The Goblin Spider Genus *Ischnothyreus* (Araneae, Oonopidae) in the New World

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**ABSTRACT**

Although originally described from St. Vincent in the Lesser Antilles, the goblin spider genus *Ischnothyreus* Simon appears to be an Old World taxon that is represented in the New World only by two presumably introduced, pantropical, synanthropic species: *I. peltifer* (Simon) and *I. velox* Jackson. Two specific names based on New World specimens (*I. barrowsi* Chamberlin and Ivie from Florida, and *I. indressus* Chickering from the Lesser Antilles) are placed as junior synonyms of *I. velox*, which is newly recorded from Mexico, Panama, Jamaica, Hispaniola, Venezuela, Brazil, Madagascar, the Philippines, the Marshall Islands, Hawaii, the Marquesas Islands, and New Caledonia. A third species, *I. browni* Chickering, that is supposedly from Costa Rica was apparently based on mislabeled specimens that are actually from the Philippines. The type specimens of *I. browni* resemble those of the Seychelle species *Ischnothyrella jivani* (Benoit) in that the dorsal abdominal scutum of males is extremely weak and that of females is either greatly reduced or entirely lost. Both species nevertheless share the synapomorphies of *Ischnothyreus*, and the generic name *Ischnothyrella* Saaristo is therefore placed as a junior synonym of *Ischnothyreus*.

**INTRODUCTION**

Simon (1891), in the first paper dealing with the generic-level diversity of New World oonopids, described a total of eight new genera, each based on a species collected on the tiny

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island of St. Vincent in the Lesser Antilles. In three of those cases, the relevant type species have since been shown to be pantropical taxa that are probably of Old World origin, rather than native to St. Vincent: *Pelicinus* Simon (see Platnick et al., 2012b), *Opopaea* Simon (see Platnick and Dupéreré, 2009), and *Triaeris* Simon (see Platnick et al., 2012c). In the present paper we argue that the same is true for a fourth genus, described initially as *Ischnaspis* Simon, a preoccupied name that was quickly replaced by *Ischnothyreus* Simon (1893a).

Simon (1891), when describing the type species, *Ischnaspis peltifer* Simon, on the basis of females from St. Vincent, already considered the species to be widespread, citing additional females from Sierra Leone and the Philippines. Simon (1893a: fig. 264) later added Sri Lanka to the list as well, supplying an illustration of a Sri Lankan male that he associated with *I. peltifer*. That male was misidentified, and belongs to a different genus, *Camptoscaphiella* Caporiacco (see Baehr and Ubick, 2010). The actual male of *I. peltifer* was first described, misplaced as a species of *Dysderina* Simon, by Bryant (1942), and it was first correctly associated with *I. peltifer* by Chickering (1968).

Although Simon's females from Sierra Leone and the Philippines were also misidentified, workers since Simon's time have followed his lead, and have recorded *I. peltifer* from a wide variety of both Old and New World localities. However, Saaristo (2001) demonstrated that some of those far-flung records actually refer to a second species, *Ischnothyreus velox* Jackson (1908), which was originally described on the basis of specimens taken in British greenhouses; Saaristo (2001) showed clearly that *I. velox* occurs also at least in the Seychelles, and that both species have been found in British greenhouses.

Our studies suggest that both of the species treated by Saaristo are actually widely distributed, pantropical, synanthropic taxa that have also been introduced into buildings in temperate areas of the northern hemisphere; *I. peltifer* has been taken even in Canada (in the African Pavilion of the Toronto Metropolitan Zoo)! The two species are sometimes even sympatric, and both have been collected in Florida, Mexico, Panama, Jamaica, St. Vincent, Venezuela, Brazil, Madagascar, Seychelles, and Hawaii.

Interestingly, Simon (1896) had already concluded that there is more than one widespread species of *Ischnothyreus*, as he reported that specimens of *Ischnothyreus lymphaseus* Simon (1893b), originally described from Sri Lanka, had been taken in the greenhouses of the Muséum National d'Histoire Naturelle in Paris. The basis for that conclusion is uncertain; the only vial currently in the Simon collection containing material said to be from those greenhouses includes three females only, and *I. lymphaseus* was described (and remains known only) from a single male. There is an additional vial in the Simon collection, labeled only with that species name, which includes one male and one female; whether that pair of specimens is from Sri Lanka, France, or somewhere else is unknown. Simon may have used that pair to match the sexes, but he seems subsequently to have realized that his identification of the Paris greenhouse specimens was incorrect; after studying the apparently conspecific specimens from British greenhouses sent to him by Jackson, Simon agreed that they represented a new species (which Jackson then described as *I. velox*), rather than *I. lymphaseus*.

New World *Ischnothyreus* have been studied seriously only by Chickering (1968), who confined his attention to collections from Central America and the West Indies; he later
(Chickering, 1969) examined a few specimens from Florida as well. In addition to noting many new records for *I. peltifer*, Chickering (1968) described two new species. One, *I. indressus* from the Lesser Antilles, is placed below as a junior synonym of *I. velox*, but the second, *I. browni*, is more problematic. It was based on two males and one female that Chickering (1968: 83) indicated were “believed to have been collected by Dr. W.L. Brown, Cornell University, in Costa Rica, Rio Toro Amarillo, near Guapiles, Heredia, March 1966.” Chickering (1968: 84) also noted that “Because of some confusion in sorting there seems to be a slight uncertainty about the type locality....”

Costa Rican oonopids have since been thoroughly collected by Carlos Viquez and his colleagues, but we have found no additional specimens of *I. browni* from Costa Rica or anywhere else in the New World. We therefore suspected that the type specimens are actually from somewhere in the Old World instead. Our searches of available collections of *Ischnothyreus* from the Old World revealed apparently conspecific specimens from the Philippines.

It is conceivable that the types of *I. browni* were an accidental introduction from the Philippines, and were actually captured in Costa Rica. However, given the confusion mentioned by Chickering, it seems far more likely that his specimens are actually from the Philippines, and were simply mislabeled during the sorting process. Until and unless additional specimens of *I. browni* are found in the New World, we regard the Costa Rican record of the species as spurious.

The type specimens of *I. browni* are notable for their lightly sclerotized abdomens (figs. 152, 153, 155). Chickering (1968: 83) described the males as having abdominal scuta “which are hardly discernible with borders very indefinite; dorsal scutum appears to reach only a little more than half way from base to posterior end”; he similarly (1968: 84) indicated that the female has the “dorsal scutum hardly discernible; ventral and epigastric scuta clearly visible.” Chickering’s specimens may be teneral (i.e., collected shortly after their final molt, before the dorsal scutum had time to become fully sclerotized). We have seen similarly teneral males of other *Ischnothyreus* species in which the dorsal scutum is scarcely detectable, even though the palps are well sclerotized; given that the palps are so heavily sclerotized, it isn’t surprising that sclerotization of the dorsal scutum may lag behind that of the palps. In the case of older specimens in collections, one often cannot tell whether they are teneral or merely bleached from overexposure to light, and of course some specimens may be both teneral and bleached, making them exceedingly difficult to study.

Nevertheless, the appearance of Chickering’s specimens of *I. browni* is strikingly similar to that of the Seychelle specimens originally described as *Ischnothyreus jivani* by Benoit (1979). In his subsequent review of the Seychelle oonopids, Saaristo (2001) established a new genus, *Ischnothyrella*, to contain only *I. jivani*. This monotypic genus was based primarily on the supposed absence of visible abdominal scuta, although Saaristo also cited minor differences in leg spination, as well as male and female genitalic features that are unique to the type species and hence uninformative about its relationships. The types of *I. jivani* are badly bleached, and it is possible that they may be teneral as well, so Saaristo’s claim that the abdominal scuta are entirely absent is suspect, and needs to be checked against freshly collected specimens.

In any case, though, as with numerous other monotypic genera erected by Saaristo, he seems here to have been so overimpressed by species-level autapomorphies (such as the puta-
tive loss of the dorsal scutum) that he promoted a relatively autapomorphic species to an unreasonably high level, thereby rendering the group to which it actually belongs (*Ischnothyreus*, in this case) paraphyletic. Just as in the similar examples detailed in Platnick et al. (2011) for *Brignolia* Dumitresco and Georgesco and in Platnick et al. (2012a) for *Orchestina* Simon, Saaristo provided no putative synapomorphies uniting all the relevant species other than *I. jivani* and hence supporting the placement of that species as the sister group of all the others. We know of no such characters; Saaristo’s artificial, monotypic genus is therefore positively misleading phylogenetically, and is here placed in synonymy. *Ischnothyreus* species actually vary widely in the extent of the dorsal abdominal scutum; although it is usually small, covering only about half of the abdominal length and width, it can be much larger (covering almost the entire dorsum; see Kranz-Baltensperger, 2011: figs. 8A, 8C, 30A, 30C) or much smaller (reduced to just a narrow strip over the cardiac area), and may possibly be lost entirely (at least in some females).

As thus relimited, *Ischnothyreus* is defined by obvious synapomorphies: the heavily sclerotized, “burnt” palps of males (figs. 77, 82), which are associated with an elaborate, internal skeletomuscular system (figs. 43–45; Dumitresco and Georgesco, 1983: pl. 17, figs. 4, 5) situated within the anterior portion of the concomitantly elevated carapace (fig. 2). These highly elaborated endosternites are typically visible through the cuticle of the carapace (fig. 79). The palps are also held in a characteristic and diagnostic resting position, twisted retrolaterally so as to lie flat at the sides of the endites and sternum (fig. 81). So far as we are aware, similarly “burnt” palps occur only in the genus *Brignolia*, but those palps are differently constructed, with a distinct dorsal depression that does not occur in *Ischnothyreus*. Females of the genus *Triaeris* also resemble those of *Ischnothyreus* in having hypertrophied posterior genitalic elements that occupy most of the postepigastric scutum and involve external modifications of that scutum, but they do not have the highly “squiggled” ducts found in most species of *Ischnothyreus*. As argued elsewhere (Platnick et al., 2011, 2012c), *Brignolia* appears to be more closely related to *Opopaea* than to *Ischnothyreus*, and *Triaeris* appears to be more closely related to *Zyngoonops* Benoit than to *Ischnothyreus*.

We suspect that, as suggested by Ubick and Griswold (2011), *Ischnothyreus* is actually more closely related to the Asian genus *Camptoscaphiella* and the Malagasy genus *Malagiella* Ubick and Griswold (2011) than to either *Brignolia* or *Triaeris*. Serious consideration of that hypothesis must await study of the many undescribed Old World species of *Ischnothyreus*, but there do seem to be potential female genitalic synapomorphies uniting these genera. Baehr and Ubick (2010: 6) reported a slit-shaped external copulatory opening, situated near the anterior margin of the postepigastric scutum, in female *Camptoscaphiella*; a similar slit occurs also at least in *I. peltifer* (compare figs. 72, 73 with Baehr and Ubick, 2010: fig. 150). However, within *Camptoscaphiella*, the presence of that slit-shaped opening has been confirmed by scanning electron microscopy only in the females of *Camptoscaphiella paquini* Ubick, a Chinese species that differs significantly from its congeners in that the female genitalic ducts resemble those of *Ischnothyreus* in being highly “squiggled.” It is possible, however, that both genera actually show a similar range of female genitalic structures, as we have seen undescribed *Ischnothyreus* species
(from Africa and Sulawesi) in which the posterior genitalic ducts of females appear (at least superficially) to be nearly straight.

In at least two species of the similar genus Malagiella, the external copulatory opening is rounded rather than slit shaped (Ubick and Griswold, 2011: figs. 11, 177), and is seemingly not accompanied by the longitudinal row of pores along the midline that is found in at least some species of Ischnothyreus (figs. 73, 74) and Camptoscaphiella. Interestingly, though, Malagiella species show similar variation in female posterior genitalic duct arrangements, ranging from nearly straight to very sinuous (Ubick and Griswold, 2011: map 4), and in I. velox the external copulatory opening is rounded (fig. 132) rather than slit shaped. Nevertheless, female genitalic structure (i.e., the longitudinal row of pores accompanying the copulatory opening) may actually support the monophyly of Ischnothyreus plus Camptoscaphiella, whereas the male palps instead clearly support the monophyly of Camptoscaphiella plus Malagiella, which are united by a greatly enlarged palpal patella (Baehr and Ubick, 2010: figs. 161, 164; Ubick and Griswold, 2011: figs. 7, 85–87) that does not occur in any of the species of Ischnothyreus. The grouping of Camptoscaphiella plus Malagiella is also supported by the presence of protrusions at the anterolateral corners of the sternum of males (Ubick and Griswold, 2011: figs. 1, 7) that do not occur in Ischnothyreus. However, the third possibility, grouping Ischnothyreus plus Malagiella, as opposed to Camptoscaphiella, may be supported by a different character, an elongated distal tooth on the claws of leg IV of females that gives those claws a bifid appearance (fig. 59; cf. Ubick and Griswold, 2011: figs. 9, 10).

Some other unusual characters seem too variable to help provide a solution. For example, the males of at least I. peltifer seem to show no trace of either the epigastric furrow or a groove connecting the posterior spiracles (fig. 15), and thus resemble those of at least some species of Malagiella (cf. Ubick and Griswold, 2011: fig. 34). However, the males of I. velox have a distinct groove (fig. 107), as in at least some species of Camptoscaphiella (cf. Baehr and Ubick, 2010: figs. 48, 49); in both genera, it seems uncertain whether this groove represents the epigastric furrow, a groove connecting the posterior spiracles, or perhaps even a fusion of both. Similarly, males of all Malagiella species, and all but two Camptoscaphiella species, have the dorsal scutum fused to the epigastric scutum, but this character varies widely within Ischnothyreus; only about half of the males described by Kranz-Baltensperger (2011, 2012) have those scuta fused.

Thus, we can only concur with Ubick and Griswold (2011: 7) that these three genera constitute a monophyletic group, the “Ischnothyreus complex.” A fourth genus, Aprusia Simon, from Sri Lanka and southern India, seems also to belong to this group, sharing a similar eye arrangement, leg spination pattern, and abdominal scutum configuration, but both the male and female genitalic conformation suggest that Aprusia is less closely related to Ischnothyreus than are Camptoscaphiella and Malagiella (see Grismado et al., 2011).

Our methods follow those of Platnick and Dupéré (2009); all measurements are in mm. A detailed description is provided for the type species, and only differences from that species are mentioned in the other descriptions. High-resolution versions of the images, many additional images of the pantropical species, a sortable version of the geocoded locality data, and a distribution map for each species will be available on the goblin spider Planetary Biodiversity Inventory (PBI) project’s website (http://research.amnh.org/oonopidae).
COLLECTIONS EXAMINED

AMNH  American Museum of Natural History, New York, NY
BMNH  Natural History Museum, London, England
BSC  Centro Oriental de Ecosistemas y Biodiversidad, Santiago de Cuba
CAS  California Academy of Sciences, San Francisco, CA
CDU  Collection of Darrell Ubick, San Francisco, CA
CKH  Collection of Karl-Hinrich Kielhorn, Berlin, Germany
CMD  Collection of Michael Dierkens, Lyon, France
CNC  Canadian National Collection, Ottawa, Canada
FMNH  Field Museum of Natural History, Chicago, IL
FSCA  Florida State Collection of Arthropods, Gainesville, FL
ICN  Instituto de Ciencias Naturales, Universidad Nacional, Bogotá, Colombia
INBIO  Instituto Nacional de Biodiversidad, Santo Domingo, Costa Rica
KBIN  Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels, Belgium
MCZ  Museum of Comparative Zoology, Harvard University, Cambridge, MA
MIUP  Museo de Invertebrados, Universidad de Panamá
MNH  Museo Nacional de Historia Natural, Havana, Cuba
MNHN  Muséum National d'Histoire Naturelle, Paris, France
MPEG  Museu Paraense Emílio Goeldi, Belém, Brazil
MRAC  Musée Royal de l'Afrique Centrale, Tervuren, Belgium
TMM  Texas Memorial Museum, Lubbock, TX
ZMUT  Zoological Museum, University of Turku, Finland

Ischnothyreus Simon

*Ischnaspis* Simon, 1891: 562 (type species by monotypy *Ischnaspis peltifer* Simon); preoccupied in the Hemiptera by *Ischnaspis* Douglas, 1887.

*Ischnothyreus* Simon, 1893a: 298 (replacement name for *Ischnaspis* Simon).

*Ischnothyrella* Saaristo, 2001: 348 (type species by original designation *Ischnothyreus jivani* Benoit).

NEW SYNONYMY.

**Diagnosis:** Specimens of *Ischnothyreus* resemble those of *Camptoscaphiella* and *Malagiella* in having long, strong spines on the anterior femora, tibiae, and metatarsi (figs. 77, 91), nearly contiguous eyes arranged in an almost circular pattern (fig. 4), an external copulatory opening on the postepigastric scutum of females (fig. 73), and (usually) a reduced dorsal scutum (figs. 76, 90). Males of *Ischnothyreus* are easily separated from those of *Camptoscaphiella* and *Malagiella* by their heavily sclerotized, “burnt” palps (figs. 77, 82, 104), which do not have the enlarged patellae characteristic of those two genera. Indeed, males are likely to be confused only with those of *Brignolia*, which also have heavily sclerotized, “burnt” palps but which lack leg spines and have flatter, more heavily sclerotized abdomens (see Platnick et al., 2011: figs. 6, 8). Most females of *Ischnothyreus* can be separated from those of *Malagiella*, and all those of *Camptoscaphiella* except *C. paquini*, by the highly “squiggled” posterior genitalic ducts (figs.
75, 96), but some undescribed species of Ischnothyreus have ducts that appear nearly straight, and we have not yet found any characters that will reliably separate such females. Females of Ischnothyreus could also be confused with those of Triaeris, which also have the bulk of the genitalia occupying the postepigastric scutum and often including somewhat sinuous posterior ducts, but which differ from members of Ischnothyreus in having a greatly elongated, spinose patella on leg I (see Platnick et al., 2012c).

**Description:** See Saaristo (2001: 345); a full description will not be possible until the many undescribed Old World species are studied in detail.

**Distribution:** Ischnothyreus appears to be natively an Old World group. Numerous endemic species occur from West Africa to Yemen (Saaristo and van Harten, 2006), Nepal (Burger, 2010), China (Tong and Li, 2008), Malaysia (Kranz-Baltensperger, 2012), Japan, the Philippines, the Marshall Islands, and Borneo (Kranz-Baltensperger, 2011) and, to the south, from Angola, Comoros, Madagascar, and Seychelles east to Australia (Edward and Harvey, 2009), Fiji, and the Cook Islands. However, as detailed below, two of the Old World species have apparently attained pantropical distributions.

**Synonymy:** The male of I. jivani has the “burnt” palps, the associated skeletomuscular elements inside the carapace, the elevated carapace, and the retrally twisted palpal resting position that are apparently synapomorphic for Ischnothyreus; removal of that species to a separate genus apparently renders Ischnothyreus paraphyletic, and is therefore unacceptable.

*Ischnothyreus peltifer* (Simon)

**Figures 1–99**

*Ischnaspis peltifer* Simon, 1891: 562 (four female syntypes from St. Vincent, in BMNH, one female syntype from St. Vincent, in MNHN; examined).


*Dysderina antillana* Bryant, 1942: 324, figs. 1, 7 (male holotype from Christiansted, St. Croix, Virgin Islands, in MCZ; examined). First synonymized by Chickering, 1968: 80.


Diagnosis: Males can easily be separated from those of *I. velox* by the large protuberance on the base of the cheliceral fang (figs. 5–8, 83), females by the narrow, posteriorly situated, sinuous ridge on the postepigastric scutum (fig. 72).

**Male** (PBI_OON 16071, figs. 1–45, 76–87): Total length 1.48. **Cephalothorax:** Carapace olive green, with dark brown egg-shaped patches behind eyes, ovoid in dorsal view (fig. 1), pars cephalica strongly elevated in lateral view (fig. 2), anteriorly narrowed to 0.49 times its maximum width or less, with rounded posterolateral corners, posterolateral edge without pits, posterior margin not bulging below posterior rim, anterolateral corners with slightly sclerotized triangular projections, posterolateral surface without spikes, surface of elevated portion of pars cephalica smooth, sides reticulate, thorax without depressions, fovea absent, without radiating rows of pits; lateral margin straight, smooth, without denticles; plumose setae near posterior margin of pars thoracica absent; nonmarginal pars cephalica setae light, needlelike, scattered; nonmarginal pars thoracica setae absent; marginal setae light, needlelike. Clypeus margin unmodified, straight in front view, vertical in lateral view, high, ALE separated from edge of carapace by their radius or more (fig. 3), median projection absent; setae light, needlelike. Chilum absent. Eyes six, well developed, ALE largest, ALE circular, PME oval, PLE oval; posterior eye row procurved from both above and front; ALE separated by less than their radius, ALE-PLE separated by less than ALE radius, PME touching throughout most of their length, PLE-PME touching (fig. 4). Sternum slightly longer than wide (fig. 12), pale orange, uniform, not fused to carapace, median concavity absent, without radial furrows between coxae I–II, II–III, III–IV, radial furrow opposite coxae III absent, surface smooth, without pits, microsculpture absent, sickle-shaped structures absent, anterior margin with continuous transverse groove, posterior margin not extending posteriorly of coxae IV, anterior corner unmodified, lateral margin with infracoxal grooves and anterior and posterior openings (figs. 13, 14), distance between coxae approximately equal, extensions of precoxal triangles present, lateral margins unmodified, without posterior hump; setae scattered, light, needlelike, more abundant on anterior half, originating from surface, without hair tufts. Chelicerae, endites and labium pale orange. Chelicerae straight, anterior face unmodified; with one tooth on both promargin and retromargin (figs. 5, 6); fangs without toothlike projections, directed posteriorly, shape normal, with prominent basal process (figs. 7, 8), tip unmodified; setae light, needlelike, evenly scattered; paturon inner margin with scattered setae, distal region unmodified, posterior surface unmodified, promargin unmodified, inner margin with many medial denticles, laminate groove absent. Labium rectangular, fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin, subdistal portion with unmodified setae (fig. 9). Endites distally excavated, serrula absent (fig. 10), anteromedian tip with one strong, tooth-shaped projection, posteromedian part unmodified, same as sternum in sclerotization. Labrum with triangular projection (fig. 11); palps connected to complexly modified endosternite (figs. 43–45). **Abdomen:** ovoid, without long posterior extension, rounded posteriorly, interscutal membrane rows of small sclerotized platelets absent posteriorly; dorsum soft portions white, without color pattern. Book lung covers large, elliptical, without setae, anterolateral edge unmodified. Posterior spiracles not connected by groove. Pedicel
tube short, unmodified, scutopedicel region unmodified, scutum extending far dorsal of pedicel, plumose setae, matted setae on anterior ventral abdomen in pedicel area, cuticular outgrowths near pedicel all absent. Dorsal scutum weakly sclerotized, olive green, without color pattern, covering 1/2 to 3/4 of abdomen, more than 1/2 to most of abdomen width, fused to epigastric scutum, middle surface smooth, sides smooth, anterior half without projecting denticles. Epigastric scutum weakly sclerotized, surrounding pedicel, not protruding, small lateral sclerites absent. Postepigastric scutum weakly sclerotized, pale orange, short, almost rectangular, covering about 2/3 of abdominal length, fused to epigastric scutum, anterior margin unmodified, without posteriorly directed lateral apodemes. Spinneret scutum present, incomplete ring. Dorsal, epigastric, postepigastric setae light, needlelike; epigastric setae not basally enlarged; spinneret scutum with fringe of needlelike setae; dense patch of setae anterior to spinnerets absent; interscutal membrane with setae. Colulus present, very small, bearing two hairs. Spinnerets (fig. 17): ALS with one major ampullate gland spigot and three piriform gland spigots (fig. 18); PMS with single spigot (fig. 19); PLS with three spigots (fig. 20). Legs: pale orange, without color pattern; femur IV not thickened, same size as femora I–III, patella plus
tibia I shorter than carapace, tibia I unmodified, tibia IV specialized hairs on ventral apex absent, tibia IV ventral scopula absent, metatarsi I, II mesoapical comb absent, metatarsi III, IV weak ventral scopula absent, tarsi III, IV with “false claws” (figs. 23, 27, 28). Leg spination (only surfaces bearing spines listed, all spines longer than segment width): femora: I p0-1-1; II p0-0-1; tibiae I, II v4-2-2; metatarsi I, II v2-2-0. Tarsal proclaws and retroclaws inner face striate, with zero teeth on lateral surface, three teeth on median surface (figs. 21–28); inferior claw absent. Trichobothria: tibia each with three, metatarsi each with one; hood covered by numerous low, closely spaced ridges (fig. 33). Tarsal organ with three receptors on legs I, II, two receptors on legs III, IV, palps (figs. 29–32).

**Genitalia**: Epigastric region with sperm pore large, triangular with rounded angles (figs. 15, 16), situated in front of anterior spiracles, unmodified; epigastric furrow apparently absent (fig. 15). Palp slightly reduced in size, strongly sclerotized, right and left palps symmetrical, proximal segments almost black; trochanter normal size, with ventral projection; femur normal size, one to two times as long as trochanter, without posteriorly rounded lateral dilation, attaching to patella basally; patella about as long as femur, not enlarged, without prolateral row of ridges, setae unmodified; tibia with three trichobothria; cymbium almost black, ovoid in dorsal view, fused with bulb but with clearly defined seam between, not extending beyond distal tip of bulb, plumose setae, stout setae, distal patch of setae all absent; bulb almost black, 1–1.5 times as long as cymbium, stout, gradually tapering apically, obtusely bent before apex (figs. 34, 35), middle part with two protuberances on ventral side (fig. 36); embolus light, prolateral excavation absent, set off from bulb by ventral collar, tip with multiple, complex processes (figs. 37–42).

**Female** (PBI_OON 16071, figs. 46–75, 88–99): Total length 1.70. As in male except as noted. Carapace without any pattern, broadly oval in dorsal view (fig. 46), pars cephalica slightly elevated in lateral view (figs. 47, 48). Sternum anterior margin unmodified (fig. 52). Fangs directed medially, without prominent basal process (figs. 49, 50). Labium anterior margin not indented at middle. Endites distally not excavated, serrula present in single row (figs. 51, 97, 99), anteromedian tip unmodified; labral projection rounded (fig. 98). Palpal claw absent (figs. 53, 54); femur with three spiniform setae ventrally (fig. 55); patella without prolateral row of ridges; tibia with three trichobothria (fig. 56); tarsus unmodified. Dorsal scutum between 1/4 and 1/2 abdomen width, not fused to epigastric scutum. Epigastric scutum slightly protruding, small lateral sclerites present (fig. 93), without lateral joints. Postepigastric scutum densely hexagonal, covering about 1/3 of abdominal length, not fused to epigastric scutum, with short, posteriorly directed lateral apodemes. Spinnerets (fig. 68): ALS as in male (fig. 69); PMS with four spigots (fig. 70); PLS with seven spigots (fig. 71). Leg spination: femora: I p0-1-1; II p0-0-1; tibiae I, II v4-2-2; metatarsi I, II v2-2-0. Tarsal organs (figs. 64–67) and claws (figs. 57–63) as in male except claws of leg IV with elongated distal tooth, tip therefore appearing bifid (fig. 59). Posterior margin of epigastric scutum with transverse row of large setae. Postepigastric scutum with narrow, sinuous, elevated ridge at about two-thirds its length (fig. 72); narrow, slit-shaped copulatory opening situated on midline near anterior edge of postepigastric scutum (fig. 73), followed posteriorly by series of tiny pores (fig. 74). Posterior genital tube originating at middle of anterior edge of postepigastric scutum, squiggled, ending at level of external ridge (fig. 75); anterior receptaculum small, T-shaped.


Saint Catherine: 3 mi. E Old Harbour, Oct. 21, 1957 (A. Chickering, MCZ 71138, PBI_OON 27295), 3♀; School of Agriculture, Nov. 23, 1957 (A. Chickering, MCZ 32461, PBI_OON 27291), 1♀2.


San Juan: Rio Piedras, Dos Pinos, Sept. 21, 1963, under boards (E. Nelson, MCZ 71367, PBI_OON 27388), 1♀; between Toa Alta and Toa Baha, ca. 17.5 km from San Juan, forest (AMNH PBI_OON 1955), 1♀ (details from Petrunkevitch, 1929).


Distribution: Pantropical, and also introduced in north temperate buildings; sometimes sympatric with I. velox. However, not all the published records of the species are accurate. For example, the specimens from St. Helena described by Benoit (1977: 41, figs. 15a–c), including his invalid “♂ allotype,” belong neither to I. peltifer nor I. velox.
Ischnothyreus velox Jackson
Figures 100–132

*Ischnothyreus peltifer* (misidentification): Simon, 1891: 562 (in part, females from the Philippines only). – Platnick et al., 2012a: 12, figs. 21, 24 only (in part, tarsal organ scans of male from Amazonas, Brazil).


*Ischnothyreus barrowsi* Chamberlin and Ivie, 1935: 9, pl. II, fig. 7 (female holotype from Marco Island, Collier Co., Florida, in AMNH; examined). NEW SYNONYMY.


*Ischnothyreus indressus* Chickering, 1968: 84, figs. 13–20 (male holotype from Nevis, Leeward Islands, in MCZ; examined). NEW SYNONYMY.

**Diagnosis:** Males differ from those of *I. peltifer* in lacking a protuberance on the base of the fang (fig. 104); their palps differ from those of *I. peltifer* and instead resemble those of *I. lymphaseus*, from Sri Lanka, in having a rounded bulb (in that species, the embolus is shorter and bears a longer distal extension than in *I. velox*); males also have a larger sperm pore than do those of *I. peltifer* (fig. 107). Females of *I. lymphaseus* are unknown, but those of *I. velox* have a distinctively procurved ridge occupying most of the width of the postepigastric scutum (figs. 127–132).

**Male** (PBI_OON 16072, figs. 100–120): Total length 1.55. As in male of *I. peltifer* except as noted. Carapace pale orange, broadly oval in dorsal view, anterolateral corners without extension or projections, nonmarginal pars thoracica setae light, needlelike. Sternum yellow. Fangs directed medially, without prominent basal process. Dorsal scutum pale orange, not fused to epigastric scutum. Spinnerets not scanned. Leg spination: femora: I p0-0-2; II p0-0-1; tibiae I, II v4-2-2; metatarsi I, II v2-2-0. Tarsal claws, tarsal organs not scanned. Palp with proximal segments, cymbium, bulb all brown; bulb more than twice as long as cymbium, rounded, with one protuberance on ventral side; embolus clearly delimited, with ventral T-shaped extension within translucent ventral flange, apex with long, narrow extension.

**Female** (PBI_OON 16072, figs. 121–132): Total length 2.11. As in female of *I. peltifer* except as noted. Carapace with lateral reticulations covering almost whole carapace, only uppermost part smooth. Palpal tibia with at least two trichobothria. Pedicel scutum not extending far dorsal of pedicel. Dorsal scutum covering less than half of abdomen length. Leg spination: femora: I p0-0-1-1; II p0-0-1; tibiae I, II v4-2-2; metatarsi I, II v2-2-0. Postepigastric scutum with boat-shaped transverse ridge situated at about half of scutum length, occupying most of scutum width; posterior genital tube narrow, squiggled, terminating at level of transverse ridge.

**Material Examined:** NORTH AMERICA: **United States:** Florida: Collier Co.: Marco Island, Jan. 9, 1930 (W. Barrows, AMNH PBI_OON 49465), 1 ♀ (holotype). **Mexico:** Nayarit: San Blas, Aug. 7, 1960, mangrove swamp (AMNH PBI_OON 1951), 1 ♀. **Tabasco:** Parque La Venta, Villahermosa,

DISTRIBUTION: Pantropical (although not yet recorded from Africa south of Egypt), and introduced in European greenhouses; sometimes sympatric with *I. peltifer.*
SYNONYMY: Chamberlin and Ivie’s female holotype of *I. barrowsi* was placed in *I. peltifer* by Chickering (1969: 146) but actually belongs to *I. velox* instead. Chickering apparently did not consider the possibility that *I. indressus* could be a widespread species.

*Ischnothyreus browni* Chickering

*Ischnothyreus browni* Chickering, 1968: 83, figs. 11, 12 (male holotype plus one male and one female paratypes putatively from Costa Rica, probably mislabeled, in MCZ 66707, PBI_OON 49520, 49521; examined).

**Diagnosis:** Males resemble those of *I. aculeatus* (Simon), from the Philippines, but can be distinguished by the distally enlarged, protruding projection on the male embolus (figs. 143, 149); females differ from those of *I. aculeatus* in having relatively short posterior genital ducts (figs. 159–161).

**Male** (PBI_OON 35514, figs. 133–151): Total length 1.14. As in male of *I. peltifer* except as noted. Carapace pale orange, broadly oval in dorsal view. Sternal setae evenly scattered. Fangs without prominent basal process. Labium anterior margin not indented at middle. Dorsal scutum yellow, extremely weak, covering about half of abdomen length, between 1/4 and 1/2 of abdomen width, not fused to epigastric scutum. Postepigastric scutum yellow, covering about 1/3 of abdomen length. Spinneret scutum absent. Spinnerets not scanned. Leg spination: femora I, II p0-0-2; tibiae I, II v4-2-2; metatarsi I, II v2-2-0. Tarsal claws, tarsal organs not scanned; trichobothria not examined. Palp with proximal segments, cymbium, bulb all brown; tibial trichobothria not examined; bulb more than twice as long as cymbium, not bent before apex, with one protuberance on ventral side; embolus light, with distinctive dorsal process, process wider at tip than at origin.

**Female** (PBI_OON 49521, figs. 152–161). Total length 1.36. As in female of *I. peltifer* except as noted. Carapace yellow, ovoid in dorsal view. Sternum yellow. Palpal femur with spiniform setae. Pedicel scutum not extending far dorsal of pedicel. Dorsal scutum, if present, with limits not detectable in this faded, possibly teneral specimen; epigastric scutum so weakly sclerotized that its limits are unclear. Postepigastric scutum very weakly sclerotized, apparently longer at middle than at sides. Leg spination: femora: I p0-1-2; II p0-0-2; tibiae I, II v4-2-2; metatarsi I, II v2-2-0. Tarsal claws, tarsal organs not scanned; trichobothria not examined. Postepigastric scutum probably with narrow transverse ridge at about half its length; squiggled posterior duct with three transverse portions.

**Material Examined:** **Philippines: Luzon:** Laguna Prov.: 4 km SE Los Baños, Apr. 8, 1977, Berlese, forest litter (L. Watrous, AMNH PBI_OON 1966), 1♂; Malaboo Camp, Mount Makiling, 3.46 km SSW Los Baños, 14°08.220’N, 121°12.352’E. May 10, 2011, miniwinkler, forest litter, elev. 675 m (H. Wood et al., CAS 43645, PBI_OON 35514), 1♂; Mount Makiling, 4 km SE Los Baños, Apr. 9, 1977, Berlese, mixed hardwood litter (L. Watrous, AMNH PBI_OON 1965), 1♂.

**Distribution:** Known with certainty only from Luzon Island in the Philippines; as indicated above, we regard the Costa Rican type locality as spurious.
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REFERENCES


