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A New Genus of the Spider Family Caponiidae (Araneae, Haplogynae) from California

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ABSTRACT

A new genus and species, *Calponia harrisonfordi*, are described for a caponiid from California

that appears to be one of the most primitive members of the family.

INTRODUCTION

Caponiids are unusual spiders in a number of respects. Most species have only two eyes, and show a variety of bizarre modifications of the distal leg segments. Their chelicerae often bear, in addition to the sclerotized lamina typical of haplogynes, a membranous distal lobe of unknown function. Their spinneret pattern resembles only that of the very distantly related gnaphosoid family Ammoxenidae; the posterior median spinnerets are advanced anteriorly, and lie between the two

anterior lateral spinnerets. The biology of caponiids is virtually unknown, but anecdotal information suggests that they prefer other spiders as their prey. Their phylogenetic relationships to other spiders have long been enigmatic, but available evidence indicates that they are members of the Haplogynae, and represent the sister group of the Tetralemmidae plus the four dysderoid families (Platnick et al., 1991).

Although only a handful of caponiids have

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been described from the United States, the North American fauna of the family is actually fairly extensive. The present paper is devoted to the most distinctive member of that fauna, a species from California that differs from most caponiids, and resembles only those of the African type genus *Caponia* Simon, in retaining eight eyes.

Comparisons of somatic and genitalic morphology with African specimens of *Caponia* leave no doubt that the California species represents a new genus, here described as *Calponia*. The eye number suggests that these two genera represent the most plesiomorphic members of the family, a view supported by the absence in both genera of most of the various distal leg segment modifications characteristic of the genus *Nops* MacLeay and its relatives. In this respect, the situation in caponiids may parallel that in another haplogyne family, the Leptonetidae, where the apparently most plesiomorphic genus in the family (*Archoleptoneta* Gertsch) also occurs in California.

The specimens used are from the American Museum of Natural History (AMNH) and the personal collection of Darrell Ubick (CDU), who has assiduously sought and reared these fascinating spiders and whose kindness in making his material available for study is greatly appreciated. Assistance with illustrations and scanning electron micrographs was supplied by Mohammad Shadab and Peling Fong, respectively. Helpful comments on a draft of the manuscript were received from Charles Dondale (Centre for Land and Biological Resources Research, Ottawa), Ray Forster (Otago Museum, Dunedin), and Charles Griswold and Darrell Ubick (California Academy of Sciences, San Francisco). All measurements are in millimeters.

SYSTEMATICS

CALPONIA, NEW GENUS

TYPE SPECIES: *Calponia harrisonfordi*, new species.

ETYMOLOGY: The generic name is a contraction of Californian *Caponia*, and is feminine in gender.

DIAGNOSIS: Members of the genus differ from all caponiids other than *Caponia* in having eight eyes (fig. 1). They differ from

Caponia in having relatively small posterior lateral spinnerets that are only slightly larger than the anterior laterals (fig. 1; the posterior laterals of *Caponia* are almost twice as thick as the anterior laterals). Males of *Calponia* lack the pad of short setae found dorsally on the cymbium of male *Caponia*, and have a very short embolus on the male palp (in *Caponia*, the embolus is extremely long and bears a subapical appendage; compare figs. 14–16 with those in Purcell, 1904).

DESCRIPTION: Moderate-sized caponiids with eight eyes (fig. 1). Carapace oval, flattened, abruptly narrowed opposite palpal coxae; cuticle with raised sculpturing and scattered long, dark setae; thoracic groove obsolete. Anterior median eyes dark, others pale, translucent; anterior medians separated by almost their diameter, united by oval ring of black pigment; anterior lateral eyes larger than anterior medians, set anterior of them, separated by more than their diameter; posterior medians set behind and to sides of anterior medians, separated by three times their diameter; posterior laterals set to sides of anterior medians, separated from them by their width; median ocular quadrangle much wider than long. Chelicerae with median lamina; most of space between lamina and base of fang occupied by white membranous lobe (collapsed in fig. 2); lateral surface with stridulatory ridges (pick at base of prolateral side of palpal femur, fig. 14). Endites convergent, not truncate distally, anterior surface distally with long serrula consisting of single tooth row, proximally with three strong setae originating from enlarged bases (figs. 3, 4). Labium triangular, anterior surface of labrum bearing transverse rows of tiny teeth (figs. 5, 6). Sternum oval, cuticle with raised sculpturing; cephalothoracic membranes with three epimeric sclerites dorsal of coxae I, II, and III plus IV; epimeric sclerites not fused with triangular sclerites extending from sternal margin to and between coxae. Female palpal tarsus not expanded, without claw, with numerous long setae but without dorsal pad of short setae. Leg formula 4123; legs without spines; metatarsi and tarsi entire, without subsegmentation or membranous processes; tarsi with three claws; paired claws with about 10 teeth, most distal of which are largest; unpaired claw without teeth, almost fused to

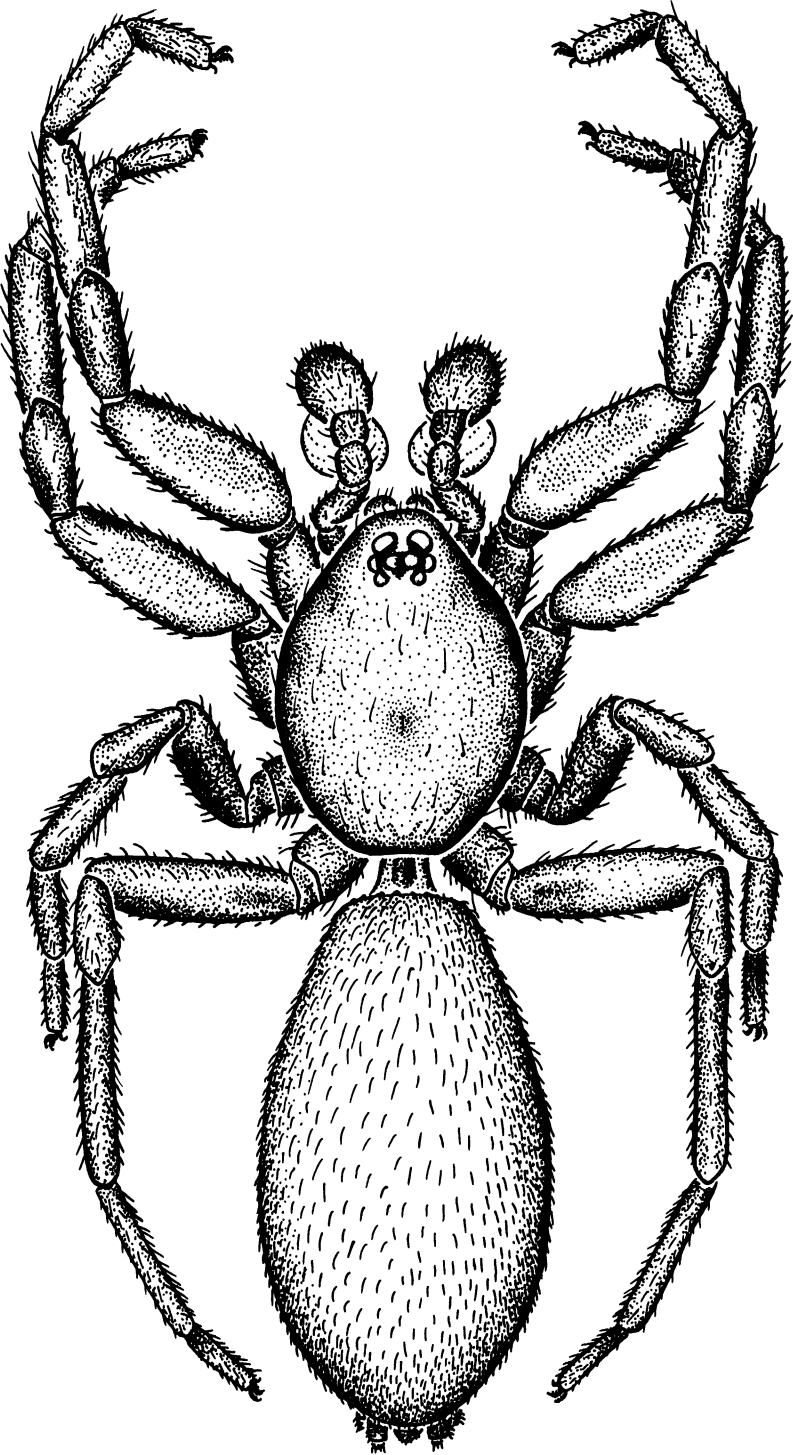
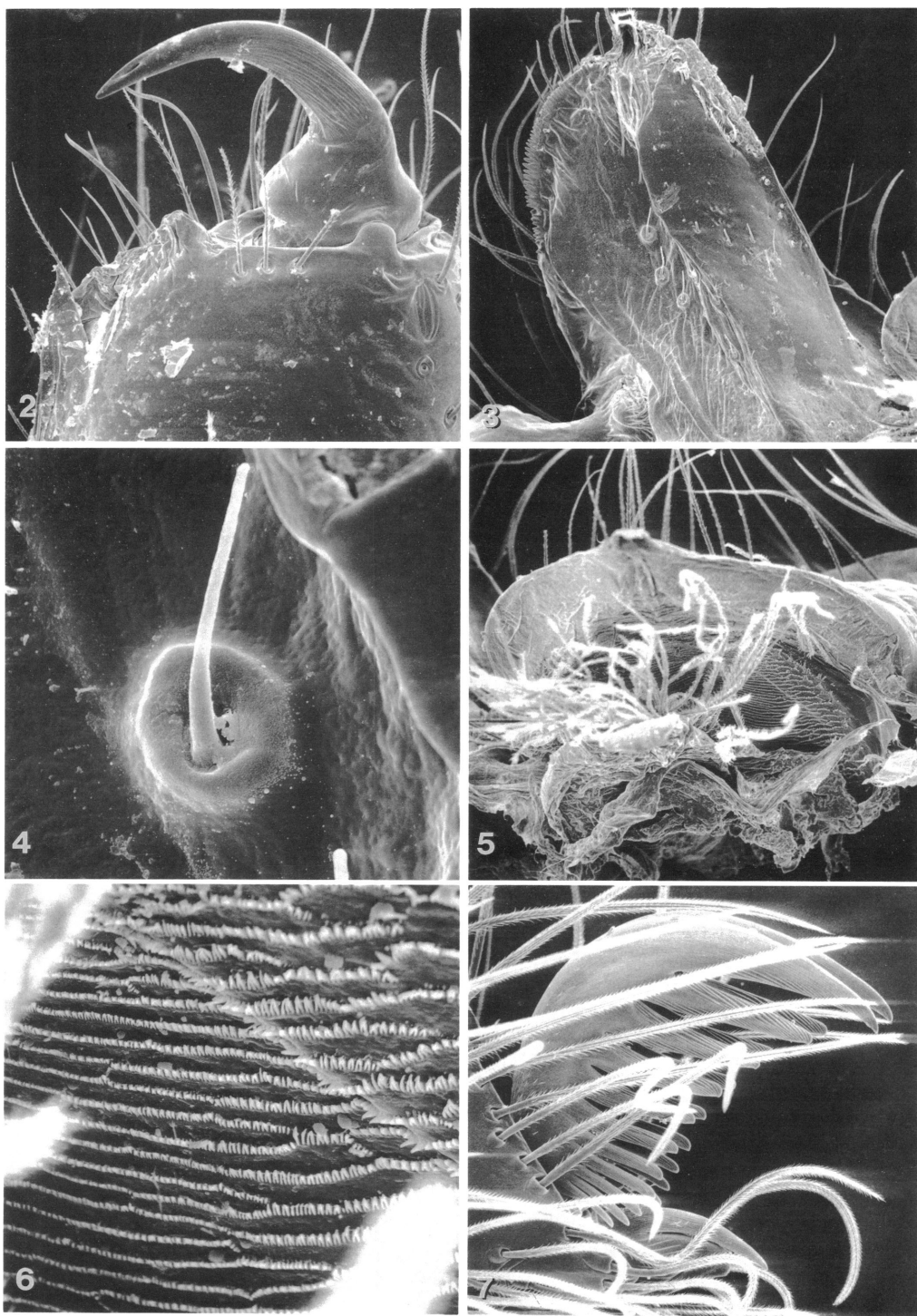
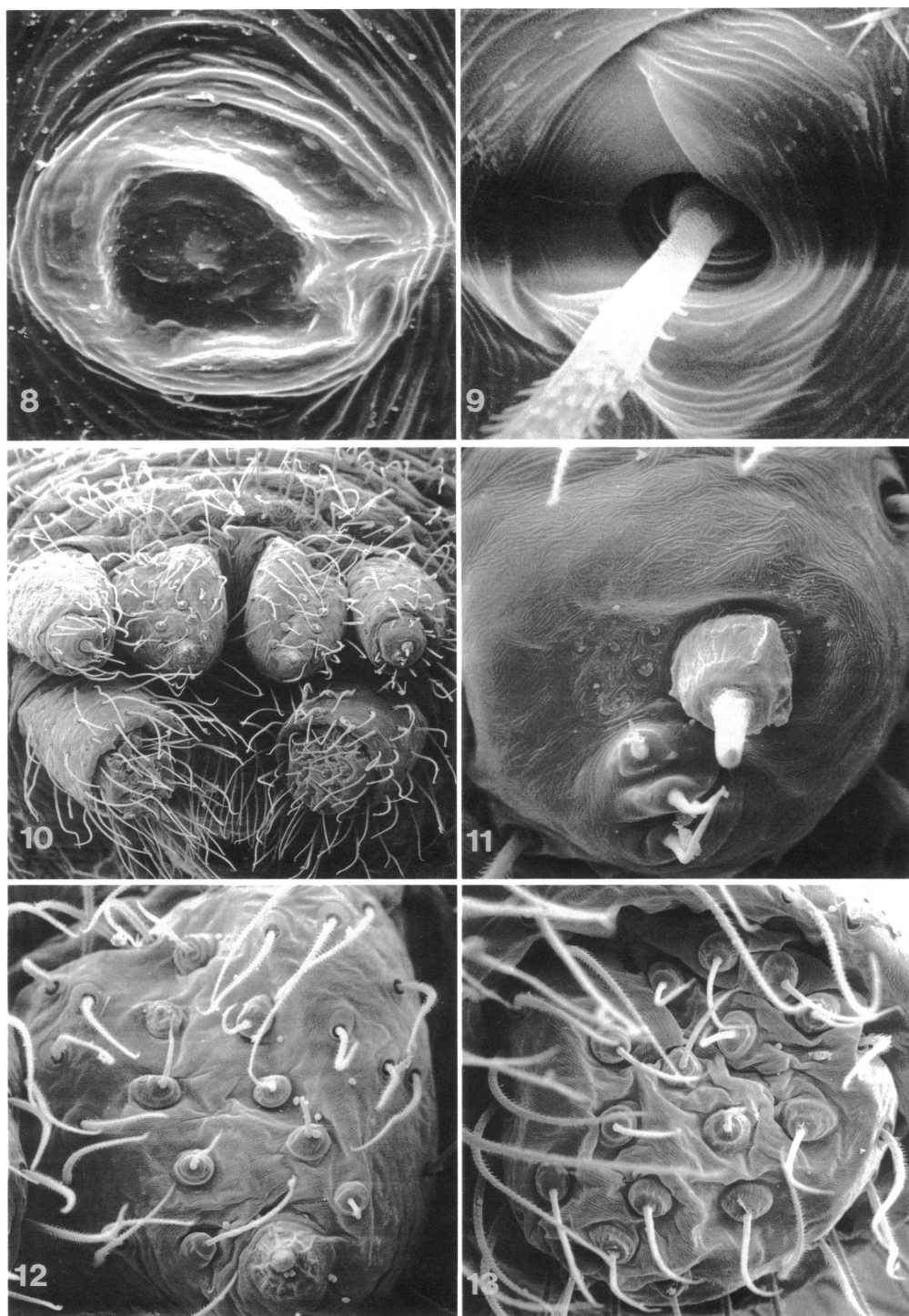


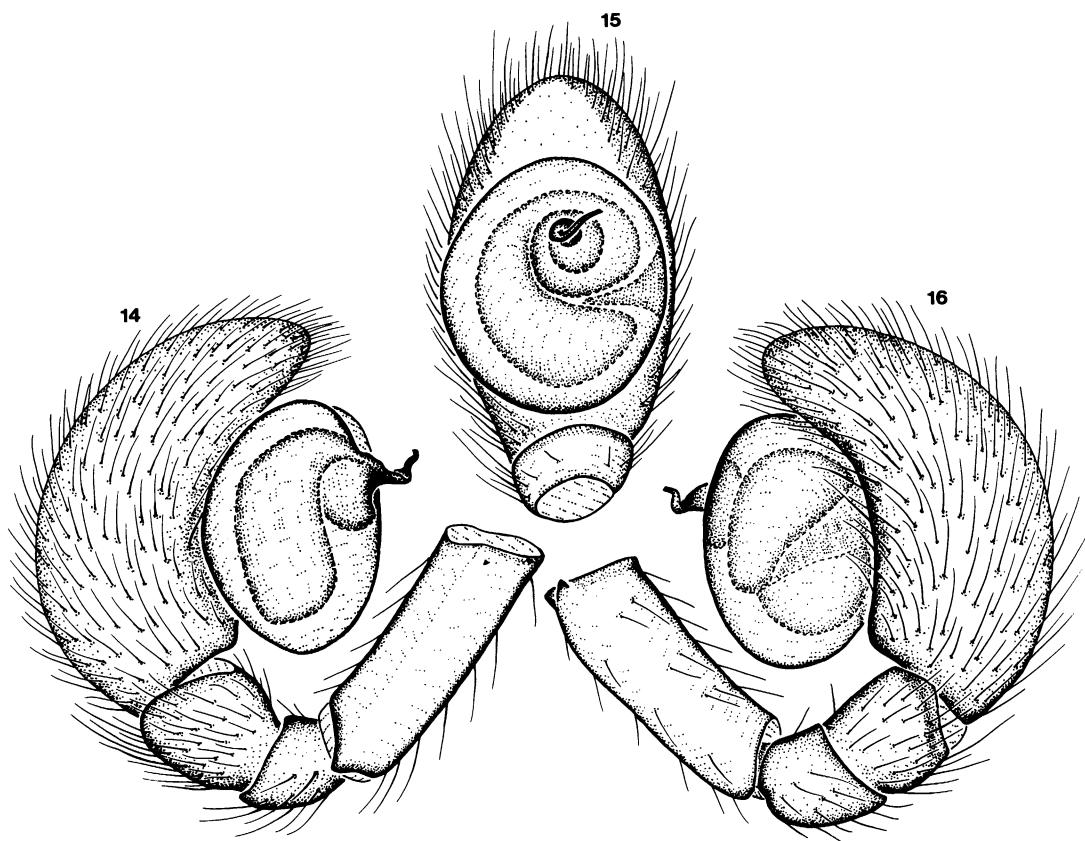
Fig. 1. *Calponia harrisonfordi*, new species, male, dorsal view.



Figs. 2-7. *Calponia harrisonfordi*, new species, female. 2. Chelicera, posterior view. 3. Endite, anterior view. 4. Seta of endite, anterior view. 5, 6. Labrum, anterior view. 7. Claws of tarsus I, lateral view.



Figs. 8–13. *Calponia harrisonfordi*, new species. 8. Tarsal organ from leg IV of female, dorsal view. 9. Trichobothrial base from tarsus IV of female, dorsal view. 10. Spinnerets of juvenile female, posterior view. 11. Anterior lateral spinneret, posterior view. 12. Posterior median spinneret, posterior view. 13. Posterior lateral spinneret, posterior view.

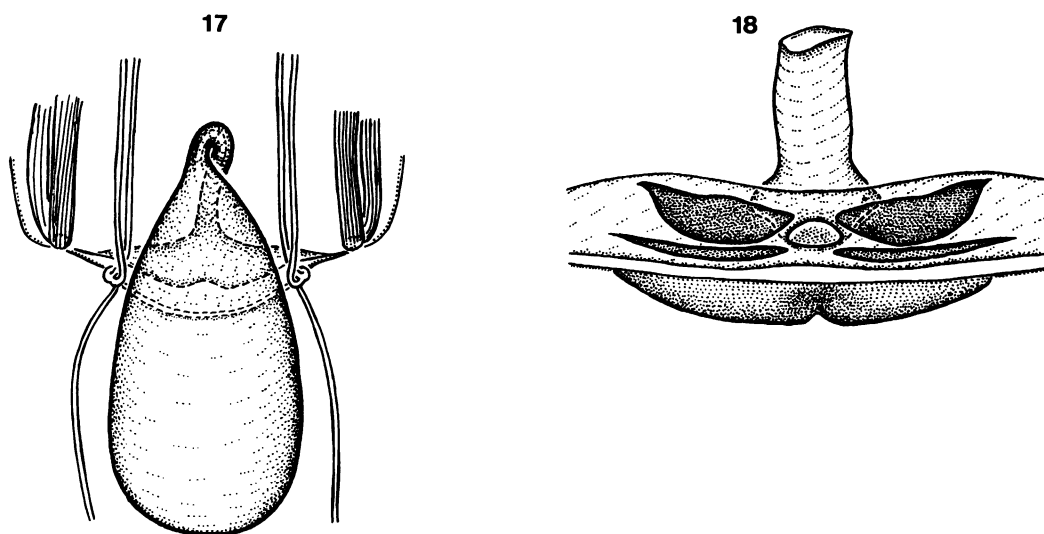


Figs. 14–16. *Calponia harrisonfordi*, new species, left male palp. 14. Prolateral view. 15. Ventral view. 16. Retrolateral view.

protruding onychium (fig. 7). Tarsal organ exposed (fig. 8); trichobothria present on tibiae, metatarsi, and tarsi, their bases with semicircular rim bearing longitudinal ridges (fig. 9). Abdomen with two pairs of respiratory spiracles clustered around epigastric groove; anterior spiracles leading to numerous tracheoles; posterior spiracles each leading to three large tracheal trunks (two extending anteriorly, one posteriorly); posterior spiracles connected by transverse duct (fig. 17). Spinnerets (only those of juvenile female examined by scanning electron microscopy) in typical caponiid arrangement (fig. 10); anterior laterals with single large major ampullate gland spigot and three smaller piriform gland spigots (fig. 11); posterior medians with about nine small aciniform gland spigots and single wide spigot presumed to serve minor ampullate gland (fig. 12; cf. Platnick et

al., 1991: 56); posterior laterals with about 15 aciniform gland spigots (fig. 13). Male palpal patella and tibia short, unmodified; cymbium globose, without distinct dorsal pad of short setae; embolus tiny, distally twisted (figs. 14–16). Female genitalia with both walls of bursa bearing sclerotizations (fig. 18); short, unsclerotized median duct leading to large sac (fig. 17) presumably representing at least part of ovarian system.

RELATIONSHIPS: Petrunkevitch (1939) recognized two subfamilies of caponiids (without, however, specifying what genera they each include). One, the Nopinae, is a presumably monophyletic group united by the presence of subsegmented tarsi and other modifications of the distal leg segments, and includes at least the genera *Nops*, *Nopsides* Chamberlin, *Orthonops* Chamberlin, and *Tarsonops* Chamberlin. The other subfamily,



Figs. 17, 18. *Calponia harrisonfordi*, new species, female. 17. Respiratory and genitalic systems, dorsal view. 18. Openings of genitalic system, dorsal view.

the Caponiinae, was defined only by the absence of noline leg modifications (including the near fusion of the unpaired tarsal claws with an extended onychium). As such, it is unlikely that the remaining genera (*Caponia*, *Caponina* Simon, *Diploglena* Purcell, and *Bruchnops* Mello-Leitão, as well as *Calponia*) form a monophyletic group. An extended onychium is found in *Calponia*, and may well prove to be plesiomorphic within the family.

Calponia harrisonfordi, new species

Figures 1–18

TYPES: Male holotype and female allotype from an elevation of 2630 ft, 14 mi N Boulder Creek, Santa Cruz Co., California (Oct. 3, 1972; L. H. Herman), deposited in AMNH.

ETYMOLOGY: The specific name is a patronym in honor of screen actor Harrison Ford, in recognition of his efforts on behalf of the American Museum.

DIAGNOSIS: With the characters of the genus, male palpi as in figures 14–16, and female genitalia as in figures 17, 18.

MALE (HOLOTYPE): Total length 5.06. Carapace 1.84 long, 1.39 wide, reddish orange. Sternum and mouthparts reddish orange, legs orange, anterior legs darkest, abdomen pale brown. Embolus tiny, with subdistal twist (figs. 14–16).

FEMALE (ALLOTYPE): Total length 5.21. Carapace 2.34 long, 1.76 wide. Coloration as in male. Posterior wall of bursa with single continuous sclerotization, invaginated at middle along posterior margin; anterior wall with two pairs of sclerotizations on either side of short, anteriorly directed tube leading to large sac enclosing solid, oval mass (figs. 17, 18).

OTHER MATERIAL EXAMINED: USA: *California: Contra Costa Co.:* Mt. Diablo, May 26, 1959 (L. M. Smith, R. O. Schuster, AMNH), 1♀. *Mendocino Co.:* Mill Creek County Park, May 5, 1991, under rock, oak-bay woods (D. Ubick, CDU), 1♂. *San Benito Co.:* 12.7 mi SE Paicines on Panoche Road, Dec. 1, 1984, elev. 460 m (D. Ubick, CDU), 1♀. *Santa Clara Co.:* Page Mill Road, 0.3 mi N Skyline Boulevard, July 7, 1990, sifting oak-bay litter, died in captivity (D. Ubick, CDU), 1♀; 3.3 mi W junction of Stevens Canyon Road on Montebello Road, Oct. 23, 1982, elev. 560 m (D. Ubick, V. F. Lee, CDU), 1♀, July 10, 1983, elev. ca. 1900 ft (D. Ubick, S. Fend, S. Renkes, CDU), 1♂, 1♀; Stevens Creek, June 2, 1957 (R. O. Schuster, AMNH), 1♂.

DISTRIBUTION: Known only from the coastal mountain ranges of central California. Juvenile specimens (which can be separated from adults by the presence of a pale, longitudinal, dorsal stripe along the legs) prob-

ably belonging to this species have been taken in the following additional localities: Bear Gulch Trail (Pinnacles National Monument, San Benito Co.); 1.5 mi E Healdsburg on Bailhache Avenue (Sonoma Co.); Mount Ma-

donna (E Watsonville, Santa Clara Co.); Pogie Point Campground (Lake Pillsbury, Lake Co.); and S end, Santa Teresa County Park (Santa Clara Co.).

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