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## The Raccoon (*Procyon lotor*) on St. Catherines Island, Georgia. 8. Reduction in Summer Home Ranges by Females

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### ABSTRACT

Two female raccoons on St. Catherines Island, Georgia, concentrated their activity in July 1979, on a smaller home range than they used in April, perhaps because of care of young. A male studied in the same area did not appreciably change his home range, which was larger than those of the females. One of the females remained in the area

mapped in 1979 for at least 5.5 years. Home ranges for both sexes were smaller than ranges, which had also been measured by radiotelemetry, on the north part of the island. Perhaps this was because the animals' needed resources are available in a smaller area as a result of a finer interspersion of areas of woods and marshes in the southern part.

### INTRODUCTION

In April and July 1979, 632 nighttime locations were established by radiotelemetry for one male and two female raccoons on the southern part of St. Catherines Island in Liberty County, Georgia. These months and the location on the island were selected for another study on foraging raccoons and nesting sea turtles (Anderson, 1980) in which a hypothesized shift by raccoons toward the beach when turtles were nesting there did not occur. We did obtain, incidentally, the information for the present report. For more on the natural history of the island see Hudson (1978) and Thomas et al. (1978).

### METHODS AND DATA

The ranges of the three raccoons were within the area mapped in figure 1. The first raccoon (ear tag no. 1001) was an adult fe-

male originally captured March 30 at station 243; weight 4.2 kg., total length 750 mm.; vagina clearly open; recaptured April 14 at the bridge; recaptured the following year on July 23 and collar removed. The second raccoon (ear tag no. 1002) was an adult male originally captured April 11 at station 240; weight 4.8 kg., length 730 mm.; recaptured June 21 at station 238 and released. The third raccoon (ear tag no. 1003) was an adult female and when recaptured April 4 at the bridge she retained an ear tag from her original capture four years earlier (January 15, 1975) at station 242. In April 1979, she weighed 4.5 kg. and was 750 mm. long. She was retrapped July 23, 1980, at the road junction and the collar was removed.

Habitats designated as marsh, woods, grass and scrub were determined from aerial photographs taken in 1972. Each location estab-

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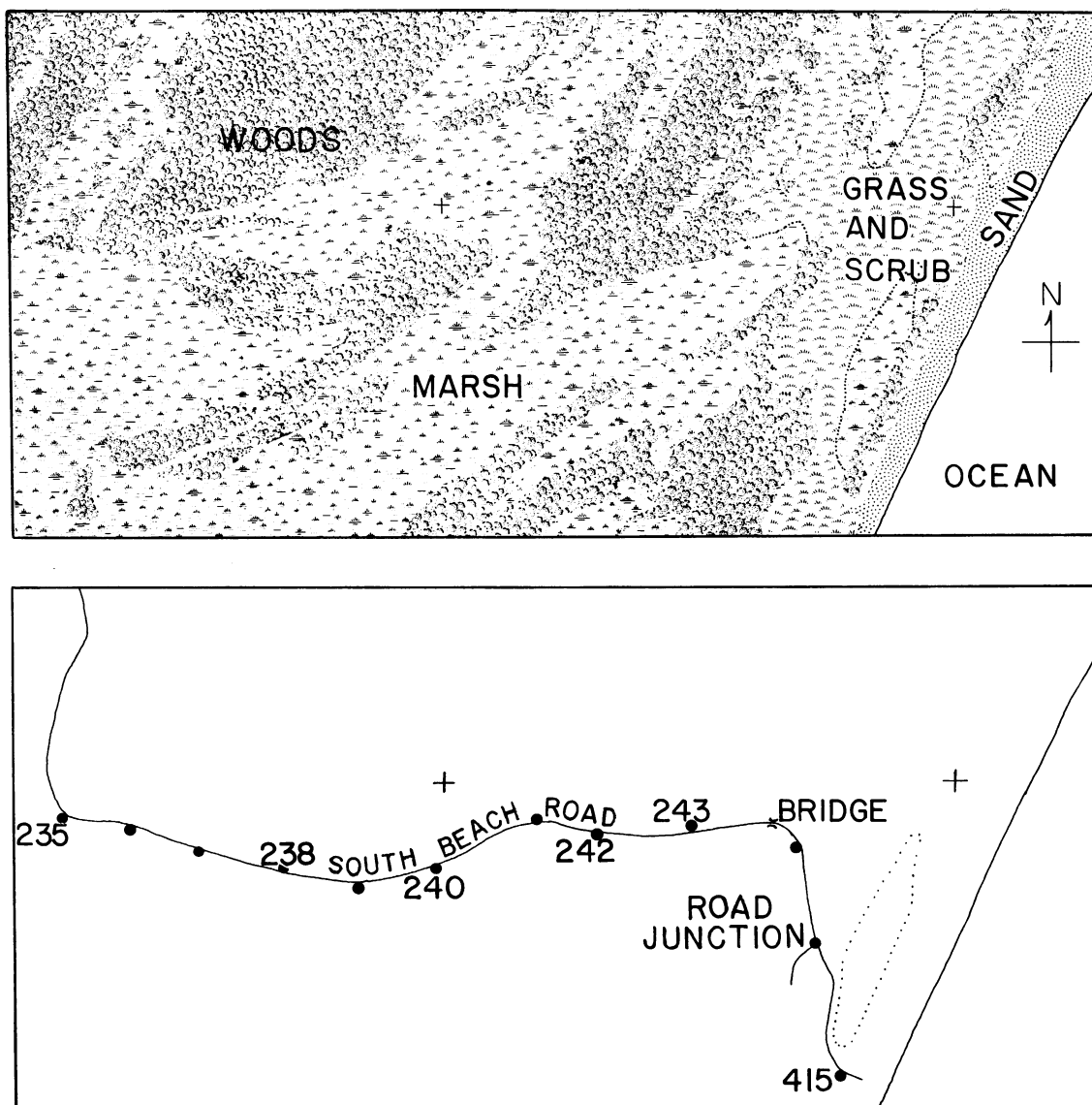


FIG. 1. Maps of study area on the south part of St. Catherine's Island, Georgia. The upper map shows major habitats, the lower map shows trap stations along roads. Small cross marks are 1 km. apart and the left cross is intercept 3496 N and 484 E of the 1000 Meter Universal Transverse Grid.

lished by telemetry was assigned to one of these habitats. We estimate that in most cases the plotted location was within 50 m. of the actual location of the animal.

Locations were taken between 1900 and 0600 hours (Eastern Standard Time) in April and (Daylight Saving Time) in July. Radio-tracking dates were: April 2 to 11 for no. 1001, April 12 to 19 for no. 1002, April 5 to

14 for no. 1003, and July 2 to 26 for all three. About 30 live-traps were set daily in the study area from March 27 to April 19 and from June 4 to July 26.

## RESULTS AND DISCUSSION

Ranges in April and July for each animal are shown in figure 2. The females used dif-

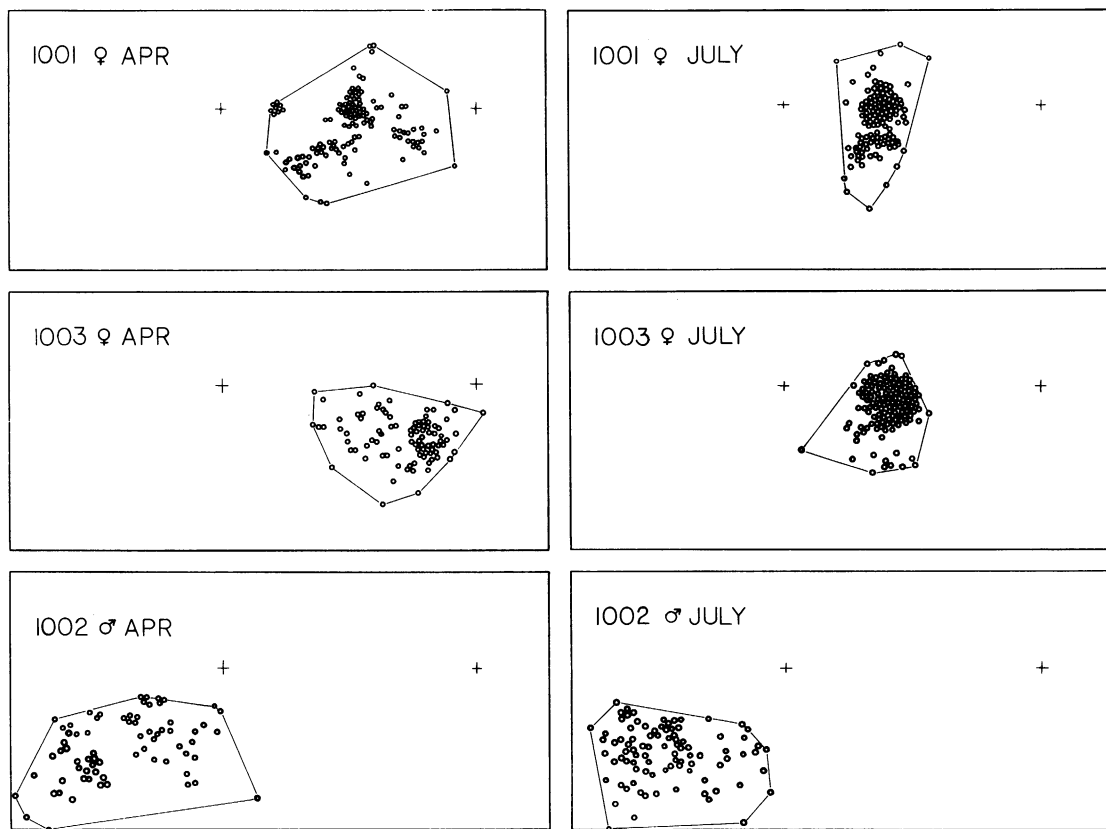


FIG. 2. Maps of the study area shown in figure 1 with locations established by radiotelemetry for each of three raccoons in April (maps at left) and in July (maps at right) plotted for comparison. When a raccoon was at a location more than once the circles representing the different "fixes" were displaced slightly so that the number could be visualized more easily. The cross marks are as in figure 1.

ferent habitats in April and July ( $P < .005$ ), the male did not (chi square values based on data in table 1 for each raccoon were: 1001, 26.51; 1003, 104.8; and 1002, 1.36; d.f. 2).

The ranges for both female raccoons decreased in size from April to July (by 51% for 1001 and 32% for 1003; a 21% decrease for the male is of dubious significance). The lo-

TABLE 1  
Comparison of Numbers of Locations and of Home Ranges<sup>a</sup>

		Woods	Marsh	Grass and Scrub	Total	Home Range (hectares)
♀ 1001	April	66	41	22	129	13
	July	89	31	0	120	16
♀ 1003	April	12	31	49	92	22
	July	88	41	0	129	15
♂ 1002	April	23	48	0	71	38
	July	22	69	0	91	30

<sup>a</sup> Established by radiotelemetry in each habitat and convex polygon estimates of home ranges for each of three raccoons in April and July 1979 on St. Catherines Island, Georgia.

cations of the female raccoons unlike those of the male were noticeably more concentrated in July than in April.

In April but not in July each of the females visited an area of mixed grass and scrub in the eastern part of its range. Perhaps some specific food was available in April but not in July. We have no data to use in testing this hypothesis.

The male raccoon had a larger range than either of the females, which is characteristic for the species (Lotze and Anderson, 1979).

The ranges (table 1) for both the male and the females are smaller than those studied on the northern part of St. Catherines Island (Anderson and Hudson, 1979), where ranges of males are usually more than 100 hectares and those of females are usually more than 25 hectares. The ranges on the northern part of the island are likewise smaller than those reported in studies on the mainland (Lotze and Anderson, 1979). These differences in home range size are correlated with the distribution of needed resources, including woods and marshes, which are more finely interspersed in our study area than on the northern part of the island. Less space may be used by an animal if the animal's needs are available in a smaller area (Sanderson, 1966; Miller and Getz, 1977).

Parturition usually occurs in May or June (Johnson, 1970; Schneider, Mech and Tester, 1971). The months of April and July precede and follow this period and the reduced range and shift in habitat use by the female raccoons may have resulted from their having litters to care for in July, hence restricting their movements to areas near den sites. We did not verify this by direct observation, partly because of the density of the undergrowth in the area where they rested in daylight hours.

Published data from telemetry on reduced home ranges after parturition in raccoons are few. Ellis (1964) radio-tracked one female raccoon in Illinois that reduced her movements at a time of suspected parturition. Schneider, Mech and Tester (1971) monitored two female raccoons before and after parturition but did not estimate home-range size. They published a map for one of the females (their fig. 5) which shows grid squares

occupied. The number of squares used while nursing young is 79 percent of those occupied in the period before young were born, so there is some indication in their data of a concentration of activity by a female raccoon while nursing. They stated that parturition and raising a family had relatively little effect on movements of female raccoons except in respect to bedding patterns (use of same den until young become mobile) and circadian rhythms (female active earlier in the afternoon when nursing young). Fritzell (1978) found no differences in monthly home-range sizes within any sex-age group studied in North Dakota, but noted that "it was apparent from field observations that females with nestling young had restricted post-partum movements." He established 1154 locations for five females, each of which had a smaller home range after the estimated date of parturition. The mean in hectares (424, based on 245 locations) for the two weeks before parturition decreased to 138 hectares (225 locations) for the two weeks after parturition.

Other animals and other areas need to be studied to resolve the question as to where, when, and to what degree such restrictions occur.

The fact that one of these female raccoons was present for at least 5.5 years on the same home range mapped in detail in 1979 is noteworthy.

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