

such as *Lola*, *Paralola*, and *Proscotolemon*, will remain enigmatic until males are described. Despite these limitations, two hypotheses of relationship have been proposed. The first is that the fundamental division in the family is based on the form of penis expansion. A glans that telescopes out of the truncus, considered plesiomorphic, occurs in *Calicina* (Figure 4.35e) and *Ptychosoma*, whereas a glans that unfolds from the truncus (Figures 4.35g) occurs in all other genera for which males have been described (Ubick & Briggs, 1989). The second suggests a close relationship between the genera with deeply bifurcate ventral plates, namely, *Banksula*, *Texella* (Figure 4.35f), and *Phalangodes*, and the nominal genera of the eastern Nearctic (Figure 4.35g). Although this clade is strictly Nearctic, a possible Palearctic counterpart may be found in the species of *Ausobskya* and *Scotolemon* with apically notched ventral plates. Although the relationship of Phalangodidae to other Grassatores is currently unresolved and a sister group has not been identified, it appears that the family occupies a relatively basal branch on that tree. Phalangodids are somatically plesiomorphic, having a well-defined ocularium and lacking pedipalpal and tarsal modifications present in gonyleptooids and others, as well as genitally. The penis, at least in its basal members, has a ventral plate that is a thin extension of the truncus, apically entire, and having only simple setae. In the basal genus, *Calicina*, the glans telescopes from the truncus rather than unfolds from it. This condition also occurs in Assamiidae and Biantidae (Martens, 1986). Especially striking is the resemblance between *Calicina* and some East Asian genera, such as *Bupares*, *Buparellus*, and *Parabeloniscus* (Suzuki, 1973), currently placed in Epedanidae. If, as is expected, this type of penis turns out to be primitive in Grassatores, then the similarities are plesiomorphies, suggesting a paraphyletic relationship between these taxa.

Main references:

- **Systematics:** Crosby & Bishop (1924), Roewer (1935a), Kratochvíl (1937, 1958a), Goodnight & Goodnight (1942a, 1945), Kraus (1961), Briggs (1968, 1974b), Brignoli (1968), Martens (1972a, 1978b), Rambla (1972, 1973, 1977, 1993), Suzuki (1973), Šilhavý (1976), Staręga (1976b), Briggs & Ubick (1981, 1989), Martens & Lingnau (1985), van der Hammen (1985), Ubick & Briggs (1989, 1992, 2002, 2004), Thaler (1996), Vázquez & Cokendolpher (1997).
- **Natural History:** Šilhavý (1976), Ubick & Briggs (1989), Thaler (1996).

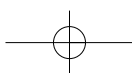
Podoctidae Roewer, 1912

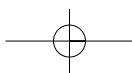
Adriano B. Kury

Etymology: *Podoctis*, from Greek *pous*, *podos* (foot) and *oktis* (spine), referring to the ventral row of long spines in femur I.

Characterization:

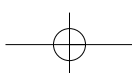
- **Size:** Medium-sized Laniatores, body length 2.5 to 5 mm. Legs I–IV extremely variable, 3–10/10–30/7–21/9–28 mm long.





- Dorsum: Dorsal scutum (Figures 4.36a–c) outline can be ovoid or subtrapezoidal, in general without strong constrictions, and the carapace is not much smaller than the opisthosomal scutum. Mesotergum usually clearly divided into areas by grooves; the areas may be connected by tubercular bridges. No areas fused. Armature of areas and tergites highly variable, perhaps either completely smooth and unarmed or armed with strong spines, which bear subapical setae. In some species the scutum is profusely covered with warts, wrinkles, granules, and tubercles. Common ocularium (or interocular mound) not always present; it may be very high and densely granulous. Sometimes eyes are wide apart in separate individual mounds, always linked to the frontal part of the carapace by tubercular bridges (which may be a synapomorphy for the family).
- Venter: Coxae I–IV more or less radiating from sternum, coxa IV not greatly enlarged in oblique position. Coxae connected by clearly marked tubercle bridges, densely tuberculate, tubercles growing larger anteriorly. No dimorphism reported for genital operculum. Stigmatic area V-shaped. Stigmata may be concealed by tubercles.
- Chelicerae: Hands usually not swollen.
- Pedipalps: With ventral row of spines in femur and ventromesal and ventroectal spines in patella-tibia-tarsus. Tibia and tarsus do not form a subchela.
- Legs: Legs usually long and straight, often covered with rows of pointed tubercles, especially leg I, which in most species has powerful ventral and dorsal rows of setiferous spines in both sexes (Figure 4.36k). Distitarsus I one- or two-jointed; II one- to four-jointed.
- Genitalia: Penis is unique (Figure 4.36l); the dorsal plate is deeply cleft, and there is an inflatable sac that inflates and exposes the stylus, flanked by two powerful prongs (Figures 4.36m–o).
- Color: Background color usually brown to yellow, some species are deep green; legs may be ringed in black and yellow; scutal spines may be black, sharply contrasting with background.
- Sexual dimorphism: Shown in basichelicerite, which is very long and armed in males (Figures 4.36d–f). The pedipalp in males may be thickened at the base with a cluster of divergent spines (Figures 4.36i,j) or extremely elongate (Figures 4.36g,h), while the female pedipalp is short. Also shown in ocularium, which in male can be wider or much more elaborate in ornamentation and leaned back against the scutum (Figures 4.36b,c).

Distribution: The peak diversity of the family is in Southeast Asia, especially in New Guinea. It also occurs in Melanesia, Micronesia, Japan, India, Sri Lanka, Madagascar, Seychelles, Mauritius, and central Africa. A single species is known from Australia. One species, *Ibantila cubana*, is reported from the New World (Šilhavý, 1969a), introduced in a botanical garden in Cuba (A. Pérez Gonzalez, pers. comm.). *Brasiloctis bucki*, the Brazilian “Podoctidae” of Mello-Leitão (1938), was later transferred to Triaenonychidae (see Soares & Soares, 1979).



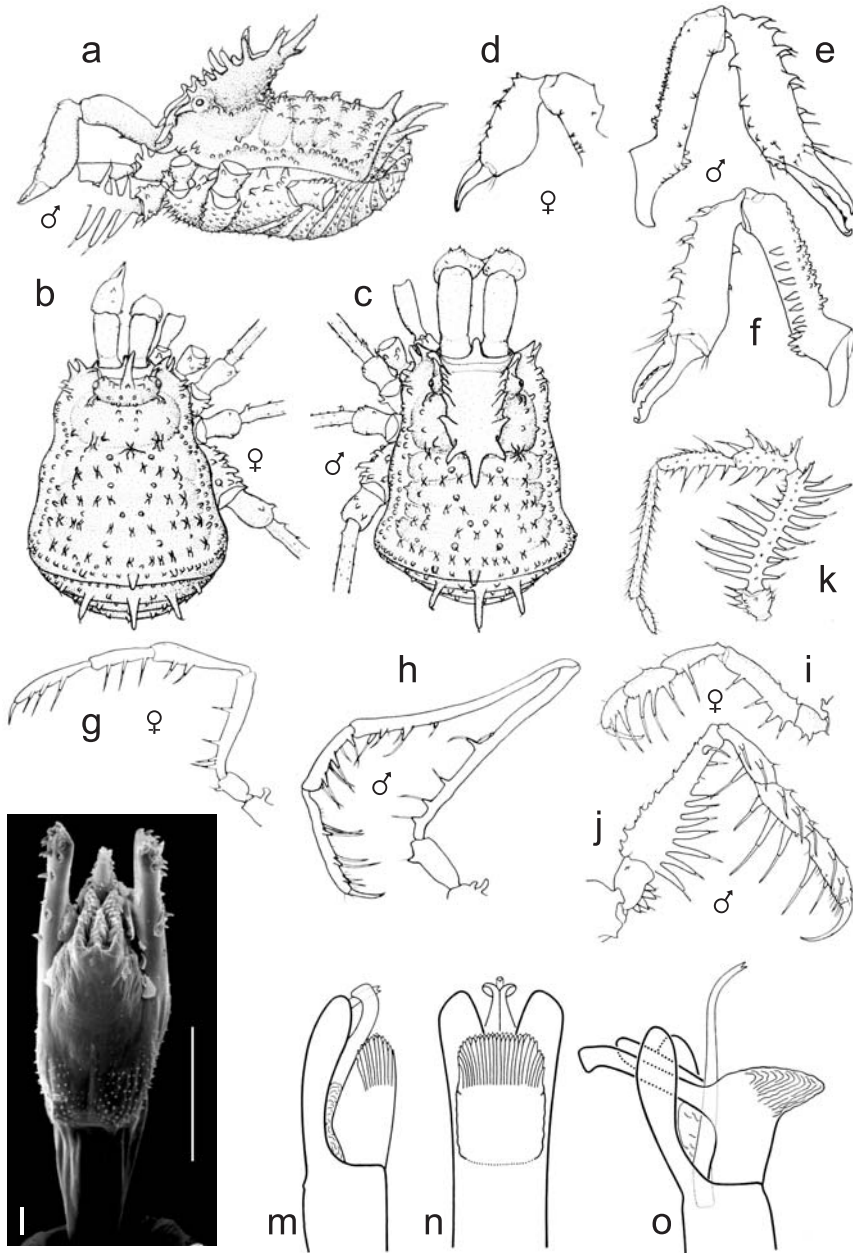
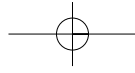
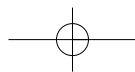
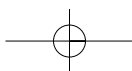


Figure 4.36. Podoctidae. (a–c) *Lomanius longipalpus mindanaoensis* from the Philippines: (a) Habitus, male, lateral; (b) female, dorsal; (c) male, dorsal. (d–f) *Hoplodino hoogstraali* from the Philippines: (d) Female chelicera, ectal; (e) male chelicera, mesal; (f) ectal. To the same scale. (g–h) *L. longipalpus mindanaoensis* from the Philippines: (g) left pedipalpus of male, ectal; (h) left pedipalpus of female, ectal. (i–j) *Hoplodino hoogstraali* from the Philippines: (i) left pedipalpus of male, mesal; (j) left pedipalpus of female, ectal. (k) *Lomanius longipalpus mindanaoensis* from the Philippines, left leg I of male, lateral. (l) *Heteropodoctis quinquespinosus* from Papua New Guinea, distal part of penis, dorsal. From: Suzuki (1977b). Scale bar = 150 μ m. Photo: D. Übick. (m–o) unspecified podoctid, schematic view of penis: (m) unexpanded, lateral; (n) unexpanded, dorsal; (o) expanded, lateral (from Martens, 1986).





Relationships: Largely unknown. The family belongs to Grassatores, and it is possible that it is related to Biantoidea, although there is no obvious relationship with any family.

Main references:

- **Systematics:** Roewer (1912b, 1923, 1949), Suzuki (1964a,b, 1969, 1977b), Rambla (1984), Starega (1992).
- **Natural History:** Roewer (1929a), Suzuki (1977b), Martens (1993b).

Samoidae Sørensen, 1886

Abel Pérez-González and Adriano B. Kury

Etymology: *Samoa*, from the Pacific island Samoa.

Characterization:

- **Size:** Small to medium-sized harvestmen; body length: 1.9–5.5 mm.
- **Dorsum:** Body as an asymmetrical hourglass, anterior half much shorter, posterior half rounded, laterally convex appearance (Figures 4.37a,b). Ocularium present, in *Samoa*, *Badessa*, *Feretrius*, and *Zalmoxista* low and wide, in *Kalominua* narrower and taller, in *Akdalima* and *Reventula* wide and ending in an acute spine, in *Arganotus* developed, elliptical, convex, and projected as a low cone bearing an apical spine, and in *Pellobunus* a very low cone. Body low (almost smooth) or densely covered with low rounded granules (Figures 4.37a,b). Mesotergum with four areas poorly defined, unarmed (Figures 4.37a,b) (except in *Reventula amabilis*). Free tergites unarmed.
- **Venter:** Some taxa possess ventrally a pair of medial apophyses in coxa IV.
- **Chelicerae:** Basichelicerite very long, smooth, unarmed, and enlarged without a defined bulla (Figure 4.37c). Hand massive, with fingers short and strongly toothed, smooth, granulate or with a few short spinelike tubercles.
- **Pedipalps** (Figure 4.37f). Not enlarged. Coxa well developed, femur commonly large, very convex dorsally, with two low ventrobasal setiferous tubercles and one mesal subdistal setiferous tubercle. In some species (such as *Akdalima jamaicana*, *Orsa daphne*) the femur mesodistal and the patella have peculiar cuticular apophyses. Tibia commonly with three ectal and two mesal low setiferous tubercles where the basis of the two mesal ones could be modified or enlarged (e.g., *Samoa variabilis*, *Reventula amabilis*). Tarsus with lateroectal and lateromesal rows of two to three setiferous tubercles. In some species the femur dorsal has a row of granules, and the patella-tibia dorsally is heavily granulous (e.g., *Reventula amabilis*).
- **Legs:** III–IV without tarsal process. Scopula (Figure 4.37e) commonly present but highly variable from well developed in *Samoa* to almost imperceptible (or absent?) in *Kalominua*. Claws smooth. Tarsal formula: 4(2):6–9(3):4–5:5–6.
- **Genitalia** (Figures 4.37g,h): Truncus cylindrical, without a well-defined ventral plate as in Gonyleptoidea, ending in one calyx. Pars distalis not differenti-

