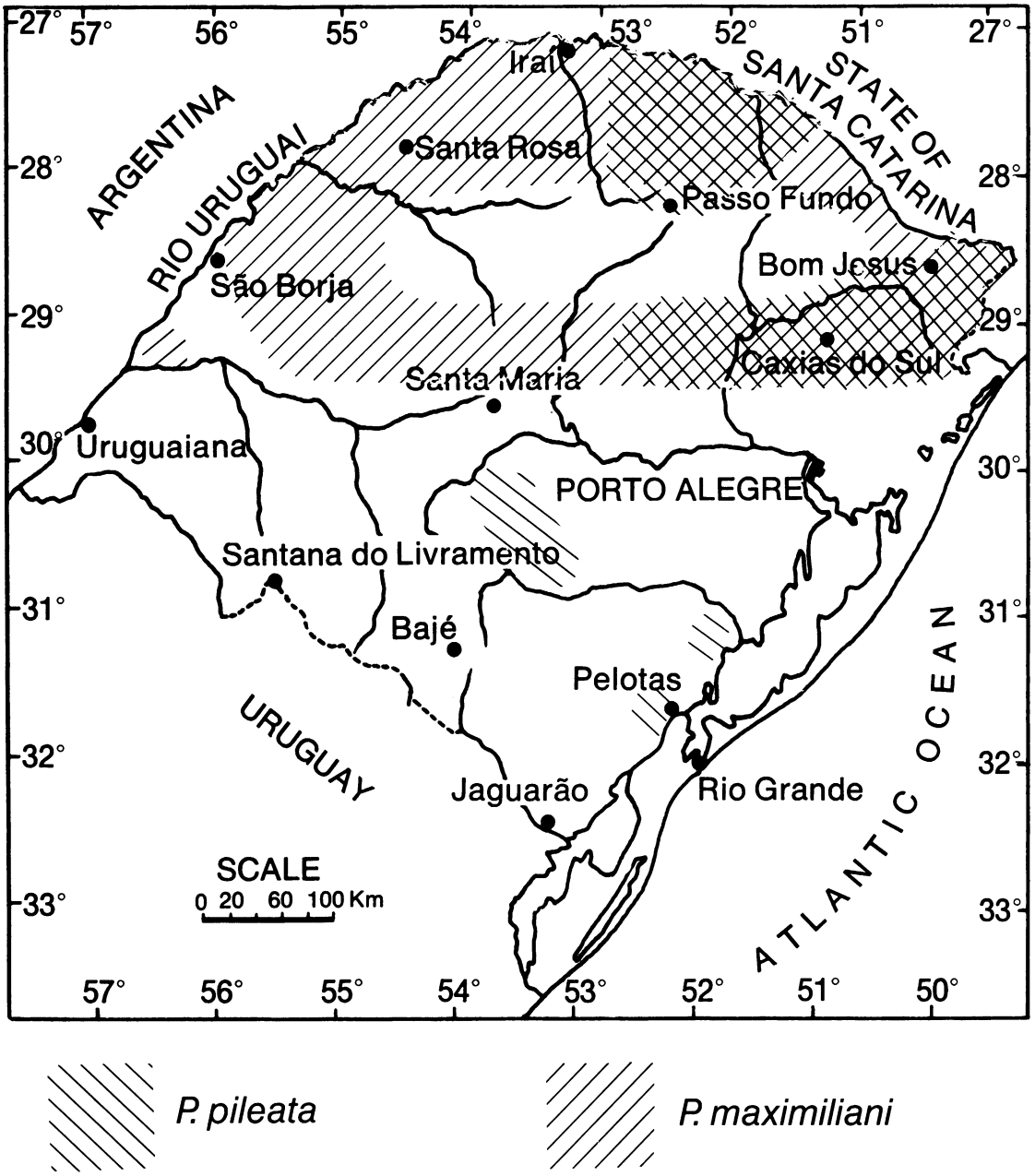
Red-capped Parrot
Cuiu-cuiu

DISTRIBUTION AND STATUS: Occurs uncommonly in forests throughout year in much of NE quarter, most extreme recent records being from S of Santa Maria and at Rincão dos Pereira. Ihering (1899a) reported it from Pelotas.

FIELD MARKS: Although considerably smaller, females might be confused with female *Triclaria malachitacea,* but *P. pileata* has dark ear coverts and *T. malachitacea* whitish bill.

VOICE: (R) In flight, rapidly repeated high-pitched shrieks, less raucous, less staccato than *Pyrrhura frontalis,* with more musical overtones. Also three syllable "ch ch chEE," last part high and metallic. Perched flock engaged in continuous, loud bubbling chatter with individual notes similar in character to those in first-described flight call.

BREEDING: Local resident of Rincão dos



MAP 76. Geographical distribution of *Pionopsitta pileata* and *Pionus maximiliani* in Rio Grande do Sul.

Pereira reported birds going in and out of nesting hole about November 15, 1979.

BEHAVIOR: Occur in pairs or small flocks, noisy in flight, more often silent when perched.

SPECIMENS: MN: 428–430. AMNH: 313993–313999.

Pionus maximiliani
Map 76

Scaly-headed Parrot
Maitaca-bronzeada
(Bronzed Maitaca)

DISTRIBUTION AND STATUS: Moderately common permanent resident in many areas

across state N of central trough, usually in open woodland and gallery forest. *Pionus m. melanoblepharus* in NE (Camargo, 1963); *P. m. siy* in W at Itaqui (Pinto, 1938). Darrieu (1979) maintains whole state lies within *melanoblepharus* range.

FIELD MARKS: Only Rio Grande do Sul parrot with red crissum. In flight wings stay below horizontal.

SIZE: One male: 271 mm, 293 gr.

SOFT PART COLORS: Tarsus has black reticulations with light gray between; mandible, tip, and edges of maxilla yellow, base of maxilla black; iris dark.

VOICE: (R) One perched on post in field near woods gave several series of four to six moderately-pitched, rapidly repeated, harsh, demanding squawks, with occasional low, querulous clucks interspersed between series.

BREEDING: Specimen of August 1, 1973 had inactive testes.

BEHAVIOR: Where unmolested, as in Nonoai Forest Reserve, occurs in substantial flocks and is quite unwary.

SPECIMENS: MCN: 1822*. AMNH: 313978–313981, 313984.

Amazona pretrei
Map 77

Red-spectacled Parrot
Charão

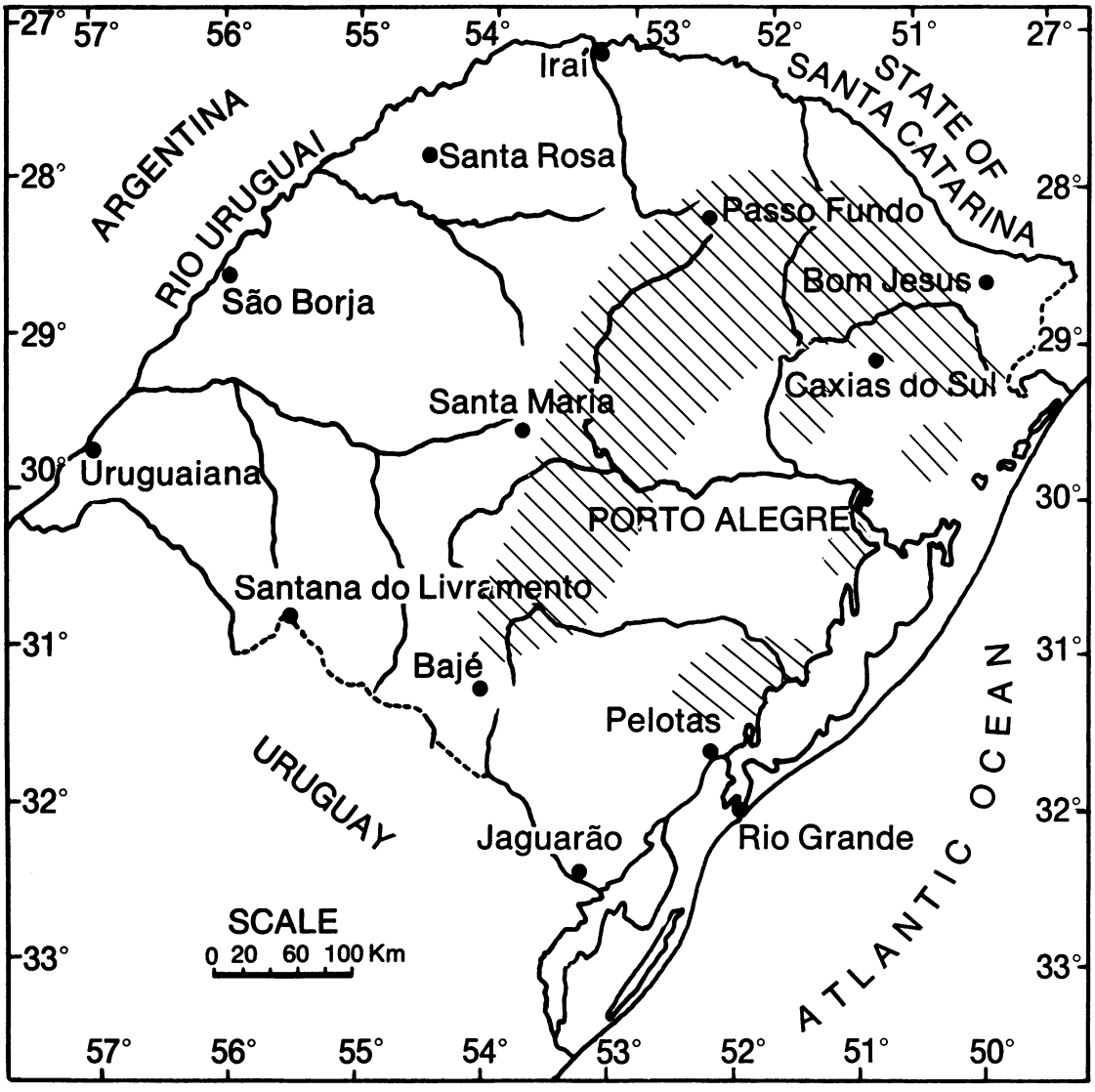
DISTRIBUTION AND STATUS: Recent records all fall within area bounded by 50°30′ to 54°W and 28° to 31°S, with sightings concentrated in NE and N central highlands, thence S through center of state across central depression to northern portion of S central hill country. Species likely could be found somewhat beyond these limits in all directions. Early records of Ihering and Kaempfer included lowland areas near Taquara, Porto Alegre, and São Lourenço. Outside of breeding season apparently move in large numbers from area to area depending on food supply, but scatter in pairs throughout entire region for nesting. In May 1971 and 1972, many thousand roosted nightly in araucaria grove 18 km S of Esmeralda, now included in Aracuri-Esmeralda Ecological Station. Local residents said this long-standing annual event lasted from April to July. However, in 1974 no significant flocks were registered there. Silva (1981) reported less than 5000 May 24–26, 1975, but Voss (*in litt.*) estimated 10,000 roosting there in late February and mid-May 1983. Report in 1975 coincided with reported sharp decline in other roosting areas, principally one 11 km NE of Santana da Boa Vista, where in February 1976 Willis (*in litt.*) saw estimated 2000. Once distributed as far N as São Paulo, species in Brazil now apparently confined to Rio Grande do Sul (Pinto, 1978) and possibly Santa Catarina. Full study urgently needed to find and try to preserve major roosting sites and food resources, and to determine life history and factors causing decline.

FIELD MARKS: Only Rio Grande do Sul parrot with extensive amounts red on head and wings.

VOICE: (R) Flocks flying to roost in evening vocalize mostly with undifferentiated piercing high-pitched screeches, but also utilize lower, hoarse "caw caw keeu keeu" and similar, loud, repetitive "hee-o hee-o hee-o. . . ." Latter also heard from pair probably nesting, with "hee-o's" grouped in pairs. In large roosting assemblages, calls lose individual character and merge into deafening din as would be heard under aluminum pan in waterfall.

BREEDING: Local country people say young vary from two to four, usually three, and are always fledged by Christmas. On December 10, 1979 at Rincão dos Pereira, we were shown two juvenals taken from nest during previous month. Pictures were taken, showing different stages of development, which boy who robbed nest said was evident at time he found them, indicating they had hatched some days apart. We were shown nest hole from which they originated, in *carvalinho* (*Casearia* sp.) tree in forested area. Hole 6 m aboveground in lower portion of tree, 51 cm deep before we excavated bottom material and 73 cm after. Diameter of entrance 10 cm; of inside hole 17 × 14 cm. Material excavated from bottom was mostly rotted wood dust—presumably from interior wall of nest hole. On top of it was thin layer of *crim vegetal,* a fungus hyphae, with few pieces of leaves. The *crim* was saturated and caked with excrement, and there was also one rotted and broken egg.

On December 11 Silva (1981) was shown another nest hole, 10.1 m aboveground, from which boy had taken one adult about two



MAP 77. Geographical distribution of *Amazona pretrei* in Rio Grande do Sul.

weeks earlier. Silva found two white eggs measuring 35.4 × 26.7 mm and 38.1 × 26.2 mm.

BEHAVIOR: Nightly roosting assemblages, with birds arriving from all directions in late afternoon in flocks of from five to 150 individuals, concentrate within few hectares several thousand individuals who spend days spread over countryside at long distances from roost. I first discovered Esmeralda roost as result of seeing several flocks totaling 500 or more individuals within few minutes all flying toward it some 15 km away. Flocks lack formation, but large ones much longer than wide. Within flocks birds usually fly in pairs, occasionally in triples or singles. Upon arrival at Esmeralda roost, flocks usually wheeled once or twice, then settled on tree branches, appearing to rest on tarsus when perched. Vocalization intense while birds in air, more subdued but constant while perched in daytime. During one to one and a half hours

between first arrivals and nightfall, large bands of perched birds would suddenly rise into air, either when disturbed or more usually without apparent provocation, to make wheeling, screeching flights over general vicinity lasting several minutes. When nearly dark, entire assemblage went up in dramatic, deafening display, circling over roost for 10 or 15 minutes before finally settling down for night and falling silent. Cackling began shortly after dawn. On clear morning almost all birds departed area, in flocks similar to those in which they arrived, within about half-hour. On foggy morning, however, there were many wheeling flights in vicinity, first in large flocks, then smaller ones, continuing more than two hours.

Roosting season at Esmeralda and one other known site in NE highlands coincides with period when araucaria nuts ripen. These appear to be principal food then. Since roosting trees are also araucaria, some birds feed between evening display flights, but most feeding is done elsewhere. Near Santana da Boa Vista we were told principal food is fruit of *pinheirinho* (*Podocarpus lambertii*), while other favorites are *guabiju* (*Eugenia* sp.) and *guabiroba* (*Campomanesia* sp.), both Myrtaceae. Parrots roost on araucarias in this area also, but are said not to come there during nut season. Voss (personal commun.) saw varying sized flocks of up to 100 or more feeding on *pinheirinho* in São Francisco de Paula area on February 2, 1979.

In contrast to conspicuous behavior while in flocks, parrots relatively quiet and quite secretive in breeding season. They do vocalize in flight, but often move about silently. When approaching nest from outside grove, they fly over forest and enter from above, reportedly at some distance from nest, thus making final approach hidden from outside observers by trees.

SPECIMENS: AMNH: 44634, 313970, 321809–321810.

Amazona brasiliensis

Blue-cheeked Parrot
Papagaio-de-cara-roxa
(Purple-faced Parrot)

Ihering (1899a) reported seeing specimen from NE highlands near Santa Catarina border. No other record.

Amazona aestiva

Turquoise-fronted Parrot
Papagaio-verdadeiro
(Common Parrot)

Ihering (1899a) included this species in his list on basis of reports that it was common in NW. No specimen known to have been collected, and no recent records of its occurrence. *Amazona a. aestiva.*

Amazona vinacea

Map 78

Vinaceous-breasted Parrot
Papagaio-peito-roxo
(Purple-breasted Parrot)

DISTRIBUTION AND STATUS: Uncommon resident of NE and northern araucaria forest, previously found by Ihering and Kaempfer near Taquara and Tôrres. Although Ihering (1902) reported receiving egg of this species from man in São Lourenço, he did not say egg itself originated there, and it seems doubtful it would have.

FIELD MARKS: Large size, red lores, and extensive vinaceous breast area distinguish it from any other Rio Grande do Sul parrot.

SIZE: One unsexed: 360 mm.

VOICE: (R by Schwartz) Loud, throaty, rather harsh "how," repeated irregularly in groups of one, two, or three.

BREEDING: Male collected July 26, 1971 by Camargo had inactive testes. Voss (personal commun.) learned of nesting in hollow araucaria during December 1978 at Aparados da Serra National Park.

BEHAVIOR: Usually found singly or in pairs. Specimen of July 26 had eaten wild fruits and berries. On August 24, 1975 near Vacaria I watched pair eat araucaria nuts. They perched on spiny fronds of tree, chewed away large section from side of cone until two or three nuts exposed, then worked on nuts while still fixed to cone, eating leisurely with occasional rest intervals.

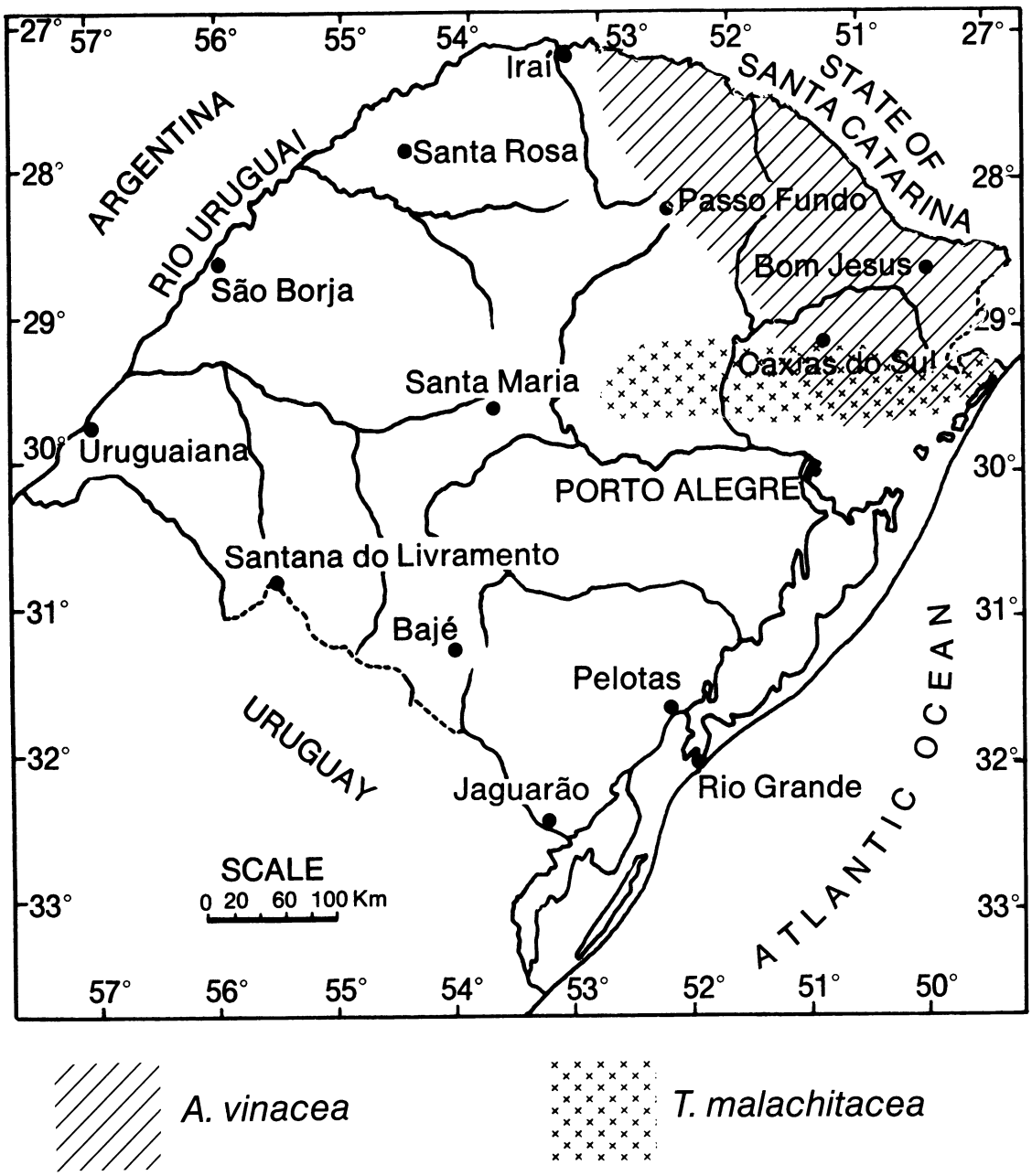
SPECIMENS: MCN: 660–661*. AMNH: 313964–313969.

Triclaria malachitacea

Map 78

Blue-bellied Parrot
Sabiá-cica
(Cica Thrush)

DISTRIBUTION AND STATUS: Scarce resident of escarpment and adjacent lowland forests.



MAP 78. Geographical distribution of *Amazona vinacea* and *Triclaria malachitacea* in Rio Grande do Sul.

FIELD MARKS: Purple-bellied male unmistakable. For female, see under *Pionopsitta pileata.*

SIZE: One male: 270 mm, 152 gr.

SOFT PART COLORS: Tarsus gray; bill white; iris brown.

VOICE: (R) Very un-parrot-like, rather fast, quite clear whistled "soo see soo soo see soo,"

or "soo see soo soo see soo soo see" and other variations on this song. In flight, single, semi-whistled, more parrot-like note may be rapidly repeated.

BREEDING: Male collected August 17, 1974 had inactive testes.

BEHAVIOR: Capable of quiet, trogon-like flight through forest foliage, but also calls on wing as well as while perched. Feeds on araucaria nuts in season.

SPECIMENS: MCN: 830*. MN: 4079. AMNH: 313988–313992.

FAMILY CUCULIDAE

Coccyzus cinereus
Map 79

Ash-colored Cuckoo
Papa-lagarto-cinzento
(Gray Caterpillar-eater)

DISTRIBUTION AND STATUS: Scarce, with widely scattered sporadic occurrences across S half in brushy areas along streams, marshes, and in dry espinilho parkland. One June sighting (Voss, 1977b) indicates it may stay through winter, but eight other records fall between November 1 and May 4.

FIELD MARKS: Plainest-colored member of genus and only one without distinctly graduated tail.

SIZE: Four females: 225–242 mm, 43–57.5 gr.

SOFT PART COLORS: Tarsus silvery gray to black; bill black, sometimes base of mandible lighter; iris red, brown in immature; eye ring red; mouth of one adult noted as pure black.

BREEDING: Copulation observed November 30, 1974 at Fazenda da Pedreira in small tree in fencerow near stream. Female collected near Porto Alegre November 19, 1975 had shell egg in oviduct.

SPECIMENS: MCN: 845*. MN: 32214*, 32230*. AMNH: 812993*.

Coccyzus americanus
Map 79

Yellow-billed Cuckoo
Papa-lagarta-norteamericano
(North American Caterpillar-eater)

DISTRIBUTION AND STATUS: Scarce summer visitor from North America recorded at widely scattered locales between December 1 and March 26 in forest, scrub, and espinilho. Perhaps some flocking for northward migration occurs, for Kaempfer collected four near Ronda Alta February 25, 1929. *Coccyzus a. americanus.*

SPECIMENS: MCN: 846*. AMNH: 314244–314248.

Coccyzus melacoryphus
Map 79

Dark-billed Cuckoo
Papa-lagarto-verdadeiro
(Common Caterpillar-eater)

DISTRIBUTION AND STATUS: Moderately common summer resident, found most frequently in vicinity central trough and along Rio Uruguay, with occasional occurrences along littoral, in SE hills, and in N and NE, often in marshy situations or near streams. Records grouped between October 7 and February 28, except one for April 26, 1973.

FIELD MARKS: Rich buff underparts and large white tips to graduated tail feathers.

SIZE: One male: 266 mm, 50 gr. Two females: 271–279 mm, both 51 gr.

SOFT PART COLORS: Tarsus lead gray; bill black; iris dark. One female had inside mouth black.

VOICE: (R) Crack-voiced, slightly descending and accelerating series: "chow chow chow chow chowchochuch."

BREEDING: Male collected October 24, 1972 had well-enlarged testes. Silva found nest November 16, 1977 with two eggs about 1.8 m high in dense broadleaf evergreen bush at Arroio Quaraí-chico.

SPECIMENS: MCN: 842–843*. AMNH: 314249–314254, 812994*.

Piaya cayana
Map 80

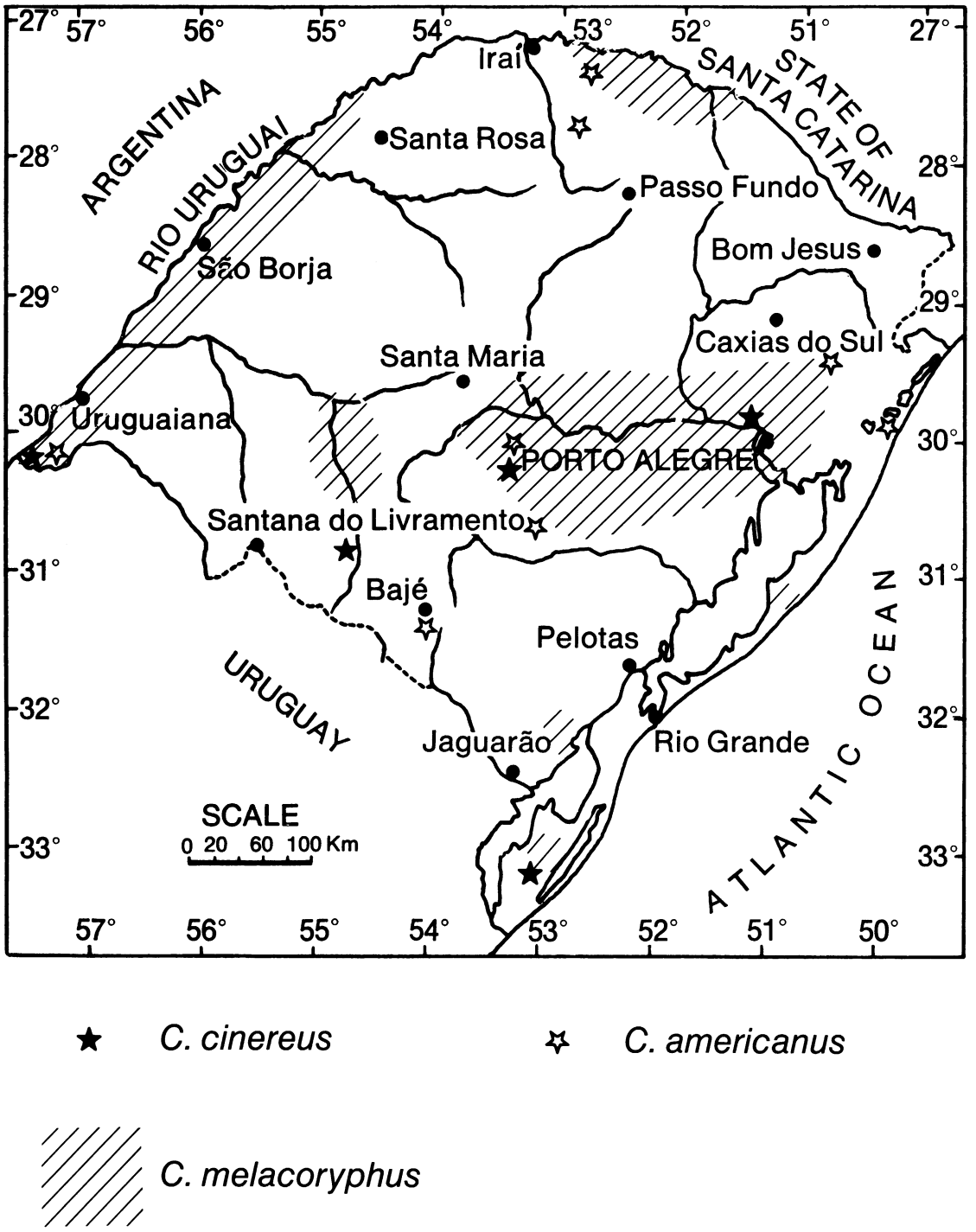
Squirrel Cuckoo
Alma-de-gato
(Cat's Soul)

DISTRIBUTION AND STATUS: Common resident of forests and open woodland in most sectors, but scarce in highest parts of NE and not registered S of 32°S. *Piaya c. macroura.*

FIELD MARKS: Extremely long tail (35 cm), with strongly graduated, white-tipped feathers.

SIZE: One male: 550 mm, 134 gr.

SOFT PART COLORS: Tarsus gray; bill light green; iris red; eye ring and orbital skin red.



MAP 79. Geographical distribution of the three species of *Coccyzus* found in Rio Grande do Sul.

VOICE: (R) Loud, abrupt, "wheep" regularly repeated. Also a mixture of non-birdlike sounds, including grating snarls, Donald Ducklike cackles running down scale: "aa-

caca-caw," and prolonged, throaty, gagging rattles.

BREEDING: Voss (personal commun.) found individual feeding nestlings in bamboo thicket at zoo, Sapucaia do Sul, September 19, 1975. Male collected November 10, 1970 had only moderately enlarged testes.

SPECIMENS: MCN: 844*. MN: 4036, 4038. AMNH: 314237–314243.

Crotophaga major
Map 81

Greater Ani
Anu-coroca
(Feeble Ani)

DISTRIBUTION AND STATUS: Scarce, restricted primarily to western edge within about 75 km of Rio Uruguay, but seen once in center at Fazenda das Casuarinas. Probably only summer resident, limited available records falling between November 15 and March 3. Moves along wooded river banks in small flocks.

FIELD MARKS: Much larger version of *C. ani,* but with yellow eye and strong bluish reflections in black plumage.

SIZE: One male: 465 mm, 153 gr.

SOFT PART COLORS: Tarsus and bill black; iris yellow.

BREEDING: Male collected February 20, 1975 had mildly enlarged testes.

SPECIMEN: MCN: 837*.

Crotophaga ani
Map 81

Smooth-billed Ani
Anu-preto
(Black Ani)

DISTRIBUTION AND STATUS: Abundant resident in most sectors, but avoids high altitude areas of NE, and Uruguayan border region except at western tip. Reaches Taim marsh along littoral, at least in mid-summer. Inhabits scrub, fencerows, fields, roadside strips.

FIELD MARKS: All black plumage, high-ridged maxilla.

SIZE: One male: 343 mm, 111 gr. One female: 347 mm, 88 gr.

SOFT PART COLORS: Tarsus and bill black; iris brown.

VOICE: (R) Drawn-out, semi-musical "rrrriiiiieeeeeep," ascending scale with ringing tones at end.

BREEDING: Voss (personal commun.) found nest with young in tangerine tree at zoo, Sapucaia do Sul, on January 9, 1979. Adroaldo Ferreira (personal commun.) found nest with young near Restinga Seca January 15, 1975. Female of October 6, 1972 had slightly enlarged ovary and follicles; male of February 27, 1975 had much enlarged testes.

BEHAVIOR: Lives in small flocks. Occasionally feeds with cattle, like cowbirds, capturing insects disturbed by grazing, once in pasture so wet cow kicked up water as it walked. Also follows plow.

SPECIMENS: MCN: 383, 838–839*.

Guira guira

Guira Cuckoo
Anu-branco
(White Ani)

DISTRIBUTION AND STATUS: One of most abundant and widespread species, found in every sector all year. Occupies fields, fencerows, scrub, orchards, roadside strips.

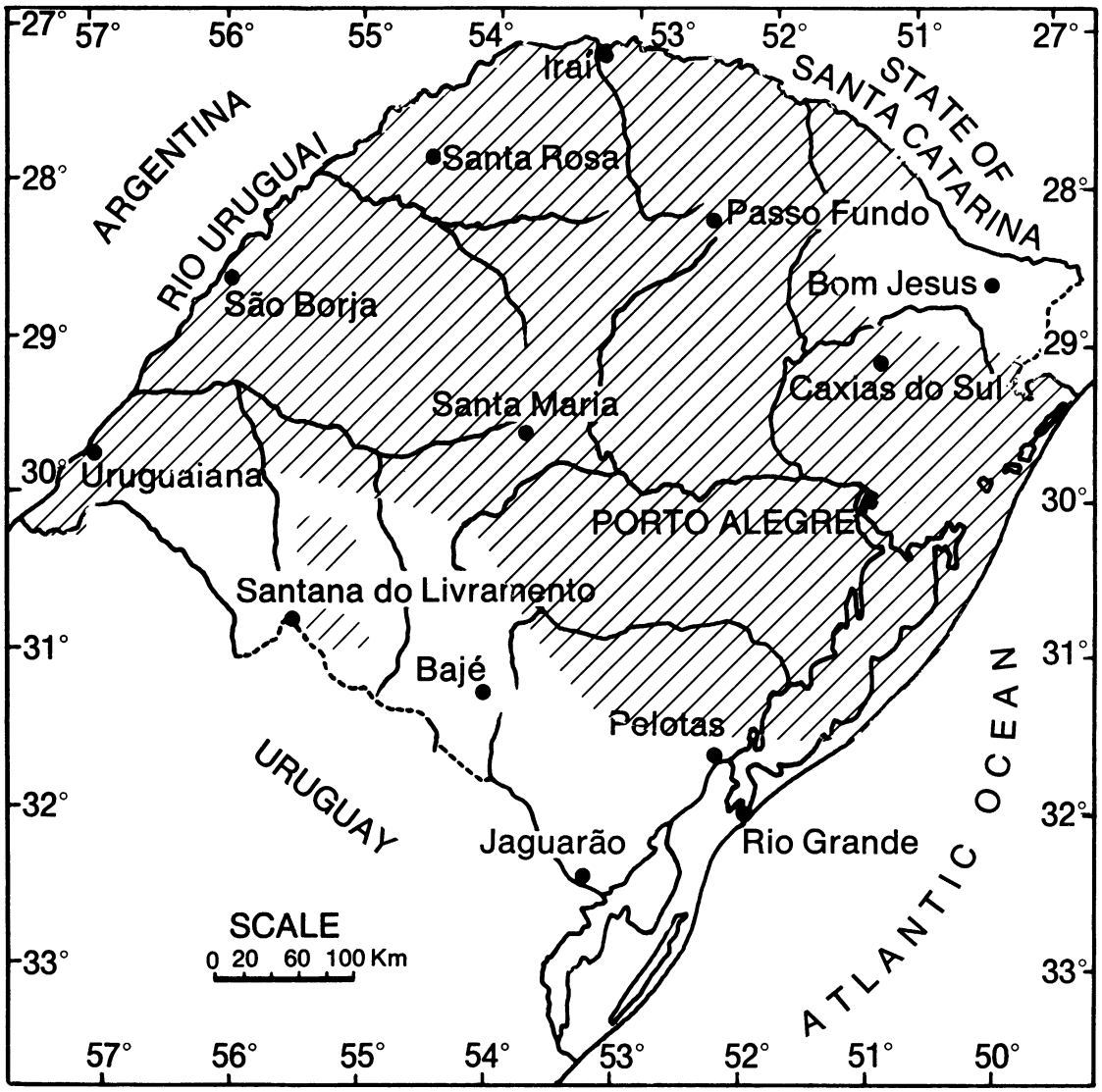
FIELD MARKS: Flocking habit, loose orange-rufous crest, yellow orbital skin, long tail with white base and tips on all but center feathers.

SIZE: Two males: 401–421 mm, 124–157 gr. One female: 434 mm, 153 gr.

SOFT PART COLORS: Tarsus light gray; bill has variable amounts orange and yellow, sometimes with brown culmen; iris orange-yellow to bright orange; orbital skin pale yellow to light yellowish green. Immature; bill black and white; iris light gray.

VOICE: (R) Loud series of plaintive, two-noted phrases starting clear: "pee-oop," gradually lowering in pitch and musicality: "pee-uur," and ending very scratchily "pee-ahkkkk." Also a moderately high, very slow, almost gargled trill, varying in intensity, speed and pitch. Also a series of individual, unstructured "creep" on several pitches.

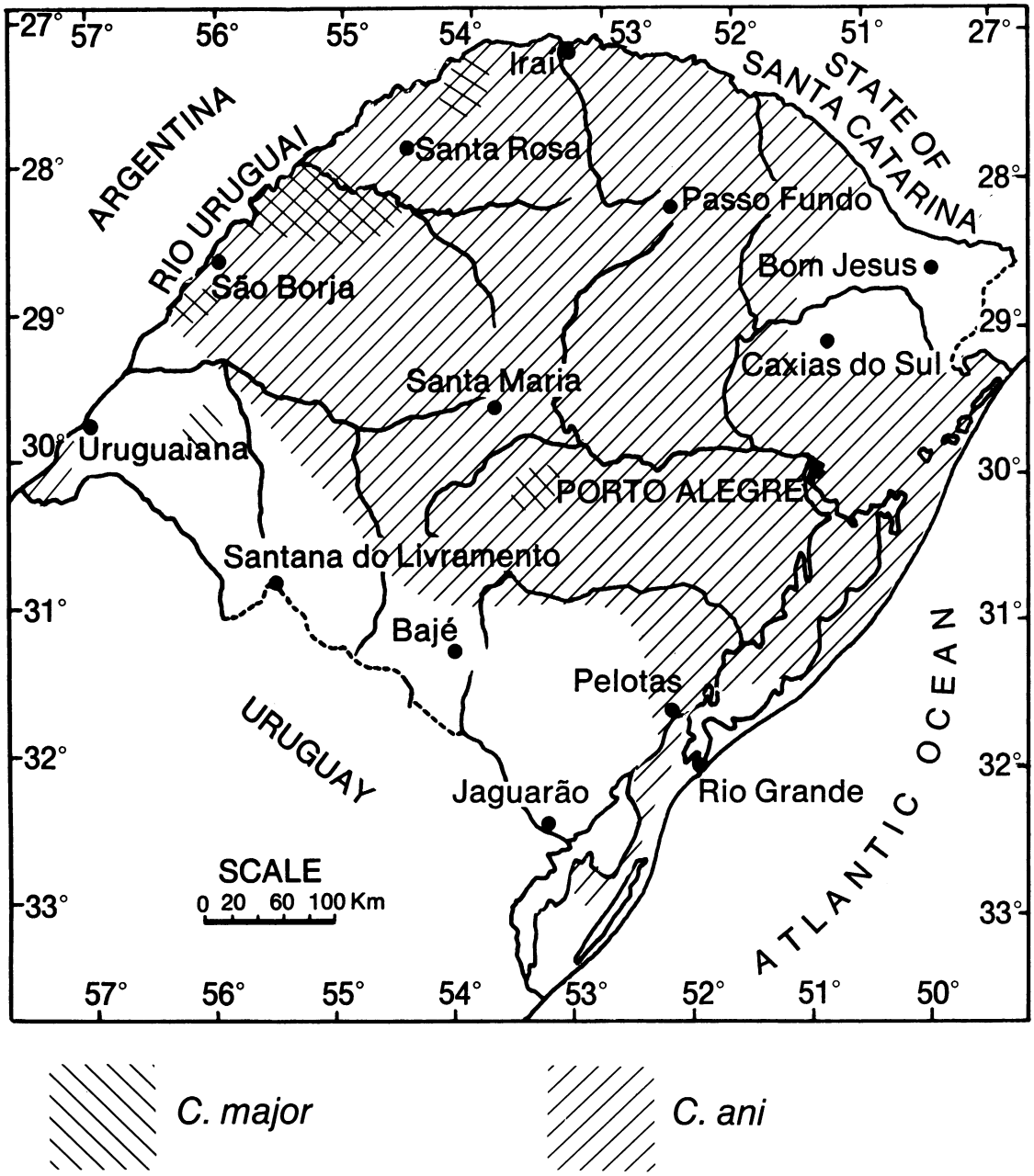
BREEDING: Nestlings being fed on December 9, 1979 at Fazenda das Casuarinas. On January 19, 1975 at Fazenda da Invernada large, cup-shaped nest constructed of sticks about 2.3 m up in spiny thicket in open field near stream contained six young with sparse, coarse, hairlike down. Male collected early September 1970 had well-enlarged testes, whereas two of November 5 and February 27, 1975 had greatly enlarged testes. Juvenal



MAP 80. Geographical distribution of *Piaya cayana* in Rio Grande do Sul.

male with tail not fully grown collected January 7, 1976. Eggs often found on ground in immediate vicinity of communal nests.

BEHAVIOR: Interesting and amusing species. When alighting on ground, tail flips over back as if stop too abrupt, giving impression bird going to fall on face. When one flock perched on fence wire, some facing each direction, brisk wind caused tails to swing back and forth at random, creating eye-catching spectacle. When perched, wings usually drop to side, exposing white back, apparently to absorb warmth of sun, as this seems to occur less often on cloudy days. When roosting at night and sometimes on cold days, flock huddles together side by side so closely it forms compact mass. I counted 14 bills emerging from one such huddle occupying 60 cm of branch. Flocks feed in weedy fields by advancing abreast, individuals approximately 1 m apart and running ahead as situation demands to catch fleeing insects. One running



MAP 81. Geographical distribution of the two species of *Crotophaga* found in Rio Grande do Sul.

on ground with bloated frog stopped and repeatedly dropped and picked up frog in apparent effort to kill or perforate it, then took off running with frog in bill again. On two occasions when flying termites swarmed and many other species were resorting to flycatching flights, small flocks of guiras perched on topmost points of tree near center of swarm, catching termites as they flew by, without need to chase them as all other species doing.

SPECIMENS: 39, 88, 89, 192, 213, 214, 233, 234, 831–835*. MN: 4224, 4237, 4244. AMNH: 314268–314276, 812995*.

Tapera naevia
Map 82

Striped Cuckoo
Saci
(onomatopoetic, and name of legendary folkloric figure)

DISTRIBUTION AND STATUS: Common resident of central trough, littoral, and S, and along Rio Uruguay into extreme N, but not registered over most of northern planalto or in some areas of SW. Occupies bushy areas, fencerows, restinga vegetation, and forests. Ihering (1899a) mentioned not having found it, and I find no records prior to my own. However, it is well known to country people, so may have spread into state, at least eastern part, within past 50 years or less. *Tapera n. chochi.*

FIELD MARKS: Loose, black-streaked rufous crest; plain buffy gray breast.

SIZE: One male: 306 mm, 50 gr. One female: 275 mm, 62 gr.

SOFT PART COLORS: Tarsus gray; maxilla dark gray or light brown with black culmen; mandible light gray to whitish; iris whitish; eye ring light gray.

VOICE: (R) Two separate, short, plaintive, whistled notes, second slightly higher than first, "sa-see. . . . . .sa-see. . . . . .sa-see. . . . ," tirelessly repeated with ventriloquial quality. Also, three whistled, short, clear, two-note, slightly slurred phrases, the first upward, the next two downward and identical. Duetted counterpoint sometimes heard during first of these phrases.

BREEDING: Female of September 15, 1971 had inactive gonads. Male of May 29, 1974 had inactive gonads.

BEHAVIOR: Much more often heard than seen because of unspectacular plumage and far-carrying ventriloquial call delivered endlessly from inconspicuous perch. Both vocalizations described above likely to be heard any time of year. Male collected May 29, 1974 sang both. Habit of flipping long black alulas back and forth across lighter breast gives it name *Quatro Asas* = "Four Wings" in some areas. Stomach one specimen contained grasshoppers.

SPECIMENS: MCN: 840–841*.

Dromococcyx phasianellus
Map 82

Pheasant Cuckoo
Peixe-frito-verdadeiro
(Common Fried Fish)

DISTRIBUTION AND STATUS: Rare. Found once in Turvo Forest Reserve and heard near Garruchos and at Iraí Forest Reserve. Ihering reported it from near Taquara, but highly doubtful it still occurs there. All records in August–October period. Forest. *Dromococcyxz p. phasianellus.*

FIELD MARKS: Only local member of family with strongly spotted breast.

SIZE: One male: 370 mm, 100 gr.

SOFT PART COLORS: Tarsus pinkish gray; maxilla black; mandible light gray; iris dark.

VOICE: (R) Clear, ringing whistle of five ascending notes, third and fourth shorter than other three.

BREEDING: Male collected September 13, 1971 had only slightly enlarged testes, but reacted vigorously to playback of song, as if strongly territorial.

SPECIMEN: MCN: 836*.

FAMILY TYTONIDAE

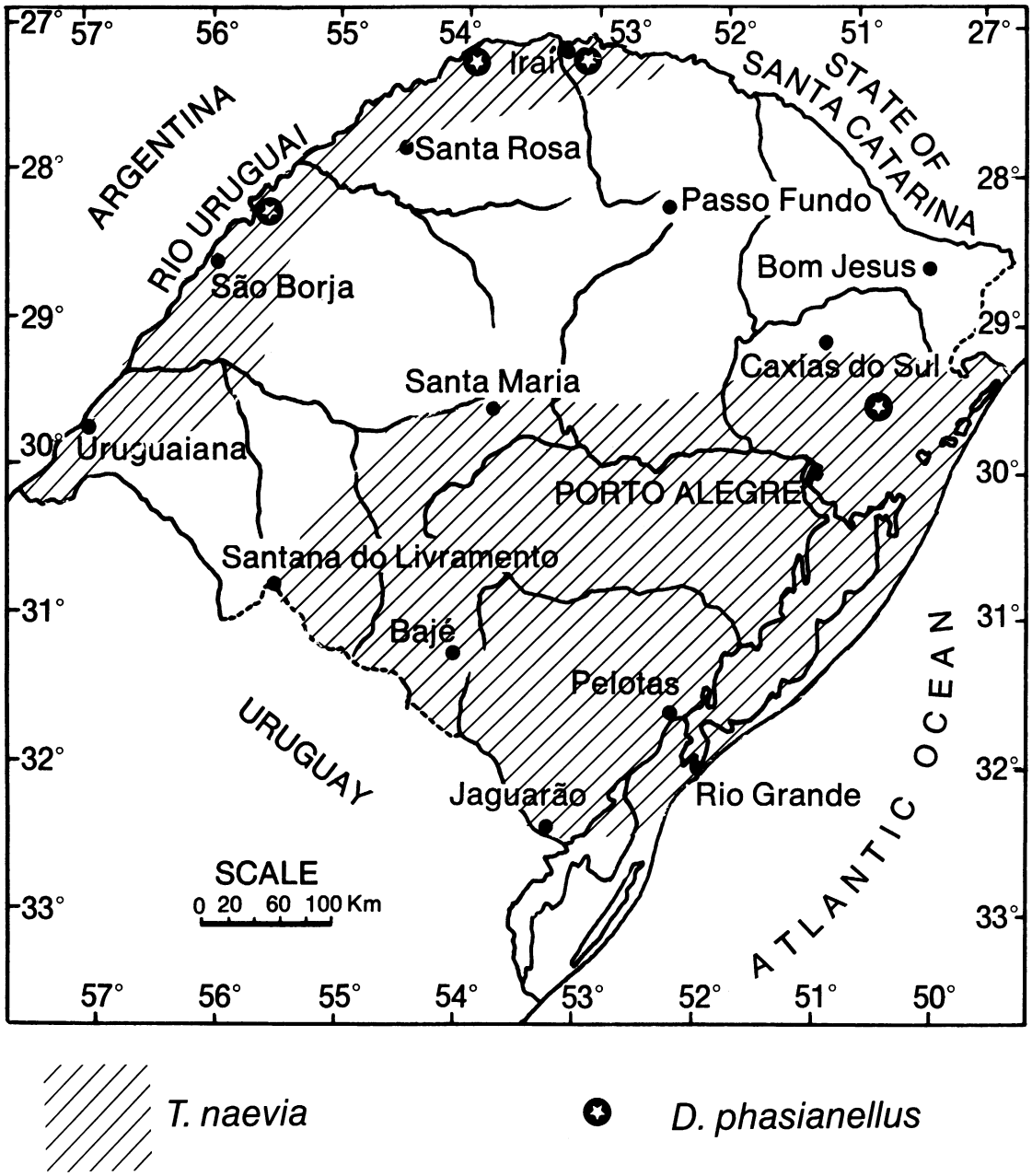
Tyto alba
Map 83

Barn Owl
Coruja-da-igreja
(Church Owl)

DISTRIBUTION AND STATUS: Uncommon resident registered primarily in eastern half central trough and on littoral but also found in planalto, southern hills, and NW. Has never responded to my taped calls, but these used principally in rural areas far from buildings. I made little effort to seek it in towns where it can find towers, so it may be considerably more widespread than records indicate. Berlepsch and Ihering (1885) said it was "nowhere abundant." *Tyto a. tuidara.*

FIELD MARKS: Long wings; lightest colored Rio Grande do Sul owl.

SIZE: One female: 355 mm.

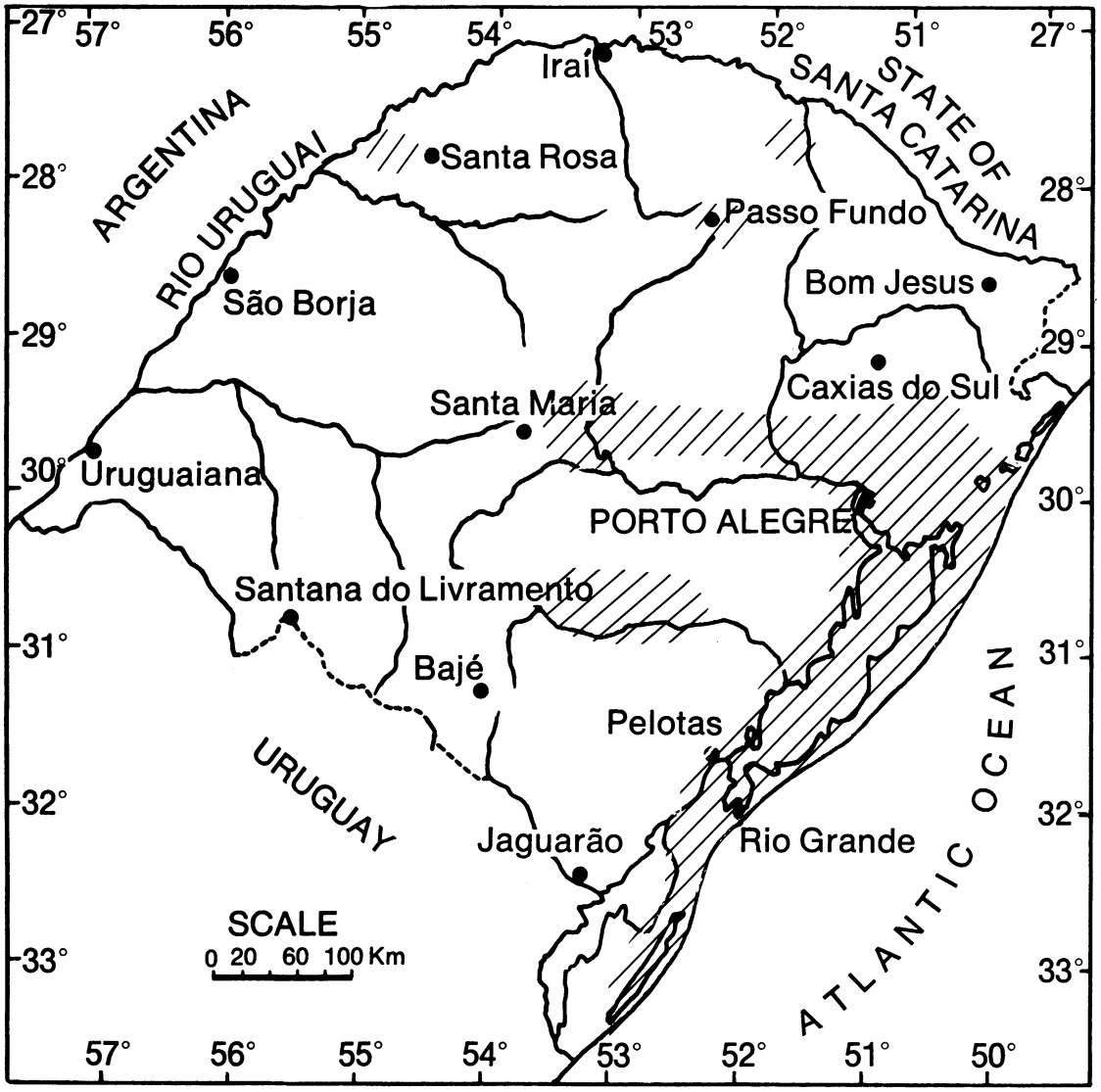


MAP 82. Geographical distribution of *Tapera naevia* and *Dromococcyx phasianellus* in Rio Grande do Sul.

SOFT PART COLORS: Tarsus gray; maxilla white with gray edges; mandible gray with white specks; iris dark.

VOICE: (R) Sharp, guttural hiss.

BREEDING: Adult with one-third sized flightless young seen in Gramado church tower October 3, 1974. Female found dead on road October 11, 1974 had inactive ovary.



MAP 83. Geographical distribution of *Tyto alba* in Rio Grande do Sul.

SPECIMENS: MCN: 818*. AMNH: 314002, 314003.

FAMILY STRIGIDAE

Otus choliba

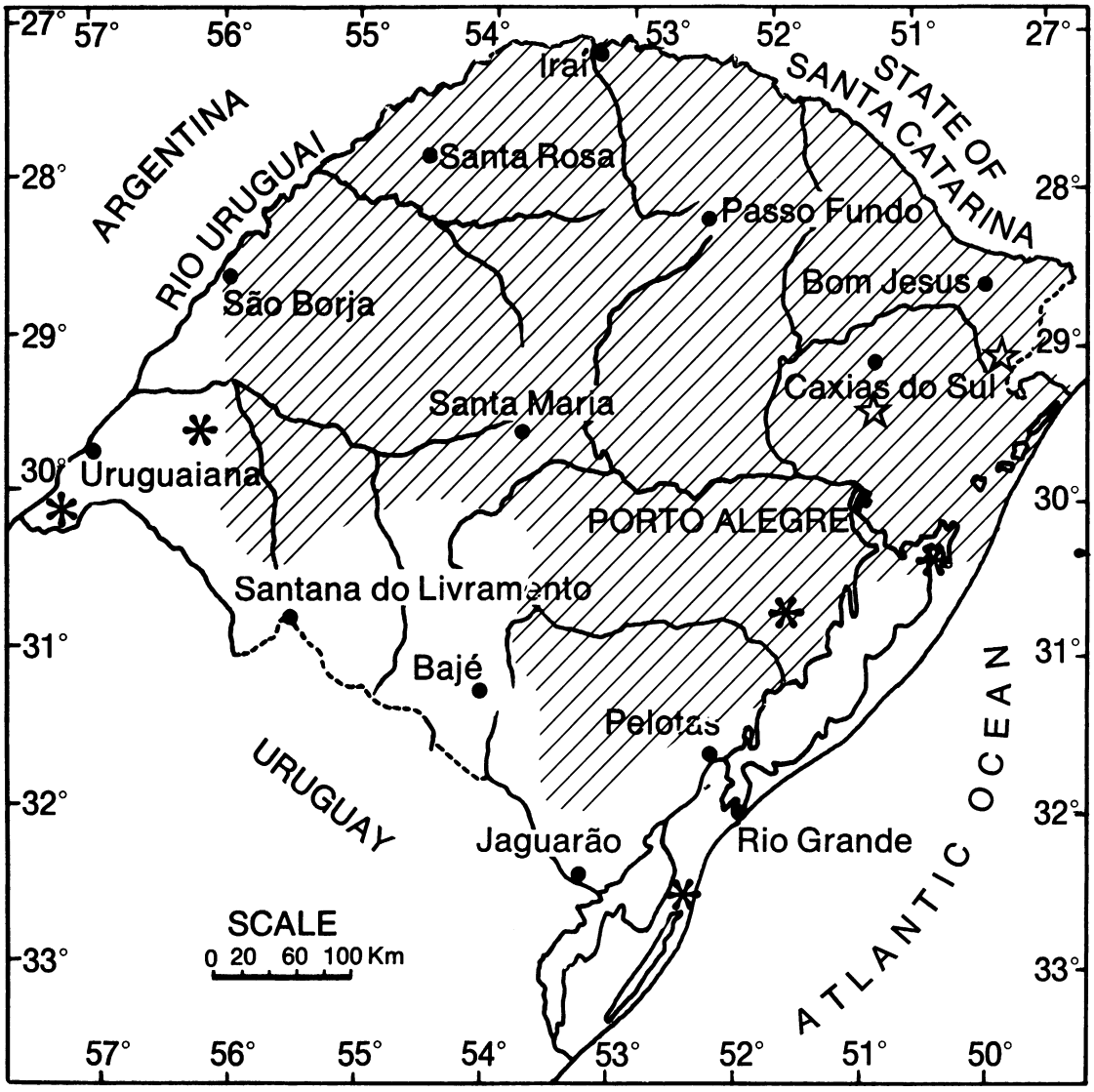
Tropical Screech Owl
Corujinha-do-mato
(Little Forest Owl)

DISTRIBUTION AND STATUS: Occurs practically throughout state, though not registered at S tip. Common on northern littoral, through central trough, in southern hills, and along Rio Uruguay, but scarce and scattered in planalto. Found all year, in woodlands, gallery forests, thickets, fence rows, espinilho parkland. *Otus c. choliba.*

FIELD MARKS: Individual feathers of breast and belly have intricate, brown, treelike pattern on white. *Otus atricapillus* has very similar markings. Due to great individual variation in both species, field identification under normal night conditions is unreliable unless based on voice.

SIZE: Four males: 204–245 mm, 97–134 gr.

SOFT PART COLORS: Tarsus gray; bill light



MAP 84. Geographical distribution of *Otus atricapillus, Bubo virginianus* and *Pulsatrix perspicillata* in Rio Grande do Sul.

greenish gray; iris light yellow or orange-yellow.

VOICE: (R) Rapid, bubbling trill on one pitch, gradually increasing in volume and

ending with two or three loud, slightly higher notes: "bbbbbbbbbbbbbbbbbb BOU BOU." Also, slower, more cackling, weaker, irregular "pu pu pu pu pu pu pu pu . . . ." wandering slightly in pitch. Also, a hollow laughing, trending down scale: "hahahahaha hahahahaha hahaha hahaha."

BREEDING: Males collected July 8, 1973, November 26, 1973, and February 18, 1974 had inactive testes; that of November 26, 1973 had unusually low weight of 97 gr and may have been abnormal. One of September 10, 1974 had enlarged testes.

SPECIMENS: MCN: 54, 87, 253, 804–807*, 1783, 1784. AMNH: 812997*.

Otus atricapillus
Map 84

Long-tufted Owl
Corujinha-sapo
(Little Frog-Owl)

DISTRIBUTION AND STATUS: Common to abundant in forests, open woodlands, and town gardens near escarpment, in central trough, southern hills, and scattered across N. Not registered on Mostardas peninsula, S of 32°S, nor W of 56°W. Scarce near Uruguayan border. *O. a. sanctaecatarinae.*

FIELD MARKS: See comments under *O. choliba.* Neither longer tufts nor larger size can usually be reliably judged under night conditions.

SIZE: Seven males: 225–276 mm, median 263 mm, 155–194 gr, median 170 gr. Eight females: 264–281 mm, median 275.5 mm, 174–211 gr, median 189.5.

SOFT PART COLORS: Males: tarsus grayish brown to greenish gray; bill light green to grayish green; iris light yellow to orange-yellow. Females: tarsus yellowish brown to greenish gray; bill light green; iris yellow.

VOICE: (R) At request of Paul Schwartz to assist his study of the genus *Otus,* I recorded and collected specimens in attempt to determine whether this species might have more than one form in Rio Grande do Sul. My data do not lead to such conclusion, but I found difference between male and female voices. Male: rounded, mellow, rapid bubbling with very slight rise and fall in pitch and volume, sometimes developing when excited, into higher cackling. Female: hoarse, rapid, flat "bababababababa. . ." sometimes with higher overtones, and when excited becoming guttural trill "wakuwakuwakuwakuwaku. . . ." Also a low, rasping "gwow," perhaps also voiced by male.

BREEDING: Seven females collected between March 27 and July 20 all had inactive ovaries, though one of May 2, 1974 less so than others. Only female collected during spring, on November 20, 1974, had small ovary and only slightly enlarged follicles. Three males collected October 16, 1971, October 25, 1972, and November 25, 1972 had enlarged testes, one of December 19, 1972 had reduced testes, and two of February 23, 1975 and March 24, 1974 had inactive ones.

BEHAVIOR: Voss (1977b) reported one in September spending days in eucalyptus tree.

SPECIMENS: MCN: 795–803*. MN: 32298*, 32301–32302*, 32304–32305*. AMNH: 812996*, 812998–813000*.

Bubo virginianus
Map 84

Great Horned Owl
Jacurutu (onomatopoetic)

DISTRIBUTION AND STATUS: Rare. One specimen collected in western tip and another near Camaquã (Belton, 1978a), while one flew low over field about sunset near Fazenda Casa Branca on May 8, 1974, five days after western tip specimen collected. Voss (personal commun.) saw one at Taim marsh in January 1980, while Silva (*in litt.*) saw family of two adults and three young perched on branch of fig tree at edge of Lagoa dos Gateados, Mostardas, and heard some daylight vocalization on August 17, 1981. *Bubo v. nacurutu.*

FIELD MARKS: Thickly barred underparts below white upper breast.

SIZE: Sex unknown: 509 mm.

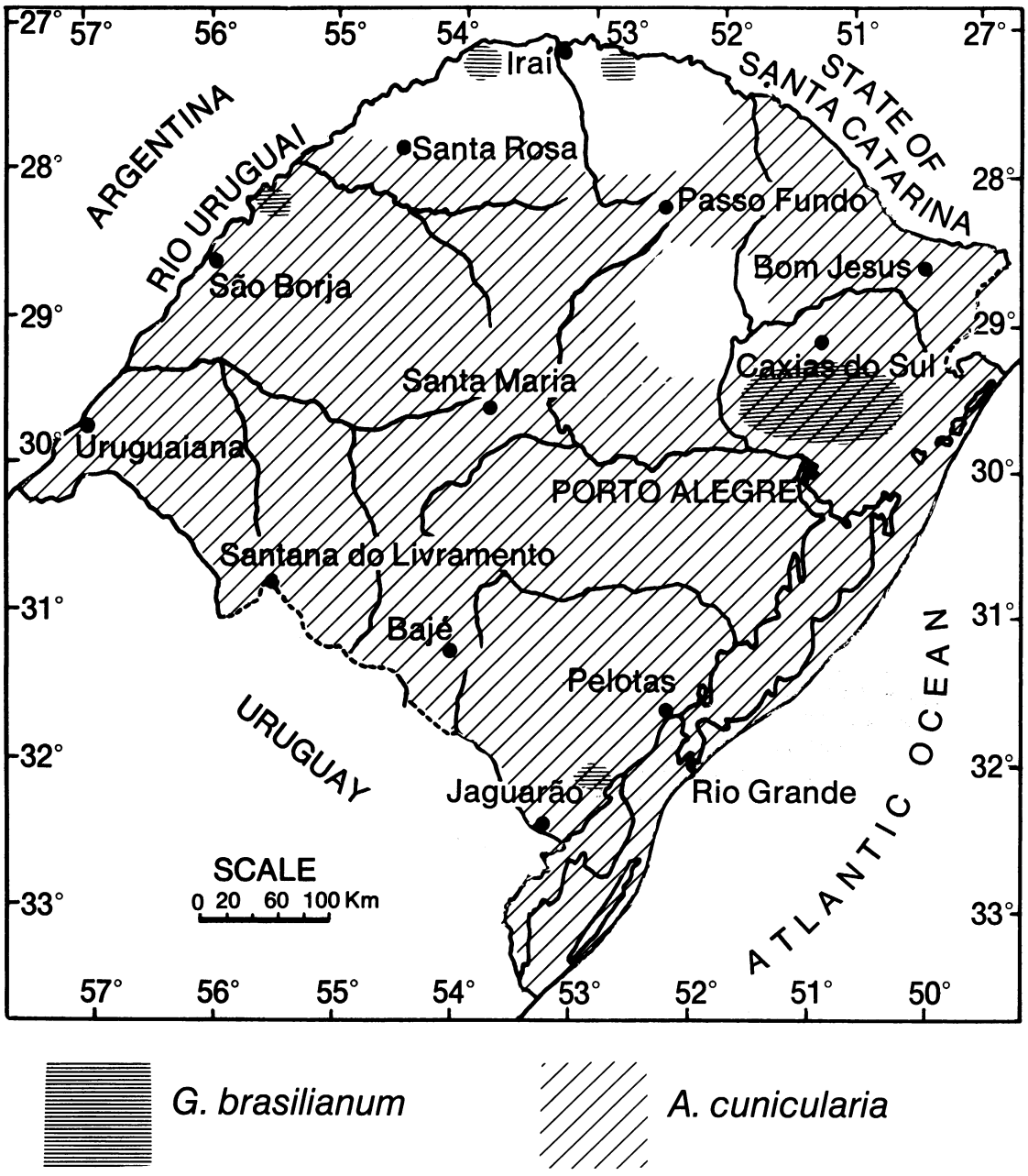
SOFT PART COLORS: Tarsus feathered, toes gray, claws black; bill black; iris yellow.

SPECIMEN: MCN: 664*.

Pulsatrix perspicillata
Map 84

Spectacled Owl
Mucurututu (onomatopoetic)

DISTRIBUTION AND STATUS: One record from Nova Petrópolis area, reported without date by Berlepsch and Ihering (1885) and three from Aparados da Serra National Park July 5 and 6, 1974 and November 4, 1978 are



MAP 85. Geographical distribution of *Glaucidium brasilianum* and *Athene cunicularia* in Rio Grande do Sul.

only ones known for this species here. *Pulsatrix p. pulsatrix.*

FIELD MARKS: Very large; broad brown breast band, clear yellowish brown below it.

SIZE: One male: 510 mm, 1075 gr. One female: 523 mm, 1250 gr.

SOFT PART COLORS: Tarsus feathered; bill light green; iris (male) bright orange-yellow, (female) rich yellow.

VOICE: (R) Resonant, slowly bubbling "bup bup bup bup bup. . . ." with constant pitch. Of pair recorded, female had lower voice.

BREEDING: Both sexes in breeding condition in early July.

BEHAVIOR: Perch high on bare branches of araucarias.

SPECIMENS: MCN: 663*, 665*.

Glaucidium brasilianum
Map 85

Ferruginous Pygmy-Owl
Caburé

DISTRIBUTION AND STATUS: Rare resident in forests of extreme N and Garruchos. Previously found along escarpment (Taquara to Poço das Antas), and Kaempfer collected one near Lagoa Mirim. Victim of human persecution as symbol of luck and subject of fantastic legends. *Glaucidium b. brasilianum.*

FIELD MARKS: Only very small owl in state with streaked underparts.

SIZE: One male: 163 mm, 65 gr.

SOFT PART COLORS: Tarsus yellow; bill pale yellow; iris yellow.

VOICE: (R by Silva) Short, hollow, clear whistle, rapidly and monotonously repeated.

BREEDING: Male collected September 12, 1971 had enlarged testes.

BEHAVIOR: Stomach contained remains of caterpillar and small mammal. One high in canopy at Nonoai Forest Reserve was attacked by various passerine species near midday.

SPECIMENS: MCN: 810*. AMNH: 321246.

Athene (*Speotyto*) *cunicularia*
Map 85

Burrowing Owl
Coruja-do-campo
(Field Owl)

DISTRIBUTION AND STATUS: Common to abundant resident everywhere but in extreme N, where not yet registered, and in area between Caxias do Sul and Passo Fundo, where no records, perhaps due to lack of thorough observation. Open fields, pastureland, espinilho. On April 18, 1973 about 10:30 P.M. one found on board vessel in Lagoa dos Patos when ship about 8 km from closest land. After being caught and examined, it flew away from ship. *Speotyto c. grallaria* in N, probably *S. c. cunicularia* at least in some regions of S.

FIELD MARKS: Long-legged diurnal owl sitting on low mounds, fence posts.

SIZE: Two males: 243–245 mm, 176–200 gr. One female: 215 mm, 222 gr.

SOFT PART COLORS: Tarsus feathered, feet gray; bill light green, tip whitish; iris yellow.

VOICE: (R) When disturbed in daytime penetrating, squalling shriek, followed by several shorter staccato repetitions, often uttered on wing. At night: thin, non-owl-like, rather high-pitched "hip hurrAH," loudest at end. Typical night song heard in mid-afternoon of September 28, 1975 at Lagoa do Jacaré.

BREEDING: Pair seen copulating October 8, 1971 E of Uruguaiana. One netted after dark October 22, 1974 and held in bag overnight for photography had laid egg by morning. Female collected October 16, 1970 had eggs in formation in ovary. Male of November 30, 1973 had moderately enlarged testes, and one of May 29, 1974 had tiny ones.

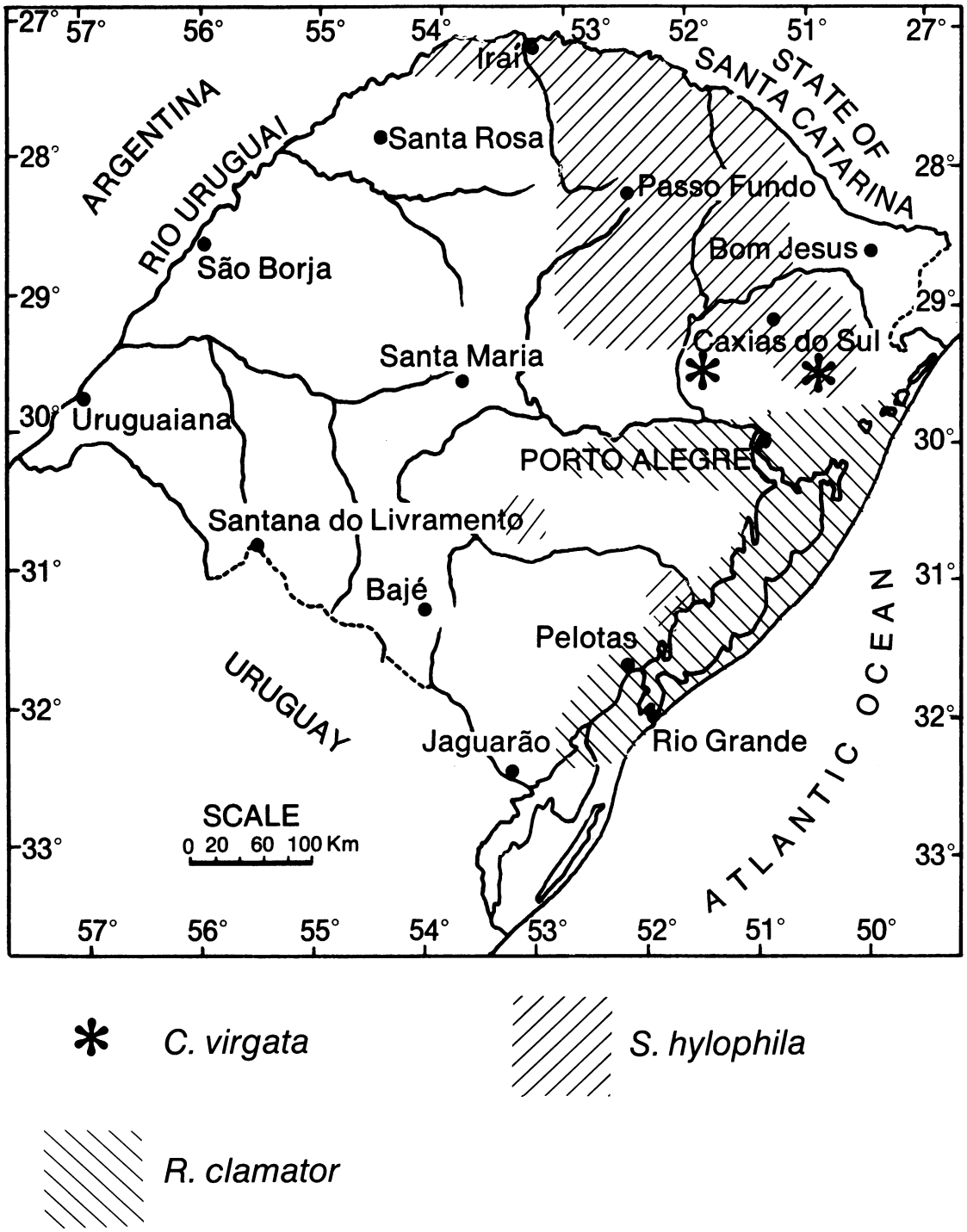
BEHAVIOR: Occasionally this species hovers above fields like *Falco sparverius* and *Elanus leucurus.* One took dust bath on small mound at burrow entrance by lying on belly with wings fully spread and screwing body around in dust. After seeing me it remained absolutely quiet in that position for about five minutes until it flew at my approach. Many shiny green remains of beetles were in dust. One fed on ocean beach near Uruguayan border on September 24, 1974. On December 13, 1971 one was carrying piece of turf 3 by 7 cm which it dropped after flying and alighting with it two or three times. Examination revealed no apparent food value to it.

SPECIMENS: MCN: 2, 24, 25, 36, 42, 53, 55–58, 186, 460, 808–809*. AMNH: 314004–314007, 813001*.

Ciccaba virgata
Map 86

Mottled Owl
Coruja-do-mato
(Forest Owl)

Specimens reported by Berlepsch and Ihering (1885) from Taquara and by Gliesch (1930) from Poço das Antas, no dates given, are only records for state for this species. *Ciccaba v. borelliana.*



MAP 86. Geographical distribution of *Ciccaba virgata, Strix hylophila* and *Rhinoptynx clamator* in Rio Grande do Sul.

Strix hylophila
Map 86

Rusty-barred Owl
Coruja-listrada
(Barred Owl)

DISTRIBUTION AND STATUS: Fairly common resident high in forests of NE, primarily above escarpment but not at highest elevations. Uncommon in extreme N. Registered once in southern hills near Santana da Boa Vista, and Pinto (1938) cited specimen from São Lourenço in 1905.

FIELD MARKS: Medium large; white spot on upper breast, heavily barred underparts but lighter on belly than breast.

SIZE: Two males: both 365 mm, 285–320 gr. One female: 367 mm, 395 gr.

SOFT PART COLORS: Tarsus feathered, toes of male gray, of female yellow; bill light gray or green or combination; iris chestnut.

VOICE: (R) Series of throaty sounds, starting with three to eight very short, low croaks, which ascend scale, followed by three or four rhythmic, descending pairs of loud, deep growls. On one occasion I recorded similar call in which last part longer and lacked rhythmic quality. This came in response to playback of slow, blood-curdling, single "YEEOW" with guttural vibrations. Also single, deep, strong, short guttural "crow" or "grow." This species often responds to recorded calls of other owl species.

BREEDING: Males collected September 9, 1971 and March 27, 1974 had moderately enlarged testes. Female collected September 24, 1972 had much enlarged ovary and follicles.

SPECIMENS: MCN: 815–816*. AMNH: 813002*.

Rhinoptynx clamator
Map 86

Striped Owl
Coruja-orelhuda
(Big-eared Owl)

DISTRIBUTION AND STATUS: Uncommon resident along most of littoral and in E portion central trough. Occupies patches of woodland near marshes and wet pastures. *Rhinoptynx c. midas.*

FIELD MARKS: Large size; prominent ear tufts; underparts streaked very dark brown on creamy background.

SIZE: One male: 438 mm.

SOFT PART COLORS: Tarsus feathered; bill black; iris light brown.

VOICE: (R) Single, not very forceful, relatively high-pitched "oooo."

BREEDING: Male collected February 18, 1974 had small testes.

BEHAVIOR: Occasionally appears during day. Passerine species in same tree paid no attention to one prominently perched and awake during mid-morning.

SPECIMENS: MCN: 504, 817*.

Asio stygius
Map 87

Stygian Owl
Mocho-diabo
(Devil Mocho)

Specimens cited by Berlepsch and Ihering (1885) from Taquara in May 1883, and by Pinto (1938) from Novo Hamburgo in August 1898, are only records for state. *Asio s. stygius.*

Asio flammeus
Map 87

Short-eared Owl
Mocho-dos-banhados
(Marsh Mocho)

Only specimens from state were cited by Pinto (1938) from Novo Hamburgo, April 1898, and by Camargo (1962) from Porto Alegre, July 1941. Four recent sight records, three from central trough in October 1971, November 1979, and January 1980, and one from extreme S in January 1976. *Asio f. suinda.*

Aegolius harrisii
Map 87

Buff-fronted Owl
Caburé-acanelado
(Cinnamon Caburé)

Sharpe (1899) cited specimen without date, later (Ihering, 1900) shown to be from São Lourenço, as type for what is now *A. h. iheringi.* Only recent record is unsexed specimen found dead on road S of Passo Fundo on May 2, 1982 by Silva and Fallavena (personal commun.). Following information supplied by them:

SIZE: 230 mm, 127 gr.

SOFT PART COLORS: Tarsus brown; bill gray; iris yellow.

SPECIMEN: MCN: 1951.

FAMILY NYCTIBIIDAE

Nyctibius griseus
Map 88

Common Potoo
Urutau

DISTRIBUTION AND STATUS: Fairly common in open woodland and forest edges in central trough, upper Jacuí valley, and across extreme N. Also found in southern hills S to 31°S, and Ihering (1899a) mentioned it for São Lourenço. Gepp (personal commun.) informs me he has evidence it occurs in Cerro Largo, Uruguay, which, together with previously established occurrence in Artigas (Gore and Gepp, 1978), indicates probability of existence throughout most of Rio Grande do Sul. Probably summer resident, earliest date October 16, latest February 10, but migratory status not certain because most records based on voice, and it could be here undetected in winter if silent then. *Nyctibius g. cornutus.*

FIELD MARKS: Peculiar stance when perched on end of snags.

SIZE: One male: 372 mm, 178 gr.

SOFT PART COLORS: Tarsus whitish gray; bill black; iris yellow.

VOICE: (R) Loud, mournful, eerie cry of six or seven clear, extended notes leisurely descending scale from moderately high pitch to near squawk. In late October 1975 at Garruchos, these birds called both in early evening and early morning. On October 23 one started at 6:05 P.M. when still very light.

BREEDING: Testes of male collected November 29, 1973 moderately enlarged.

SPECIMEN: MCN: 863*.

FAMILY CAPRIMULGIDAE

Lurocalis semitorquatus
Map 89

Semi-collared Nighthawk
Tuju (onomatopoetic)

DISTRIBUTION AND STATUS: Common near escarpment and across extreme N downstream to Garruchos, with isolated records in central planalto and southern hills, in forest openings, open woodland, suburban areas with trees. Probably summer resident, earliest record October 2, latest March 8, but migratory status not certain because most records based on voice and it could be here undetected in winter if silent then.

FIELD MARKS: Short tail, calls in flight.

VOICE: (R) Clear, mellow, rapidly whistled single "jeRIco" or a more constantly repeated but well-spaced "ewIT. . .ewIT. . . . ewIT. . . ."

BEHAVIOR: Crepuscular flight song usually heard for only few minutes just before dark and just at dawn. Seldom heard except when flying.

[*Chordeiles acutipennis*]

[Lesser Nighthawk]

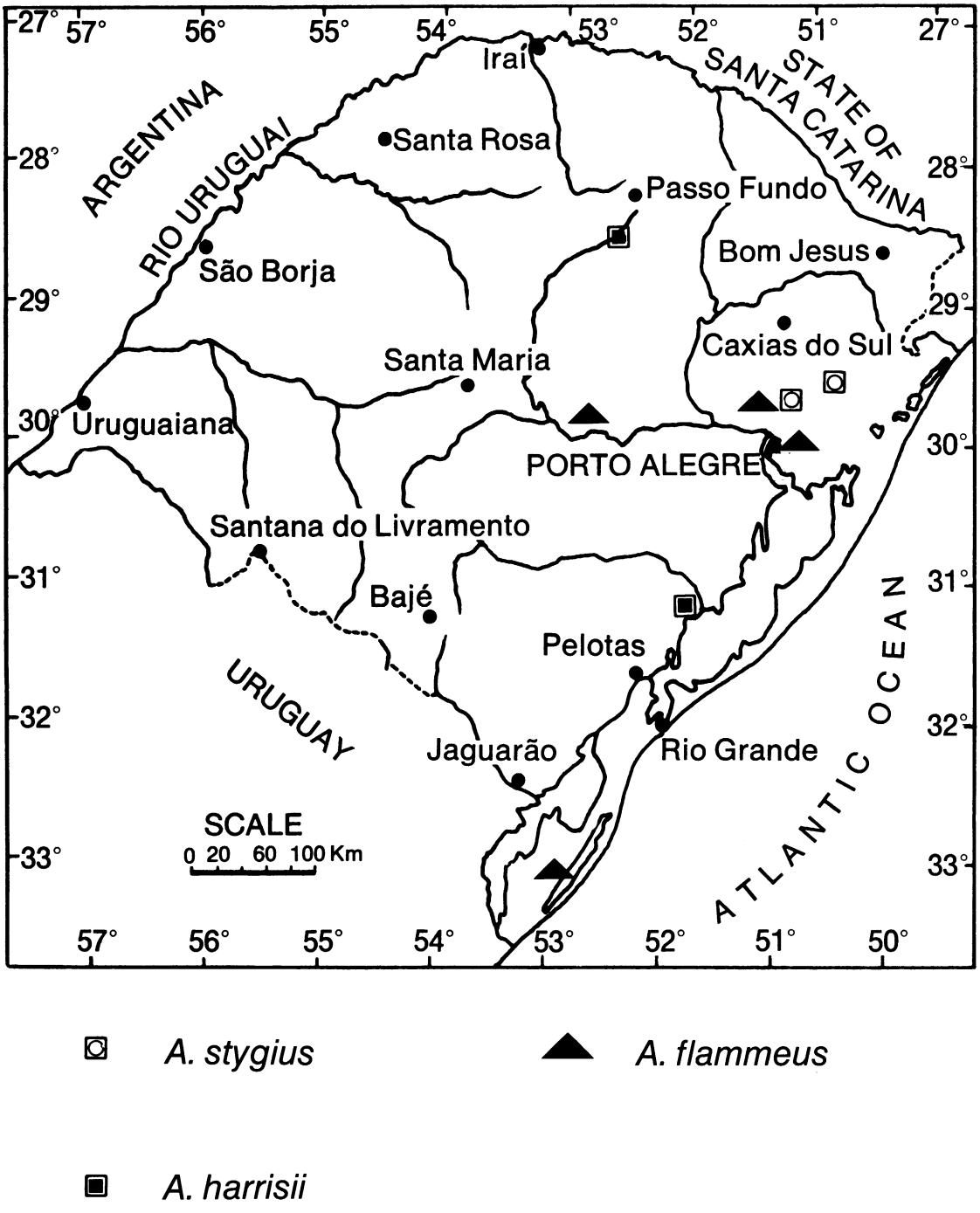
Inclusion of this species on state list has been based entirely on specimen reported from Tôrres in summer (January–March) by Gliesch (1930). Voss (1977b) reported it flying over zoo in Sapucaia do Sul in January and February 1977, and subsequently registered it (personal commun.) in March and December 1976 and January and February 1977. We have discussed his observations and he agrees sightings could have been of *C. minor* instead of present species. Gliesch collection no longer available so not possible to verify identity his specimen. In view of possibility of misidentification due to close similarity of the two species, lack of any further sure record, and fact that *acutipennis* not otherwise reported S of São Paulo or in adjacent Argentina, I believe this species should be removed from list.

Chordeiles minor
Map 91

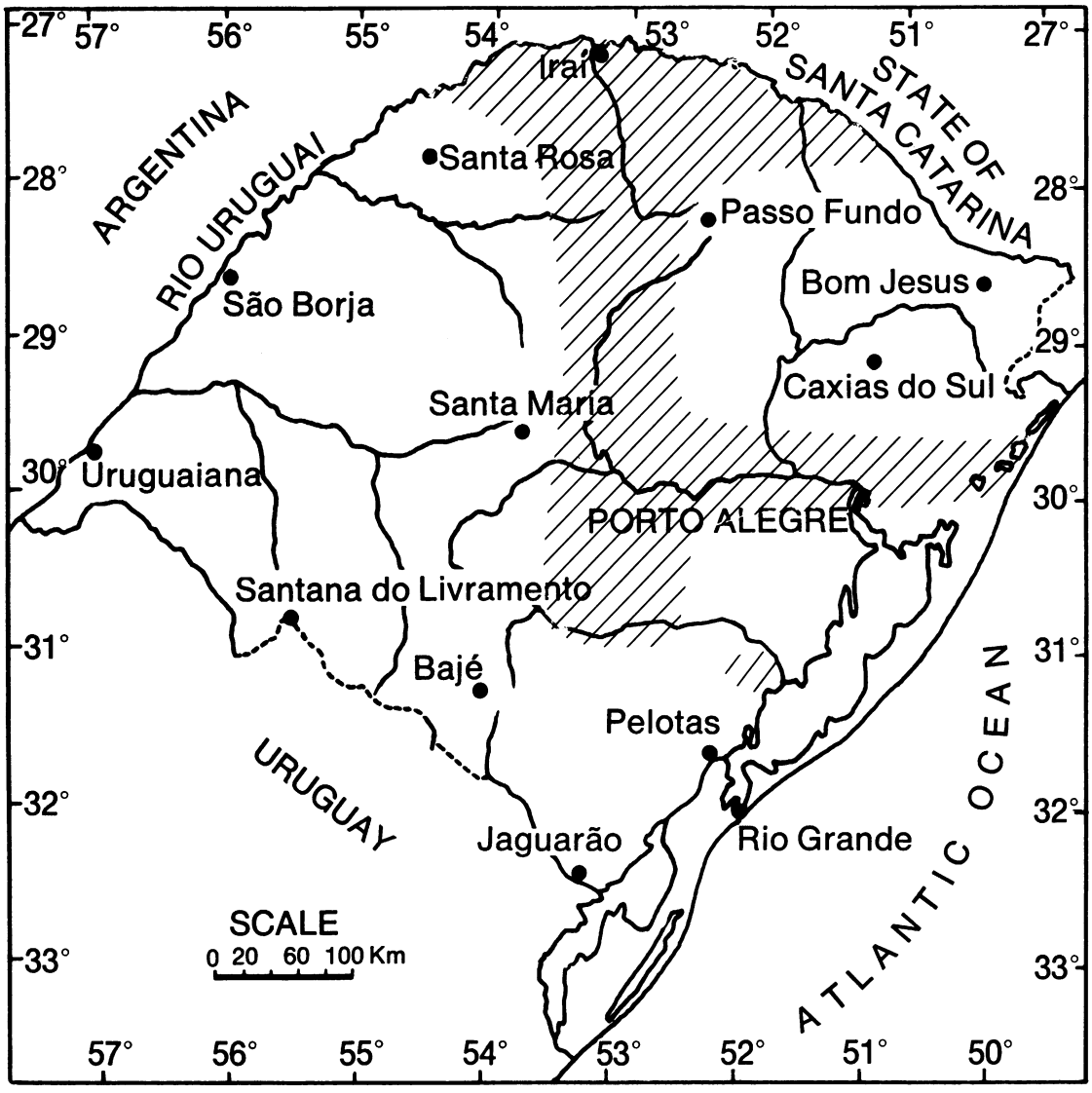
Common Nighthawk
Bacurau-norteamericano
(North American Nighthawk)

Presence of this North American visitor in Rio Grande do Sul first verified by specimen collected January 26, 1974 NE of Mostardas (Belton, 1978a). Other records are from Granja Quatro Irmãos and Ijuí, with probables from Garruchos and Tramandaí, and possibly Sapucaia do Sul if Voss sightings considered (see *C. acutipennis*). All records except those of Voss fall between January 15 and February 21. *Chordeiles m. chapmani.*

SPECIMEN: 855*.



MAP 87. Geographical distribution of *Asio stygius, Asio flammeus* and *Aegolius harrisii* in Rio Grande do Sul.



MAP 88. Geographical distribution of *Nyctibius griseus* in Rio Grande do Sul.

Podager nacunda
Map 90

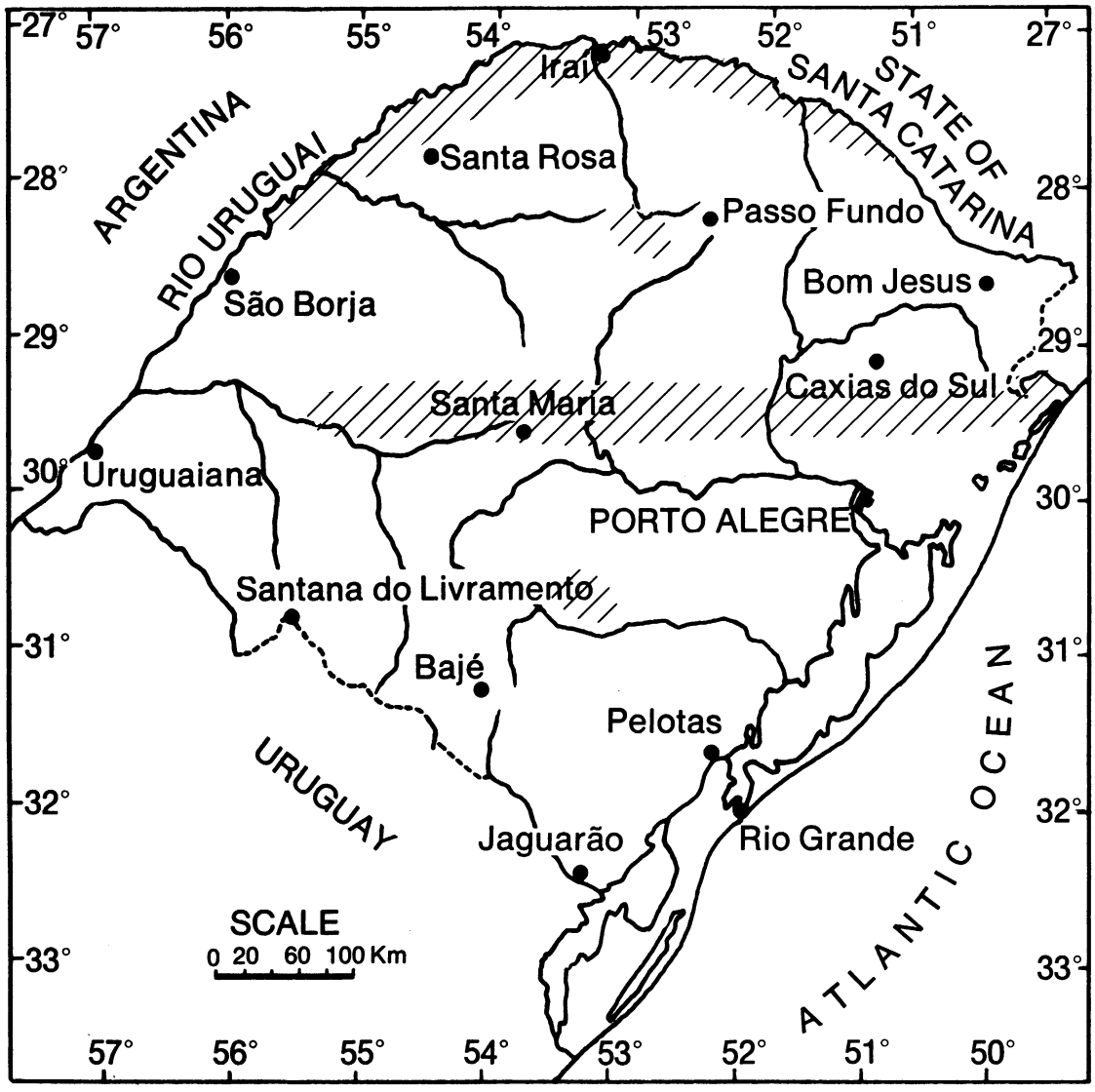
Nacunda Nighthawk
Corucão (onomatopoetic)

DISTRIBUTION AND STATUS: Common to abundant in W, SW, and mid-state portion central trough; uncommon in planalto and S, never registered on Mostardas peninsula or northern littoral. Summer resident, earliest arrival August 17, latest departure May 14. Hunts over marshes, reservoirs, open country, cities; rests on rocky outcroppings in grassland. *Podager n. nacunda.*

FIELD MARKS: White lower breast and belly, large white wing patches.

SIZE: One male: 290 mm, 188 gr. One female: 278 mm, 170 gr.

SOFT PART COLORS: Tarsus dark reddish gray; bill blackish; iris light brown.

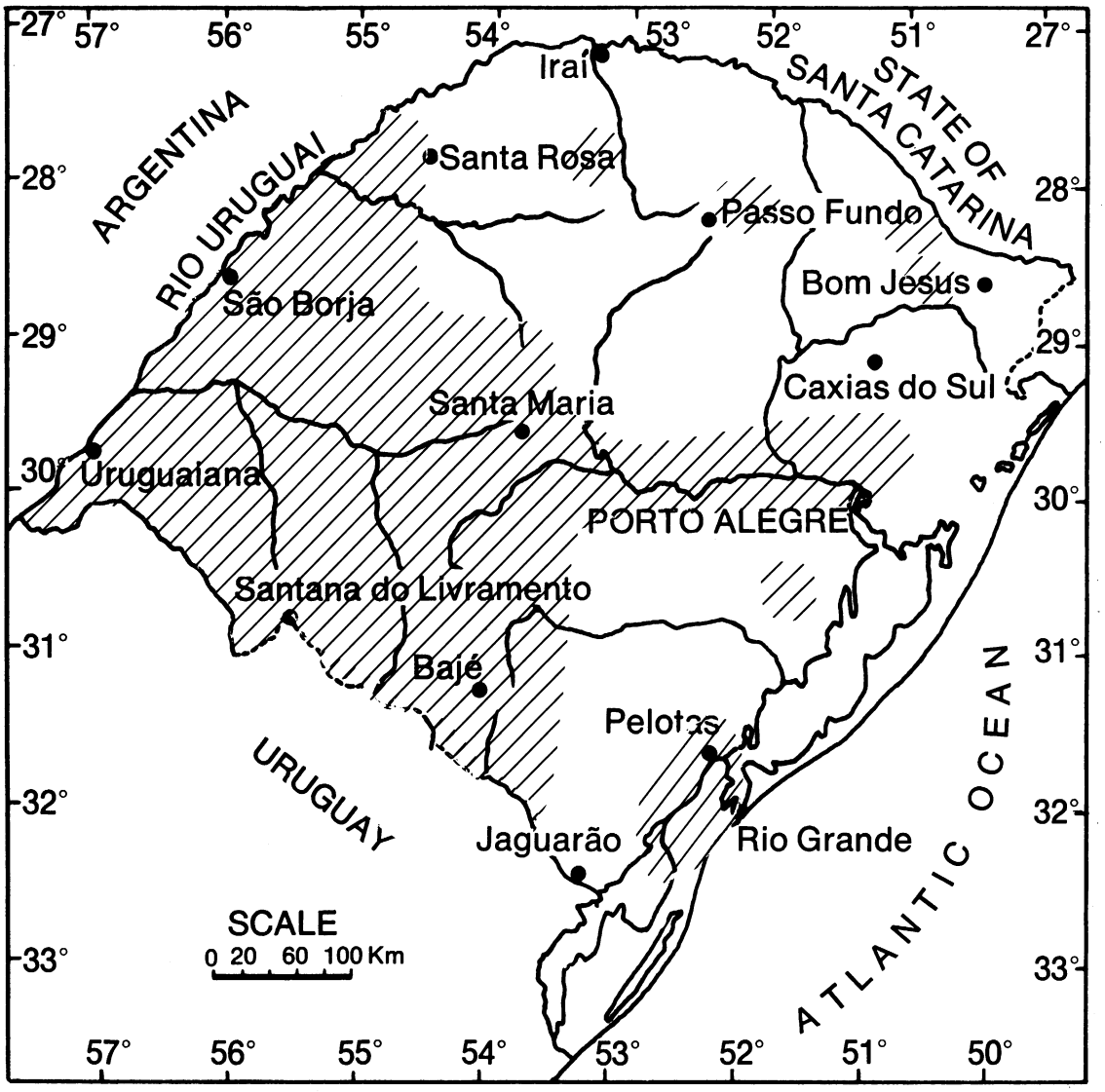


MAP 89. Geographical distribution of *Lurocalis semitorquatus* in Rio Grande do Sul.

VOICE: (R) Continually repeated, low volume, leisurely, very low frequency "cooorrr cOO. . . .cooooorrr cOO. . . ." while perched on ground. Also "whup" or "whump"; see Behavior, below.

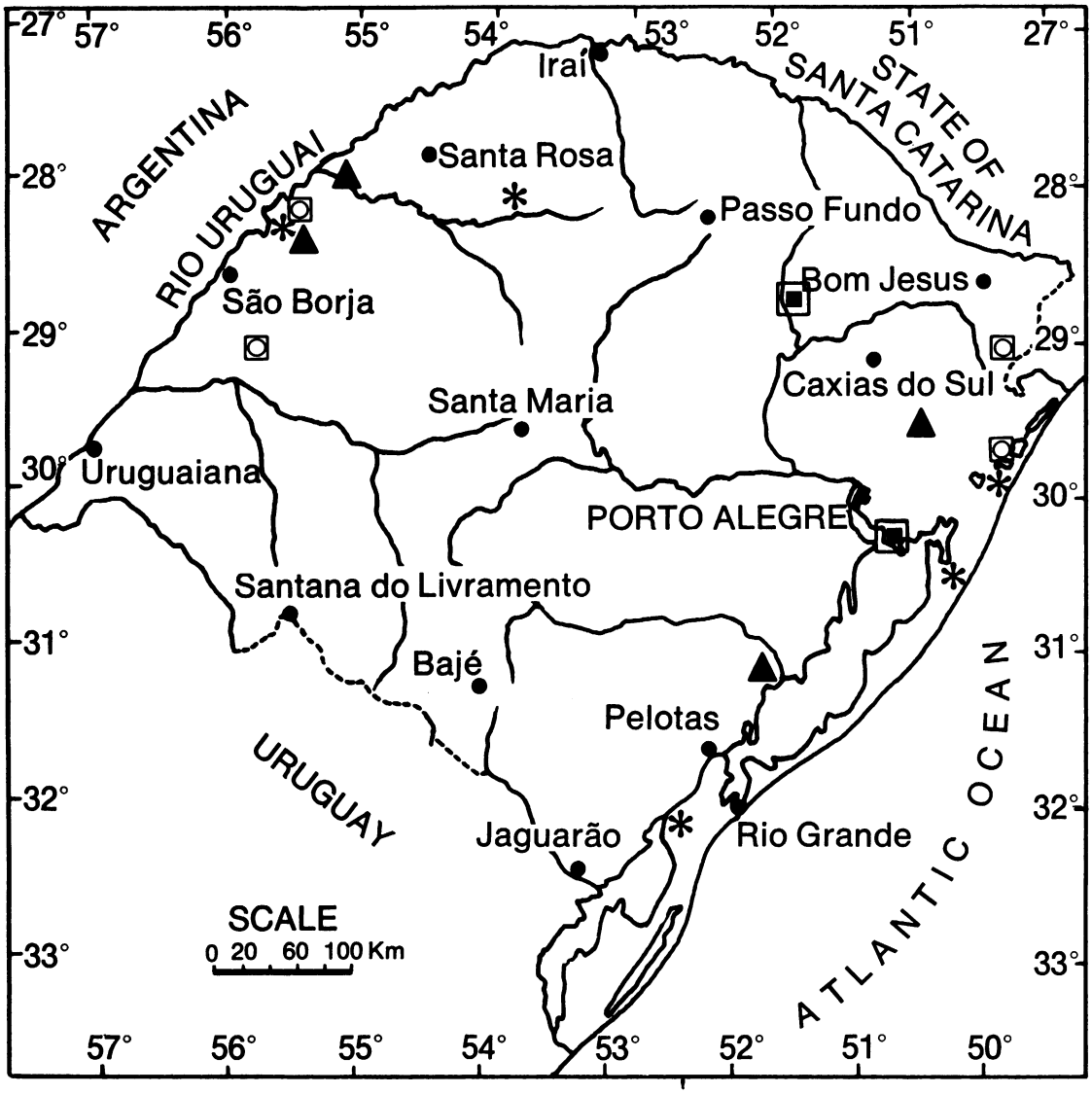
BREEDING: Female brooded two flightless but almost fully feathered chicks on November 1, 1975 on rocky ground at edge of São Donato marsh. No evidence of nest structure. Male collected near Uruguaiana on February 14, 1971 had much reduced testes.

BEHAVIOR: Nests, rests, and roosts on rocky outcroppings in grasslands. Also utilizes paved roads, as on February 14, 1971 when before dawn between Uruguaiana and Arroio Quaraí-chico I encountered hundreds. They were slow to rise and many flew back into car lights or even against side of vehicle despite my precautions. On February 18 and 19, 1975 at Fazenda São Roberto I walked through flock of more than 30 perched on dark brown exposed rock among grassy and



MAP 90. Geographical distribution of *Podager nacunda* in Rio Grande do Sul.

weedy clumps with scattered bird-size stones lying about which provided such excellent camouflage I was continually surprised as "stones" flew up at my approach. Only birds I was approaching directly flew. They would leap-frog over others resting farther ahead and alight beyond. As they went up they called single, quiet, "whup." On alighting they first stood upright with stretched neck and legs, made couple of jerky stretches of whole body, then gradually subsided, giving a "whup" or "whump" or two as they lowered into typical hunched posture which concealed all the white plumage, leaving only brown visible. With binoculars, wide-open brown eyes of perched birds could be seen. Although primarily crepuscular, Nacundas often fly in daytime in flocks of up to 75. Sometimes when disturbed, instead of behaving as above, they take to air and swirl over surrounding countryside for some minutes before alighting. Occasionally flock swirls in organized, cir-



MAP 91. Geographical distribution of *Chordeiles minor, Nyctidromus albicollis, Caprimulgus rufus* and *Caprimulgus longirostris* in Rio Grande do Sul.

cular fashion, some individuals flying very high; at other times they appear to hunt as individuals, each going own way but all remaining in same immediate area. Twice dur-

ing early evening of November 30, 1973 SW of Tupancireta I saw pair drink from running stream by swooping in over water and dipping beaks delicately while hovering.

SPECIMENS: MCN: 859–862*. MN: 546, 547, 4679. AMNH: 314013–314018.

Nyctidromus albicollis
Map 91

Pauraque
Bacurau (onomatopoetic)

DISTRIBUTION AND STATUS: Scarce, found at a few scattered locations near E and W edges of state in all seasons. Occupies forest edges, roads through open woodland. *Nyctidromus a. derbyanus.*

FIELD MARKS: Best identified by voice and very short flights.

SIZE: One male (by Silva): 307 mm, 73 gr. One female: 295 mm, 70 gr.

SOFT PART COLORS: Tarsus gray; bill black; iris dark; eye ring pale orange.

VOICE: (R) "Wheeoo-who wheeoo-who" with second syllable dropping in pitch, can also be heard as "werewolf . . . werewolf." Also those syllables reversed: "who-wheeoo," and a less vigorous "puk puk whow . . . puk puk whow." All these calls are loud and uttered usually well after dark or before dawn. In Brasilia National Park netted bird in bag awaiting banding made low, growling " ba - cu - rau."

BREEDING: Female collected April 2, 1973 at Aparados da Serra National Park had inactive ovary.

BEHAVIOR: Calls while perched on ground. When disturbed or to seize prey, often flies up from ground and immediately alights very short distance away. Known in other parts of Brazil as "*Mede leguas*" = "League-measurer" for habit of moving along road ahead of traveler by short flights.

SPECIMENS: MCN: 463, 854*.

[*Nyctiphrynus ocellatus*]

[Ocellated Poorwill]

Although Meyer de Schauensee (1970) mentioned Rio Grande do Sul specifically as within range of this species, I have not encountered any record of its having been found here, and therefore omit it from list.

Caprimulgus rufus
Map 91

Rufous Nightjar
João-corta-pau
(John-cut-wood—onomatopoetic)

DISTRIBUTION AND STATUS: Scarce, found in recent times only near Garruchos and lower reaches of Rio Ijuí, between October 22 and December 7. Collected at Taquara and São Lourenço in November and January at turn of century. Forests. *Caprimulgus r. rutilans.*

VOICE: (R) Mild, percussive sound followed by three loud whistles: "chook wee wee wEEo. . . . .chook wee wee wEEo. . . . ." which at distance can be interpreted "You'll whip me, WILL." Continues with constant repetition from dusk well into night.

Caprimulgus longirostris
Map 91

Band-winged Nightjar
Bacurau-de-telha
(Roof-tile Bacurau)

DISTRIBUTION AND STATUS: Known first in state from quarry SE of Casca, where heard on May 22, 1972 and November 6, 1975 (Belton, 1978a). Silva netted first specimen for state near quarry at Itapuã September 28, 1980.

SIZE: One (by Silva), sex undetermined: 242 mm, 50 gr.

SOFT PART COLORS: Tarsus and bill black, iris chestnut.

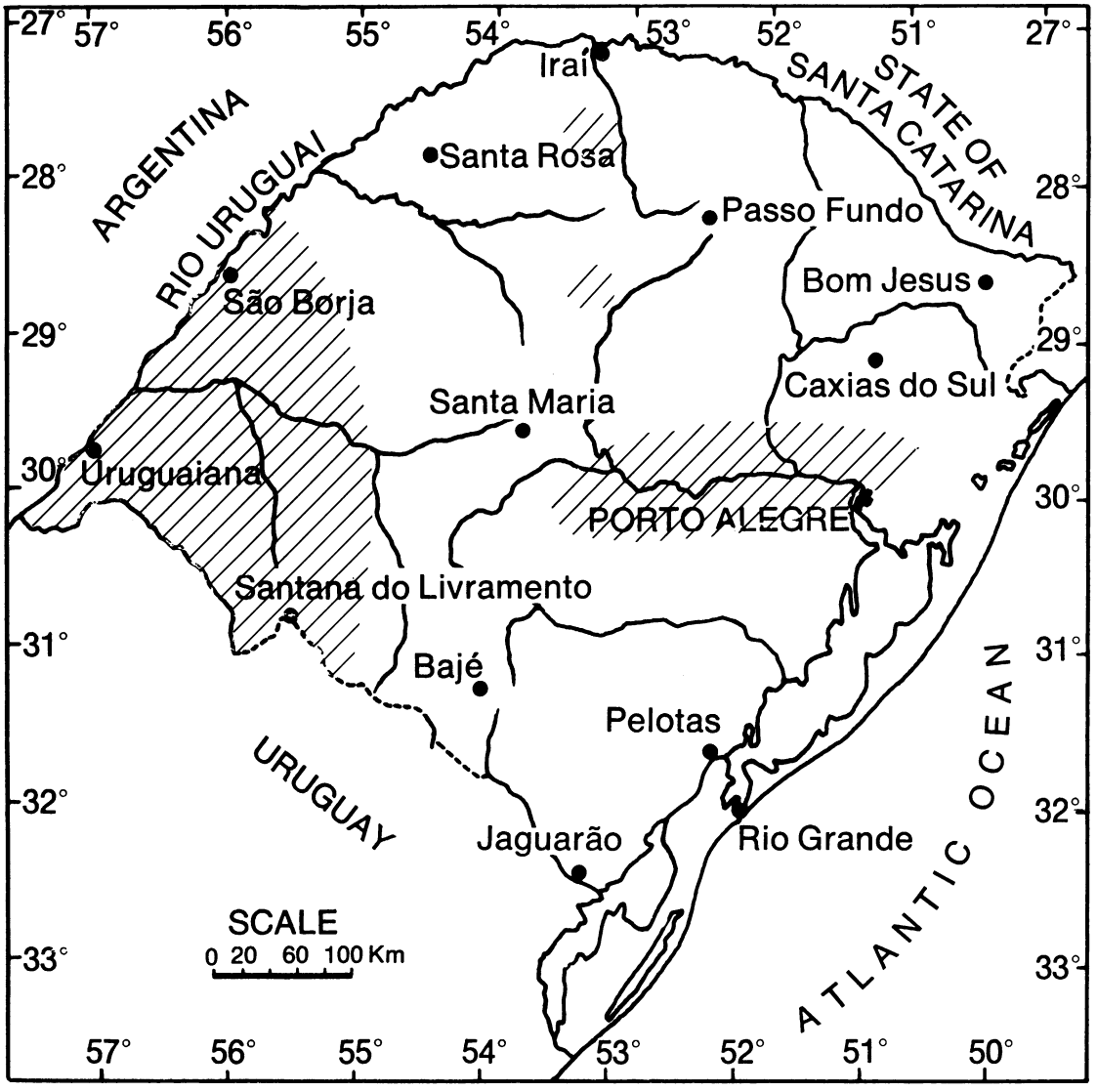
VOICE: (R) A single, weak, very high-pitched plaintive whistle, repeated constantly: "tseeooeet . . . . tseeooeet."

SPECIMEN: Specimen netted by Silva deposited in Museu Nacional.

Caprimulgus parvulus
Map 92

Little Nightjar
Bacurau-pequeno
(Little Bacurau)

DISTRIBUTION AND STATUS: Common W of 55°W, less so farther E in central trough, occasionally found in central N. Summer resident, earliest presence October 21, latest February 13. Found on ground in espinilho, open woodland, eucalyptus groves. *Caprimulgus p. parvulus.*



MAP 92. Geographical distribution of *Caprimulgus parvulus* in Rio Grande do Sul.

FIELD MARKS: Small size; relatively long tail.

SIZE: Two males: 198–200 m, 25–39 gr. Two females: 198–214 mm, 45–46.5 gr.

SOFT PART COLORS: Tarsus pinkish brown or pinkish gray; bill black; iris brown; eye ring very pale yellow.

VOICE: (R) Rattling, clacking, flat, unbird-like sound in pattern of "hurr-ee quick quick quick quick quick quick." Usually heard at dusk, after dark, and in early morning hours, but in mid-November 1977 at Arroio Quaraí-chico it called several times during mid-morning, once as late as 11 A.M.

BREEDING: On November 16, 1977 Silva found two eggs, somewhat separated from each other, in scrape on ground. Two males and two females collected between November 11 and November 22 all had active gonads.

BEHAVIOR: When disturbed during daylight hours, usually flies no more than 20 m, alighting on far side of tree or bush from observer.

SPECIMENS: MCN: 856–858*. AMNH: 813003*.

Hydropsalis brasiliana
Map 93

Scissor-tailed Nightjar
Bacurau-tesoura
(Scissor Bacurau)

DISTRIBUTION AND STATUS: Registered principally in central trough and S hills, but also at scattered points in W, N, and on top of escarpment. Common, found on ground in espinilho, grassland with scattered clumps of vegetation, forests, eucalyptus and acacia groves. It disappears from many areas, including NE highlands, during winter, but has been found by Voss and da Silva (unpubl. ms.) at zoo, Sapucaia do Sul during winter months. *Hydropsalis b. furcifera.*

FIELD MARKS: Very long tail, which could be confused with even longer tail of *Macropsalis creagra.*

SIZE: Six males: 420–510 mm, 51–63 gr. Two females: 256–276 mm, 57–60 gr.

SOFT PART COLORS: Tarsus brown to pinkish or reddish gray; bill black; iris brown.

BREEDING: On November 21, 1983 at Itapuã Silva found two light brown eggs, heavily spotted with darker brown, being brooded by female on ground amid scrub on rocky hillside. Eggs were unprotected by any nest structure and placed on nearly bare granite, most of a thin layer of small leaves having been scraped aside. Juvenal with tail not fully developed collected December 2, 1973. Voss and Sander (1981) found nest on ground within planting of exotic *acácia-negra* (*Acacia mollissima* Willd) with one egg and one newly hatched young near São Leopoldo on December 26, 1976. Ihering (1902) described three sets of eggs from São Lourenço without date. Seven specimens collected between September 15 and November 12 all in breeding condition. Female of February 3, 1972 had small ovary.

BEHAVIOR: When disturbed in daytime, birds usually fly silently for 20 or 30 m to alight on ground on other side of tree or clump of vegetation from observer, but occasionally perch on low stump or log. On September 20, 1974, S of Dom Feliciano, just before dark, male displayed in middle of dirt road by stretching wings up to almost 90° from horizontal, then closing them rapidly, simultaneously producing a succession of up to five rapidly repeated sounds between a thump and a snap, like that made by snapping one's fingers. Sometimes this performance occurred while bird stood still, but sometimes bird seemed to lift slightly off ground, as if by force of wing action. At other times it would fly a few meters producing sound as it landed. Interspersed between these performances was occasional sharp jerk of neck which stretched head forward and up, then back into place, repeated once or twice in quick succession. Whole performance continued for more than 20 minutes until quite dark, when display noise diminished and a female appeared.

SPECIMENS: MCN: 259, 556, 847–853*. MN: 32299*. AMNH: 43827, 321817, 810491–810492*.

Macropsalis creagra
Map 93

Long-trained Nightjar
Bacurau-tesoura-gigante
(Giant Scissor Bacurau)

Kaempfer collected one at Sinimbu on September 29, 1928 and six at Lagoa do Forno in late October 1928. Gliesch (1930) reported it from Porto Alegre, Poço das Antas, and Novo Hamburgo. Only recent record is from Voss (1976) who reported it in city of Novo Hamburgo in September 1974. He informs me it flew about 20 m high in straight line.

SPECIMENS: AMNH: 314019–314025.

Eleothreptus anomalus
Map 93

Sickle-winged Nightjar
Curiango-do-banhado
(Marsh Curiango)

Although Pinto (1938) was cited in my state list (Belton, 1978b) as authority for inclusion of this species, he did not mention specimen, and I am unable to find reference to one collected here. However, on October 5, 1971

Sick found badly mangled corpse on highway near marshy reservoir W of Pantano Grande which he subsequently identified as this species. This is only known Rio Grande do Sul record.

FAMILY APODIDAE

Cypseloides fumigatus
Map 94

Sooty Swift
Andorinhão-preto-da-cascata
(Black Waterfall Swift)

DISTRIBUTION AND STATUS: Common in vicinity of escarpment in NE, from Novo Hamburgo to Santa Catarina line. Flies over canyons, surrounding country, and marshes, roosts on cliffs and behind waterfalls. Probably summer resident, registered between September 11 and March 31, except for one record each for May and June from Novo Hamburgo (Voss, 1976). *Cypseloides f. fumigatus.*

FIELD MARKS: Medium size; solid dark brown plumage. Voss (1977b) characterizes it as having relatively narrower, more pointed wings and slower wingbeat than *Chaetura* sp., and less vigorous, more dainty flight than *Streptoprocne* sp.

SIZE: Three males: 135–145 mm, 40–44 gr. One female: 147 mm, 41 gr.

SOFT PART COLORS: Tarsus and bill black; iris brown.

BREEDING: Specimens collected October 5, 1972, and November 1, 1970 all in breeding condition.

BEHAVIOR: More common on October 5, 1972 that *Streptoprocne zonaris, S. biscutata,* or *Chaetura cinereiventris* all of which flew over marshes at edge of Lagoa do Jacaré all day. At 7 A.M. October 23, 1971 flock of 100 or more were hanging on rock face behind Caracol Falls near Canela. Most were under rock overhang, thus partly protected from water. Fluttered wings from time to time, but none seen flying. Search for caves of roosting swifts in Rio Santa Maria (or Paranhas) canyon near Canela on March 10, 1973 produced no caves, but along edges of stream we found abundance of flight feathers believed to be of this species, a few body feathers, and enough excrement to create strong odor, all apparently from birds roosting on canyon walls above, though none present then.

SPECIMENS: MCN: 864*, 866*. MN: 32235*, 32248*. AMNH: 314027.

Streptoprocne zonaris
Map 94

White-collared Swift
Andorinhão-coleira
(Collared Swift)

DISTRIBUTION AND STATUS: Common to abundant resident in NE in vicinity of escarpment, with one record for extreme N. Flies over fields, forests, canyons, marshes, beaches; roosts and nests in caves. *Streptoprocne z. zonaris.*

FIELD MARKS: Large, blackish, with white band completely encircling body at neck/breast level. Associates with *S. biscutata* and usually indistinguishable from it—see that species.

SIZE: One male: 213 mm, 134 gr. One female: 211 mm, 128 gr.

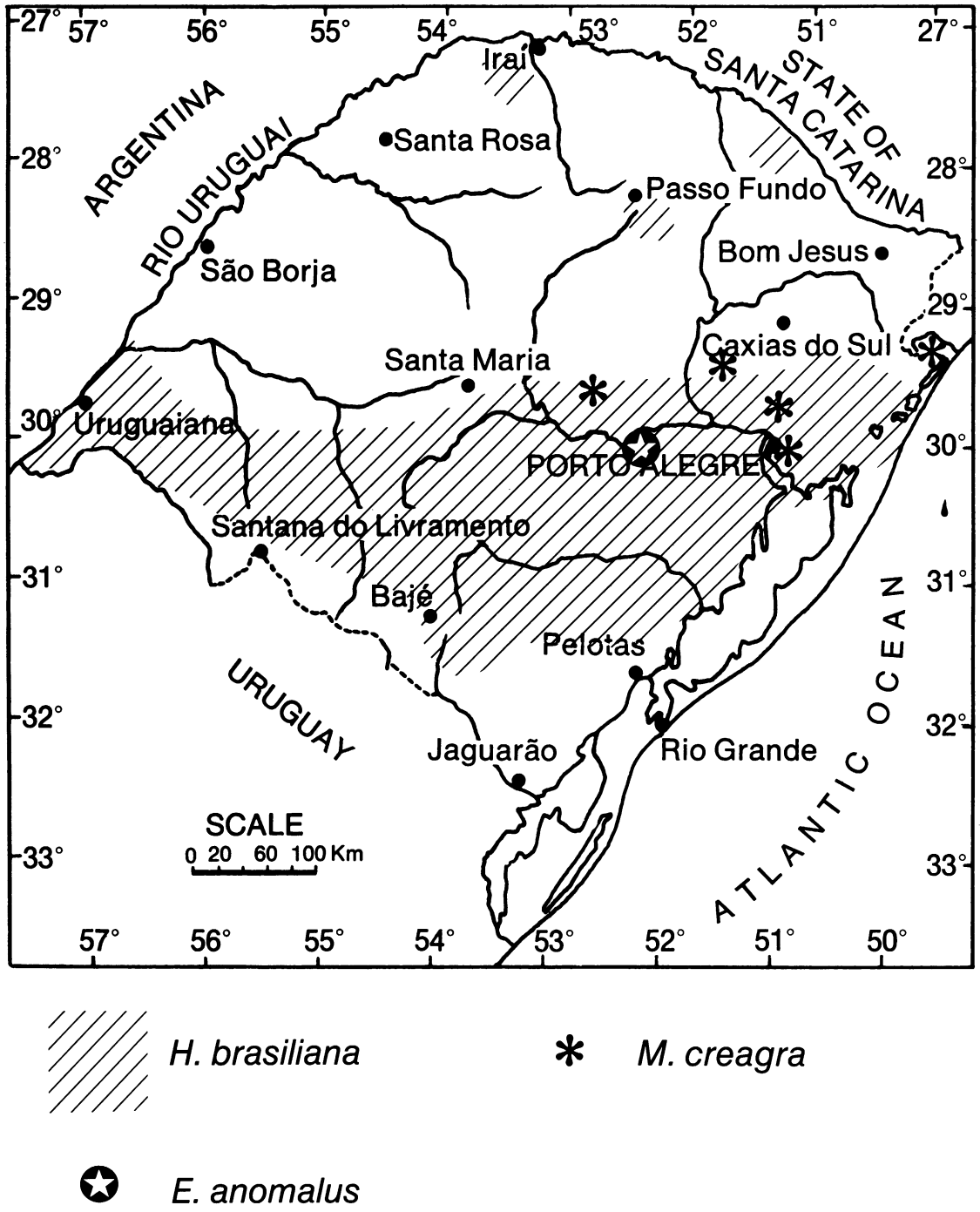
SOFT PART COLORS: Tarsus and bill black; iris brown.

VOICE: (R) Shrill "chee chee chee chee chee. . ." uttered in flight.

BREEDING: Male and female collected October 5, 1972 in full breeding condition.

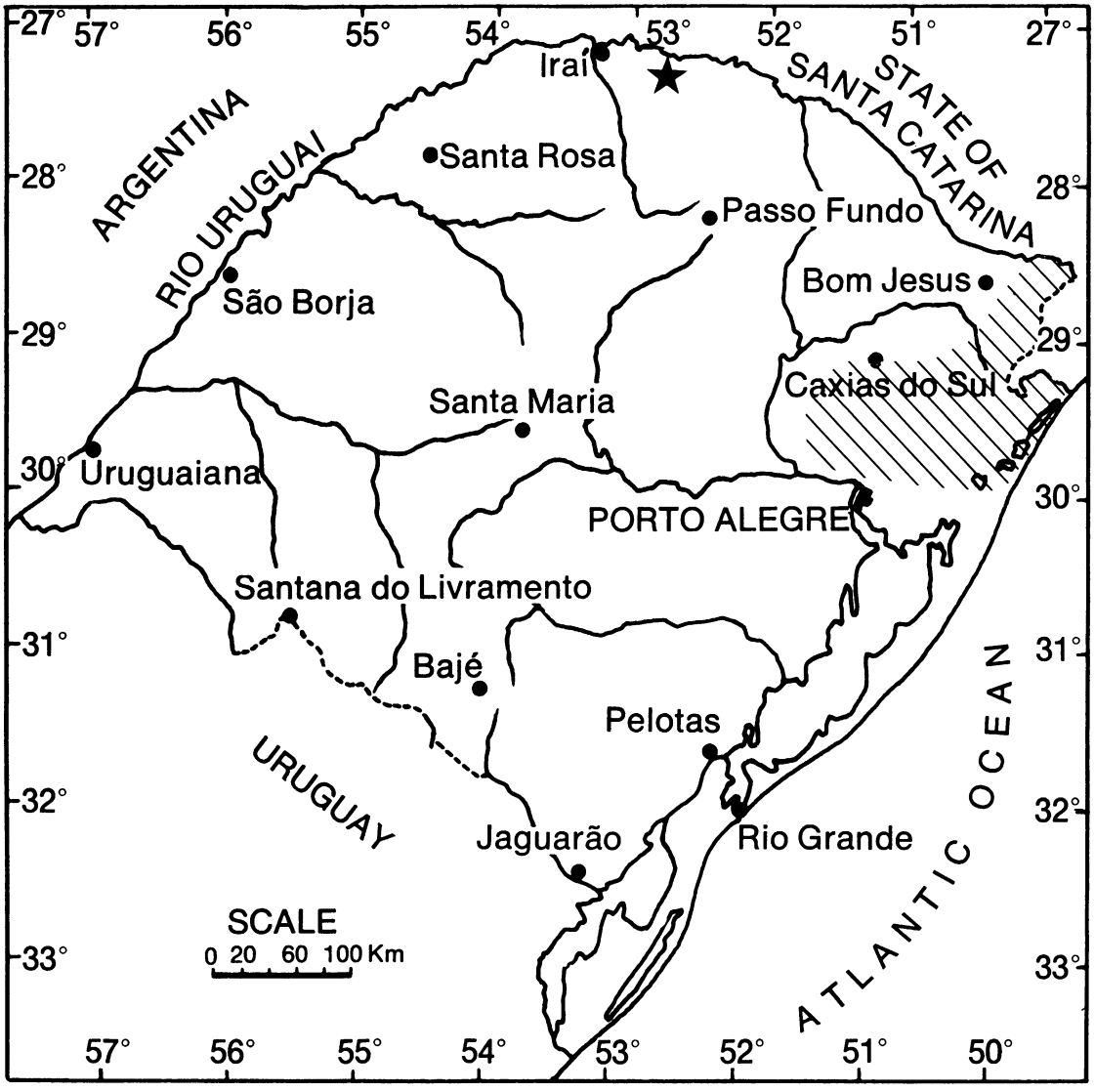
BEHAVIOR: Usually seen in flocks, often of some hundreds, most frequently high over canyons or other rough terrain, but sometimes individuals fly within 2 or 3 m of surface over fields, ocean beaches, marshes. Often vocalize in unison, as on February 6, 1971 at Morro Pelado when about 200 all suddenly emerged from clouds and fog overhead and gave short, chattering screech. Frequently seen passing over Gramado in late afternoons in long, straggling flocks moving in one direction, apparently heading for roosts, in much different style than usual swooping, circling flight when hunting or displaying.

At Tôrres two entrances about 6 m apart to roosting cavern or caverns are on sea side of headland projecting into Atlantic. One into which most birds entered on July 1, 1974 is about 1.5 m wide at widest point, with top probably less than 2 m above water line. Birds gathered in high flying flock above headland after sunset and circled there for some time. As dusk fell, one by one they swooped down to enter caverns, appearing to fly less than 1 m above water. Waves beat constantly against



MAP 93. Geographical distribution of *Hydropsalis brasiliana, Macropsalis creagra* and *Eleothreptus anomalus* in Rio Grande do Sul.

cliff and were quite high even with very still sea. Under storm conditions, entrance of birds would seem to be real problem. Due to poor light, it was impossible to determine whether



MAP 94. Geographical distribution of two species of *Streptoprocne* and of *Cypseloides fumigatus* in Rio Grande do Sul. Ranges of the three species are approximately identical, as indicated by the streaked area, but *S. zonaris* has also been found in the area marked by a star.

flocks included *S. biscutata*. Similar phenomenon observed July 5 and 6, 1974 at Aparados da Serra National Park where large flocks assembled above 400 m deep Itaimbezinho canyon and flew with great speed into vertical split in side of canyon cliff about 30 m below top. Evening of January 17, 1979 flocks of this species not seen at Itaimbezinho.

SPECIMENS: MCN: 865*, 869*. AMNH: 314026, 810490*.

Streptoprocne biscutata
Map 94

Biscutate Swift
Andorinhão-coleira-falha
(Broken-collared Swift)

DISTRIBUTION AND STATUS: Apparently

same as *S. zonaris*. My observation has been that most *Streptoprocne* flocks are composed principally of *zonaris,* but on November 7, 1973 at Itaimbezinho canyon the vast majority were *biscutata.* Definite records for August, October, November, and January, probable for July, and very likely here throughout year.

FIELD MARKS: Impossible to distinguish between this and *zonaris* under most viewing conditions. They appear to associate regularly in mixed flocks, which caused Ihering (1898) to declare them conspecific and to attribute plumage differences to individual variation. Only difference normally visible in flight in this species is interruption on sides of neck of white collar, which is complete on *zonaris.* Unless seen at precisely correct angle, extended wing of *zonaris* obscures view of side of neck and creates false impression of interruption in collar.

SIZE: One male: 208 mm, 127 gr.

SOFT PART COLORS: Tarsus and bill black; iris brown.

VOICE: Not distinguished from that of *zonaris.* Flocks of November 7, 1973 called same "chee chee chee chee chee. . ." as recorded from presumed *zonaris* flocks.

BREEDING: Male collected October 5, 1972 had greatly enlarged testes.

BEHAVIOR: See *S. zonaris.*

SPECIMEN: 870*.

Chaetura cinereiventris
Map 95

Gray-rumped Swift
Andorinhão-cinzento
(Gray Swift)

DISTRIBUTION AND STATUS: Moderately common resident found in NE near escarpment, in extreme N, and near Garruchos. First noted by Sick in 1971 (Belton, 1974). I have not seen it in winter, but Voss (personal commun.) has observed flocks of hundreds in that season in São Leopoldo/Novo Hamburgo area entering abandoned chimneys for nocturnal roosting. He finds it scarcer in spring and summer, indicating these flocks probably then disperse for breeding. *Chaetura c. cinereiventris.*

FIELD MARKS: Gray rump contrasts with black tail. Willis (*in litt.*) points out that when soaring, wings of this species appear relatively long, narrow, and rounded at end, whereas those of *C. andrei* broader and more sharply pointed.

VOICE: Sick has described it to me as "buzzing" compared with "cheeping" or "tinkling" of *andrei.*

Chaetura andrei
Map 95

Ashy-tailed Swift
Andorinhão-do-temporal
(Storm Swift)

DISTRIBUTION AND STATUS: Common in NE, except highest areas, N from near foot of escarpment and E of about 54°W. Not positively registered in winter. Voss (1976, 1977b) reported it in Sapucaia do Sul/Novo Hamburgo region in every month, but now (personal commun., 1981) believes he saw *C. cinereiventris* in winter. *Chaetura. a. meridionalis.*

FIELD MARKS: Dark back contrasts with lighter rump and tail. Also see *C. cinereiventris.*

SIZE: One female: 135 mm, 19.5 gr.

SOFT PART COLORS: Tarsus dark reddish brown; bill black; iris grayish brown.

VOICE: (R) Excited, rapid chittering: "tsee tsee ts tsee tsee tsee. . . ." Also see *C. cinereiventris.*

BREEDING: Regularly breeds in chimneys in Gramado area, with young and occasionally adults appearing in fireplaces and inside houses. One flightless young found about January 10, other in late November 1978. Nest on latter occasion also fell from chimney. Made of short sticks, from 2 to 8 cm long, cemented together with saliva, having general appearance of that photographed by Sick (1948), it was triangular in shape, having been constructed in corner with two sides against wall, each side only about 6 cm long. On December 23, 1976 at Morro Pelado adult made three or four visits in about an hour to feed nestlings in hole in tree 12 m up. Young could be heard as parent arrived.

BEHAVIOR: Often occurs in loose flocks hunting at relatively low heights above houses in Gramado.

SPECIMENS: MCN: 867–868*.

FAMILY TROCHILIDAE

Ramphodon naevius

Saw-billed Hermit
Beija-flor-grande-da-mata
(Large Forest Flowerkisser)

Inclusion on state list based on specimen from Porto Alegre, date unknown, reported by Gliesch (1930). No other record.

[*Glaucis hirsuta*]

[Rufous-breasted Hermit]

Although Rio Grande do Sul is specifically included within the range of this species by Meyer de Schauensee (1970), I have found no evidence of its occurrence here and therefore omit it from state list.

Phaethornis eurynome
Map 96

Scale-throated Hermit
Rabo-branco-garganta-rajada
(Speckle-throated Whitetail)

DISTRIBUTION AND STATUS: Common in extreme N, less so in Tôrres area, rare near Porto Alegre where collected by Ruschi. Ihering reported it from Taquara without date. Forests. Registered June, August, September, November, and February. *Phaethornis e. eurynome.*

FIELD MARKS: Long, decurved bill; two long, white, projecting tail feathers.

SIZE: One female: 154 mm, 5 gr.

SOFT PART COLORS: Tarsus pinkish; bill black, base of mandible yellow; iris dark.

VOICE: (R) by Silva. Song: constantly repeated three syllable phrase, in rhythm of "Keep. .yourseat. . . . .Keep. .yourseat," with pause after first syllable.

BREEDING: Female collected September 30, 1973 had egg in oviduct.

SPECIMEN: MCN: 898*.

Eupetomena macroura

Swallow-tailed Hummingbird
Beija-flor-de-tesoura
(Scissor-tailed Flowerkisser)

Ruschi (1956) reported collecting specimen July 3, 1956 in citrus flowers near Porto Alegre. One male was seen at zoo, Sapucaia do Sul, for few days during March 1976 (Voss, personal commun.).

Melanotrochilus fuscus
Map 96

Black Jacobin
Beija-flor-preto-de-rabo-branco
(White-tailed Black Flowerkisser)

DISTRIBUTION AND STATUS: Scarce, but appears occasionally, especially in winter, at zoo, Sapucaia do Sul, and very rarely at feeders in Gramado area. Most southerly record near São Lourenço August 1, 1974. Registered in all months except January and April.

FIELD MARKS: Very dark body with extensive white in tail.

BEHAVIOR: Feeds on eucalyptus flowers, and frequents new leaves of *timbaúva* (*Enterolobium contortisiliquum*).

SPECIMEN: MCN: 399.

Colibri serrirostris

White-vented Violetear
Beija-flor-de-canto
(Singing Flowerkisser)

Ruschi (1956) reported the only specimen ever registered for state, collected July 8, 1956 between Porto Alegre and São Leopoldo, in citrus flowers.

Anthracothorax nigricollis
Map 97

Black-throated Mango
Beija-flor-de-veste-preta
(Black-vested Flowerkisser)

DISTRIBUTION AND STATUS: Uncommon, found in NE near escarpment, at scattered localities in N and NW, and once (Voss, personal commun.) near Bagé. Regular spring and summer wild resident at zoo, Sapucaia do Sul, where Voss (1977b) reports it prefers flowers of *Erythrina cristagalli.* Not registered between unspecified May and September dates, except for two July records. Probably mostly summer resident.

FIELD MARKS: Dark centered underparts edged blue in male, white in female.

BREEDING: On January 14, 1973 female was attending nest in outermost twigs of tree overhanging Rio Ijuí, N of Ijuí, 5 or 6 m from shore and equal distance above water. She sat on nest after prodding into it with bill, possibly to turn eggs. Voss (personal commun.) found female taking feathers and grass from *Pitangus sulphuratus* nest at zoo on November 16, 1978.

SPECIMENS: NM: 18435. AMNH: 314057, 314058.

Stephanoxis lalandi
Map 97

Black-breasted Plovercrest
Beija-flor-de-topete
(Crested Flowerkisser)

DISTRIBUTION AND STATUS: Moderately common resident, found across state N of 28°30'S and farther south E of 54°W and N of 31°30'S, but not recorded on Mostardas peninsula nor in highest parts of NE. Prefers brushy woodland edges near streams or boggy areas. *Stephanoxis l. loddigesi.*

FIELD MARKS: Streamer-like purple crest; black streak through center of gray underparts.

SIZE: One male: 95 mm, 3.7 gr.

SOFT PART COLORS: Tarsus gray; bill black; iris dark.

VOICE: (R) Constantly repeated, hard, percussive "tink tink tink tink. . . ." varying slightly in regularity of "tink's." One "tinked" at rate of 110 per minute.

BREEDING: Male collected April 12, 1971 had small testes.

SPECIMENS: MCN: 878–880*. MN: 18447. USNM: (alcohol) 505201–505203*. AMNH: 314194–314199, 321827, 485054.

Lophornis magnifica

Frilled Coquette
Topetinho-vermelho
(Little Red-crest)

Known in state only from specimens collected in Taquara, September 4, 1882 (Berlepsch and Ihering, 1885), and near Porto Alegre among eucalyptus flowers July 4, 1956 (Ruschi, 1956).

Chlorostilbon aureoventris

Glittering-bellied Emerald
Besorinho-bico-vermelho
(Red-billed Little Beetle)

DISTRIBUTION AND STATUS: Common and well distributed through most of state, but no records for extreme NW. Found in semi-open habitats, scrub, gardens, woodland edges, espinilho, bushy marshes. Mostly summer resident, but Voss (1977b) registered it every month at zoo, Sapucaia do Sul, and we found it N of São José do Norte feeding on eucalyptus flowers July 26, 1981. *Chlorostilbon a. berlepschi.*

FIELD MARKS: Bill orange with black tip.

SIZE: Three males (two sexed on plumage): 97–98 mm, 3.5–4 gr. Two females (one sexed on plumage): 94–103 mm, 4–4.9 gr.

SOFT PART COLORS: Tarsus black; bill orange with black tip; iris dark.

BREEDING: Nest with two eggs, discovered November 4, 1970 4 m from edge of paved highway near Gramado, was suspended from roots hanging from earth undercut by excavation of embankment. It was about 35 cm below roof formed by overhang, and less than 1 m above ground surface. Made entirely of downy vegetable fiber, but lined on outside with few pieces of broad dried grass and piece or two of very light-weight bark. By November 17 one egg had hatched, other found open November 19 was addled. When observed November 4, female returning to nest after absence would sit on eggs and then push piece of seed fluff she had brought with her under her body. On November 15, 1974 near Soledade another nest in similar situation, suspended from roots in undercut bank about 60 cm above running stream, contained two downy young. On October 25, 1972 at Fazenda São José bird was sitting on empty unfinished nest attached to nearly vertical piece of heavy wire hanging from rafter of occupied garage. This nest was apparently abandoned, for there was no further evidence of construction or use by November 17. Voss (1977b) reported wild nestlings of this species at zoo, Sapucaia do Sul in early February 1976. Young beginning to acquire male plumage seen in Gramado March 20, 1973 and same date in 1975.

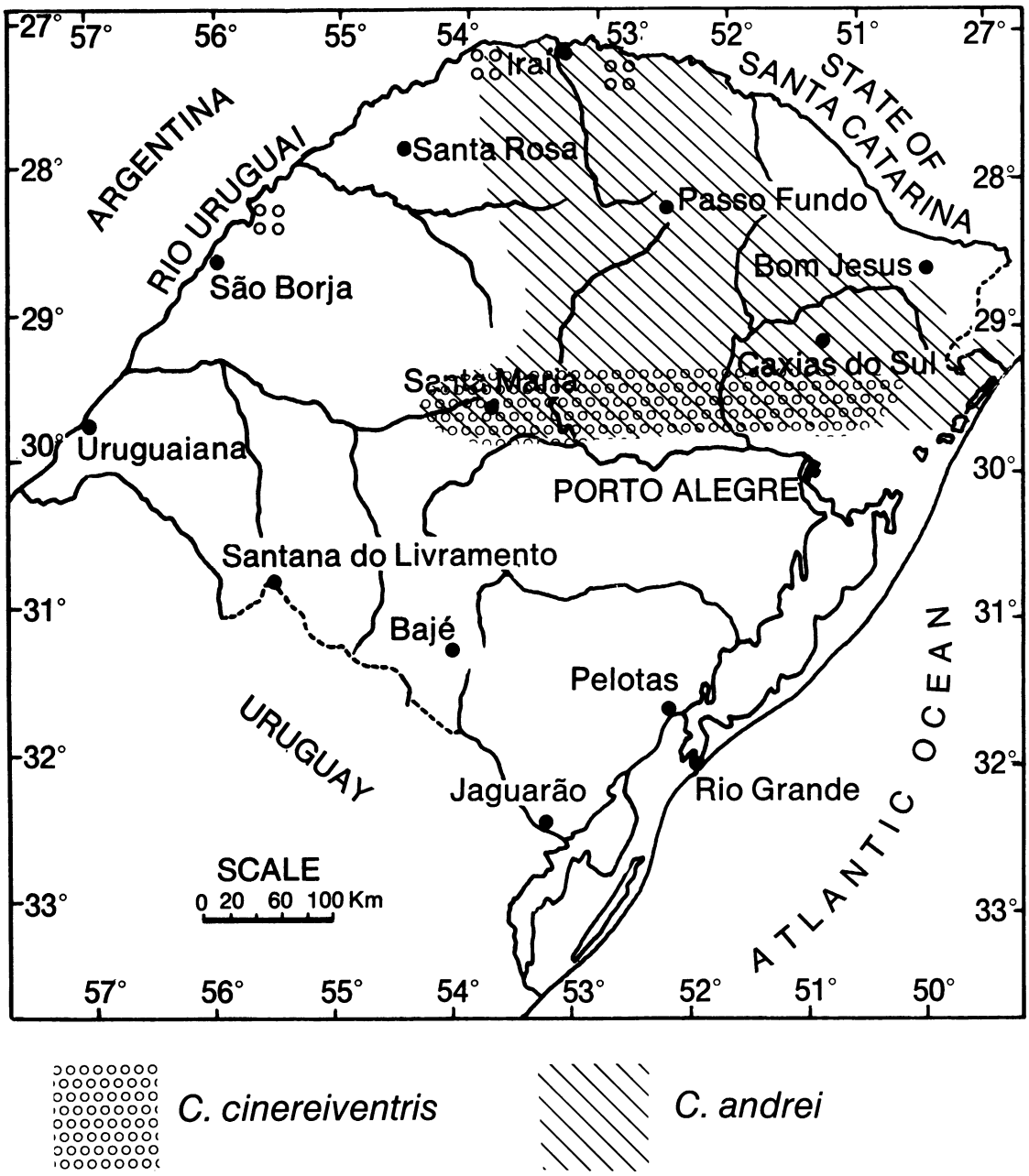
BEHAVIOR: Voss and Sander (1980) reported this species feeding on fruits of *figuerão-brabo* (*Ficus diabolica* Hert.).

SPECIMENS: MCN: 269, 884–889*. MN: 18131–18135. AMNH: 314172–314186, 321822–321826, 813004–813005*.

Thalurania glaucopis
Map 98

Violet-capped Woodnymph
Beija-flor-de-fronte-violeta
(Violet-browed Flowerkisser)

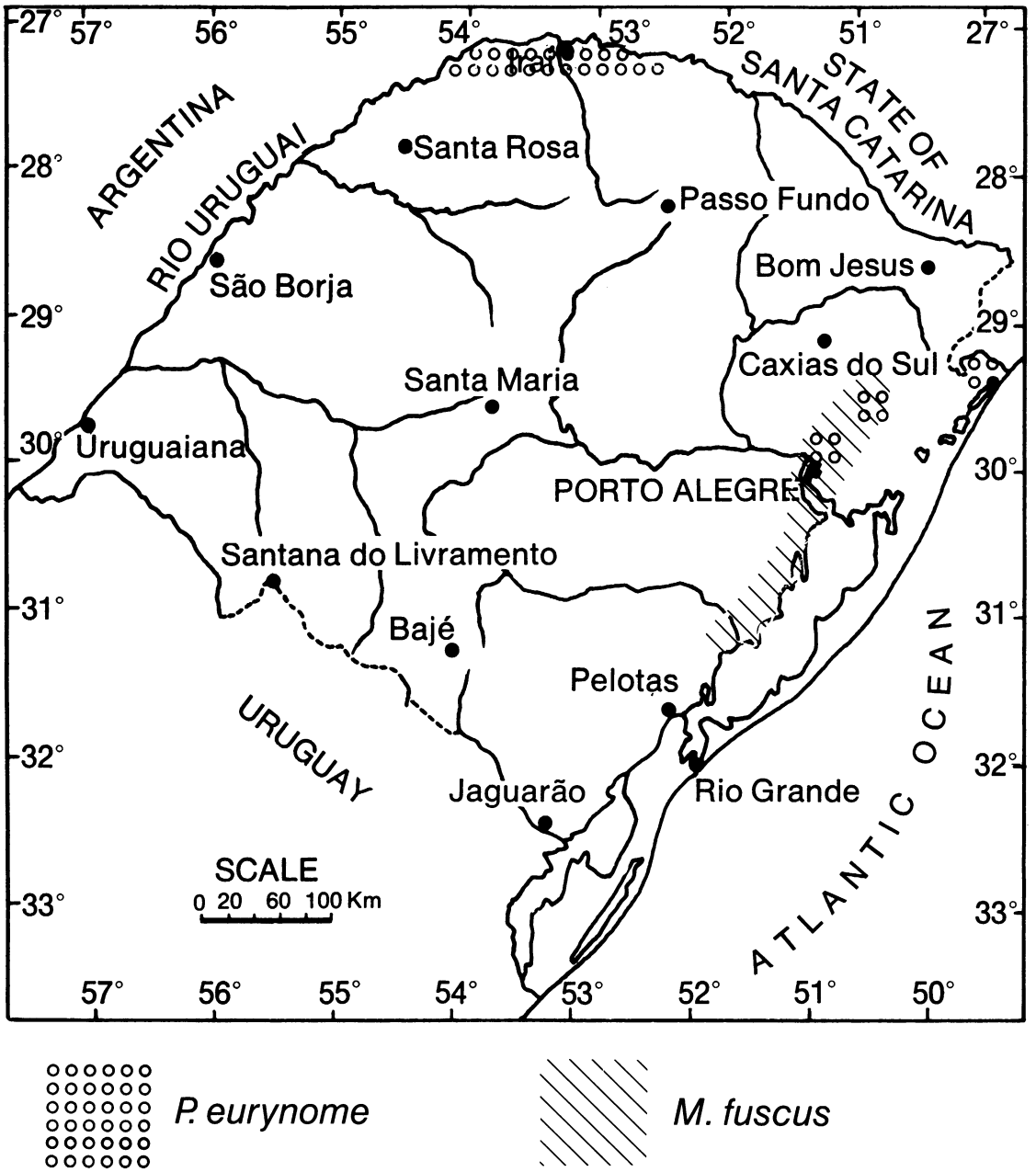
DISTRIBUTION AND STATUS: Moderately common resident of E end central trough,



MAP 95. Geographical distribution of the two species of *Chaetura* found in Rio Grande do Sul.

along northern littoral, and in extreme N. Scarce at top of escarpment. One record for southern hills near Santana da Boavista. More common in winter at zoo, Sapucaia do Sul (Voss, 1977b) where it feeds on *benção-de-deus-arbórea* (*Malvaviscus penduliflorus*).

FIELD MARKS: Moderately long, forked tail; violet forecrown.

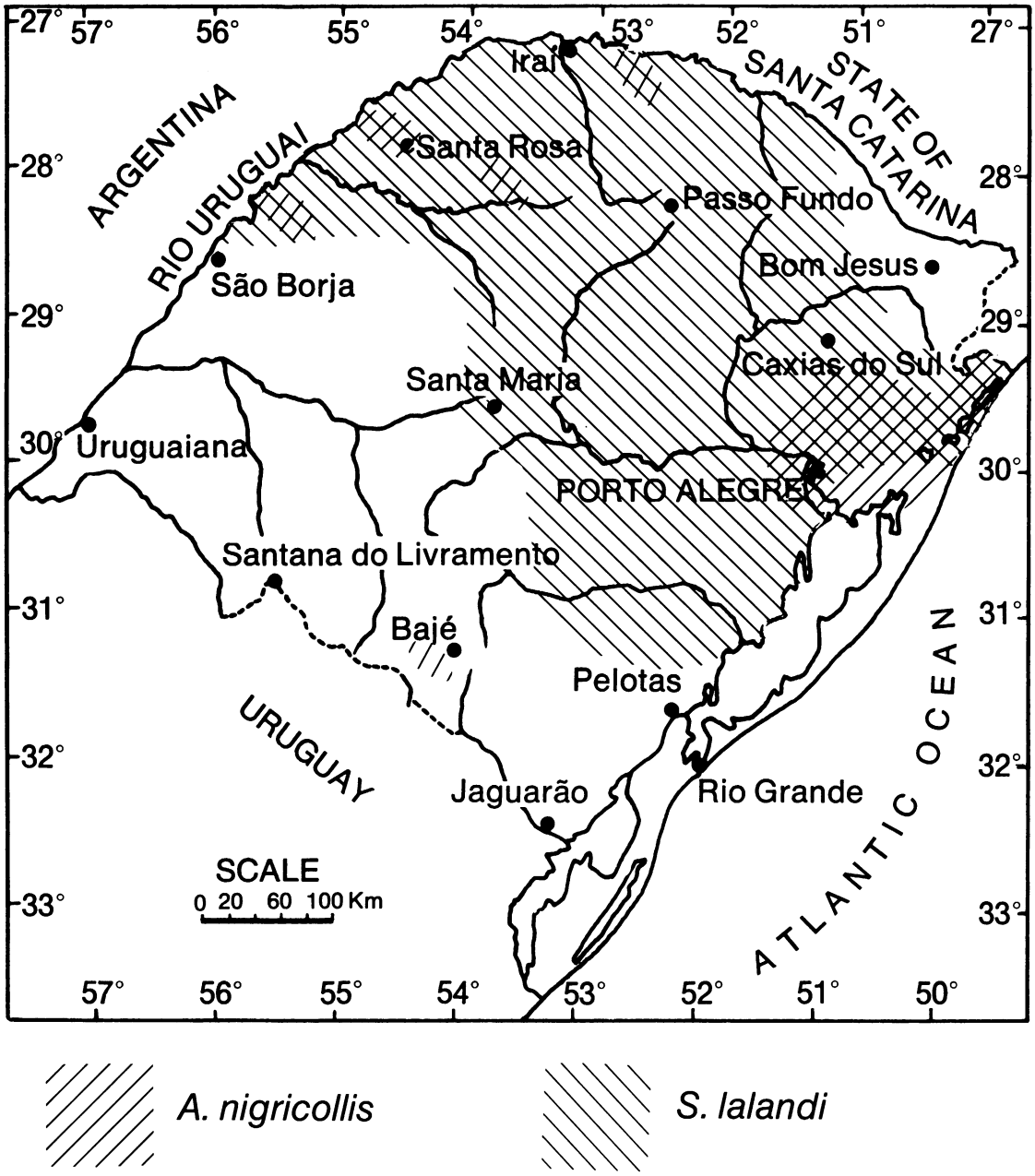


MAP 96. Geographical distribution of *Phaethornis eurynome* and *Melanotrochilus fuscus* in Rio Grande do Sul.

SIZE: Three males (two sexed by plumage): 110–121 mm, 4.5–5 gr. Three females (two sexed by plumage): 100–108 mm, 3.5–4 gr.

SOFT PART COLORS: Tarsus reddish brown to black; bill black; iris dark.

BREEDING: Male and female collected Sep-



MAP 97. Geographical distribution of *Anthracothorax nigricollis* and *Stephanoxis lalandi* in Rio Grande do Sul.

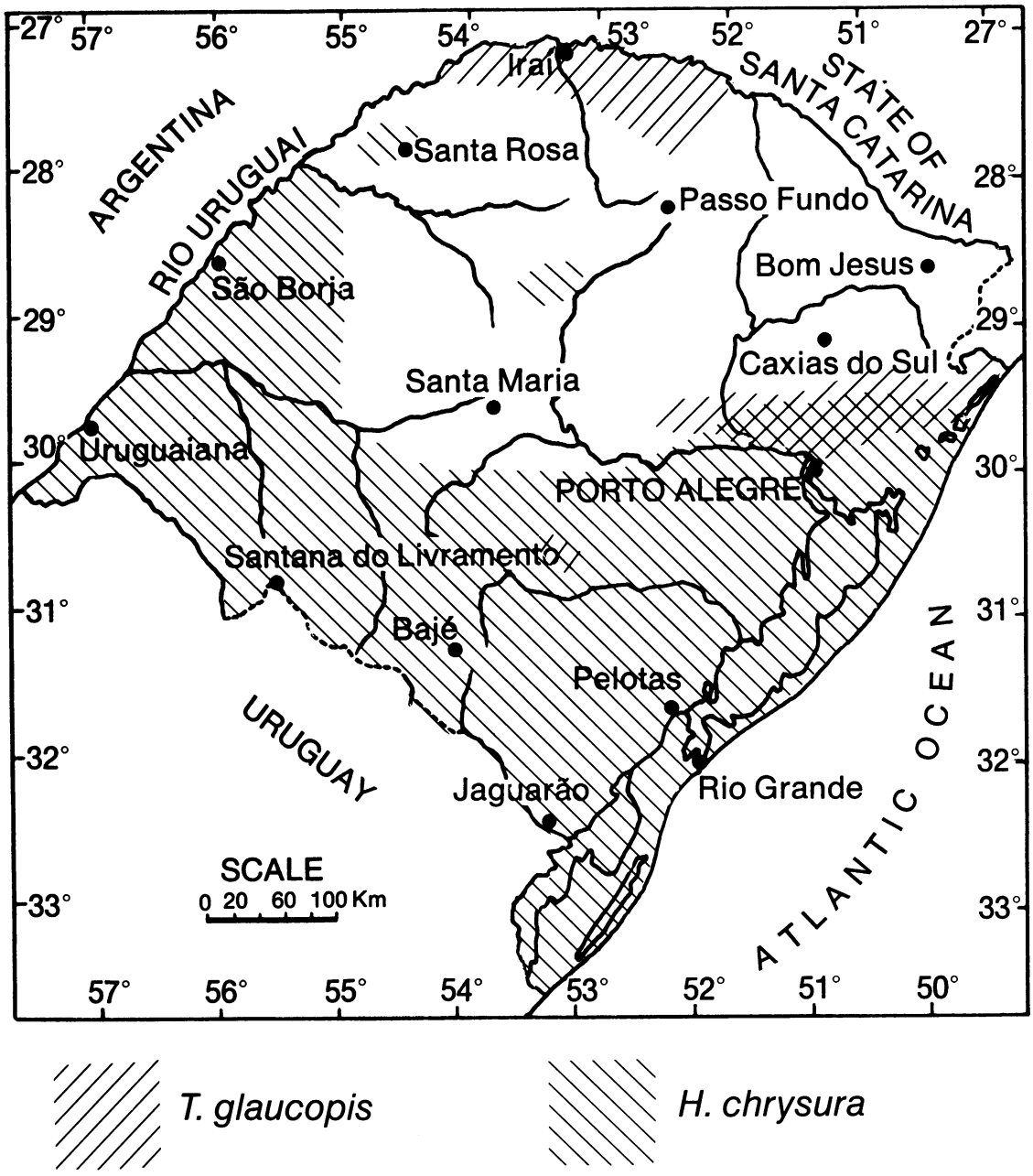
tember 18, 1971 and September 26, 1975 had inactive gonads, as did two males collected April 20, 1972.

SPECIMENS: MCN: 871–877*, 908*. USNM: (alcohol) 505198–505200*. AMNH: 314107–314117, 314171, 813006–813008*.

Hylocharis chrysura
Map 98

Gilded Hummingbird
Beija-flor-dourado
(Gilded Flowerkisser)

DISTRIBUTION AND STATUS: Common to



MAP 98. Geographical distribution of *Thalurania glaucopis* and *Hylocharis chrysura* in Rio Grande do Sul.

abundant resident of scrub, forest edges, fencerows, espinilho, in E end of central trough, littoral except northern tip, across S, W of 55°W, with rare occurrences in planalto.

FIELD MARKS: Coppery tail; orange-red bill with black tip.

SIZE: Three males: 98–102 mm, 4.5–5 gr.

SOFT PART COLORS: Tarsus black; bill orange-red with black tip, iris dark.

VOICE: (R) Extremely high-pitched, prolonged series of brief, rapidly repeated squeaks: "ee ee ee ee ee ee ee. . . . ," tending

slightly down scale near end. Also even higher-pitched squeaks delivered in series of short bursts, individual squeaks combining to produce single, wavering phrase.

BREEDING: Voss (1977b) reported young at end of September 1975 at zoo, Sapucaia do Sul. On October 12, 1972 N of Mostardas nest about 12 m high in *Ficus* sp. tree, on top of horizontal branch about 13 mm thick, was bound to branch by few vegetable fiber bindings fixed with spider web, with structure itself of white vegetable down, covered on outside and rim with lichen. Exterior diameter of nest about 45 mm, interior diameter about 23 mm, depth of bowl 20 mm, thickness of wall at rim 11 mm; contained two eggs with embryos. On February 15, 1974 at Granja Quatro Irmãos juvenal was fed with violent pumping action by adult on bare limb of bush.

BEHAVIOR: At Garruchos on October 22, 1975 two apparent males were each singing vigorously only 3 m from each other, indicating possible lek. Individuals often become so covered with pollen on head and bill as to impede quick identification. One near Garruchos on January 30, 1973 had white instead of black bill from feeding on *gravatá-do-campo* (*Eryngium ciliatum*), over which it had assumed control, perching only 2 or 3 m from it and dashing out to drive away insects which approached its flower stalk. N of São José do Norte on July 26, 1981 several were feeding on eucalyptus flowers.

SPECIMENS: MCN: 890–894*. MN: 18338, 18339. AMNH: 314098–314106, 321250, 321564–321568, 321818–321821, 480509.

Leucochloris albicollis
Map 99

White-throated Hummingbird
Beija-flor-de-papo-branco
(White-throated Flowerkisser)

DISTRIBUTION AND STATUS: Common to abundant resident in much of NE, particularly along escarpment and especially on top, with occasional records in southern hills, littoral, and one in W near Santiago. Forest, gardens, principal patron of feeders in Gramado area, once with more than 30 seen in one tree near feeder battery.

FIELD MARKS: White throat and belly separated by wide green band.

SIZE: One male: 118 mm, 6.5 gr. Six unsexed: 110–118 mm, 5–6 gr.

SOFT PART COLORS: Tarsus black; bill black with base of mandible pink; iris dark.

VOICE: (R) Series of rapidly repeated but individually distinct, loud, scratchy, two or three-toned squeaks, first squeak prolonged, remainder shorter and of equal length. Also a single, hard, well-spaced rhythmic "tnk tnk tnk . . . ." constantly repeated.

BREEDING: At Morro Pelado on October 4, 1970 bird in nest about 9 m up in small tree at mid-level in forest was incubating two white eggs. One egg hatched before 2:15 P.M. October 13 and the other between 2:55 P.M. October 13 and 10:55 A.M. October 14. Young still in nest November 10, when one lifted itself off with wing fanning, but settled back as adult called stridently. At 10 A.M. November 11 nest empty but adult in immediate vicinity; young not seen. On November 3, 1978 at Aparados da Serra National Park adult was on nest in tree crotch about 9 m aboveground in forest and later brought construction material, nest not yet being fully covered with lichen. Voss (1977b) reported new wild young at end of March 1975 at zoo, Sapucaia do Sul.

BEHAVIOR: At feeders containing one part sugar to four parts water in Gramado, average maximum feeding of individual this species was 0.4 cc. When taking solution out of feeder, bird darts tongue in and out of feeder, appearing to lift tip of upper mandible to do so without moving center or base of bill.

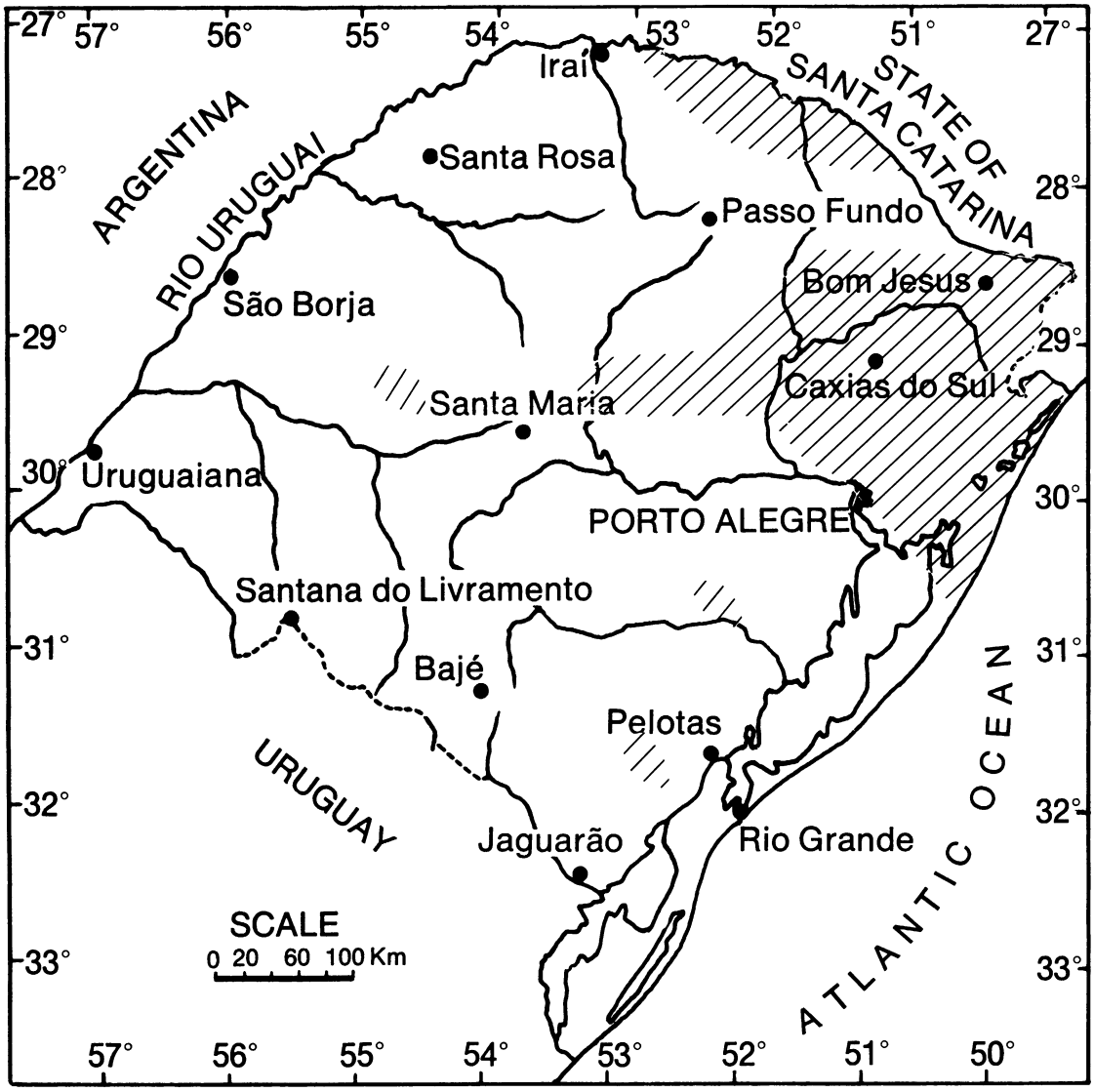
SPECIMENS: MCN: 901–907*. MN: 18019. USNM: (alcohol) 505192–505197*. AMNH: 314080–314090, 314093–314097, 813009–813010*.

Amazilia versicolor
Map 100

Versicolored Emerald
Beija-flor-de-banda-branca
(White-streaked Flowerkisser)

DISTRIBUTION AND STATUS: Uncommon, so far registered only in central trough near escarpment and around to Tôrres. Utilizes open areas with trees, found in all months except April and May. *Amazilia v. versicolor.*

FIELD MARKS: White streak running down center of throat and breast, bordered by green.



MAP 99. Geographical distribution of *Leucochloris albicollis* in Rio Grande do Sul.

SIZE: Two males: 96–98 mm, both 4 gr.

SOFT PART COLORS: Tarsus blackish; bill black, proximal two-thirds of mandible pale orange; iris dark.

VOICE: (R) Series of high-pitched, continually repeated but irregularly spaced, harsh "tseets's."

BREEDING: Males collected October 1 and 2, 1975 had only slightly enlarged testes.

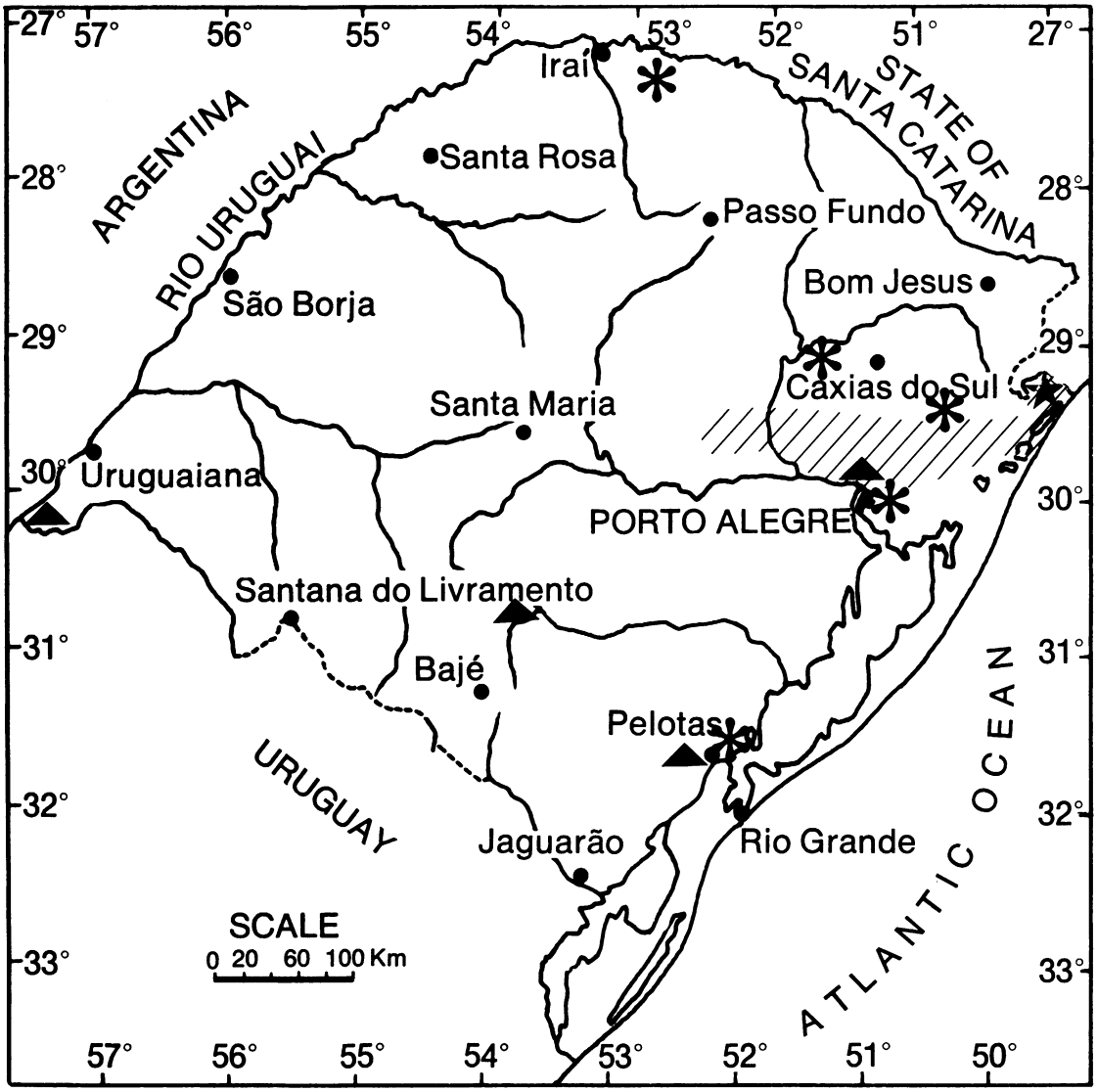
BEHAVIOR: Eucualyptus flowers are one item of diet.

SPECIMENS: MCN: 895–896*. AMNH: 314169, 314170, 813011*.

Amazilia fimbriata
Map 100

Glittering-throated Emerald
Beija-flor-garganta-verde
(Green-throated Flowerkisser)

DISTRIBUTION AND STATUS: Known in state from only two specimens collected near



MAP 100. Geographical distribution of two species of *Amazilia* and of *Heliomaster furcifer* and *Calliphlox amethystina* in Rio Grande do Sul.

Tôrres on September 29, 1975 (Belton, 1978a). *Amazilia f. tephrocephala.*

FIELD MARKS: Underparts green except for white belly.

SIZE: One male: 113 mm, 6 gr. One female: 102 mm, 5 gr.

SOFT PART COLORS: Tarsus dark grayish pink or grayish red; maxilla brown; mandible pink with brown tip; iris dark.

BREEDING: Gonads of pair collected September 29, 1975 only moderately enlarged.

BEHAVIOR: Collected pair feeding on eucalyptus flowers.

SPECIMENS: MCN: 899–900*.

Aphantochroa cirrhochloris

Sombre Hummingbird
Beija-flor-cinza
(Ashy Flowerkisser)

Rare. Kaempfer collected specimen near Tôrres on November 2, 1928 and Ruschi (1956) collected one near Porto Alegre on July 3, 1956 in citrus flowers. I believe I saw an individual of this species on island in Rio Jacuí delta near Porto Alegre on November 19, 1975.

Clytolaema rubricauda

Brazilian Ruby
Beija-flor-papo-de-fogo
(Fiery-throated Flowerkisser)

Specimens collected by Ihering, no date, at Taquara (Berlepsch and Ihering, 1885) and by Ruschi on July 8, 1956 N of Porto Alegre are only records for state.

Heliomaster furcifer
Map 100

Blue-tufted Starthroat
Beija-flor-de-barba-azul
(Blue-bearded Flowerkisser)

DISTRIBUTION AND STATUS: Moderately common in espinilho at W tip, rare elsewhere. Seen once, possibly twice, in Seival valley of Caçapava do Sul; collected by Ihering (1899a) at Pelotas, no date given; and specimen of July 4, 1956 reported by Ruschi (1956) from near Porto Alegre, farthest point from normal range. My observations in October, November, and March.

FIELD MARKS: Ruby throat, remaining underparts deep blue; female largest of dull-plumaged female hummingbirds in state, with long, slightly decurved, black bill.

SIZE: One male: 125 mm, 5 gr. One female: 128 mm, 6.5 gr.

SOFT PART COLORS: Tarsus and bill black; iris dark.

BREEDING: Juvenal collected in immediate vicinity of female November 13, 1977.

SPECIMENS: MCN: 881–883*.

Calliphlox amethystina
Map 100

Amethyst Woodstar
Estrelinha
(Little Star)

DISTRIBUTION AND STATUS: Scarce. A few occur regularly during spring and summer at Gramado feeders, otherwise registered once only at scattered points in NE and once without date by Ihering (1899a) at Pelotas. Ruschi (1956) reported specimen from Porto Alegre collected July 4, 1956, but other records indicate it to be summer resident. Excepting Ruschi record, earliest date September 13, latest April 11, both from Gramado.

FIELD MARKS: Smallest Rio Grande do Sul hummingbird. White spots on either side of rump.

SIZE: One female (by plumage): 81 mm, 2 gr.

BREEDING: Immature individuals appear in Gramado between late January and late March.

BEHAVIOR: Holds body virtually horizontal whether moving vertically, horizontally, or feeding; often carries tail in cocked position, flicks it while feeding. On October 13, 1973 at Fazenda da Zamoreira, I watched display when pair fussing at each other near flower on tree about 5 m high came sizzling down nearly to ground level where female perched on branch of low bush no more than 15 cm aboveground. Male then started series of pendulum flights, swinging some 8 m to either side above her. His wings constantly made usual buzzing sound, but each time he passed her he made four much louder noises, apparently with wings, and a third kind of sound, apparently vocal. After 10 or 12 round trip pendulum swings, female suddenly flew off and male disappeared.

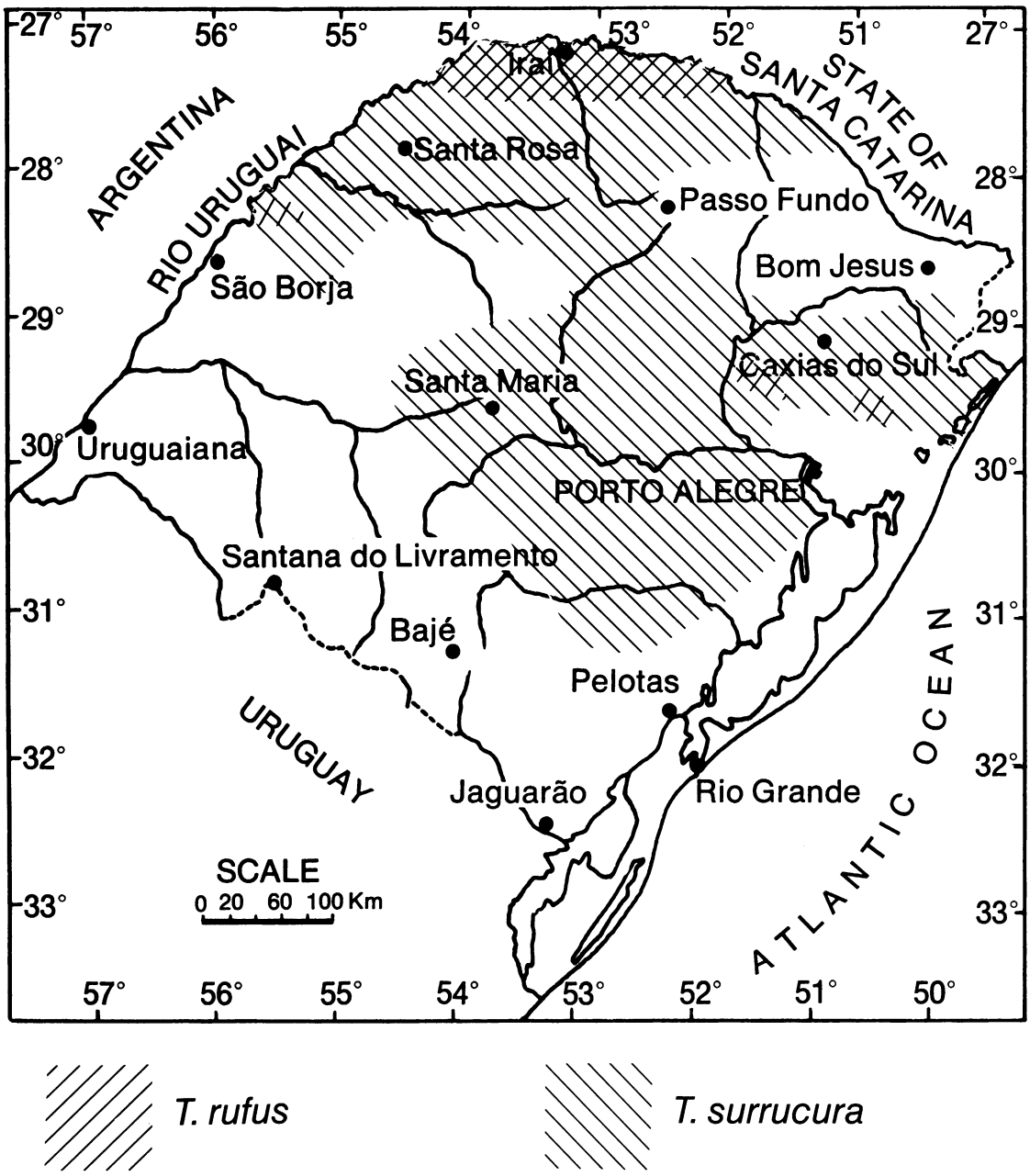
SPECIMENS: MCN: 897*. AMNH: 314201.

FAMILY TROGONIDAE

Trogon rufus
Map 101

Black-throated Trogon
Surucuá-de-barriga-amarela
(Yellow-bellied Trogon)

DISTRIBUTION AND STATUS: Scarce resident



MAP 101. Geographical distribution of the two species of *Trogon* found in Rio Grande do Sul.

presently found only in forests of extreme N and near Garruchos. Ihering (1899a) obtained it near Taquara, while Gliesch (1930) reported a "yellow surucuá" from Poço das Antas he labelled "*Trogon viridis* ?" which must have been this species. *Trogon r. chrysochloros.*

FIELD MARKS: Male green, female brown, both with yellow bellies.

SIZE: One male: 265 mm, 57 gr. Two females: 275–297 mm, 54–58 gr.

SOFT PART COLORS: Tarsus feathered black, toes gray; bill yellow-green to olive; iris (one female) brown.

VOICE: (R) Moderately high-pitched series of identical hollow-sounding "wheeeu's," the calls individually more drawn out and leisurely than those of *T. surrucura.*

BREEDING: Male collected September 20, 1971 had moderately enlarged testes; two females collected September 15, 1971 and May 20, 1972 had inactive ovaries.

SPECIMENS: MCN: 910–911*. AMNH: 314228, 314229, 813012*.

Trogon surrucura
Map 101

Surucua Trogon
Surucuá-variado
(Varied Trogon; also called *Pavó* by many country people)

DISTRIBUTION AND STATUS: Common resident in most of state NE of line between Canguçu and Garruchos, but no recent records for northern littoral, and some gaps exist, especially in high NE. Forests. *Trogon s. surrucura.*

FIELD MARKS: Male: blue head and breast, green back; female blackish; both have red belly. Immatures have varying amounts of gray on belly.

SIZE: Two males, 282–287 mm, 72–78 gr. One female: 276 mm, 70 gr.

SOFT PART COLORS: Tarsus feathered black, toes gray; bill light gray to greenish gray; iris brown; eye ring orange. Some immatures and females have white eye ring.

VOICE: (R) Moderately high-pitched series of identical, short "quiow's," except final one of series sometimes is simple "coe." Also a rattle, like that of woodpecker pecking especially resonant piece of wood. Accompanying this vocalization, tail is lifted from vertical to almost horizontal in rhythmic, pulsating movement. At Nonoai Forest Reserve this was performed in presence of two females.

BREEDING: Nesting holes being dug in rotten trees at Turvo Forest Reserve on September 17 and 20, 1971 by pairs in which male and female worked alternately. Nest in use at Garruchos October 31, 1975 was dug into high cactus. Nest at Fazenda da Zamoreira had three well-advanced nestlings on December 14, 1972; another had one egg on December 17, 1974 and three eggs December 26. Male was brooding these January 2, 1975. Nests observed have been from 5 to 12 m aboveground. While digging nests, pair usually uses nearby branch for perch while resting. In excavating hole they accumulate rotted wood dust in mouths, freeing themselves of it by opening and closing bill several times. Female collected October 31, 1975 had active ovary and brood patch. Male of November 20, 1972 at Fazenda das Casuarinas had much enlarged testes, while one of December 15, 1972 had moderate enlargement.

BEHAVIOR: Pair fed on what appeared to be bark of dead, tree-sized cactus, although lichen and wooly aphids also present. One picked green blackberry on wing, later dropped it. While sunning, female on January 20, 1977 at Sete Leguas spread tail and sunny-side wing fully, fluffed out breast feathers, opened mouth wide. Species has very flexible neck, being able to turn head fully 180° so left eye can be seen on right side by observer directly behind.

SPECIMENS: MCN: 262, 912–913*. MN: 568, 569, 4302. AMNH: 44283, 314202–314216, 813013*.

[*Trogon curucui*]

[*Blue-crowned Trogon*]

Although Rio Grande do Sul is mentioned by Meyer de Schauensee (1966, 1970) as being within the range of this species, I have been unable to find any record of it here and so omit it from list.

FAMILY ALCEDINIDAE

Ceryle torquata
Map 102

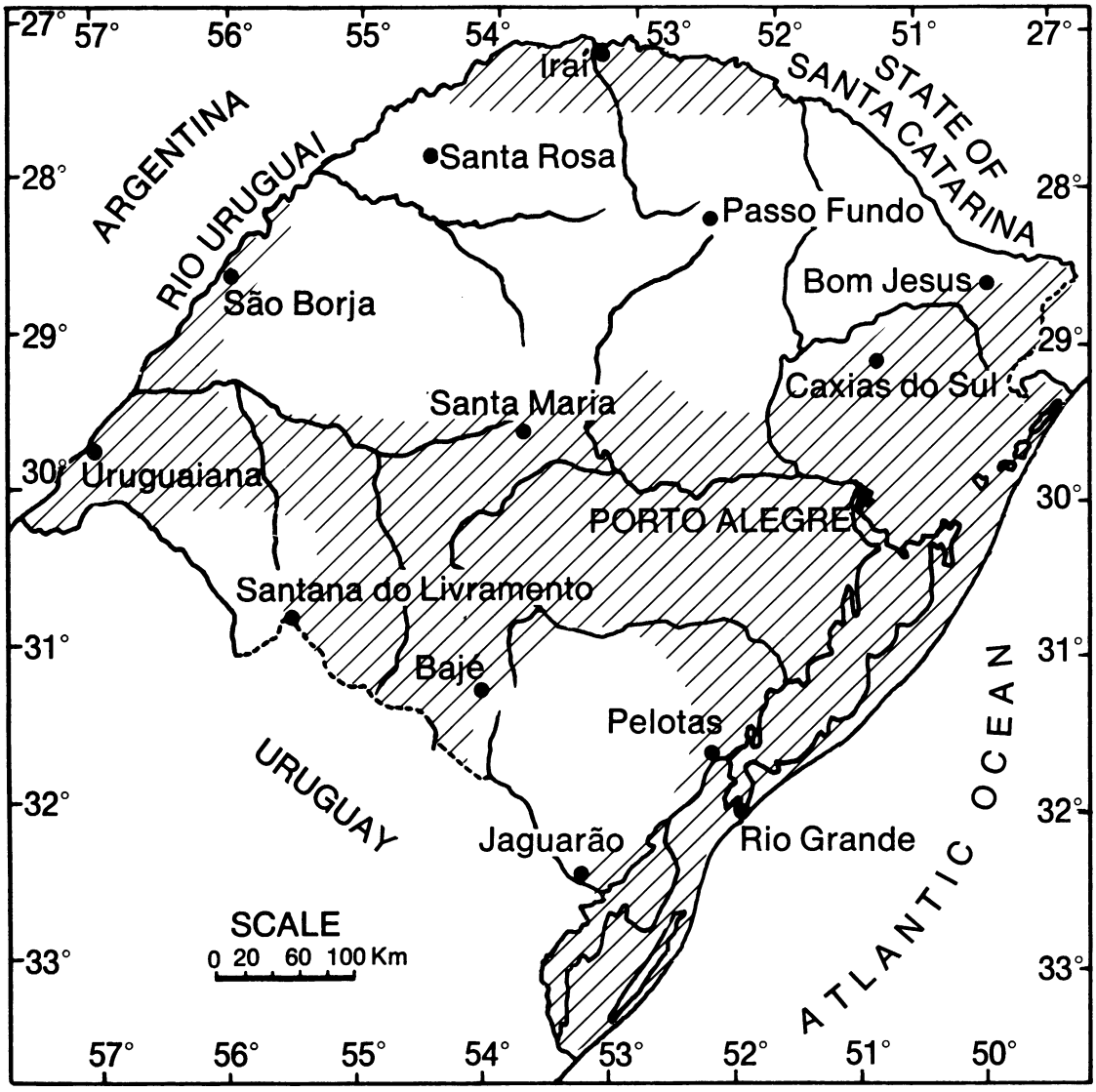
Ringed Kingfisher
Martim-pescador-grande
(Large Fishing Martin)

DISTRIBUTION AND STATUS: Common resident of marshes, lakes, rivers, in central trough, along littoral, and in W, less so in SW; uncommon in NE, not recorded in southernmost hills and in most of planalto except extreme N. *Ceryle t. torquata.*

FIELD MARKS: Very large; blue-gray above, chestnut below.

SIZE: One male: 445 mm, 355 gr.

SOFT PART COLORS: Tarsus yellowish gray; maxilla black with greenish gray at sides of base; mandible greenish gray with black tip; iris brown.



MAP 102. Geographical distribution of *Ceryle torquata* in Rio Grande do Sul.

BREEDING: Male collected May 8, 1974 had inactive testes. Display flight observed August 18, 1971.

SPECIMENS: MCN: 919*. AMNH: 321811, 321812.

Chloroceryle amazona
Map 103

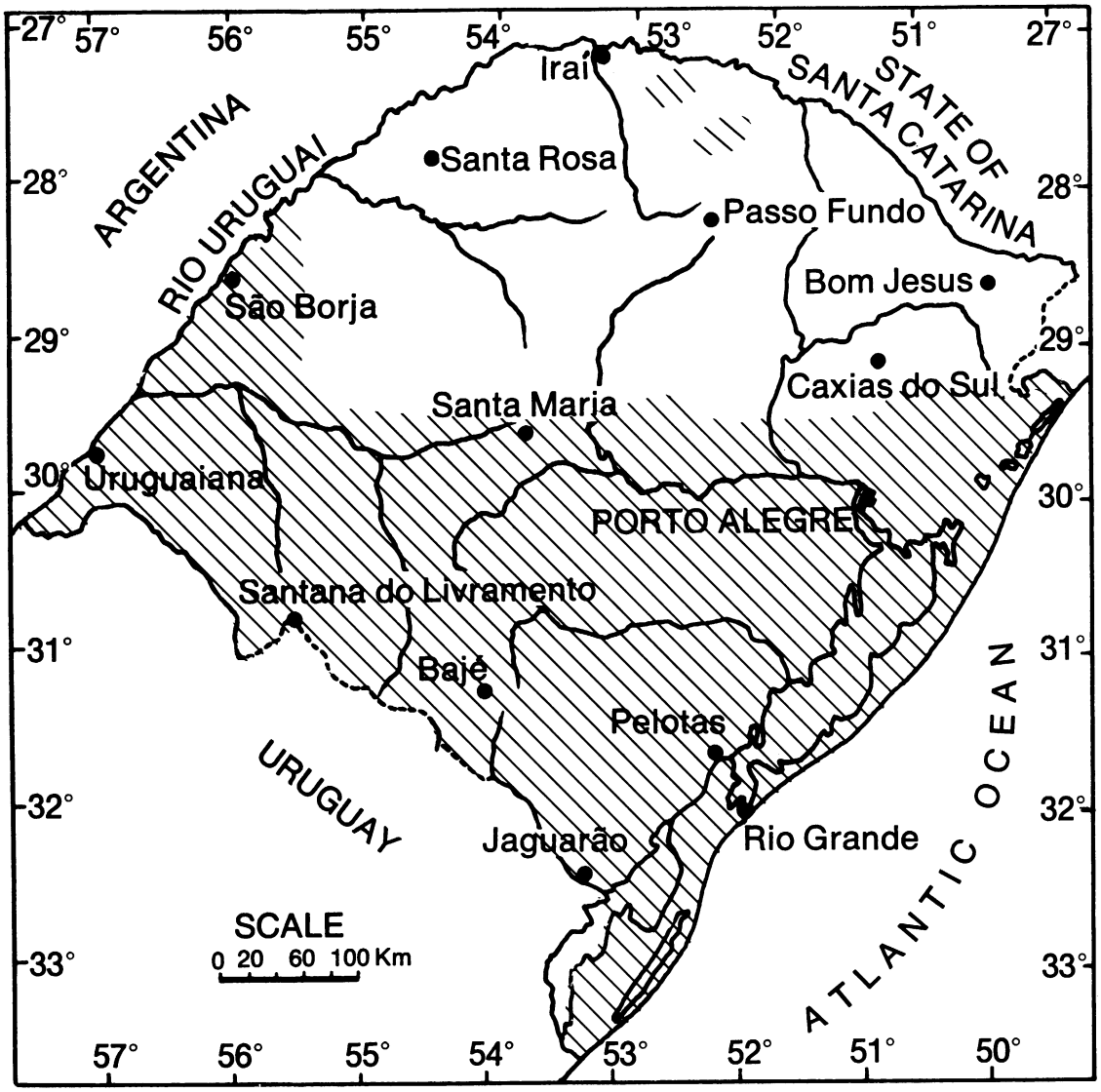
Amazon Kingfisher
Martim-pescador-verde
(Green Fishing Martin)

DISTRIBUTION AND STATUS: Common resident of streams, marshes, drainage canals, lakes, ponds, through central trough, along littoral, and across southern half of state and in W north ot Garruchos. Occasional at top of escarpment in NE, but no other planalto records except once each at Passo da Entrada and Nonoai Forest Reserve. *Chloroceryle a. amazona.*

FIELD MARKS: Large; dark green upperparts.

SIZE: One male: 306 mm, 123 gr.

SOFT PART COLORS: Tarsus and bill black; iris dark.



MAP 103. Geographical distribution of *Chloroceryle amazona* in Rio Grande do Sul.

VOICE: (R) Regularly spaced brief bursts of quick rattle, like tic-tac used on windows at Halloween, bursts sometimes speeding up so much as to run almost together.

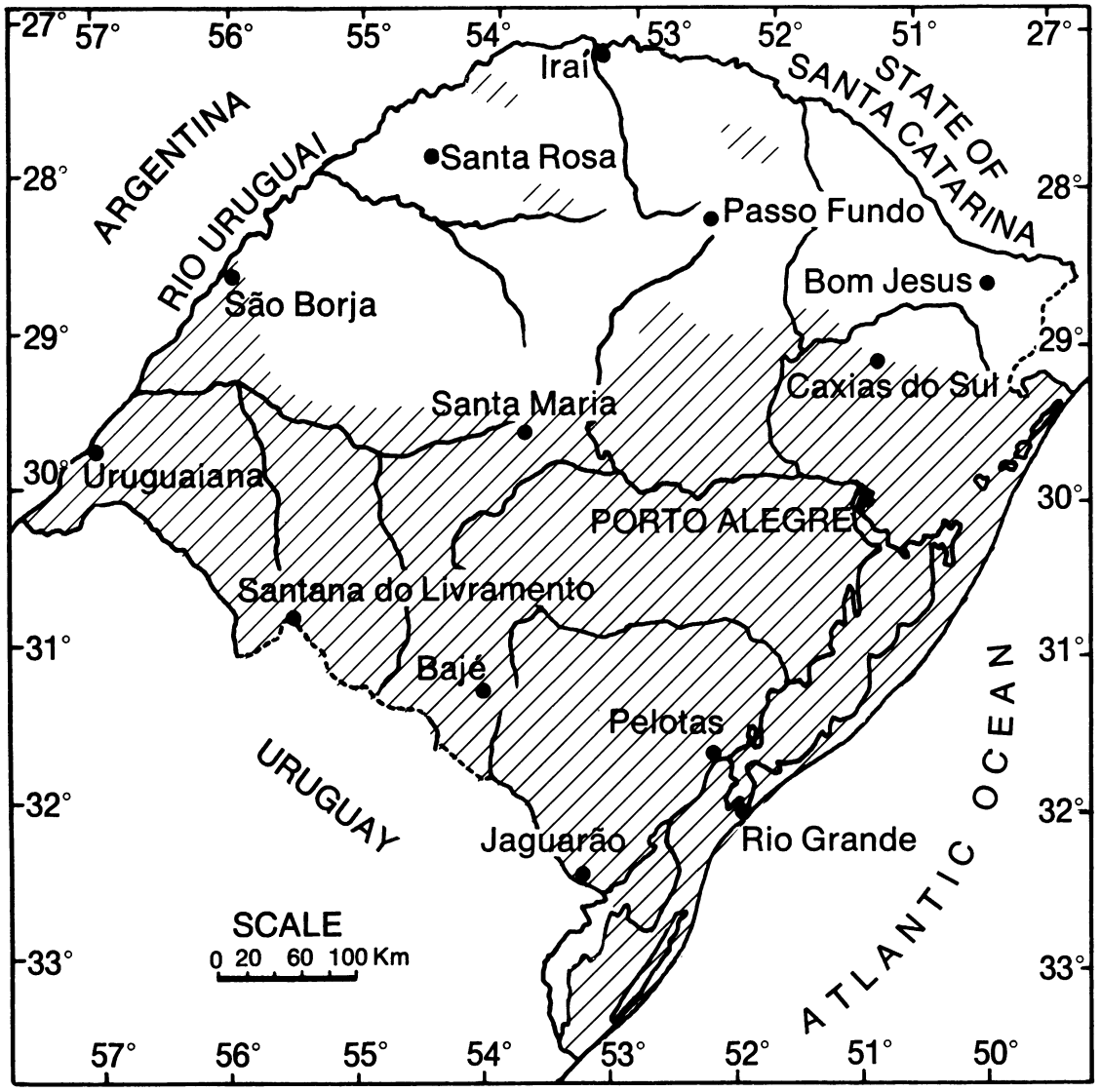
BREEDING: Adults fed nestlings in hole in face of breach in earth dam about 2.3 m above small stream on October 21, 1972 at Army Training Center near Butiá. Hole only about 3 m across breach from similar hole being utilized for nesting by *Alopochelidon fucata*. Male collected June 16, 1973 had inactive testes.

SPECIMENS: MCN: 918*. AMNH: 314008.

Chloroceryle americana
Map 104

Green Kingfisher
Martim-pescador-pequena
(Little Fishing Martin)

DISTRIBUTION AND STATUS: Common res-



MAP 104. Geographical distribution of *Chloroceryle americana* in Rio Grande do Sul.

ident, utilizing lakes, marshes, ditches, streams, including watercourses generally too small to attract larger kingfisher species, through central trough to W, along littoral, across S, and along top of escarpment, but not registered in highest portions of NE, and only at scattered points across N. *Chloroceryle a. americana.*

FIELD MARKS: Small; dark green upperparts; bill relatively much more slender, top to bottom, than on two preceding species.

SIZE: Two males (one by plumage): 198–218 mm, 31–36 gr. One female (by plumage): 205 mm, 33 gr.

SOFT PART COLORS: Tarsus and bill black; iris brown.

BREEDING: Voss (1977b) reported wild nesting at zoo, Sapucaia do Sul, with young

in late October 1975. Male collected January 5, 1976 had much reduced testes.

SPECIMENS: MCN: 916–917*. AMNH: 321251, 321252, 321813–321816, 813014*.

FAMILY MOMOTIDAE

Baryphthengus ruficapillus

Rufous Motmot
Juruva

DISTRIBUTION AND STATUS: Scarce forest inhabitant presently found only in extreme N in Turvo and Nonoai Forest Reserves. "Lagoa dos Patos" is questionable as origin for Rogers collection specimen in British Museum, although Kaempfer collected one near Tôrres. Records all between September 13 and February 8, but number insufficient to substantiate any presumption of migration. *Baryphthengus r. ruficapillus.*

FIELD MARKS: Very long tail; dull green with rufous cap and upper belly.

SIZE: One female: 405 mm, 140 gr.

SOFT PART COLORS: Tarsus gray; bill black; iris brown.

VOICE: (R) Brief burst of deep, resonant bubbling: "bubububububub."

BREEDING: Female collected September 13, 1971 had active ovary. This bird and one netted and released following day had mud caked on bills and in nares, presumably from digging nesting burrows.

SPECIMENS: MCN: 915*. AMNH: 314010, 314011.

FAMILY BUCCONIDAE

Nystalus chacuru
Map 105

White-eared Puffbird
João-bobo
(Crazy John)

DISTRIBUTION AND STATUS: Moderately common resident across N between 51°W and 55°W, S to 29°S, with two records farther S, including three individuals together near Candelária on August 10, 1971. Open country with scattered vegetation. *Nystalus c. chacuru.*

FIELD MARKS: Squat shape, bulky head, orange bill.

SIZE: Two males: 215–218 mm, 61–64 gr.

SOFT PART COLORS: Tarsus light olive-green; bill orange, tip dark; iris light grayish green.

VOICE: Loud, whistled song, distinctively attractive and far-carrying: series of about eight double whistles, alternating between low and high notes with high ones gradually descending in pitch.

BREEDING: Specimens collected September 14, 1971 and November 6, 1975 had small testes.

SPECIMENS: MCN: 914*. AMNH: 314310–314317, 813015*.

FAMILY RAMPHASTIDAE

Pteroglossus castanotis

Chestnut-eared Araçari
Araçari-castanho
(Chestnut Araçari)

Known in state from only two sightings, one at Turvo Forest Reserve on September 15, 1971 (Belton, 1973a), other at Nonoai Forest Reserve May 18, 1972. *Pteroglossus c. australis.*

Selenidera maculirostris

Spot-billed Toucanet
Araçaripoca
(Popping Araçari)

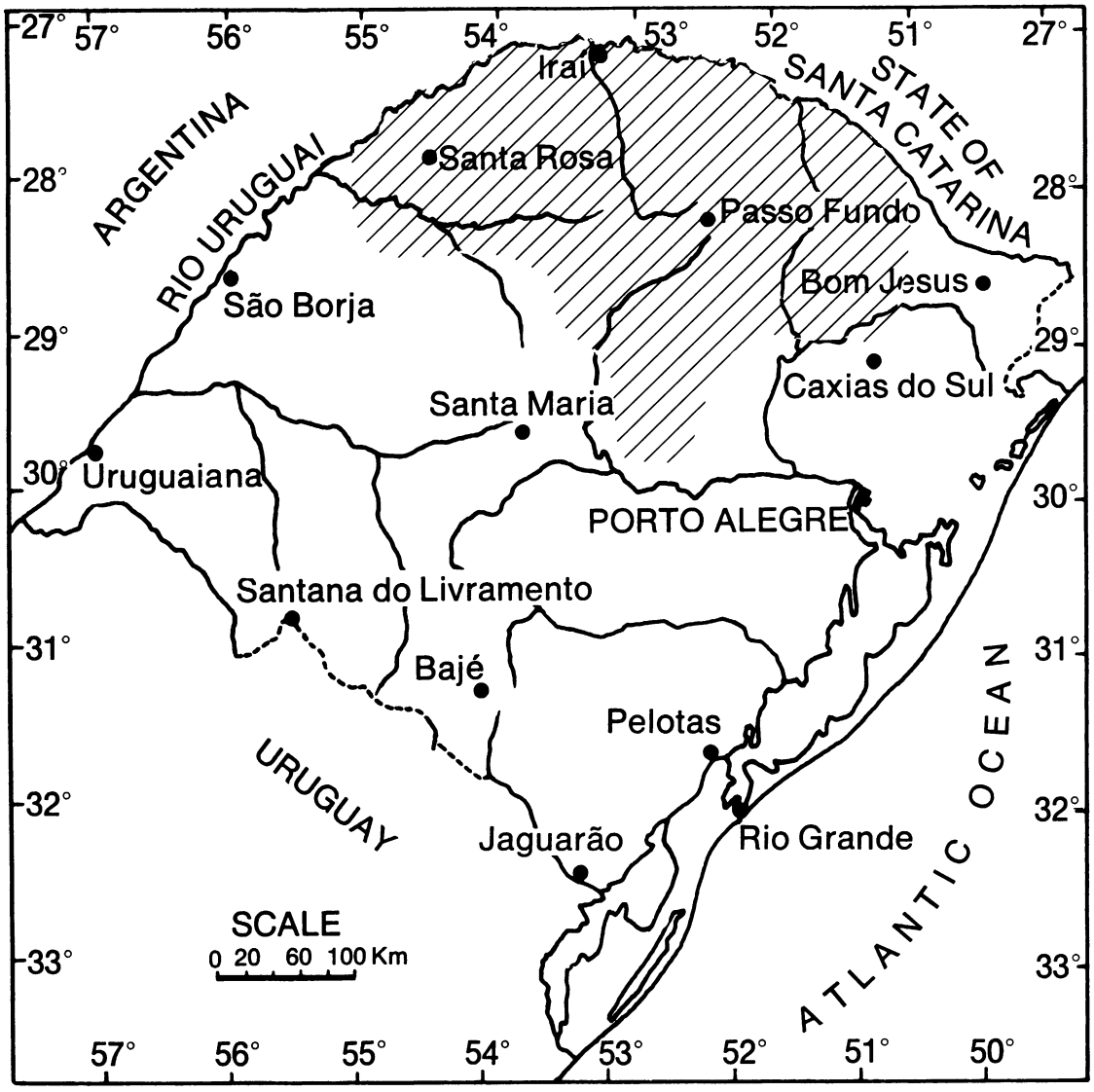
No recent records, but seemingly fairly common in former times, judging from specimens collected near foot of escarpment from Tôrres to Poço das Antas by Ihering (1899a), Schwartz (Pinto, 1938), Gliesch (1930), and Kaempfer, in April, May, June, November, and "summer" (January–March). *Selenidera m. maculirostris.*

SPECIMENS: AMNH: 314301–314303.

Baillonius bailloni

Saffron Toucanet
Araçari-banana
(Banana Araçari)

Seen in Turvo Forest Reserve on September 18, 1971 (Belton, 1973a) and at Nonoai Forest Reserve on May 19, 1972. More recently observed occasionally by Albuquerque



MAP 105. Geographical distribution of *Nystalus chacuru* in Rio Grande do Sul.

(personal commun.) during his research at Turvo Forest Reserve.

Ramphastos dicolorus
Map 106

Red-breasted Toucan
Tucano-de-bico-verde
(Green-billed Toucan)

DISTRIBUTION AND STATUS: Resident along escarpment from E of Santa Maria to Aparados da Serra National Park and in extreme and central N. Origin of one specimen in MAE at Camaquã, dated July 15, 1968 from Encruzilhada do Sul, should be viewed with caution. Formerly common, perhaps abundant, but now scarce; Ihering (Berlepsch and Ihering, 1885) collected 23 in Taquara. Occupies forests and forest edges.

FIELD MARKS: Light green bill, broad orange band on light yellow breast.

SIZE: One female: 525 mm, 400 gr.

SOFT PART COLORS: Tarsus grayish blue-green; bill various shades of green, base outlined in black, edge red on toothed area; iris greenish yellow; eye ring blue; orbital skin red.

VOICE: (R) Single, flat, somewhat rasping, nasal "aaaaaa" or "eaaaa" with rubber-bulb horn quality, but lower in tone.

BREEDING: Female collected September 3, 1972 had inactive ovary. Voss (personal commun.) saw one constructing nest in hollow plane tree, *Platanus* sp., near Sapiranga November 20, 1977.

BEHAVIOR: Much persecuted by country people, who justify actions by claim (probably correct) species active predator on nestlings of other birds. Often seen in small groups. At Nonoai Forest Reserve on September 23, 1971 I saw individual four times successively produce cherry-sized fruit from throat and place it in bill of another perched alongside. On another occasion, one erected nape feathers two or three times successively in presence another individual. Voss and Sander (1980) reported this species feeds on fruits of *cangerana* (*Cabralea oblongifolia* DC.).

SPECIMENS: MCN: 909*. MN: 5332, 5337. AMNH: 314277–314281, 314291–314294.

Ramphastos toco
Map 106

Toco Toucan
Tucanuçu
(Great Toucan)

DISTRIBUTION AND STATUS: Very scarce resident of forest canopy, edges, recently registered only in NW, upper Jacuí basin, and central southern hills. Although earlier found at several points in lowlands of E, Ihering said it was rare near Taquara. *Ramphastos t. albogularis.*

FIELD MARKS: Very long orange-yellow bill with large black spot at tip; white rump and throat.

SIZE: One female: 570 mm.

SOFT PART COLORS: Tarsus Brilliant Blue; bill: base black, culmen Deep Red, portions of maxilla near Vivid Yellow, tip of maxilla black, mandible and portions of maxilla various shades of Deep Reddish Orange; eye ring Strong Blue; skin below eye ring Light Greenish Yellow; orbital skin Vivid Orange; iris light grayish brown.

VOICE: (R) Same general character as *R. dicolorus,* but harsher—a rattly snore.

BREEDING: Female collected October 28, 1975 had active ovary.

BEHAVIOR: In flight, bill gives impression of scow being pushed by tug, for flight slow and wings beat very hard. Flocks often perch in very visible spots such as high, bare snags, where on November 16, 1974 SW of Soledade one pair in flock of eight billed each other at some length, and others shared snag with *Cyanocorax caeruleus.* Snore-like call given both perched and in flight.

SPECIMEN: MCN: 659*.

FAMILY PICIDAE

Picumnus nebulosus
Map 107

Mottled Piculet
Pica-pau-anão-carijó
(Mottled Dwarf-Woodpecker)

DISTRIBUTION AND STATUS: Common resident E of 54°30'W, from central trough N, with few scattered records in S and W. Not found on littoral. In forests, capoeira, fencerows, usually low on slender woody stems, particularly bamboo.

FIELD MARKS: Only piculet in state with streaked underparts.

SIZE: One male: 110 mm, 12 gr. Two females: 104–107 mm, one female 11.5 gr.

SOFT PART COLORS: Tarsus gray; bill black with base of mandible gray; iris dark.

VOICE: (R) Series of high-pitched, weak, single short squeaks, evenly spaced. Juvenal apparently calling for food on January 18, 1979 at Aparados da Serra National Park voiced several series of three such squeaks. Tapping pattern: slight pauses between rapid series of two, three, or four taps, often very loud for size of bird due to predilection for dead bamboo.

BREEDING: Female collected October 7, 1973 and two males of August 16 and January 24, 1972 all had inactive gonads while ovary of female of September 24, 1972 somewhat enlarged. Voss and Scott (personal commun.) saw female feeding fledgling at

Aparados da Serra National Park January 12, 1982.

BEHAVIOR: Preference for dead bamboo stalks attracts attention to it due to noise of hammering on hollow tubes; habits otherwise inconspicuous.

SPECIMENS: MCN: 346, 434, 931–932*. MN: 5446, 32186*, 32207*. AMNH: 314422, 314423, 314425–314427, 314430, 314431, 321836, 813016*.

Picumnus temmincki
Map 107

Ochre-collared Piculet
Pica-pau-anão-de-coleira
(Collared Dwarf-Woodpecker)

DISTRIBUTION AND STATUS: Uncommon resident near E end of escarpment, common in extreme N where occasionally found downstream as far as Garruchos, in forests, scrub, capoeira, usually low on slender stalks. Regarded by Stager and by Short (1982) as race of *P. cirratus.*

FIELD MARKS: Underparts barred; ochraceous collar.

SIZE: One male (by plumage): 92 mm, 12 gr. One female (by plumage): 92 mm, 11 gr.

SOFT PART COLORS: Tarsus gray; maxilla black; mandible gray with black tip; iris dark.

VOICE: High-pitched whistle. Tapping pattern: (R) similar to *P. nebulosus,* but slower.

SPECIMENS: MCN: 933*. MN: 5464, 32196*, (WB)1829*. AMNH: 314415–314417, 314424, 314428, 314429.

Picumnus cirratus

White-barred Piculet
Pica-pau-anão-barrado
(Barred Dwarf-Woodpecker)

Ihering (1899a) reported that Berlepsch had written him saying he had specimen of this species from Rio Grande do Sul. No date or place of origin available. Albuquerque (1977) reported seeing one at Porto Garcia, Turvo Forest Reserve, in early January 1977. No other records.

Melanerpes (*Leuconerpes*) *candidus*
Map 108

White Woodpecker
Pica-pau-branco
(White Woodpecker)

DISTRIBUTION AND STATUS: Scarce in far NW, rare elsewhere at isolated localities W of 53°W. Resident, in tree-studded open country, forest edges.

FIELD MARKS: White head, rump, and underparts.

SIZE: One male: 280 mm, 130 gr.

SOFT PART COLORS: Tarsus greenish gray; bill black with light gray at base of mandible; iris white.

VOICE: (R) "Peeurrrrrrr."

BREEDING: Male collected September 21, 1971 had enlarged testes.

SPECIMEN: MCN: 945*.

Melanerpes flavifrons
Map 108

Yellow-fronted Woodpecker
Benedito-testa-amarela
(Yellow-browed Benedict)

DISTRIBUTION AND STATUS: Common across N, south into upper Jacuí basin. Berlepsch and Ihering (1885) reported it from Taquara. Resident in forests, open woodlands. *Melanerpes f. rubriventris.*

FIELD MARKS: Yellow brow and throat: broad red streak down center of belly.

SIZE: Two males (one by plumage): 192–200 mm, 62–64 gr. One female: 186 mm, 53 gr.

SOFT PART COLORS: Tarsus greenish gray; bill black with light gray at base of mandible; iris brown.

VOICE: (R) Very rapid "tweewetwee tweewetwee. . . . . ." In response to playback of "tweewetwee," pair gave squeaky, complaining "eeeuk eeeuk."

BREEDING: Male and female collected September 19, 1971 had active gonads.

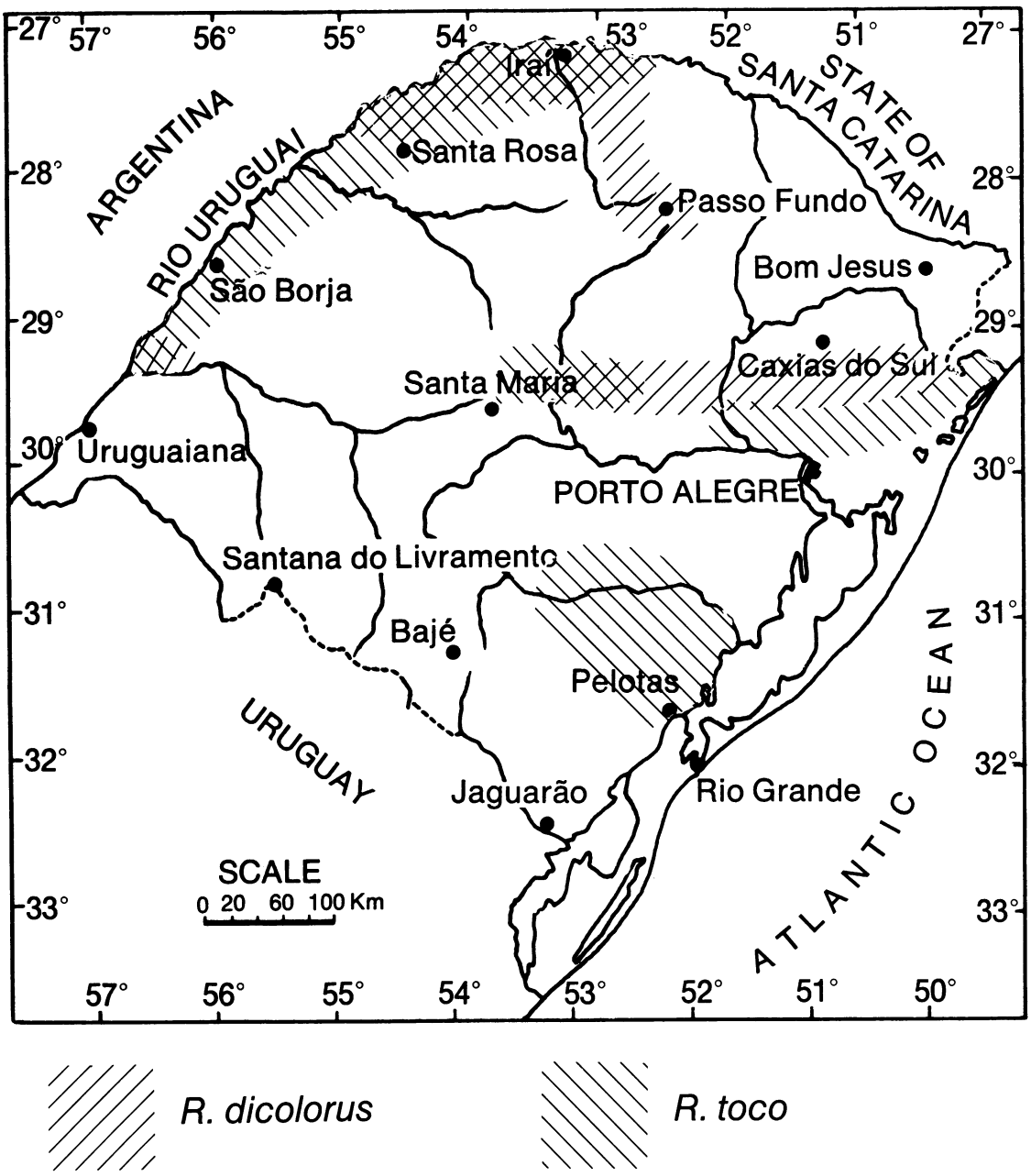
SPECIMENS: MCN: 344, 345, 922–923*. AMNH: 314350–314357, 813017*.

Picoides (*Dendrocopos*) *mixtus*
Map 109

Checkered Woodpecker
Picapauzinho-chorão
(Little Weeping Woodpecker)

DISTRIBUTION AND STATUS: Common in espinilho at western tip, only area where found to date. Presence verified in July, October, November, February, and May. *Picoides m. mixtus.*

FIELD MARKS: Small; back, tail, and wings black, prominently spotted and barred white; underparts streaked.



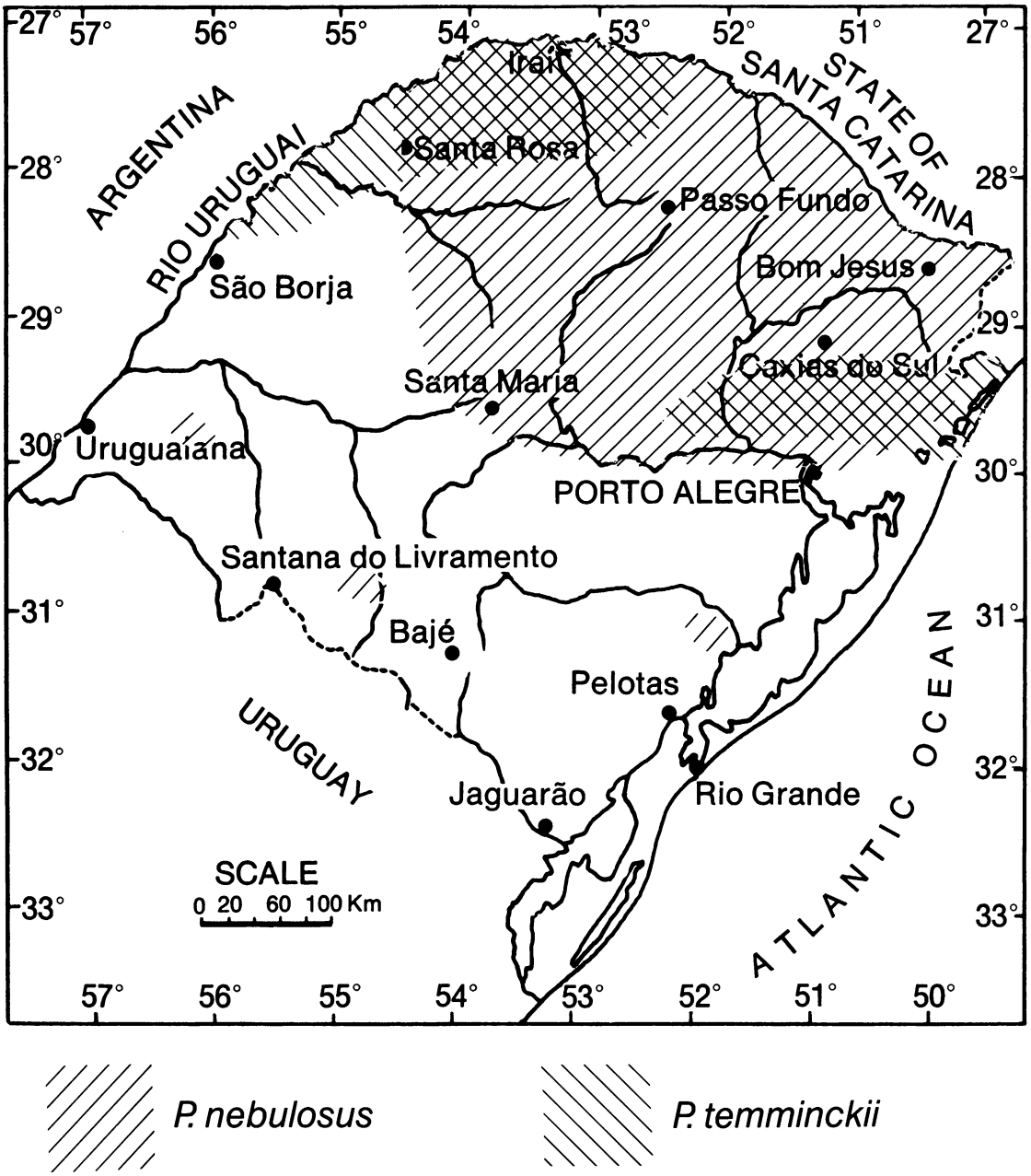
MAP 106. Geographical distribution of the two species of *Ramphastos* found in Rio Grande do Sul.

SIZE: Two males (one sexed by plumage): 150–157 mm, 33–34 gr. Three females: 153–176 mm, 32–33 gr.

SOFT PART COLORS: Tarsus gray; maxilla blackish; mandible dark gray to blackish, lighter at base; iris brown to reddish.

BREEDING: Gonads of male and female collected November 12, 1970 and of females collected February 13, 1971 and May 6, 1974 all inactive.

SPECIMENS: MCN: 920–921*. MN: 32168*, (WB)176*. AMNH: 813018*.



MAP 107. Geographical distribution of two species of *Picumnus* in Rio Grande do Sul.

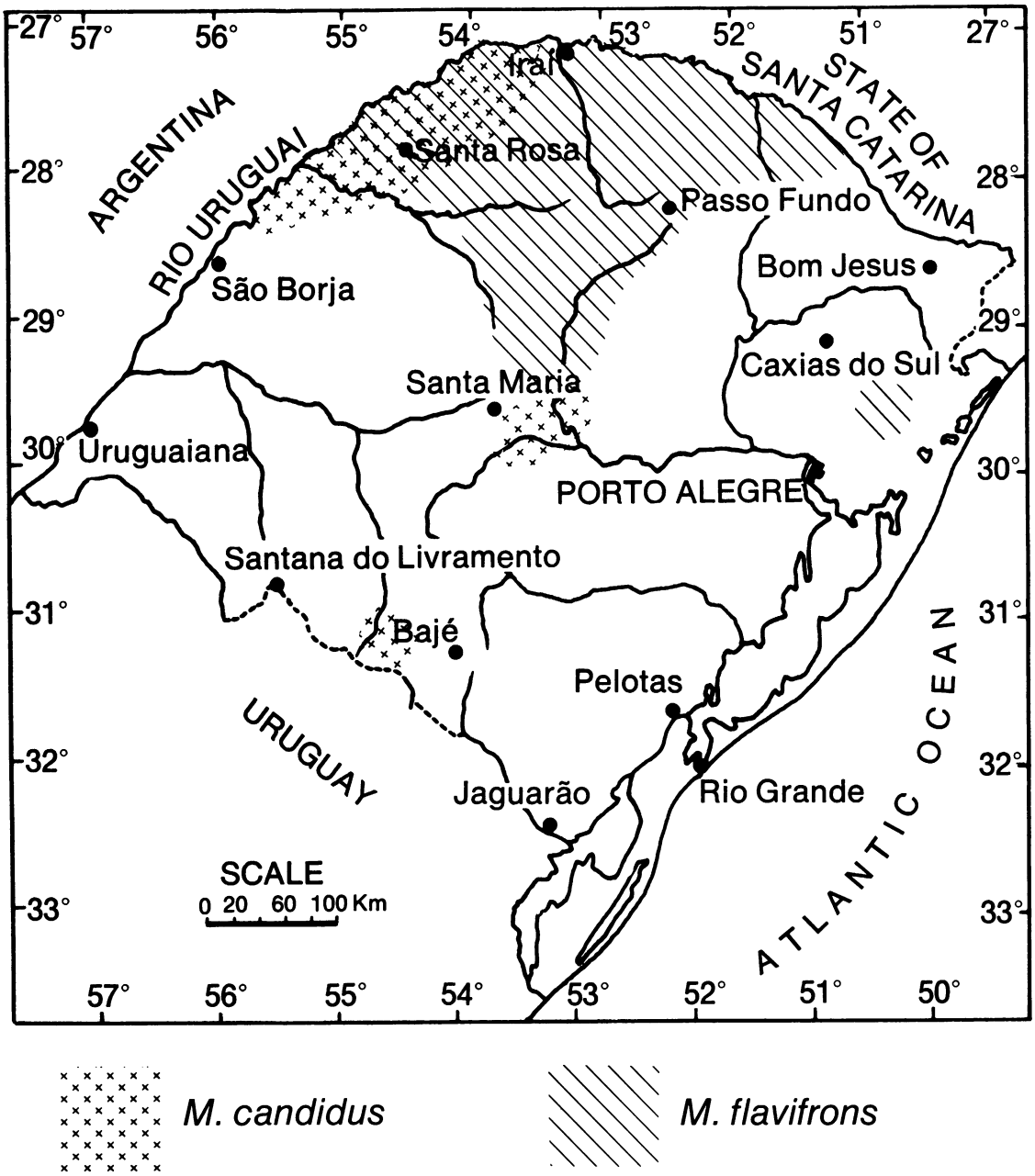
Veniliornis spilogaster

White-spotted Woodpecker
Picapauzinho-verde-carijó
(Speckled Little Green Woodpecker)

DISTRIBUTION AND STATUS: Very common resident, in forests, open woodlands, espinilho, tree-studded open areas virtually throughout, though not registered on Mostardas peninsula nor in southern tip.

FIELD MARKS: Bright olive with lighter barring above; dull olive brown, barred or speckled below.

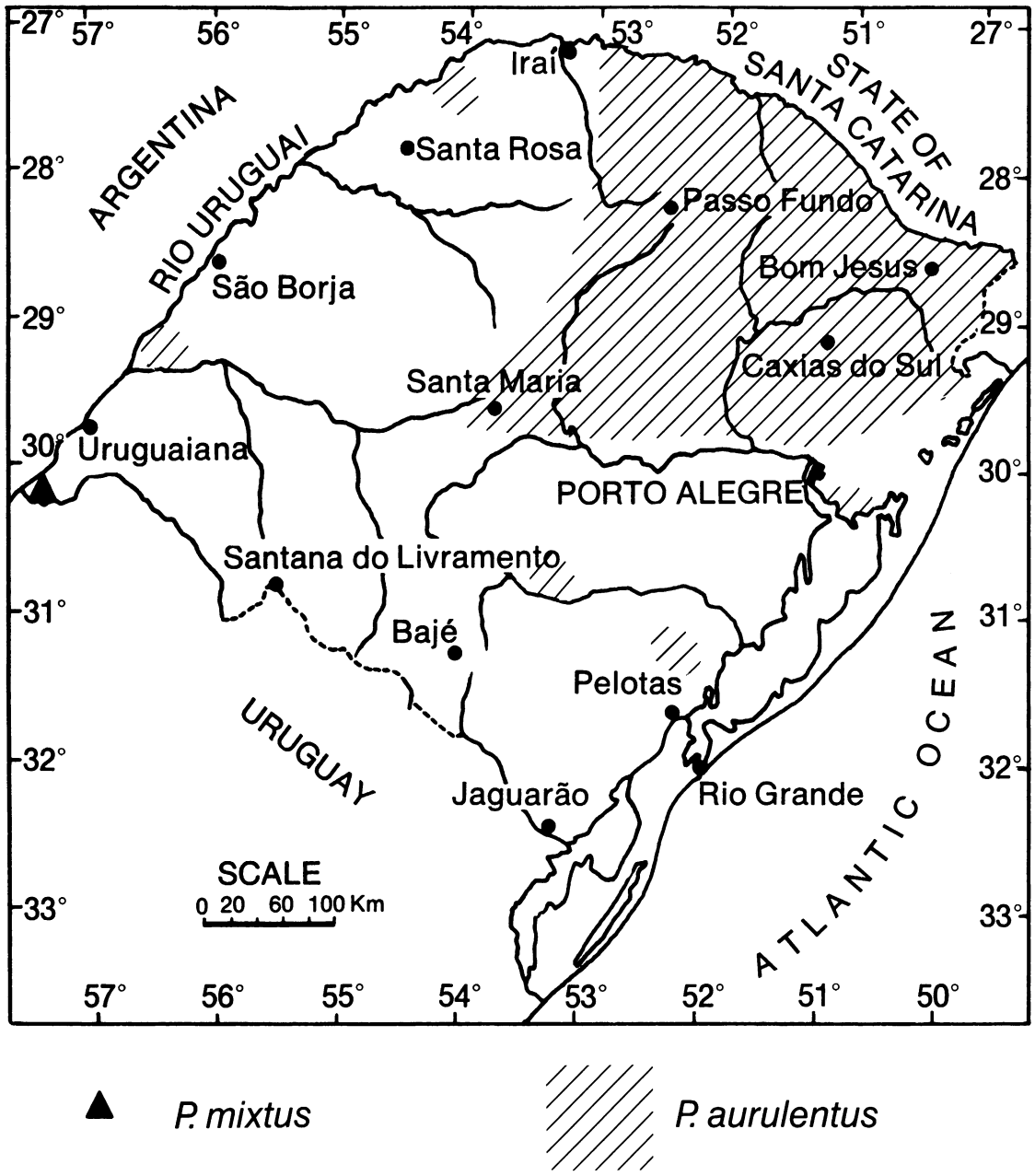
SIZE: Five males (two by plumage): 159–195 mm, 39–45 gr.



MAP 108. Geographical distribution of the two species of *Melanerpes* found in Rio Grande do Sul.

SOFT PART COLORS: Tarsus greenish gray to gray; maxilla black; mandible light gray with blackish tip; iris brown.

VOICE: (R) Sharp "chEEkit ch che che che che" or simply "chEEkit." When approaching nesting hole with food for young, one emitted harsh, short rasping "peedunk." Nestlings produced high-pitched, almost whistled chittering with considerable tonal variety, resolving, as adult approached, into "chu chee BA ba. . .chu chee BA ba. . . . . ." Signal tapping pattern: (R) Often continuous



MAP 109. Geographical distribution of *Picoides mixtus* and *Piculus aurulentus* in Rio Grande do Sul.

but irregular and desultory gentle tapping, spaced singly or in groups of from two to four with occasional pauses and isolated taps.

BREEDING: Copulation seen August 5, 1973 near Garruchos. Female was perched lengthwise on horizontal branch, facing trunk of tree with mouth wide open watching male. As he approached hopping along branch, she turned crosswise on it, he mounted, and after quick contact both flew off to other trees.

Voss saw nest construction under way on September 21, 1977. Male collected November 1, 1970 had active testes, but gonads of two males of August 29, 1975 and December 23, 1970 and female of January 29, 1971 all appeared inactive.

BEHAVIOR: On July 6, 1974 at Aparados da Serra National Park one emerged from roosting hole at 7:30 A.M. Hole entrance about 2.2 m from ground in dead snag only 95 mm in diameter. Chamber occupied whole center of snag with only 10 to 15 mm thickness around it, and was 190 mm deep from bottom of entrance to bottom of cavity. Entire cavity appeared to have been excavated by bird, there being no evidence of rot. On same day I saw individual work its way up tree trunk until at level of berry-laden branch hanging about 60 cm out. Bird jumped out to branch to feed on berries, returning to trunk to rest between feedings. Although almost always seen in wooded areas, on November 19, 1972 one was on fencepost in middle of grasslands.

SPECIMENS: MCN: 924–930*. MN: 7177, 7178. AMNH: 44090, 314371–314386, 321831–321833, 813019*.

[*Veniliornis affinis*]

[Red-stained Woodpecker]

Ihering (1899a) said Berlepsch had informed him he had specimen of this species from Rio Grande do Sul. No date or place of origin available. In the absence of more information and in view of the great distance between Rio Grande do Sul and known range of this species, I believe it should not be included on state list.

Piculus aurulentus

Map 109

White-browed Woodpecker
Pica-pau-dourado
(Gilded Woodpecker)

DISTRIBUTION AND STATUS: Uncommon resident of forests and woodlands found primarily in NE quarter with isolated records for southern hills, Itaqui, and extreme NW. Most lowland records old ones.

FIELD MARKS: Golden throat and narrow pale yellow lines above and below eye.

SIZE: One female: 215 mm, 62.5 gr.

SOFT PART COLORS: Tarsus forest green; bill blackish, whitish at base of mandible; iris dark; eye ring dark gray.

VOICE: Single, sharp, strong note. Signal tapping pattern: (R) Very rapid, regular "drum roll."

BREEDING: Female collected May 13, 1972 had inactive ovary.

SPECIMENS: MCN: 248, 940–941*. MN: 7176. AMNH: 314344–314349, 321829, 321830.

Colaptes (*Chrysoptilus*) *melanochloros*

Green-barred Woodpecker
Pica-pau-verde-barrado
(Green-barred Woodpecker)

DISTRIBUTION AND STATUS: Common and widespread resident of fields, woodland edges, tree-studded campo, espinilho, probably throughout, though records lacking for some areas of central W and NE. Short (1972, pp. 50–51) discussed hybridization of *C. m. melanochloros* and *C. m. leucofrenatus* in Rio Grande do Sul. Since his paper, several additional specimens have been obtained. In general, based on my superficial examination, these tend to confirm Short's findings that birds across N are *melanochloros* with various tendencies toward *leucofrenatus,* that specimens S along E edge of southern hills are intermediate between the two races (so are some in central trough as far W as São Pedro do Sul), and that southern birds of more inland origin increasingly show *leucofrenatus* characteristics the farther W their points of origin. Strong *leucofrenatus* characteristics can also be seen in one specimen from between São Sepé and Santa Maria in center of state, about halfway between and only 60 km away on NW–SE line from each of two typically intermediate specimens.

FIELD MARKS: Broad white streak through eye bordered by black cap and blackish malar stripe.

SIZE: Seven males (four by plumage): 276–307 mm, 120–137 gr. Eleven females (four by plumage): 276–306 mm, 114–140 gr.

SOFT PART COLORS: Tarsus gray to olive; bill black; iris reddish brown.

VOICE: (R) Single screech: "whEEo," apparently the call described by Short (1972, pp. 89–90) as "PEAH." Distress call, when

caught in net, like "whEEo" but with latter part drawn out and guttural. Also, "ker wick ker wick ker wick. . . ." each "ker" starting with hard sound as of sticks hitting together. This seems to be Short's (1972) "wicka" vocalization.

BREEDING: Voss saw one excavating nest hole in utility pole on September 24, 1975. Nesting in early November registered three times.

BEHAVIOR: Although occasionally seen on open ground, this species much more frequently found in trees or semi-wooded situations. It eats cactus fruit, and I have seen one feeding in *umbu* tree (*Phytolacca dioica*) by delicately touching bill tip to berry clumps, apparently to take juice, without eating berries themselves. I saw no ants among berry clumps, nor were there any on cactus fruits.

SPECIMENS: MCN: 938–939*. MN: 5045, 5049. AMNH: 314335–314340, 321834, 321835, 822178–822197*.

Colaptes campestris (*campestroides*)

Field Flicker
Pica-pau-do-campo
(Field Woodpecker)

DISTRIBUTION AND STATUS: One of most abundant and widespread species in state. Resident throughout, though less common in extreme N. Found in fields, woodland edges, and on fences and utility poles. *Colaptes c. campestroides.*

FIELD MARKS: Black cap, yellow breast, light rump.

SIZE: One male: 320 mm, 164 gr. Two females: 300–312 mm, 149–160 gr.

SOFT PART COLORS: Tarsus gray to grayish green; bill black; iris (male and female, live birds) Dark Reddish Brown.

VOICE: (R) Harsh, shrieking cry, constantly repeated and often voiced on wing. Also a less strident "wikwikwikwik. . . . ," Short's "wick" call (1972, pp. 95–96). In addition this species has a rarely heard, high-pitched, clear, attractive whistle, which I noted on August 2, 1974 as fluctuating between two notes in following pattern: "oo oo oo oo ee oo oo ee oo ee oo oo oo ee oo oo." This seemingly much longer but otherwise same character as whistle described by Short (1972, pp. 91–92). Nestlings at São Roberto made sizzling/bubbling sound like kettle boiling.

BREEDING: Pair seen copulating October 6, 1971. At zoo, Sapucaia do Sul, Voss found one nest of wild bird in utility pole in early October and another with young in mid-October 1975. Nest in hole in *cinamomo* (*Melia azedarach* L.) at São Roberto November 5, 1983 contained nestlings.

BEHAVIOR: Social, usually seen in small groups of four to eight. At Fazenda São Roberto individuals regularly roost overnight on top beam of cattle bath shed in narrow space between beam and peak of roof. At Fazenda da Pedreira I saw four weather rain storm by clinging hunched to tree trunk 1 m or less aboveground. Often seen perched on telephone wires.

SPECIMENS: MCN: 30, 31, 43, 46, 92, 934–937* (includes albino). AMNH: 314329–314334, 321828, 813020*.

Celeus flavescens
Map 110

Blond-crested Woodpecker
João-velho
(Old John)

DISTRIBUTION AND STATUS: Moderately common resident of forests near escarpment from upper Jacuí basin to near Tôrres. Occasional in central planalto. *Celeus f. flavescens.*

FIELD MARKS: Creamy yellow head with long crest; solid black breast and belly.

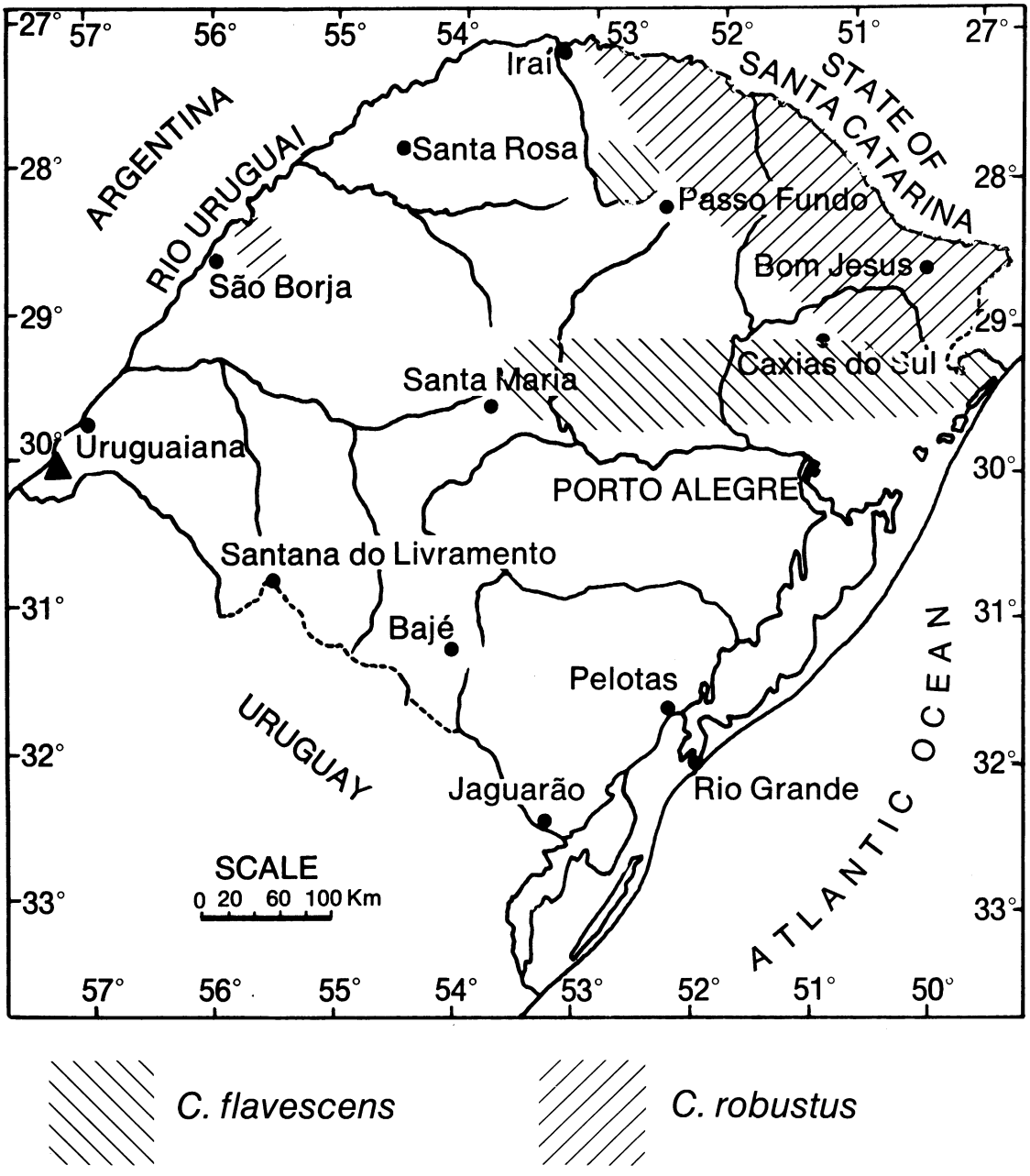
SIZE: One male: 288 mm, 144 gr. One female: 303 mm, 165 gr.

SOFT PART COLORS: Male: tarsus and maxilla gray, mandible whitish with dark gray tip; iris red.

VOICE: (R) Very loud, far carrying, high-pitched "wheep wheep. . . . .wheep wheep wheep." Also scratchy, raucous "wícket wícket."

BREEDING: Voss (personal commun.) observed wild pair making nest high in dead eucalyptus at zoo, Sapucaia do Sul, September 22, 1978. Male and female collected January 22, 1976 and April 2, 1972, respectively, had inactive gonads.

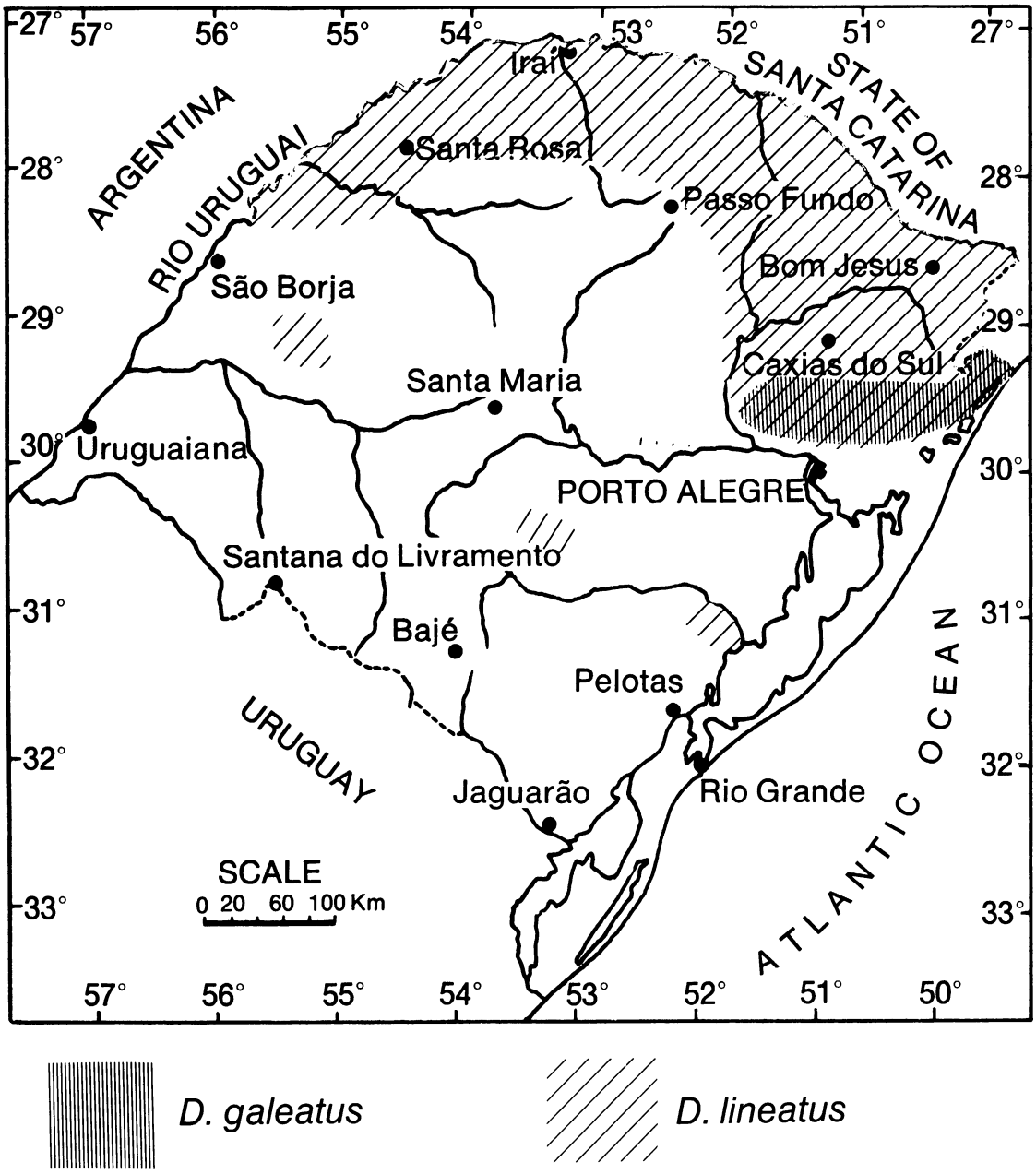
BEHAVIOR: Often seen in pairs or small family groups. Voss and Sander (1980) re-



MAP 110. Geographical distribution of *Celeus flavescens, Campephilus robustus* and *Campephilus leucopogon* in Rio Grande do Sul.

ported this species feeding on fruits of *chade-bugre* (*Casearia silvestris* Sw.).

SPECIMENS: MCN: 942–943*. AMNH: 314387–314392.



MAP 111. Geographical distribution of the two species of *Dryocopus* found in Rio Grande do Sul.

Dryocopus galeatus
Map 111

Helmeted Woodpecker
Pica-pau-de-cara-amarela
(Yellow-faced Woodpecker)

Presumably extinct in state. Ihering (1898) referred to it as rare in his day. He collected male on August 22, 1883 at Taquara. Gliesch reported one from Poço das Antas without date, presumably about 1920. Kaempfer collected female October 23, 1928 at São Pedro, near Tôrres. No more recent record. In view

information from Olrog (personal commun.) that he saw species during 1970s in area of Misiones, Argentina, due N of Turvo Forest Reserve, it should be looked for in latter area.

SPECIMEN: AMNH: 314414.

Dryocopus lineatus
Map 111

Lineated Woodpecker
Pica-pau-de-banda-branca
(White-striped Woodpecker)

DISTRIBUTION AND STATUS: Scarce resident of forests, open woodlands in N and NW; rare in NE and southeastern hills (Rincão dos Pereira). One old record for São Lourenço. *Dryocopus l. erythrops.*

FIELD MARKS: Red cap, white line through black from bill to shoulder.

SIZE: Two males: 357–360 mm, 216–264 gr.

SOFT PART COLORS: Tarsus gray; bill blackish, one specimen had gray at base of mandible; iris white.

BREEDING: Male collected September 14, 1971 at Turvo Forest Reserve had active testes. Those of one collected November 1, 1970 at Fazenda Potrerinhos only moderately enlarged.

BEHAVIOR: One foraging in bushy crown of tall, broadleaved tree on January 23, 1973 at Santo Cristo appeared to be seeking fruits. Voss (personal commun.) saw one hammering on dead eucalyptus in June 1975.

SPECIMENS: MCN: 944*. MN: 7189. AMNH: 314404–314407, 813021*.

Campephilus (Phloeoceastes) robustus
Map 110

Robust Woodpecker
Pica-pau-rei
(King Woodpecker)

DISTRIBUTION AND STATUS: Rare resident; found only at scattered locales in high NE, extreme N, and at Garruchos, in forests. One old record for escarpment.

FIELD MARKS: Most of head and neck bright red; all of back creamy.

SIZE: One female: 375 mm, 263 gr.

SOFT PART COLORS: Tarsus gray; bill ivory, culmen grayish; iris pale yellow.

BREEDING: Female collected November 2, 1970 had inactive ovary.

SPECIMENS: MCN: 946*. MN: 7079. AMNH: 314397–314403.

Campephilus (Phloeoceastes) leucopogon
Map 110

Cream-backed Woodpecker
Pica-pau-de-costas-cremosas
(Creamy-backed Woodpecker)

I have been unable to find any clear-cut evidence of the occurrence of this species in Rio Grande do Sul. However, there is strong circumstantial evidence that type specimen, collected by Auguste St. Hilaire, may have been taken near western tip of state within week or so after January 28, 1821. Jacques Vielliard (*in litt.*) examined label in Paris Museum and informed me it gives only *Brésil* as source, and date as August 1822, when St. Hilaire already back in France.

In translation (1935) of that portion his diary relating to travels in Rio Grande do Sul, St. Hilaire occasionally mentioned one of his assistants collecting bird specimens and preparing them for shipment to Paris. Contrary to his custom with botanical specimens, he never related details of what was found. After traveling down littoral of Rio Grande do Sul, St. Hilaire went through Uruguay and emerged again on January 28, 1821 at western tip of state. By February 3, 1821 he reached area NE of present city of Uruguaiana. Because the only place where proven range of this species coincides with St. Hilaire's travels is Uruguayan Dept. of Artigas, from where he crossed back into Brazil, it is reasonable to suppose he might have found specimen in immediately adjacent Brazilian area. In view of inadequacy of labelling, however, we cannot discard possibility that the specimen was collected in Artigas and shipped to Paris along with specimens collected in Rio Grande do Sul. At any rate, Pinto (1978) considered it reasonable to accept Rio Grande do Sul as its type locality, so I am including it in my state list from which I previously had removed it (Belton, 1978a).

DENDROCOLAPTIDAE

Dendrocincla fuliginosa
Map 112

Plain-brown Woodcreeper
Arapaçu-liso
(Plain Arapaçu)

Rare. Registered only at Turvo Forest Reserve and in coastal forests behind Tôrres, in

October, January, and March. *Dendrocincla f. turdina.*

SPECIMEN: AMNH: 314848.

Sittasomus griseicapillus
Map 112

Olivaceous Woodcreeper
Arapaçu-verde
(Green Arapaçu)

DISTRIBUTION AND STATUS: Common in forest and woodland, resident in most of state but not registered on Mostardas peninsula, in southern tip, nor in proximity Uruguayan border except by Silva at Cerro do Jaraú near Quaraí. Less common in W and SW. *Sittasomus g. sylviellus.*

FIELD MARKS: Only short-billed member of family in state, and except for rare and much larger *Dendrocincla fuliginosa,* only unstreaked one.

SIZE: Six males: 150–167 mm, 12.5–15 gr. One female: 156 mm, 12 gr. Two unsexed: 170–174 mm, 12–12.5 gr.

SOFT PART COLORS: Tarsus gray; maxilla brown to black; mandible light gray, usually with dark tip; iris brown.

VOICE: (R) Slow series of well-separated "weep's" moving slightly down scale while gradually accelerating. Once during this call I saw outer tail feathers held out from others and vibrated in rhythm with "weep's." Also, individual "wheep's" uttered at intervals of about one second. Display call: harsh chatter, all on one pitch but varying in intensity and speed and, when prolonged, usually reaching peak of loudness and rapidity close to end. One seen fluttering wings while chattering.

BREEDING: Six males collected between October 26 and December 3 all had active testes. Female of March 24, 1975 had inactive ovary. On November 15, 1971 one caught winged insect on tree trunk and flew off as if carrying it to nest.

BEHAVIOR: Typically works its way up tree trunk, then flies down to near bottom of neighboring tree to start again. Works trunk surfaces without much digging into bark crevices or attached plant life.

SPECIMENS: MCN: 260, 947–953*. USNM: (alcohol) 503781–503782*. AMNH: 314849–314864, 813022–813023*.

Drymornis bridgesii
Map 112

Scimitar-billed Woodcreeper
Arapaçu-platino
(Plata Arapaçu)

DISTRIBUTION AND STATUS: Uncommon espinilho resident in W tip. First found in state November 1970 (Belton, 1973a) and since seen also in July, October, February, and May.

FIELD MARKS: Conspicuously long, stout, greatly decurved bill; solid dark rufous cap above white superciliary.

SIZE: One male: 260 mm, 80 gr.

SOFT PART COLORS: Tarsus gray; bill brown; iris light grayish brown.

VOICE: Double-throated cackle. Also loud screech.

BREEDING: Male collected November 14, 1970 had only slightly enlarged testes.

BEHAVIOR: Actions this species, which often feeds on ground and retreats noisily to prominent high place in trees when disturbed, reminiscent of *Colaptes campestris.* When on ground, bill long enough and stance sufficiently horizontal so end of bill very close to surface. When agitated, head feathers erected and those of throat puffed out.

SPECIMENS: MCN: 954*. MN: (WB)274*.

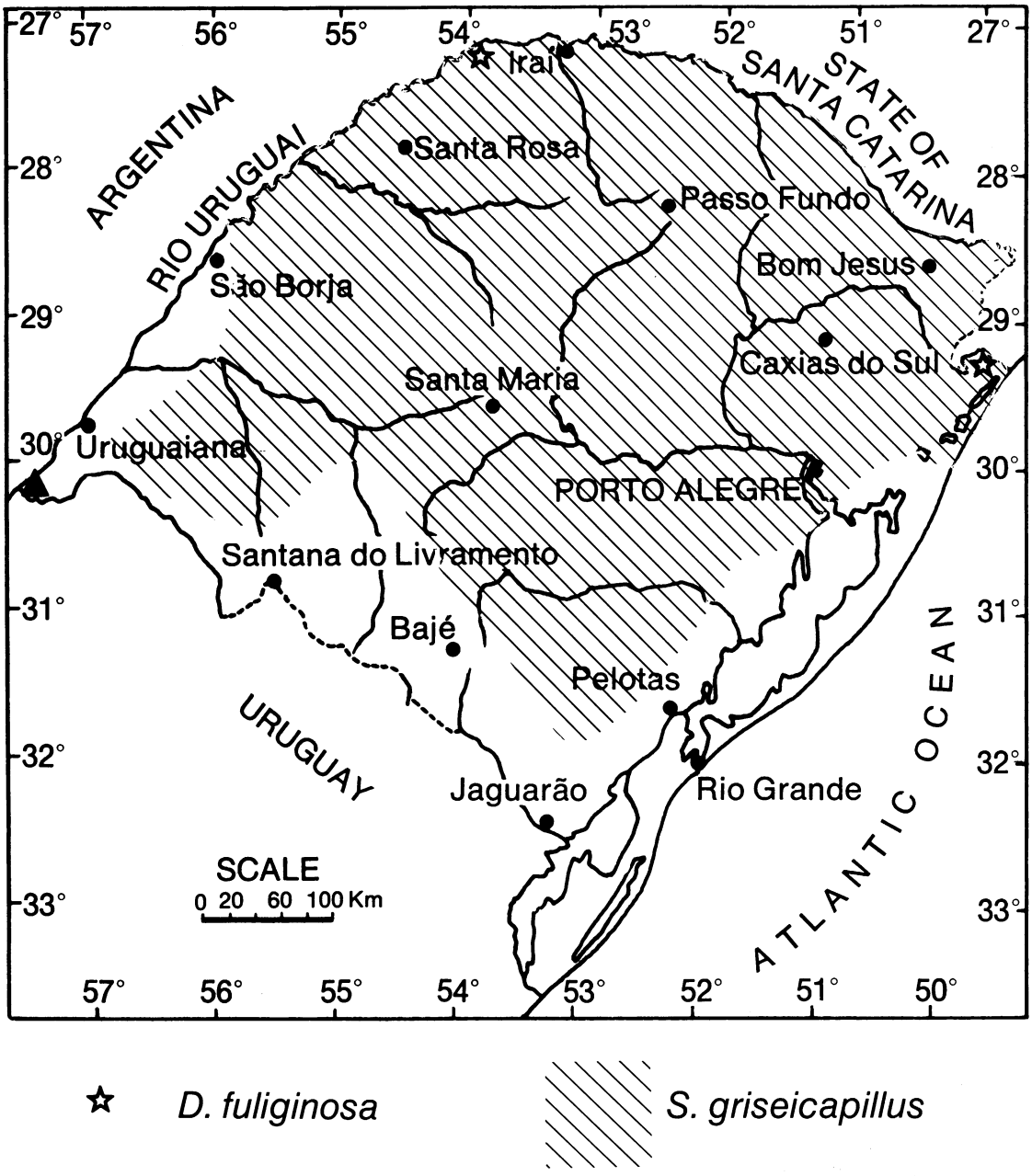
Xiphocolaptes albicollis
Map 113

White-throated Woodcreeper
Arapaçu-grande-garganta-branca
(Great White-throated Arapaçu)

DISTRIBUTION AND STATUS: Occurs N of 30°S, primarily in NE quarter near escarpment and in extreme N, but also registered in Garruchos, and formerly in Itaqui. Origin of "Camaquã" for specimen in MAE should be viewed with caution. Uncommon forest species, possibly only summer resident in view of lack of winter records. Earliest date September 15, latest May 21. *Xiphocolaptes a. albicollis.*

FIELD MARKS: Easily confused with *Dendrocolaptes platyrostris,* but throat more uniformly white or cream; bill longer, higher and much narrower.

SIZE: One male: 296 mm, 113 gr.



MAP 112. Geographical distribution of *Dendrocincla fuliginosa, Sittasomus griseicapillus* and *Drymornis bridgesii* in Rio Grande do Sul.

SOFT PART COLORS: Tarsus grayish green; bill black; iris red; orbital skin greenish.

VOICE: (R) Clear, resounding, leisurely "mc-whEER. . .mc-whEER. . .mc-whEER. . .mc-

whEER," each sound lower on scale than preceding one, series sometimes ending with throaty rattle.

BREEDING: Male collected October 31, 1970 had much enlarged testes.

BEHAVIOR: When foraging up trunk of araucarias, moves very slowly, digging behind loose, birchlike upper bark and tearing it off tree, producing constant shower of bark.

SPECIMENS: MCN: 958–959*. MN: 13915. AMNH: 314909–314919.

Dendrocolaptes platyrostris
Map 113

Planalto Woodcreeper
Arapaçu-grande
(Big Arapaçu)

DISTRIBUTION AND STATUS: Resident of forests N from vicinity escarpment and E of 54°W, and to W edge of state N of 28°30'S, with one old specimen from Itaqui and one recent record from southern hills. Usually common, but scarce near SW edge of range. *Dendrocolaptes p. platyrostris.*

FIELD MARKS: See *Xiphocolaptes albicollis.* Throat creamy, usually slightly mottled.

SIZE: Two males: 250–260 mm, 60–63 gr. Two females: each 270 mm, 68–69 gr. Four unsexed: 270–290 mm, 62–69 gr.

SOFT PART COLORS: Tarsus greenish gray; bill black, sometimes with light tip; iris brown; orbital skin yellow.

VOICE: (R) Series of rapidly repeated, staccato "week" sounds: "weekweekweekweekweek. . ." on one pitch, lasting from five to 10 seconds, sometimes rising slightly in intensity toward end. When bird excited, rapidity and length of series increases. One individual interspersed from one to several plaintive, whiny squeaks between series.

BREEDING: Male collected October 17, 1970 had greatly enlarged testes; male of December 3, 1970 had large ones.

BEHAVIOR: Occasionally feeds on ground. When working up tree trunk, usually looks well ahead and makes quick dashes to catch prey up to 1 m away. One jumped from trunk to snatch caterpillar from leaf more than 1 m above and behind it and returned to trunk in one smooth action. While foraging in bromeliads on tree, another jerked quickly from one posture to another, apparently to see down between leaves, and eventually caught and ate small frog. One released after banding hitched way up rough bark of lower araucaria trunk to point where smooth, birchlike bark began, then flew from branch to branch upward before flying to another tree.

SPECIMENS: MCN: 590, 591, 955–957*. MN: 13676, 13679. USNM: (alcohol) 503784–503787*, 314873–314882, 813024–813025*.

Lepidocolaptes angustirostris
Map 114

Narrow-billed Woodcreeper
Arapaçu-do-cerrado
(Cerrado Arapaçu)

DISTRIBUTION AND STATUS: Common resident in far W, also registered near São Pedro do Sul and at Fazenda do Valente. Open, tree-studded areas, espinilho, gallery forests. Pinto (1978) includes Rio Grande do Sul within ranges of both *L. a. angustirostris* and *L. a. bivittatus,* but all my specimens and one in MN appear to be *L. a. praedatus.*

FIELD MARKS: Light-colored, very slender bill; broad white superciliary.

SIZE: Two males: 210–215 mm, 35–37 gr.

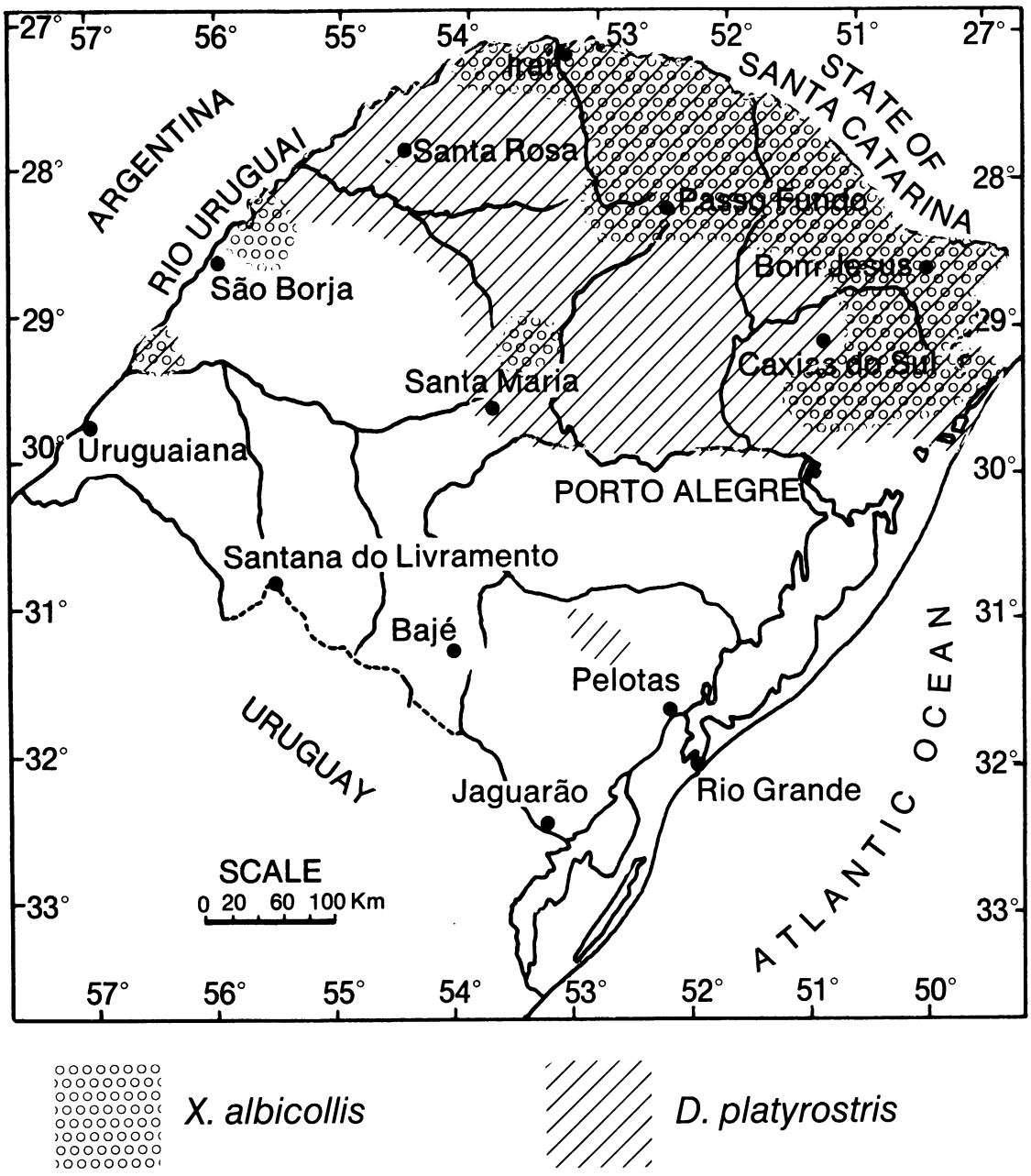
SOFT PART COLORS: Tarsus greenish gray to dark gray; bill pinkish gray to grayish white, with brown or gray on sides of maxilla near base; iris brown.

VOICE: (R) Adult: brief, sharp, high-pitched, gurgled outburst. Nestlings: best imitated by whistling through teeth; "pseeeeee pseeeee pseeee pseeee pseee pseee pseee psiu psiu." When adult entered nest some of these whistles converted to rolling trills of about same pitch.

BREEDING: Two males collected October 18, 1971 and November 12, 1970 and female of November 14, 1970 all had active gonads. Entrance to nest in hollow trunk of living tree at Fazenda Silêncio on November 22, 1974 was about 2 m aboveground, but nest chamber appeared to be about 1.4 m below entrance. Adult carried food in and feces out, young called persistently.

BEHAVIOR: In moving from tree to tree this species appears to glide more slowly than other Rio Grande do Sul members of family.

SPECIMENS: MCN: 252, 392, 960–963*. MN: 14038. USNM: (alcohol) 503774–503775*. AMNH: 813026*.



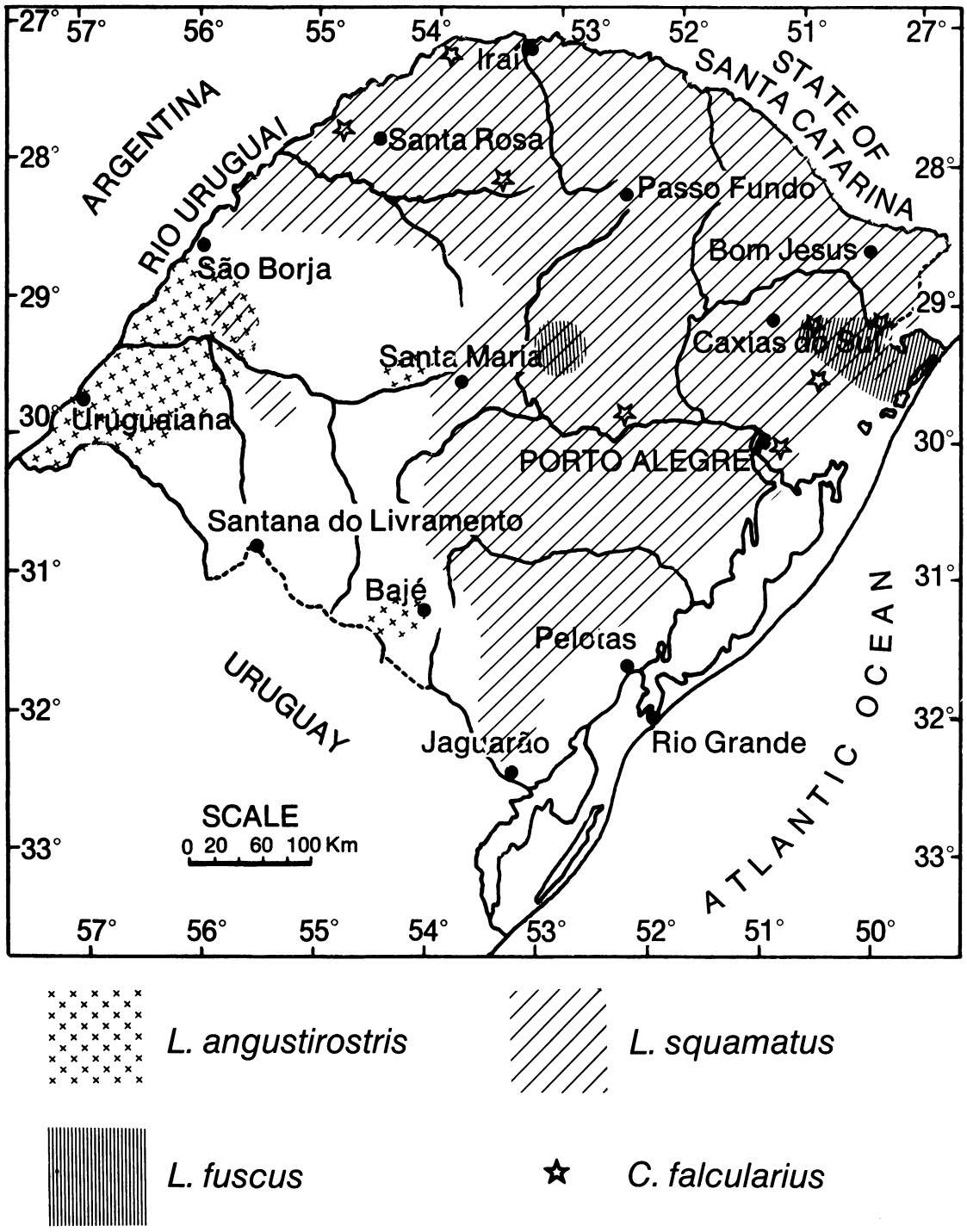
MAP 113. Geographical distribution of *Xiphocolaptes albicollis* and *Dendrocolaptes platyrostris* in Rio Grande do Sul.

Lepidocolaptes squamatus
Map 114

Scaled Woodcreeper
Arapaçu-escamoso
(Scaly Woodcreeper)

DISTRIBUTION AND STATUS: Common resident in forests across state N of 28°30'S, and in eastern half E of 54°W, except along littoral where not registered. Two records in W are only known overlap with *L. angustirostris*. *Lepidocolaptes s. falcinellus*.

FIELD MARKS: Distinguished from *L.*



MAP 114. Geographical distribution of three species of *Lepidocolaptes* and of *Campylorhamphus falcularius* in Rio Grande do Sul.

angustirostris by inconspicuous superciliary; much darker, more contrastingly marked breast and belly, shorter bill.

SIZE: Three males: 180–198 mm, 26–30 gr. Three females: 189–192 mm, 29.5–30 gr.

SOFT PART COLORS: Tarsus greenish gray to greenish brown; maxilla gray, light brown, or pinkish white; mandible white to light brown; iris brown.

VOICE: (R) Brief, sharp, dry, squeaky outburst: "peekkku," lacking bubbling quality of *L. angustirostris.*

BREEDING: On December 13, 1979 at Rincão dos Pereira one was seen repeatedly entering long, longitudinal split about 4 m up in 8 m snag, carrying something white. Female of November 9, 1973 and two males of November 24, 1971 and December 3, 1970 all had active gonads. Male of March 6, 1972 had very small testes.

BEHAVIOR: One hopped along underside of long, almost horizontal araucaria branch, foraging in moss in same fashion as if it were mounting vertical trunk. Another, while climbing trunk, suddenly, in brief flash of wings, caught flying insect passing about 30 cm behind and above it and returned to same spot on trunk.

SPECIMENS: MCN: 143, 555, 964–970*. MN: 13355, 13359. USNM: (alcohol) 503772*. AMNH: 314933–314953, 321897–321900, 813027–813028*.

Lepidocolaptes fuscus
Map 114

Lesser Woodcreeper
Arapaçu-rajado
(Streaked Arapaçu)

DISTRIBUTION AND STATUS: Uncommon resident, currently found in forests near escarpment E of 51°W, including NE coast, with questionable record from extreme N near Barracão. Kaempfer collected it near Sinimbu. *Lepidocolaptes f. fuscus.*

FIELD MARKS: Differs from *L. squamatus* by head being spotted instead of streaked, and by lighter tone of underparts, which lack black in streaking.

SIZE: Two males: 155–174 mm, 19–21.5 gr. One female: 166 mm, 19.5 gr.

SOFT PART COLORS: Tarsus olive gray to bluish gray; maxilla brown to blackish; mandible pinkish white; iris brown.

VOICE: (R) Phrase, lasting six to eight seconds, beginning with individual "chip" notes all on one pitch that quickly accelerate into loud, continuous harsh trill and as abruptly drop back to beginning speed. Phrases often connected by continuous "chipping."

BREEDING: Male of September 30, 1975 had much enlarged testes, while one of January 27, 1971 and female of April 19, 1972 had inactive gonads.

SPECIMENS: MCN: 971–973*. USNM: (alcohol) 503773*. AMNH: 314920–314922, 813029*.

Campylorhamphus falcularius
Map 114

Black-billed Scythebill
Arapaçu-de-bico-torto
(Curve-billed Arapaçu)

DISTRIBUTION AND STATUS: Rare, found occasionally in forests in central trough, near NE escarpment, and in NW. Probably resident, but no records between February 1 and July 18.

FIELD MARKS: Extremely long, very slender, deeply decurved black bill.

SIZE: One female: 284 mm, 42 gr.

SOFT PART COLORS: Tarsus olive green to greenish gray; bill black; iris brown.

VOICE: (R) Each call of only individual recorded consisted of series of from 10 to 17 cricket-like rasping sounds, gradually descending in pitch.

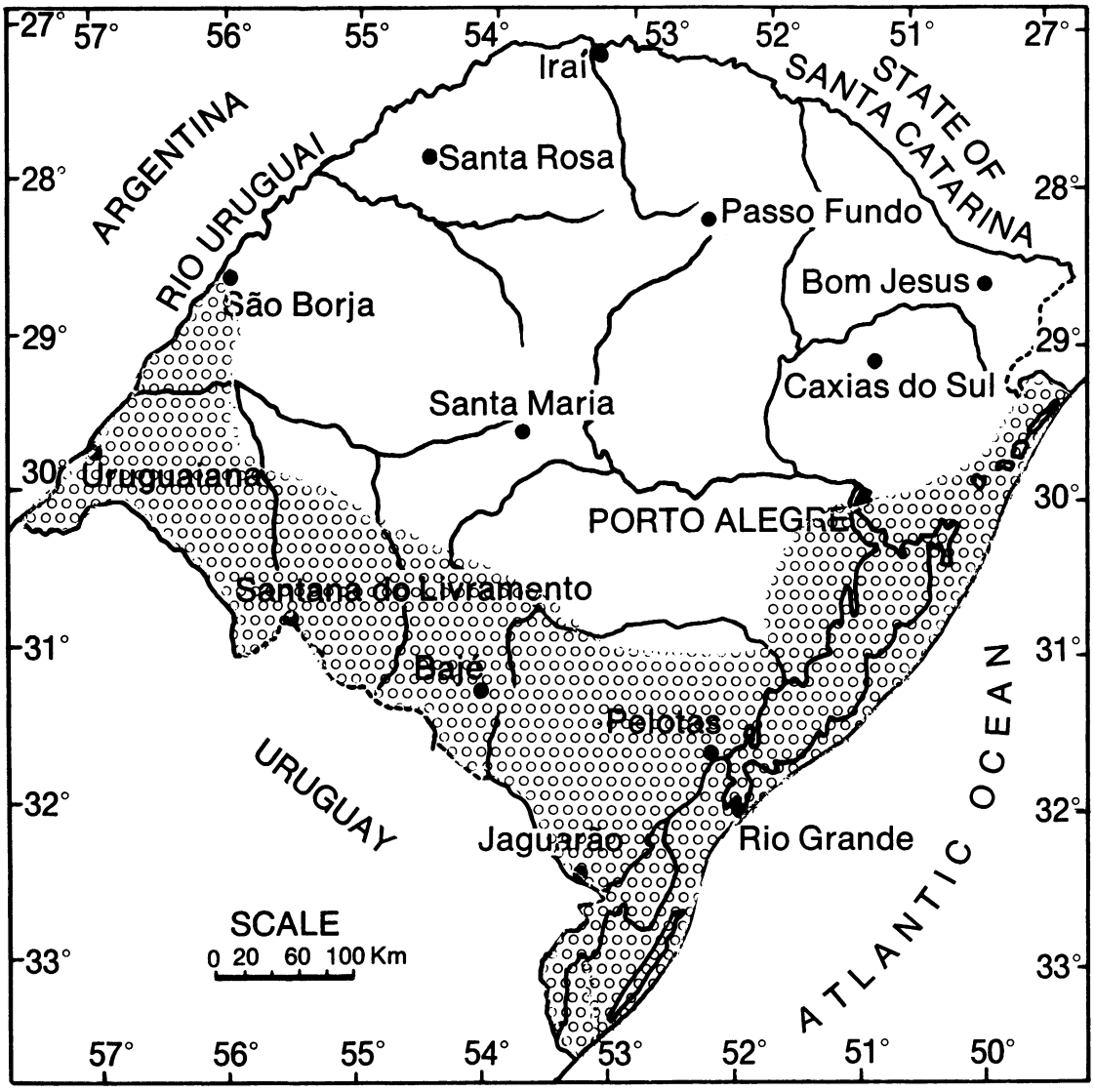
SPECIMENS: MCN: 974–975*. AMNH: 314955.

FURNARIIDAE

Geositta cunicularia
Map 115

Common Miner
Curriqueiro
(Scooter)

DISTRIBUTION AND STATUS: Resident, common to abundant on sandy soils along full length of littoral; less frequent but spottily common in hills bordering W edge Lagoa dos Patos, in S section of SE hills, through Uruguayan frontier area, and in far W north to



MAP 115. Geographical distribution of *Geositta cunicularia* in Rio Grande do Sul.

São Borja. On ground in open country. *Geositta c. cunicularia.*

FIELD MARKS: Pipit-like, but with long, white superciliary. Flies low, close to ground, rather than mounting upward.

SIZE: One male: 150 mm, 30 gr.

SOFT PART COLORS: Tarsus dark gray to blackish; bill black with gray or pinkish at base of mandible; iris dark.

VOICE: On July 24, 1981 at Lagoa do Peixe one made short display flights, rising higher than in normal flight, while voicing continuous high chittering.

BREEDING: Male and female collected September 1, 1970 had active gonads. Adults were carrying food into nesting tunnel in grass-covered sand mound about 100 m inland from ocean beach at Capão da Canoa on October 3, 1972.

BEHAVIOR: When feeding, often bobs tail up and down and sometimes teeters.

SPECIMENS: MCN: 394, 573, 1308–1309*. MN: 15381, (WB)094–095*. (WB)785*,

(WB)1156*. AMNH: 314627–314632, 321263–321268, 321569.

NOTE: Specimen no. (WB)1156 has bill deformity, with mandible 6 mm longer than maxilla and much decurved, whereas maxilla approximately 4 mm longer than normal. Bird otherwise seemed normal, with weight of 30 gr.

Cinclodes fuscus
Map 116

Bar-winged Cinclodes
Pedreiro-dos-Andes
(Andean Quarry-worker)

DISTRIBUTION AND STATUS: Uncommon winter visitor, occurring primarily S of 32°S, but also registered in lowlands as far N as Taquara in E and Itaqui in W, with rare appearances between. Not known to occur on NE highlands, contrary to Vaurie (1980, p. 36). Earliest record April 27, latest October 9. Usually on ground near water, although at Fazenda Silêncio on May 13, 1974, one flushed out of sorghum field and sat on fencepost. *Cinclodes f. fuscus.*

FIELD MARKS: White throat with dark speckles contrasts with much darker grayish brown breast and belly.

SIZE: One male: 194 mm, 33 gr. Three females: 168–184 mm, 29–33 gr.

SOFT PART COLORS: Tarsus gray to blackish; bill black with yellow at base of mandible; iris brown.

BEHAVIOR: Actions characterized by many nervous gestures and much tail flipping.

SPECIMENS: MCN: 1302–1304*. MN: 32223*. AMNH: 321272–321280, 321571–321578.

Cinclodes pabsti
Map 116

Long-tailed Cinclodes
Terezinha or *Pedreiro*
(Little Teresa) or (Quarry-worker)

DISTRIBUTION AND STATUS: Uncommon to common in NE corner at altitudes above 750 m. Endemic to this region and adjoining similar areas in SE Santa Catarina (Sick, 1973). Resident, in open, rolling, often rocky grasslands with easy access to water. No known contact with *C. fuscus*; edge of ranges separated by only about 20 km, but approximately 700 m of altitude.

FIELD MARKS: Large size; white throat, sometimes lightly spotted, contrasts with gray-brown breast and belly; extensive light rufous on outer tail feathers.

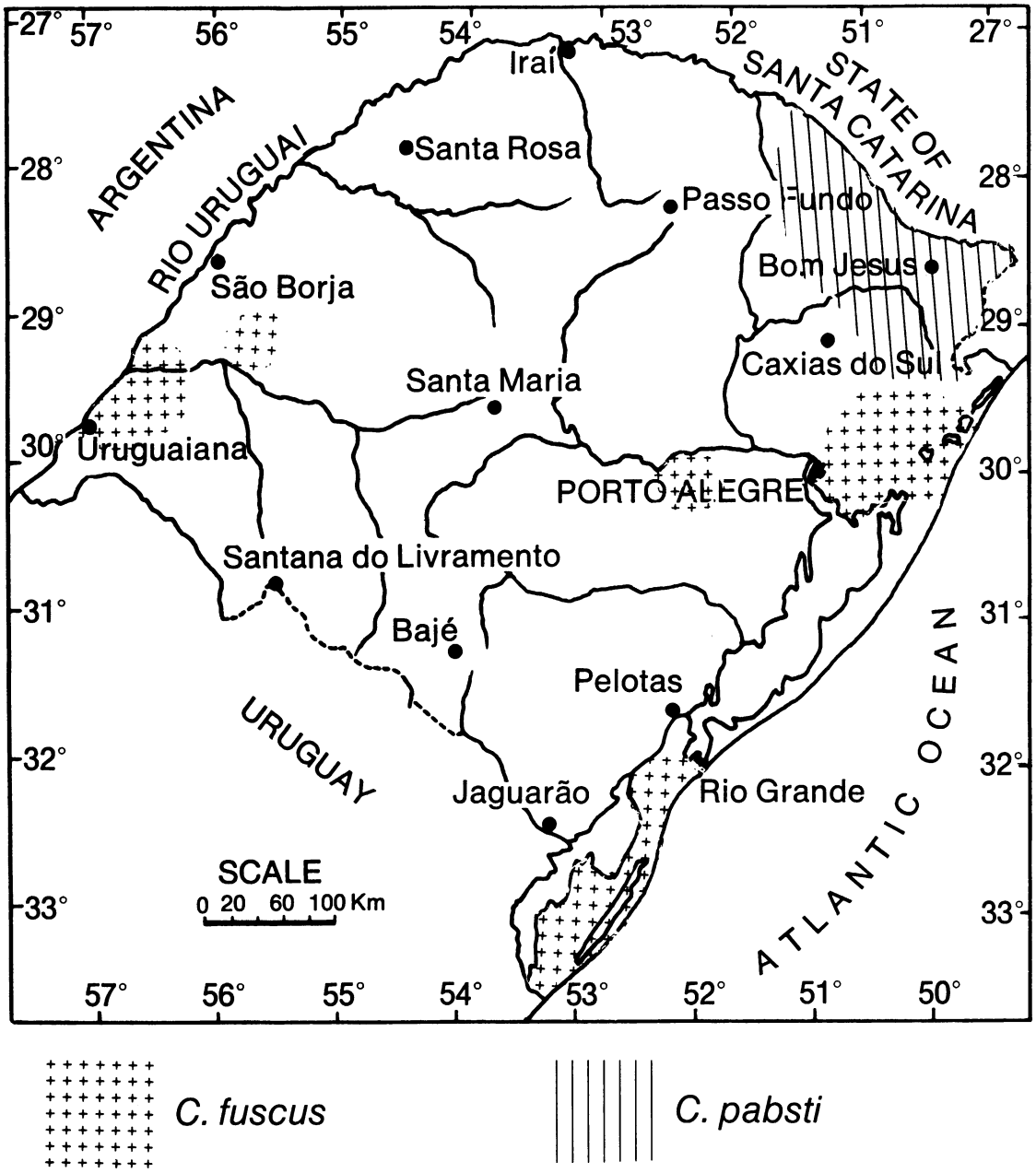
SIZE: Three males: 223–240 mm, 49–55 gr.

SOFT PART COLORS: Tarsus dark gray to black; bill black, sometimes whitish at base of mandible; iris brown.

VOICE: Song: prolonged single-noted trill accompanied toward end, when volume most intensive, by tail vibrating vertically in rhythm and wings pumping, though not so vigorously as *Furnarius rufus.* Bother call: plaintive phrase, slurring from high to low note, described by Sick as "tsi-o."

BREEDING: Nesting occurs in holes excavated in embankments and under roofs in farm buildings, as described by Sick. On September 7, 1972 near Saiqui, Canela, site of most southerly known occurrence, I saw bird regularly attending nesting hole but not carrying in food. When I left area it had been in hole 12 minutes, presumably brooding eggs. On September 23, food being carried into nest and young heard inside. On September 28, food still being carried in, but on October 2 no activity observed and I assumed young had left. On November 12 food again being carried into nesting hole. This second nesting capability confirmed by information obtained by Voss from Superintendent of Aparados da Serra National Park that pair nested twice there in late 1978 under tiles of park outbuilding and that this is annual event. Male taken July 7 had inactive testes.

BEHAVIOR: On June 4, 1972 I watched individual displaying by moving to tops of five different fence posts in three or four minutes, singing long trill almost constantly while fluttering wings slowly in lifted position approximately on level with back. On November 4, 1972 adult carried food into nesting hole only 1.3 m from edge of busy highway. When it saw me it retreated to bush across road from nest and gave bother call while holding large caterpillar in bill. Area immediately below nesting hole littered with feathers and nesting material, as if old nest had been scraped out of hole. This nest site, S of Vacaria at about 750 m altitude, is only record for species below 800 m. Nesting holes usually constructed in extremely hard, rocklike material and must take long time to excavate. South of Tainhas



MAP 116. Geographical distribution of the two species of *Cinclodes* found in Rio Grande do Sul.

on March 30, 1973 I found embankment about 2 m high by 6 m wide with many shallow holes, some moss-covered indicating long abandonment, others in process of excavation. At least four birds of this species in vicinity. On April 4 there was evidence of further activity, with about 12 different excavations showing recent work. Some of these had been moss-covered on March 30. Only one pair birds present this time. At same site on July 4, 1974, pair singing, displaying, and interacting in and near apparently completed nesting excavation, but I saw no evidence actual nesting activity.

SPECIMENS: MCN: 1305–1307*. MN: 30325 (type), 32217*. AMNH: 314619, 314620. 810512*, 813030*.

Furnarius rufus

Rufous Hornero
João-de-barro
(John Mud)

DISTRIBUTION AND STATUS: One of most abundant, widespread, and best known species in state. Occupies open country, forest edges, eucalyptus groves, espinilho, suburban areas in all sectors all year, but much less common in high areas of NE than elsewhere. *Furnarius r. rufus.*

FIELD MARKS: Bright rufous tail contrasts with remaining duller upperparts; high-stepping walk.

SIZE: One male: 223 mm, 62.5 gr. One female: 212 mm, 65 gr.

SOFT PART COLORS: Tarsus blackish; maxilla blackish brown to black; mandible whitish or pinkish with dark tip; iris (live bird) Dark Reddish Orange, (collected specimens) Brownish Orange to reddish brown.

VOICE: (R) Loud, raucous, accelerating and rising crescendo trill which at high point changes to series of sharp, shrill "keee keee keee keee" notes before brief, more subdued ending. Various portions of beginning trill often sung independently. Individual, desultory "keee's," voiced as apparent bother call, are sharp and shrill but much less so than at peak of song. Nestlings gave gentle version of crescendo trill. Wings and tail vibrate vigorously during song.

BREEDING: Records of nestlings being fed extend from October 25 to January 25. Construction of igloo-shaped, mud nests occurs throughout most of year. I have records of building activity for every month from January 19 to October 18. Activity usually intense right after rain, but suspended when mud not available.

BEHAVIOR: For reaction of one pair to invasion of nest by another species, see under *Sicalis flaveola.* Mud nests prominent feature of Rio Grande do Sul landscape, often being placed on cross-ties of utility poles, fence posts, roof peaks, as well as tree branches, including in eucalyptus groves. Voss and Sander (1980) reported this species feeding on fruits of *tarumã* (*Vitex megapotamica* [Spreng.] Mold.).

SPECIMENS: MCN: 33, 34, 218, 1295–1300*. MN: 15378–15380. USNM: 461530*. AMNH: 43120, 314616–314618, 314621–314626, 321269–321271, 321570, 321840, 802139, 813031–813033*.

Leptasthenura platensis
Map 117

Tufted Tit-Spinetail
Rabudinho
(Little Long-tail)

DISTRIBUTION AND STATUS: Common in espinilho areas of western tip, probably resident, with records for July, October, November, and May.

FIELD MARKS: Very long tail with projecting, sharp-pointed central tail feathers; distinct crest.

SIZE: Three males: 164–175 mm, 11–12 gr.

SOFT PART COLORS: Tarsus dark olive-green; bill black with light shade at base of mandible; iris brown.

VOICE: (R) One near nest sang two very short notes which led into rapid trill, accelerating until it assumed almost buzzing quality. All notes high, thin, single-pitched and non-musical, much weaker and squeakier than other two Rio Grande do Sul members of genus. Other member of pair protested my presence with continuous, excited chatter of irregularly-timed squeaks on various pitches.

BREEDING: Two adults fed nestlings in hole, presumed to be of woodpecker, in dry tree about 2 m aboveground October 9, 1971 at Arroio Quaraí-chico. Pair in same area on November 16, 1977 nesting in old *Furnarius rufus* nest. Male collected November 12, 1970 had well-enlarged testes, while those of two of May 4 and 5, 1974 inactive.

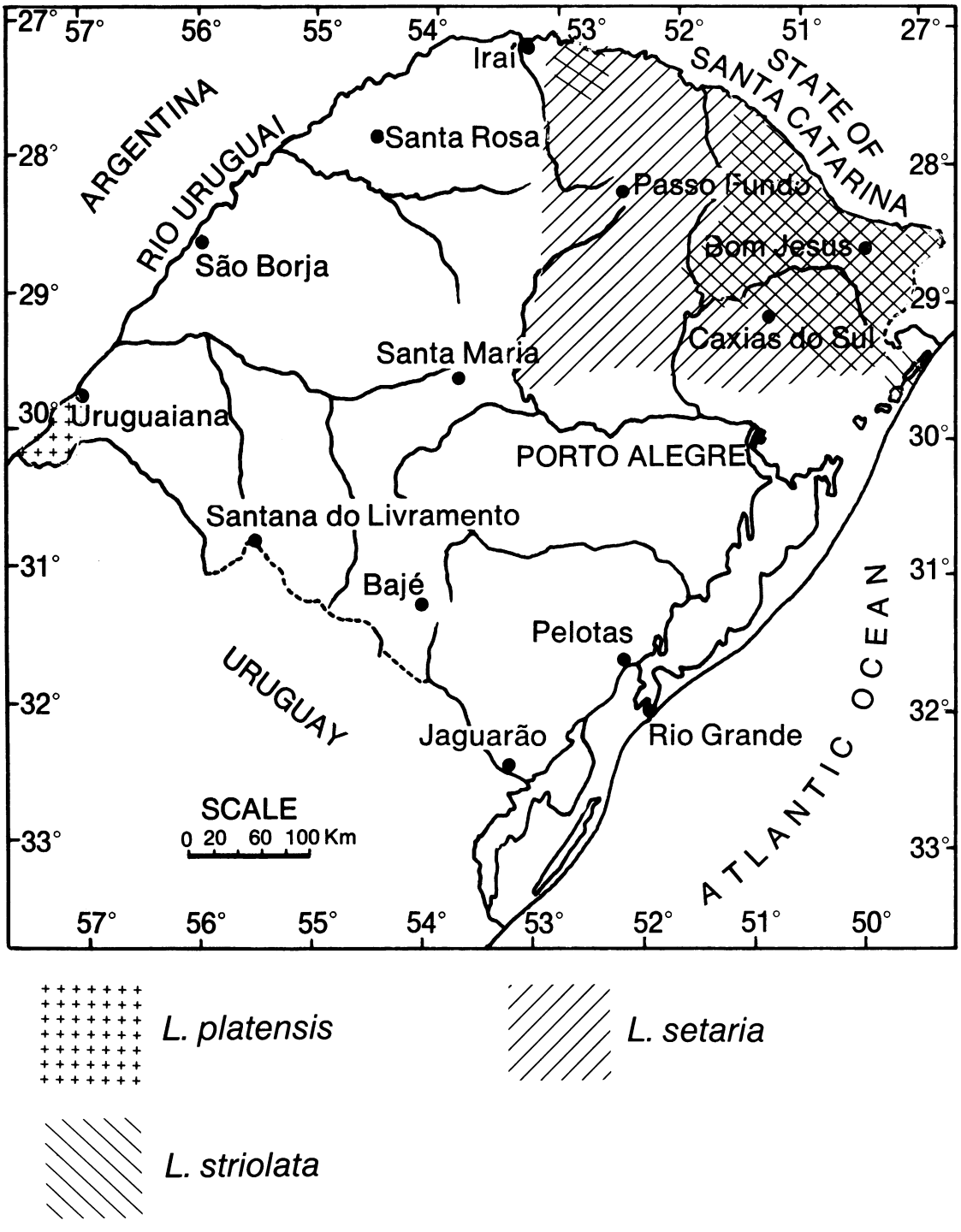
BEHAVIOR: Busy searcher of tree branches, utilizing thinnest twigs and constantly picking up minuscule food items.

SPECIMENS: MCN: 1291–1292*. MN: 32205*, 32241*. AMNH: 813034*.

Leptasthenura setaria
Map 117

Araucaria Tit-Spinetail
Grimpeiro
(Araucaria-frond Bird)

DISTRIBUTION AND STATUS: Common resident of NE quarter, N of 29°30'S and E of 53°W, with only three records slightly beyond these limits. Almost exclusively in araucarias,



MAP 117. Geographical distribution of the three species of *Leptasthenura* found in Rio Grande do Sul.

rarely utilizing other trees and bushes in close vicinity of araucarias. Although limited araucaria forests exist in southern hills and to W of above defined area, the species has not been found in them.

FIELD MARKS: Very long tail with sharp, projecting central tail feathers; white-streaked black crest; rufous back and wings.

SIZE: One male: 180 mm, 11 gr. One female: 178 mm, 11 gr.

SOFT PART COLORS: Tarsus grayish green; bill black with white at base of mandible; iris brown in one male, light gray in one female.

VOICE: (R) Rapid series of high, thin squeaks descending scale slightly while accelerating to terminal trill. Rapid chittering when excited.

BREEDING: On September 10, 1971 one was gathering green stringy moss from broad-leaved tree, carrying it to nest under construction in topmost part of araucaria pompon about 9 m aboveground. Enclosed nest appeared small and round, with diameter up to 8 cm. Male and female collected in May 1972 had inactive gonads.

BEHAVIOR: Constantly on move, foraging in bark, moss and among broad needles of araucarias, moving as readily on underside as on top of horizontal branches. Courtship display seen August 16, 1974 in small araucaria, where pair chased each other in very short hops, spreading tails and constantly vocalizing for about 10 minutes.

SPECIMENS: MCN: 1289*. MN: 15207. AMNH: 314648–314656, 813035*.

Leptasthenura striolata
Map 117

Striolated Tit-Spinetail
Grimpeirinho
(Little Araucaria-frond Bird)

DISTRIBUTION AND STATUS: Common resident; in forests, scrub, edges, and suburban gardens in highest areas of NE, with one record from Nonoai Forest Reserve and another from littoral below escarpment. Utilizes araucaria, but not particularly attached to it.

FIELD MARKS: Heavily streaked above; long tail with two projecting, pointed central feathers.

SIZE: Two females: 154–155 mm, both 10 gr.

SOFT PART COLORS: Tarsus greenish; bill black with pinkish gray at base of mandible; iris Dark Brown.

VOICE: (R) Moderately slow, high trill, with emphasis on early portion, falling off in volume and slightly in pitch in latter half. Trill of *L. setaria* very similar, but drop in pitch at end much more clearly defined. Also irregular series of six to eight thin, high, sharp squeaks.

BREEDING: On November 27, 1975 bird probably incubating eggs was nesting deep inside cow skull placed about 1.8 m up among branches of small tree in Gramado garden. Small sticks and duck feathers from nearby pond only nesting material visible. On December 2, 1976 adult fed nestlings in woodpecker hole about 6 m aboveground in snag in Gramado garden. Nestlings made high-pitched, insect-like, single-noted sound.

SPECIMENS: MCN: 1290*. MN: (WB)234*. AMNH: 314645–314647, 813036*.

Synallaxis (Schoeniophylax) phryganophila
Map 118

Chotoy Spinetail
Bichoita

DISTRIBUTION AND STATUS: Resident; across state from central trough S to 31°30'S, and in most of W beyond 55°W. Also around N end Lagoa Mirim. Common except in NE corner of range, where scarce. Found in open country with bushes, scrub, farm gardens, and especially in marshy terrain.

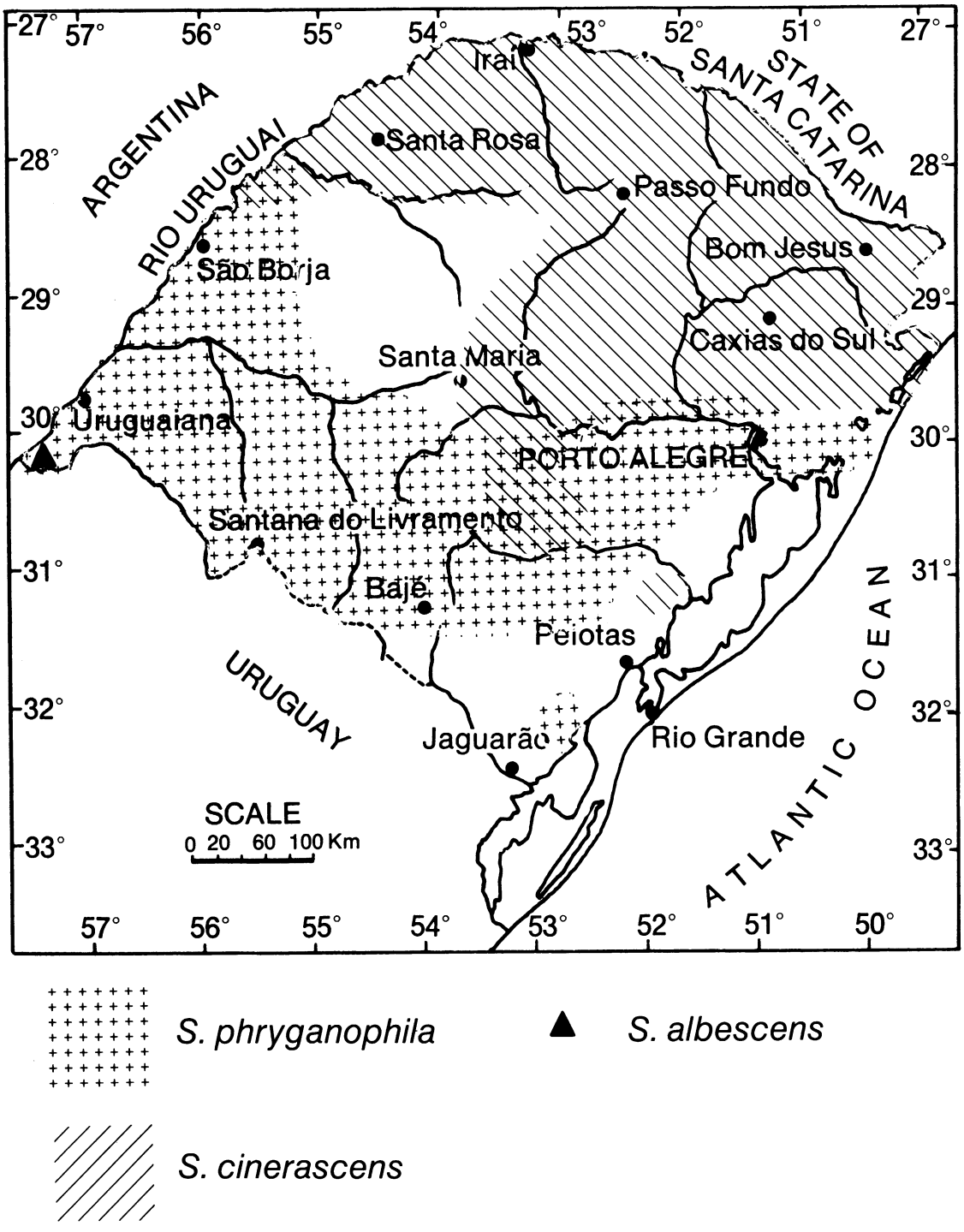
FIELD MARKS: Very long tail, black breast patch below yellow throat.

SIZE: One male: 199 mm, 18 gr. Two unsexed: 190–193 mm, 15–18 gr.

SOFT PART COLORS: Tarsus light greenish gray to gray; maxilla black; mandible light gray to black with gray base; iris light red.

VOICE: (R) Bubbling, bouncing, hollow-sounding trill with many squeaky overtones, often starting and/or ending with drier, more mechanical rattle. Overtones give impression of more complex song than it really is.

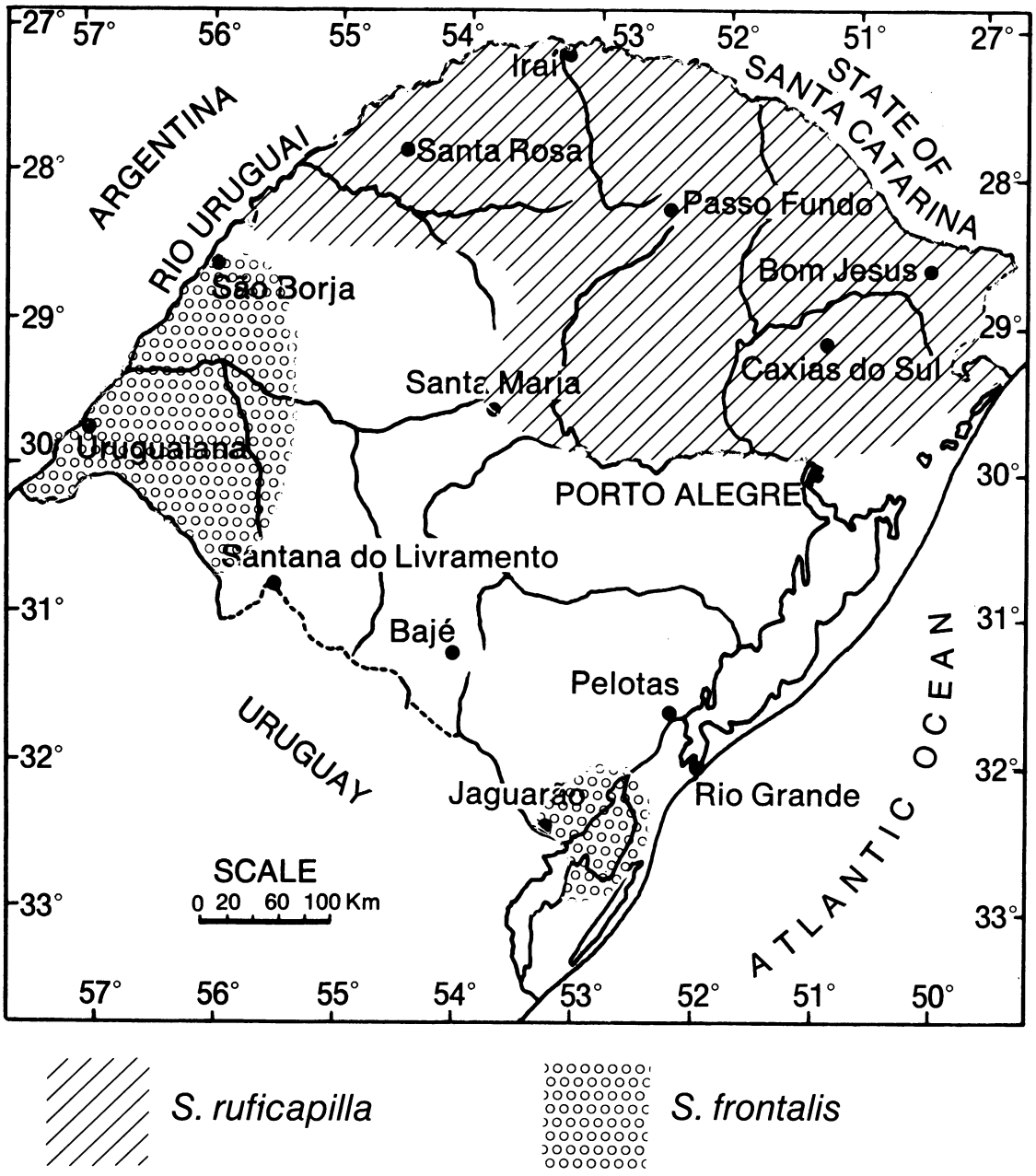
BREEDING: Pair nest building November 20, 1974 high in araucaria near São Pedro do Sul. Voss (personal commun.) saw nest construction under way 4 m up in *corticeira*



MAP 118. Geographical distribution of three species of *Synallaxis* in Rio Grande do Sul.

(*Erythrina crista-galli*) at Botanical Gardens, Porto Alegre, August 23 and 30, 1979.

SPECIMENS: MCN: 1280–1282*. MN: 14690, 14698, 14700. AMNH: 813037*.



MAP 119. Geographical distribution of two species of *Synallaxis* in Rio Grande do Sul.

Synallaxis ruficapilla
Map 119

Rufous-capped Spinetail
Pichororé (onomatopoetic)

DISTRIBUTION AND STATUS: Common resident, in forests N from central trough W as far as Santa Maria, and W across state N of 28°30'S. *Synallaxis r. ruficapilla.*

FIELD MARKS: Bright rufous cap and wings, light buffy postocular streak.

SIZE: Two males: 140–161 mm, 12.5–15 gr. One female: 155 mm, 14 gr.

SOFT PART COLORS: Tarsus greenish gray; maxilla black; mandible gray with dark tip; iris light reddish brown.

VOICE: (R) Phrase of four to eight throaty rattles, followed by sharp, high "twit." When excited, these phrases continuous at rate of up to about two per second. Also a low, fast, rattly trill on one pitch with few overtones and quite uniform speed that starts fast, as if spit out.

BREEDING: Female of October 9, 1972 and male of November 25, 1975 had active gonads. Male of February 6, 1971 had small testes.

SPECIMENS: MCN: 149, 1273–1274*. MN: 15258. AMNH: 314672–314676, 813038*.

Synallaxis frontalis
Map 119

Sooty-fronted Spinetail
Petrim (onomatopoetic)

DISTRIBUTION AND STATUS: Common resident W of 55°30'W; also occurs in littoral S of 32°S, where registered so far only in July and September. Occupies scrub, brushy patches, espinilho. *Synallaxis f. frontalis.*

FIELD MARKS: Gray forehead, rufous cap and wings.

SIZE: Three males: 157–160 mm, 14.5–16 gr. Two females: 145–160 mm, 14–15 gr.

SOFT PART COLORS: Tarsus light greenish gray to light olive-green; maxilla dark gray to black; mandible light gray, sometimes with black tip; iris reddish brown to pale orange-white.

VOICE: (R) Low volume, querying: "ja-cooEE. . . . .ja - cooEE. . . . .ja - cooEE. . . . ." Also a constantly repeated note: "choint," with variations.

BREEDING: Male collected November 12, 1970 had somewhat enlarged testes; female of May 9, 1974 and males of May 5, 1974 and July 10, 1973 had inactive gonads.

SPECIMENS: MCN: 1270–1272*, 1275–1278*. MN: 15701, 15716. AMNH: 810518–810519*.

Synallaxis albescens
Map 118

Pale-breasted Spinetail
Ui-pi (onomatopoetic)

DISTRIBUTION AND STATUS: Known from only two specimens taken at W tip, one October 17, 1928, and one at edge of espinilho July 10, 1973. Three from Passo da Entrada mentioned in Belton (1973a) subsequently proved to have been misidentified. *Synallaxis a. albescens.*

FIELD MARKS: Underparts very much lighter than on any other Rio Grande do Sul member of genus.

SIZE: One unsexed: 144 mm.

SOFT PART COLORS: Tarsus greenish gray; maxilla black; mandible light gray; iris light greenish yellow with tinges of red.

VOICE: (R) (in Brasilia National Park) Insistent and regularly repeated but mildly expressed: "wee-peep. . . . .wee-peep. . . . ."

SPECIMENS: MCN: 1279*. MN: 15440.

Synallaxis spixi
Map 120

Chicli Spinetail
João-tenenem (onomatopoetic)

DISTRIBUTION AND STATUS: Very common resident in most regions, but not registered in SW corner and scarce along most of Uruguayan border. Found in capoeira and scrub, with preference for thickets, grass clumps, and heavy undergrowth, in marshy areas.

FIELD MARKS: Bright rufous cap and wing coverts; tail dull grayish brown.

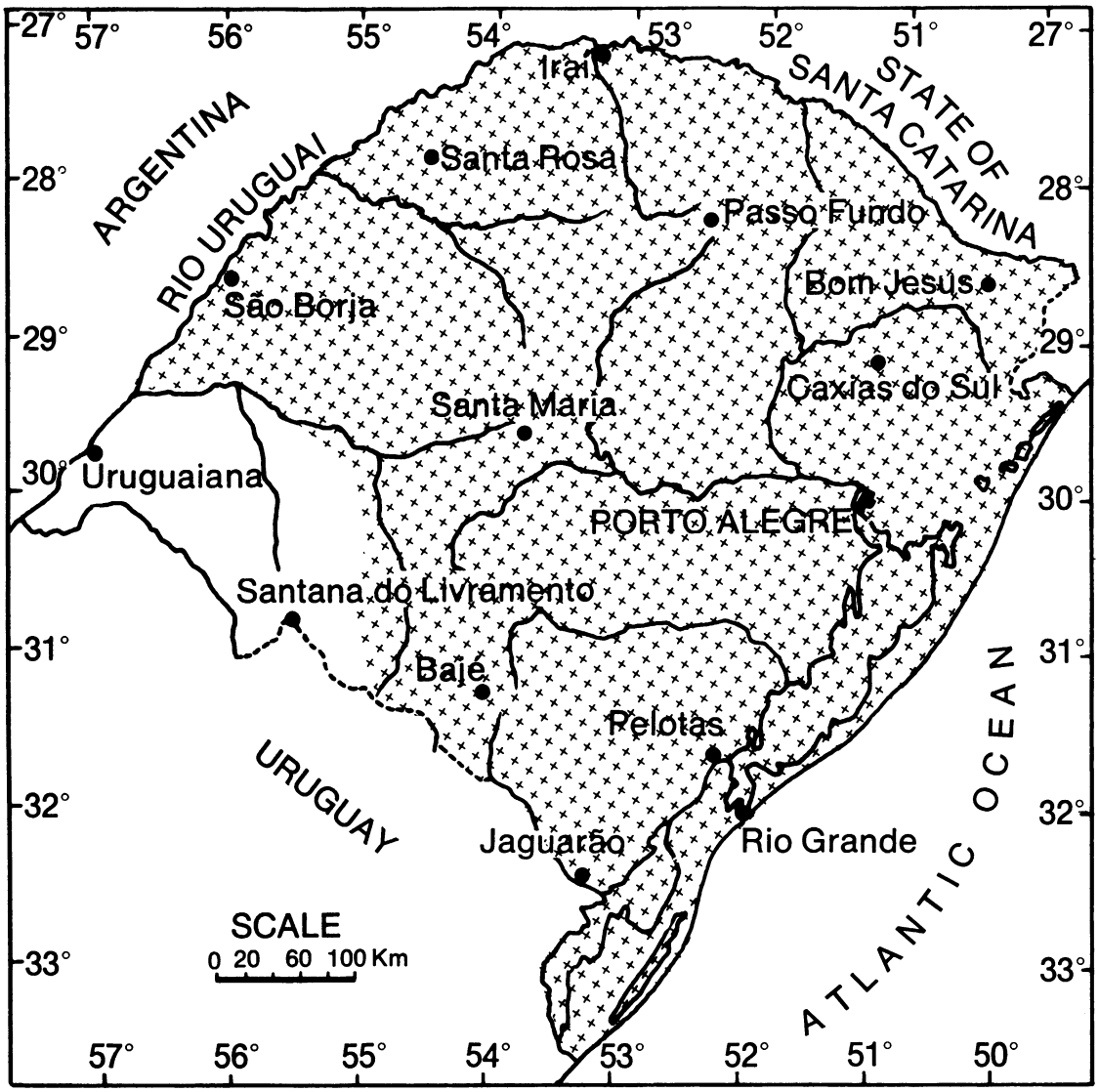
SIZE: Three males: 155–170 mm, 12–13 gr. One female: 176 mm, 13 gr.

SOFT PART COLORS: Tarsus gray to greenish gray; maxilla black; mandible gray (pinkish in young individuals); iris reddish brown to pale orange.

VOICE: (R) Five syllable phrase, last four syllables with bubbling quality: "sweet! bee bee bee bee. . . . . .sweet! bee bee bee bee. . . . . ."

BREEDING: Male collected February 15, 1974 had partially enlarged testes. Empty enclosed nest believed to be of this species (bird nearby) found in center of low bush in moist depression in open grassland on February 6, 1972 made of small sticks with very short tunnel entrance on side, wide enough to permit view inside. Nest about 20 cm high and 60 cm aboveground.

BEHAVIOR: Very active, constantly moving within dense cover of regular habitat, but occasionally mounts into trees. One pair seen more than 10 m up in fronds of palm. Another was "flycatching" termites from high in tree.



MAP 120. Geographical distribution of *Synallaxis spixi* in Rio Grande do Sul.

SPECIMENS: MCN: 1262–1266*. MN: 15489. AMNH: 314684–314691, 321289–321293, 321865, 810520*, 813039*.

Synallaxis cinerascens
Map 118

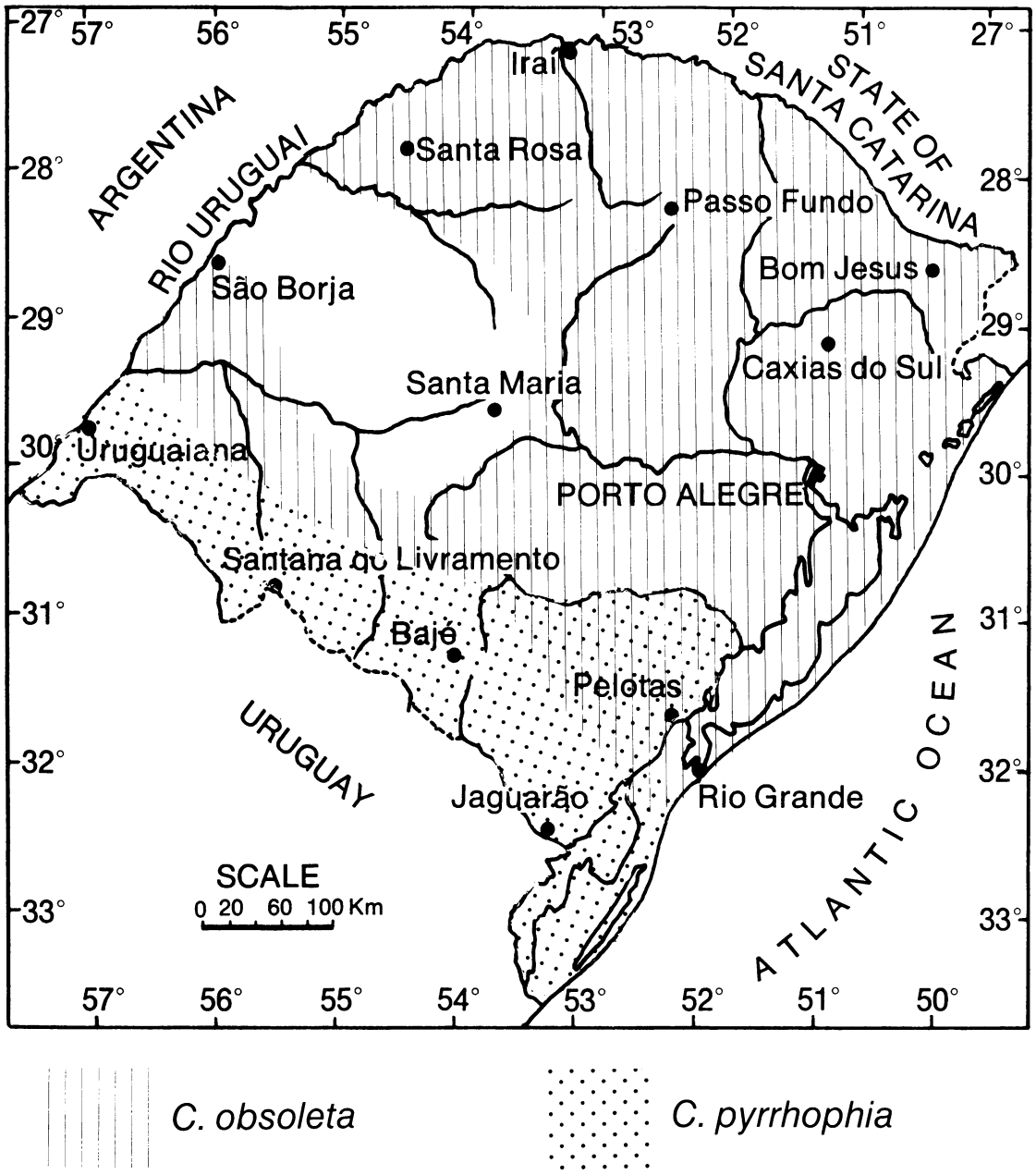
Gray-bellied Spinetail
Pi-pui (onomatopoetic)

DISTRIBUTION AND STATUS: Common resident found low in forest from near bottom of escarpment N and across state W to Garruchos. Also found in central southeastern hills and by Ihering near São Lourenço, farthest south record. Known from Uruguay, so presumably can be found at scattered locations more to S than my records indicate.

FIELD MARKS: Bright rufous on wings only, breast and belly gray.

SIZE: Two males: 141–148 mm, both 13 gr. One female: 12.5 gr.

SOFT PART COLORS: Tarsus greenish gray to reddish gray; maxilla black; mandible dark



MAP 121. Geographical distribution of two species of *Certhiaxis* in Rio Grande do Sul.

gray, or black with gray base; iris brownish red.

VOICE: (R) Soft but high-pitched three-syllable phrase with long pause between first and second syllables: "seeeeee. . . . .pu-tsee," given in leisurely fashion with considerable interval between each repetition. Sometimes only first syllable, or second and third, are repeated in lieu of full phrase.

BREEDING: Pair was constructing nest September 25, 1971 on ground, in bowl scraped out of earth with bottom about 35 mm below

surface. Funnel-like passage to exterior, sloping up to ground level, had floor lined with small sticks, as was floor of bowl near funnel mouth. Presumably remaining floor would be soft-lined. Walls also made of sticks up to 6 mm in diameter, and rose from surrounding ground about 9 cm, giving nest chamber height of 12.5 cm and 7.5 cm inside diameter. Length from farthest interior wall to funnel exit (small end) about 25 cm. Female brought sticks into nest by walking over top edge, but departed via funnel which already had few sticks across top and appeared ready for roofing.

SPECIMENS: MCN: 1267–1269*. MN: (WB)145*. AMNH: 43136, 314659–314671.

Certhiaxis (*Cranioleuca*) *obsoleta*
Map 121

Olive Spinetail
Arrédio-oliváceo
(Olivaceous Loner)

DISTRIBUTION AND STATUS: Widely distributed common resident in most of E half of state, with extensions into extreme NW and Itaqui areas, but not registered in wide strip from Santa Maria NW to Rio Uruguay. Replaced by *C. pyrrhophia* in much of S, but both occur in S half of SE hills and as far S as mouth of Lagoa Mirim. Variations in plumage of two species, particularly cline evident in *C. pyrrhophia* toward coloration of *obsoleta* in area where two meet, combined with the fact that voices are indistinguishable and each reacts strongly to other's voice lead me to speculate they may constitute only one species. Further analysis of specimens and fieldwork on breeding habits required before this can be resolved.

FIELD MARKS: Underparts yellowish, forehead with yellow to yellowish streaking on gray-green to gray background.

SIZE: Eight males: 136–158 mm, average 145.9 mm. Nine males: 12–15.5 gr, average 13.3 gr. Nine females: 133–152 mm, average 143.1 mm, 12–14 gr, average 13.1 gr. Six unsexed: 138–159 mm, average 149.5 mm, 12–16 gr, average 14.2 gr.

SOFT PART COLORS: Tarsus some shade of grayish olive or grayish olive green; maxilla black, occasionally brownish; mandible pink or bluish gray or bluish white, usually with dark tip; iris may vary from dull red through pale orange to whitish with pink edges.

VOICE: (R) Song: fast, sizzling "pseepseepseepsee. . . ." that accelerates into quick downward trending trill, sometimes continuing in rising and falling pattern. Bother call: fast, short, hard trills on single pitch. Also single "tst's."

BREEDING: On October 17, 1975 near Caràzinho I found nest about 6 m up in pompon near top of small araucaria. Enclosed, oblong, long axis was about 60° from horizontal with entrance near top of lower side and thus protected from weather. Bird apparently brooding eggs for it remained in nest for more than 20 minutes on warm morning. On October 23, 1970 one was carrying moss into araucaria in Gramado. On May 11, 1972 Sick and I found pair carrying moss and *Tillandsia* into thick clump of foliage about 12 m up in broadleaved tree in mixed araucaria woodland. Of my specimens, only four males collected between September 9 and November 1 showed definitely active gonads. However, one from São Donato marsh on May 8, 1974 showed moderate enlargement.

BEHAVIOR: Inconspicuous, tending to keep to interior of thickets where frequently found. Usually in constant movement searching branches and foliage. Normally found in pairs. Responds rapidly to playback of voice. When foraging on vertical trunks, uses tail for support while ascending, like woodcreeper, but carries it normally on descent.

SPECIMENS: MCN: 1837–1868*. MN: 15728. AMNH: 314692–314698, 321875.

Certhiaxis (*Cranioleuca*) *pyrrhophia*
Map 121

Stripe-crowned Spinetail
Arrédio
(Loner)

DISTRIBUTION AND STATUS: Common resident, across state from W tip to littoral within approximately 100 km of Uruguayan border, but extending N almost to Rio Camaquã in SE hills. Found in woodlands, brushy thickets, high fencerows, and espinilho parkland.

FIELD MARKS: Underparts whitish to yellowish. Forehead and forecrown distinctly streaked with rufous and black on gray back-

ground. Background color darkens, striping becomes less intense on head, and underparts darken in E and NE sectors of Rio Grande do Sul range.

SIZE: Eight males: 148–165 mm, average 157.5 mm, 14–16 gr, average 14.6 gr. Fourteen females: 144–161 mm, average 151.4 mm, 14–17 gr, average 15.2 gr. Six unsexed: 145–166 mm, average 156.0 mm, 13–15.5 gr, average 14.4 gr.

SOFT PART COLORS: Tarsus some shade of grayish green or grayish olive; maxilla black, occasionally brown; mandible variously pink, bluish white, pinkish blue, tip dark; iris varies widely from Dark Reddish Brown through Dark Reddish Orange to pale red or pale orange-red.

VOICE: Similar if not identical with *C. obsoleta.*

BREEDING: Nest found in espinilho parkland October 11, 1971 about 4.5 m up in bushy, spiny tree in dense thicket near top, about 3 m from active nest of *Saltator aurantiirostris.* Ball-shaped, about 25 cm in diameter, woven of sticks, it had opening on side with receding slope, above feces-stained supporting branch. Hole appeared to be about two-thirds plugged with nest lining. Two adults constantly brought food to squeaking nestlings, sometimes two or three times a minute, but fed through entrance which appeared too small for them to pass. On November 14, 1977 in same area, pair was carrying sticks up to 6 inches long and green leaves into natural cluster of epiphytes on almost leafless, spiny, leguminous tree. No further activity noted at this site during two succeeding days, but two nearby structures found of arching twigs woven over small branches as if to provide roofed perch. These had no floor. Several individuals in vicinity; therefore impossible to determine if same birds responsible for all structures. Among specimens collected, three males from November 14 to November 30 and three females from September 29 to November 27 had active gonads.

BEHAVIOR: Similar to *C. obsoleta.*

SPECIMENS: MCN: 1869–1902*. MN: 15167–15169. AMNH: 321307–321314, 321595–321597, 321871–321874, 802143.

Certhiaxis (*Cranioleuca*) *sulphurifera*

Map 122

Sulphur-bearded Spinetail
Arrêdio-de-papo-manchado
(Spot-throated Loner)

DISTRIBUTION AND STATUS: Scarce resident in marshes, found mostly in southernmost littoral, but occasionally at scattered locales farther N and W. I have never found it in forests or climbing trees as mentioned in Olrog (1959) and Meyer de Schauensee (1970).

FIELD MARKS: Adults have gray and white mottled throat and breast with few bright yellow feathers in center of throat.

SIZE: Two males: 154–165 mm, each 14 gr. One female: 143 mm, 12.5 gr.

SOFT PART COLORS: Tarsus greenish gray to light olive-green; maxilla blackish brown to black; mandible pinkish white to white; iris whitish red to orange-pink.

VOICE: (R) Series of hard, quick "cheek. . cheek. .cheek" sounds with squeaky overtones, ending in brief, hard, downward trill. Sometimes phrase begins with extremely short trill.

BREEDING: Male collected November 23, 1974 at São Donato marsh had much enlarged testes.

BEHAVIOR: Much more shy than other Rio Grande do Sul congeners.

SPECIMENS: MCN: 1251–1254*. MN: 32203*, (WB)1152–1153*, (WB)1515*. AMNH: 321303–321306, 321588–321590, 321876, 321877, 813040–813041*.

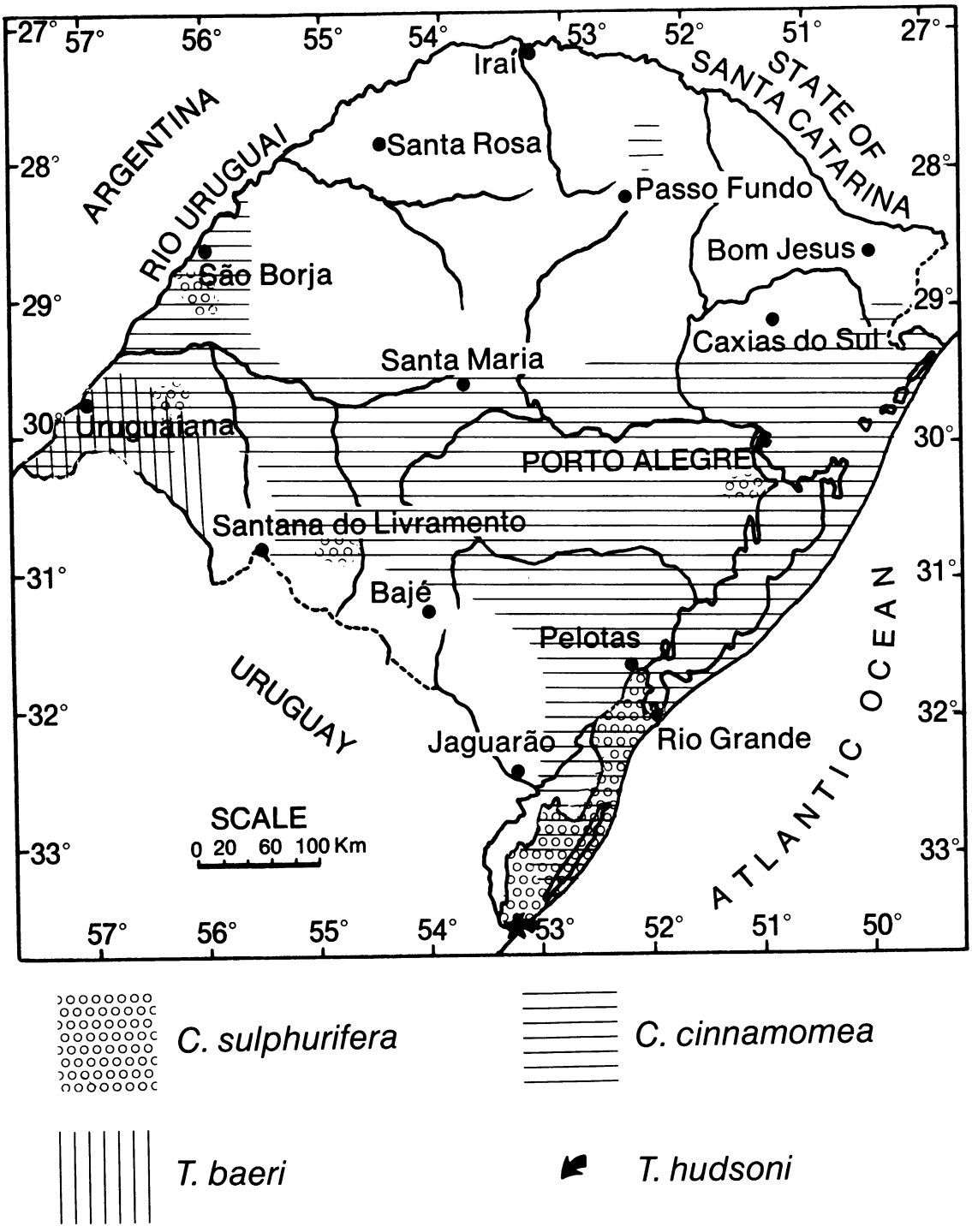
Certhiaxis cinnamomea

Map 122

Yellow-throated Spinetail
Curutié

DISTRIBUTION AND STATUS: Resident; found across most of southern two-thirds of state, but rare near Uruguayan border, and only one record for northern planalto. Especially common along littoral and E portion central trough, in marshes and wet areas with reedbeds or low bushes. *Certhiaxis c. russeola.*

FIELD MARKS: Rufous cap, wings, tail, whitish underparts; relatively long bill. Yellow throat patch not often visible.



MAP 122. Geographical distribution of two species of *Certhiaxis* and the two species of *Thripophaga* found in Rio Grande do Sul.

SIZE: One male: 168 mm, 16 gr. One female: 165 mm, 16.5 gr.

SOFT PART COLORS: Tarsus light gray to greenish gray; maxilla black; mandible gray with black tip; iris pale orange or whitish with reddish tinge or reddish inner rim.

VOICE: (R) Low, single-pitch trill with high, only slightly trilled accompanying overtone.

BREEDING: Domed nest with three off-white eggs found October 6, 1972 at Lagoa do Jacaré had entrance on top, curving into chamber. Whole very loosely woven, eggs visible through roof. Nest, entirely exposed in top of small clump of coarse marsh grass in middle of marsh surrounded by shallow water, was made of spiny sticks that would have had to be carried at least 200 m from closest source of supply. Longest diameter of nest about 25 cm, nest chamber appeared 10 to 12 cm deep. Another nest under construction on top of stump in reedbed of lake on August 31, 1973. Bird carrying nesting material seen September 20, 1974. Another pair worked on nest with top not yet closed on February 25, 1975.

BEHAVIOR: On November 23, 1974 at São Donato marsh adult gave large, live, winged insect to full-sized juvenal, then received it back again. Prey was then passed back and forth several times as if juvenal afraid of it but receiving instruction in how to kill and mash it. Juvenal finally swallowed it.

SPECIMENS: MCN: 1255–1261*. AMNH: 321294, 321864, 813042–813043*.

Thripophaga (*Asthenes*) *baeri*
Map 122

Short-billed Canastero
Lenheiro
(Firewood Bird)

DISTRIBUTION AND STATUS: Common resident in espinilho at W tip, occasionally found farther E almost to 56°W in patches of low, spiny trees. *Thripophaga b. baeri.*

FIELD MARKS: Cocked tail; rufous throat patch most visible from below.

SIZE: Two males: 145–153 mm, 19–20 gr. Two females: 142–161 mm, each 21 gr.

SOFT PART COLORS: Tarsus gray; maxilla dark gray to black; mandible gray; iris gray-brown.

VOICE: (R) Strong, single-pitch trill, usually with constant intensity, weaker only at start and finish, voiced frequently. Occasionally a song resembling that of *Leptasthenura setaria.* Also series of short, irregularly timed buzzing phrases: "pzzz. .pzzz. . . .pzzz. ."

BREEDING: Two males and female collected November 12–14, 1970 at Arroio Quaraí-chico had active gonads. Adult pair with two juvenals lacking throat patch seen same place November 12, 1977. Another pair constructing nest about 2.5 m up near top of spiny tree worked November 14–18, 1978 without advancing beyond basic framework on large, slightly flattened ovoid structure with domed central chamber approximately 35 × 20 cm, all of thorny sticks.

BEHAVIOR: One hopped and walked on ground with tail cocked, searching surface from which it ate green hairless caterpillar.

SPECIMENS: MCN: 1249–1250*. MN: 15170–15175, 31965–31968*. AMNH: 813044–813045*.

Thripophaga (*Asthenes*) *hudsoni*
Map 122

Hudson's Canastero

Pinto (1978) listed this species from Arroio Chuí, small stream entering Atlantic at Brazil-Uruguay border. I have no further details.

Phacellodomus erythrophthalmus
Map 123

Red-eyed Thornbird
João-botina
(John Low-boot)

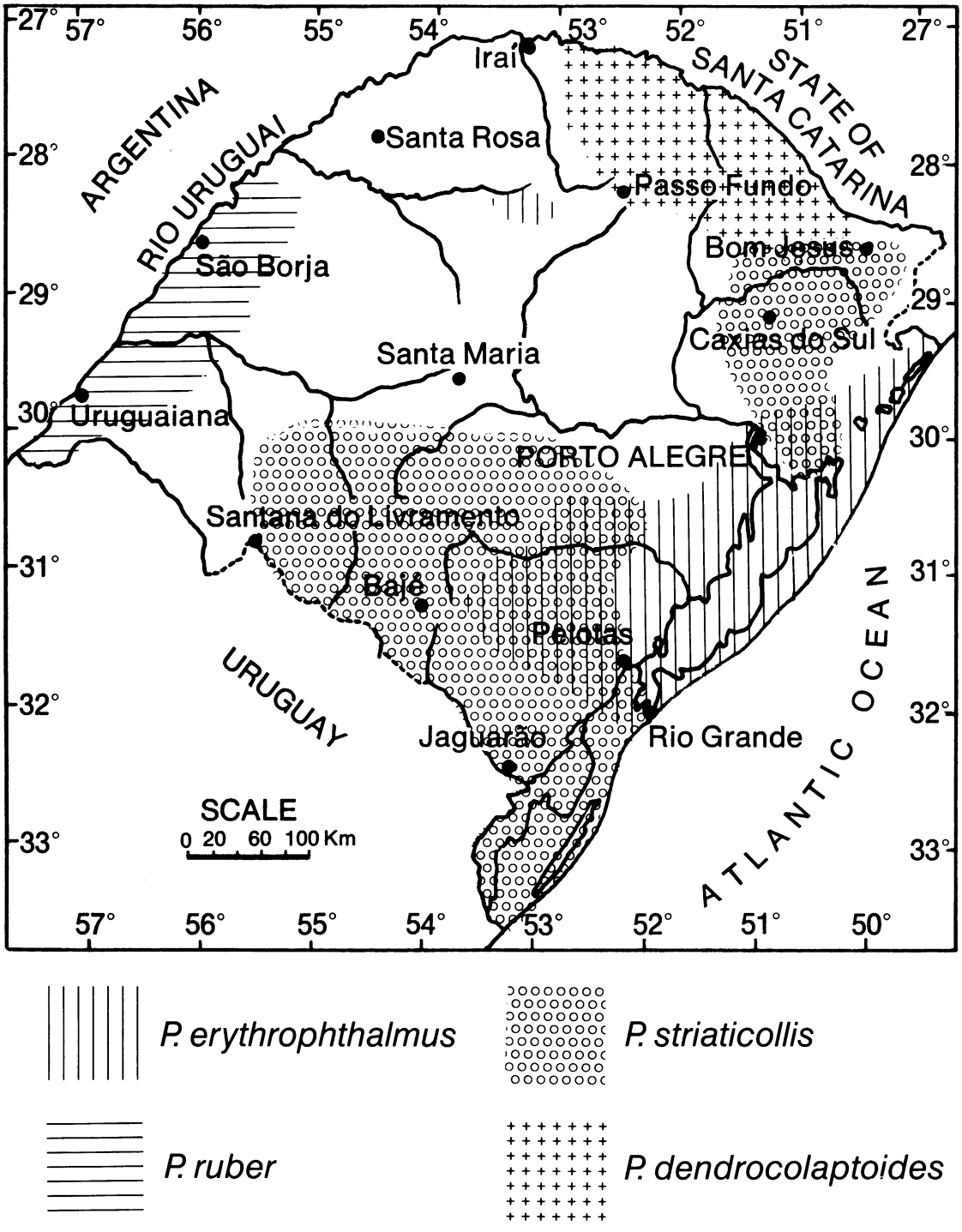
DISTRIBUTION AND STATUS: Uncommon; S along littoral to Quinta, in southern hills, once near Panambi in planalto, and two early specimens from foot of escarpment. Probably resident, but not registered in December or March–May. Found in swamps and marshy areas, usually with trees or high bushes. *Phacellodomus e. ferrugineigula.*

FIELD MARKS: Bright rich rufous forecrown, throat, and breast.

SIZE: Two males: 178–184 mm, 24–25 gr.

SOFT PART COLORS: Tarsus greenish gray to gray; maxilla black; mandible gray; iris red.

VOICE: (R) Short series of loud, resounding cries, usually starting with one lower and less loud followed by about four full-throated, ringing: "queea. .queea. .queea. .queea," and



MAP 123. Geographical distribution of the four species of *Phacellodomus* found in Rio Grande do Sul.

ending with one or two lower notes. Also individual smacking sounds.

BREEDING: Male collected October 25, 1972 had greatly enlarged testes, one of July 19, 1974 had very small ones.

BEHAVIOR: Extremely shy, usually keeps under cover but responds well to playback of recorded voice.

SPECIMENS: MCN: 1355–1356*. AMNH: 314726, 314727, 321329, 321330, 321866.

Phacellodomus striaticollis
Map 123

Freckle-breasted Thornbird
Tio-tio (onomatopoetic)

DISTRIBUTION AND STATUS: Uncommon resident of brushy areas and scrub near water in southern littoral and southern hills W to 55°30'W, and in NE, both in lowlands and higher altitudes. *Phacellodomus s. striaticollis.*

FIELD MARKS: Light beige breast speckled with rufous; rufous cap.

SIZE: Three males: 160–180 mm, 24.5–26.5 gr. One female: 163 mm, 26 gr.

SOFT PART COLORS: Tarsus greenish gray to gray; maxilla brownish to black; mandible gray, sometimes with dark tip; iris yellow to pale orange.

VOICE: (R) Three or four very loud, shrill, high cries, ending abruptly at peak of intensity, introduced by from one to many lower, ascending calls which sometimes go part way up, then hesitate before starting again as if bird undecided about proceeding.

BREEDING: Male collected November 24, 1971 in breeding condition. Female of March 8, 1972 and male of May 13, 1973 not. On November 23, 1974 at Fazenda da Pedreira, nest of small dead twigs, few weed stalks and lichen clusters under construction at end of dead, low-hanging branch only breast high, appeared to be divided into two chambers with opening at top of one. Extreme dimensions about 30 × 18 cm. On January 28, 1975 at Seival Valley, Caçapava do Sul, two-chambered nest, believed to be of this species, made of sticks and grass at end of *corticeira* (*Erythrina crista-galli*) branch, had three white eggs.

SPECIMENS: MCN: 1360–1362*. MN: (WB)582–583*, (WB)649*. AMNH: 314728–314732, 321322–321328, 321610–321614, 321867–321870, 813046*.

Phacellodomus ruber
Map 123

Greater Thornbird
Garrincha-do-buriti
(Buriti-Palm Wren)

DISTRIBUTION AND STATUS: Uncommon, resident in brushy areas and scrub near water, also reedbeds and sawgrass, within about 60 km of Rio Uruguay downstream from Rio Ijuí.

FIELD MARKS: Appreciably larger than preceding two *Phacellodomus* sp.; bright yellow eye.

SIZE: One male: 197 mm, 40 gr. Two females: 203–208 mm, 37–38 gr.

SOFT PART COLORS: Tarsus greenish gray to gray; maxilla blackish; mandible light gray; iris between Vivid and Brilliant Yellow.

VOICE: (R) One bird of pair, presumably female, sang relatively low volume, short series of "peeeu's" descending slightly in pitch while accelerating. Other responded occasionally with much longer, louder, emphatic series of "keee's" gradually descending scale, accelerating, and diminishing in volume but retaining individual quality to end. Also a note: "chweet."

BREEDING: Male and female collected November 23, 1974 and female of November 3, 1975 all had active gonads.

BEHAVIOR: Skulks in low tangles and undergrowth, rarely coming into open.

SPECIMENS: MCN: 1357–1359*. AMNH: 813047–813048*.

Phacellodomus (*Clibanornis*) *dendrocolaptoides*
Map 123

Canebreak Groundcreeper
Cisqueiro
(Debris Bird)

DISTRIBUTION AND STATUS: Rare, in E half of northern planalto SE to near Bom Jesus. Insufficient data yet available to determine whether resident. Earliest date August 24, also registered in November, January, February, March, and latest on April 2. Occupies thickets, bamboo tangles, near streams.

FIELD MARKS: Bright rufous cap, white or yellowish throat, clear in center, distinctively spotted on sides of neck.

SIZE: One female: 220 mm, 52.5 gr.

SOFT PART COLORS: Tarsus olive-green to greenish gray; maxilla black; mandible black on sides, light gray on gonys; iris brown.

VOICE: (R) Loud, strident, staccato series of a few hard "chk" sounds with squeaky overtones, changing about halfway through phrase to pure, high-pitched, quicker squeaks. When excited, series are prolonged and/or run together. Also a short, abrupt, gobbling sound.

BEHAVIOR: Birds sang actively August 24 and 28, 1975. In response to playback of song, one of pair kept up constant monotonous chatter, its tail accompanying this by short, bobbing movement, while other repeated taped song and gave single harsh call. They mounted into trees up to about 4 m.

SPECIMENS: MCN: 1301*. MN: 32234*. AMNH: 314633–314639.

Spartanoica maluroides
Map 124

Bay-capped Wren-Spinetail
Boininha
(Little Beret)

DISTRIBUTION AND STATUS: Scarce resident; along littoral S of 32°S and once in Seival Valley of Caçapava do Sul, in marshes, marsh edges, boggy areas with *Eryngium horridum,* reedbeds in lakes, wet scrub.

FIELD MARKS: Light rufous cap not extending back of crown; white eye.

SIZE: One male: 131 mm, 12 gr. One female: 138 mm, 10 gr.

SOFT PART COLORS: Tarsus shiny light tan; maxilla blackish; mandible white with dark tip; iris dull white.

VOICE: (R) Very thin, weak "tch-tch-tch. . ." kept up continuously but with irregular timing, probably a warning note. Also very weak, insect-like trill, all on one pitch, believed to have originated with fledgling in same grass clump with adult.

BREEDING: Male collected February 13, 1974 had moderately enlarged testes. Fledgling found January 7, 1976 near Santa Isabel.

BEHAVIOR: Inconspicuous, shy bird.

SPECIMENS: MCN: 1247–1248*. MN: (WB)1151*. AMNH: 321295–321302, 321591–321594, 321878–321884.

Phleocryptes melanops
Map 124

Wren-like Rushbird
Bate-bico
(Snap-bill)

DISTRIBUTION AND STATUS: Common resident, in reedbeds along littoral and occasionally inland to vicinity Porto Alegre. Also found at few locales in SW and near Rio Uruguay. *Phleocryptes m. melanops.*

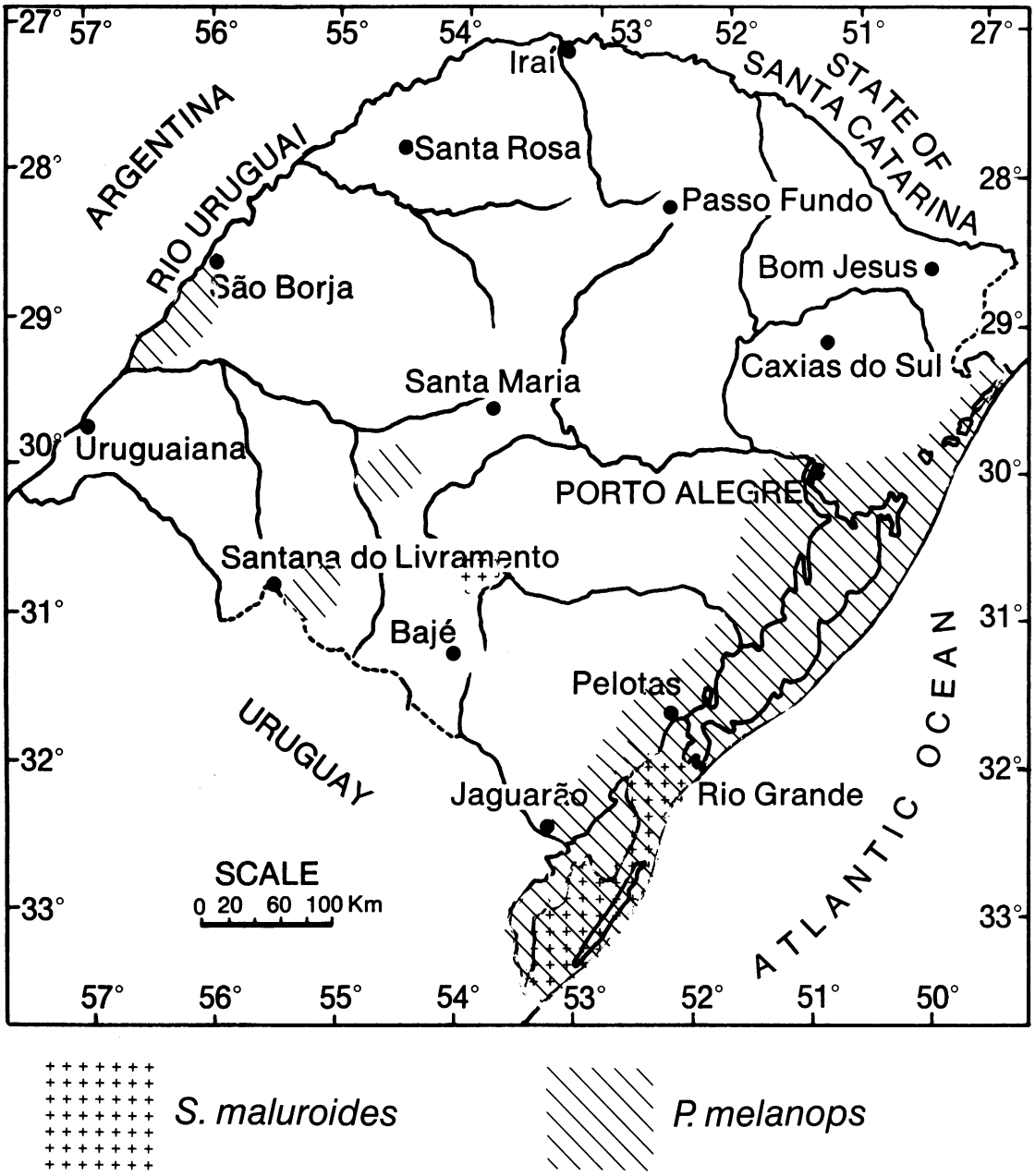
FIELD MARKS: Prominent light superciliary; extensive black in upperparts, streaked white; wings rufous and black; bill snapping sound.

SIZE: One male: 135 mm, 14 gr. One female: 130 mm, 14 gr. Five unsexed: 130–143 mm, 13–16 gr.

SOFT PART COLORS: Tarsus gray; maxilla brown to black; mandible whitish; pinkish, or greenish gray at base, dark at tip; iris brown.

VOICE: (R) Rapid click, as if mandibles being constantly snapped together. Click occurs at rate of several times per second and sometimes is maintained constantly for many minutes. I found this sound primarily vocal rather than mechanical. Although bill usually closes with each click, it sometimes does not close completely. On those occasions sound louder and less muffled than when bill closes entirely. Separate but practically simultaneous snap of bill itself can sometimes be heard when bird closes it entirely. Repertory also includes shoft, sharp, buzzing "zzt" given singly at intervals; a hard kissing sound with occasional high squeaks; and a quick, squeaky "ik."

BREEDING: Nesting period prolonged. Two nests with three eggs each found October 5, 1972 at Lagoa do Jacaré, and nest with only one, very fresh egg on February 10, 1974 at Estância Ipiranga. Latter egg unspotted Light Bluish Green. Nesting period in some areas undoubtedly influenced by occasional high-water levels which cover reeds. Nest constructed of dead, water-soaked coarse grasses, which are wound around several reed stalks to hold it in place. At these points, individual ribbon-like grass blades predominate, but in body of nest grass is compacted so blade ends,



MAP 124. Geographical distribution of *Spartanoica maluroides* and *Phleocryptes melanops* in Rio Grande do Sul.

roots, and some included feathers present solid, coarse-textured appearance. When water-soaked construction dries, it forms surprisingly rigid, durable whole. Enclosed nest roughly ovoid in form, about 14 cm × 9 cm, with long axis vertical. Small entrance at top of one side protected by semicircular eave projecting from roof and supported by arching sides rising from bottom corners of entrance. Entrance threshold particularly rigid

and appears to have mud mixed in, perhaps only brought by usage. One nest lined with black feathers, apparently of coots or gallinules. Associated with many nests is platform, resembling nest floor, constructed on same reeds few centimeters above top of nest (in few cases below nest). These are frequently constructed prior to nests themselves. I am not clear whether these represent false starts, form of protection for nest, or singing and display sites. I have found abandoned nests 50 m or more from dry land occupied by nesting mice.

SPECIMENS: MCN: 1285–1288*. MN: 32200–32201*. AMNH: 321281–321288, 321579–321587, 321846–321863, 813049*.

Limnornis curvirostris
Map 125

Curve-billed Reedhaunter
Junqueiro-de-bico-curvo
(Curve-billed Reedbird)

DISTRIBUTION AND STATUS: Moderately common resident along littoral, especially in S, inhabiting sawgrass and reeds in marshes and along marshy edges.

FIELD MARKS: Disproportionately long, decurved bill, whitish superciliary, rufous tail.

SIZE: (Note: All my specimens had unossified skulls and may not have achieved full growth.) One male: 166 mm, 29 gr. Three females: 168–177 mm, 27–30 gr.

SOFT PART COLORS: Tarsus gray; maxilla brown to blackish; mandible white with brown stains; iris brown.

VOICE: (R) Strident, hard, stuttered trill of rapid "re-te-te-te" notes rising quickly to crescendo, then falling more gradually in pitch and intensity. Also harsh single notes, like two hollow sticks being beaten together in irregular rhythm, probably a bother call.

BREEDING: On November 5, 1979 near Viamão, Voss (personal commun.) found round nest 22 cm in diameter with side entrance, made of finely stripped dry leaves, placed 80 cm aboveground in top of clump of marsh grass.

BEHAVIOR: Usually remains low in thick vegetation, occasionally rising to grass spike to sing.

SPECIMENS: MCN: 1293–1294*. MN: 32161*. AMNH: 321317–321321, 321606–321609, 321841.

Limnornis (*Limnoctites*) *rectirostris*
Map 125

Straight-billed Reedhaunter
Junqueiro-de-bico-reto
(Straight-billed Reedbird)

DISTRIBUTION AND STATUS: Moderately common resident; in southern hills from Jaguarão to Encruzilhada do Sul, and in high areas of NE, in small upland marshes with *gravatá* (*Eryngium horridum*). I have never found it except in association with this plant.

FIELD MARKS: Disproportionately long, straight bill, longer both absolutely and in proportion to body size than that of *L. curvirostris*. Immature is rich ochre below.

SIZE: Two males: 163–173 mm, 16–18.5 gr. One female: 170 mm, 21 gr.

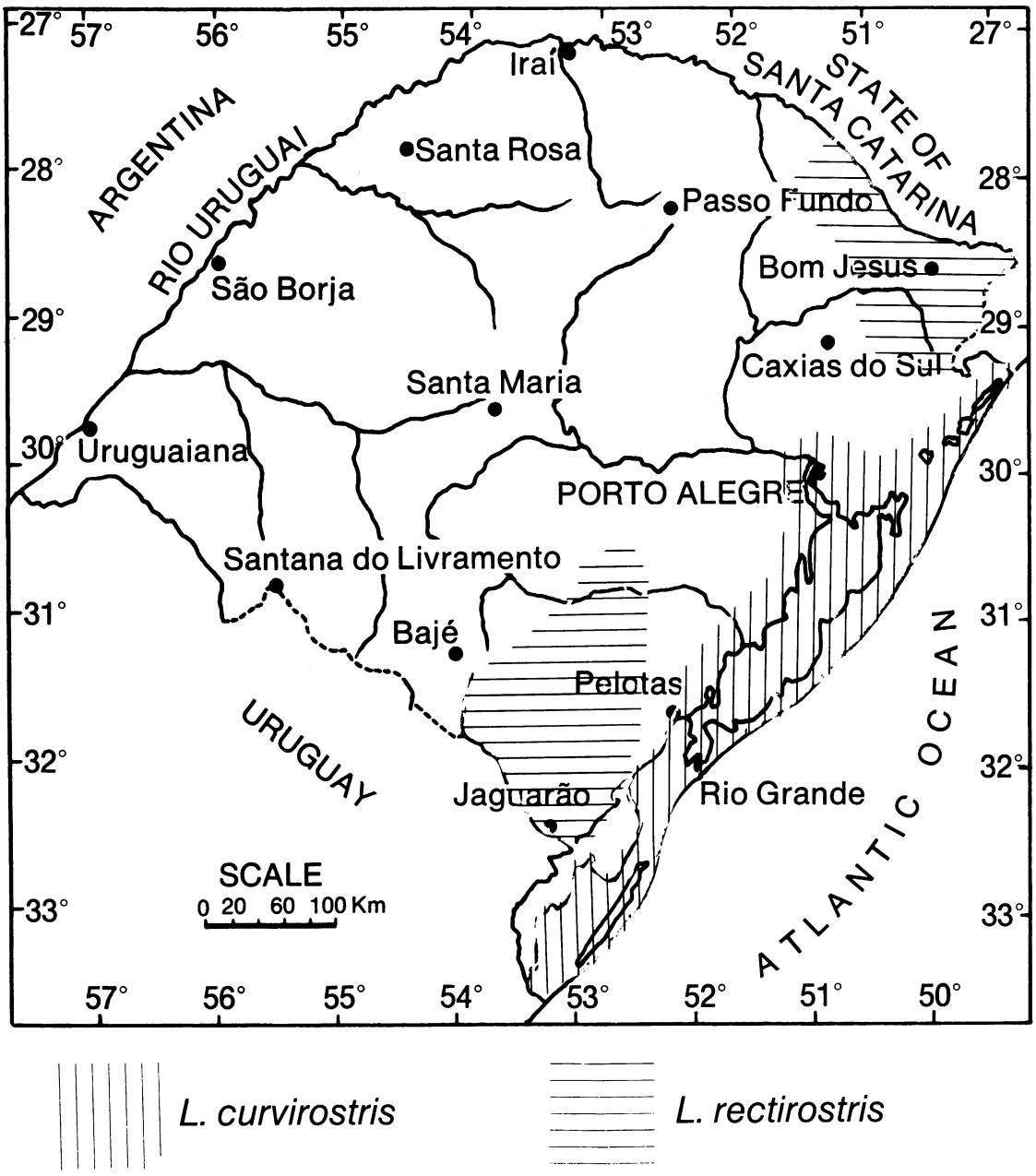
SOFT PART COLORS: Tarsus from grayish brown to olive-green; maxilla black; mandible pinkish gray to whitish with dark tip; iris from light brown to orange-red.

VOICE: (R) Rather long series of short sounds "pee-pee-pee-pee. . . ." accelerating constantly to rattly, terminal trill, all on one pitch without any distinct intensity peak. Also a continuous but irregular chipping, probably alarm note.

BREEDING: Male of October 25, 1972 and female of November 4, 1972 each had active gonads. At Aparados da Serra National Park on January 18, 1979 adult crossed road through marsh several times carrying food, but young not seen. Another seen then had molted entire tail.

BEHAVIOR: Normally remains low in marshy habitat protected from most predators by spiny-edged, stiff, pointed leaves of *Eryngium*, but occasionally moves out, as when first one I saw was singing 10 m up on exposed branch in vegetation at marsh edge, and when another climbed 5 m up tree on small cliff above marsh in response to my squeaking lure. One sat on fence wire at marsh edge with same knock-kneed stance often seen in marshbirds standing with each foot on different reed or grass blade.

SPECIMENS: MCN: 1283–1284. MN: 32204*, 32257*. USNM: (alcohol) 503764*. AMNH: 321842–321845.



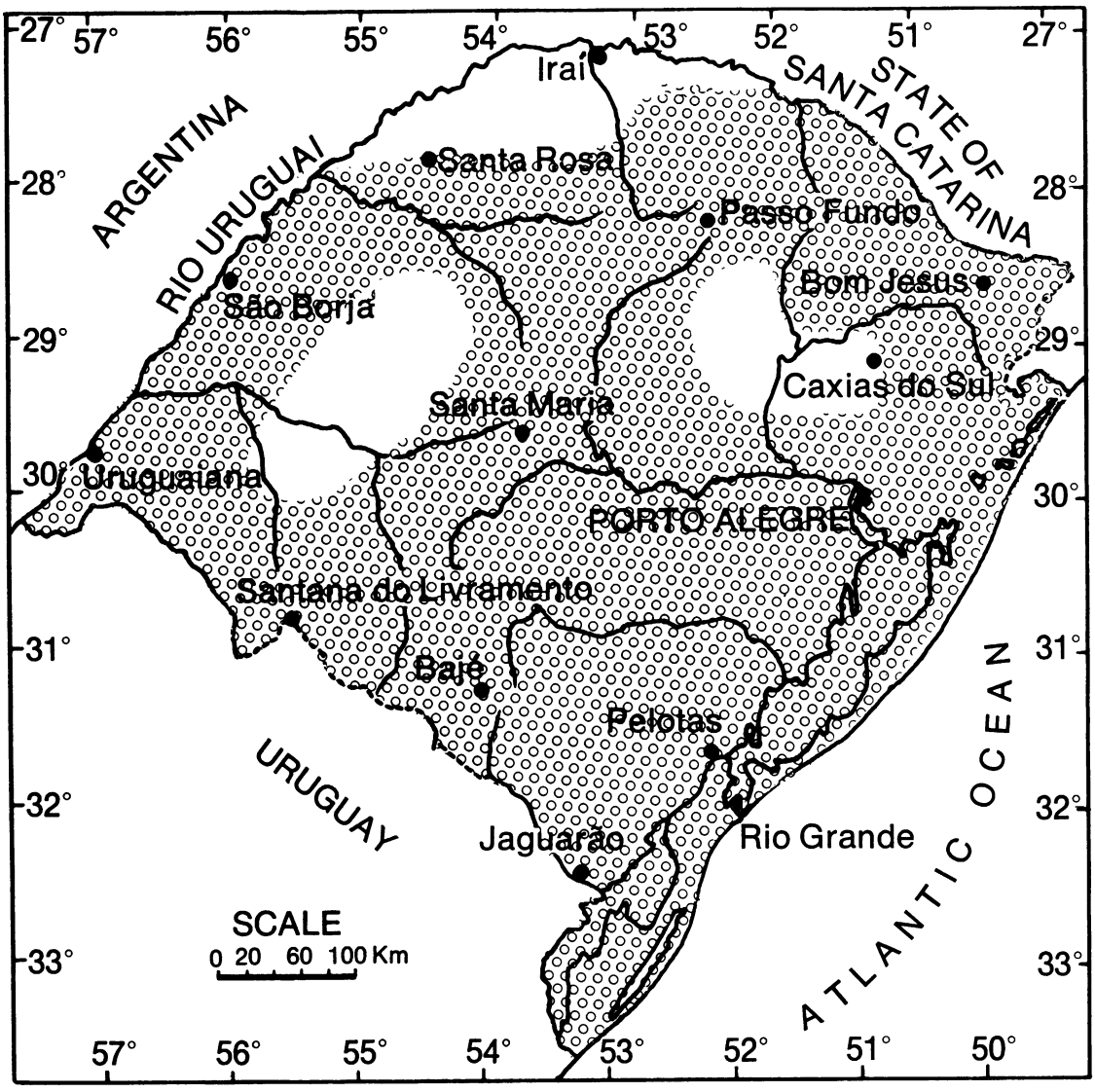
MAP 125. Geographical distribution of the two species of *Limnornis* in Rio Grande do Sul.

Anumbius annumbi
Map 126

Firewood-gatherer
Cochicho
(Whisper)

DISTRIBUTION AND STATUS: Common resident of open country, scrub, tree-studded campos throughout state except in extreme NW and two regions in central W and NE where not yet registered. *Anumbius a. annumbi.*

FIELD MARKS: White-tipped, fan-shaped



MAP 126. Geographical distribution of *Anumbius annumbi* in Rio Grande do Sul.

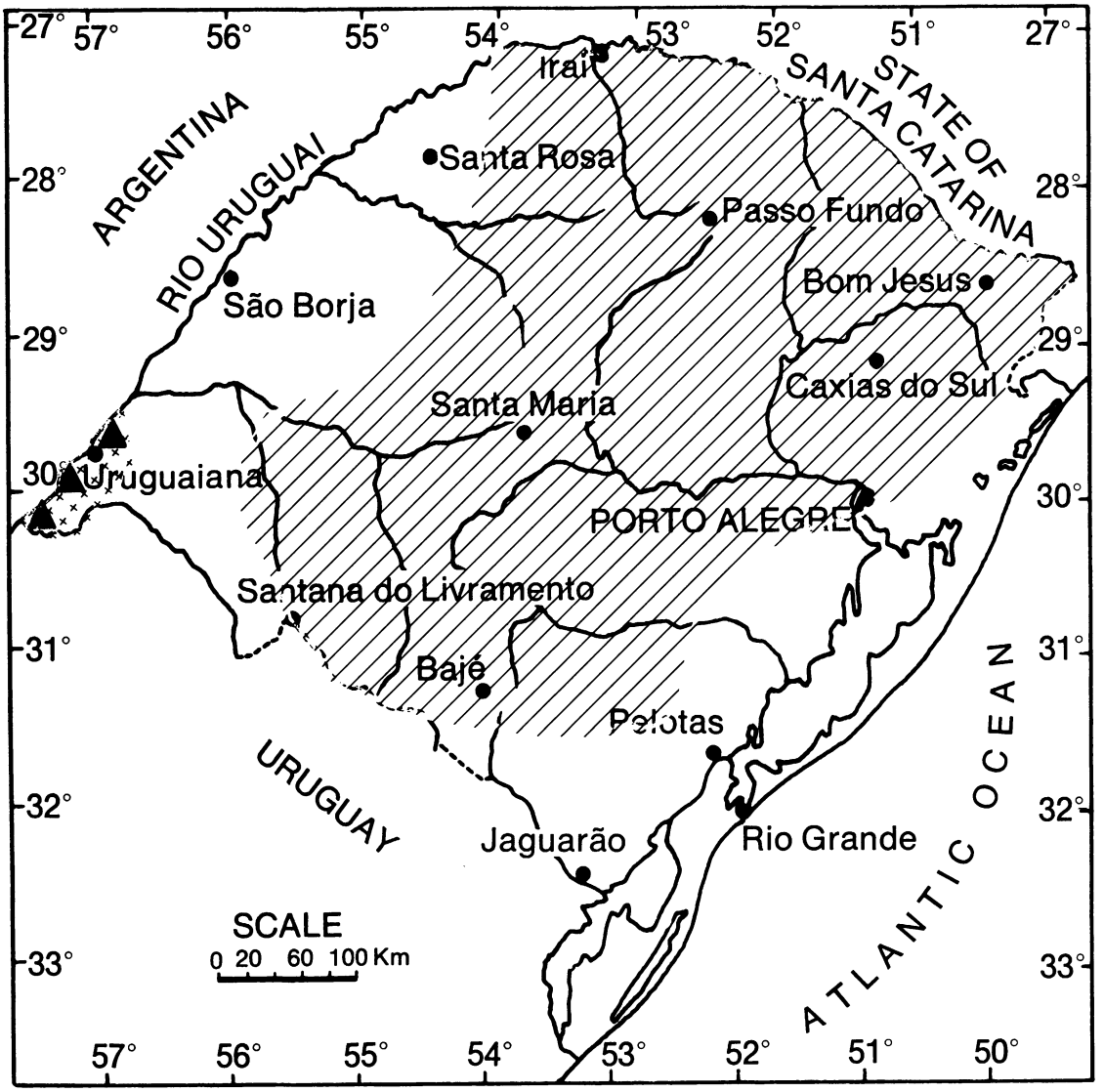
tail; necklace of black spots borders white throat.

SIZE: One female: 203 mm, 45 gr. One unsexed: 193 mm, 38 gr.

SOFT PART COLORS: Tarsus greenish gray; maxilla light brown; mandible light gray; iris reddish.

VOICE: (R) Bouncing, bubbly, fairly short, rapid phrase: "chi-chi-chi-chichichich-CHchchchch," accelerating to instant of intensity with high overtones, then terminating in mechanical rattle on lowering pitch.

BREEDING: Nest building observed from mid-October to late March. Large stick nests often placed on utility poles as well as in eucalyptus, araucaria, and miscellaneous very small trees, usually near center rather than out on branches like *Phacellodomus* sp. On October 13, 1971 near Massambará we saw single nest structure with entrances on each



MAP 127. Geographical distribution of *Coryphistera alaudina, Lochmias nematura* and *Pseudoseisura lophotes* in Rio Grande do Sul.

end, one end occupied by *Machetornis rixosus,* other end by this species, which had newer half and was still adding sticks to it.

BEHAVIOR: Flicks tail quite violently when disturbed.

SPECIMENS: MCN: 52, 236, 238, 1364–1365*. MN: 15188, 15190, 15192. AMNH: 43191, 314733–314738, 321315, 321598–321605, 321885–321887.

Coryphistera alaudina
Map 127

Lark-like Bushrunner
Corredor-crestudo
(Large-crested Runner)

DISTRIBUTION AND STATUS: Common resident in espinilho at W tip; recent records all from Arroio Quaraí-chico. *Coryphistera a. alaudina.*

FIELD MARKS: Heavily streaked above and below; distinctly crested.

SIZE: Two females: 167–168 mm, 37–42 gr. Three unsexed: 161–175 mm, 31–37.5 gr.

SOFT PART COLORS: Tarsus yellowish brown; maxilla yellowish brown with dark tip; mandible yellowish brown to whitish; iris light grayish brown.

VOICE: (R) High, bubbling, tinkling trill, irregularly timed with wandering pitch. When cowbirds in vicinity of nest, voiced constant, excited, rapid "chk chk chkchkchk chk chkchk chk. . . ."

BREEDING: Ovaries appeared inactive in two females collected November 14, 1970.

BEHAVIOR: Usually in small flocks or family groups. Spends much time walking on ground, scratches for food, sometimes with both feet. Picks up dung to look for insects underneath.

SPECIMENS: MCN: 1363*. MN: 15202–15205, (WB)105*, (WB)1158*. USNM: (alcohol) 503783*. AMNH: 813050*.

Lochmias nematura
Map 127

Sharp-tailed Streamcreeper
João-porca
(Sloppy John)

DISTRIBUTION AND STATUS: Common resident; along stream edges and on exposed rocks in midstream, both in forest and open areas; in much of state but not registered along littoral, much S of 31°30'S, or close to Rio Uruguay downstream from Turvo Forest Reserve. *Lochmias n. nematura.*

FIELD MARKS: Sharply marked: abundant white spots on very dark underparts. White spot on sides of lower neck.

SIZE: One male: 156 mm, 23.5 gr. One female: 144 mm, 23 gr.

SOFT PART COLORS: Tarsus reddish gray to pinkish gray; maxilla black; mandible blackish brown to black with grayish white base; iris brown.

VOICE: (R) Quick, short, thin trill.

BREEDING: Voss (personal commun.) found nest in hole in embankment December 8, 1976 at zoo, Sapucaia do Sul. Female and male collected April 13, 1971 and May 13, 1972, respectively, had inactive gonads.

BEHAVIOR: Reminiscent of *Cinclus* sp., but does not go under water. Forages at very edge of streams, walking in water on edge of shore and rocks, picking up food from shallows. While foraging, tosses things aside with lateral head motion similar to that of *Sclerurus scansor.*

SPECIMENS: MCN: 150, 237, 1391–1392*. AMNH: 314640, 314641, 314644, 802149.

Pseudoseisura lophotes
Map 127

Brown Cachalote
Coperete
(Big Crest—from Spanish)

DISTRIBUTION AND STATUS: Common resident in espinilho at W tip, also occurring uncommonly in other similar habitats in Uruguaiana area. *Pseudoseisura l. argentina.*

FIELD MARKS: Very large for furnariid; distinctly crested; reddish tinges in plumage.

SIZE: One male: 270 mm, 90 gr. Two females: 247–249 mm, 78–81 gr.

SOFT PART COLORS: Tarsus gray to dark greenish gray; maxilla black; mandible light gray with black tip; iris very light greenish gray to pale yellow.

VOICE: (R) Several vocalize together with different calls, all loud, coarse, non-musical. One, low: "zzzzzuut. . . . .zzzzzuut. . . . . ," as

if comb being rubbed across canvas; another higher, dry, guttural: "akkkkkkk. . . . akkkkkkk. . . ."; a third, higher yet, descending scale and accelerating: "chuck. . . . chuk. . .chuk. .chuk. .chuk. .chukchukchukchuk. . . . ."

BREEDING: Male collected November 12, 1970 had much enlarged testes. Two females of July 10, 1973 had inactive ovaries.

BEHAVIOR: Usually found in small flocks or family groups.

SPECIMENS: MCN: 1366–1367*. MN: 15646, 31961–31962*.

Philydor rufosuperciliatus (*Syndactyla rufosuperciliata*)

Buff-browed Foliage-gleaner
Trepador-quiete
(Quiete [onomatopoetic] Creeper)

DISTRIBUTION AND STATUS: Resident in forest and woodland throughout state, very common in most of E half and N, becoming less so in W and along Uruguayan border. *Philydor r. acrita.*

FIELD MARKS: Heavily streaked underparts, xenops-like upcurve to mandible. Appearance and behavior quite distinct from other Rio Grande do Sul *Philydors.*

SIZE: Eight males: 159–192 mm, 24–29 gr. One female: 173 mm, 24 gr.

SOFT PART COLORS: Tarsus dark olive to brown; maxilla brown to black; mandible whitish to gray, edges and tip dark; iris brown.

VOICE: (R) Like clacking of ratchet on wheel revolving at varying velocities, at times balky and sporadic, often continuous for prolonged periods. Makes additional higher overtone at faster speeds. Also, a single, short, emphatic kissing sound, ending in "eeeup" or "eeeow."

BREEDING: Males collected September 29, 1975 near Tôrres and November 27, 1973 near Garruchos had greatly enlarged testes. Pair feeding nestlings on November 10, 1978 near Caràzinho brought small items of food at intervals of 10 minutes or more to hole 5 m up in rotted portion of tree.

BEHAVIOR: Usually forages on branches and trunks of trees and bushes in preference to outer, foliated areas. On August 18, 1974 one dug into and fed from tent caterpillar nest.

SPECIMENS: MCN: 249, 1346–1354*. MN: 13342. AMNH: 314797–314819, 314821–314827, 321331–321333, 321888–321892, 810513–810516*.

Philydor (*Anabacerthia*) *amaurotis*
Map 128

White-browed Foliage-gleaner
Limpa-folha-miudo
(Tiny Leaf-cleaner)

Known in Rio Grande do Sul only from one specimen collected by Kaempfer September 18, 1928 near Santa Cruz.

SPECIMEN: AMNH: 314747.

Philydor lichtensteini
Map 128

Ochre-breasted Foliage-gleaner
Limpa-folha-ocrácea
(Ochraceous Leaf-cleaner)

DISTRIBUTION AND STATUS: Scarce; registered only in extreme N at Turvo and Nonoai Forest Reserves, Iraí, and Garruchos, in forests in August, September, March, and May.

FIELD MARKS: Dark cap reaches bill, differentiating it from *P. rufus.*

SIZE: Two males: 150–155 mm, 20–21 gr.

SOFT PART COLORS: Tarsus greenish gray; maxilla brownish gray; mandible light gray; iris dark.

BREEDING: Males collected September 12 and 17, 1971 had active testes.

SPECIMENS: MCN: 1399*. AMNH: 813051*.

Philydor atricapillus
Map 128

Black-capped Foliage-gleaner
Limpa-folha-coroada
(Crowned Leaf-cleaner)

DISTRIBUTION AND STATUS: Uncommon; in NE littoral forests, where registered June, September, October, and January.

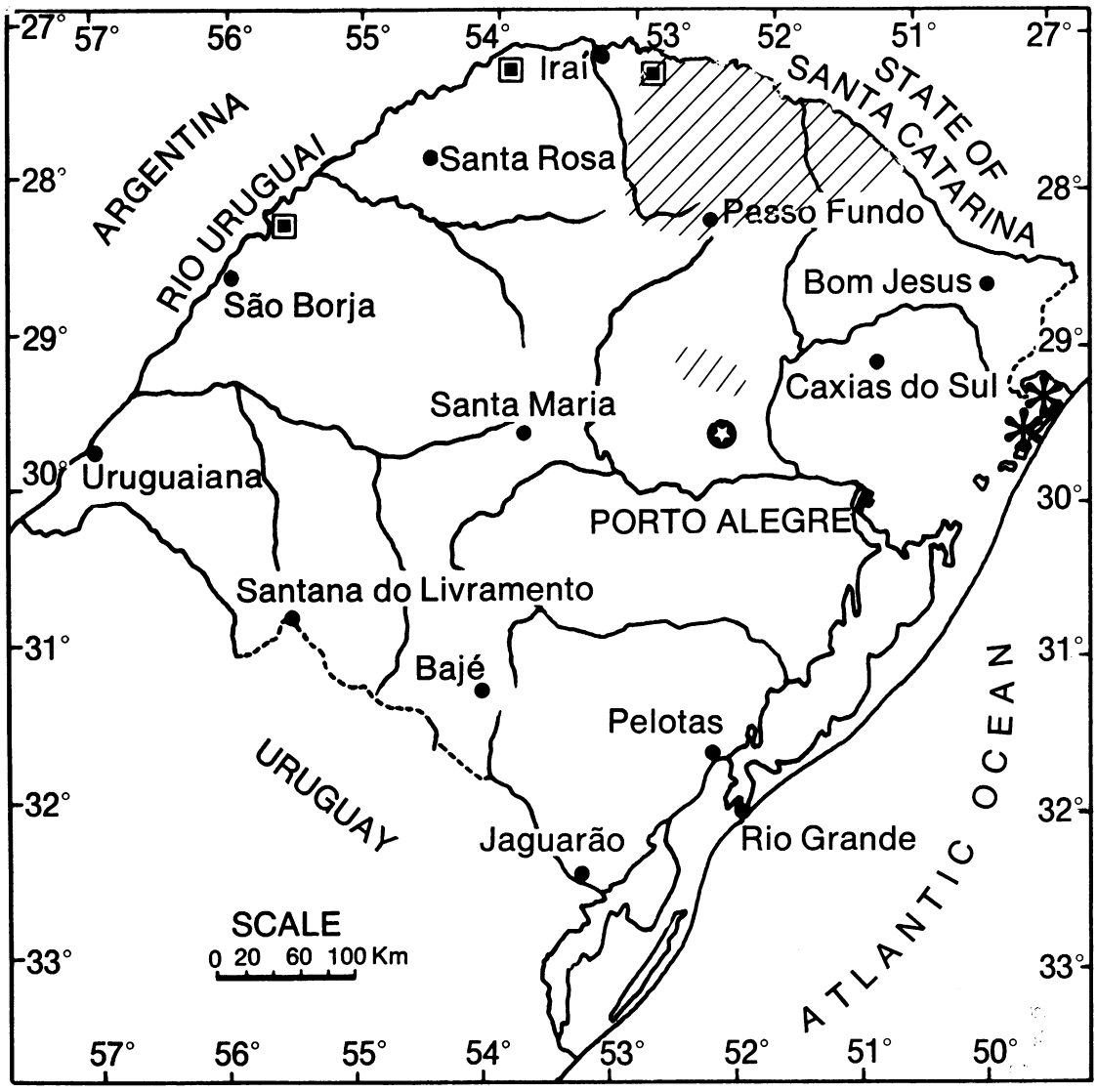
FIELD MARKS: Black cap and black lines below and behind eye contrast sharply with other ochre and rufous plumage.

SIZE: Three females: 167–176 mm, 21–22 gr.

SOFT PART COLORS: Tarsus pale ochre-yellow to light olive-gray; maxilla black; mandible very light gray to greenish or yellowish gray; iris brown.

VOICE: (R) Rather long, steeply downtrending, whistled but mechanical-sounding fluttered trill, dropping almost an octave.

BREEDING: Female collected September 30, 1973 had slightly enlarged ovary and folli-



MAP 128. Geographical distribution of four species of *Philydor* in Rio Grande do Sul.

cles; two females of January 24, 1976 and June 25, 1974 had inactive ovaries.

SPECIMENS: MCN: 327, 1402–1404*. AMNH: 314701–314702, 813052*.

Philydor rufus
Map 128

Buff-fronted Foliage-gleaner
Limpa-folha-de-testa-baia
(Bay-browed Leaf-cleaner)

DISTRIBUTION AND STATUS: Fairly common resident of forest canopy in area between 51°W and 53°W, N of 28°30'S, but also registered near Sete Leguas, and uncertainly at Turvo Forest Reserve. *Philydor r. rufus.*

FIELD MARKS: Light forehead and long tail differentiate it from *P. lichtensteini.*

SIZE: One male: 191 mm, 25 gr. One female: 196 mm, 27 gr.

SOFT PART COLORS: Tarsus ochre-green; maxilla black; mandible black on sides, gonys greenish; iris brown.

VOICE: (R) Downtrending series of sharp, hard, rapidly repeated "tsee's" with metallic, tinkling quality. Response to playback was continuous succession of similar notes, wandering somewhat up and down scale. Also a sharp "skik."

BREEDING: Male collected November 23, 1973 had much enlarged testes.

BEHAVIOR: Associates with other canopy species in mixed feeding flocks.

SPECIMENS: MCN: 1405–1406*. AMNH: 314714–314725, 813053*.

[*Philydor* (*Cichlocolaptes*) *leucophrys*]

[Pale-browed Treehunter]

This species included on state list (Belton, 1978a) based on one specimen in British Museum collected by Rogers. On reconsideration, because specimen labeled only "Rio Grande," not "Rio Grande do Sul," I think species should be omitted until better evidence its presence here available.

Automolus leucophthalmus
Map 129

White-eyed Foliage-gleaner
Barranqueiro-olho-branco
(White-eyed Embankmentbird)

DISTRIBUTION AND STATUS: Rare; found only twice (Belton, 1978a), once near Tôrres in mid-December 1971, and once near Garruchos in late November 1973, both times in forest. *Automolus l. leucophthalmus.*

FIELD MARKS: Bright rufous tail, white throat and breast, white eye.

SIZE: Two males: 191–198 mm, 32–35 gr. One female: 194 mm, 35 gr.

SOFT PART COLORS: Tarsus grayish yellow to olive-green; maxilla brown to black; mandible greenish gray to light gray; iris white.

VOICE: (R) Loud, vigorous, rapid series of approximately five bisyllabic phrases: "tuWEET tuWUT tuWUT tuWUT tuWUT." Garruchos bird sang this so fast it became "tWEE tWEE tWEE tWEE tWEEt." Also slower, more deliberate but equally vigorous two syllable phrase: "tEE-pUT. . .tEE-pUT. . .tEE-pUT," and a single shrill note.

BREEDING: Males of November 28, 1973 and December 16, 1971 had greatly enlarged testes. Female of December 17, 1971 had enlarged ovary but small follicles.

SPECIMENS: MCN: 1407–1408*. AMNH: 813054*.

Sclerurus scansor
Map 129

Rufous-breasted Leafscraper
Vira-folha
(Leaf-turner)

DISTRIBUTION AND STATUS: Uncommon resident; found on floor of moist and remote forest areas at scattered localities across N, in vicinity of escarpment, and in hills along W edge Lagoa dos Patos. Many records old, including most southerly, from W of São Lourenço. *Sclerurus s. scansor.*

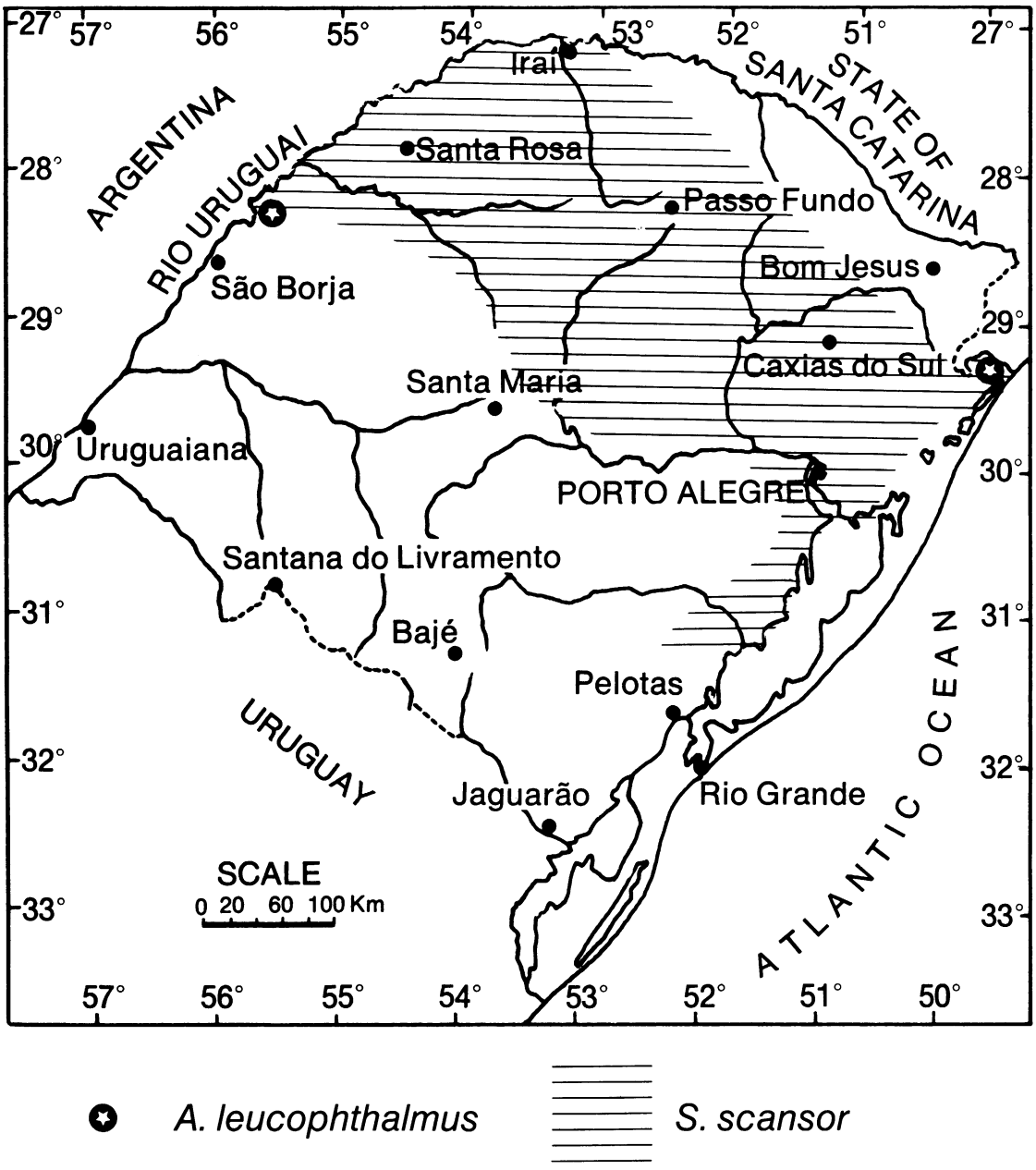
FIELD MARKS: Underparts except throat very dark; reddish rump contrasts with black tail.

SIZE: Three males: 175–201 mm, 35–40 gr.

SOFT PART COLORS: Tarsus blackish brown to black; bill black with whitish at base of mandible; iris brown.

VOICE: (R) Metallic trill, faster than *Xenops contaminatus,* running slightly down scale. Sometimes starts with few individual notes: "tsik. . .tsik. . ." before trill, which slows at end and concludes with few more such notes. On responding to playback of voice, one individual started and ended trill very strongly without these additions. Also, a single, sharp alarm note.

BREEDING: Two males collected September 23, 1972 and December 1, 1975 in Canela vicinity had greatly enlarged testes, while another of November 28, 1970 had only slight enlargement.



MAP 129. Geographical distribution of *Automolus leucophthalmus* and *Sclerurus scansor* in Rio Grande do Sul.

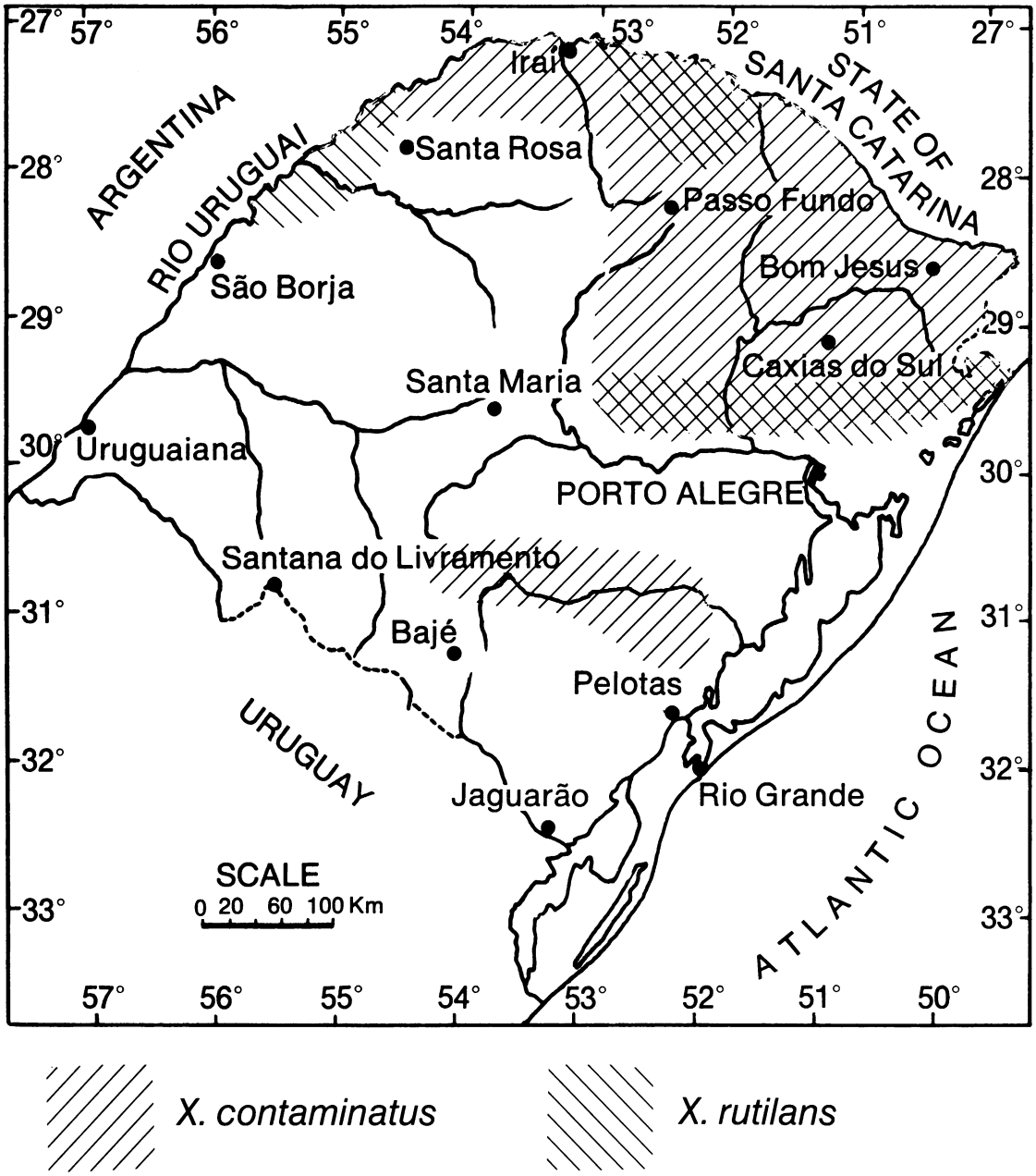
BEHAVIOR: When bird calling, tail vibrates vertically in rhythm with voice, so fast it becomes blurred to observer. When foraging on forest floor, tosses leaves aside with sharp lateral jerk of head.

SPECIMENS: MCN: 276, 333, 1389–1390*. AMNH: 314832–314839, 321896, 813055*.

Xenops (*Heliobletus*) *contaminatus*
Map 130

Sharp-billed Treehunter
Trepadorzinho
(Little Creeper)

DISTRIBUTION AND STATUS: Common



MAP 130. Geographical distribution of the two species of *Xenops* found in Rio Grande do Sul.

resident of forest across extreme N and in NE quarter down to and including escarpment. Also in central portion of southern hills.

FIELD MARKS: Woodpecker-like stance; buffy coloration of throat and superciliary; latter extends to edge of nape.

SIZE: Two males: 127–130 mm, 14–15 gr. One female: 132 mm, 13 gr.

SOFT PART COLORS: Tarsus greenish gray to yellowish green; maxilla brown to black; mandible pinkish gray; iris brown.

VOICE: (R) Slow, hard, staccato trill with

metallic quality, mostly on one pitch but sometimes switching to high, squeaky character, or taking on tinkling overtones. This vocalization sometimes interspersed with scarcely audible, irregular, high, single squeaks and trills.

BREEDING: Male collected October 7, 1972 had much enlarged testes, while those of one collected April 12, 1971 much reduced.

SPECIMENS: MCN: 1415*. MN: 32188*. USNM: (alcohol) 503765–503768*. AMNH: 314753–314788, 321893–321895, 810517*.

Xenops rutilans
Map 130

Streaked Xenops
Bico-virado-carijó
(Mottled Tilt-bill)

DISTRIBUTION AND STATUS: Uncommon; occurring at scattered localities in extreme N and NW downstream to Garruchos, and along foot of escarpment from Sinimbu to Tôrres. Found in forest, probably all year, but not registered in February, April, May, or June. *Xenops r. rutilans.*

FIELD MARKS: Upslanted mandible; woodpecker-like stance.

SIZE: One male: 128 mm, 12.5 gr. One female: 127 mm, 16 gr.

SOFT PART COLORS: Tarsus gray; maxilla dark brown to blackish; mandible white; iris brown.

VOICE: (R) Slow, high-pitched trill of squeaks or quick kissing sounds. Pair engaging in what I took to be courtship chasing at Santo Cristo January 22, 1973 uttered high "pik. . .pik. . .pik. . . ."

BREEDING: Female collected August 4, 1973 at Garruchos had greatly enlarged follicles; male collected September 3, 1973 near Tôrres had greatly enlarged testes.

SPECIMENS: MCN: 1387–1388*. AMNH: 314828–314831.

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