

Australian Goblin Spiders of the Genus *Ischnothyreus* (Araneae, Oonopidae)

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AUSTRALIAN GOBLIN SPIDERS OF THE GENUS *ISCHNOTHYREUS* (ARANEAE, OONOPIDAE)

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ABSTRACT

Goblin spiders of the genus *Ischnothyreus* are characterized by small, heavily sclerotized male pedipalps, reduced dorsal and ventral scutes, and heavy spination of the first and second legs. Species of this genus may be distinguished from each other by the variation in the embolic region of the male palp, female genitalia, color, degree and shape of dorsal and ventral sclerotization, and specializations of the chelicerae and endites in the male. A total of 34 Australian species of *Ischnothyreus* Simon are recognized, all of which are endemic and found throughout the tropical, monsoonal, and subtropical regions of the country. *Ischnothyreus darwini* Edward and Harvey is the only previously described species, and 33 are newly described: *I. arcus*, *I. barratus*, *I. bifidus*, *I. binorbis*, *I. boonjee*, *I. bualveus*, *I. bupariorbis*, *I. collingwoodi*, *I. comicus*, *I. corniculatum*, *I. cornuatus*, *I. crenulatus*, *I. culleni*, *I. digitus*, *I. eacham*, *I. eungella*, *I. florence*, *I. hamatus*, *I. hoplophorus*, *I. julianneae*, *I. ker*, *I. meidamon*, *I. monteithi*, *I. nourlangie*, *I. ovinus*, *I. piricius*, *I. pterodactyl*, *I. puruntatamerii*, *I. raveni*, *I. rixi*, *I. stauntoni*, *I. tragicus*, and *I. tumidus*. Many of the described species have extremely small geographic ranges, and the genus shows high diversity over relatively small areas. A key, detailed illustrations, and digital images are provided for all Australian species of *Ischnothyreus*.

INTRODUCTION

The Oonopidae are a widely distributed family of very small (0.5–4 mm) haplogyne, ecribellate, usually six-eyed spiders. Very little is known about the ecology, diversity, and phylogenetic relationships of these spiders and it is estimated that up to 1500 species are yet to be formally described (Platnick, unpublished data). Currently there are 1135 described species in 93 genera (Platnick, 2013), and they are known to occur in a variety of terrestrial microhabitats that include leaf litter, bark, rocks, and forest canopies (e.g., Harvey, 1987; Saaristo, 2001; Platnick et al., 2011; Baehr et al., 2012). Although thought to be of greatest diversity in the tropical and subtropical regions of the world (Jocqué and Dippenaar-Schoeman, 2007), they are also known to persist in subterranean habitats (Harvey and Edward, 2007), arid regions (Fannes and Jocqué, 2008; Baehr et al., 2010; Baehr et al., 2013), and high altitudes such as the Himalayan mountains (Baehr and Ubick, 2010). What makes this group so intriguing is the extremely small distribution ranges that many species exhibit, particularly from genera such as *Cavisternum* Baehr et al. (Baehr and Harvey, 2010; Baehr et al., 2010), *Birabenella* Grismado (Grismado, 2010), *Opopaea* Simon (Saaristo and Marusik, 2008; Baehr et al., 2013), *Escaphiella* Platnick and Dupérré (Platnick and Dupérré, 2009), *Orchestina* Simon (Saaristo, 2001; Saaristo and Harten,

2006), and *Ischnothyreus* Simon (Kranz-Baltensperger, 2011, 2012). Many species are known only from a single locality (Baehr et al., 2010), despite extensive survey work, and many are short-range endemics as defined by Harvey (2002) and Harvey et al. (2011). Not only are these particular taxa informative in studies investigating hotspots of high diversity and endemism, they are potentially important in studies of historical biogeography, in helping establish areas of priority for conservation, and ecological research. Further, sexual dimorphism, interesting somatic and genitalic characteristics, and evidence of sperm dumping in females (Burger, 2010), make them potentially valuable in studies of sexual selection and genitalic evolution (Eberhard, 1985).

The genus *Ischnothyreus* was established by Simon in 1893 based on a female specimen collected from the island of St. Vincent of the Lesser Antilles (Simon, 1893). The type species of this genus was originally described as *Ischnaspis peltifer* in 1891 (Simon, 1891); however, as the generic name was preoccupied, it was changed to *Ischnothyreus* in 1893 (Simon, 1893). There are currently 47 valid specific names assigned to *Ischnothyreus* (Platnick, 2013), found throughout the Old World tropics and subtropics from Yemen in the west to Samoa in the east. Two species, *I. peltifer* and *I. velox* Jackson, are also known from the New World and Europe, but these are thought to represent accidental introductions from Old World populations (Platnick

et al., 2012a). At least one of the Asian species, *I. deccanensis* Tikader and Malhotra, does not exhibit the diagnostic features characteristic of the genus *Ischnothyreus* (Tikader and Malhotra, 1974) and clearly belongs within another genus. However, further revisionary work will be required before appropriate placement of *I. deccanensis* and other potentially misplaced species is possible.

Apart from a review of the introduced New World species (Platnick et al., 2012a), recent additions to our knowledge of the genus *Ischnothyreus* have included the description of new species from northern Australia (Edward and Harvey, 2009), Borneo (Kranz-Baltensperger, 2011), Malaysia (Kranz-Baltensperger, 2012), and Hainan Island, China (Tong and Li, 2012).

Numerous unidentified specimens of *Ischnothyreus* from museums and recent field collections suggest that the presently recognized species represent only a small fraction of the actual biodiversity. Within Australia the entire *Ischnothyreus* fauna had clearly been overlooked and underrepresented in the taxonomic literature until only recently, when *I. darwini* was described from the Northern Territory (Edward and Harvey, 2009). In a review of *Ischnothyreus* specimens lodged in Australian museums we found a large number of putative new taxa from Australia and these are the focus of the present revision. Although found in varied habitats in New South Wales, northern Queensland, and across to the Northern Territory, they were found to be particularly abundant and speciose in the tropical wet rainforests of northern Queensland (Wet Tropics Bioregion), an area renowned for high levels of endemism and biodiversity (e.g., Nix, 1991; Schneider and Moritz, 1998; Yeates et al., 2002; Bell et al., 2007).

It is uncertain what affinities this genus has within the family Oonopidae as they are quite unique and easily distinguished from other genera. *Ischnothyreus* is currently placed in the subfamily Oonopinae (Platnick et al., 2012b) as they have the characteristic tarsal organ pattern found in this group. Members of this genus can easily be recognized by the distinctive, small, darkened male pedipalps and strong spines present on the femora,

tibiae, and metatarsi of the first and second legs in both sexes. In some cases, the male has clear modifications on the distal portion of the endites and the base of the cheliceral fang. A prominent basal process on the fang is quite rare in other oonopid genera and has only been formally recorded in *Escaphiella hespera* (Chamberlin) and *E. litoris* (Chamberlin) (Platnick and Dupérré, 2009). However, there is some indication that prominent basal processes on the fang and distinct modifications of the distal portion of the endites exist in other genera (e.g., Platnick et al., 2011). The genus *Camptoscaphiella* Caporiacco is probably the most similar to *Ischnothyreus* as it shares reduced dorsal and ventral sclerotization, modifications of the endites, leg spination, heavily sclerotized male palps, and similar eye arrangements (Baehr and Ubick, 2010). These two genera, however, are easily distinguished by the male and female genitalia. *Camptoscaphiella* exhibits an enormous enlarged male palpal patella and clearly separated bulb and cymbium, compared to a normal-size patella and a fused cymbium and bulb with a clearly defined seam, in *Ischnothyreus*. Further, *Camptoscaphiella* females lack the distinct, darkly sclerotized, convoluted duct and uniquely shaped atrium, seen in *Ischnothyreus*. Putative external copulatory openings or curved ducts may also be seen in genera such as *Antoonops* Fannes and Jocqué (Fannes and Jocqué, 2008) and *Triaeris* Simon (Platnick et al., 2012c), but are not as distinct or diverse as those seen in *Ischnothyreus*. Ubick and Griswold (2011) suggest that the genera *Ischnothyreus*, *Camptoscaphiella*, *Aprusia* Simon, and *Malagiella* Ubick and Griswold are sufficiently similar to warrant inclusion in the *Ischnothyreus* complex.

Ischnothyreus are haplogyne spiders, a basal group of araneomorph spiders that are generally thought to exhibit comparatively simple palpi in males and no epigynum (or external genital plate with separate openings for the males' sperm-transmitting organs) in females (Burger et al., 2003; Burger et al., 2006a). Although genitalic characters have been found to be surprisingly more complex in genera like *Escaphiella* and *Scaphiella*, *Ischnothyreus* seem to be consistent with the haplogyne form (Burger et al., 2006a; Burger

et al., 2006b; Burger and Kropf, 2007; Burger, 2010). Studies have shown the female genitalia of *Ischnothyreus* lack distinct receptacula seminis and that fertilization was thought to occur in the uterus or ovary (Burger, 2010). The function of the uniquely shaped external atrium or depression and the sclerotized convoluted duct in the females remains unknown. This convoluted duct may have a glandular role as it was found to be covered in small pores and embedded in glandular tissues (Burger, 2010). There is also the possibility that sperm could be stored in a large fold of the uterus externus (Burger, 2010), which has been observed in *Brignolia recondita* (Chickering) (Burger, 2009; now known as *B. parumpunctata* (Simon), see Platnick et al. (2011)). For a detailed description and diagrams of the female reproductive system, see Burger (2010).

There is an incredible diversity of modifications to the embolic region of the male pedipalp in the Australian species of *Ischnothyreus*. Modifications in this region, and sometimes with the male chelicerae (figs. 8C, 22C, 24C), correspond with modifications of the female genitalia (figs. 8F, 22E, 24E), thus indicating the possibility of copulatory courtship or a locking mechanism during copulation (Huber, 2002). Although thought to have a very simple embolus and short conductor (Burger, 2010), the embolic region of the male palps exhibit other modifications that are quite diverse, ranging from being simple and stout (figs. 50A, 63A), very long and digitiform (figs. 55A, 73A), possessing digitiform processes (figs. 26A, 30A), to numerous enlarged sclerites (figs. 32A, 44A). There are similar levels of modification in the female epigynal region ranging from very simple (figs. 9I, 59F), differently shaped atrium openings (figs. 1I, 13I, 77E), paired atria (figs. 29I, 43I, 65I), to heavily sclerotized shield-shaped structures (figs. 17J, 23I).

Here we provide a taxonomic revision of the genus *Ischnothyreus* in Australia. This study is based on over 2000 specimens that have been collected over the last 25 years. A total of 33 new species are described of which three occur in the Northern Territory, 23 are endemic to the Wet Tropics Bioregion of northern Queensland (map 1), two are endemic to southeast Queensland, and three are

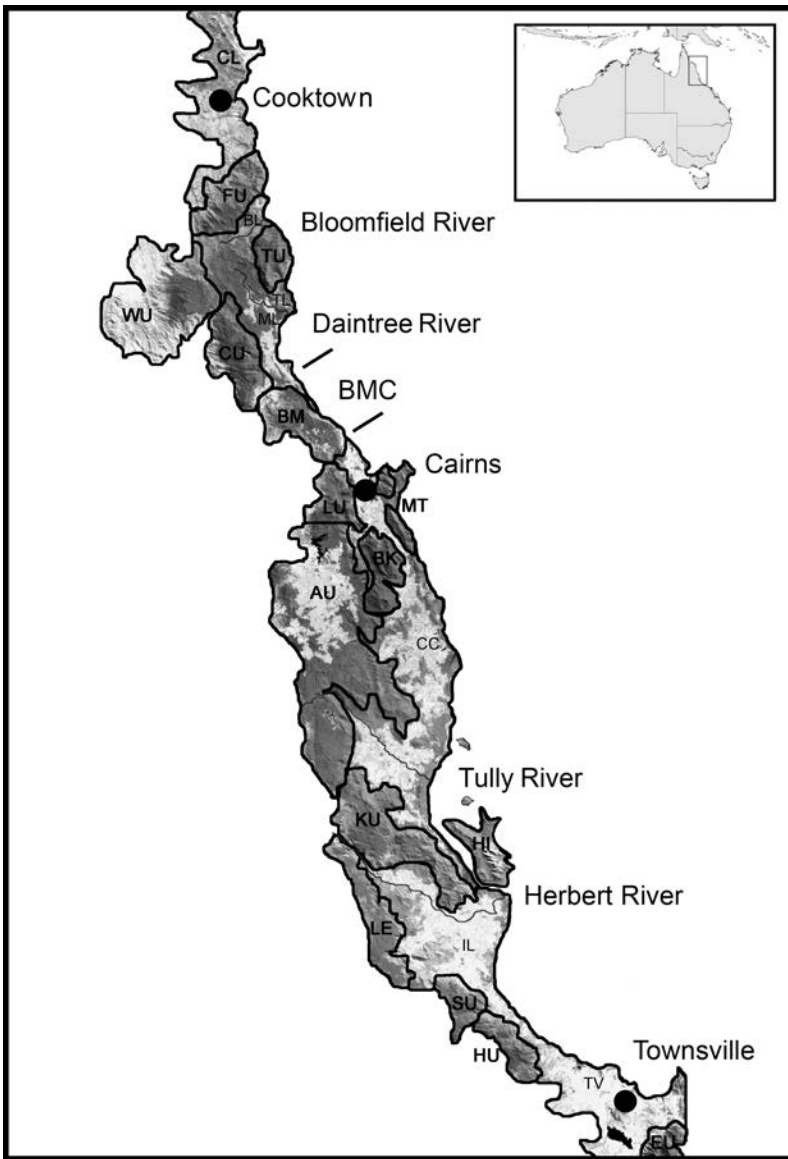
more widespread from New South Wales to northeast Queensland. We are also aware of several other new species of *Ischnothyreus* from Australia but refrain from describing them due to the lack of suitable material.

MATERIALS AND METHODS

The majority of specimens used in this revision had been collected by staff of the Queensland Museum and the Australian National Insect Collection since the late 1970's using Berlese funnels, pyrethrum knockdown, and pitfall traps. Field expeditions by K.L.E. to the Northern Territory, New South Wales, and Queensland were undertaken from 2007–2009 to specifically collect *Ischnothyreus* specimens for molecular and morphological studies. During targeted sampling, specimens were generally collected by hand using a soil sieve (5 mm grid size) and a collecting tray to sieve moist rainforest leaf litter.

Specimens were examined using a Leica MZ16A and a Olympus SZX7 binocular microscopes. Digital images were composed from multiple images taken with a Leica DFC 500 digital camera attached to the Leica MZ16A using the software program Auto-Montage Pro version 5.02 (p). Temporary slide mounts were made by placing specimens in a 20% lactic acid/glycerol solution or clove oil at room temperature for at least 24 hours and mounting them on microscope slides with 10 mm cover slips supported by small sections of 0.25 mm or 0.5 mm diameter nylon fishing line. Preparations were examined with an Olympus BX41 compound microscope and illustrated with the use of a drawing tube. Specimens were returned to 75% ethanol and dissected parts placed in 12 × 3 mm glass genitalia microvials after study (BioQuip Products, Inc). Specimens prepared for scanning electron microscopy were dehydrated in 100% ethanol, critical point dried, sputter coated, and imaged with a Zeiss Evo 40XVP scanning electron microscope.

Measurements were taken at the highest possible magnification using an ocular graticule and are in millimetres (mm). Leg spines were documented by dividing each leg segment into 4 aspects: prolateral (p), retrolateral (r), ventral (v), and dorsal (d) and



Map 1. Subregions within the Wet Tropics Bioregion (modified from Williams, 1997). Upland areas (>300 m altitude): AU, Atherton; BK, Bellenden Ker/Bartle Frere; BM, Black Mountain corridor; CU, Carbine; EU, Elliot; FU, Finnigan; HI, Hinchinbrook; HU, Halifax; KU, Kirrama; MT, Malbon-Thompson; LE, Lee; LU, Lamb; SU, Spec; TU, Thornton; WU, Windsor. Lowland regions (< 300 m altitude): BL, Bloomfield-Helenvale; CC, Cairns-Cardwell; CL, Cooktown; IL, Ingham; ML, Mossman; TL, Thornton; TV, Townsville. Note the position of the Black Mountain Corridor (BMC).

dividing each aspect into basal, middle, and distal sections separated by a hyphen, e.g., p1-1-0. The species description of the legs includes only segments and positions where spines were present. Descriptions were generated with the aid of the Goblin Spider PBI

descriptive database and modified where appropriate (<http://research.amnh.org/oonopidae>). Only differences from the males are mentioned in the descriptions of the females. Maps were produced with the computer program ArcGIS 9.1 (ESRI Inc.). Terminology of the

female epigynum area is modified from Burger (2010).

Abbreviations used in the text:

ALE	anterior lateral eye(s)
ALS	anterior lateral spinneret(s)
PER	posterior eye row
PLS	posterior lateral spinneret(s)
PLE	posterior lateral eye(s)
PME	posterior median eye(s)
PMS	posterior median spinnerets
SEM	scanning electron microscope

Specimens examined in this study are deposited in the following institutions:

AM	Australian Museum, Sydney
AMNH	American Museum of Natural History, New York
ANIC	Australian National Insect Collection, Canberra
CAS	California Academy of Sciences, San Francisco
FMNH	Field Museum of Natural History, Chicago
MAGNT	Museum and Art Gallery of the Northern Territory, Darwin
QM	Queensland Museum, Brisbane
WAM	Western Australian Museum, Perth

Family Oonopidae Simon
Subfamily Oonopinae Simon
Ischnothyreus Simon

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

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

Ischnothyrella Saaristo, 2001: 348 (type species by original designation *Ischnothyreus jivani* Benoit, 1979). Synonymized by Platnick et al. (2012a: 6).

DIAGNOSIS: *Ischnothyreus* are small to medium-sized (1.4–3.5), scutate oonopids. The most distinctive characteristic of the members of this genus are the small, darkly colored, heavily sclerotized palps of the male spiders, held close to the mouthparts on the sternum (figs. 1H, 7H). The rest of the body and appendages are only weakly sclerotized,

with dorsal and ventral scutes partially covering the abdomen to varying degrees (figs. 1A–F, 7A–F). Strong spines are positioned on the femora, tibiae, and metatarsi of legs I and II (figs. 20F, 27A–F, 29A–F, 38A, B). Eyes are relatively large, mostly touching each other, forming a ring (figs. 1G, 2A, 7G). The cymbium and bulb of the male pedipalps are fused but with a clearly defined seam. The bulb is usually elongated and gradually tapering, usually with an obtusely bent embolic region (figs. 4A, B, 8A, B). The female genitalia is unique with a median convoluted duct starting from the epigastric furrow, winding posteriorly, usually ending in a funnellike atrium (figs. 1I, 4F, 7I, 8F).

DESCRIPTION: Total length of males, 1.20–1.81, of females, 1.34–2.22. **CEPHALOTHORAX:** Male carapace with dark brown egg-shaped patches behind eyes (exceptions noted in text), female carapace without any pattern, usually ovoid in dorsal view (fig. 35B), pars cephalica usually highly elevated in males (figs. 2A, 20A, 34A), slightly elevated in females (figs. 35A, C), surface of carapace usually reticulate to some degree (fig. 34B), with rounded posterolateral corners, posterolateral edge without pits, posterior margin not bulging below posterior rim, posterolateral surface without spikes, thorax without depressions, fovea absent, without radiating rows of pits; lateral margin straight, smooth, without denticles; nonmarginal pars cephalica setae needlelike; plumose setae near posterior margin of pars thoracica absent; nonmarginal pars cephalica setae dark, present, scattered; nonmarginal pars thoracica setae absent; marginal setae absent. *Clypeus* margin unmodified, vertical in lateral view; setae present, needlelike (figs. 34C, D, 35C, D). *Chilum* absent. *Eyes* six, well developed, ALE usually largest, circular, PME usually oval; posterior eye row procurved from front, usually procurved from above but sometimes straight (fig. 35B); ALE usually touching, PME touching throughout most of their length, PLE–PME touching. *Sternum* not fused to carapace, median concavity absent, distance between coxae approximately equal, 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 unmodified, posterior margin not extending posteriorly of coxae IV, anterior corner unmodified, lateral margin without infracoxal grooves, extensions of precoxal triangles present, lateral margins unmodified, without posterior hump; setae sparse, needlelike, originating from surface, without hair tufts. Chelicerae usually directed medially; retromargin, promargin without teeth; fang without toothlike projections, tip unmodified; setae needlelike, evenly scattered; paturon distal region unmodified, posterior surface unmodified, anterior surface sometimes modified in males, promargin with medial denticles (figs. 2D, 37A–D), laminate groove absent; female fang without prominent basal process; male fang sometimes with prominent basal process (figs. 4C, D, 8C, D, 65C, D). Labium triangular or elongated hexagonal, subdistal portion with unmodified setae (fig. 18C). Endites posteromedian part unmodified. Serrula present in single row in female (fig. 2F), appears modified in males (figs. 18E, F, 37E, F). ABDOMEN: Ovoid to cylindrical (figs. 20A, 34E, F, 35F), without long posterior extension, rounded posteriorly, interscutal membrane with setae, without rows of small sclerotized platelets; dorsum soft portions without color pattern and generally white. Book lung covers large, without setae, anterolateral edge unmodified. Posterior spiracles not connected by groove. Pedicel tube short (fig. 34F), unmodified, scutopedicel region unmodified, scutum extending far dorsal of pedicel in males, not extending far dorsal of pedicel in females, plumose hairs absent, matted setae on anterior ventral abdomen in pedicel area absent, cuticular outgrowths near pedicel absent. Dorsal scutum weakly sclerotized, without color pattern, anterior half without projecting denticles, not fused to epigastric scutum. Epigastric scutum weakly sclerotized, surrounding pedicel, not protruding. Male postepigastric scutum weakly sclerotized, short, almost rectangular, anterior margin unmodified, without posteriorly directed lateral apodemes, fused to epigastric scutum. Female postepigastric scutum small, not fused to epigastric scutum, separated by epigastric furrow (figs. 1I, 4F), without lateral joints, with short, posteriorly directed apodemes.

Spinneret scutum present, incomplete ring, with fringe of needlelike setae. Supraanal scutum absent. Dorsum, epigastric area, and postepigastric area setae present, uniform, needlelike. Dense patch of setae anterior to spinnerets present in females, absent in males. Interscutal membrane with setae. Colulus present. Spinnerets scanned only in *I. puruntatmeri*, sp. nov., *I. crenulatus*, sp. nov., and *I. bifidus*, sp. nov; female ALS with one major ampullate gland spigot surrounded by three smaller spigots, PMS with four spigots, PLS with six to eight spigots (figs. 3C, D, 21E–H, 38E, F), and male ALS with one major ampullate gland spigot surrounded by three smaller spigots, PMS with one spigot, and PLS with three spigots (figs. 3A, B, 38C, D); spigots elongate. LEGS: Femur IV not thickened, same size as femora I–III, patella plus tibia I usually shorter than carapace, tibia IV specialized hairs on ventral apex absent, tibia IV ventral scopula absent, metatarsi III and IV weak ventral scopula absent. Leg spines present (figs. 20F, 38A, B). Claws (examined in detail for *I. crenulatus*, sp. nov., only). Tarsi I to IV superior claws with three or four teeth on lateral surface of proclaw and retroclaw (figs. 41A–F). Tarsi I to IV without inferior claw. Tibiae each with three trichobothria, metatarsi each with one (figs. 40A–C, 20D), male palpal tibia usually with three dorsal trichobothria (figs. 20C, 40E, F); trichobothrial bases longitudinally narrowed but rounded in male palp (figs. 20C, 40A, F), aperture internal texture not gratelike, hood covered by numerous low, closely spaced ridges (fig. 40A–C). Tarsal organ of legs I and II with three sensillae and legs III and IV with two sensillae (figs. 20E, 39B–D). Slit sensilla visible on leg IV (fig. 39E, F). Female palp without claws or spines, tarsus unmodified, patella without prolateral row of ridges (fig. 39A). GENITALIA: Male epigastric region with large sperm pore, triangular with rounded angles, situated at level of anterior spiracles, unmodified (fig. 3E); furrow without Ω -shaped insertions, without modified setae. Male palp of normal size, strongly sclerotized, right and left palps symmetrical; embolus prolateral excavation absent; trochanter normal size, with ventral projection;

femur normal size, attaching to patella basally, without posteriorly rounded lateral dilation; patella not enlarged, without pro-lateral row of ridges, setae unmodified; cymbium ovoid in dorsal view, fused with bulb but with clearly defined seam between, not extending beyond distal tip of bulb, plumose setae absent, distal patch of setae absent, without stout setae; bulb tapering apically (figs. 2B, 21A–C, 36F). Short, thin sperm duct visible beneath chitin starting posterior to embolic region (fig. 4A, B), ending subdistally at dark colored region on ventral surface, assumed to be embolus opening (embolus opening in fig. 4A, B), embolic region usually obtusely bent; small spiniform conductor sometimes visible near putative embolus opening; embolic region sometimes with large modified projections or processes (fig. 4A, B, E). Female genitalia with medial convoluted duct (fig. 4F) starting from epigastric furrow, winding posteriorly to end anterior to depression or funnellike atrium (epigynal atrium in figs. 3F, 4F, 21D, 35E); sometimes with process or processes (figs. 8F, 17J, 65F) that partly overlie anterior or posterior portion of atrium.

DISTRIBUTION: Australia, Papua New Guinea, Pacific Islands, Asia, America, Middle East, Europe, Africa, Madagascar, Seychelles.

KEY TO AUSTRALIAN SPECIES OF *ISCHNOTHYREUS*

(males unknown for *I. nourlangie*, sp. nov., *I. florence*, sp. nov., *I. bualveus*, sp. nov.)

1. Males. 2
- Females. 32
2. Subdistal tip of fang with swollen process (fig. 8C, D). *I. tumidus*, sp. nov.
- Subdistal tip of fang unmodified (e.g., fig. 4C, D). 3
3. Anterior face of chelicerae modified with complex processes (figs. 19A, B, 22C, 23G–H, 24C). 4
- Anterior face of chelicerae unmodified (e.g., figs. 4C, 30C, 57C). 5
4. Anterior process on chelicerae bifurcated (figs. 19A, B, 22C). *I. bifidus*, sp. nov.
- Anterior process on chelicerae nonbifurcated, digitiform (fig. 24C). *I. hoplophorus*, sp. nov.
5. Fang with medial modification (figs. 10C, D, 28D, 75D). 6
- Fang without medial modification (e.g., figs. 4C, 30C, 57C). 8
6. Fang with dorsal nonsclerotized, sharp triangular incision (fig. 10D); embolic region of palp enlarged and clublike (fig. 10A, B, E). *I. culleni*, sp. nov.
- Fang with medial rounded sclerotized process (figs. 28D, 75D); palp embolic region not enlarged and clublike (figs. 28A, B, 75A, B). 7
7. Fang basal process large, complex (fig. 75C, D). *I. arcus*, sp. nov.
- Fang basal process absent (fig. 28C, D). *I. ker*, sp. nov.
8. Fang basal process absent (figs. 14C, D, 26C, D, 30C, D, 32C, D). 9
- Fang basal process present (figs. 4C, D, 16C, D, 52D). 19
9. Palp bulbous in shape, elongate embolic region bent obtusely at right angles, tapering to rounded tip (fig. 55A, B). *I. piricius*, sp. nov.
- Palp elongate, tapering apically (e.g., figs. 12A, 14A, 30A). 10
10. Palp with number of processes, embolic region complex, split into numerous structures (figs. 26A, 30A, B, 32A, B, 42A, B, E, 44A, B, E). 11
- Palp embolic region with one or two less complex processes (figs. 12A, 14A). 17
11. Lateral process situated medially on palpal bulb (figs. 26A, E, 30A, E). 12
- Complex processes situated subdistally on palpal bulb (figs. 32E, 42E, 44E, 46E). 13
12. Palpal bulb lateral process long, embolic region not obtusely bent or tapered (fig. 26A, B, E). *I. digitus*, sp. nov.
- Palpal bulb lateral process very short, small stub, embolic region split into number broad, rounded processes (fig. 30A, B, E). *I. binorbis*, sp. nov.
13. Basal part of fang flattened (Edward and Harvey, 2009: figs. 8, 9); labium not heavily sclerotized (Edward and Harvey, 2009: fig. 3). *I. darwini* Edward and Harvey
- Basal part of fang normal (figs. 32C, D, 37D, 42C, D, 44C, D, 46C, D); labium much more heavily sclerotized than sternum (figs. 31F, 33H, 43H, 45H). 14
14. Subdistal embolic region of palp with backward facing triangular hornlike process (figs. 44A, B, 46A, B, E). 15
- Not as above (figs. 44A, B, 46A, B, E). 16
15. Subdistal embolic region of palp extremely broad and enlarged, triangular in shape in dorsal view (fig. 32E). *I. boonjee*, sp. nov.
- Subdistal embolic region of palp divided into two main processes, digitiform process pro-

- jected laterally (fig. 42A, B, E)
 *I. crenulatus*, sp. nov.
16. Subdistal embolic region of palp with one large and one smaller dorsal hornlike process (fig. 44A, B) *I. cornuatus*, sp. nov.
- Subdistal embolic region of palp with one dorsal hornlike process and two smaller lateral processes (fig. 46A, B, E).
 *I. corniculatum*, sp. nov.
17. Distal embolic region of palp broad and short, extending about 1/3 length of bulb (fig. 12A, B) *I. meidamon*, sp. nov.
- Distal embolic region of palp obtusely bent at right angle (figs. 14A, B, 50A, B) 18
18. Distal embolic region of palp long, obtusely bent tip longer than wide (fig. 14A, B)
 *I. comicus*, sp. nov.
- Distal embolic region of palp broad, obtusely bent tip about as wide as long (fig. 50A, B)
 *I. eacham*, sp. nov.
19. Cheliceral fang with very prominent basal process (figs. 16C, D, 65C, D, 71C, D, 73D) 20
- Cheliceral fang with slight basal process (figs. 4C, D, 52D, 57C, D, 59D) 24
20. Embolic region of palp obtusely bent and elongate, greater than 2/3 of bulb length (fig. 73A, B); basal process of fang with numerous lobes (fig. 73C, D)
 *I. pterodactyl*, sp. nov.
- Embolic region of palp slightly bent and short, less than 2/3 of bulb length (e.g., figs. 16A, 65A, 71A); basal process of fang without numerous lobes (e.g., figs. 16C, D, 65C, D, 71C, D) 21
21. Embolic region of palp curved to form thin, hooked distal tip (fig. 71A, B, E); fang greatly enlarged basally with thin process curved around anterior side (fig. 71C, D)
 *I. hamatus*, sp. nov.
- Embolic region of palp not curved to form thin, hooked distal tip (figs. 16A, B, E, 65A, B, E, 69A, B, E); fang not greatly enlarged basally (figs. 65C, D, 69C, D) 22
22. Embolic region of palp bifurcated distally (fig. 65A, B, E); fang not enlarged basally (fig. 65C, D) *I. raveni*, sp. nov.
- Embolic region of palp stout, rounded distally (figs. 16A, B, E, 69A, B, E); posterior basal process of fang disc shaped (figs. 16C, D, 69C, D) 23
23. Embolic region of palp tapering to rounded distal tip (fig. 69A, B, E) *I. rixi*, sp. nov.
- Embolic region of palp not tapering to distal tip (fig. 16A, B, E) *I. tragicus*, sp. nov.
24. Embolic region of palp without enlarged or complex distal tip (figs. 57A, B, 59A, B, 61A, B, 63A, B) 25
- Embolic region of palp with enlarged or complex distal tip (figs. 4A, B, 52A, B) 28
25. Embolic region of palp slightly swollen and clublike (fig. 61A, B); clypeus high (fig. 60G) *I. julianneae*, sp. nov.
- Embolic region of palp not clublike (figs. 57A, B, 59A, B, 63A, B); clypeus low (figs. 56G, 58G, 62G) 26
26. Fang basal process dorsally produced into a rounded bump (fig. 63C, D)
 *I. stauntoni*, sp. nov.
- Fang basal process otherwise (figs. 57C, D, 59D) 27
27. Fang basal process dorsally flattened (fig. 57C, D) *I. barratus*, sp. nov.
- Fang basal process rounded, disc shaped on posterior aspect (fig. 59D)
 *I. monteithi*, sp. nov.
28. Embolic region of palp obtusely bent at right angles or slightly curved toward cymbium (figs. 4A, 77A, 48A) 29
- Embolic region of palp divided into curved or laterally twisted lobes (figs. 52A, B, 65A, B) 28
29. Embolic region of palp obtusely bent at right angles to bulb, slightly twisted subdistally (fig. 4A, B); basal process of fang with large bump (fig. 4C, D)
 *I. puruntatamerii*, sp. nov.
- Embolic region of palp angled back toward cymbium (figs. 48A, B, 77A, B); basal process of fang with large bump (figs. 48 C, D, 77C, D) 30
30. Embolic region of palp long, greater than length of 2/3 bulb, broadening to fan shape distally (fig. 77A, B); basal process of fang forming a very small bump (fig. 77C, D)
 *I. eungella*, sp. nov.
- Embolic region of palp shorter, less than 2/3 length of bulb, tapering slightly at distal tip (fig. 48A, B); basal process of fang only forming slight bump (fig. 48C, D)
 *I. ovinus*, sp. nov.
31. Lateral process of embolic region elongate and bent retrolaterally, distal end curved, caplike (fig. 67A, B); dorsal scute small, covering 1/2–2/3 abdomen (fig. 66A)
 *I. hupariorbis*, sp. nov.
- Lateral process of embolic region stout and curved around distal end (fig. 52A, B); dorsal scute large, covering most of abdomen (fig. 51A) *I. collingwoodi*, sp. nov.
32. Epigynal region with very heavily sclerotized platelike sclerite (figs. 17J, 22E, 23I) 33
- Epigynal region without heavily sclerotized platelike sclerite (figs. 1I, 13I) 34
33. Platelike sclerite of epigyne elongate, with curved lateral edges (figs. 23I, 24E); habitus

- color pale orange (fig. 23D); posterior margin of dorsal scute rectangular (fig. 23D) *I. hoplophorus*, sp. nov.
- Platelike sclerite of epigyne stout, with straighter lateral edges (figs. 17J, 22E); habitus color brown (fig. 17D); dorsal scute rounded posteriorly (fig. 17D) *I. bifidus*, sp. nov.
34. Epigynal region very simple, without distinctly shaped epigynal atrium (figs. 9I, 10F, 59F). 35
- Epigynal region of variously modified, more heavily sclerotized or with distinctly shaped epigynal atriums (figs. 1I, 4F, 7I, 12F, 16F, 26F, 28E, 30F) 38
35. Convolute duct of epigyne with distal triangular process (figs. 10F, 50F). 36
- Convolute duct of epigyne without distal triangular process (figs. 59F, 6F) 37
36. Color pale yellow-orange (fig. 9D); dorsal scute short, covering 1/2 of abdomen (fig. 9D); small triangular process over epigynal atrium pointing posteriorly (fig. 10F) *I. culleni*, sp. nov.
- Color orange-brown (fig. 49D); dorsal scute long, covering 1/2–2/3 of abdomen (fig. 49D); triangular process over epigynal atrium pointing anteriorly (fig. 50F) *I. eacham*, sp. nov.
37. Color pale orange-olive green (fig. 58D); dorsal scute long, covering 2/4 of abdomen (fig. 58D); distinct process near convolute duct absent (fig. 59F) *I. monteithi*, sp. nov.
- Color olive green (fig. 6A); dorsal scute broad, covering 2/4 abdomen width (fig. 6A); small teardrop-shaped process at posterior end of thin convolute duct (fig. 6F) *I. nourlangie*, sp. nov.
38. Epigyne with transverse sclerotized bar clearly joined to posteriorly directed apodemes (figs. 16F, 65F, 69F, 71F, 73E, 75F, 77E) 39
- Epigyne without transverse sclerotized bar clearly joined to posteriorly directed apodemes (figs. 4F, 5F, 12F, 14F) 44
39. Epigynal atrium very wide, with edges extending to apodemes, no process overhanging anterior part of atrium (figs. 76I, 77E) *I. eungella*, sp. nov.
- Epigynal atrium generally circle or oval shaped, with heavily sclerotized process overhanging anterior part of atrium (figs. 7I, 8F, 16F, 61F, 65F, 69F, 71F). 40
40. Epigynal convolute duct very thin toward posterior end (figs. 64I, 65F); process overhanging epigynal atrium relatively straight across with only slight median indentation (figs. 64I, 65F) *I. raveni*, sp. nov.
- Epigynal convolute duct uniform and thicker than apodemes (figs. 16F, 69F, 71F); process overhanging epigynal atrium otherwise (figs. 16F, 69F, 71F). 41
41. Epigynal horizontal sclerotization weak (figs. 8F, 61F). 42
- Epigynal horizontal sclerotization strong (figs. 16F, 69F, 71F, 73E) 43
42. Process overhanging epigynal atrium with two heavily sclerotized lobes, opening of atrium higher than wide (figs. 7I, 8F) *I. tumidus*, sp. nov.
- Process overhanging epigynal atrium triangular, opening of atrium wider than high (figs. 60I, 61F) *I. julianneae*, sp. nov.
43. Color brown to dark brown (figs. 68D, 72D, 70D); dorsal scute large, covering 1/2 to most of abdomen width and 1/2–3/4 length (figs. 68D, 72D, 70D) 44
- Color pale orange (figs. 15D, 74D); dorsal scute smaller, covering 1/4–1/2 abdomen width and 1/4–1/2 length (figs. 15D, 74D) 46
44. Process overhanging epigynal atrium clearly triangular and pointed at posterior end (fig. 69F); dorsal scute covering about 1/2 abdomen width (fig. 68D) . . . *I. rixi*, sp. nov.
- Process overhanging epigynal atrium not triangular and pointed (figs. 71F, 72E); dorsal scute covering more than 1/2 abdomen width (figs. 70D, 72D). 45
45. Process overhanging epigynal atrium appears to be fused to circular edge, opening of atrium very round (figs. 72I, 73E). *I. pterodactyl*, sp. nov.
- Process overhanging epigynal atrium heavily sclerotized, rectangular shaped, edges of atrium not heavily sclerotized (figs. 70I, 71F). *I. hamatus*, sp. nov.
46. Epigyne with curved edge of overhanging process with very small medial triangular extension (figs. 74I, 75F) *I. arcus*, sp. nov.
- Epigyne with curved edge of overhanging process with slight indentation or rounded edge, without extension (fig. 16F) *I. tragicus*, sp. nov.
47. Convolute duct of epigyne thick posteriorly, thinning anteriorly (fig. 63F); epigynal atrium very round, with distinct triangular process on anterior edge (fig. 63F) *I. stauntoni*, sp. nov.
- Convolute duct of epigyne uniform (fig. 4F); epigynal atrium not so round, either with very small triangular process on anterior edge (fig. 4F) or without process (e.g., Edward and Harvey, 2009: fig. 10) 48

48. Convoluted duct of epigyne thinner than apodemes (figs. 4F, 5F); carapace with lateral margins olive green, elevated portion of pars cephalica yellow to orange brown (figs. 1D, 5A) 49
- Convoluted duct of epigyne thicker than apodemes (e.g., figs. 12F, 14F, 26F, 28E); carapace uniformly yellow to orange brown (e.g., figs. 29D, 43D, 66D) 51
49. Elevated portion of pars cephalica yellow (fig. 5A, C); dorsal scute with posterior edge rounded (fig. 5A); overhanging process anterior to epigynal atrium present (fig. 5F)
. *I. florence*, sp. nov.
- Elevated portion of pars cephalica orange to pale orange (fig. 1D; Edward and Harvey, 2009: fig. 2); dorsal scute with posterior edge straight (fig. 1D; Edward and Harvey, 2009: fig. 2); epigynal atrium otherwise (fig. 4F; Edward and Harvey, 2009: fig. 10). 47
50. Epigynal atrium large and square shaped (figs. 1F, 4F). *I. puruntatamerii*, sp. nov.
- Epigynal atrium Ω -shaped, with teardrop-shaped process in depression (Edward and Harvey, 2009: fig. 10)
. *I. darwini* Edward and Harvey
51. Epigynal atrium paired (figs. 30F, 44F, 65F). 52
- Epigynal atrium singular, varied in shape (figs. 12F, 14F, 26F) 54
52. Paired epigynal atrium cup shaped with thicker sclerotization at lateral edges (figs. 43I, 44F); dorsal scute long (fig. 43D)
. *I. cornuatus*, sp. nov.
- Paired epigynal atrium circular in shape, sclerotization even or heavier anteriorly; dorsal scute short (fig. 30F) 53
53. Dorsal scute wider at posterior end (fig. 29D); epigyne with paired circles small, convoluted duct elongate (figs. 29I, 30F)
. *I. binorbis*, sp. nov.
- Dorsal scutenuarrowed posteriorly (fig. 66D); epigyne with paired circles large, convoluted duct short (figs. 66I, 67F)
. *I. bupariorbis*, sp. nov.
54. Posterior edge of epigynal atrium with triangular projection facing toward center of depression (figs. 26F, 32F, 42F, 46F, 50F, 52F, 53F). 55
- Posterior edge of epigynal atrium rounded or straight (figs. 12F, 14F, 28E, 48F) 60
55. Epigynal atrium depression wider than long, depression extending out to apodemes (fig. 46F) 56
- Epigynal atrium depression higher than wide, anterior section with modifications (figs. 26F, 32F, 52F). 57
56. Epigynal atrium depression very large and U-shaped, extending length of convoluted duct (fig. 53B, C) *I. bualveus*, sp. nov.
- Epigynal atrium depression stout, extending only 1/3 of convoluted duct (figs. 45J, 46F)
. *I. corniculatum*, sp. nov.
57. Anterior part of epigynal atrium wider than posterior part, with curved edge expanding to form two wing-shaped depressions (figs. 33I, 42F). *I. crenulatus*, sp. nov.
- Posterior part of epigynal atrium wider than anterior part, with anterior indented depressions forming narrowed necklike structure (figs. 26F, 32F, 52F) 58
58. Postepigastric scutum not heavily sclerotized (fig. 51E); epigynal depression shorter in height, anterior indentation not very distinct or heavily sclerotized (figs. 51I, 52F).
. *I. collingwoodi*, sp. nov.
- Postepigastric scutum heavily sclerotized (figs. 26I, 31E, 56I); epigynal depression elongate, anterior indentation very distinct and heavily sclerotized (figs. 25I, 26F, 32F). 59
59. Epigynal atrium elongate and vase shaped, duct always convoluted (figs. 31E, 32F); posterior edge of dorsal scute straight (fig. 31A)
. *I. boonjee*, sp. nov.
- Epigynal atrium Ω -shaped, anterior portion of duct straight, posterior portion convoluted (figs. 25E, I, 26F); posterior edge of dorsal scute rounded (fig. 25D) *I. digitus*, sp. nov.
60. Epigynal atrium very small and rounded (figs. 56I, 57F); posterior third of dorsal scute slightly broader than anterior third (fig. 56D)
. *I. barratus*, sp. nov.
- Epigynal atrium large and varied in shape (figs. 12F, 14F, 28E, 48F, 55E); posterior third of dorsal scute not wider than anterior third (figs. 11D, 13D, 27D, 47D) 61
61. Epigynal atrium higher than wide, pear shaped (figs. 54I, 55E) . . . *I. piricius*, sp. nov.
- Epigynal atrium wider than high, smile shaped (figs. 12F, 14F) 62
62. Lateral edges of epigynal atrium sharp, not rounded (figs. 11I, 12F).
. *I. meidamon*, sp. nov.
- Lateral edges of epigynal atrium rounded (figs. 14F, 28E, 48F) 63
63. Sclerotization around epigynal atrium opening discontinuous and heavier in lateral corners (figs. 48F) *I. ovinus*, sp. nov.
- Sclerotization around epigynal atrium opening continuous and even (figs. 14F, 28E). 64
64. Epigynal atrium jelly-bean shaped, narrow, visible lines running down each side of convoluted duct toward depression (figs. 27I, 28E). *I. ker*, sp. nov.

- Epigynal atrium with wide smiley face, no lines visible either side of convoluted duct (figs. 13I, 14F) *I. comicus*, sp. nov.

***Ischnothyreus darwini* Edward and Harvey**
Map 2

Ischnothyreus darwini Edward and Harvey, 2009: 288–292, figs. 1–11.

TYPES: AUSTRALIA: Northern Territory: Male holotype and female allotype collected from sifted rainforest leaf litter and under logs in Mary River National Park, Bryan Creek monsoon patch, 12.66083°S, 131.78194°E (25 Apr. 2008, K. Edward and P. Cullen), deposited in MAGNT (♂ holotype: A004398, PBI_OON 5889; ♀ allotype: A004399, PBI_OON 5892). Paratypes: see Edward and Harvey (2009).

DIAGNOSIS: This species can be distinguished from all others by the the unique shape of the embolic region of the male palp that divides roughly into two lobes, and the U-shaped epigynal atrium and thin convoluted duct of the female epigynal region. Males do not have a distinct knob or modification of the basal part of the fang, but is slightly flattened. The lateral margins of the carapace of both sexes are light olive green with the elevated portion of pars cephalica a lighter yellow or pale orange.

MALE (PBI_OON 5889): See Edward and Harvey (2009).

FEMALE (PBI_OON 5892): See Edward and Harvey (2009).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Northern Territory:** Annaburroo, pitfall, 12.90000°S, 131.66667°E (April, 1997, T.B. Churchill, WAM T78977, PBI_OON 00004302), 1 ♀; Berrimah, pitfall, 12.41666°S, 130.92100°E (May 7–14, 1998, T.B. Churchill, WAM T78980, PBI_OON 00004305), 1 ♀; Howard Springs, dry vine thicket, 12.46700°S, 131.06200°E (April, 1996, B. Hoffman, WAM T78981, PBI_OON 00004306), 1 ♂; same data (WAM T78982, PBI_OON 00004307), 1 ♀, CSIRO A1745; same data (WAM T78983, PBI_OON 00004308), 1 ♀, CSIRO A1746; Wangi Falls, Litchfield National Park, under bark of tree, 13.15000°S, 130.63333°E (May 26, 1992, M.S. Harvey, J.M. Waldock, WAM T78976, PBI_OON 00004301), 1 ♀.

DISTRIBUTION: This species is known only from the northwest region of the Northern Territory (map 1).

***Ischnothyreus puruntatamerii*, new species**
Figures 1–4, map 2

TYPES: AUSTRALIA: Northern Territory: Male holotype and female allotype from rainforest alongside spring-fed creek, Tiwi Islands, Bathurst Island, Mangupulu Jungle, 11.52527°S, 130.29833°E (12 May 2008, K. Edward and P. Cullen), deposited in MAGNT (♂ holotype: MAGNT PBI_OON 5893; ♀ allotype: MAGNT PBI_OON 5894).

ETYMOLOGY: The specific name is a patronym in honor of Tiwi Island elder, Leon Puruntatameri.

DIAGNOSIS: Males of this species can be easily recognized by the the unique shape of the embolic region of the palp, which is obtusely bent at right angles and slightly twisted subdistally (fig. 4A, B). Males also possess a distinct rounded bump on the basal part of the fang (fig. 4C, D). The female epigynal region consists of a uniquely square-shaped epigynal atrium (fig. 3F) and thin convoluted duct (figs. 1I, 4F). The lateral margins of the carapace in both sexes are dark olive green with the elevated portion of pars cephalica orange-brown (fig. 1A, D).

MALE (PBI_OON 5893, figs. 1A–C, G–H, 4A–E; paratype ♂: figs. 2A, B, D, 3A, B, E). Total length 1.27. **CEPHALOTHORAX:** Carapace lateral margins dark olive green, elevated portion of pars cephalica orange-brown, ovoid in dorsal view, pars cephalica slightly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica smooth, sides strongly reticulate. *Clypeus* straight in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes:* posterior eye row, as viewed from above very slightly procurved, ALE largest, ALE circular, PME oval, PLE circular; posterior eye row procurved from above; ALE touching, ALE-PLE touching (fig. 2A, paratype ♂). *Sternum* as long as wide, pale orange, uniform, setae dark, evenly scattered. Chelicerae, endites, and labium pale orange.

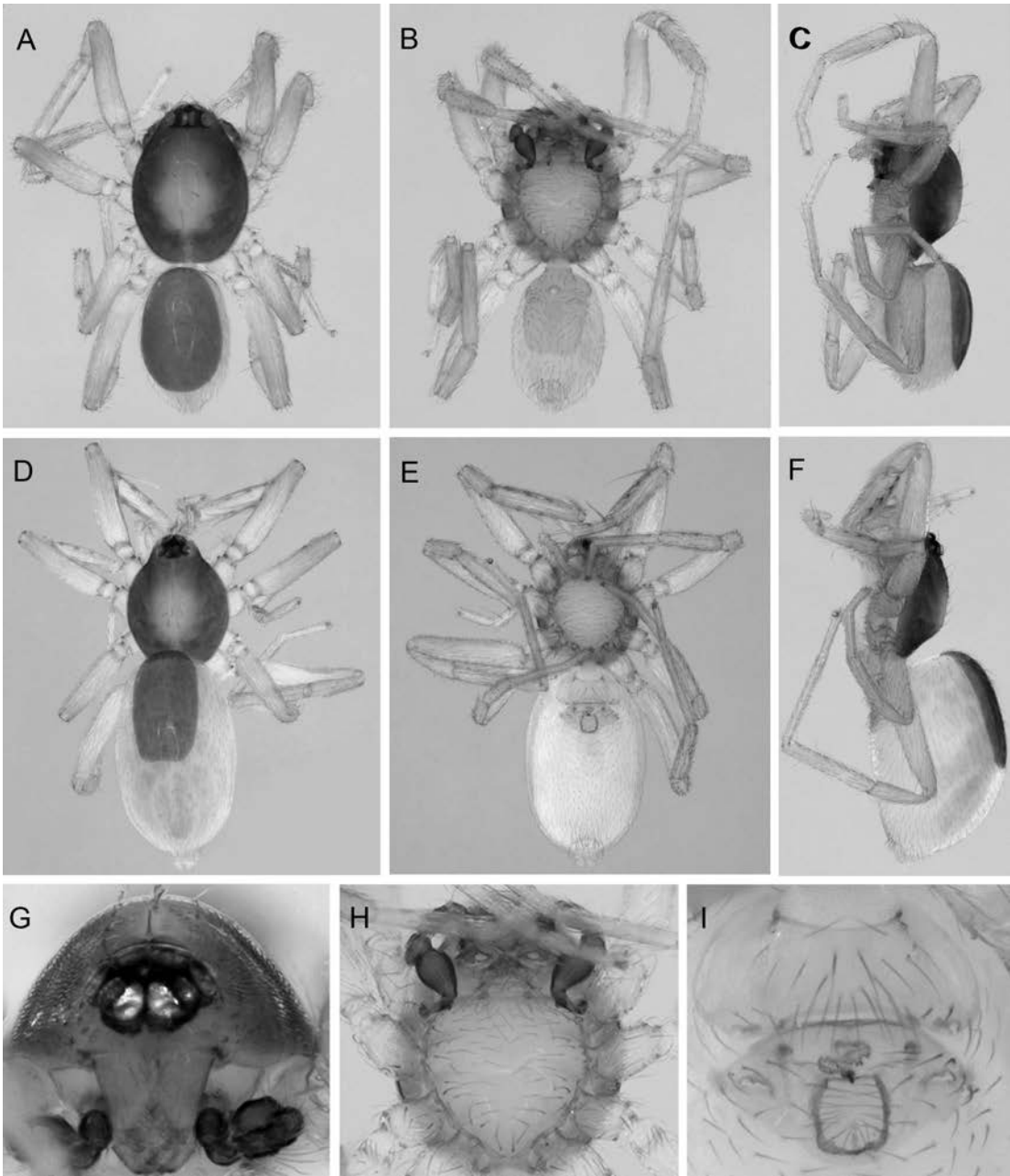


Fig. 1. *Ischnothyreus puruntatamerii*, sp. nov. Holotype male (PBI_OON 5893): **A.** Habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 5894): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

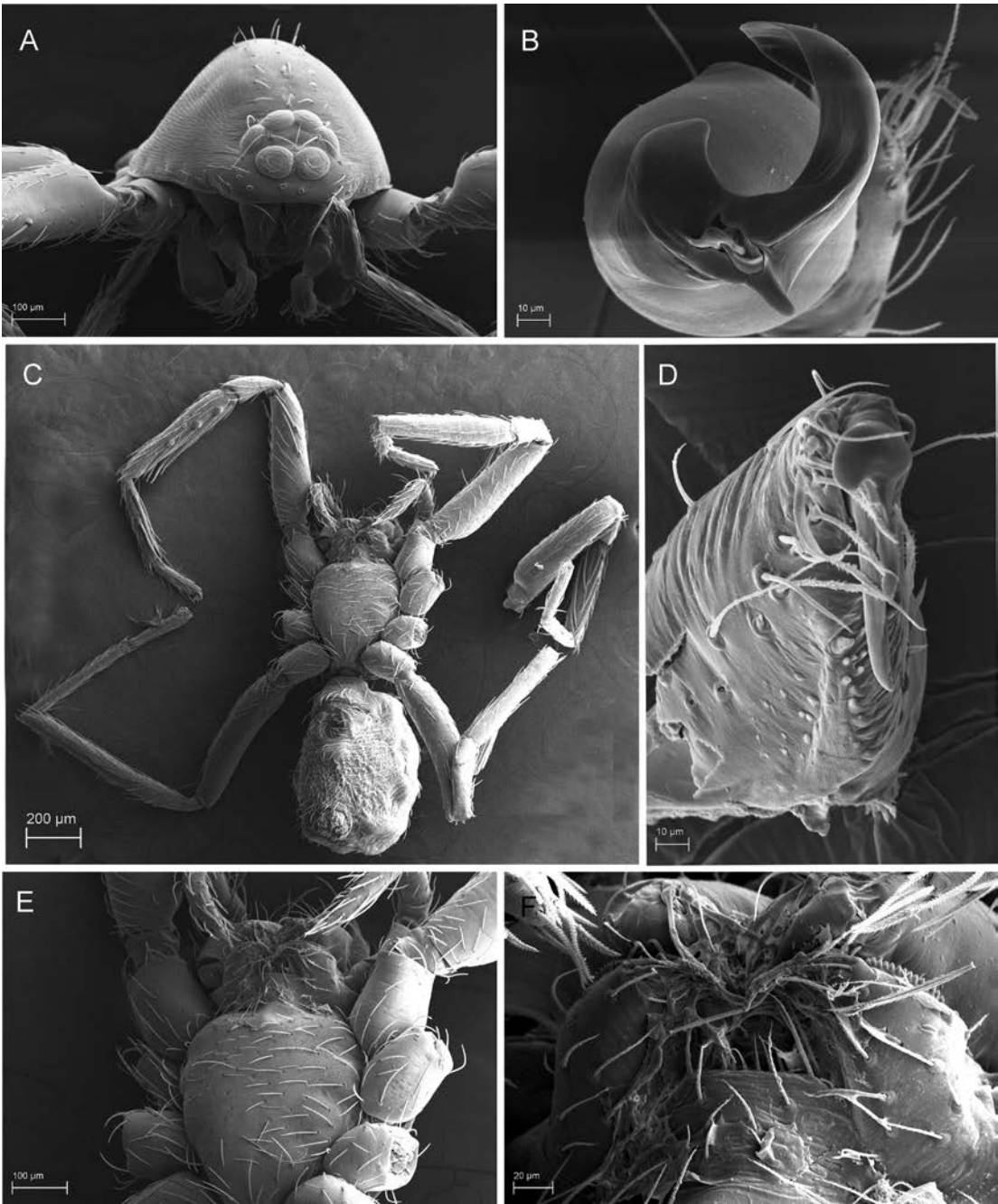


Fig. 2. Scanning electron micrographs of *Ischnothyreus puruntatamerii*, sp. nov. Paratype male (PBI_OON 25711): **A.** carapace, anterior view; **B.** palp, close-up of embolus; **D.** chelicerae, ventral view. Allotype female (PBI_OON 25710): **C.** habitus, ventral view; **E.** sternum, ventral view; **F.** mouthparts, endites, showing serrula.

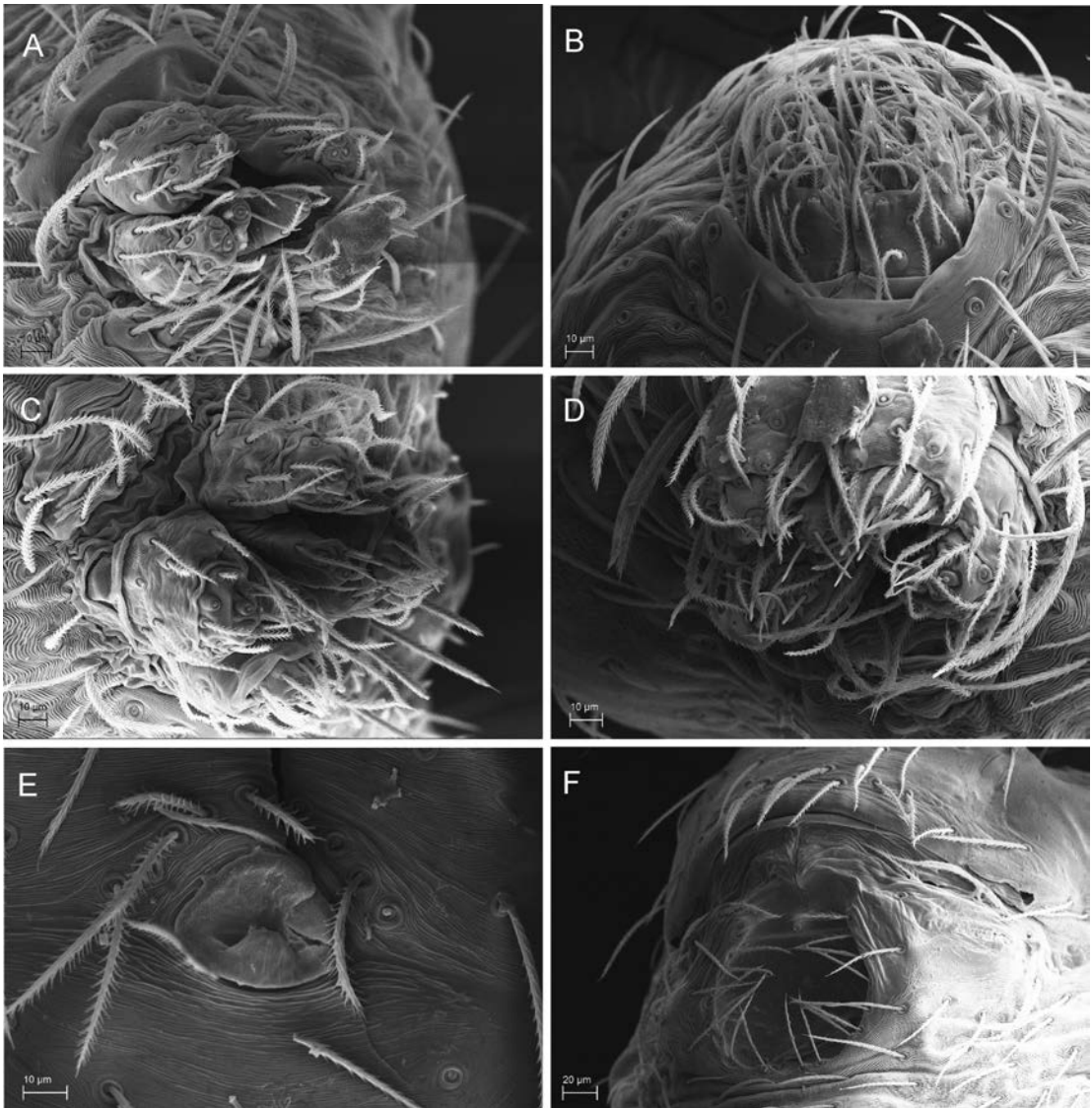


Fig. 3. Scanning electron micrographs of *Ischnothyreus puruntatamerii*, sp. nov. Paratype male: **A**, spinnerets, posterior view (PBI_OON 25711); **B**, same (PBI_OON 25713); **E**, epigastric region, ventral view (PBI_OON 25711). Allotype female (PBI_OON 25710): **C**, spinnerets, posterior view; **D**, same; **F**, epigynum, ventral view.

Chelicerae straight, anterior face unmodified, promargin of chelicerae with one larger denticle; fang shape normal, with prominent basal process (fig. 2D, paratype ♂); setae dark, evenly scattered; paturon inner margin with scattered setae. Labium elongated hexagon, not fused to sternum, anterior margin not indented at middle, same as sternum in sclerotization; with six or more setae on

anterior margin. Endites distally not excavated, anteromedian tip unmodified, same as sternum in sclerotization. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers ovoid. Dorsal scutum olive green, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Post-

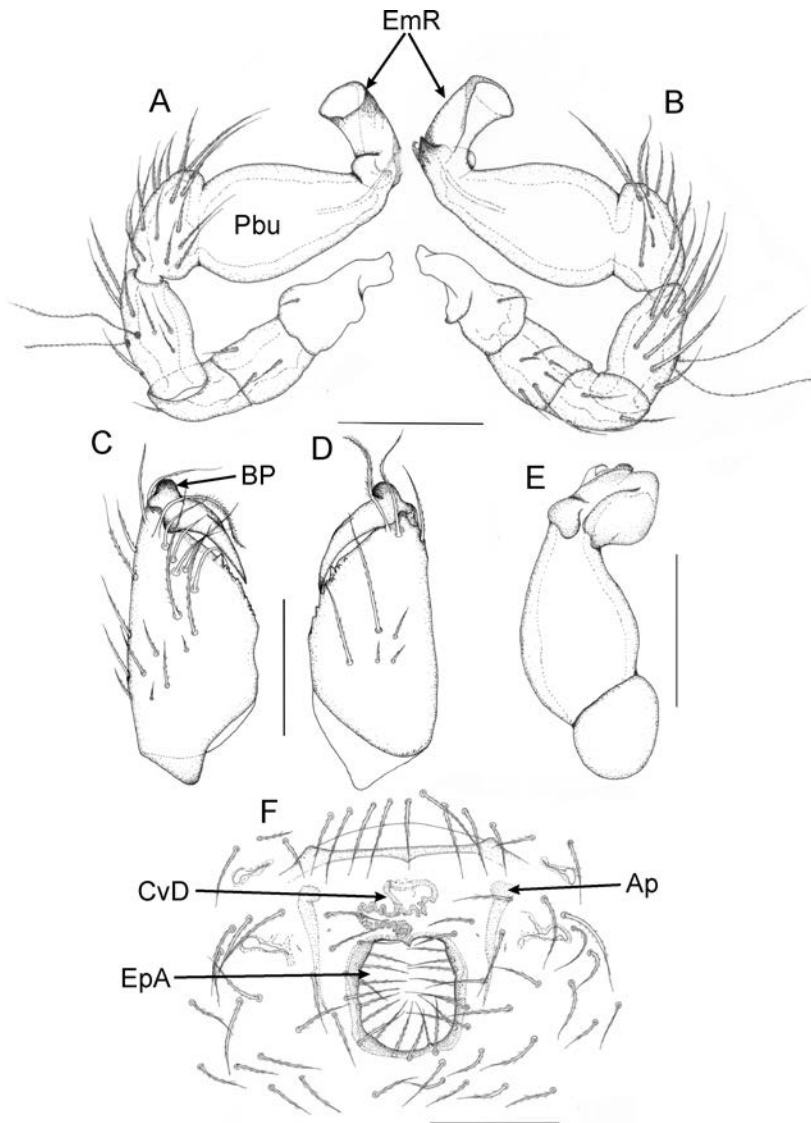
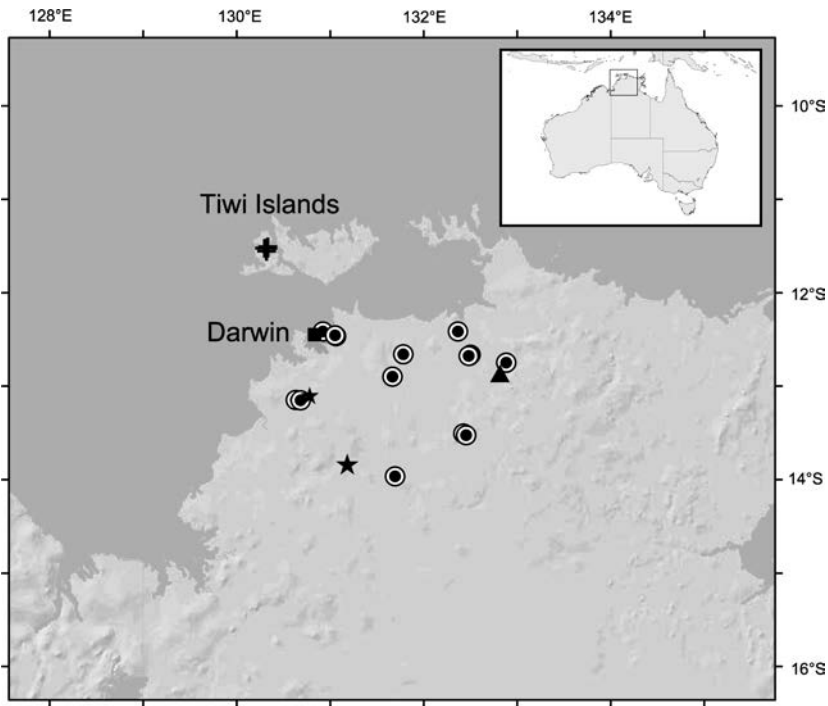


Fig. 4. *Ischnothyreus puruntatamerii*, sp. nov. Holotype male (PBI_OON 5893): **A**, left palp, prolateral view; **B**, left palp, retrolateral view; **C**, left chelicerae, anterior view; **D**, left chelicerae, posterior view; **E**, left palp, dorsal view. Allotype female (PBI_OON 5894): **F**, epigynum, ventral view. Scale lines = 0.1 mm. Abbreviations: **EmR**, embolic region; **Pbu**, palpal bulb; **BP**, basal process of fang; **CvD**, convoluted duct; **EpA**, epigynal atrium; **Ap**, apodeme.

epigastric scutum pale orange, covering about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. LEGS: Pale orange, femora and basal half of tibiae darkened; patella plus tibia I shorter than carapace. Leg spination: femora: I, II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA:

Palp proximal segments brown; embolus dark; femur shorter than trochanter; patella about as long as femur; cymbium brown; bulb brown, 1 to 1.5 times as long as cymbium, stout; embolic region divided into two distinct processes or lobes, larger distal process (approximately 1/2 length of bulb) obtusely bent at right angle to rest of palpal



Map 2. Map of Northern Territory showing the recorded distributions of *Ischnothyreus darwini* (⊙), *I. puruntatamerii* (+), *I. florence* (★), and *I. nourlangie* (▲).

bulb, broad, rounded and slightly twisted distally (fig. 2B, paratype ♂), smaller lateral process rounded. Apparent embolus opening on ventral surface of distal lobe above a small, heavily sclerotized triangular pointed structure (fig. 4A, B).

FEMALE (PBI_OON 5894, figs. 1D–F, I, 4F; paratype ♀: figs. 2C, E, F, 3C, D, F). Total length 1.65. **CEPHALOTHORAX:** *Carapace* broadly oval in dorsal view, anteriorly narrowed to 0.49 times its maximum width or less. **ABDOMEN:** Dorsal scutum covering about 1/2 of abdomen, between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. **LEGS:** Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Ventral view: epigynal atrium large, almost square shaped, very small triangular process overhanging anterior portion; convoluted duct much thinner than apodemes (figs. 1I, 4F).

OTHER MATERIAL EXAMINED: **AUSTRALIA:** **Northern Territory:** Tiwi Islands,

Bathurst, Big Pig Jungle, wet rainforest, moist litter, 11.50833°S, 130.33472°E, May 13, 2008 (K. Edward and P. Cullen, MAGNT, PBI_OON 25707, 25708), 1 ♂, 1 ♀; Tiwi Islands, Bathurst, Illinga Jungle, wet rainforest, moist litter, 11.55916°S, 130.32138°E, May 15, 2008 (K. Edward and P. Cullen, MAGNT, PBI_OON 25712, 25713), 4 ♂, 4 ♀; Tiwi Islands, Bathurst, Illinga West, wet rainforest, moist litter, 11.52305°S, 130.31083°E, May 14, 2008 (K. Edward and P. Cullen, MAGNT, PBI_OON 25710, 25711), 2 ♂, 5 ♀; same data (WAM T130758), 1 ♂, 2 ♀; Tiwi Islands, Bathurst, Little Pig Jungle, wet rainforest, moist litter, 11.52527°S, 130.33527°E, May 13, 2008 (K. Edward and P. Cullen, MAGNT, PBI_OON 25709), 1 ♀; Tiwi Islands: Bathurst, Mangupulu Jungle, spring fed Creek, moist litter, 11.52527°S, 130.29833°E, May 12, 2008 (K. Edward and P. Cullen, MAGNT, PBI_OON 25705, 25706), 3 ♂, 2 ♀.

DISTRIBUTION: This species is only known from Bathurst Island (Tiwi Islands), Northern Territory (map 1).

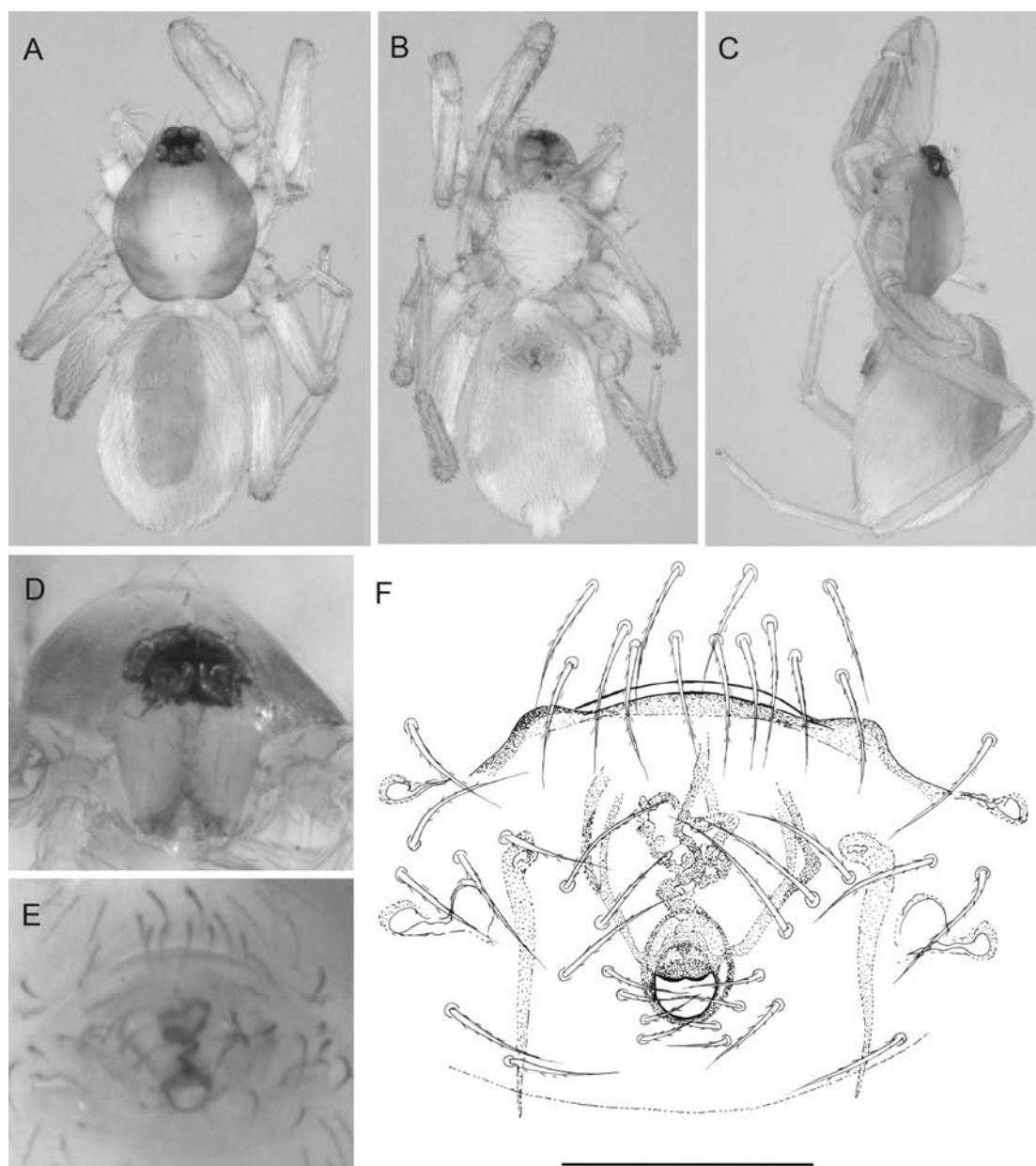


Fig. 5. *Ischnothyreus florence*, sp. nov. Holotype female (PBI_OON 00025701): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **D.** carapace, anterior view; **E.** epigynum, ventral view; **F.** epigynum, ventral view. Scale lines = 0.1 mm.

Ischnothyreus florence, new species

Figure 5, map 2

TYPE: AUSTRALIA: Northern Territory:
Female holotype from Litchfield National
Park, Florence Falls, monsoon forest walk,

13.10166°S, 130.7825°E (6 May 2008, K.
Edward and P. Cullen), deposited in MAGNT
(PBI_OON 00025701).

ETYMOLOGY: The specific epithet is a noun
in apposition, taken from the type locality.

DIAGNOSIS: Females can be recognized by the thin convoluted duct of the female epigynum region and the small, heavily sclerotized process overhanging the anterior section of a small rounded epigynal atrium (fig. 5E, F). The lateral margins of the carapace are pale olive green with the elevated portion of pars cephalica pale yellow (fig. 5A).

MALE: Unknown.

FEMALE (PBI_OON 25701, fig. 5A–F). Total length 1.50. **CEPHALOTHORAX:** *Carapace* lateral margins pale olive green, elevated portion of pars cephalica pale yellow, broadly oval in dorsal view, pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. *Clypeus* curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes:* ALE circular, PME oval, PLE oval; posterior eye row procurved from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, yellow; setae dark, evenly scattered. *Chelicerae*, endites, and labium yellow; setae dark. Labium elongated hexagon, anterior margin indented at middle; with six or more setae on anterior margin. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale olive green, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale orange, widely hexagonal, only around epigastric furrow, not fused to epigastric scutum, with short posteriorly directed lateral apodemes. Dorsum, epigastric area and postepigastric area setae dark. **LEGS:** Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Ventral view: epigynal atrium small, rounded, overhanging process heavily sclerotized with sinuous anterior edge; convoluted duct much thinner than apodemes (fig. 5E, F); pair of thin sclerotized apodemes extend from either side of epigynal atrium toward epigastric furrow (fig. 5F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Northern Territory:** Douglas Daly, pitfall, 13.83333°S, 131.18333°E (Oct. 1997, T.B. Churchill, WAM T78979, PBI_OON 00004304), 1 ♀.

DISTRIBUTION: This species is only known from Florence Falls and Douglas Daly in Litchfield National Park, Northern Territory (map 1).

Ischnothyreus nourlangie, new species

Figure 6, map 2

TYPE: AUSTRALIA: **Northern Territory:** Female holotype from Kakadu National Park, Nourlangie Area, walktrail, 12.86444°S, 132.815°E (28 Apr. 2008, K. Edward and P. Cullen), deposited in MAGNT (PBI_OON 00025694).

ETYMOLOGY: The specific epithet is a noun in apposition, taken from the type locality.

DIAGNOSIS: Females of *I. nourlangie*, sp. nov., are quite similar to *I. culleni*, sp. nov. (fig. 10F), and *I. monteithi*, sp. nov. (fig. 59F), as they all have a very simple epigynal region, with no discerning epigynal atrium. However *I. nourlangie*, sp. nov., can be distinguished by a uniformly colored olive green carapace, a broad dorsal scute, covering 3/4 to most of the abdomen width, and a small teardrop-shaped process at posterior end of a thin, convoluted duct (fig. 6A, E, F).

MALE: Unknown.

FEMALE (PBI_OON 25694, fig. 6A–F). Total length 1.55. **CEPHALOTHORAX:** *Carapace* olive green, broadly oval in dorsal view, pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. *Clypeus* straight in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes:* ALE circular, PME oval, PLE oval; posterior eye row procurved from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, yellow; setae dark, evenly scattered. *Chelicerae*, endites, and labium yellow; setae dark. Labium elongated hexagon, anterior margin indented at middle; with six or more setae on anterior margin. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers

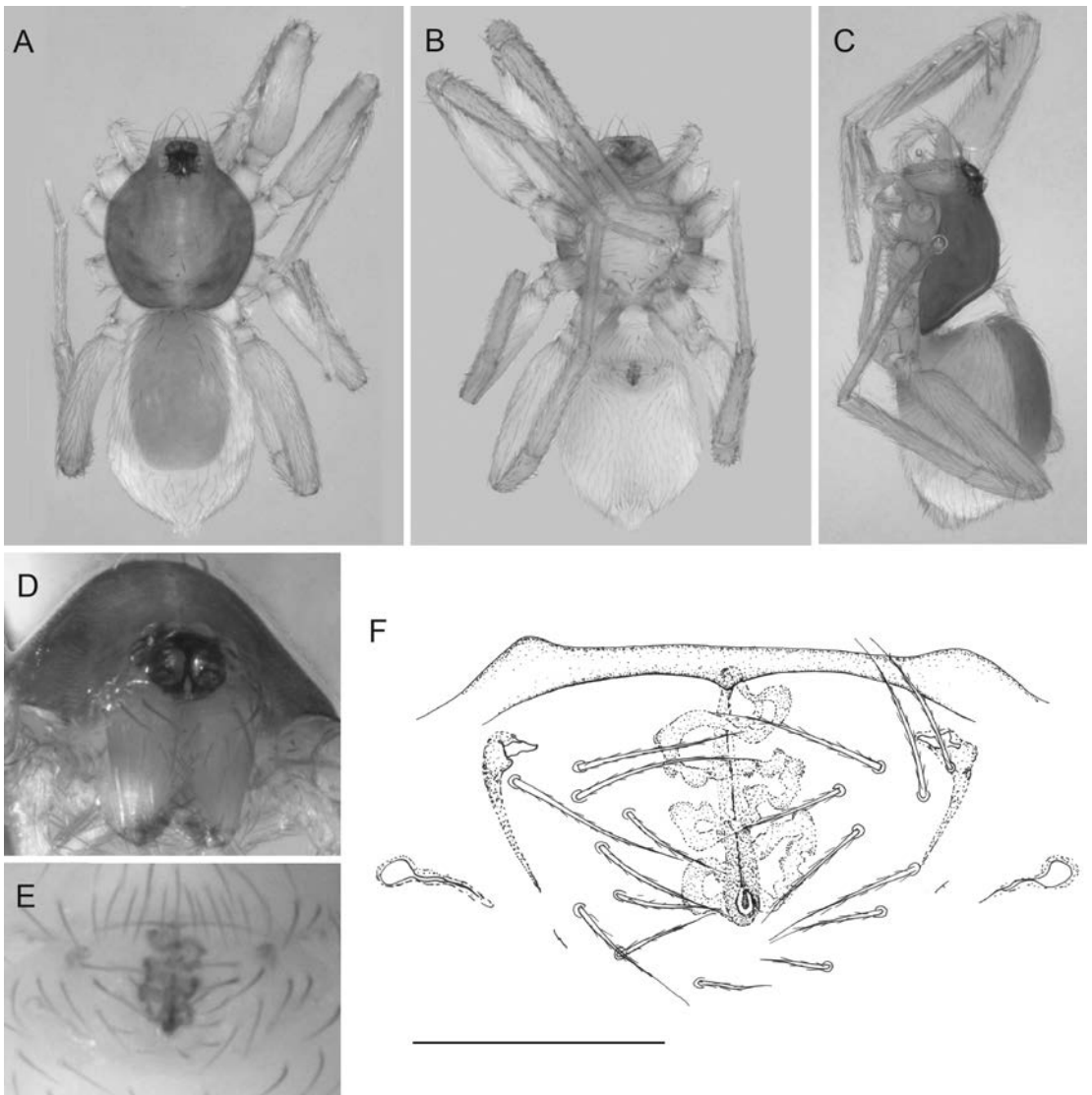


Fig. 6. *Ischnothyreus nourlangie*, sp. nov. Holotype female (PBI_OON 00025694): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **D.** carapace, anterior view; **E.** epigynum, ventral view; **F.** epigynum, ventral view. Scale lines = 0.1 mm.

elliptical. Dorsal scutum live green, covering 1/2 to 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale orange, widely hexagonal, only around epigastric furrow. Dorsum, epigastric area, and postepigastric area setae dark. **LEGS:** Pale orange, femora and basal half of tibiae darkened; patella plus tibia I shorter than carapace. Leg

spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Ventral view: epigynal region very simple, without distinct atrium; convoluted duct extends posteriorly to small teardrop-shaped process (fig. 6E, F).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: This species is only known from Nourlangie Rock in Kakadu National Park, Northern Territory (map 1).

Ischnothyreus tumidus, new species

Figures 7–8, map 3

TYPES: AUSTRALIA: **Queensland:** Male holotype from Cape Tribulation, 16.08333°S, 145.46666°E (20–29 July 1992, R. Forster), deposited in QM (S78176, PBI_OON 00022791). Female allotype from 1.5 km NW Cape Tribulation (Site 1), 16.08333°S, 145.4667°E, 1 m (23 Sept. 1982, G. Monteith, D. Yeates, G. Thompson), deposited in QM (S16068, PBI_OON 00025962).

ETYMOLOGY: The specific epithet is derived from the Latin *tumidus* meaning “swelling” (Brown, 1956), and refers to the distinct subdistal swelling on the fang of the male of this species.

DIAGNOSIS: Males of this species possess a uniquely shaped cheliceral fang, which is subdistally and basally swollen (fig. 8C, D). The clypeus, hyaline grooves, anterolateral corners of the carapace, endites, and the lateral edges of the labium are all heavily sclerotized (fig. 7G–H). Females can be distinguished by the two heavily sclerotized lobes or processes overhanging the anterior portion of an ovoid epigynal atrium, and a weak horizontal sclerotization connected to the posteriorly directed lateral apodemes (figs. 7I, 8F).

MALE (PBI_OON 22791, figs. 7A–C, G–H, 8 A–E). Total length 1.65. **CEPHALOTHORAX:** *Carapace* orange-brown, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, anterolateral corners with heavily sclerotized triangular projections, surface of elevated portion of pars cephalica finely reticulate, sides strongly reticulate. *Clypeus* margin strongly sclerotized, straight in front view, high, ALE separated from edge of carapace by more than their radius; setae dark. *Eyes:* ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE–PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark, evenly scattered. Chelicerae, endites, and labium pale orange to red-brown. Chelicerae straight, anterior face with conical apophysis, fang with enlarged subdistal and basal swelling; promargin with one much larger denticle or

tooth; setae dark. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, heavy sclerotization either side; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, much more heavily sclerotized than sternum. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange-brown, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale orange, covering about 3/4 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. **LEGS:** Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella about as long as femur; cymbium dark red-brown; bulb dark red-brown, 1 to 1.5 times as long as cymbium, stout; embolic region of palp obtusely bent at right angle to palpal bulb, elongate, tapering to slightly pointed tip; presumed embolus opening situated in dark colored region near bend (fig. 8A).

FEMALE (PBI_OON 25962, figs. 7D–F, I, 8F). Total length 2.22. **CEPHALOTHORAX:** *Carapace* pars cephalica slightly elevated in lateral view. *Clypeus* straight in front view. Chelicerae slightly divergent. **ABDOMEN:** Ovoid. Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Epigastric scutum small lateral sclerites present. Postepigastric scutum short, only around epigastric furrow. **LEGS:** Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Ventral view: epigastric furrow procurved; epigynal atrium ovoid, two heavily sclerotized lobes or processes overhang anterior portion; convoluted duct thicker than apodemes, weak horizontal sclerotization connects to posteriorly directed lateral apodemes (figs. 7I, 8F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** Cape Tribulation, 1 km WNW, rainforest, 10 m, 16.04000°S,

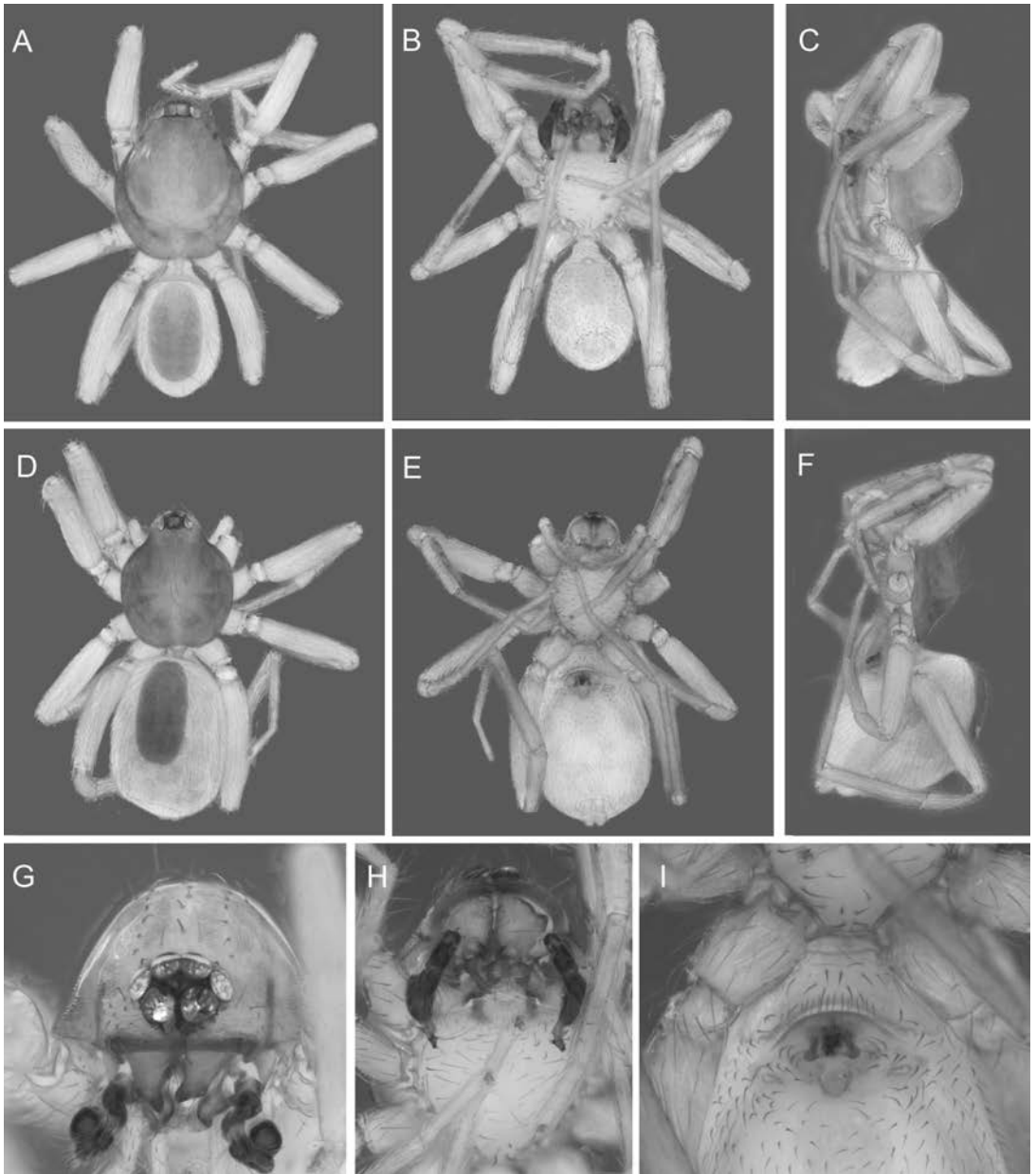


Fig. 7. *Ischnothyreus tumidus*, sp. nov. Holotype male (PBI_OON 00022791): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00025962): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

145.28000°E, Jan. 4–Feb. 1, 1996 (L. Umback, QM S95896, PBI_OON 5840), 1 ♀; Cape Tribulation, rainforest, 16.08333°S, 145.46666°E, July 20–29, 1992 (R. Forster, QM S78150, PBI_OON 22781), 3 ♀; Cape

Tribulation, rainforest, 16.08333°S, 145.46666°E, July 20–29, 1992 (R. Forster, QM S78176, PBI_OON 25756), 2 ♀; Cape Tribulation, rainforest, leaf litter, 10 m, 16.08333°S, 145.43330°E, Oct. 13, 1980 (G. Monteith, QM S12953,

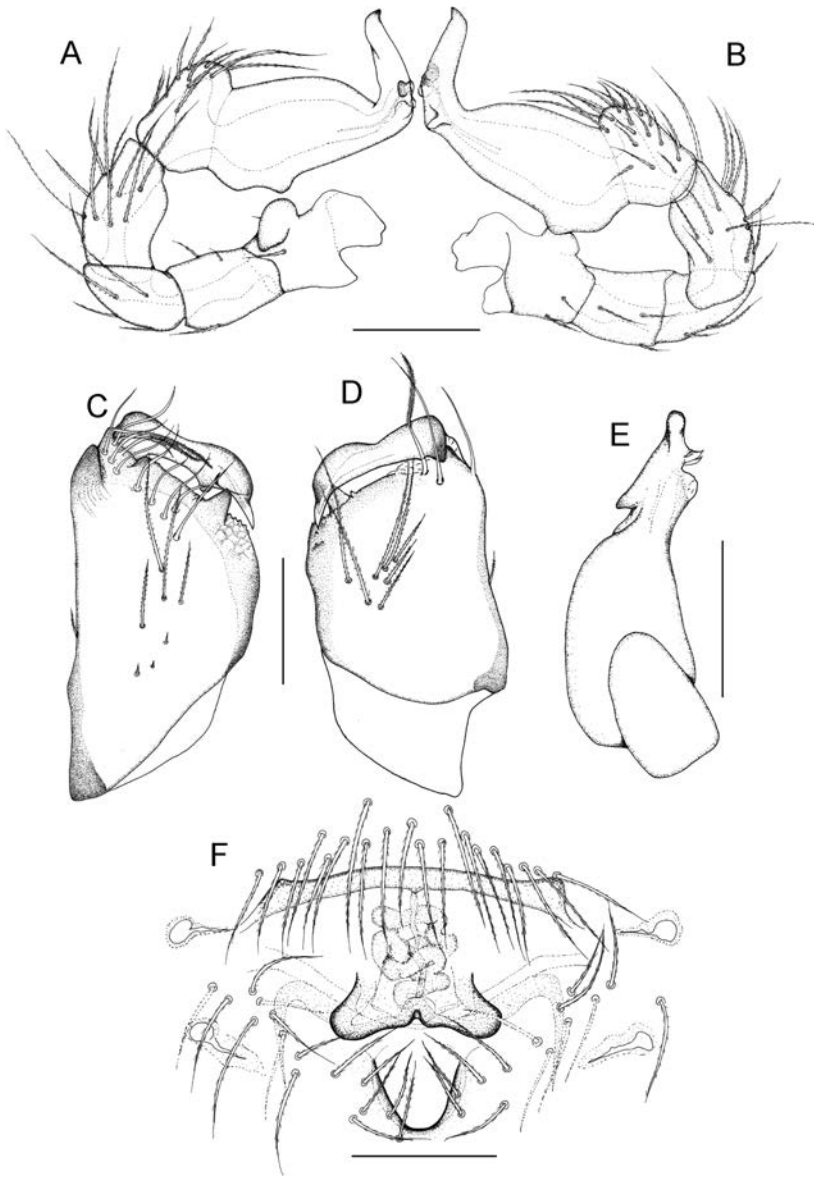
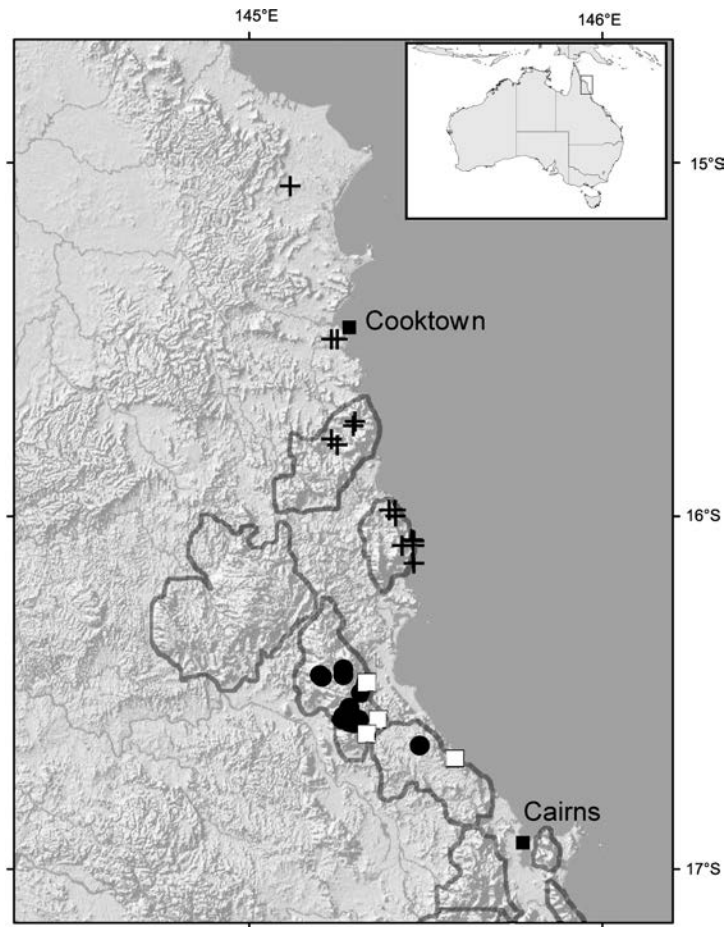


Fig. 8. *Ischnothyreus tumidus*, sp. nov. Holotype male (PBI_OON 00022791): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00025962): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

PBI_OON 25767), 1 ♂; Cape Tribulation, rainforest, leaf litter, 10 m, 16.08333°S, 145.43330°E, Oct. 13, 1980 (G. Monteith, QM S12953, PBI_OON 25769), 1 ♀; Cape Tribulation, 1.5 km NW (Site 1), rainforest, leaf litter, 1 m, 16.08333°S, 145.46670°E, Oct. 3, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16087, PBI_OON 25768), 1 ♀; Cape Tribulation, Pilgrim

Sands, rainforest, 5 m, 16.08333°S, 145.43330°E, Aug. 24–29, 1988 (R. Raven, J. Gallon, T. Churchill, QM S14036, PBI_OON 21949), 2 ♂, 2 ♀; Daintree National Park, Cowie range, rainforest, leaf litter, 15.98277°S, 145.41472°E, May 11, 2009 (K. Edward and P. Cullen, QM S95897), 1 ♂, 1 ♀; Daintree National Park; Cowie range, Bloomfield Road, rainforest, leaf litter,



Map 3. Map of northeastern Queensland, northern Wet Tropics Bioregion, showing recorded distributions of *Ischnothyreus tumidus* (+), *I. bifidus* (●) and *I. digitus* (□). Wet Tropics upland subregions outlined in grey (see map 1).

15.98277°S, 145.39638°E, May 11, 2009 (K. Edward and P. Cullen, QM S95898, PBI_OON 5540), 1 ♀; Daintree National Park; Donovan Range, Bloomfield track N of Cape Tribulation, rainforest, leaf litter, 16.00000°S, 145.44750°E, May 11, 2009 (K. Edward and P. Cullen, QM S95899), 1 ♂; Daintree National Park, Donovan Range, Bloomfield track N of Cape Tribulation, rainforest, leaf litter, 16.00000°S, 145.44750°E, May 11, 2009 (K. Edward and P. Cullen, QM S95900, PBI_OON 5564), 1 ♀; Home Rule Falls track, near Big Tableland National Park, rainforest, leaf litter, 15.74555°S, 145.29500°E, May 11, 2009 (K. Edward and P. Cullen, QM S95901, PBI_OON

5544), 2 ♀; Keating's Gap, Mount Cook, rainforest, 15.50000°S, 145.23330°E, July 20–Nov. 28, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S22597, PBI_OON 21999), 1 ♂; Mount Sorrow plateau, rainforest, leaf litter, 750 m, 16.08333°S, 145.43330°E, Dec. 10, 1993 (G. Monteith, QM S49684, PBI_OON 22123), 1 ♂; Pilgrim Sands (NQ 25), rainforest, 16.07000°S, 145.46670°E, Nov. 5, 1991, to July 20, 1992 (R. Raven, P. Lawless, M. Shaw, QM S24872, PBI_OON 22034), 1 ♀; Pilgrim Sands (NQ 25), rainforest, 16.07000°S, 145.46670°E, July 21–Nov. 29, 1992 (R. Raven, P. Lawless, M. Shaw, QM S24045, PBI_OON 22093), 1 ♀;

Shiptons Flat, rainforest, leaf litter, 200 m, 15.80000°S, 145.25000°E, Nov. 30, 1985 (D.K. Yeates, QM S22734, PBI_OON 21699), 1 ♀.

DISTRIBUTION: This species is known from the northern subregions of the Wet Tropics Bioregion (CL, BL, FU, TU, and TL), in northeastern Queensland (map 3).

Ischnothyreus culleni, new species

Figures 9–10, map 4

TYPES: AUSTRALIA: **Queensland:** Male holotype and female allotype from sifted leaf leater in Mount Cook National Park off walking track, near lookout, 15.47444°S, 145.26361°E (12 May 2008, K. Edward and P. Cullen), deposited in QM (♂ holotype: QM S95902, PBI_OON 00005612; ♀ allotype: QM S95903, PBI_OON 00005539).

ETYMOLOGY: The specific name is a patronym in honor of Patrick Cullen, one of the collectors of the holotype and many other interesting creatures, and in recognition of his passion for the natural world.

DIAGNOSIS: Females of *I. culleni*, sp. nov., are quite similar to *I. nourlangie*, sp. nov. (fig. 6F), and *I. monteithi*, sp. nov. (fig. 59F), as they all have a very simple epigynal region, with no discerning epigynal atrium. However, females of this species can be distinguished by a yellow–pale orange colored carapace, a short dorsal scute, covering 1/2 of the abdomen length, and a small triangular process at posterior end of a convoluted duct (figs. 9D, I, 10F). The male pedipalps possess an enlarged clublike embolic region, and the dorsal surface of the fang has a sharp triangular incision that is not heavily sclerotized (fig. 10A–D).

MALE (PBI_OON 5612, figs. 9A–C, G–H, 10A–E). Total length 1.20. **CEPHALOTHORAX:** Carapace pale orange, ovoid in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica smooth, sides finely reticulate; nonmarginal pars cephalica setae dark. Clypeus margin unmodified, curved downward in front view, high, ALE separated from edge of carapace by their radius or more; setae dark. **Eyes:**

ALE largest, ALE circular, PME oval, PLE oval; posterior eye row procurved from above; ALE touching, ALE–PLE touching. Sternum longer than wide, yellow, uniform; setae dark, evenly scattered. Chelicerae slightly divergent, anterior face unmodified; promargin with one larger denticle; fang shape normal, without prominent basal process; fang modified with triangular indent subbasally; setae dark. Labium elongated hexagon, not fused to sternum, anterior margin slightly indented at middle, much more heavily sclerotized than sternum; with six or more setae on anterior margin, subdistal portion with unmodified setae. Endites anteromedian tip with one strong, toothlike projection, much more heavily sclerotized than sternum. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Postepigastric scutum pale orange, covering about 1/2 of abdominal length. Epigastric area and postepigastric area setae dark. **LEGS:** Yellow, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter, with posteriorly rounded lateral dilation; patella about as long as femur; cymbium dark red-brown, without distal patch of setae; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region, stout, enlarged, clublike (fig. 10A, B, E).

FEMALE (PBI_OON 5539, figs. 9D–F, I, 10F). Total length 1.65. **CEPHALOTHORAX:** Carapace yellow, pars cephalica slightly elevated in lateral view. Clypeus low, ALE separated from edge of carapace by less than their radius. Chelicerae, endites, and labium yellow. Dorsal scutum covering about 1/2 of abdomen, between 1/4 and 1/2 abdomen width. Epigastric scutum small lateral sclerites present. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. **LEGS:** Pale orange. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0.

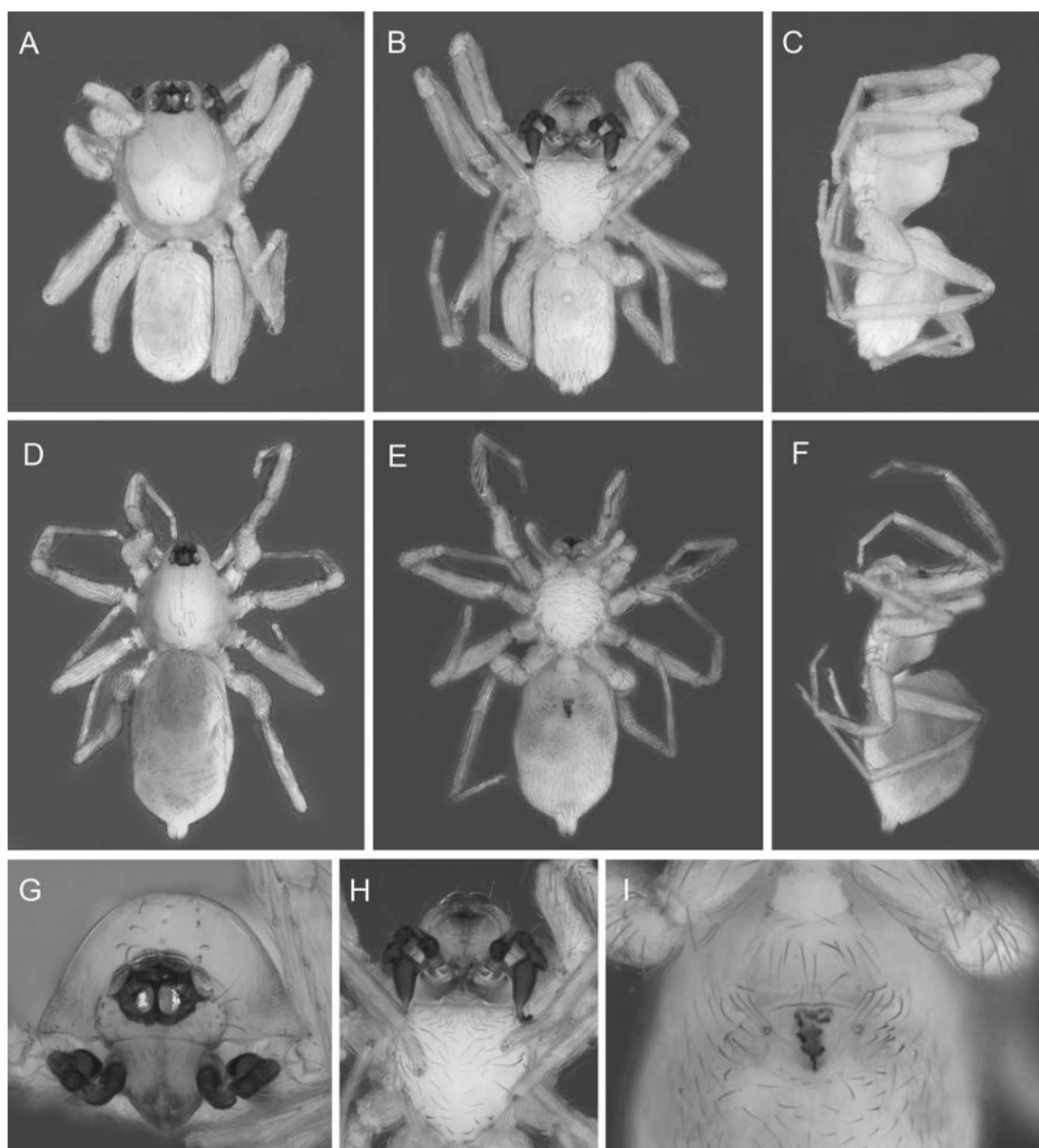


Fig. 9. *Ischnothyreus culleni*, sp. nov. Holotype male (PBI_OON 00005612): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005539): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

GENITALIA: Ventral view: epigynal region very simple, without distinct epigynal atrium; convoluted duct ends at small posteriorly pointed triangular process; convoluted duct thicker than apodemes (fig. 10F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** Black Mountain National Park, 15.68333°S, 145.21666°E, July 20–Nov. 28, 1992 (R. Raven, P. Lawless, M. Shaw, QM S24151, PBI_OON 21994), 1 ♂;

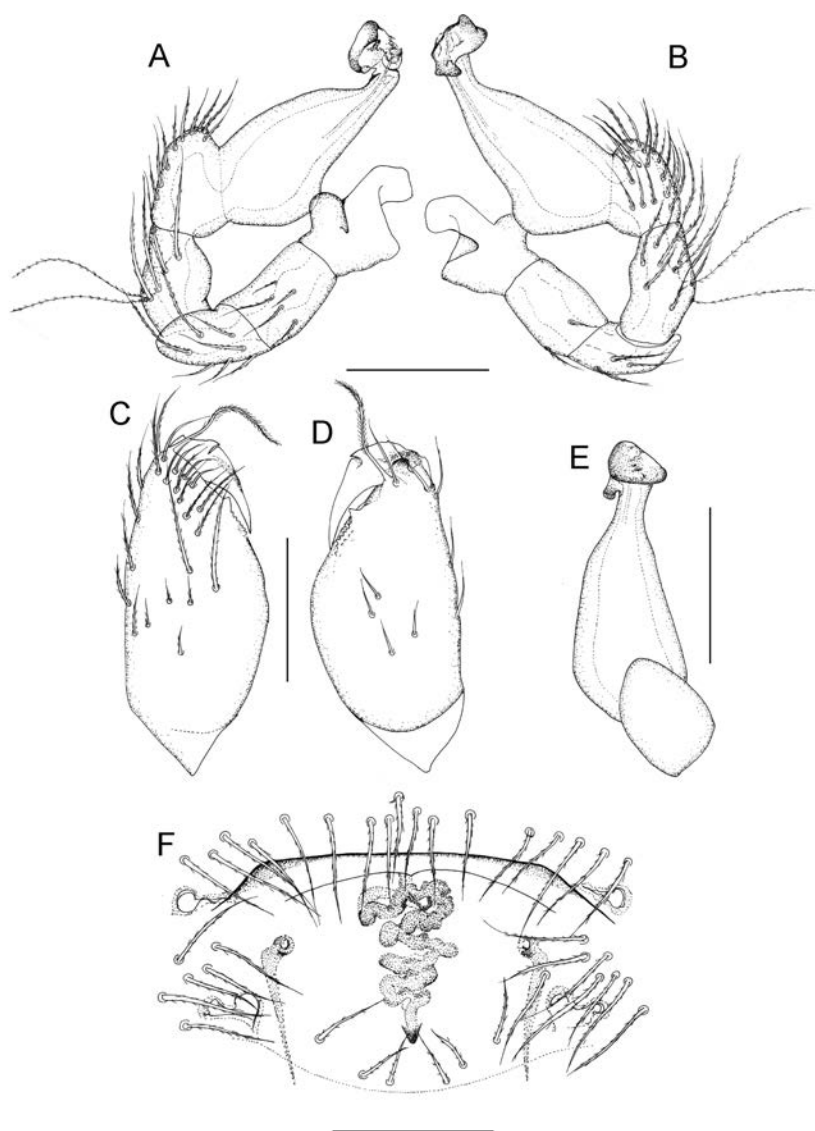
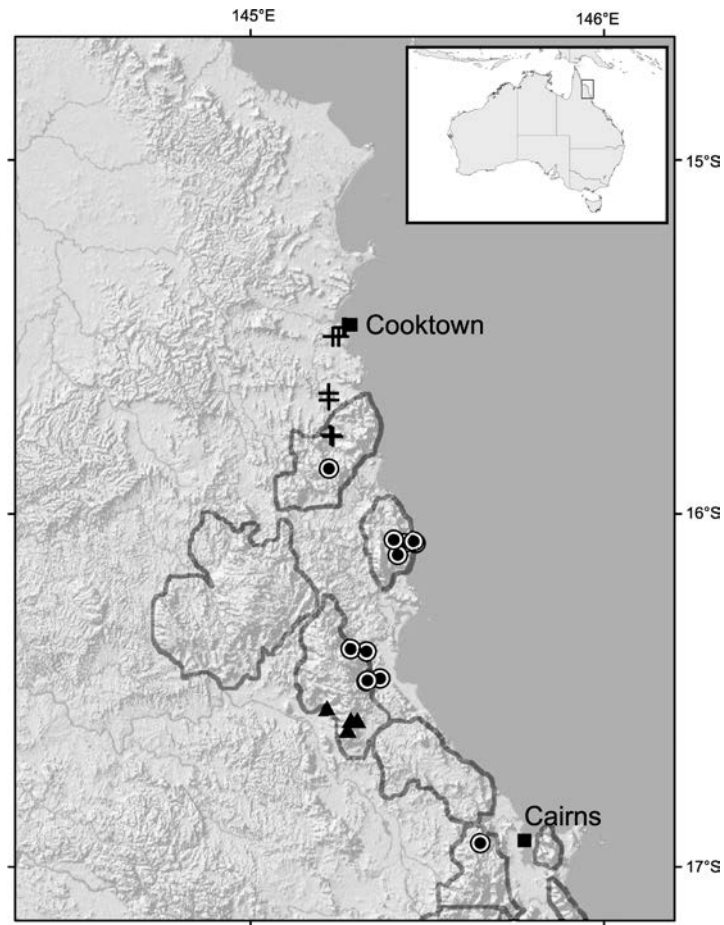


Fig. 10. *Ischnothyreus cullenii*, sp. nov. Holotype male (PBI_OON 00005612): **A**. left palp, prolateral view; **B**. left palp, retrolateral view; **C**. left chelicerae, anterior view; **D**. left chelicerae, posterior view; **E**. left palp, dorsal view. Allotype female (PBI_OON 00005539): **F**. epigynum, ventral view. Scale lines = 0.1 mm.

Black Mountain National Park, across road from Black Mountain lookout, vine thicket and eucalypt among boulders, leaf litter, 15.66083°S, 145.22111°E, May 12, 2009 (K. Edward and P. Cullen, QM S95904), 1 ♂, 4 ♀; Black Mountain National Park, across Road from Black Mountain lookout, vine thicket and eucalypt among boulders, leaf litter, 15.66083°S, 145.22111°E, May 12, 2009 (K. Edward and P. Cullen, WAM T130759,

PBI_OON 5541), 1 ♂, 1 ♀; Black Mountain National Park, across Road from Black Mountain lookout, vine thicket and eucalypt among boulders, leaf litter, 15.66083°S, 145.22111°E, May 12, 2009 (K. Edward and P. Cullen, QM S95905, PBI_OON 5574), 1 ♀; Mount Cook National Park; walking track, near lookout, rainforest, leaf litter amongst boulders, 15.47444°S, 145.26722°E, May 12, 2009 (K. Edward and P. Cullen, QM S95906,



Map 4. Map of northeastern Queensland, northern Wet Tropics Bioregion, showing recorded distributions of *Ischnothyreus cullenii* (+), *I. comicus* (⊙) and *I. hoplophorus* (▲). Wet Tropics upland subregions outlined in grey (see map 1).

PBI_OON 5573), 1 ♀; Mount Cook National Park; walking track, near lookout, rainforest, leaf litter amongst boulders, 15.47444°S, 145.26722°E, May 12, 2009 (K. Edward and P. Cullen, QM S95907, PBI_OON 5588), 1 ♂, 2 ♀; Mount Cook National Park, 80 m, 15.50000°S, 145.26670°E, Nov. 10–16, 1975 (R. Raven, V. Davies, QM S16138, PBI_OON 26244), 10 ♂; Mount Cook, Quarantine Road (NQ 21), 15.50000°S, 145.23330°E, July 20–Nov. 28, 1992 (R. Raven, P. Lawless, M. Shaw, QM S24419, PBI_OON 21802), 8 ♂, 2 ♀; Shiptons Flat, 15.78333°S, 145.23333°E, Oct. 17–19, 1980 (T. Weir, ANIC, PBI_OON 25820), 1 ♂, 1 ♀; Shiptons Flat Road,

Rossville, 9 km S Helenvale, rainforest, leaf litter, 15.77944°S, 145.22750°E, May 12, 2009 (K. Edward and P. Cullen, QM S95908), 2 ♂, 1 ♀; Shiptons Flat Road, Rossville, 9 km S Helenvale, rainforest, leaf litter, 15.77944°S, 145.22750°E, May 12, 2009 (K. Edward and P. Cullen, QM S95909, PBI_OON 5542), 1 ♀; Shiptons Flat Road, Rossville, 9 km S Helenvale, rainforest, leaf litter, 15.77944°S, 145.22750°E, May 12, 2009 (K. Edward and P. Cullen, QM S95910, PBI_OON 5575), 1 ♀.

DISTRIBUTION: known only from three northern subregions of the Wet Tropics Bioregion (CL, BL, and FU), in northeastern Queensland (map 4).

Ischnothyreus meidamon, new species

Figures 11–12, map 5

TYPES: AUSTRALIA: **Queensland:** Male holotype, female allotype, and three female paratypes from 3 km NNE Mount Webb, 15.05°S, 145.15°E (1–3 Oct 1980, T. Weir), deposited in ANIC (♂ holotype: PBI_OON 00005887; ♀ allotype and paratypes: PBI_OON 00005595).

ETYMOLOGY: The specific epithet is derived from the Greek *meidamon* meaning “smiling” (Brown, 1956), and relates to the smile-shaped epigynal atrium of the female, which comes to sharp points at the lateral edges.

DIAGNOSIS: Males of this species can be distinguished by the distal tip of the embolic region of the palp, which is angled backward toward the cymbium, distally broad and short, extending about 1/3 length of the bulb (fig. 12A, B). The female epigynal region has an epigynal atrium that is wider than high, smile shaped with sharp lateral points, and lacking heavily sclerotized processes (figs. 11I, 12F).

MALE (PBI_OON 5887, figs. 11A–C, G, H, 12A–E). Total length 1.46. **CEPHALOTHORAX:** *Carapace* pale orange, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica smooth, sides finely reticulate. *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae light. *Eyes:* ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, pale orange, uniform; setae light, evenly scattered. Chelicerae, endites, and labium pale orange. Chelicerae slightly divergent, anterior face unmodified; promargin with one larger denticle; fang shape normal, without prominent basal process; setae light. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike

projection, same as sternum in sclerotization. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, between 1/4 and 1/2 abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum yellow, covering about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae light. **LEGS:** Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella longer than femur; cymbium dark red-brown, without distal patch of setae; bulb dark red-brown, 1 to 1.5 times as long as cymbium, stout; embolic region angled backward toward cymbium, broad and short, extends 1/3 length of palpal bulb (fig. 12A, B).

FEMALE (PBI_OON 5595, figs. 11D–F, I, 12F). Total length 1.50. **CEPHALOTHORAX:** *Carapace* pars cephalica slightly elevated in lateral view. *Eyes:* posterior eye row procurved from above. **ABDOMEN:** Dorsal scutum covering 1/2 to 3/4 of abdomen. Epigastric scutum small lateral sclerites present. Postepigastric scutum pale orange, widely hexagonal, covering about 1/3 of the abdominal length. **LEGS:** Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Ventral view: epigynal atrium wider than high, smile shaped with sharp lateral points, heavily sclerotized processes absent; convoluted duct much thicker than apodemes (figs. 11I, 12F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** 2.0 km WNW Cape Tribulation. Site 2, rainforest, 50 m, 16.08333°S, 145.43330°E, Sept. 23–Oct. 07, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16038, PBI_OON 25739), 1 ♂; Cape Tribulation, Pilgrim Sands, rainforest, 5 m, 16.08333°S, 145.43330°E, Aug. 24–29, 1988 (R. Raven, J. Gallon, T. Churchill, QM S14036, PBI_OON 25814), 1 ♂; Cedar Bay National Park, Bloomfield Road, rainforest, leaf litter, 15.79638°S, 145.30194°E, May 12, 2009 (K. Edward and P. Cullen, QM S95911,

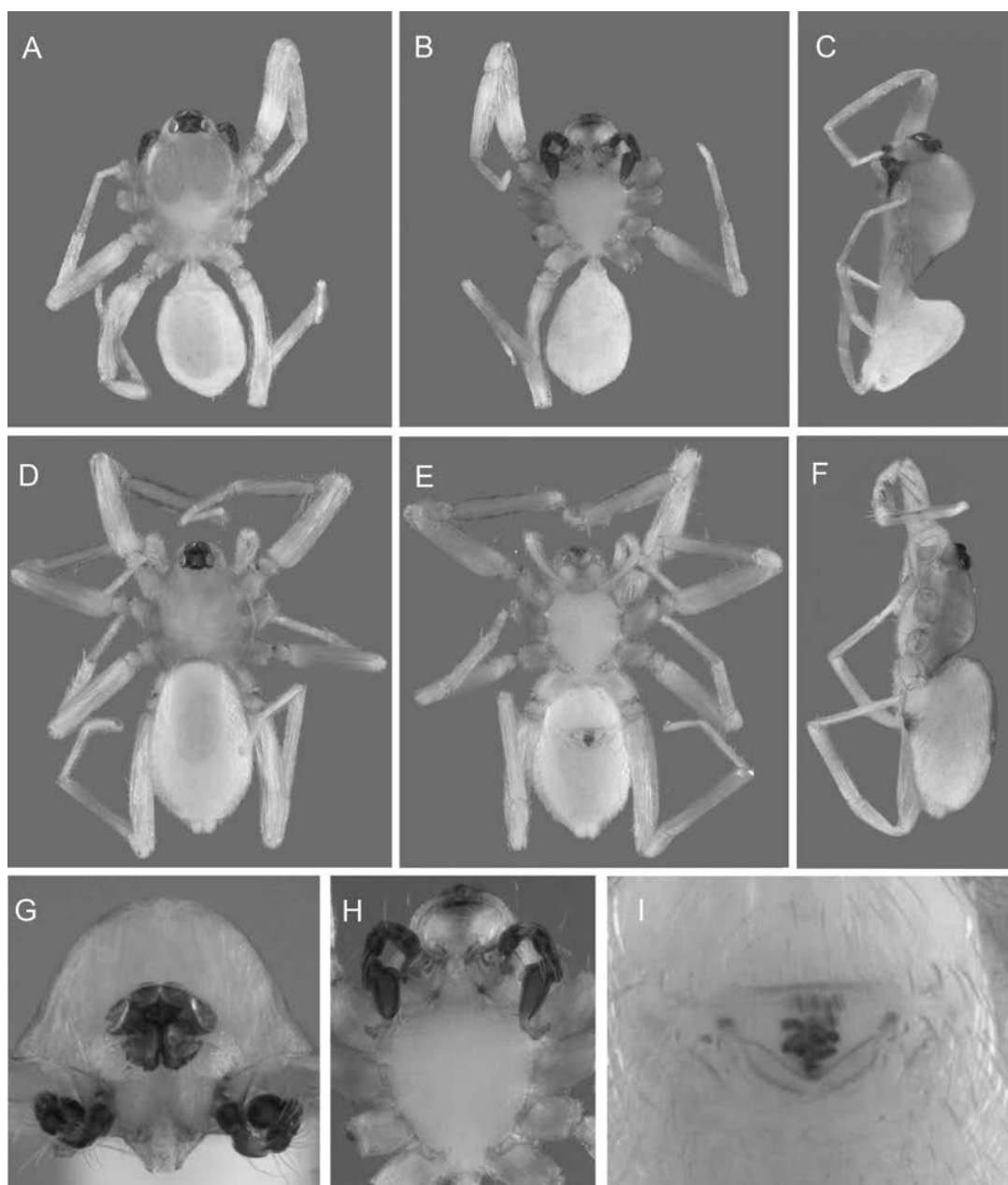


Fig. 11. *Ischnothyreus meidamon*, sp. nov. Holotype male (PBI_OON 00005887): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005595): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

PBI_OON 5543), 2 ♀; Moses Creek, 4 km NE of Mount Finnigan, rainforest, leaf litter, 15.78333°S, 145.28333°E, Oct. 14–16, 1980 (T.A. Weir, ANIC, PBI_OON 25821), 3 ♂, 3

♀; Moses Creek, 4 km NE of Mount Finnigan, rainforest, leaf litter, 15.78333°S, 145.28333°E, Oct. 14–16, 1980 (T.A. Weir, ANIC, PBI_OON 25823), 1 ♂, 2 ♀; Mount Webb National

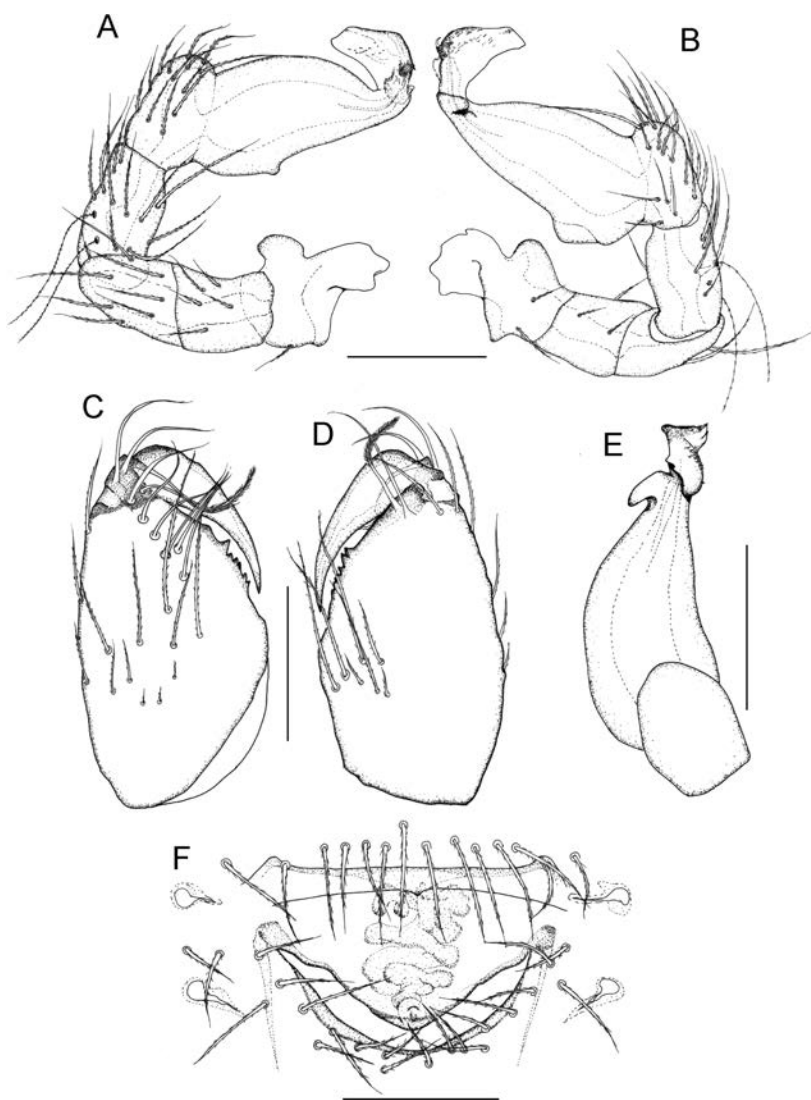


Fig. 12. *Ischnothyreus meidamon*, sp. nov. Holotype male (PBI_OON 00005887): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00005595): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

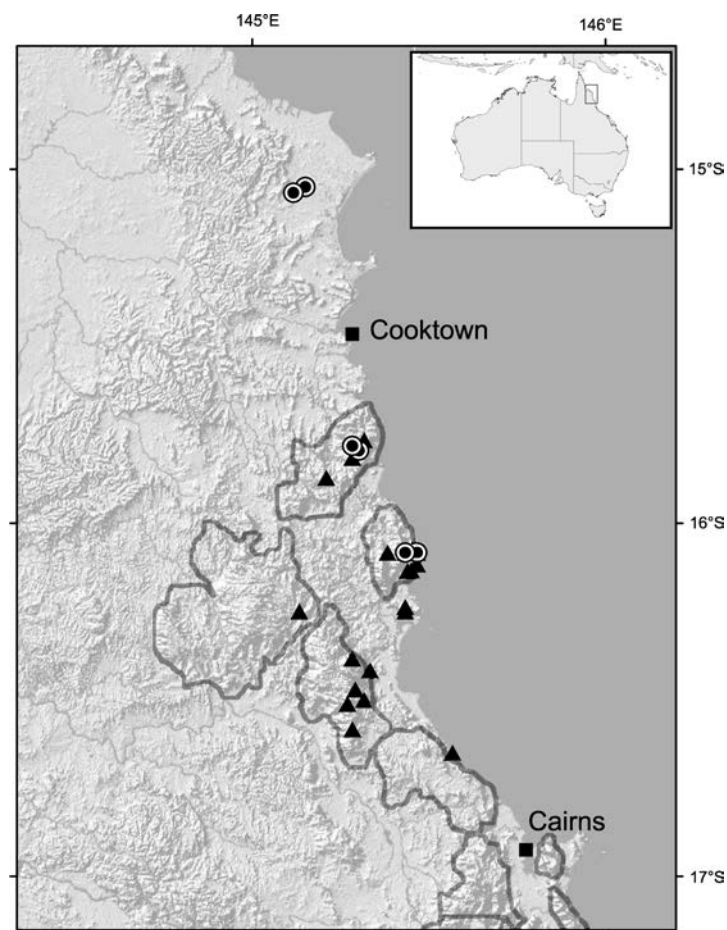
Park, rainforest, leaf litter, 200 m, 15.06666°S, 145.11666°E, Sept. 28–30, 1980 (T.A. Weir, ANIC, PBI_OON 25868), 2 ♂, 1 ♀; Mount Webb, 3 km NNE, rainforest, leaf litter, 15.05000°S, 145.15000°S, Apr. 30–May 03, 1981 (A. Calder, J. Freehan, ANIC, PBI_OON 25741), 1 ♂, 2 ♀.

DISTRIBUTION: This species is known only from the northern subregions of the Wet

Tropics Bioregion (CL, FU, TU, and TL), in northeastern Queensland (map 5).

Ischnothyreus comicus, new species
Figures 13–14, map 4

TYPES: AUSTRALIA: **Queensland:** Male holotype from rainforest, 4.5 km W Cape Tribulation, 760 m, 16.08333°S, 145.43333°E (23 Sept.–7 Oct. 1982, G. Monteith, D.



Map 5. Map of northeastern Queensland, northern Wet Tropics Bioregion, showing recorded distributions of *Ischnothyreus meidamon* (●) and *I. tragicus* (▲). Wet Tropics upland subregions outlined in grey (see map 1).

Yeates, G. Thompson), deposited in QM (S16042, PBI_OON 25943). Female allotype from 4 km West Cape Tribulation, rainforest, 720 m, 16.08333°S, 145.43330°E (24 Sept. 1982, G. Monteith, D. Yeates, G. Thompson), deposited in QM (16055, PBI_OON 25967).

ETYMOLOGY: The specific epithet is from the Latin *comicus*, meaning “pertaining to comedy” (Brown, 1956), and refers to the female smile-shaped epigynal atrium with rounded lateral edges.

DIAGNOSIS: This species is similar to *I. meidamon*, sp. nov. However, males can be distinguished by the distal tip of the embolic region of the palp, which is obtusely bent at a

right angle to the bulb and is longer than wide (fig. 14A, B). The female epigynal region has an epigynal atrium that is wider than high and smile shaped like *I. meidamon*, sp. nov., but instead exhibits rounded lateral edges (figs. 13I, 14F).

MALE (PBI_OON 25943, figs. 13A–C, G–H, 14A–E of paratype ♂). Total length 1.49. **CEPHALOTHORAX:** Carapace pale orange, broadly oval in dorsal view, pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate; nonmarginal pars cephalica setae

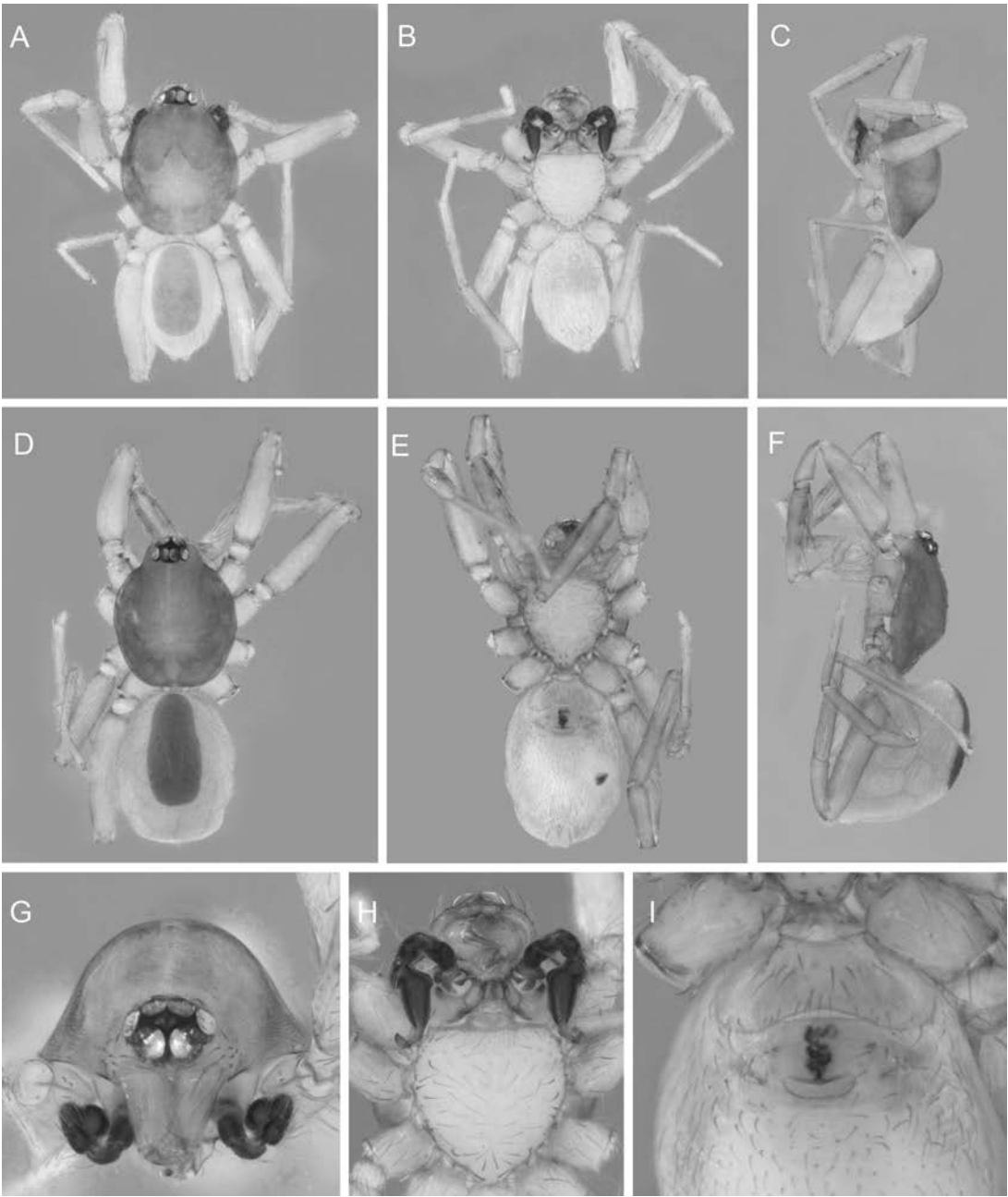


Fig. 13. *Ischnothyreus comicus*, sp. nov. Paratype male (PBI_OON 5671): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 5672): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

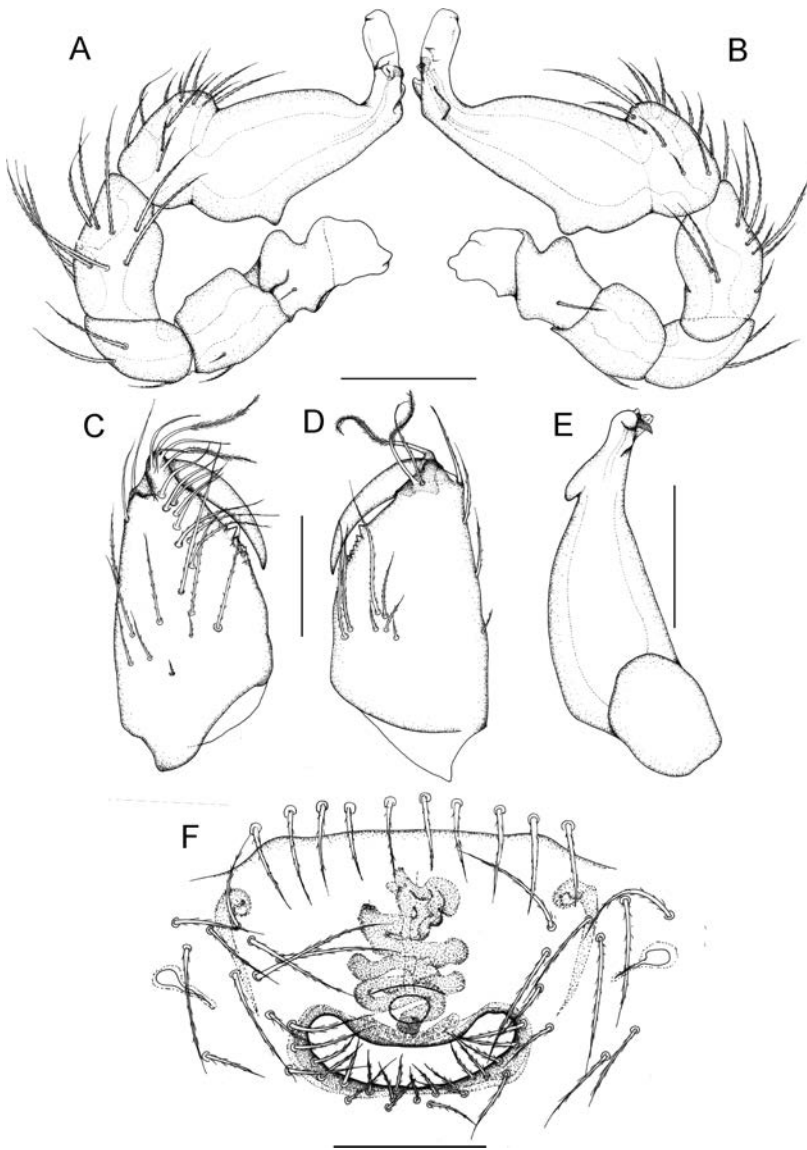


Fig. 14. *Ischnothyreus comicus*, sp. nov. Holotype male (PBI_OON 25943): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 25967): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

light. *Clypeus* margin unmodified, straight in front view, low, ALE separated from edge of carapace by less than their radius; setae light. *Eyes*: ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE-PLE touching. *Sternum* as long as wide, yellow, uniform; setae light, evenly scattered. Chelicerae, endites, and labium pale orange. Chelicerae

straight, anterior face unmodified; promargin of chelicerae with one or two larger denticles; fang shape normal, without prominent basal process; setae light. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, more

heavily sclerotized than sternum. ABDOMEN: Ovoid; dorsum soft portions white. Dorsal scutum pale orange, covering 1/2 to 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale orange, covering about 1/2 of abdominal length. Dorsum, epigastric area, and postepigastric area setae light. LEGS: Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments brown; embolus light; femur shorter than trochanter, without posteriorly rounded lateral dilation; patella about as long as femur; cymbium brown; bulb brown, 1 to 1.5 times as long as cymbium, stout; embolic region obtusely bent at right angle to palpal bulb, longer than wide, distally rounded, not tapered (fig. 14A, B).

FEMALE (PBI_OON 25967, figs. 13D–F, I, 14F). Total length 1.90. ABDOMEN: Book lung covers ovoid. Dorsal scutum between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. LEGS: Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Ventral view: epigynal atrium wider than high, smile shaped, lateral edges rounded, heavily sclerotized processes absent; convoluted duct much thicker than apodemes (figs. 13I, 14F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** 2.0 km W Cape Tribulation. Site 4, rainforest, leaf litter, 200 m, 16.08333°S, 145.43330°E, Sept. 25, 1982 (G. Monteith, D. Yeates, G. Thompson, QM 16063, PBI_OON 25746), 1 ♂, 1 ♀; Cape Tribulation, 4.5 km W (Site 9), rainforest, leaf litter, 760 m, 16.08333°S, 145.43330°E, Sept. 28, 1982 (G. Monteith, D. Yeates, G. Thompson, QM 16075, PBI_OON 25743), 2 ♂, 2 ♀; Cape Tribulation, 5 km W (Site 10), rainforest, leaf litter, 780 m, 16.08333°S, 145.43330°E, Sept. 29–30, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16069, PBI_OON 25738), 2 ♀; Chujeba Peak summit, 7 km SW Redlynch, rainforest, leaf litter, 1000 m, 16.93333°S,

145.65000°E, Dec. 16, 1989 (G. Monteith, G. Thompson, QM S58115, PBI_OON 22215), 1 ♀; Daintree National Park, Cape Tribulation, on track to Mount Sorrow, rainforest, leaf litter, 600 m, 16.07833°S, 145.46166°E, Apr. 20, 2009 (H. Wood, CAS 9035020, PBI_OON 5629), 1 ♀; Daintree National Park, Mossman Gorge, water access track, rainforest, leaf litter, 16.47444°S, 145.32777°E, Apr. 1, 2009 (K. Edward and J. Waldock, QM S95912), 2 ♂, 2 ♀; same data (WAM T130760), 1 ♂, 1 ♀; Daintree National Park, Mossman Gorge, water access track, rainforest, leaf litter, 16.47444°S, 145.32777°E, Apr. 1, 2009 (K. Edward and J. Waldock, QM S95913, PBI_OON 5671), 1 ♂; Daintree National Park, Mossman Gorge, water access track, rainforest, leaf litter, 16.47444°S, 145.32777°E, Apr. 1, 2009 (K. Edward and J. Waldock, QM S95914, PBI_OON 5672), 2 ♀; Daintree National Park, western section, Manjal Jimalji trail “devils thumb,” rainforest, leaf litter, 16.38972°S, 145.32777°E, Apr. 4, 2009 (K. Edward and J. Waldock, QM S95915), 1 ♀; Daintree National Park, western section, Manjal Jimalji trail “devils thumb,” rainforest, leaf litter, 16.38972°S, 145.32777°E, Apr. 4, 2009 (K. Edward and J. Waldock, QM S95916, PBI_OON 5678), 1 ♂; Daintree National Park, western section, Manjal Jimalji trail “devils thumb,” rainforest, leaf litter, 16.38972°S, 145.32777°E, Apr. 4, 2009 (K. Edward and J. Waldock, QM S95917, PBI_OON 5679), 1 ♀; Devils Thumb, 10 km NW Mossman, rainforest, leaf litter, 1150 m, 16.38333°S, 145.28330°E, Oct. 9, 1982 (G. Monteith, D. Yeates, G. Thompson, QM, S16082, PBI_OON 25811), 1 ♂; Devils Thumb–Paul’s Luck Site 12, rainforest, 1300 m, 16.38333°S, 145.28330°E, Dec. 27, 1989, to Jan. 15, 1990 (ANZSES expedition, QM S33933, PBI_OON 21752), 1 ♂; Mossman Bluff Track, 5–10 km W Mossman (Site 1), rainforest, 250 m, 16.46667°S, 145.36670°E, Dec. 16–30, 1988 (G. Monteith, G. Thompson, ANZSES, QM S38453, PBI_OON 22016), 1 ♂; Mossman Bluff Track, 5–10 km W Mossman (Site 1), rainforest, 250 m, 16.46667°S, 145.36670°E, Dec. 16–30, 1988 (G. Monteith, G. Thompson, ANZSES Expedition, QM S33796, PBI_OON 21732), 1 ♂; Mossman Gorge National Park, circuit track, rainforest, leaf litter, 16.47222°S, 145.33055°E, May 21,

2007 (K. Edward and K. Pitz, QM S95918, PBI_OON 5568), 1 ♂; Mount Hemmant, rainforest, leaf litter, 1050 m, 16.11667°S, 145.41670°E, Nov. 27, 1993 (G. Monteith, H. Janetzki, QM S24196, PBI_OON 21745), 1 ♂; Mount Hemmant, 6 km SW Cape Tribulation, rainforest, leaf litter, 880 m, 16.11667°S, 145.41670°E, Apr. 25, 1983 (G. Monteith, D. Cook, QM S12965, PBI_OON 25742), 1 ♂, 1 ♀; Mount Misery, summit, rainforest, 850 m, 15.87433°S, 145.22200°E, Dec. 6, 1990, to Jan. 17, 1991 (QLD Museum, ANZSES, QM S58148, PBI_OON 22160), 1 ♂; Mount Pieter-Butte, rainforest, 900 m, 16.07383°S, 145.40530°E, Nov. 21–Dec. 08, 1993 (G. Monteith, H. Janetzki, QM S34776, PBI_OON 21963), 1 ♂, 1 ♀.

DISTRIBUTION: This species is only known only from the northern subregions of the Wet Tropics Bioregion (ML, FU, TU, and TL), in northeastern Queensland (map 4).

Ischnothyreus tragicus, new species

Figures 15–16, map 5

TYPES: AUSTRALIA: **Queensland:** Male holotype, female allotype, and 1 female paratype from 3.0 km W Cape Tribulation, Site 6, 16.08333°S, 145.4333°E, 500 m (23 Sep–7 Oct 1982, G. Monteith, D. Yeates, G. Thompson), deposited in QM (♂ holotype: QM S16073, PBI_OON 00025961; ♀ allotype: QM S16048, PBI_OON 00025960; ♀ paratype QM S16073, PBI_OON 00025755).

ETYMOLOGY: The specific epithet is derived from the Latin *tragicus* meaning “pertaining to tragedy” (Brown, 1956), and relates to the type locality and distribution of this species.

DIAGNOSIS: This species is similar to *I. rixi*, sp. nov., *I. pterodactyl*, sp. nov., *I. hamatus*, sp. nov., *I. raveni*, sp. nov., and *I. arcus*, sp. nov., in that the males exhibit a very prominent basal process on the fang and females exhibit a strong horizontal sclerotization or apodeme, anterior to a rounded epigynal atrium, that clearly joins to the posteriorly directed lateral apodemes in the epigynal region. However, males of this species are distinguished by the basal process of the fang consisting of numerous lobes, the posterior lobe of which is disc shaped (fig. 16C, D). The embolic part of the male

palp although obtusely bent, is stout, and not tapered distally (fig. 16A, B). Females of this species differ in the shape of the overhanging process of the epigynal atrium, which has a very slight indent or a rounded edge and possesses a thick convoluted duct (figs. 15I, 16F). This species is pale orange in color and the dorsal scute of the female is small, covering 1/4–1/2 of abdomen width and 1/4–1/2 of the abdomen length (fig. 15D).

MALE (PBI_OON 25961, figs. 15A–C, G–H, 16A–E). Total length 1.40. **CEPHALOTHORAX:** *Carapace* pale orange, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica finely reticulate, sides strongly reticulate. *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes:* ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE–PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark, evenly scattered. Chelicerae, endites, and labium orange-brown. Chelicerae slightly divergent, anterior face unmodified; promargin with two to three larger denticles; fang shape normal, with prominent basal process of numerous lobes, posterior lobe disc shaped (fig. 16C, D); setae dark. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, much more heavily sclerotized than sternum. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale orange, covering about 1/2 of abdominal length. Dorsum, epigastric area, and post-epigastric area setae dark. **LEGS:** Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-

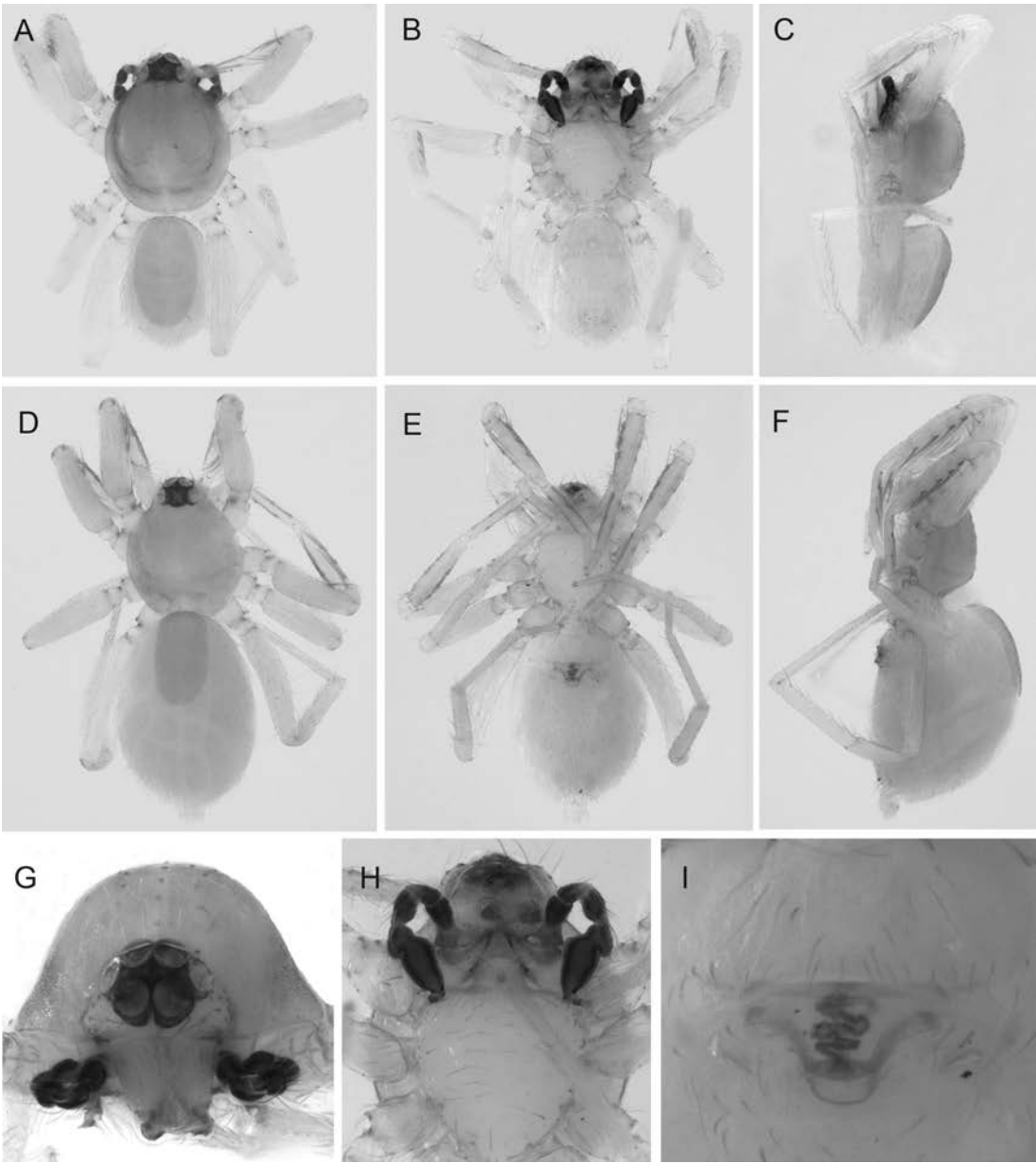


Fig. 15. *Ischnothyreus tragicus*, sp. nov. Holotype male (PBI_OON 00025961): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Paratype female (PBI_OON 00025755): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter, without posteriorly rounded lateral dilation; patella longer than femur;

cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region obtusely bent, stout, not tapered distally, without enlarged or complex processes (fig. 16A, B).

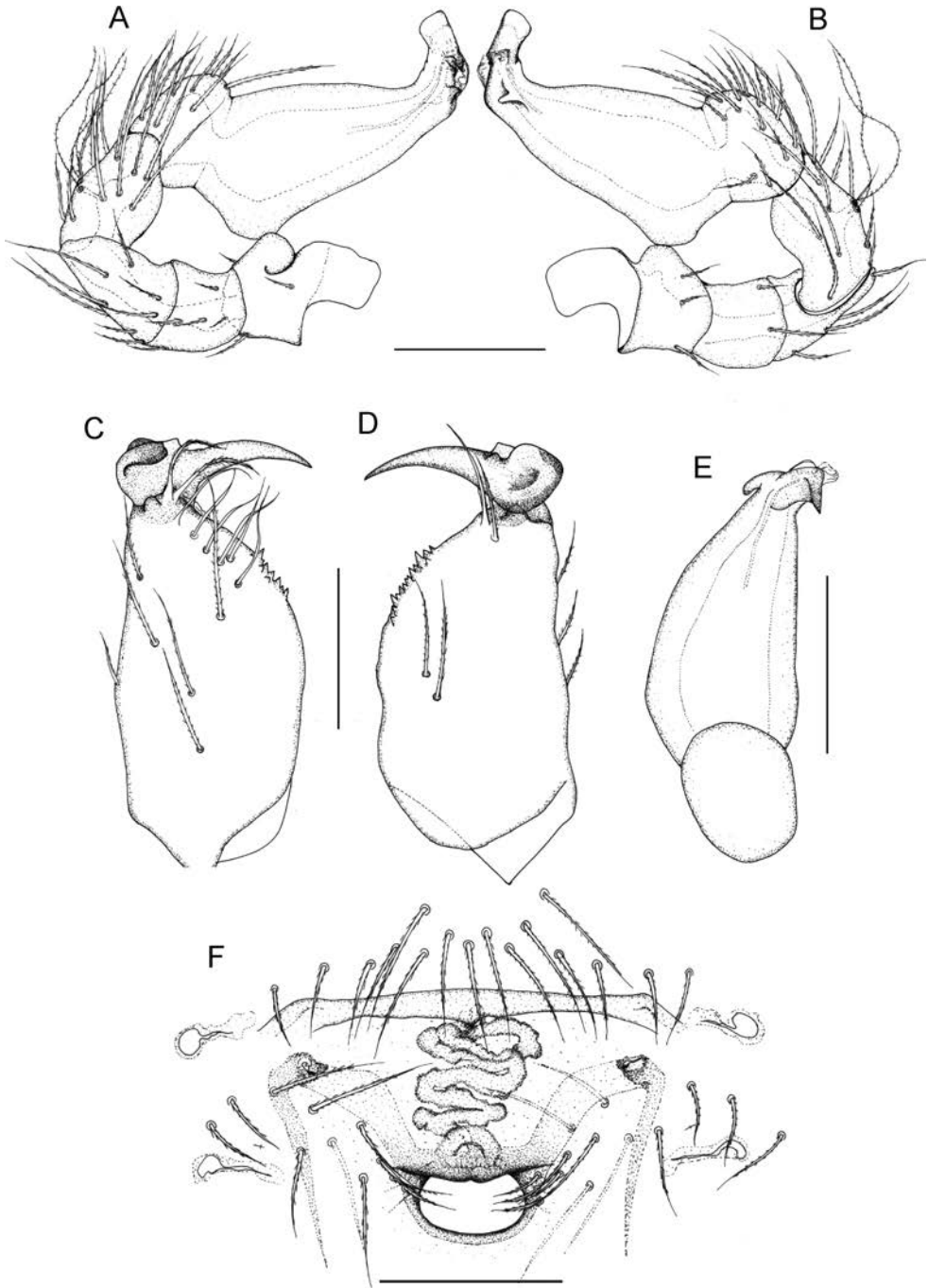


Fig. 16. *Ischnothyreus tragicus*, sp. nov. Holotype male (PBI_OON 00025961): **A**. left palp, prolateral view; **B**. left palp, retrolateral view; **C**. left chelicerae, anterior view; **D**. left chelicerae, posterior view; **E**. left palp, dorsal view. Paratype female (PBI_OON 00025755): **F**. epigynum, ventral view. Scale lines = 0.1 mm.

FEMALE (PBI_OON 25960, figs. 15D–F, I, 16F). Total length 1.65. **CEPHALOTHORAX**: *Carapace* pars cephalica slightly elevated in lateral view. *Clypeus* straight in front view. Chelicerae, endites, and labium pale orange. **ABDOMEN**: Dorsal scutum covering about 1/2 of abdomen, between 1/4 and 1/2 abdomen width. Epigastric scutum small lateral sclerites present. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. **LEGS**: Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA**: Ventral view: epigynal atrium rounded, heavily sclerotized process overhanging anterior section with very slight indent or rounded edge; convoluted duct thicker than apodemes, strong horizontal sclerotization anterior to epigynal atrium clearly joins posteriorly directed lateral apodemes (figs. 15I, 16F).

OTHER MATERIAL EXAMINED: **AUSTRALIA**: **Queensland**: Daintree National Park, Cape Tribulation, Mount Sorrow, rainforest, leaf litter, 200 m, 16.07833°S, 145.46166°E, Apr. 19, 2009 (H. Wood, CAS 9031343, PBI_OON 5638), 1 ♂, 1 ♀; Daintree National Park, Cape Tribulation, Mount Sorrow, rainforest, leaf litter, 200 m, 16.07833°S, 145.46166°E, Apr. 19, 2009 (H. Wood, CAS 9035035–9035036), 2 ♂, 1 ♀; Daintree National Park; Cape Tribulation area, Marrdja boardwalk rainforest loop., rainforest, leaf litter, 16.13555°S, 145.43944°E, Apr. 6, 2009 (K. Edward and J. Waldock, QM S95919, PBI_OON 26305), 1 ♀; Daintree National Park; Cape Tribulation section, near Jindalba walk, rainforest, leaf litter, 16.23722°S, 145.43305°E, Apr. 6, 2009 (K. Edward and J. Waldock, QM S95920, PBI_OON 5681), 1 ♀; Alexandra Range, Daintree, rd summit, rainforest, leaf litter, 250 m, 16.25000°S, 145.43330°E, Oct. 13, 1980 (G. Monteith, QM S12963, PBI_OON 25779), 1 ♀; Cape Tribulation, 1.5 km W (Site 3), rainforest, leaf litter, 150 m, 16.08333°S, 145.46670°E, Apr. 21, 1983 (G. Monteith, D. Yeates, QM S16094, PBI_OON 25776), 1 ♀; Cape Tribulation, 1.5 km W (Site 3), rainforest, leaf litter, 150 m, 16.08333°S, 145.46670°E, Jan. 1–31, 1983 (G. Monteith, QM S16073, PBI_OON 25777), 1 ♂; Cape Tribulation, 2 km W (Site 4), rainforest, leaf

litter, 200 m, 16.08333°S, 145.46670°E, Oct. 7, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16089, PBI_OON 25772), 1 ♀; Cape Tribulation, 2 km W (Site 4), rainforest, leaf litter, 200 m, 16.08333°S, 145.46670°E, Jan. 2, 1983 (G. Monteith, QM S16080, PBI_OON 25775), 1 ♀; Cape Tribulation, 3.5 km W (Site 7), rainforest, leaf litter, 680 m, 16.08333°S, 145.45000°E, Jan. 1–31, 1983 (G. Monteith, QM S16079, PBI_OON 25773), 1 ♀; Cape Tribulation, 4.5–5 km W (Top Camp), rainforest, leaf litter, 770 m, 16.08333°S, 145.43330°E, Oct. 1, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16066, PBI_OON 25774), 1 ♀; Cape Tribulation, 4.5 km W (Site 9), rainforest, leaf litter, 760 m, 16.08333°S, 145.43330°E, Jan. 1–31, 1983 (G. Monteith, QM S95921, PBI_OON 25771), 1 ♀; Karnak-Devils Thumb, 8–12 km NW Mossman (Site 5), rainforest, 440 m, 16.38333°S, 145.28330°E, Dec. 26, 1989, to Jan. 15, 1990 (ANZSES expedition, QM S25132, PBI_OON 21972), 1 ♂; Mossman Bluff (site 5), rainforest, 760 m, 16.47083°S, 145.29150°E, Dec. 20, 1989, to Jan. 15, 1990 (G. Monteith, G. Thompson, ANZSES, QM S60813, PBI_OON 22064), 1 ♀; Mossman Bluff Track, 5–10 km W Mossman (Site 3), rainforest, 480 m, 16.41667°S, 145.33330°E, Dec. 20, 1989, to Jan. 15, 1990 (G. Monteith, G. Thompson, ANZSES Expedition, QM S41551, PBI_OON 21725), 1 ♀; Mossman Bluff Track, 5–10 km W Mossman (Site 4), rainforest, 600 m, 16.65000°S, 145.56670°E, Dec. 20, 1989, to Jan. 15, 1990 (G. Monteith, G. Thompson, ANZSES Expedition, QM S72950, PBI_OON 21993), 1 ♂, 1 ♀; Mount Demi summit, 7 km SW Mossman, rainforest, 1100 m, 16.50000°S, 145.31670°E, Dec. 17, 1995, to Jan. 25, 1996 (G. Monteith, G. Thompson, Ford, QM S44688, PBI_OON 25815), 1 ♂; Mount Finnigan, rainforest, 950 m, 15.81667°S, 145.28330°E, Apr. 19–22, 1982 (G. Monteith, D. Yeates, D. Cook, QM S12982, PBI_OON 25888), 1 ♂; Mount Finnigan summit, via Helenvale, rainforest, 1100 m, 15.81667°S, 145.28330°E, May 28–30, 1985 (G. Monteith, D. Cook, QM S16029, PBI_OON 25766), 1 ♂; Mount Finnigan, Summit, rainforest, 1100 m, 15.81666°S, 145.28333°E, Nov. 21, 1998 (G. Monteith, QM S78897, PBI_OON 20880), 2 ♀; Mount Hartley summit, rainforest, 750 m, 15.76667°S,

145.31670°E, Nov. 8, 1995–Jan. 16, 1996 (G. Monteith, D. Cook, L. Roberts, QM S38626, PBI_OON 21774), 1 ♀; Mount Lewis, rainforest, litter berlese, 960 m, 16.35000°S, 145.17000°E, Oct. 30, 1976 (R.W. Taylor and A. Weir, ANIC, PBI_OON 5844), 1 ♀; Mount Lewis Road (Hut), rainforest, 1200 m, 16.51667°S, 146.26670°E, July 14, 1996 (G. Monteith, QM S43173, PBI_OON 21766), 1 ♀; Mount Lewis Road, 29 km from highway, rainforest, leaf litter, 1210 m, 16.51167°S, 145.27000°E, Nov. 29, 1997 (D. Clyne, QM S35952, PBI_OON 21784), 2 ♀; Mount Misery, ascent road, rainforest, 730 m, 15.87317°S, 145.20970°E, Dec. 6, 1990, to Jan. 17, 1991 (QLD Museum, ANZSES, QM S60283, PBI_OON 22210), 1 ♀; Mount Pieter-Butte, 0.5 km E, rainforest, leaf litter, 780 m, 16.08333°S, 145.38330°E, Oct. 5, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16046, PBI_OON 25829), 1 ♀; Mount Windsor Uplands, Mount Windsor Road, rainforest, leaf litter, 1080 m, 16.26583°S, 145.05916°E, Apr. 3, 2009 (K. Staunton, QM S95922, PBI_OON 5578), 2 ♀; Noah Creek, rainforest, in litter, 16.07000°S, 145.25000°E, June 21, 1971 (Feehan Taylor, ANIC, PBI_OON 5841), 1 ♀; Noah Head, S Cape Tribulation, rainforest, leaf litter, 40 m, 16.13333°S, 145.45000°E, Oct. 16, 1980 (G. Monteith, QM S12959, PBI_OON 25778), 2 ♀; SW slope of Mount Hartley, rainforest, 750 m, 15.76667°S, 145.31670°E, Nov. 8, 1995, to Jan. 16, 1996 (G. Monteith, D. Cook, L. Roberts, QM S46886, PBI_OON 21773), 1 ♂; Windsor Tld, 35 km NNW Mount Carbine, rainforest, leaf litter, 1150 m, 16.25000°S, 145.13330°E, Apr. 26, 1982 (G. Monteith, D. Yeates, D. Cook, QM S16077, PBI_OON 25898), 2 ♀.

DISTRIBUTION: This species is known only from the northern subregions of the Wet Tropics Bioregion (CU, WU, FU, TU, and TL) in northeastern Queensland (map 5).

Ischnothyreus bifidus, new species

Figures 17–22, map 3

TYPES: AUSTRALIA: **Queensland:** Male holotype, female allotype, and 1 female paratype from rainforest leaf litter in Mount Lewis Forest Reserve, 16 km from highway, along Mount Lewis Road, 16.57611°S,

145.26416°E (2 Apr. 2009, K. Edward and J. Waldock) deposited in QM (♂ holotype: QM S95923, PBI_OON 00005674; ♀ allotype: QM S95924, PBI_OON 00005675; ♀ paratype: PBI_OON 5640).

ETYMOLOGY: The specific epithet is of the Latin *bifidus*, meaning “bifurcated” (Brown, 1956), and refers to the distinctive bifurcated process on the anterior face of the male chelicerae of this species.

DIAGNOSIS: This species is closely related to *I. hoplophorus*, sp. nov., as both males possess a clypeus that is concave medially (figs. 17H, 20A, B, 23G), the anterior face of the chelicerae is modified with complex processes (figs. 19A, B, 22C, 24C), and the hyaline grooves, anterolateral corners of the carapace, endites, and the lateral edges of the labium are all heavily sclerotized (fig. 17G–I, 23G–H). Females share a unique epigynal region that consists of a heavily sclerotized platelike structure anterior to an ovoid shaped epigynal atrium (17J, 23I). *Ischnothyreus bifidus*, sp. nov., can be distinguished by the bifurcated anterior process on the male chelicerae (fig. 22C), and the stouter platelike sclerite of the female epigynal region, which has straighter edges (figs. 21D, 22E).

MALE (PBI_OON_0005674, figs. 17A–C, G–I, 22A–D; paratype ♂: figs. 18–19, 20A–C, E, 21A–C). Total length 1.81. **CEPHALOTHORAX:** *Carapace* brown, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, anterolateral corners with strongly sclerotized, triangular extension, strongly sclerotized lines extend either side of clypeus halfway to elevated portion of pars cephalica; surface of elevated portion of pars cephalica finely reticulate, sides strongly reticulate; nonmarginal pars cephalica setae dark. *Clypeus* margin unmodified, very strongly curved in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes:* ALE largest, ALE circular, PME circular, PLE oval; posterior eye row straight from above; ALE touching, ALE–PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark. Chelicerae, endites, and labium dark red-brown. Chelicerae slightly divergent, anterior face with

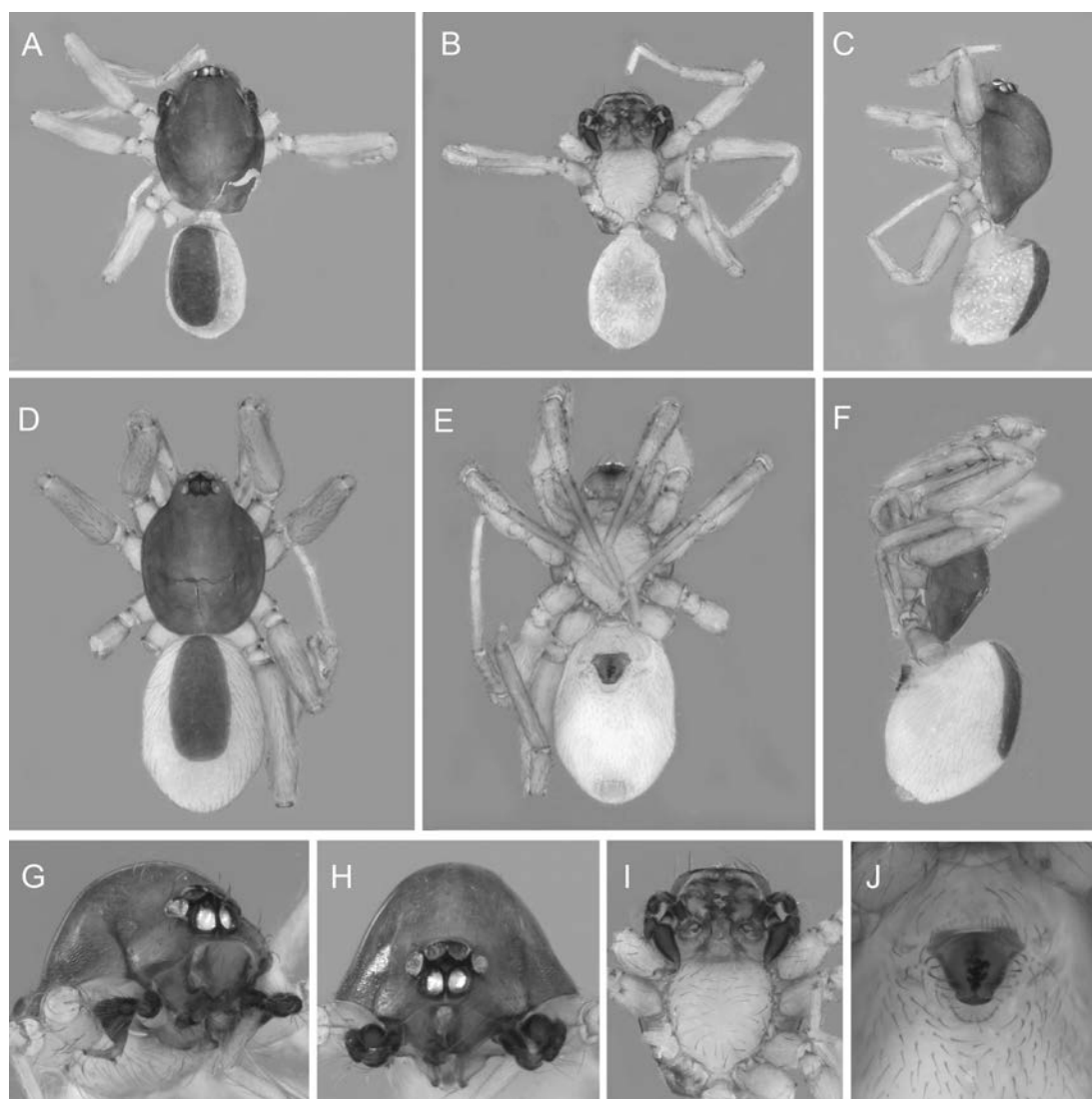


Fig. 17. *Ischnothyreus bifidus*, sp. nov. Holotype male (PBI_OON 00005674): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, oblique view; **H.** carapace, anterior view; **I.** sternum, ventral view. Allotype female (PBI_OON 00005675): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **J.** epigynum, ventral view.

distal complex projections, largest projection bifurcated (figs. 19A–C, 22C); fang with prominent basal process, broad, fluted outgrowth and large, rounded bump; setae dark. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, slightly heavier than sternum in sclerotization; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, much more

heavily sclerotized than sternum. ABDOMEN: Ovoid; dorsum soft portions pale white. Book lung covers elliptical. Dorsal scutum brown, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites present. Postepigastric scutum pale orange, covering about 1/2 of abdominal length. Dorsum, epigastric area, and postepigastric

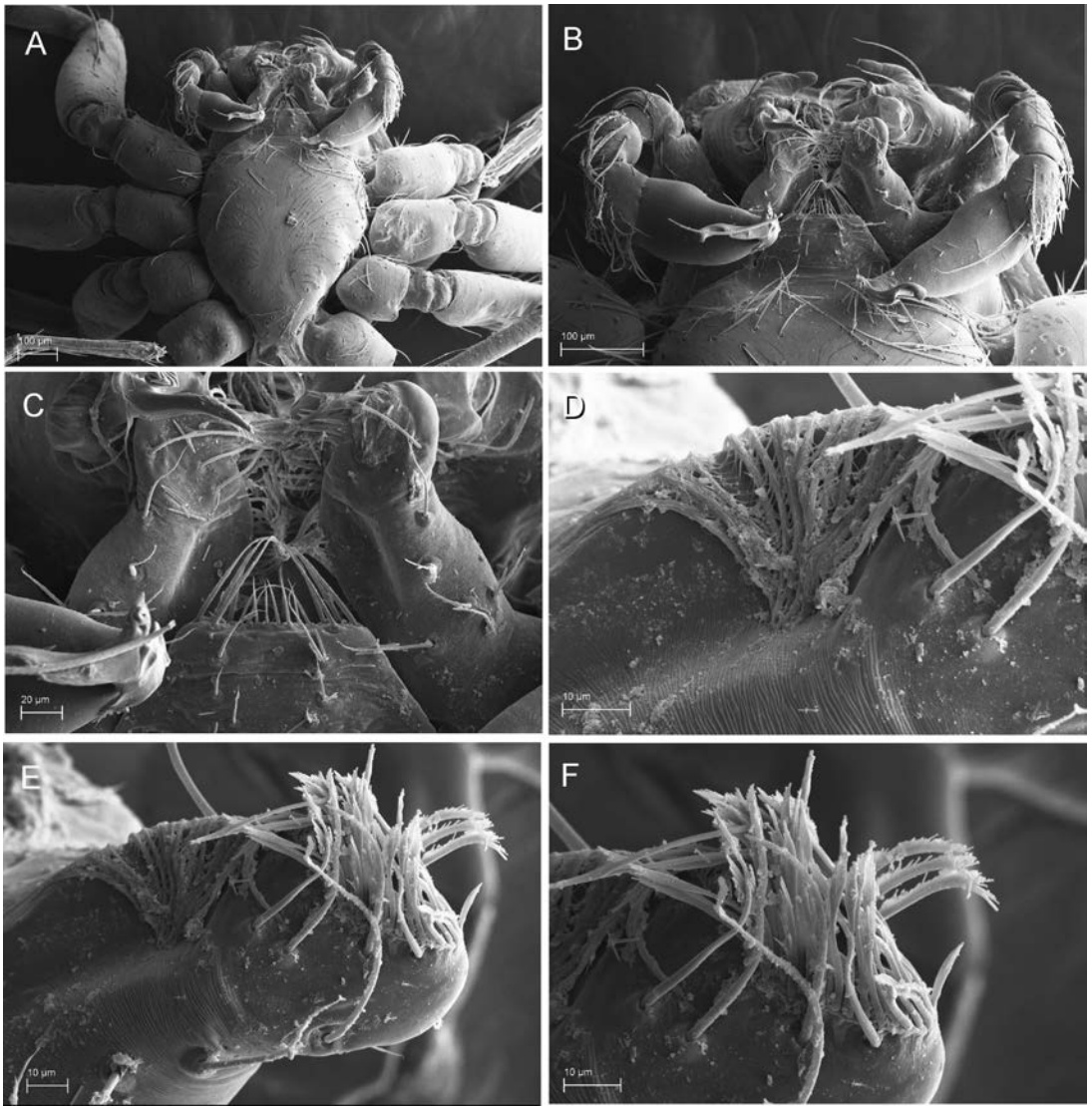


Fig. 18. Scanning electron micrographs of *Ischnothyreus bifidus*, sp. nov. Paratype male (PBI_OON 00021798): **A.** sternum, ventral view; **B.** mouthparts, ventral view; **C.** mouthparts, close-up; **D.** endite; **E.** endite, close-up of distal tip; **F.** endite, close-up of modified serrula.

area setae dark. **LEGS:** Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter, without posteriorly rounded lateral dilation; patella shorter than femur; cymbium dark red-brown; bulb dark red-brown, more than

two times as long as cymbium, stout; embolic region obtusely bent, elongate, basal section broad, narrow distally, slightly curved distal tip; fine denticles present on ventral subdistal edge (fig. 21A–C, 22A, B).

FEMALE (PBI_OON 5640, figs. 17D–F, J, 22E; paratype ♀: figs. 20D, F, 21D–G). Total length 1.78. **CEPHALOTHORAX:** Carapace pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its

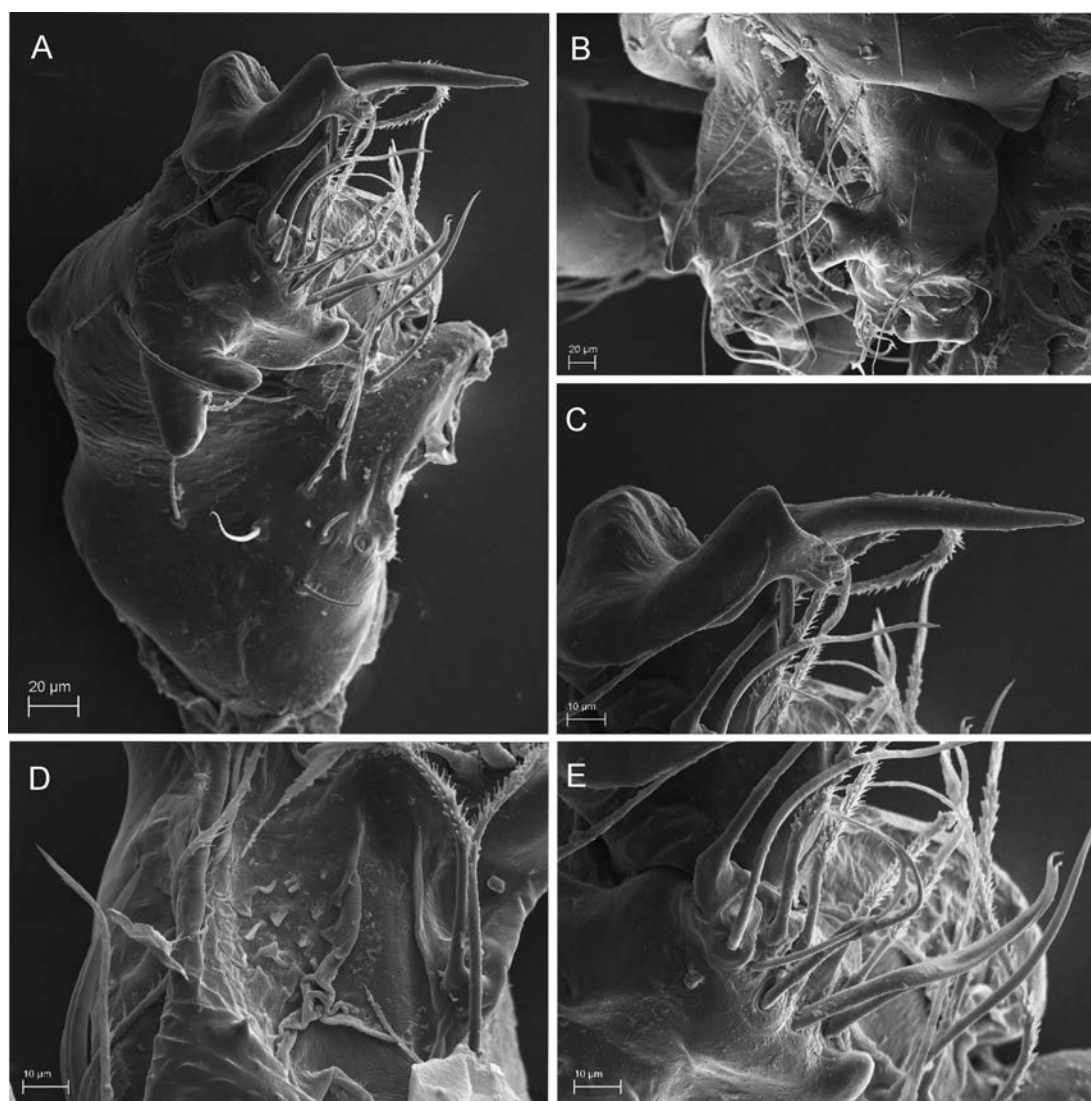


Fig. 19. Scanning electron micrographs of *Ischnothyreus bifidus*, sp. nov. Paratype male (PBI_OON 00021798): **A.** chelicera, anterior view; **B.** carapace, anterior view; **C.** cheliceral fang, close-up of subbasal process; **D.** chelicera, close-up of denticles, posterior view; **E.** chelicera, close-up of modified setae, anterior view.

maximum width or less. *Clypeus* straight in front view. Chelicerae, endites, and labium pale orange. ABDOMEN: Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. LEGS: Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Ventral view: epigynal region

with heavily sclerotized platelike structure, stout, lateral edges straight, epigynal atrium ovoid; convoluted duct thicker than apodemes (figs. 17J, 21D).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** Mount Lewis Forest Reserve, Mount Lewis Road, 21–22 km from highway, rainforest, leaf litter, 16.54250°S, 145.28388°E, Apr. 2, 2009 (K. Edward and J. Waldock, QM S95925), 2 ♂; Mount Lewis

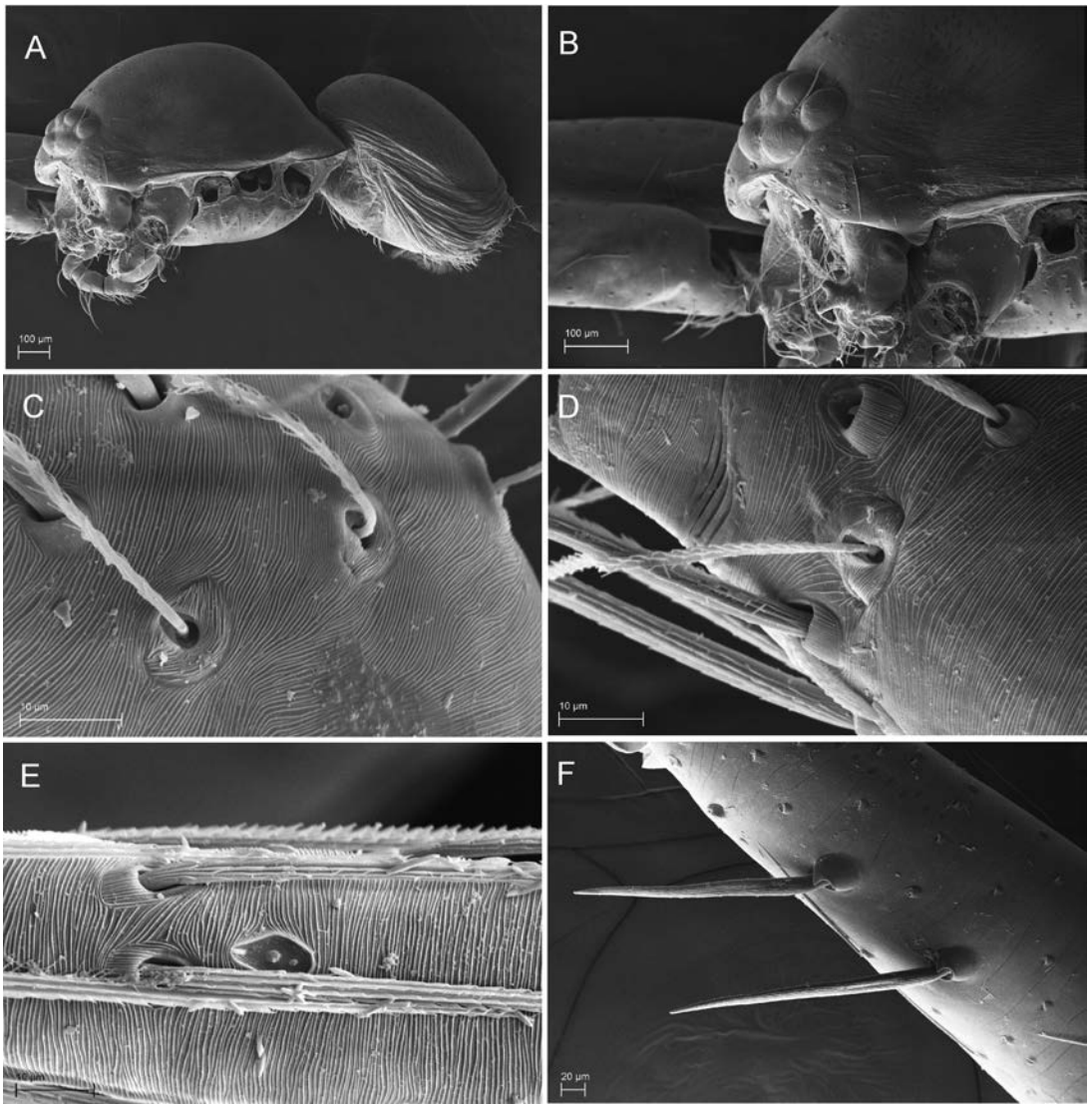


Fig. 20. Scanning electron micrographs of *Ischnothyreus bifidus*, sp. nov. Paratype male (PBI_OON 00021798): **A.** habitus, lateral view. **B.** carapace, lateral view. **C.** palpal tibia, dorsal view, showing two trichobothria. **E.** tarsal organ from leg I, dorsal view. Paratype female (PBI_OON 00021798): **D.** metatarsus III, dorsal view, showing single distal trichobothrium. **F.** tibia I, prolateral view, showing two spines.

Forest Reserve, Mount Lewis Road, 21–22 km from highway, rainforest, leaf litter, 16.54250°S, 145.28388°E, Apr. 2, 2009 (K. Edward and J. Waldock, QM S95926, PBI_OON 5559), 1 ♂; Black Mountain, 17 km ESE Julatten, rainforest, moss forest litter, 1000 m, 16.65000°S, 145.48330°E, Apr. 29, 1982 (G. Monteith, D. Yeates, D. Cook, QM S12961, PBI_OON 25809), 1 ♀;

Carbine Tableland, Pauls Luck–Doolins Creek, 1100 m, 16.43333°S, 145.26666°E, Nov. 30, 1990 (G. Monteith, G. Thompson, D. Cook, H. Janetzki, QM S49371, PBI_OON 22180), 1 ♂; Carbine Uplands area, Mount Lewis Road, rainforest, leaf litter, 820 m, 16.58638°S, 145.29250°E, Apr. 1, 2009 (K. Staunton, QM S95927, PBI_OON 5576), 1 ♀; Carbine Uplands area, Mount

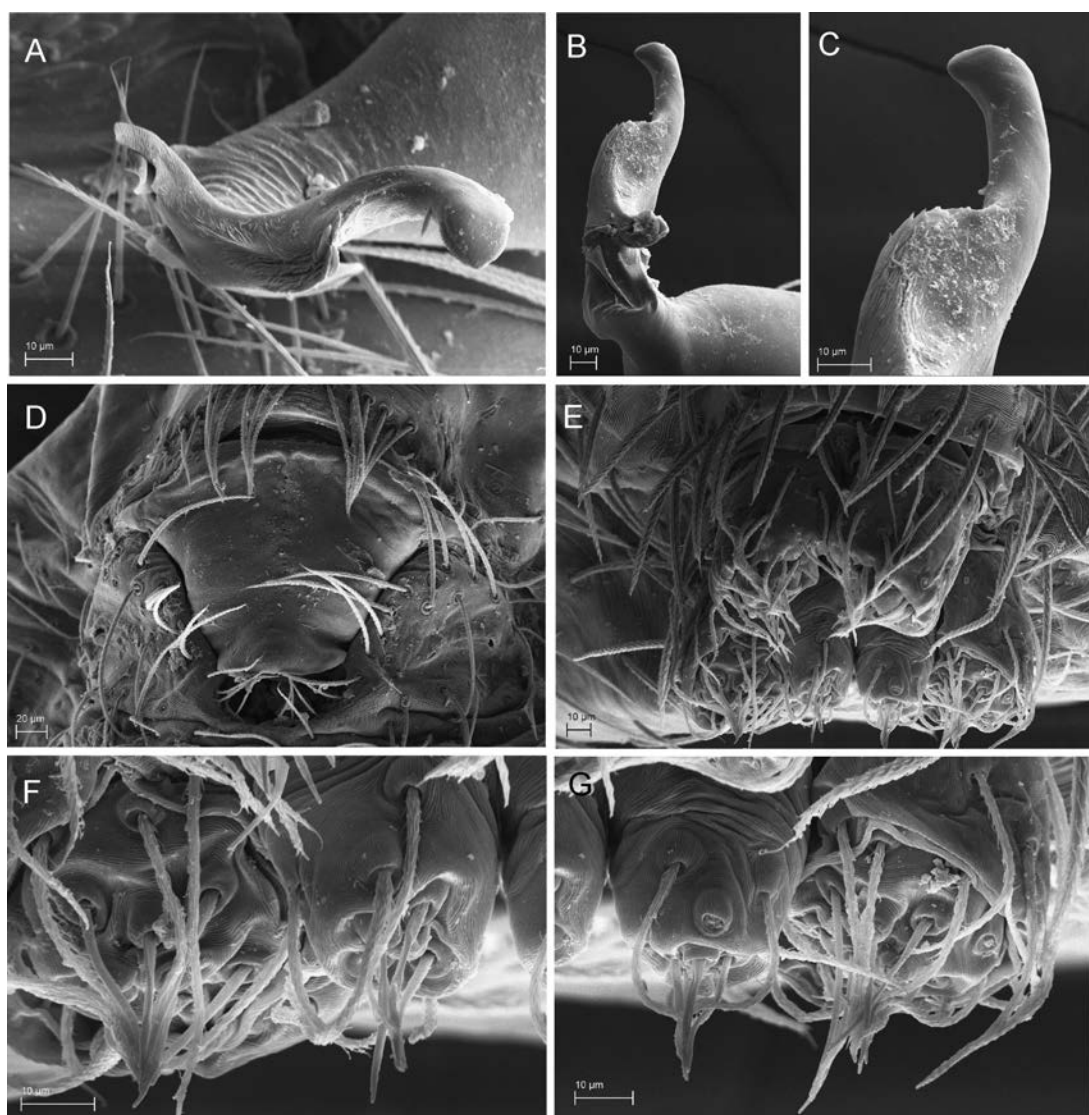


Fig. 21. Scanning electron micrographs of *Ischnothyreus bifidus*, sp. nov. Paratype male (PBI_OON 00021798): A–C. palpal embolus, close-up. Paratype female (PBI_OON 00021798): D. epigynum, ventral view; F. spinnerets, ventral view; G. right PLS, PMS, close-up, ventral view; H. left PMS, PLS, close-up, ventral view.

Lewis Road, rainforest, leaf litter, 600 m, 16.57722°S, 145.30916°E, Apr. 1, 2009 (K. Staunton, QM S95928, PBI_OON 5580), 1 ♂; Julatten, Mount Lewis Road, Nov. 12, 1975 (A. Walford-Huggins, ANIC, PBI_OON 5863), 1 ♂, 1 ♀; Mossman Gorge National Park, circuit track, rainforest, leaf litter, 16.47222°S, 145.33055°E, May 21, 2007 (K. Edward and K. Pitz, QM S95929, PBI_OON

25723), 1 ♂; Mount Demi north Peak, rainforest, 1050 m, 16.50000°S, 145.31670°E, Dec. 17, 1995, to Jan. 25, 1996 (G. Monteith, G. Thompson, Ford, QM S43388, PBI_OON 21798), 3 ♂, 2 ♀; Mount Demi summit, 7 km SW Mossman, rainforest, 1100 m, 16.50000°S, 145.31670°E, Dec. 17, 1995, to Jan. 25, 1996 (G. Monteith, G. Thompson, Ford, QM S44688, PBI_OON 21968), 4 ♂,

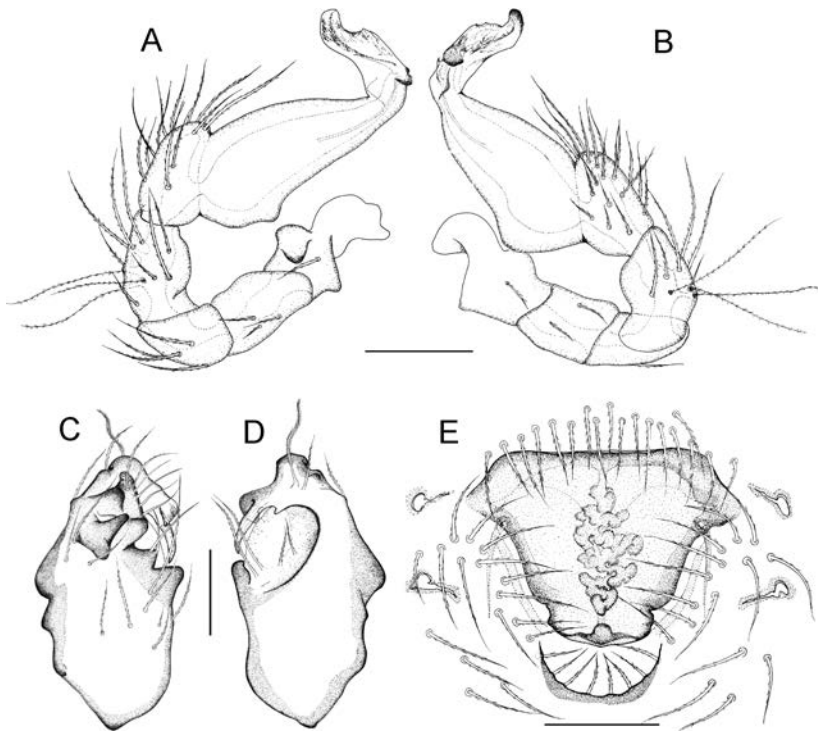


Fig. 22. *Ischnothyreus bifidus*, sp. nov. Holotype male (PBI_OON 00005674): **A**. left palp, prolateral view; **B**. left palp, retrolateral view; **C**. left chelicerae, anterior view; **D**. left chelicerae, posterior view. Allotype female (PBI_OON 00005675): **E**. epigynum, ventral view. Scale lines = 0.1 mm.

3 ♀; Mount Demi, 7 km SW Mossman, rainforest, leaf litter, 1100 m, 16.50000°S, 145.31670°E, Oct. 29, 1983 (D. Yeates, G. Thompson, QM S16807, PBI_OON 21531), 1 ♀; Mount Demi, 7 km SW Mossman, rainforest, leaf litter, 950 m, 16.50000°S, 145.31670°E, Apr. 26, 1983 (G. Monteith, D. Yeates, QM S16074, PBI_OON 25810), 1 ♂; Mount Demi, 7 km SW Mossman, rainforest, leaf litter, 950 m, 16.50000°S, 145.31670°E, Apr. 26, 1983 (G. Monteith, D. Yeates, QM S16122, PBI_OON 25812), 3 ♀; Mount Demi, 7 km SW Mossman, rainforest, leaf litter, 1100 m, 16.50000°S, 145.31670°E, Oct. 29, 1983 (D. Yeates, G. Thompson, QM S16801, PBI_OON 25817), 3 ♂, 1 ♀; Mount Lewis, rainforest, leaf litter, 914 m, 16.58333°S, 145.28330°E, Sept. 4, 1983 (A. Williamson, QM S12989, PBI_OON 25813), 1 ♀; Mount Lewis Road, Windmill Creek, rainforest, 900 m, 16.56983°S, 145.26750°E, Nov. 18, 1997, to Feb. 9, 1998 (G. Monteith, D. Cook, QM S69621,

PBI_OON 21965), 1 ♀; Mount Lewis, 2 km N, rainforest, leaf litter, 1000 m, 16.56667°S, 145.26670°E, Sept. 9, 1981 (G. Monteith, D. Cook, QM S12962, PBI_OON 25808), 2 ♀; Mount Spurgeon (Star house), rainforest, 1100 m, 16.45500°S, 145.20660°E, Nov. 19, 1997 (D. Clyne, QM S35951, PBI_OON 21769), 1 ♀; Mount Spurgeon (Star house), rainforest, 1100 m, 16.45500°S, 145.20660°E, Nov. 19, 1997 (G. Monteith, QM S43135, PBI_OON 21776), 1 ♂; Mount Spurgeon (Star house), rainforest, leaf litter, 1100 m, 16.45500°S, 145.20660°E, Nov. 20, 1997 (G. Monteith, QM S43045, PBI_OON 21790), 1 ♀; Mount Spurgeon (Star house), rainforest, leaf litter, 1100 m, 16.45500°S, 145.20660°E, Nov. 19, 1997 (G. Monteith, QM S43133, PBI_OON 21985), 2 ♀; Mount Spurgeon, 2 km SE, via Mount Carbine, rainforest, leaf litter, 1100 m, 16.45000°S, 145.20000°E, Dec. 20, 1988 (G. Monteith, G. Thompson, QM S58138, PBI_OON 22137), 1 ♂, 3 ♀; the Bluff, 11 km W Mossman, rainforest, leaf

litter, 950 m, 16.45000°S, 145.26670°E, Apr. 27, 1983 (G. Monteith, D. Yeates, QM S16072, PBI_OON 25807), 1 ♂; the Bluff, 11 km W Mossman, rainforest, leaf litter, 1000 m, 16.45000°S, 145.26670°E, Nov. 2, 1983 (G. Monteith, D. Yeates, G. Thompson, QM S16812, PBI_OON 25816), 1 ♀.

DISTRIBUTION: This species is only known from three northern subregions of the Wet Tropics Bioregion (CU, ML, and BM), in northeastern Queensland (map 3).

Ischnothyreus hoplophorus, new species

Figures 23–24, map 4

TYPES: AUSTRALIA: **Queensland:** Male holotype and female allotype from Mount Lewis, 16.35°S, 145.17°E, 960 m (30 Oct 1976, R.W. Taylor and A. Weir), deposited in ANIC (♂ holotype: PBI_OON 00005845; ♀ allotype: PBI_OON 00005598).

ETYMOLOGY: The specific epithet is derived from the Greek *hoplon* (“armor, shield”), meaning “bearing a shield” (Brown, 1956), and refers to the distinctive heavily sclerotized plate of the female epigynum region of this species.

DIAGNOSIS: This species is closely related to *I. bifidus*, sp. nov., as males of both species possess a clypeus that is concave medially (figs. 17H, 23G), the anterior face of the chelicerae is modified with complex processes (figs. 22C, 24C), and the hyaline grooves, anterolateral corners of the carapace, endites, and the lateral edges of the labium are all heavily sclerotized (fig. 17G–I, 23G–H). Females share a unique epigynal region that consists of a heavily sclerotized platelike structure anterior to an ovoid shaped epigynal atrium (figs. 22E, 24E). *Ischnothyreus hoplophorus*, sp. nov., can be distinguished by the nonbifurcated anterior process on the male chelicerae (fig. 24C), and the elongate platelike sclerite of the female epigynal region, which has curved lateral edges (figs. 23I, 24E).

MALE (PBI_OON 00005845, figs. 23A–C, G–H, 24A–D). Total length 1.58. **CEPHALOTHORAX:** Carapace pale orange, without any pattern, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, anterolateral

corners with strongly sclerotized, triangular extension, strongly sclerotized lines extend either side of clypeus half way to elevated portion of pars cephalica; surface of elevated portion of pars cephalica smooth, sides finely reticulate. *Clypeus* margin unmodified, very strongly curved in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes:* ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE separated by less than their radius, ALE–PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark, evenly scattered. Chelicerae, endites, and labium dark red-brown. Chelicerae slightly divergent, anterior face with hyaline grooves and distal complex projections, anterior face with three major heavily sclerotized projections, largest digitiform; fang shape normal, with prominent basal process, broad, fluted outgrowth; setae dark (fig. 24C, D). Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, more sclerotized than sternum; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, much more heavily sclerotized than sternum. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites present. Postepigastric scutum pale orange, covering about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. **LEGS:** Yellow, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur one to two times as long as trochanter; patella shorter than femur; cymbium dark red-brown; bulb dark red-brown, more than 2 times as long as cymbium, stout; embolic region obtusely bent, elongate, basal section broad, narrow distally, slightly curved distal tip; fine denticles present on ventral subdistal edge (fig. 24A, B).

FEMALE (PBI_OON 5598, figs. 23 D–F, I, 24E). Total length 1.90. **CEPHALOTHOR-**

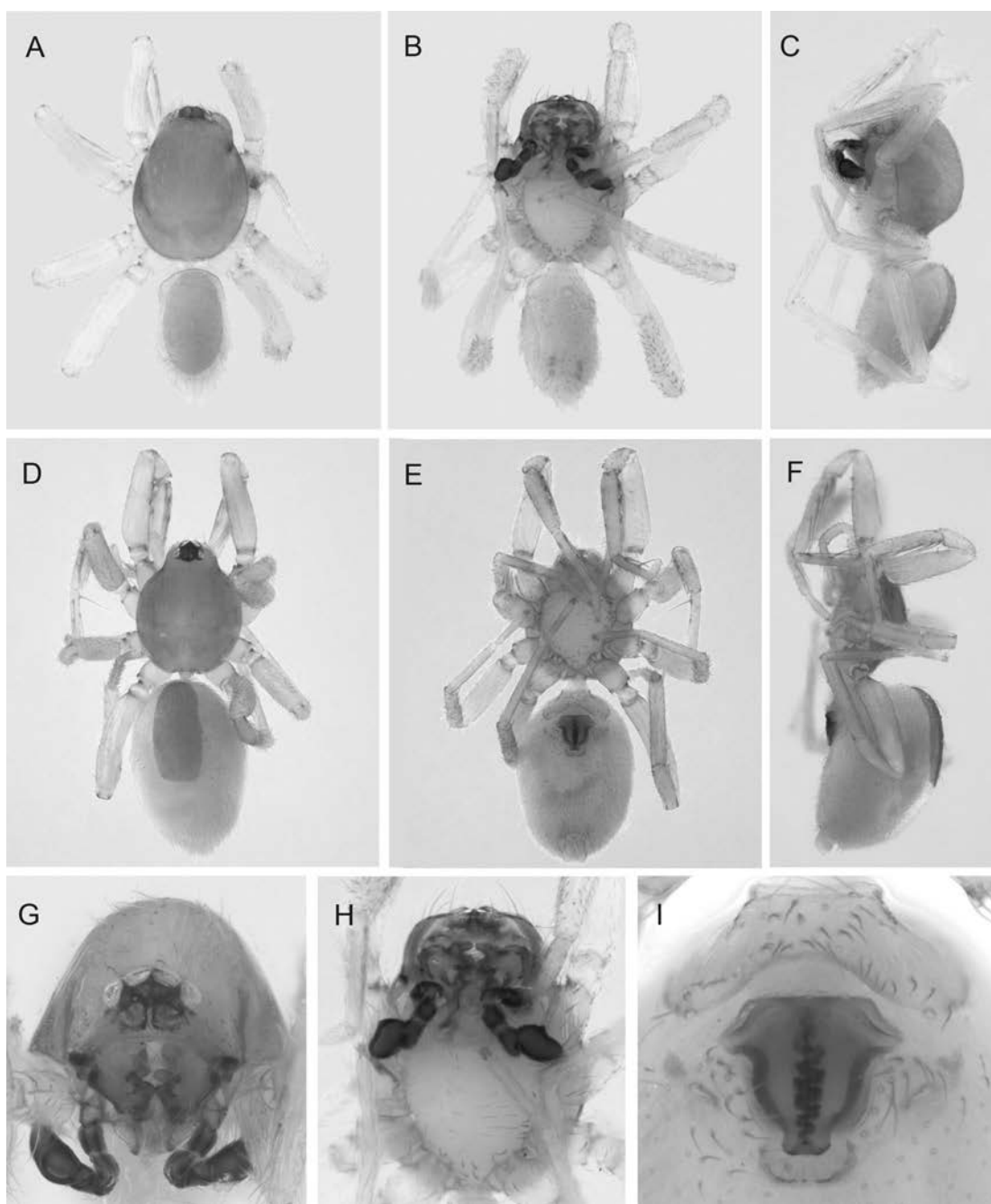


Fig. 23. *Ischnothyreus hoplophorus*, sp. nov. Holotype male (PBI_OON 00005845): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005598): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

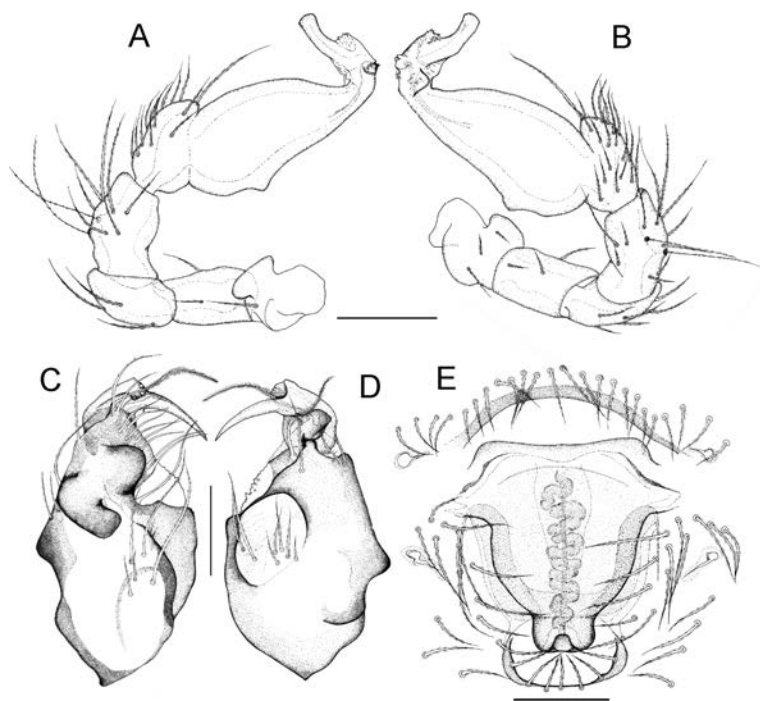


Fig. 24. *Ischnothyreus hoplophorus*, sp. nov. Holotype male (PBI_OON 00005845): **A**, left palp, prolateral view; **B**, left palp, retrolateral view; **C**, left chelicerae, anterior view; **D**, left chelicerae, posterior view. Allotype female (PBI_OON 00005598): **E**, epigynum, ventral view. Scale lines = 0.1 mm.

RAX: *Carapace* pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less. *Clypeus* straight in front view. *Eyes*: ALE touching. *Sternum* orange-brown. *Mouthparts*: Chelicerae, endites, and labium pale orange. **ABDOMEN**: Dorsal scutum orange-brown, covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Post-epigastric scutum widely hexagonal, only around epigastric furrow. **LEGS**: Orange-brown. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA**: Ventral view: anterior edge of epigastric furrow strongly procurved; epigynal region with heavily sclerotized platelike structure, elongate, lateral edges curved and undulate, epigynal atrium ovoid; convoluted duct thicker than apodemes, elongate (fig. 23I).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland**: Mount Lewis, rainforest, leaf litter, 970 m, 16.33000°S, 145.13000°E, Sept. 8, 1975 (R.W. Taylor,

ANIC, PBI_OON 25870), 1 ♀; Mount Lewis, 3 km E, 680 m, 16.58367°S, 145.30220°E, Nov. 29, 1997, to Feb. 09, 1998 (G. Monteith, D. Cook, QM S69564, PBI_OON 22174), 1 ♂; Mount Lewis, barracks, 950 m, 16.61167°S, 145.27500°E, Nov. 17, 1997 (G. Monteith, QM S43210, PBI_OON 21788), 1 ♀.

DISTRIBUTION: This species is only known from Mount Lewis, northeastern Queensland (map 4; CU subregion).

Ischnothyreus digitus, new species

Figures 25–26, map 3

TYPES: AUSTRALIA: **Queensland**: Male holotype from Clacherty Road, via Julatten, 16.5833°S, 145.3666°E (11 Oct. 1980, G. Monteith), deposited in QM (S95930, PBI_OON 00025965). Female allotype from Clacherty Road, Julatten, 16.57638°S, 145.36611°E (3 Apr. 2009, K. Edward and J. Waldock), deposited in QM (S95931, PBI_OON 00005676).

ETYMOLOGY: The specific epithet is of the Latin *digitus*, meaning “finger” (Brown,

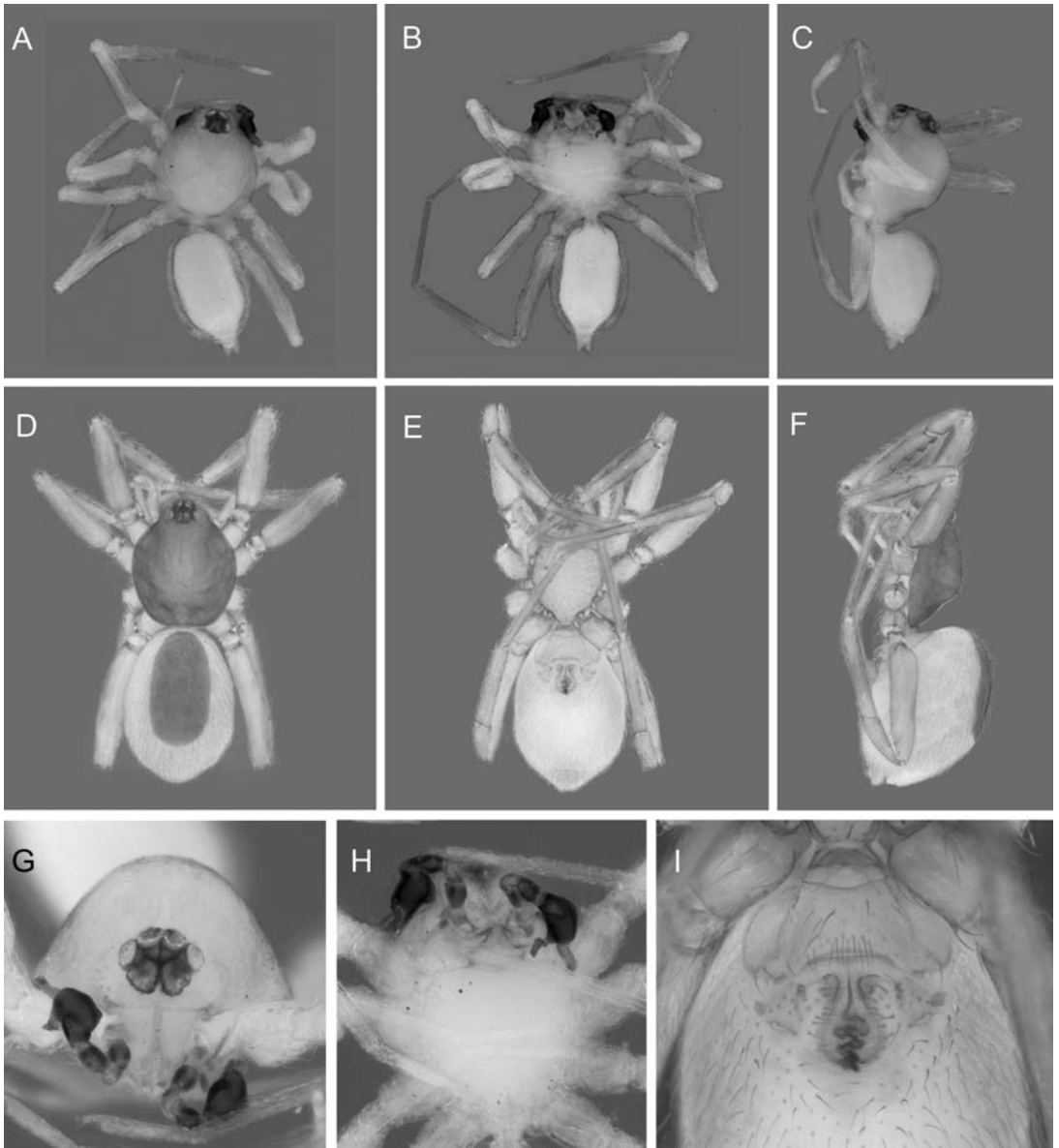


Fig. 25. *Ischnothyreus digitus*, sp. nov. Holotype male (PBI_OON 00025965): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005676): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

1956), and refers to the distinctive elongate digitiform process situated on the prolateral aspect of the male palpal bulb.

DIAGNOSIS: This species is unique and can be easily distinguished by the long digitiform lateral process positioned medially on the prolateral aspect of the male palpal bulb

(fig. 26A, B). The embolic region of the male palp is not obtusely bent or tapered. Females of the species can be identified by the uniquely shaped epigynal atrium, which is an elongate U-shape. The convoluted duct winds only in the posterior section of epigynal atrium, with the anterior portion straight (figs. 25I, 26F).

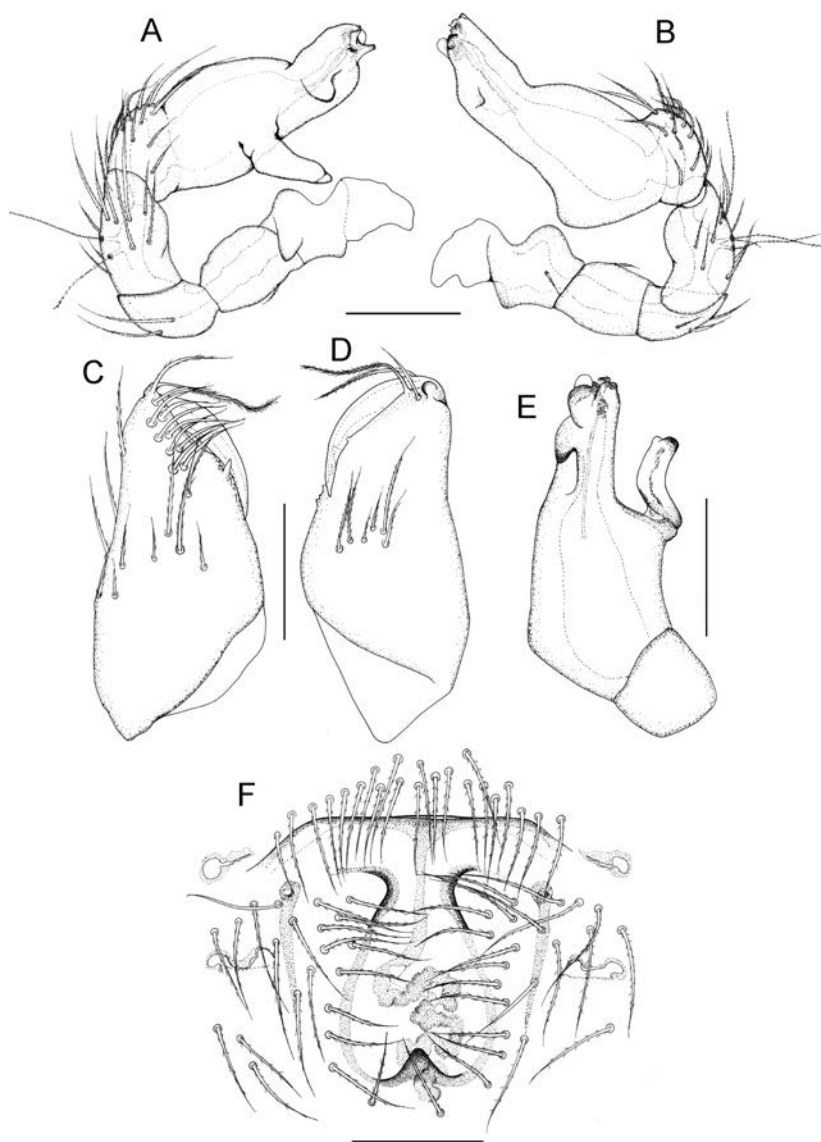


Fig. 26. *Ischnothyreus digitus*, sp. nov. Holotype male (PBI_OON 00025965): A. left palp, prolateral view; B. left palp, retrolateral view; C. left chelicerae, anterior view; D. left chelicerae, posterior view; E. left palp, dorsal view. Allotype female (PBI_OON 00005676): F. epigynum, ventral view. Scale lines = 0.1 mm.

MALE (PBI_OON 25965, figs. 25 A–C, G, H, 26 A–E). Total length 1.58. CEPHALO-THORAX: *Carapace* pale orange, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica finely reticulate,

sides finely reticulate. *Clypeus* margin unmodified, curved downward in front view, high, ALE separated from edge of carapace by their radius or more. *Eyes*: ALE largest, ALE circular, PME circular, PLE oval; posterior eye row procurved from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, uniform, setae evenly scattered. Chelicerae straight, anterior face

unmodified; promargin with two larger denticles; fang shape normal, without prominent basal process. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin. Endites distally not excavated, anteromedian tip with one strong, toothlike projection, same as sternum in sclerotization. ABDOMEN: Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. LEGS: Without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0; distal spine of femora I much smaller than medial spines. GENITALIA: Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter, without posteriorly rounded lateral dilation; patella shorter than femur; cymbium dark red-brown, without distal patch of setae; bulb dark red-brown, more than two times as long as cymbium, stout; palpal bulb with long digitiform lateral process positioned medially on prolateral aspect (fig. 26A, B), embolic region not obtusely bent or tapered.

FEMALE (PBI_OON 5676, figs. 25 D–F, I, 26F). Total length 1.62. CEPHALOTHORAX: *Carapace* yellow-brown, ovoid in dorsal view, pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less. *Clypeus* straight in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Sternum* pale orange; setae dark. Chelicerae, endites, and labium pale orange; setae dark. ABDOMEN: Dorsum soft portions pale orange. Dorsal scutum yellow-brown, covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Epigastric scutum small lateral sclerites present. Postepigastric scutum pale orange, widely hexagonal, only around epigastric furrow. Dorsum, epigastric area, and postepigastric area setae dark. LEGS: Pale orange. Leg spination: femora: I p0-2-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0; two very small spines on retrolateral side of femora I. GENITALIA:

Ventral view: epigynal atrium elongate U-shape, anterior portion with necklike indents, triangular process overhanging posterior portion; convoluted duct thicker than apodemes, only convoluted in posterior section of epigynal atrium, anterior portion straight (figs. 25I, 26F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** Clacherty Road, Julatten, rainforest, leaf litter, 16.57638°S, 145.36611°E, Apr. 3, 2009 (K. Edward and J. Waldock, QM S95932, PBI_OON 5560), 1 ♀; Clacherty Road, Julatten, rainforest, leaf litter, 16.57638°S, 145.36611°E, Apr. 3, 2009 (K. Edward and J. Waldock, QM S95933, PBI_OON 5677), 1 ♀; Clacherty Road, Julatten, rainforest, leaf litter, 16.57638°S, 145.36611°E, Apr. 3, 2009 (K. Edward and J. Waldock, QM S95934, PBI_OON 26310), 1 ♀; Clacherty Road, via Julatten, rainforest, leaf litter, 16.5833°S, 145.3666°E, Oct. 11, 1980 (G. Monteith, QM S12968), 1 ♂, 1 ♀; Mossman Gorge National Park, rainforest, 16.47167°S, 145.33330°E, July 22, 1992, to Nov. 27, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S22644, PBI_OON 21729), 1 ♀; Mossman Gorge National Park, rainforest, leaf litter, 16.47167°S, 145.33330°E, Oct. 20, 1980 (G. Monteith, QM S12955, PBI_OON 25945), 1 ♀; Rex Lookout, via Mossman, rainforest, leaf litter, 16.50°S, 145.383°E, Oct. 13, 1980 (G. Monteith, QM S12964, PBI_OON 25946), 1 ♂.

DISTRIBUTION: This species is known only from two northern subregions of the Wet Tropics Bioregion (CU and ML), in north-eastern Queensland (map 3).

Ischnothyreus ker, new species

Figures 27–28, map 6

TYPES: AUSTRALIA: **Queensland:** Male holotype, female allotype, and two female paratypes from Bellenden Ker Range, summit TV Station, 17.25883°S, 145.8548°E, 1560 m (28 Aug–8 Oct 1991, G. Monteith, H. Janetzki), deposited in QM (♂ holotype: S95935, PBI_OON 00022001; ♀ allotype: QM S95936, PBI_OON 00025753).

ETYMOLOGY: The specific epithet is a noun in apposition, taken from the type locality.

DIAGNOSIS: Males can be distinguished by the presence of a rounded medial sclerotized

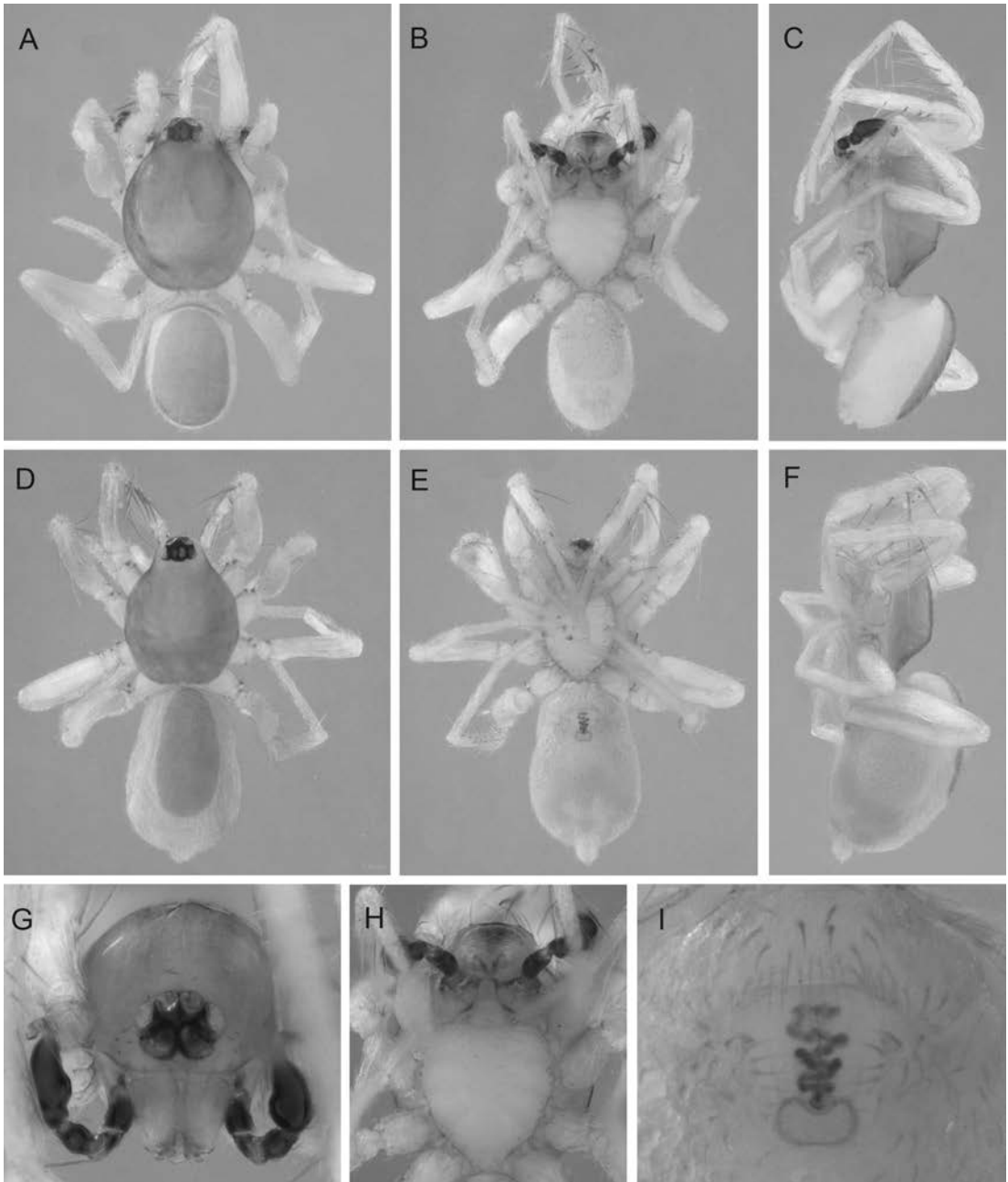


Fig. 27. *Ischnothyreus ker*, sp. nov. Holotype male (PBI_OON 00022001): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00025753): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

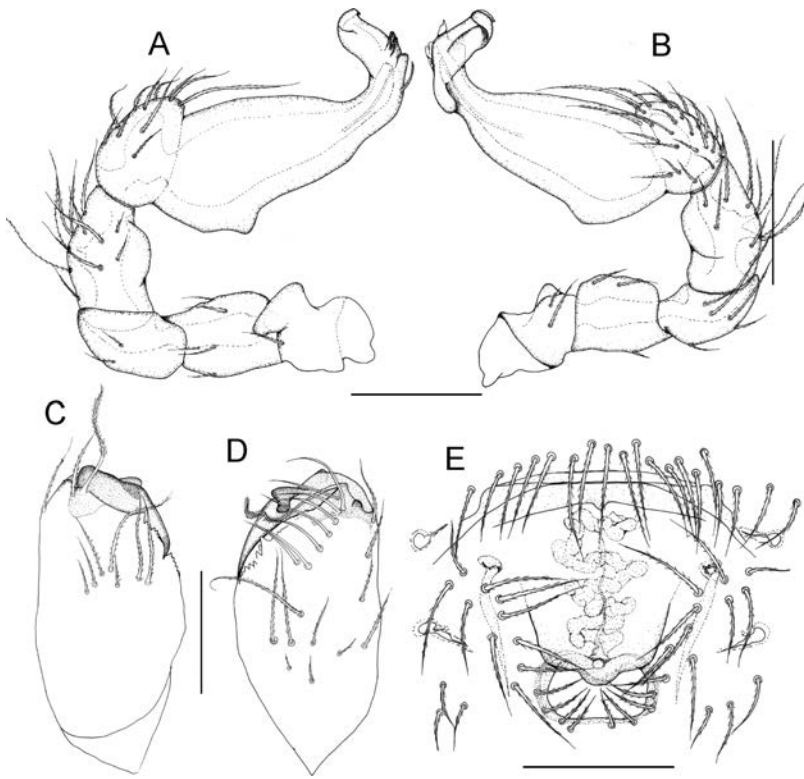
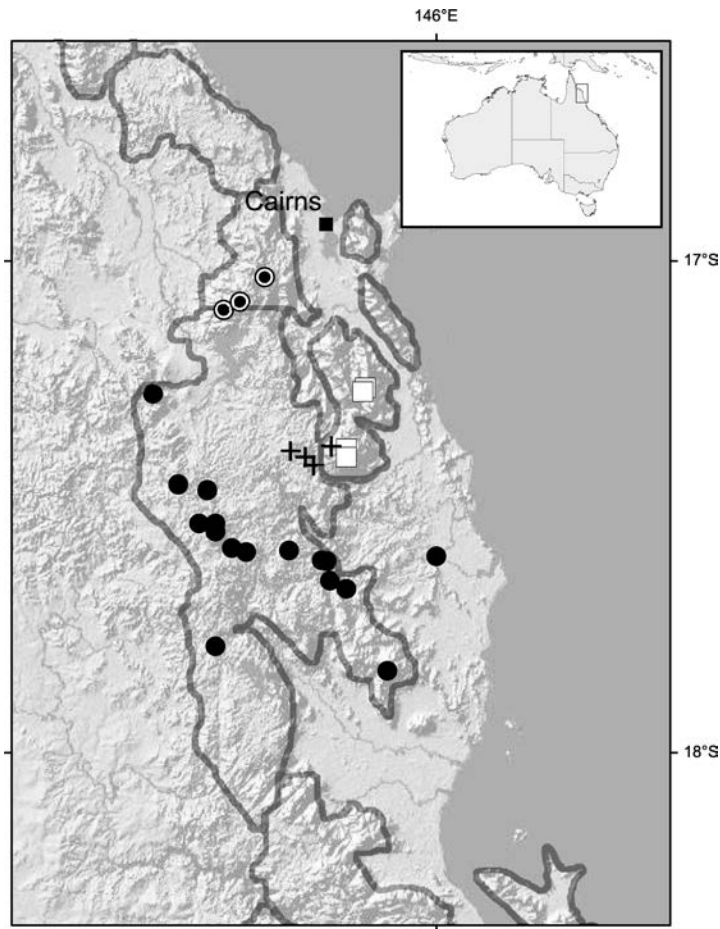


Fig. 28. *Ischnothyreus ker*, sp. nov. Holotype male (PBI_OON 00022001): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view. Allotype female (PBI_OON 00025753): **E.** epigynum, ventral view. Scale lines = 0.1 mm.

process on the posterior aspect of the cheliceral fang and lacks any basal process (fig. 28D). The female epigynal region is similar to that of *I. comicus*, sp. nov., but differs in the smaller width of the epigynal atrium opening, which is more jelly-bean shaped, and the faint but visible lines running down each side of the convoluted duct (figs. 27I, 28E).

MALE (PBI_OON 22001, figs. 27A–C, G, H, 28A–D). Total length 1.36. **CEPHALOTHORAX:** *Carapace* pale orange, broadly oval in dorsal view, pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. *Clypeus* margin unmodified, straight in front view, low, ALE separated from edge of carapace by less than their radius; setae

dark. *Eyes:* ALE largest, ALE circular, PME oval, PLE oval; posterior eye row procurved from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, pale orange, uniform; setae light, evenly scattered. Chelicerae, endites, and labium pale orange. Chelicerae straight, anterior face unmodified; fang shape normal, with prominent medial process; setae light; promargin with one larger denticle. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization. Endites anteromedian tip with one strong, toothlike projection, same as sternum in sclerotization. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers round. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale



Map 6. Map of northeastern Queensland, central Wet Tropics Bioregion, showing recorded distributions of *Ischnothyreus ker* (□), *I. binorbis* (⊙), *I. boonjee* (+) and *I. corniculatum* (●). Wet Tropics upland subregions outlined in grey (see map 1).

orange, covering about 2/3 of abdominal length. Dorsum, epigastric area, and post-epigastric area setae light. LEGS: White, without color pattern; patella plus tibia I nearly as long as carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus light; femur one to two times as long as trochanter, without posteriorly rounded lateral dilation; patella shorter than femur; cymbium dark red-brown, without distal patch of setae; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region obtusely bent, slightly bent back toward

cymbium, distal tip curved anteriorly, darkened apparent embolus opening positioned distal to thin conductor.

FEMALE (PBI_OON 25753, figs. 27 D-F, I, 28E). Total length 1.50. CEPHALOTHORAX: Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, only around epigastric furrow. LEGS: Yellow; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Ventral view: epigynal atrium slightly wider than high, jelly-bean shaped, lateral edges rounded, heavily sclerotized processes absent;

convoluted duct thicker than apodemes, faint but visible lines running down each side of the convoluted duct (figs. 27I, 28E).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** Bellenden Ker Range, 0.5 km S Cable tower 7, rainforest, 500 m, 17.26667°S, 145.85000°E, Nov. 1–7, 1981 (EARTHWATCH/Qld Museum, QM S27626, PBI_OON 25930), 1 ♂; Bellenden Ker Range, cable tower 3, rainforest, leaf litter, 1054 m, 17.26667°S, 145.85000°E, Oct. 17–24, 1981 (EARTHWATCH/Qld Museum, QM S27896, PBI_OON 22156), 2 ♂, 1 ♀; Bellenden Ker Range, Centre Peak Summit, rainforest, leaf litter, 1560 m, 17.26667°S, 145.85000°E, Oct. 23, 1980 (G. Monteith, QM S12999, PBI_OON 25805), 1 ♂; Bellenden Ker Range, summit TV Station, rainforest, leaf litter, 1560 m, 17.25883°S, 145.85480°E, Dec. 1, 1998 (G. Monteith, QM S78698, PBI_OON 7143), 1 ♀; Bellenden Ker Range, summit TV Station, rainforest, 1560 m, 17.25883°S, 145.85480°E, Nov. 1, 1981 (EARTHWATCH/Qld Museum, QM S27849, PBI_OON 22148), 1 ♀; Bellenden Ker Range, summit TV Station, rainforest, leaf litter, 1560 m, 17.25883°S, 145.85480°E, Oct. 25, 1981 (EARTHWATCH/Qld Museum, QM S27850, PBI_OON 22149), 1 ♀; Bellenden Ker Range, Summit TV Station, rainforest, leaf litter, 1560 m, 17.26667°S, 145.85000°E, Apr. 29–May 2, 1983 (G. Monteith, D. Yeates, QM S16016, PBI_OON 25801), 1 ♂; Bellenden Ker Range, Summit TV Station, rainforest, leaf litter, 1560 m, 17.26667°S, 145.85000°E, Apr. 29–May 2, 1983 (G. Monteith, D. Yeates, QM S16172, PBI_OON 25803), 1 ♀; Bellenden Ker Range, Summit TV Station, rainforest, 1560 m, Oct. 1–Dec. 1, 1982 (S. Montague, QM S16092, PBI_OON 25804), 3 ♂, 2 ♀; Mount Bartle Frere, 0.5 km N Sth Peak summit, rainforest, leaf litter, 17.40000°S, 145.81666°E, Nov. 6–8, 1981 (EARTHWATCH/Qld Museum, QM S75931, PBI_OON 22775), 1 ♀; Mount Bartle Frere, Centre Peak Ridge, rainforest, leaf litter, 17.38333°S, 145.81666°E, Nov. 7–8, 1981 (EARTHWATCH/Qld Museum, QM S75930, PBI_OON 22776), 1 ♂; Mount Bartle Frere, Sth Peak summit, rainforest, leaf litter, 17.40000°S, 145.81666°E, Nov. 6–8, 1981 (EARTHWATCH/Qld Museum, QM S75928, PBI_OON 22780), 1 ♂.

DISTRIBUTION: This species is only known from Mount Bartle Frere and Bellenden Ker Range of the Wet Tropics Bioregion (BK subregion), in northeastern Queensland (map 6).

Ischnothyreus binorbis, new species
Figures 29–30, map 6

TYPES: AUSTRALIA: **Queensland:** Male holotype and female allotype from Lamb Range, 19 km SE Mareeba, 17.1°S, 145.5667°E, 1200 m (3 Dec 1988, G. Monteith, G. Thompson), deposited in QM (♂ holotype: QM S38628, PBI_OON 00022047; ♀ allotype: QM S38628, PBI_OON 00025759).

ETYMOLOGY: The specific epithet is derived from the Latin *bi-* (“two”) and *orbis* (“circle”) (Brown, 1956), and refers to paired circular-shaped depressions in the epigynum area of the female.

DIAGNOSIS: This species can be easily identified by the small stub-shaped lateral process positioned medially on the prolateral aspect of the male palpal bulb, the complex embolic region that is split into a number of curved processes, and the lighter orange-brown coloration of the palpal bulb (figs. 29G–H, 30A, B, E). Females exhibit small, circular paired epigynal atriums either side of a very long convoluted duct (figs. 29I, 30F).

MALE (PBI_OON_00022047, figs. 29A–C, G–H, 30A–E). Total length 1.38. **CEPHALOTHORAX:** *Carapace* pale orange, broadly oval in dorsal view, pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica smooth, sides finely reticulate. *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae light. *Eyes:* ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE–PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark, evenly scattered. Chelicerae, endites, and labium dark red-brown, chelicerae pale. Chelicerae straight, anterior face unmodified; promargin with one larger denticle; fang shape normal,

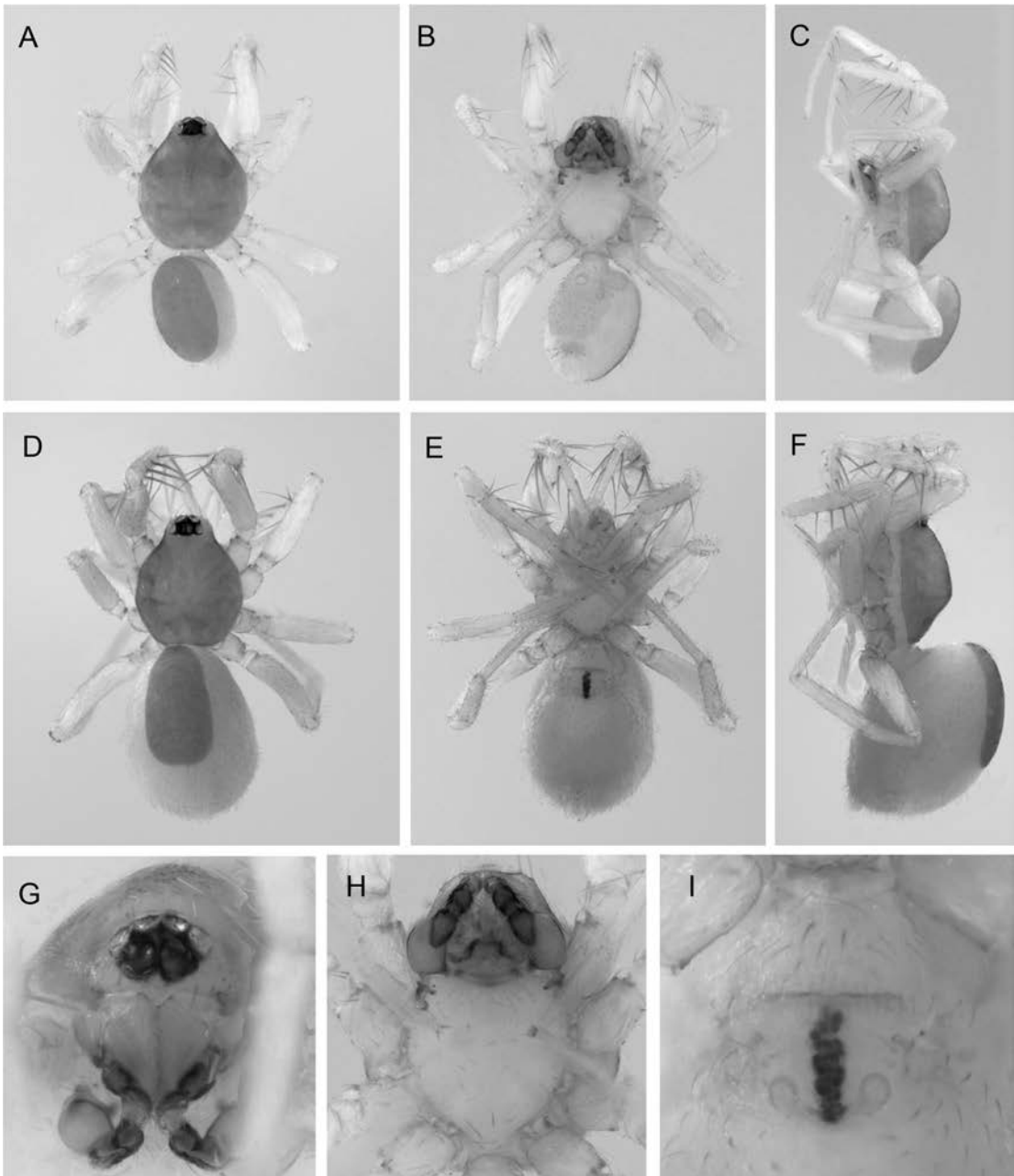


Fig. 29. *Ischnothyreus binorbis*, sp. nov. Holotype male (PBI_OON 00022047): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00025759): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

without prominent basal process; setae light. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, much more heavily sclerotized than sternum;

with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, much more heavily sclerotized than sternum. ABDOMEN:

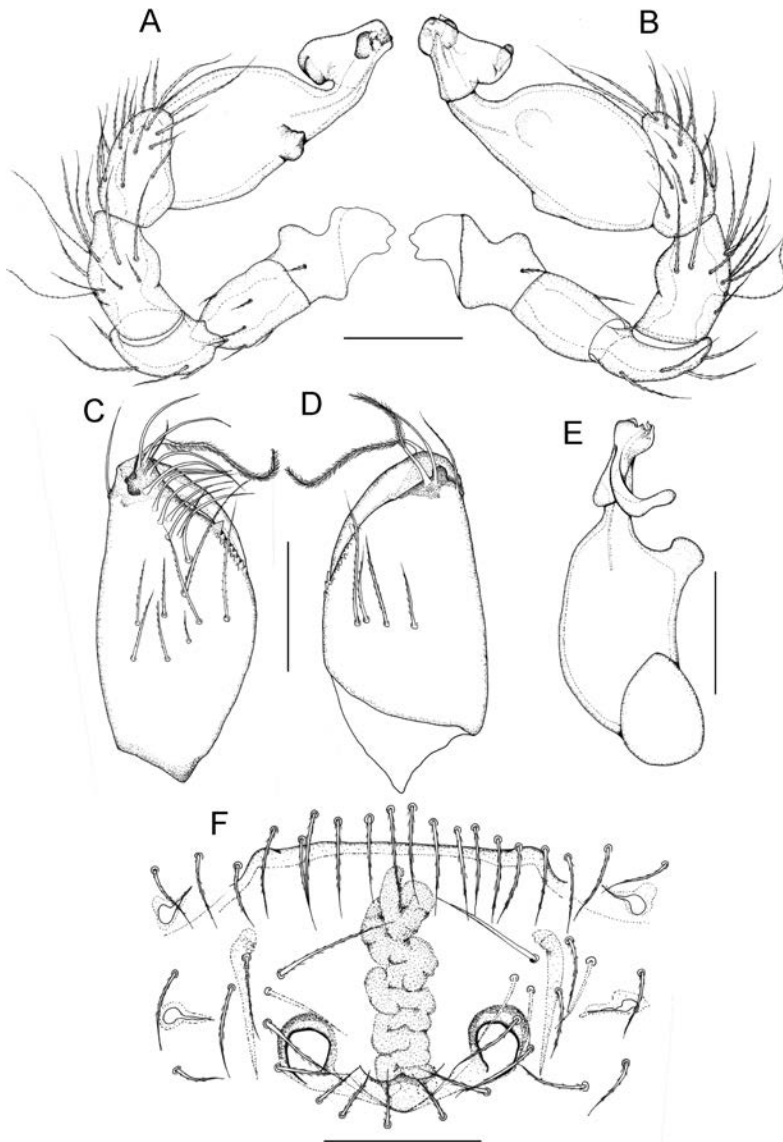


Fig. 30. *Ischnothyreus binorbis*, sp. nov. Holotype male (PBI_OON 00022047): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00025759): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, no soft tissue visible from above, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites present. Post-epigastric scutum pale orange, covering about 3/4 of abdominal length. Dorsum, epigastric area, and postepigastric area setae

dark. LEGS: Yellow, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella shorter than femur; cymbium dark red-brown; bulb orange-brown, 1 to 1.5 times as long as cymbium,

stout; palpal bulb with small stub-shaped lateral process positioned medially on pro-lateral aspect; embolic region complex, split into number of stout and curved processes (fig. 30A, B).

FEMALE (PBI_OON 25759, figs. 29D–F, I, 30F). Total length 1.68. **CEPHALOTHORAX**: *Carapace* nonmarginal pars cephalica setae dark. *Clypeus* straight in front view. **ABDOMEN**: Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, only around epigastric furrow. **LEGS**: Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA**: Ventral view: epigynal atrium paired, small and circular, sclerotization heavier on anterior portion; convoluted duct very long, much thicker than apodemes (figs. 29I, 30F).

OTHER MATERIAL EXAMINED: **AUSTRALIA**: **Queensland**: Lamb Range, 19 km SE Mareeba, 1200 m, 17.10000°S, 145.56670°E, Dec. 3, 1988 (G. Monteith, G. Thompson, QM S58039, PBI_OON 22167), 1 ♀; Lamb's Head, 20 km SW Cairns, rainforest, leaf litter, 1200 m, 17.03333°S, 145.65000°E, Nov. 10, 1981 (G. Monteith, QM S78312, PBI_OON 20628), 1 ♀; Lambs Head, 10 km W Edmonton, 1200 m, 17.03333°S, 145.65000°E, Dec. 10, 1989, to Jan. 08, 1990 (G. Monteith, G. Thompson, H. Janetzki, QM S58166, PBI_OON 22084), 5 ♂; Mount Haig, 1000 m, 17.09833°S, 145.60170°E, Feb. 25, 1997 (G. Monteith, QM S37497, PBI_OON 21749), 2 ♂, 3 ♀.

DISTRIBUTION: This species is known only from the Lamb Uplands (LU) subregion of the Wet Tropics Bioregion, in northeastern Queensland (map 6).

Ischnothyreus boonjee, new species

Figures 31–32, map 6

TYPES: **AUSTRALIA**: **Queensland**: Male holotype from Boonjee State Forest, 17.4°S, 145.7333°E, 700 m (3–6 Apr. 1978, R. Raven, V. Davies), deposited in QM (S16143, PBI_OON 00025964). Female allotype from Boonjee, 13 km ESE Malanda, 17.41666°S, 145.75°E, 700 m (8 Dec. 1988, G. Monteith, G. Thompson), deposited in QM (S58089, PBI_OON 00022176).

ETYMOLOGY: The specific epithet is a noun in apposition, taken from the type locality.

DIAGNOSIS: This species can easily be distinguished by the striking modifications of the embolic region of the male pedipalp, which is extremely large, split into numerous structures, and triangular in shape dorsally (figs. 31F, 32A, B, E). The female epigynal region is similar to that of *I. digitus*, sp. nov., but differs in an extremely elongate, vase-shaped epigynal atrium, and the duct is always convoluted (figs. 31D, 32F).

MALE (PBI_OON 25964, figs. 31E, F, 32A–E). Total length 1.58. **CEPHALOTHORAX**: *Carapace* pale orange, ovoid in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes*: ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark, evenly scattered. Chelicerae, endites, and labium dark red-brown. Chelicerae slightly divergent, anterior face unmodified; promargin with one larger denticle; fang shape normal, without prominent basal process; setae light. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, much more heavily sclerotized than sternum; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, much more heavily sclerotized than sternum. **ABDOMEN**: Ovoid; dorsum soft portions white. Book lung covers ovoid. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale orange, covering about 2/3 of abdominal length. Dorsum, epigastric area, and post-epigastric area setae dark. **LEGS**: Yellow, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora:

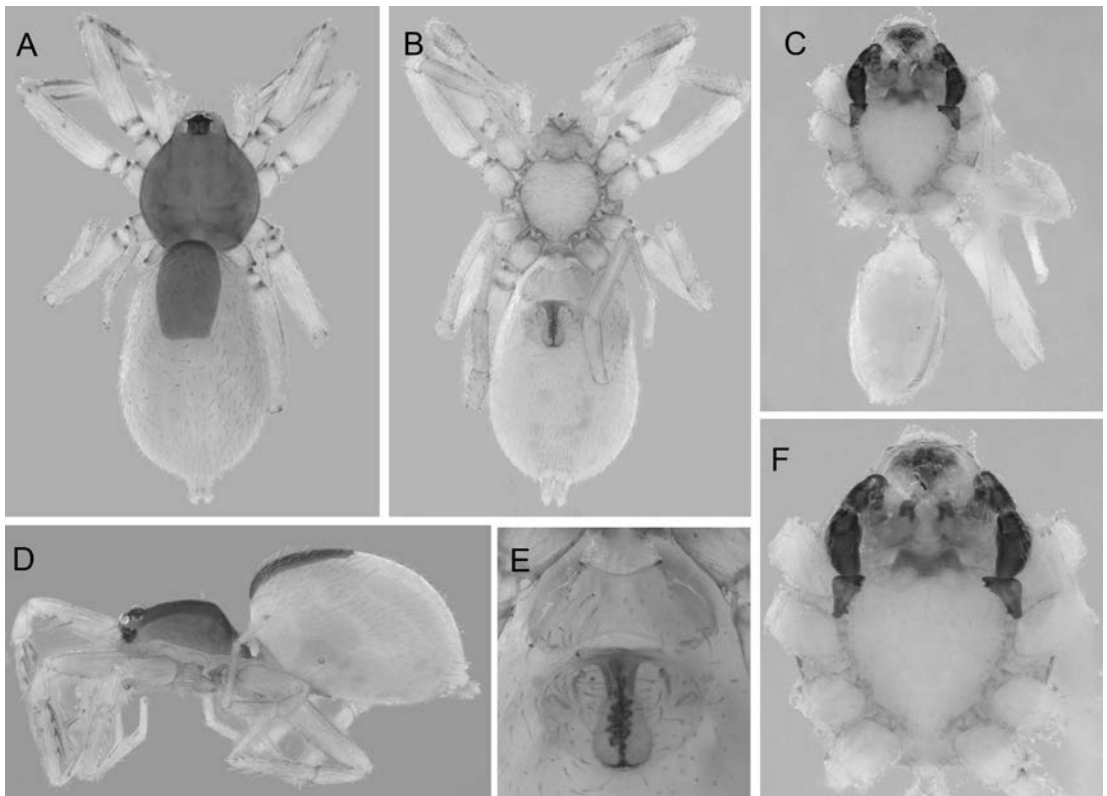


Fig. 31. *Ischnothyreus boonjee*, sp. nov. Allotype female (PBI_OON 00022176): A. habitus, dorsal view; B. habitus, ventral view; C. habitus, lateral view; D. epigynum, ventral view. Holotype male (PBI_OON 00025964): E. habitus, ventral view; F. sternum, ventral view.

I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella about as long as femur; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, palpal bulb slender; embolic region extremely enlarged, split into numerous structures, triangular in dorsal view (figs. 31F, 32E).

FEMALE (PBI_OON 22176, figs. 31A–D, 32F). Total length 2.01. **CEPHALOTHORAX:** *Carapace* pars cephalica slightly elevated in lateral view. *Sternum* as long as wide. Chelicerae, endites, and labium pale orange. Chelicerae straight. **ABDOMEN:** Dorsal scutum covering less than 1/2 of abdomen, between 1/4 and 1/2 abdomen width. Epigastric scutum small lateral sclerites present. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length.

LEGS: Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Ventral view: epigynal atrium extremely elongate, vase shaped, anterior portion with necklike indents; convoluted duct thicker than apodemes, convoluted along entire length (figs. 31D, 32F).

OTHER MATERIAL EXAMINED: **AUSTRALIA:** **Queensland:** 6 km E of Butchers Creek School, rainforest, leaf litter, 720 m, 17.36666°S, 145.68330°E, Oct. 9, 1980 (G. Monteith, QM S12992, PBI_OON 25761), 2 ♀; Boonjee SF, 700 m, 17.40000°S, 145.73330°E, Apr. 3–6, 1978 (R. Raven, V. Davies, QM S16143, PBI_OON 25758), 2 ♀; Boonjee, nr Malanda, rainforest, 700 m, 17.40000°S, 145.73330°E, Dec. 8, 1988 (G. Monteith, G. Thompson, QM S58088, PBI_OON 25937), 1 ♂; Wooroonooran National Park, Mount Bartle Frere, western side on track to summit, rainforest, leaf litter, 1000 m,

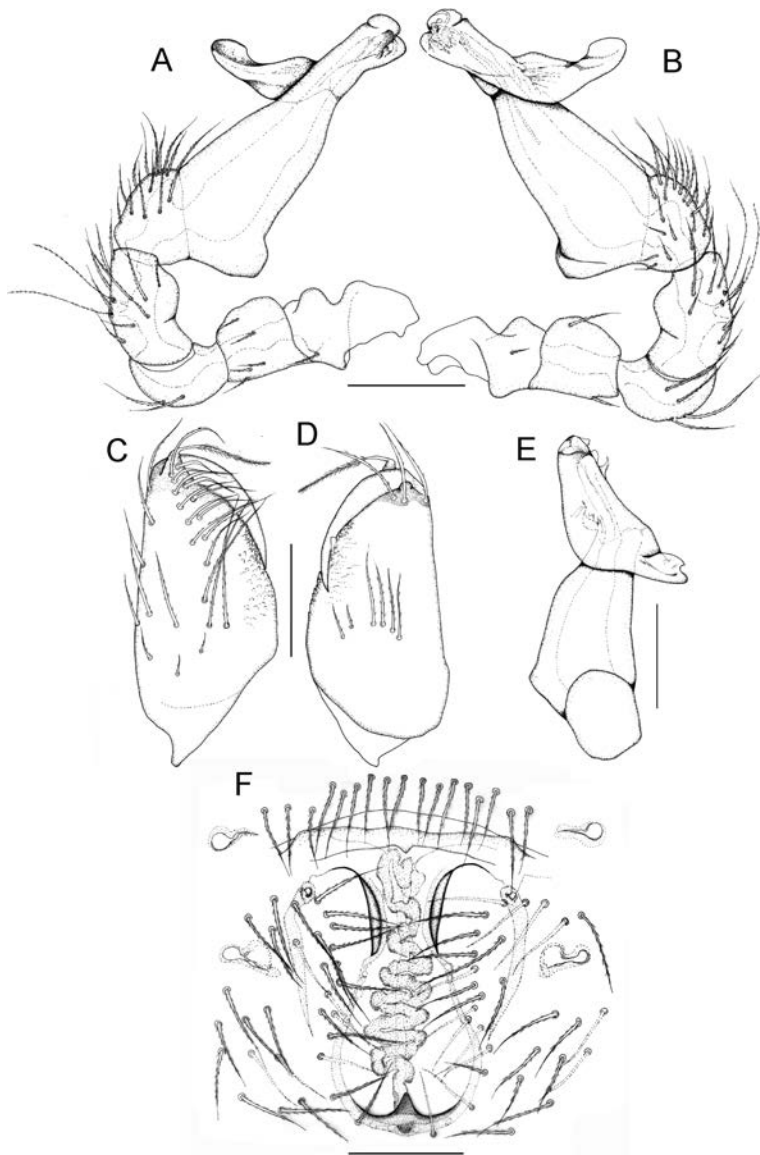


Fig. 32. *Ischnothyreus boonjee*, sp. nov. Holotype male (PBI_OON 00025964): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00022176): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

17.37833°S, 145.785778°E, Apr. 23, 2009 (H. Wood, CASENT 9035057, PBI_OON 5632), 4 ♀; Wooroonooran National Park, Mount Bartle Frere, western side on track to summit, rainforest, leaf litter, 1000 m, 17.37833°S, 145.785778°E, Apr. 23, 2009 (H. Wood, CASENT 9035058, PBI_OON 5634), 1 ♂, 2 ♀.

DISTRIBUTION: This species is known only from the eastern region of the Atherton

Tableland and Mount Bartle Frere (AU and BK subregions), of the Wet Tropics Bioregion, in northeastern Queensland (map 6).

Ischnothyreus crenulatus, new species
Figures 33–42, map 7

TYPES: AUSTRALIA: **Queensland:** Male holotype and female allotype from Mount

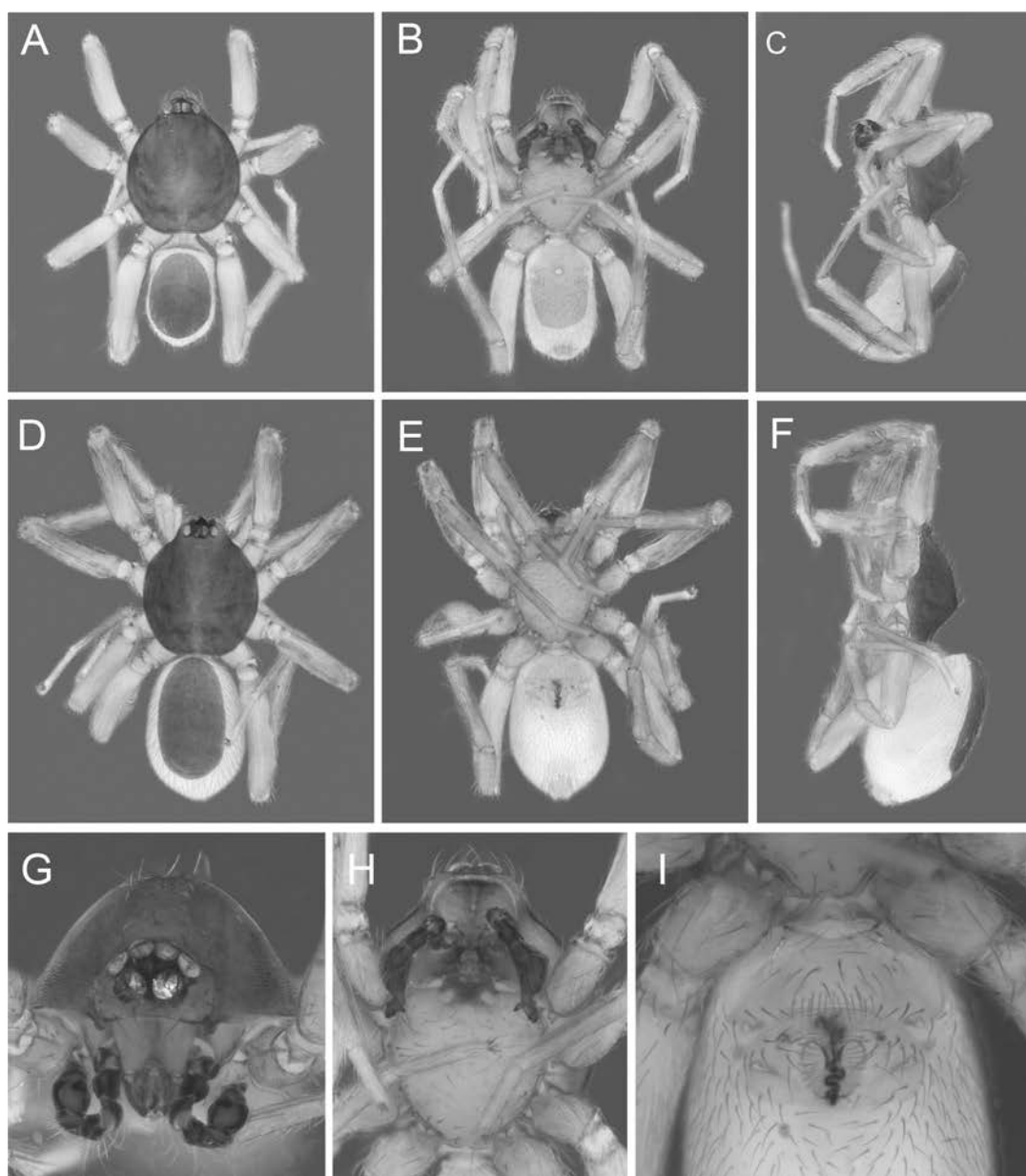


Fig. 33. *Ischnothyreus crenulatus*, sp. nov. Holotype male (PBI_OON 00025966): **A**. habitus, dorsal view; **B**. habitus, ventral view; **C**. habitus, lateral view; **G**. carapace, anterior view; **H**. sternum, ventral view. Allotype female (PBI_OON 00025754): **D**. habitus, dorsal view; **E**. habitus, ventral view; **F**. habitus, lateral view; **I**. epigynum, ventral view.

Hypipamee National Park, 17.43333°S, 145.4833°E, 950 m (5 Oct 1980, G. Monteith), deposited in QM (♂ holotype: QM S95937, PBI_OON 00025966; ♀ allotype: QM S95938, PBI_OON 00025754).

ETYMOLOGY: The specific epithet is derived from the Latin *crenala* meaning “little rounded projection” (Brown, 1956), and refers to the stout digitiform subdistal projection on the male palpal bulb.

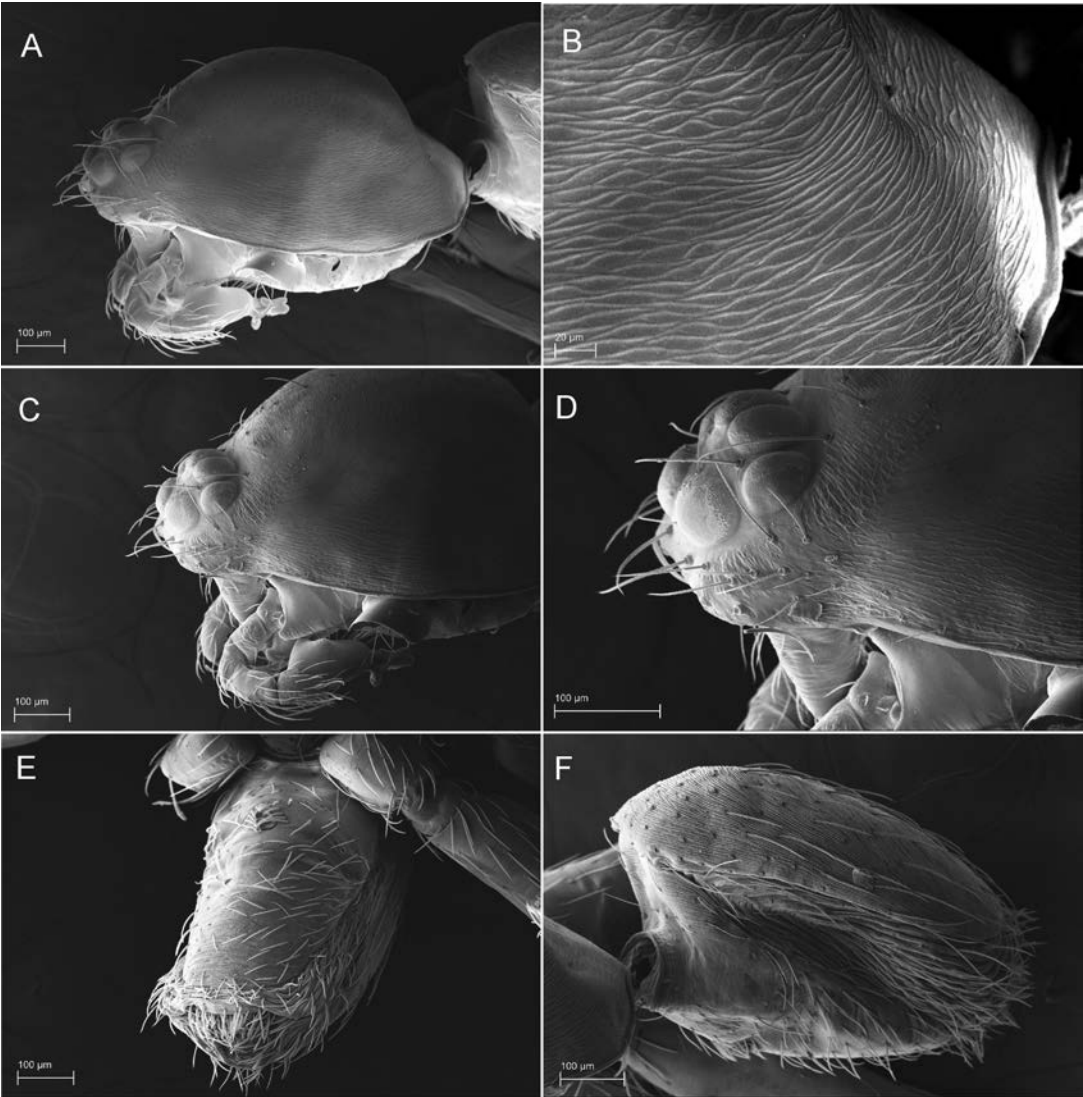


Fig. 34. Scanning electron micrographs of *Ischnothyreus crenulatus*, sp. nov. Paratype male (PBI_OON 00005563): **A.** carapace, lateral view; **B.** carapace, close-up of reticulate surface structure; **C.** carapace, lateral view; **D.** eyes and clypeus, lateral view; **E.** abdomen, ventral view; **F.** abdomen, lateral view.

DIAGNOSIS: The male of this species exhibits heavily sclerotized labium and endites (fig. 33H) and can be distinguished from other species by the presence of a subdistal modification that is divided into two, with a digitiform process projected laterally (figs. 33H, 42A, B, E). The epigynal atrium of the female appears heart shaped and the depressions almost in the shape of wings either side of medial extension of the cuticle (figs. 33I, 42).

MALE (PBI_OON 25966, figs. 33A–C, G–H, 42A–E; paratype ♂, figs. 34, 36–38A–D, 39B–F, 40C–F, 41C–F). Total length 1.56. **CEPHALOTHORAX:** *Carapace* pale orange–olive brown, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view (fig. 34A), anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners with slightly sclerotized triangular projections, surface of elevated portion of

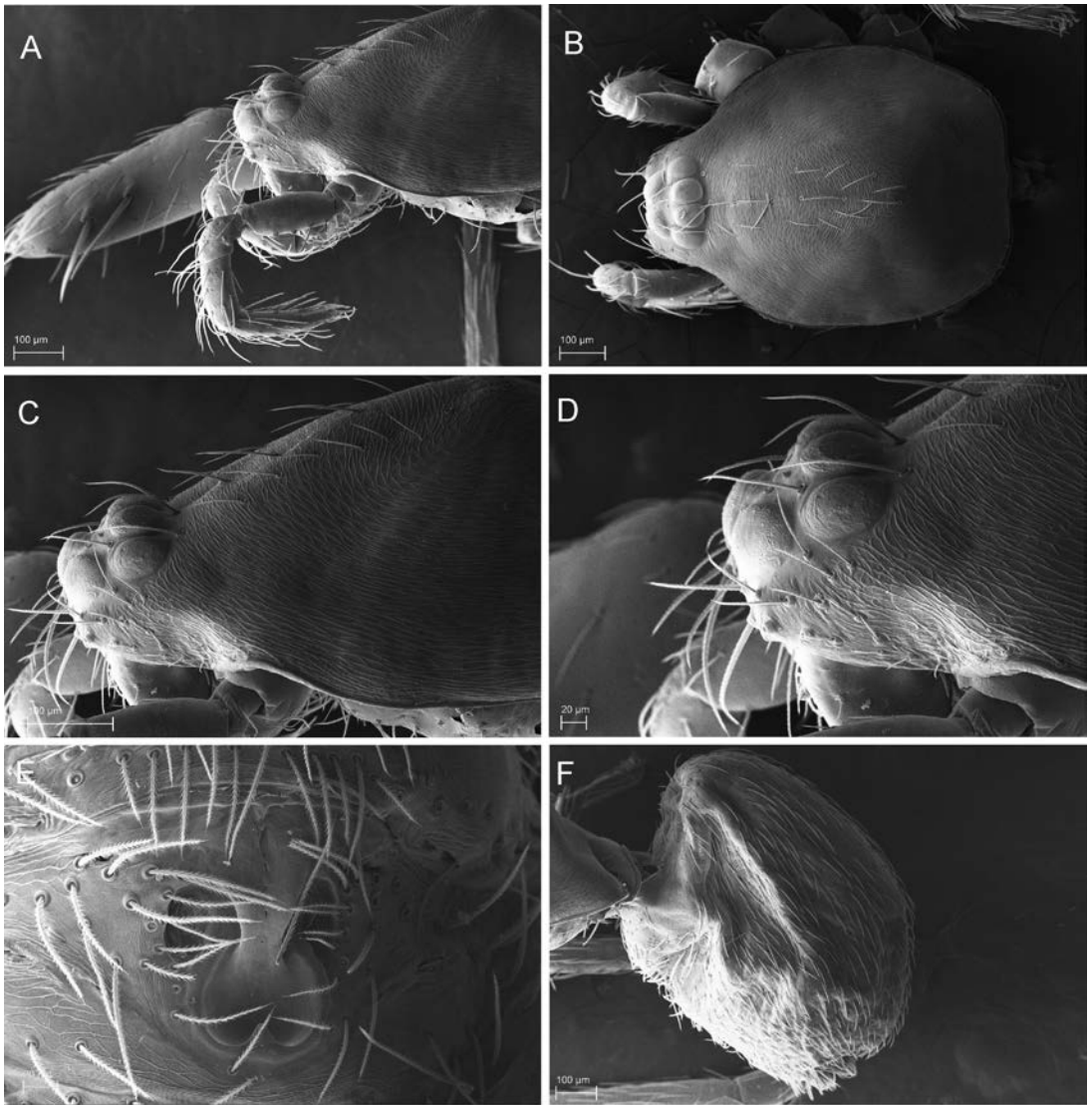


Fig. 35. Scanning electron micrographs of *Ischnothyreus crenulatus*, sp. nov. Paratype female (PBI_OON 00005563): **A.** carapace, lateral view; **B.** carapace, dorsal view; **C.** carapace, lateral view; **D.** eyes and clypeus, lateral view; **E.** epigynum, ventral view; **F.** abdomen, lateral view.

pars cephalica finely reticulate, sides strongly reticulate (fig. 34B). *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius (fig. 34D); setae light. *Eyes*: ALE largest, ALE circular, PME circular, PLE oval; posterior eye row straight from above; ALE touching, ALE-PLE touching. *Sternum* as long as wide, pale orange, darker anteriorly near labium forming unique shape,

the base of which has large patch of 26 fine setae (fig. 33H); setae dark, evenly scattered. Chelicerae, endites, and labium dark red-brown. Chelicerae slightly divergent, anterior face unmodified; promargin with one or two larger denticles; fang normal, without prominent basal process (fig. 37A–D); setae dark. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, much more heavily sclerotized than

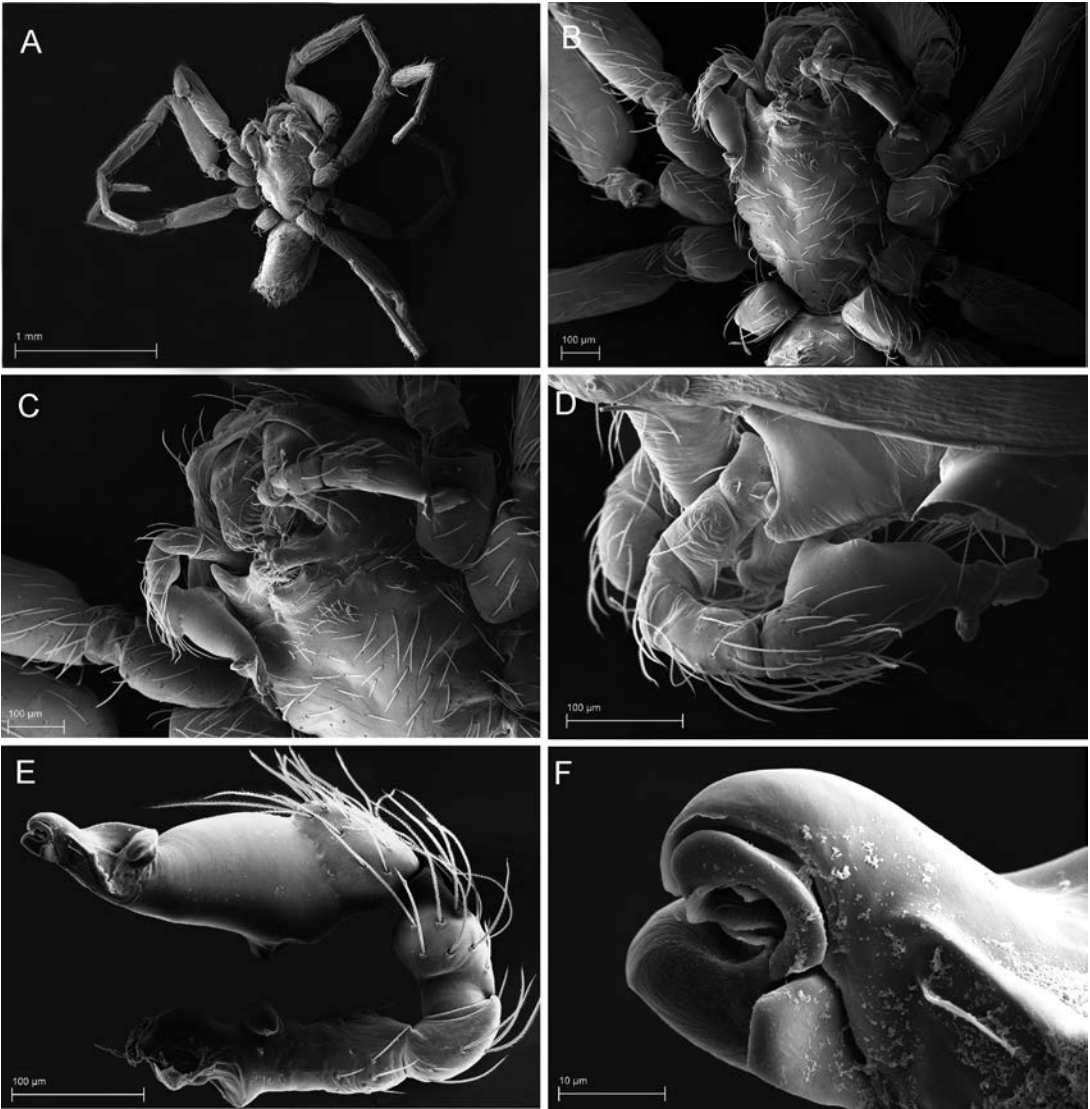


Fig. 36. Scanning electron micrographs of *Ischnothyreus crenulatus*, sp. nov. Paratype male (PBI_OON 00026314): **A.** habitus, ventral view; **B.** sternum, ventral view; **C.** sternum, close-up of mouthparts; **D.** carapace, lateral view, close-up of palps; **E.** right palp, prolateral view; **F.** right palp, close-up of embolus, prolateral view.

sternum; with six or more setae on anterior margin (figs. 36B, C, 37E). Endites antero-medial tip with one strong, toothlike projection, much more heavily sclerotized than sternum. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange to olive brown, covering more than 3/4 of abdomen, more than 1/2 to most of abdo-

men width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale orange, covering about 3/4 of abdominal length. Dorsum, epigastric area, and post-epigastric area setae dark. **LEGS:** Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0;

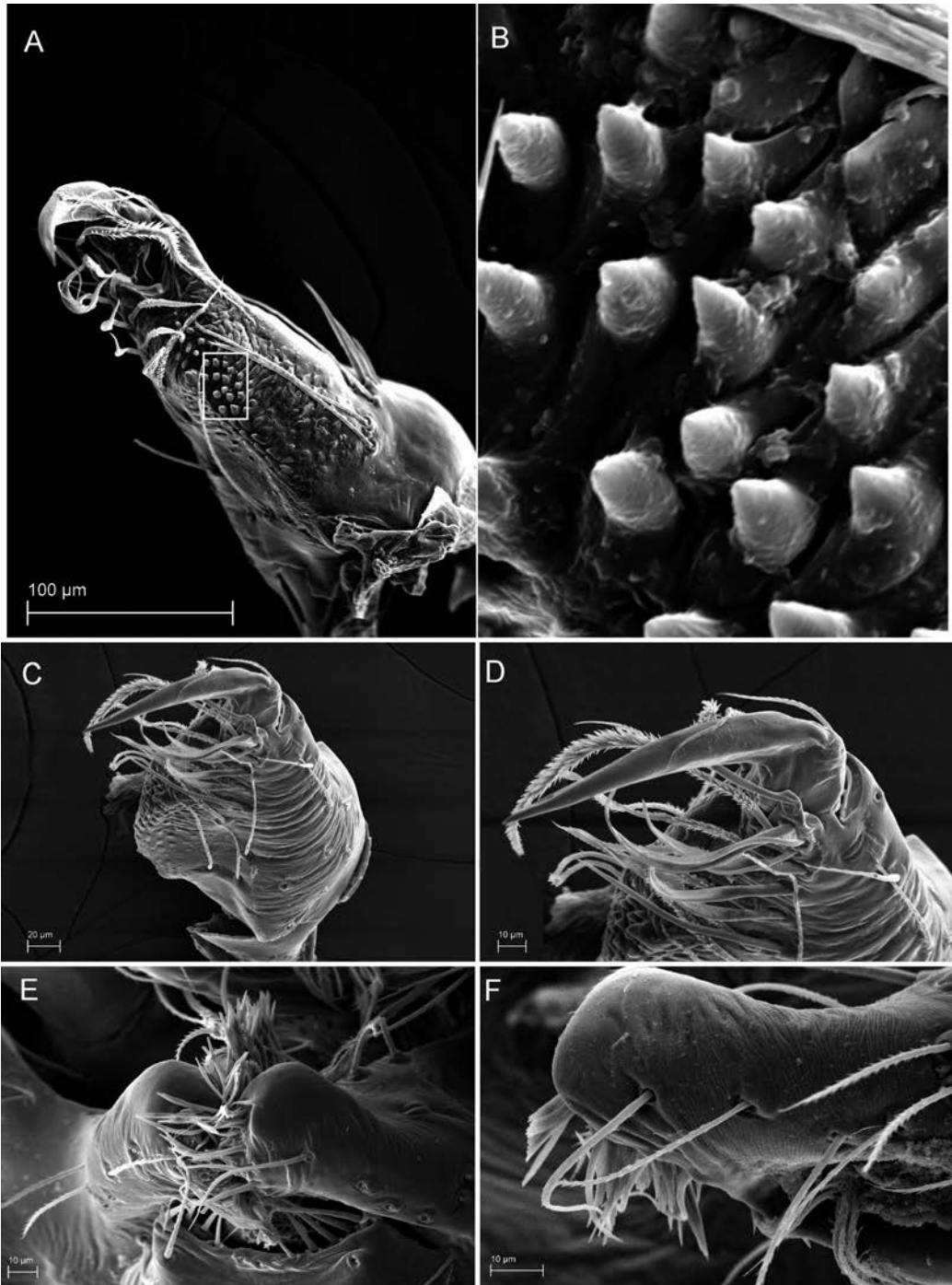


Fig. 37. Scanning electron micrographs of *Ischnothyreus crenulatus*, sp. nov. Paratype male (PBI_OON 00026314): **A.** chelicera, prolateral view; **B.** chelicera, ventral view, close-up of denticles; **C.** chelicera, dorsal view; **D.** chelicera, dorsal view, showing close-up of unmodified fang; **E.** endites and labium, ventral view; **F.** endite, close-up of distal tip.

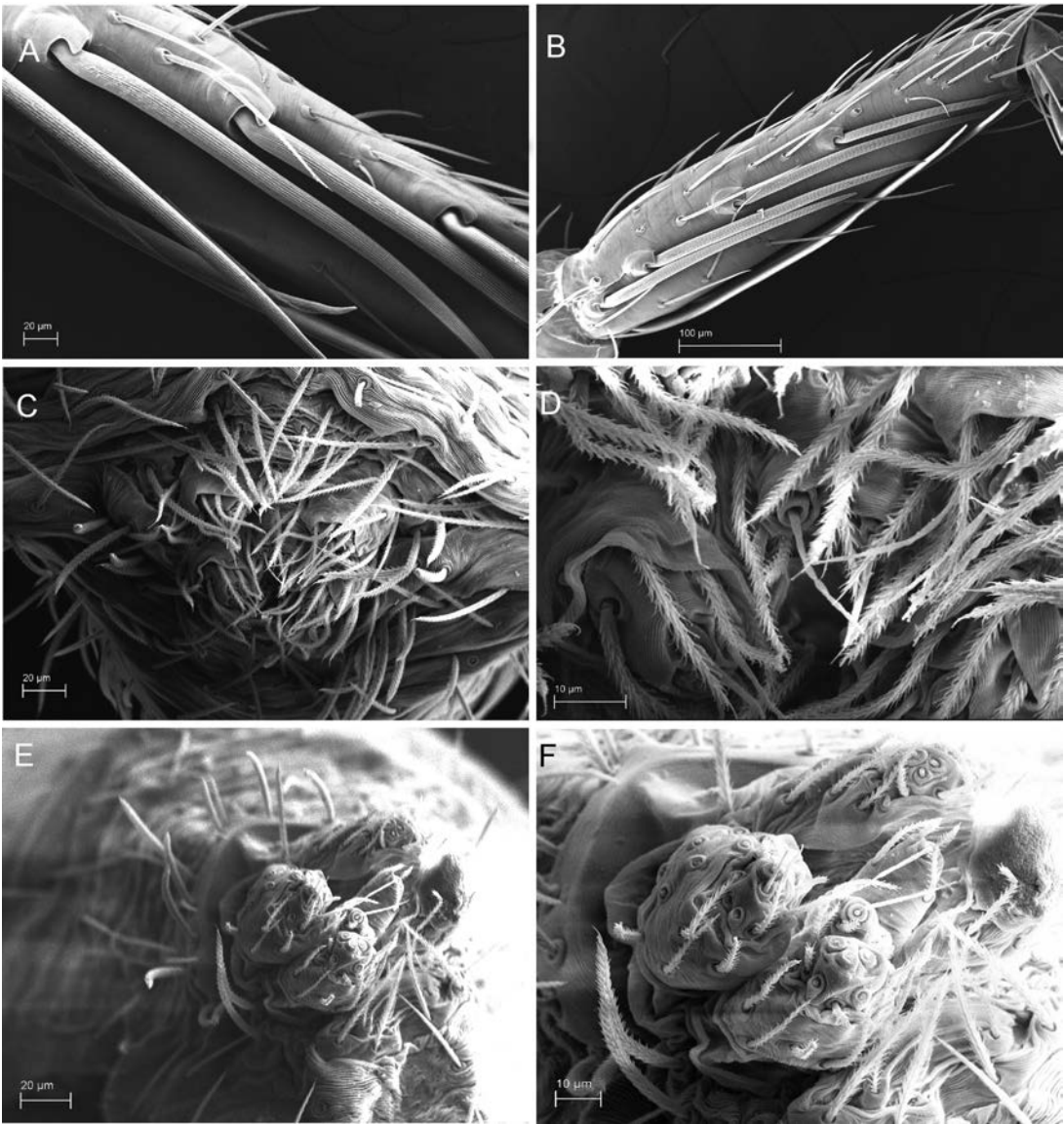


Fig. 38. Scanning electron micrographs of *Ischnothyreus crenulatus*, sp. nov. Paratype male (PBI_OON 0005563): **A.** tibia of leg I, spines, prolateral view; **B.** tibia of Leg I spines, prolateral view; **C.** spinnerets, posterior view; **D.** same, close-up; Paratype female (PBI_OON 0005563): **E.** spinnerets, posterior view; **F.** same, close-up.

v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus dark, femur shorter than trochanter; patella about as long as femur; tibia with three trichobothria; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout, tapering apically; embolic region not obtusely

bent at right angle, with complex modifications, subdistal digitiform process projected laterally (figs. 36E, F, 42A, B, E); apparent embolus opening at distal tip, excavated (fig. 36F). FEMALE (PBI_OON 25754, figs. 33D–F, I, 42F; paratype ♀, figs. 35, 38E, F, 39A, 40A, B, 41A, B). Total length 1.80. CEPHALO-

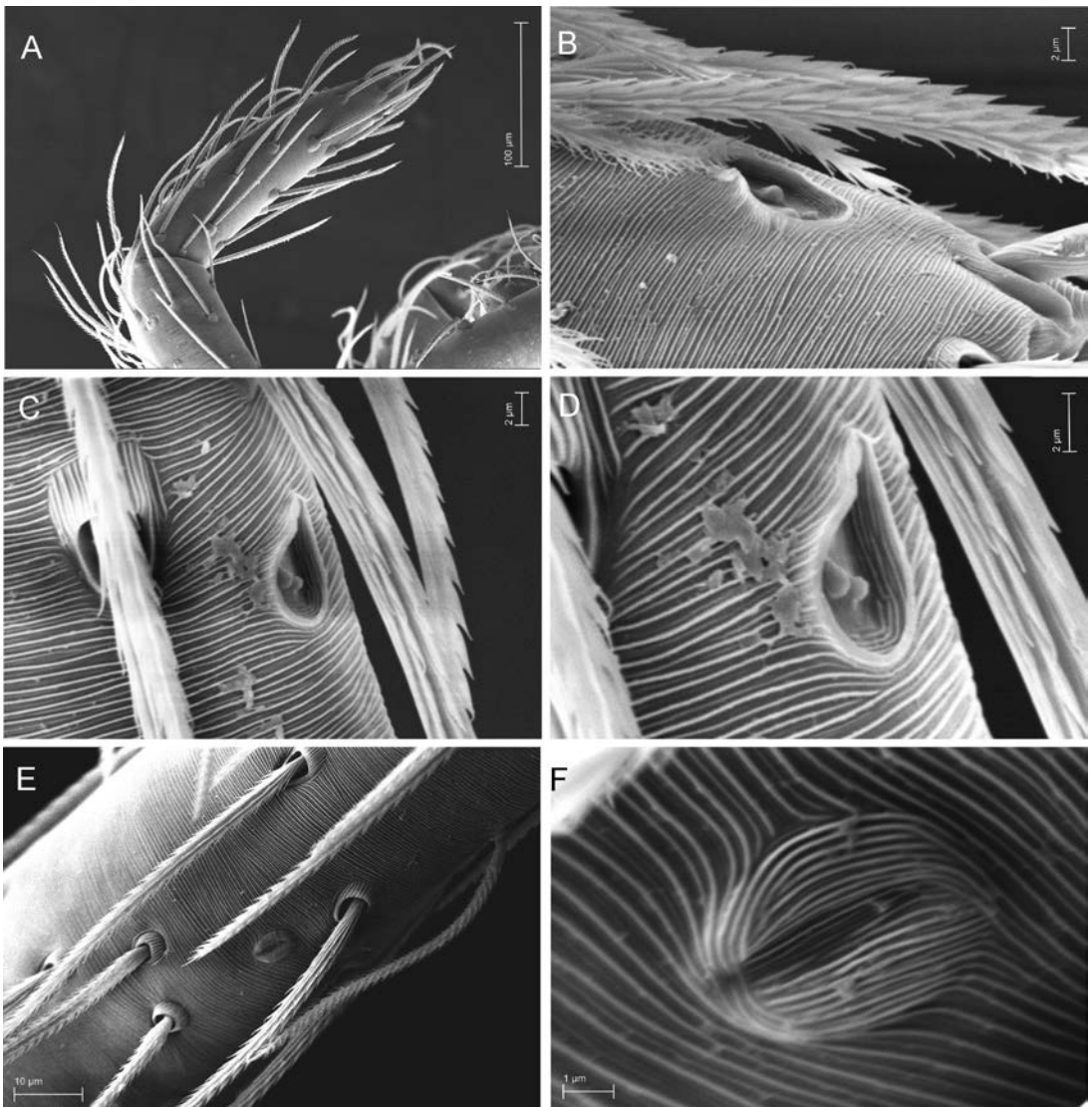


Fig. 39. Scanning electron micrographs of *Ischnothyreus crenulatus*, sp. nov. Paratype female (PBI_OON 0005563): **A.** palp, retrolateral view. Paratype male (PBI_OON 0005563): **B.** tarsal organ from leg I, dorsal view; **C.** tarsal organ from leg IV, dorsal view; **D.** same, close-up. Paratype male (PBI_OON 00026314): **E.** slit sensilla from leg IV, dorsal view; **F.** same, close-up.

THORAX: *Carapace* pars cephalica slightly elevated in lateral view. *Sternum* longer than wide. Chelicerae, endites, and labium pale orange. **ABDOMEN:** Epigastric scutum small lateral sclerites present. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. **LEGS:** Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0.

GENITALIA: Ventral view: epigynal atrium heart shaped, depressions almost wing shaped either side of anterior necklike indents; convoluted duct thicker than apodemes (figs. 33I, 42F).

OTHER MATERIAL EXAMINED: **AUSTRALIA:** **Queensland:** 3 km W of Bones Knob, rainforest, 1140 m, 17.23333°S, 145.41670°E, Dec. 10, 1995, to Feb. 09,

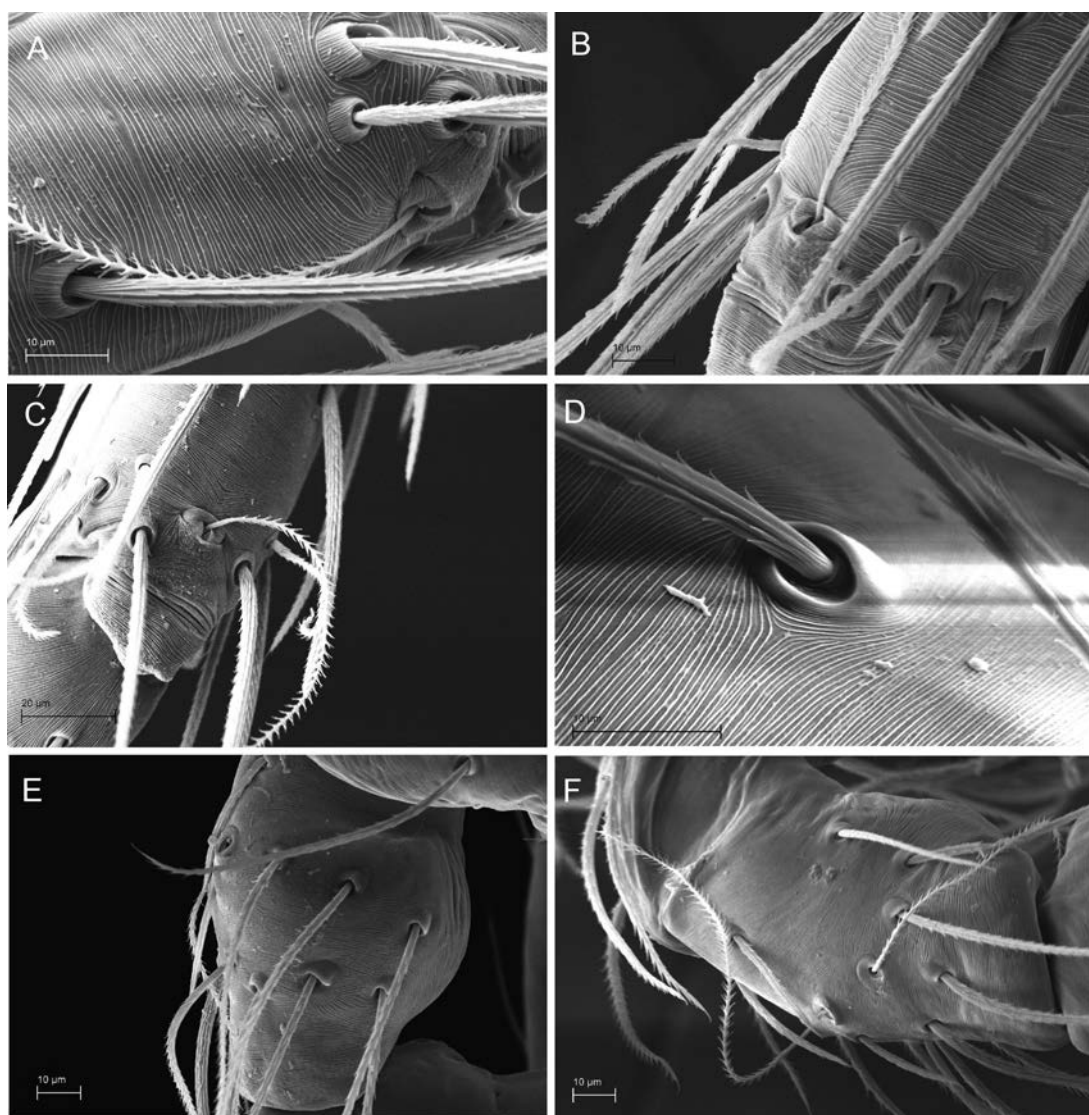


Fig. 40. Scanning electron micrographs of *Ischnothyreus crenulatus*, sp. nov. Paratype female (PBI_OON 0005563): **A.** metatarsus I, dorsal view, showing single distal trichobothrium. **B.** same. Paratype male (PBI_OON 00026314): **C.** metatarsus I, dorsal view, showing single distal trichobothrium. **D.** Base of seta. **E.** Palpal tibia, prolateral view, showing base of one trichobothrium. Paratype male (PBI_OON 00005563), **F.** Palpal tibia, dorsal view, showing two trichobothria.

1996 (G. Monteith, D. Cook, G. Thompson, QM S43353, PBI_OON 21793), 1 ♂; Baldy Mountain, SW. of Atherton, rainforest, leaf litter, 1200 m, 17.26666°S, 145.41666°E, Oct. 10, 1980 (G. Monteith, QM S12956, PBI_OON 25792), 1 ♂, 3 ♀; Baldy Mountain, SW. of Atherton, rainforest, leaf litter, 1200 m, 17.26666°S, 145.41666°E, Oct. 10,

1980 (G. Monteith, QM S12966, PBI_OON 25795), 1 ♂, 1 ♀; Baldy Mountain Road, SW Atherton, rainforest, leaf litter, 1150 m, 17.26667°S, 145.41670°E, Dec. 9, 1988 (G. Monteith, G. Thompson, QM S59270, PBI_OON 22130), 1 ♂, 2 ♀; Boonjee, near Malanda, rainforest, leaf litter, 700 m, 17.40000°S, 145.73330°E, Dec. 8, 1988 (G.

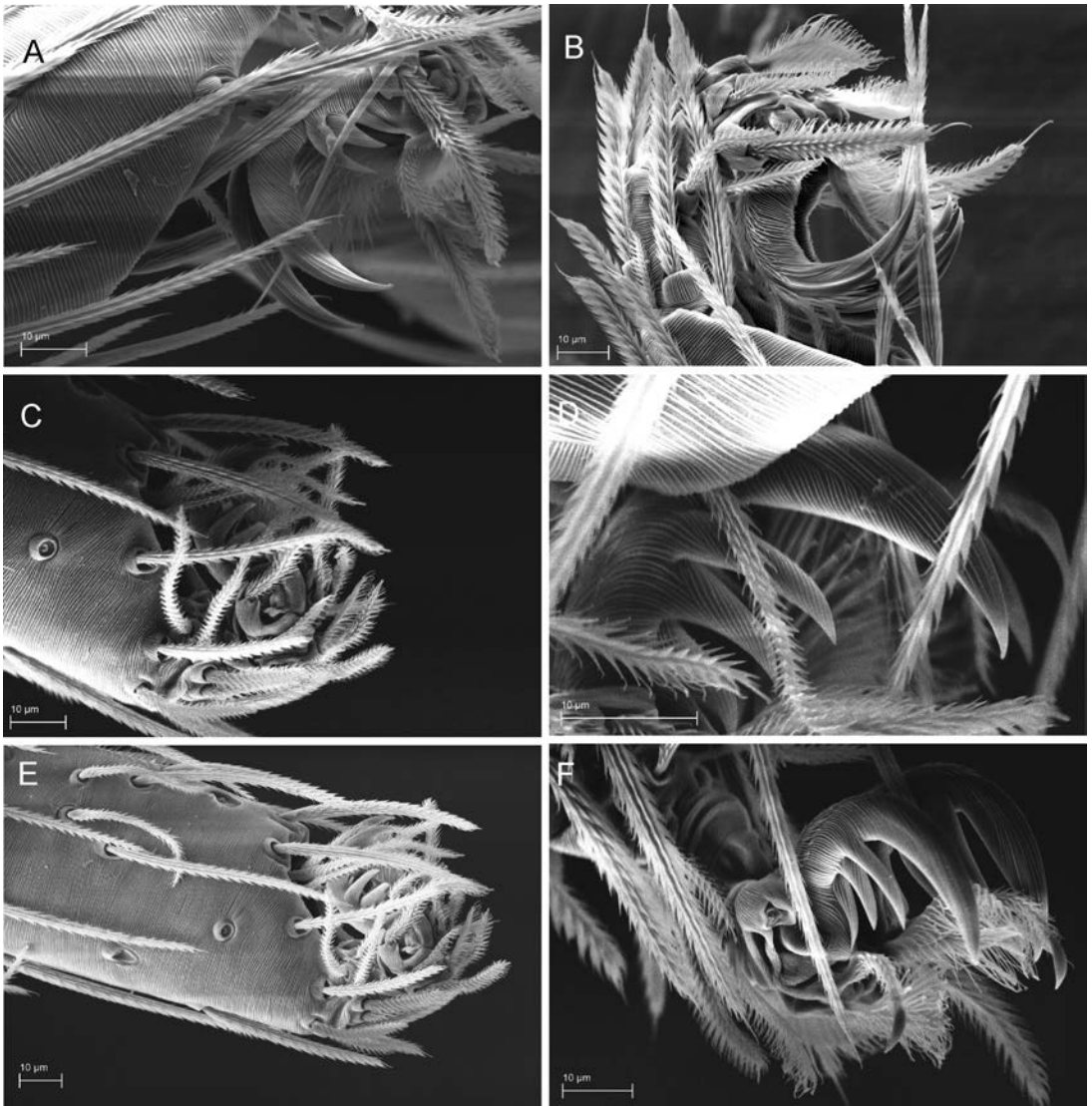


Fig. 41. Scanning electron micrographs of *Ischnothyreus crenulatus*, sp. nov. Paratype female (PBI_OON 0005563): **A**. tarsal claws, leg III, lateral view; **B**. tarsal claws, leg IV, lateral view. Paratype male (PBI_OON 00005563): **C**. tarsal claws, leg I, lateral view; **D**. tarsal claws, leg III, close-up of teeth; **E**. tarsus, leg I, showing claws and tarsal organ; **F**. tarsal claws, leg IV.

Monteith, G. Thompson, QM S58088, PBI_OON 25938), 1 ♂; Evelyn River, SE Herberton, rainforest, leaf litter, 17.53333°S, 145.33333°E, Aug. 29, 1977 (A. Walford-Huggins, ANIC, PBI_OON 25787), 1 ♂, 2 ♀; Herberton Range State Forest, Forestry track, rainforest, leaf litter, 17.27111°S, 145.42277°E, Apr. 23, 2009 (K. Edward and P. Cullen, QM S95939, PBI_OON 5536), 1 ♂; Herberton Range State Forest, Forestry

track, rainforest, leaf litter, 17.28805°S, 145.42138°E, Apr. 24, 2009 (K. Edward and P. Cullen, QM S95940, PBI_OON 5563), 2 ♂, 2 ♀; Herberton Range State Forest, Forestry track, rainforest, leaf litter, 17.28805°S, 145.42722°E, Apr. 24, 2009 (K. Edward and P. Cullen, QM S95941, PBI_OON 26314), 3 ♂, 1 ♀; same data (WAM T130761), 2 ♂, 1 ♀; Lake Barrine, rainforest, leaf litter, 750 m, 17.25000°S, 145.63330°E, Oct. 4, 1980 (G.

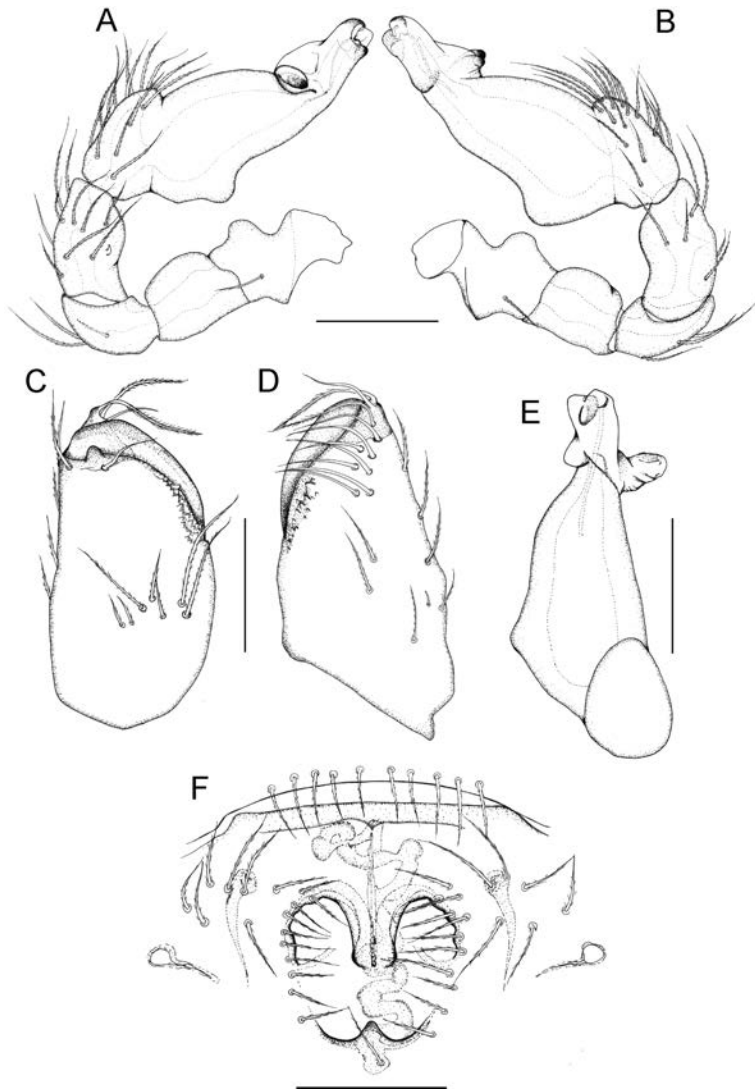
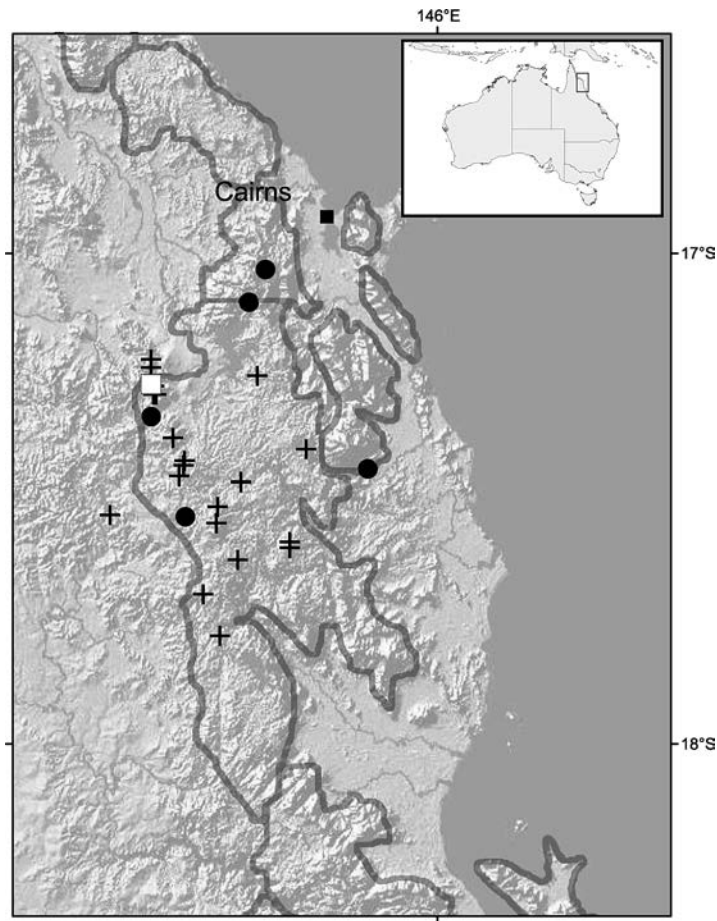


Fig. 42. *Ischnothyreus crenulatus*, sp. nov. Holotype male (PBI_OON 00025966): **A**. left palp, prolateral view; **B**. left palp, retrolateral view; **C**. left chelicerae, anterior view; **D**. left chelicerae, posterior view; **E**. left palp, dorsal view. Allotype female (PBI_OON 00025754): **F**. epigynum, ventral view. Scale lines = 0.1 mm.

Monteith, QM S12973, PBI_OON 25790), 1 ♂, 1 ♀; Lake Barrine, rainforest, leaf litter, 750 m, 17.25000°S, 145.63330°E, Oct. 8, 1980 (G. Monteith, QM S12960, PBI_OON 25794), 2 ♀; Longlands Gap State Forest, forest, 17.45500°S, 145.47420°E, July 23–Nov. 26, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S19940, PBI_OON 21966), 7 ♂, 1 ♀; Maalan Road, 1.5 km S Palmerston highway, rainforest, leaf litter,

750 m, 17.60000°S, 145.70000°E, Nov. 26, 1994 (G. Monteith, QM S46946, PBI_OON 21780), 1 ♀; Maalan Road, 2 km S Palmerston highway, rainforest, 750 m, 17.60000°S, 145.70000°E, Nov. 26, 1994, to Jan. 10, 1995 (G. Monteith, J. Hasenpusch, QM S32437, PBI_OON 22061), 2 ♂, 1 ♀; Millaa Millaa Falls, rainforest, leaf litter, 800 m, 17.46667°S, 145.60000°E, May 17, 1995 (G. Monteith, QM S43871, PBI_OON 22025), 2



Map 7. Map of northeastern Queensland, central Wet Tropics Bioregion, showing recorded distributions of *Ischnothyreus crenulatus* (+), *I. ovinus* (●) and *I. bualveus* (□). Wet Tropics upland subregions outlined in grey (see map 1).

♀; Mount Fisher, 7 km SW Millaa Millaa, Kjellberg Road, rainforest, leaf litter, 1000 m, 17.55000°S, 145.56670°E, May 3, 1983 (G. Monteith, D. Yeates, QM S16091, PBI_OON 25789), 1 ♀; Mount Hypipamee National Park, 14 km SW Malanda, rainforest, 950 m, 17.43333°S, 145.48333°E, July 24–Aug. 2, 1982 (S. and J. Peck, AMNH, PBI_OON 5303), 1 ♀; Mount Hypipamee National Park, 14 km SW Malanda, rainforest, leaf litter, 950 m, 17.43333°S, 145.48333°E, July 24–Aug. 2, 1982 (S. and J. Peck, AMNH, PBI_OON 5304), 1 ♂, 1 ♀; Mount Hypipamee National Park, walking track to crater, rainforest, leaf litter, 17.42361°S, 145.48500°E, Apr. 29, 2009 (K. Edward and P. Cullen, QM S95942, PBI_OON 5555), 1 ♀; Mount Hypipamee

National Park, rainforest, leaf litter, 950 m, 17.43333°S, 145.48330°E, Oct. 5, 1980 (G. Monteith, QM S12970, PBI_OON 25793), 1 ♀; Palmerston National Park, rainforest, 670 m, 17.58834°S, 145.70000°E, Nov. 30, 1992, to Apr. 15, 1993 (R.J. and S. Raven, P. and E. Lawless, QM S22948, PBI_OON 21670), 5 ♂, 1 ♀; Palmerston National Park (NQ 11b), rainforest, 670 m, 17.58834°S, 145.70000°E, July 25–30, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S21922, PBI_OON 21669), 6 ♂, 2 ♀; Palmerston National Park (NQ 11b), rainforest, 670 m, 17.58834°S, 145.70000°E, July 25–Nov. 30, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S24436, PBI_OON 21712), 2 ♂, 1 ♀; Palmerston National Park (NQ 11b),

rainforest, 670 m, 17.58834°S, 145.70000°E, Oct. 30, 1991, to July 24, 1992 (R. Raven, P. Lawless, M. Shaw, QM S24727, PBI_OON 22140), 13 ♂; Plath Road, rainforest, leaf litter, 1150 m, 17.37667°S, 145.46170°E, Nov. 30, 1997 (G. Monteith, QM S43010, PBI_OON 21765), 2 ♀; Tully Falls State Forest, rainforest, leaf litter, 17.62472°S, 145.59361°E, Oct. 4, 1978 (A. Walford-Huggins, ANIC, PBI_OON 25788), 1 ♂, 1 ♀; Tully Gorge National Park, start of Rhyolite Pinnacle trail, rainforest, leaf litter, 17.69500°S, 145.52333°E, Apr. 28, 2009 (K. Edward and P. Cullen, QM S95943, PBI_OON 5556), 1 ♂; Tully Gorge National Park, start of Rhyolite Pinnacle trail, rainforest, leaf litter, 17.69500°S, 145.52333°E, Apr. 28, 2009 (K. Edward and P. Cullen, QM S95944, PBI_OON 26313), 1 ♀.

DISTRIBUTION: This species is known only from the Atherton Tableland (AU subregion), of the Wet Tropics Bioregion, in northeastern Queensland (map 7).

Ischnothyreus cornuatus, new species

Figures 43–44, map 8

TYPES: AUSTRALIA: **Queensland:** Male holotype and female allotype from 21 km S Atherton, 17.45°S, 145.4667°E, 1070 m (5 Nov. 1983, D. Yeates, G. Thompson), deposited in QM (♂ holotype: QM S16023, PBI_OON 00025944; ♀ allotype: QM S16023, PBI_OON 00025757).

ETYMOLOGY: The specific epithet is of the Latin *cornuatus* meaning “hornlike” (Brown, 1956), and refers to the distal hornlike processes on the male palp.

DIAGNOSIS: The male of this species exhibits a striking modification of the embolic region of the male pedipalp, with one larger and one smaller hornlike process directed dorsally (fig. 44A, B). The female epigynal region has paired cup-shaped epigynal atriums that are large and possess thicker sclerotization at the lateral edges (figs. 43I, 44F).

MALE (PBI_OON 25944, figs. 43A–C, G–H, 44A–E). Total length 1.50. **CEPHALOTHORAX:** Carapace orange, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral

corners with slightly sclerotized triangular projections, surface of elevated portion of pars cephalica finely reticulate, sides strongly reticulate. *Clypeus* margin unmodified, straight in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes:* ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE–PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark, evenly scattered. *Chelicerae*, endites, and labium pale orange. *Chelicerae* slightly divergent, anterior face unmodified; promargin with one larger denticle; fang normal, without prominent basal process. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, slightly stronger sclerotization at base; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, slightly stronger sclerotization than sternum. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale orange, covering about 1/2 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. **LEGS:** Yellow, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella shorter than femur; cymbium dark red-brown; bulb dark red-brown, more than 2 times as long as cymbium, elongate; embolic region with two hornlike processes, one large and one small, both directed dorsally (fig. 44A, B).

FEMALE (PBI_OON 25757, figs. 43D–F, I, 44F). Total length 1.73. **ABDOMEN:** Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Epigastric scutum small lateral sclerites present. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. **LEGS:** Pale orange. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:**

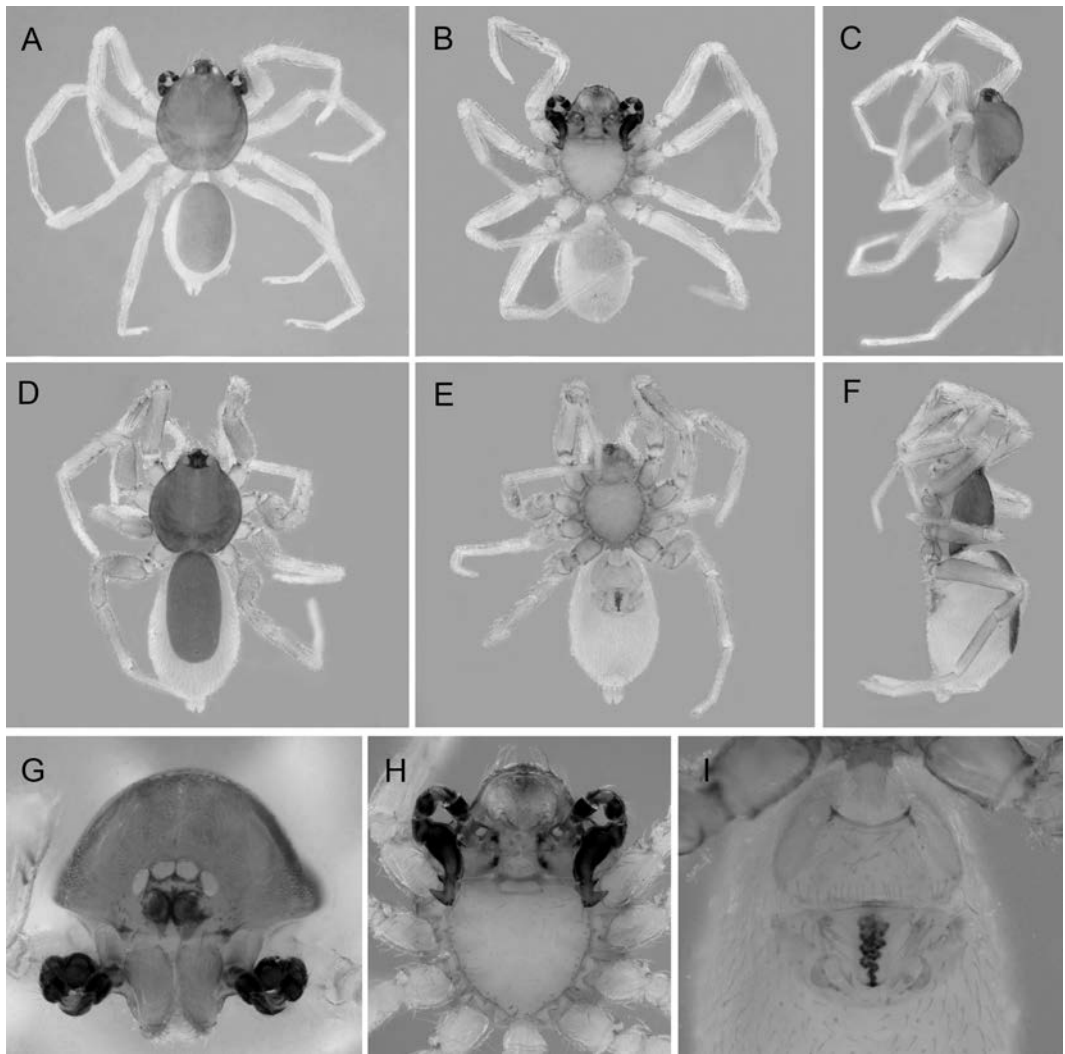


Fig. 43. *Ischnothyreus cornuatus*, sp. nov. Holotype male (PBI_OON 00025944): **A.** Habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00025757): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

Ventral view: epigynal atrium paired, cup shaped, sclerotization heavier at lateral edges; convoluted duct very long, thicker than apodemes, ending posteriorly at small crescent-shaped indent (figs. 43I, 44F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** 21 km S Atherton, rainforest, leaf litter, 1070 m, 17.45000°S, 145.46670°E, Nov. 5, 1983 (D. Yeates, G. Thompson, QM S16022, PBI_OON 25797), 1 ♂; Millaa Millaa Lookout, rainforest,

1000 m, 17.51667°S, 145.56670°E, Dec. 1, 1993, to Feb. 25, 1994 (J. Hasenpusch, QM S49694, PBI_OON 22107), 1 ♂; Mount Fisher, 1150 m, 17.33000°S, 145.32000°E, May 3–June 2, 1995 (P. Zborowski, ANIC, PBI_OON 5847), 1 ♀; Mount Fisher (Kjelberg), rainforest, leaf litter, 1100 m, 17.53333°S, 145.55000°E, May 18, 1995 (G. Monteith, QM S41902, PBI_OON 21955), 1 ♀; Mount Fisher, 7 km SW. of Millaa Millaa, rainforest, leaf litter, 1100 m, 17.55000°S,

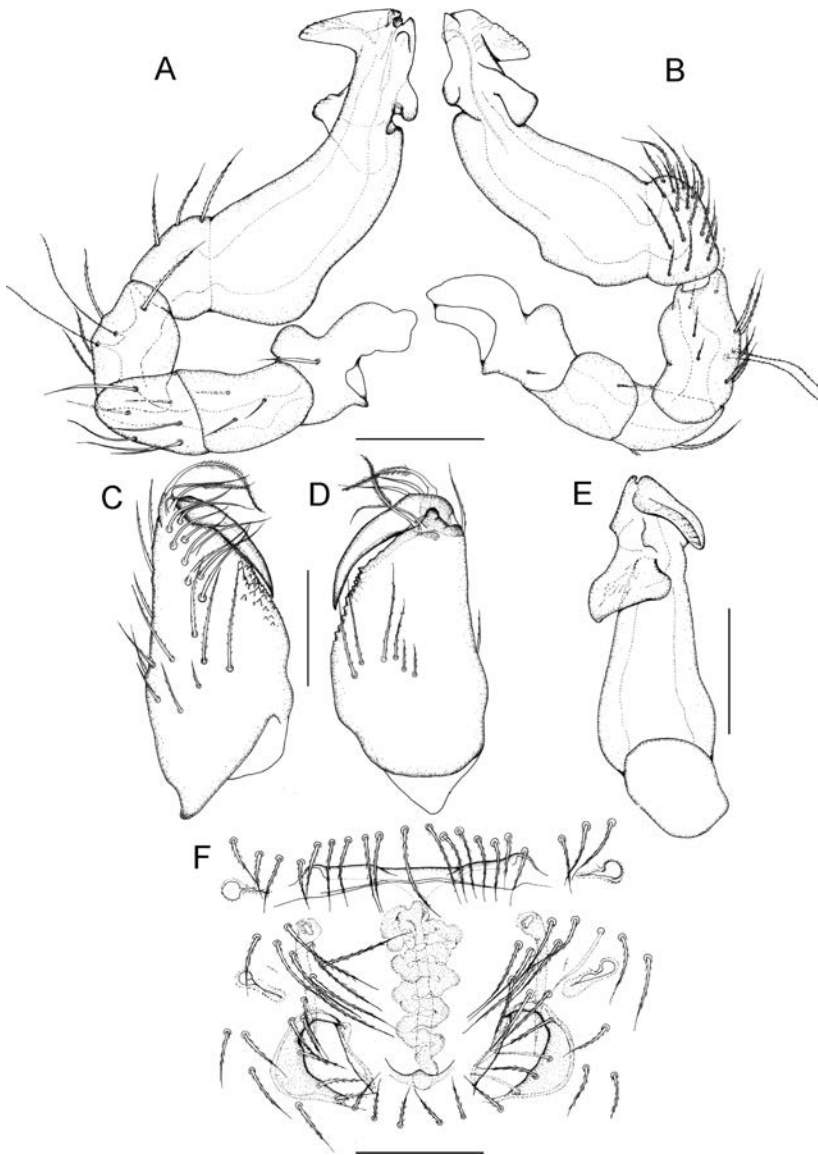
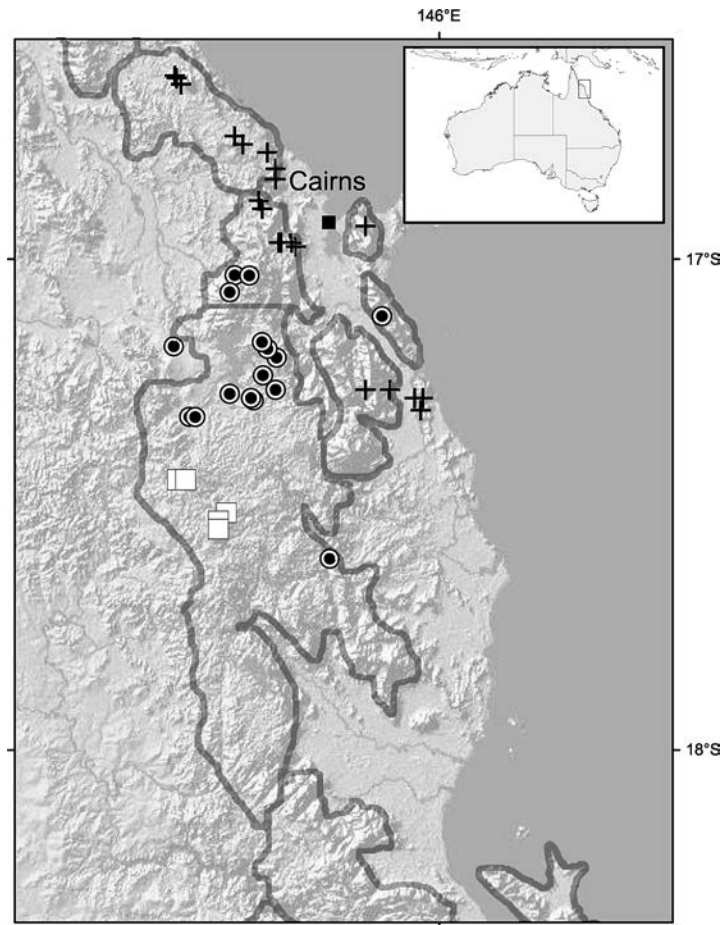


Fig. 44. *Ischnothyreus cornuatus*, sp. nov. Holotype male (PBI_OON 00025944): A. left palp, prolateral view; B. left palp, retrolateral view; C. left chelicerae, anterior view; D. left chelicerae, posterior view; E. left palp, dorsal view. Allotype female (PBI_OON 00025757): F. epigynum, ventral view. Scale lines = 0.1 mm.

145.55000°E, Apr. 27, 1982 (G. Monteith, D. Yeates, D. Cook, QM S12995, PBI_OON 25799), 1 ♂; Tower nr the Crater, rainforest, leaf litter, 1230 m, 17.45000°S, 145.48330°E, Nov. 23, 1994 (G. Monteith, QM S31611, PBI_OON 22177), 1 ♀; Tower nr the Crater National Park, rainforest, 1230 m, 17.45000°S,

145.48330°E, Nov. 25, 1994, to Jan. 10, 1995 (G. Monteith, J. Hasenpusch, QM S46987, PBI_OON 21982), 3 ♂, 2 ♀.

DISTRIBUTION: This species is known only from the Atherton Tableland (AU subregion), of the Wet Tropics Bioregion, in northeastern Queensland (map 8).



Map 8. Map of northeastern Queensland, central Wet Tropics Bioregion, showing recorded distributions of *Ischnothyreus cornuatus* (□), *I. eacham* (⊙) and *I. collingwoodi* (+). Wet Tropics upland subregions outlined in grey (see map 1).

***Ischnothyreus corniculatum*, new species**

Figures 45–46, map 6

TYPES: AUSTRALIA: **Queensland:** Male holotype, female allotype and three female paratypes from Herberton Range State Forest, Forestry track, 17.27111°S, 145.42277°E (23 Apr. 2009, K. Edward and P. Cullen), deposited in QM (♂ holotype: QM S95945, PBI_OON 00005611; ♀ allotype and paratypes: QM S95946, PBI_OON 00026309).

ETYMOLOGY: The specific epithet is the Latin *corniculatum* meaning “little horn” (Brown, 1956), and refers to the small horn-shaped process on the distal tip of the male palp.

DIAGNOSIS: Like *I. cornuatus*, sp. nov., the male of this species possesses a hornlike modification on the embolic region of the male pedipalp. However, *I. corniculatum*, sp. nov., has two small lateral processes and only one dorsal hornlike process, instead of two (fig. 46 A, B). The epigynal atrium of the female epigynal region is not paired, and exists as a wide, but short depression that is heavily sclerotized around the posterior edge (figs. 45J, 46F).

MALE (PBI_OON 5611, figs. 45A–C, G–I, 46A–E). Total length 1.53. **CEPHALOTHORAX:** Carapace yellow-brown, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed

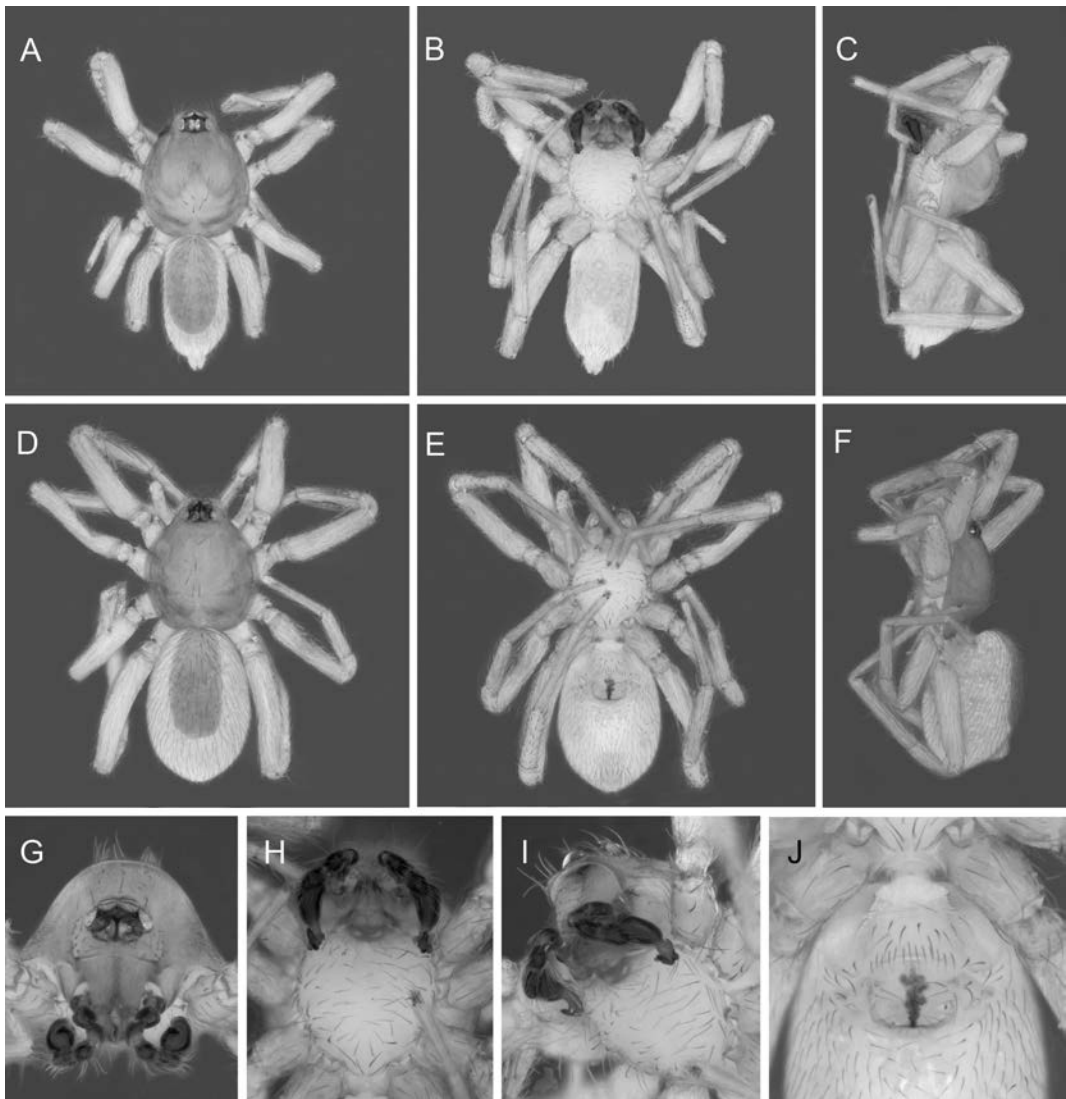


Fig. 45. *Ischnothyreus corniculatum*, sp. nov. Holotype male (PBI_OON 00005611): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view; **I.** sternum, oblique view. Allotype female (PBI_OON 00026309): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **J.** epigynum, ventral view.

to between 0.5 and 0.75 times its maximum width, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica strongly reticulate, sides strongly reticulate. *Clypeus* margin unmodified, curved downward in front view, high, ALE separated from edge of carapace by their radius or more; setae dark. *Eyes*: ALE largest, ALE oval, PME circular, PLE oval; posterior eye row straight from above;

ALE touching, ALE-PLE touching. *Sternum* as long as wide, pale orange, darker anteriorly near labium forming unique pattern (fig. 45H, I); setae dark, evenly scattered. Chelicerae, endites, and labium dark red-brown. Chelicerae straight, anterior face unmodified; promargin with one larger denticle; fang shape normal, without prominent basal process; setae dark. Labium elongated hexagon, not fused to sternum, anterior

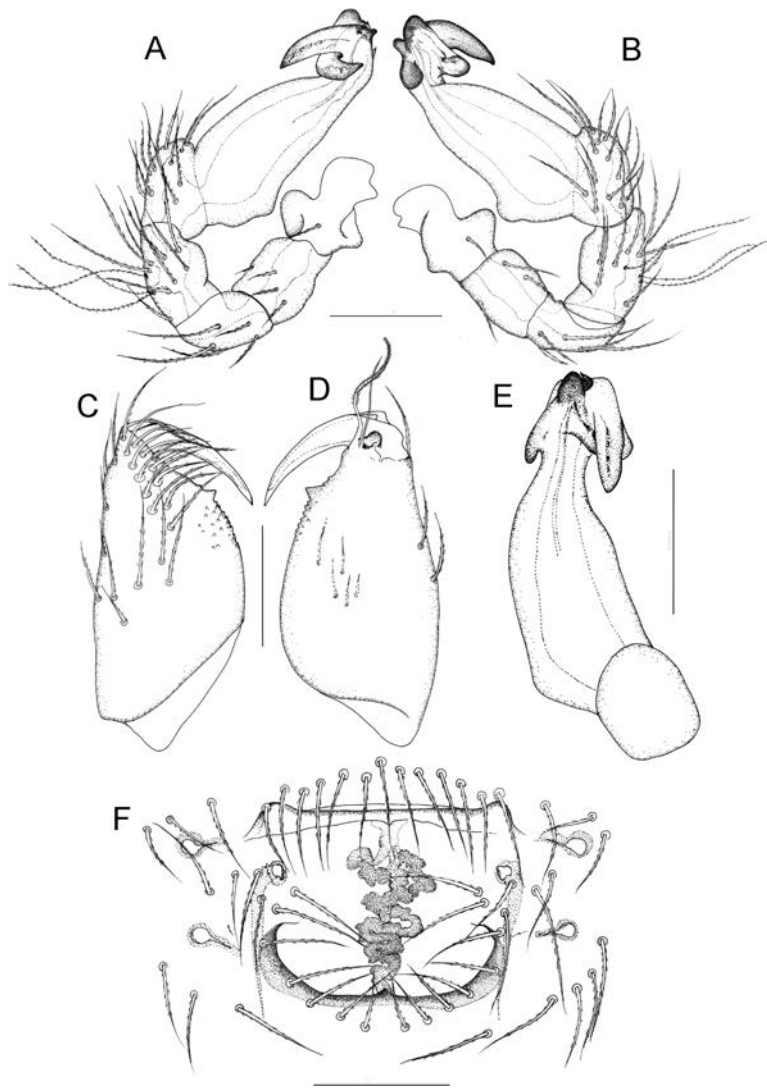


Fig. 46. *Ischnothyreus corniculatum*, sp. nov. Holotype male (PBI_OON 00005611): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00026309): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

margin indented at middle, much more heavily sclerotized than sternum, with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, much more heavily sclerotized than sternum. ABDOMEN: Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum yellow-brown, covering 1/2 to 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface finely

reticulate, sides finely reticulate. Epigastric scutum small lateral sclerites present. Post-epigastric scutum pale orange, covering about 1/2 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. LEGS: Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp

proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella about as long as femur; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region with one posteriorly directed hornlike process and two small lateral processes (fig. 46A, B).

FEMALE (PBI_OON 26309, figs. 45D–F, J, 46F). Total length 1.50. **CEPHALOTHORAX**: *Carapace* pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less. Chelicerae, endites, and labium pale orange. **ABDOMEN**: Dorsal scutum between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. **LEGS**: Leg spination: femora: I p0-2-0; r0-1-1; II p0-1-0; r0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0; spines on retrolateral side much smaller than prolateral side. **GENITALIA**: Ventral view: epigynal atrium wider than high, sclerotization heavier around curved posterior edge; convoluted duct thicker than apodemes (figs. 45J, 46F).

OTHER MATERIAL EXAMINED: **AUSTRALIA**: **Queensland**: 2 km E of South Johnstone Forestry Camp, 17.60000°S, 146.00000°E, Dec. 1, 1993, to Feb. 25, 1994 (J. Hasenpusch, QM S63216, PBI_OON 22037), 1 ♀; Boulder Creek, via Tully, rainforest, leaf litter, 17.83333°S, 145.90000°E, Oct. 27, 1983 (G. Monteith, D. Yeates, G. Thompson, QM S16024, PBI_OON 25798), 1 ♂; Downey Creek, 25 km SE Millaa Millaa, 400 m, 17.65000°S, 145.78330°E, Dec. 7, 1988 (G. Monteith, G. Thompson, QM S31962, PBI_OON 21746), 1 ♀; Herberton Range State Forest, Forestry track, rainforest, leaf litter, 17.27111°S, 145.42277°E, Apr. 23, 2009 (K. Edward and P. Cullen, QM S95947, PBI_OON 5535), 1 ♂; Kenny Road, 850 m, 17.46667°S, 145.53330°E, Nov. 25, 1994, to Jan. 10, 1995 (G. Monteith, J. Hasenpusch, QM S27980, PBI_OON 21789), 1 ♂; Longlands Gap SF, forest, 17.45500°S, 145.47420°E, July 23–Nov. 26, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S19940, PBI_OON 25927), 1 ♂, 1 ♀; Malaan SF, rainforest, 17.58834°S, 145.60750°E, Nov. 26, 1992, to Apr. 15, 1993 (R. Raven, P. Lawless, QM S24383, PBI_OON 21735), 1 ♂; Malaan SF,

rainforest, 1000 m, 17.58333°S, 145.58330°E, Apr. 20–24, 1978 (R. Raven, V. Davies, QM S16126, PBI_OON 25796), 4 ♂; Malaan SF, rainforest, 1000 m, 17.58333°S, 145.58330°E, Apr. 20–24, 1978 (R. Raven, V. Davies, QM S16126, PBI_OON 25915), 3 ♂; McNamee Creek, rainforest, leaf litter, 400 m, 17.63333°S, 145.8500°E, July 8, 1971 (Taylor and Feehan, ANIC, PBI_OON 25848), 2 ♂; Mount Fisher, 7 km SW Millaa Millaa, Kjellberg Road, 1000 m, 17.55000°S, 145.56670°E, May 3, 1983 (G. Monteith, D. Yeates, QM S16097, PBI_OON 25800), 1 ♂; Mount Fisher, 7 km SW Millaa Millaa, Kjellberg Road, 1000 m, 17.55000°S, 145.56670°E, May 3, 1983 (G. Monteith, D. Yeates, QM S16091, PBI_OON 26241), 2 ♀; Mount Fisher, Kjellberg Road, 1000 m, 17.53333°S, 145.55000°E, Dec. 1, 1993, to Feb. 25, 1994 (J. Hasenpusch, QM S34940, PBI_OON 21947), 1 ♂; Palmerston National Park, rainforest, 670 m, 17.58834°S, 145.70000°E, Nov. 30, 1992, to Apr. 15, 1993 (R.J. and S. Raven, P. and E. Lawless, QM S22948, PBI_OON 25919), 1 ♂; Palmerston National Park, rainforest, 670 m, 17.58834°S, 145.70000°E, July 25–Nov. 30, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S21922, PBI_OON 25931), 1 ♂; Palmerston National Park, Downey Creek Road, rainforest, 17.60500°S, 145.76670°E, July 25–Nov. 30, 1992 (R. Raven, P. Lawless, M. Shaw, QM S24238, PBI_OON 21705), 2 ♂; Palmerston National Park, Downey Creek Road, rainforest, 17.60500°S, 145.76670°E, Oct. 30, 1991, to July 24, 1992 (R. Raven, P. Lawless, M. Shaw, QM S24577, PBI_OON 21708), 2 ♀; the Millstream, 10 km NNE Ravenshoe, 1040 m, 17.53333°S, 145.51670°E, Dec. 6, 1998, to Feb. 5, 1999 (G. Monteith, D. Cook, QM S49225, PBI_OON 22202), 1 ♂, 1 ♀; Tully Gorge National Park, rainforest, leaf litter, 750 m, 17.7000°S, 145.5500°E, July 2, 1971 (Taylor and Feehan, ANIC, PBI_OON 5848), 1 ♀; Upper Boulder Creek, 8 km N of Tully, 250 m, Dec. 4–7, 1989 (G. Monteith, G. Thompson, H. Janetzki, QM S46824, PBI_OON 22027), 1 ♀; Upper Boulder Creek, Walter Hill Range, 950 m, 17.83333°S, 145.90000°E, Nov. 17–18, 1984 (V. Davies, G. Monteith, J. Gallon, D. Cook, G. Thompson, QM S12923, PBI_OON 6434), 1 ♀; Wooroonooran National Park, Tchupala Falls track, rainforest, leaf litter, 17.61000°S, 145.77722°E, Apr. 27, 2009 (K.

Edward and P. Cullen, QM S95948, PBI_OON 5566), 1 ♀; Wooroonooran National Park, Tchupala Falls track, rainforest, leaf litter, 17.61000°S, 145.77722°E, Apr. 27, 2009 (K. Edward and P. Cullen, QM S95949, PBI_OON 26306), 1 ♀; Wooroonooran National Park, Tchupala Falls track, rainforest, leaf litter, 17.61000°S, 145.77722°E, May 17, 2007 (K. Edward and K. Pitz, QM S95950, PBI_OON 26312), 1 ♀.

DISTRIBUTION: This species is only known from the Atherton Tablelands (AU) and the Cairns-Cardwell Lowlands (CC), of the Wet Tropics Bioregion, in northeastern Queensland (map 6).

Ischnothyreus ovinus, new species

Figures 47–48, map 7

TYPES: AUSTRALIA: **Queensland:** Male holotype from Mount Edith, Lamb Range, 17.1°S, 145.6167°E, 1140 m (11 Oct 1982, G. Monteith, D. Yeates, G. Thompson), deposited in QM (S16118, PBI_OON 00025969). Female allotype and 1 female paratype from Emerald Creek, Lamb range, 17.1°S, 145.61666°E, 950 m (11 Oct 1982, G. Monteith, D. Yeates, G. Thompson), deposited in QM (S16083, PBI_OON 00025970).

ETYMOLOGY: The specific epithet is of the Latin *ovinus*, meaning “of sheep” (Brown, 1956), and relates to the distribution of the species within the Lamb Range.

DIAGNOSIS: The male of this species can be distinguished by the distal tip of the embolic region of the palp, which is angled backward toward the cymbium and elongate, extending almost half way along the bulb (fig. 48A, B). The female epigynal region is quite similar to that of *I. comicus*, sp. nov., but differs in the discontinuous sclerotization of the epigynal atrium, which is much heavier around the lateral edges and not present around the anterior edge (fig. 48F).

MALE (PBI_OON 25969, figs. 47A–C, G–H, 48A–E). Total length 1.50. **CEPHALOTHORAX:** *Carapace* pale orange, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica finely reticulate, sides strongly

reticulate. *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes:* ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark, evenly scattered. Chelicerae, endites, and labium pale orange. Chelicerae slightly divergent, anterior face unmodified; promargin with one larger denticle; fang shape normal, with slight basal process (fig. 48D); setae dark. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, same as sternum in sclerotization. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale orange, covering about 2/3 of abdominal length. Dorsum, epigastric area, and post-epigastric area setae dark. **LEGS:** Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter, without posteriorly rounded lateral dilation; patella shorter than femur; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region angled back toward cymbium, elongate, extending almost half-way along palpal bulb, rounded distal tip (fig. 48A, B).

FEMALE (PBI_OON 25970, figs. 47D–F, I, 48F). **CEPHALOTHORAX:** *Carapace* pars cephalica slightly elevated in lateral view. *Clypeus* straight in front view. **ABDOMEN:** Dorsal scutum covering about 1/2 of abdomen, between 1/4 and 1/2 abdomen width. Epigastric scutum small lateral sclerites present. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. **GENITALIA:** Ventral view: epigynal

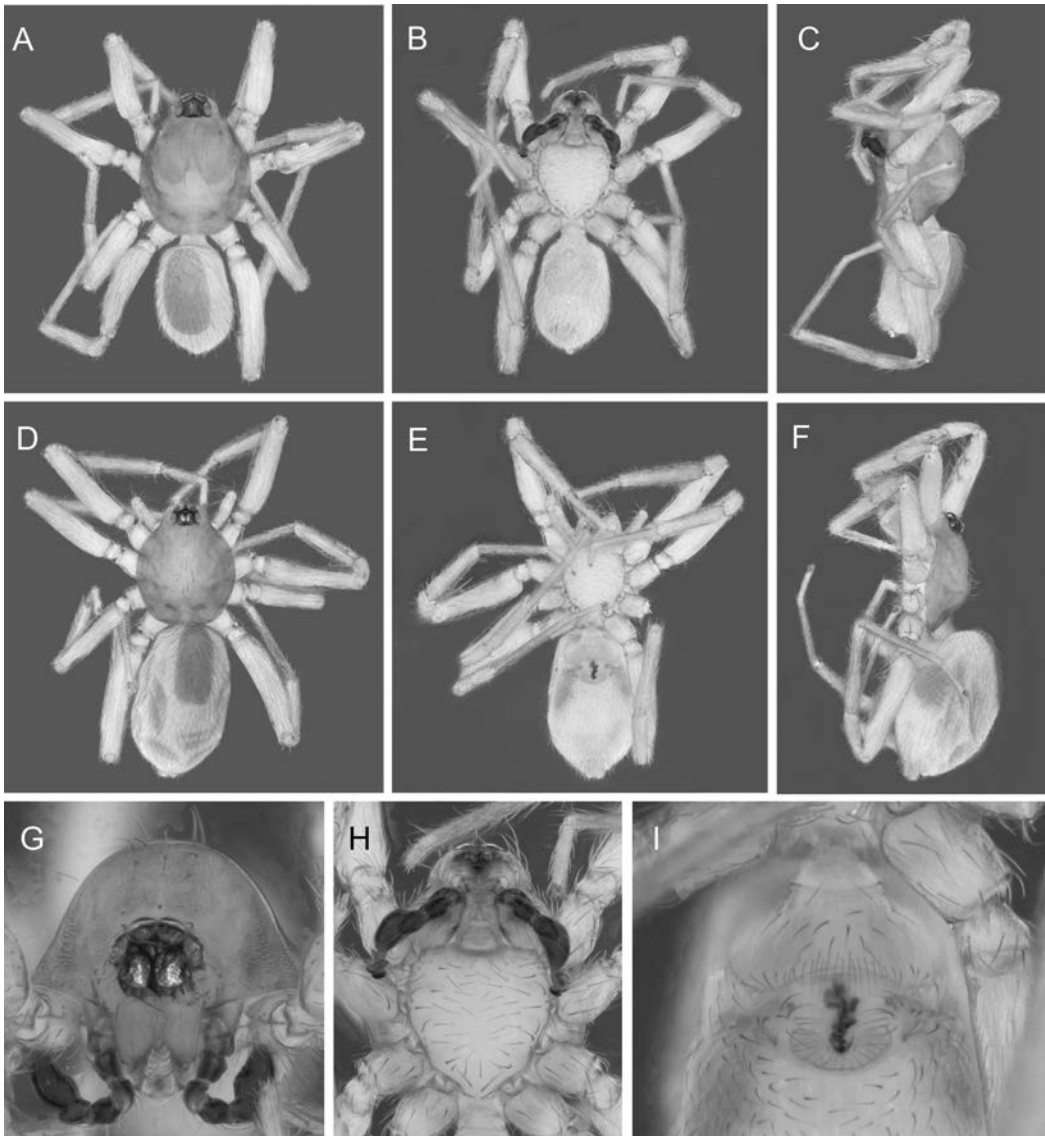


Fig. 47. *Ischnothyreus ovinus*, sp. nov. Holotype male (PBI_OON 00025969): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00025970): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

atrium wider than high, smile shaped, lateral edges rounded, heavily sclerotized around lateral edges and not around anterior edge (fig. 48F), lacking heavily sclerotized processes over epigynal atrium; convoluted duct much thicker than apodemes.

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** Emerald Creek,

Lamb Range, rainforest, leaf litter, 950 m, 17.10000°S, 145.61666°E, Oct. 11, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16027, PBI_OON 25782), 1 ♀; Baldy Mountain Road, 2 km from S end, open forest, leaf litter, 1200 m, 17.33333°S, 145.41670°E, Nov. 30, 1997, to Feb. 5, 1998 (G. Monteith, D. Cook, QM S44749, PBI_OON 22054), 1 ♂;

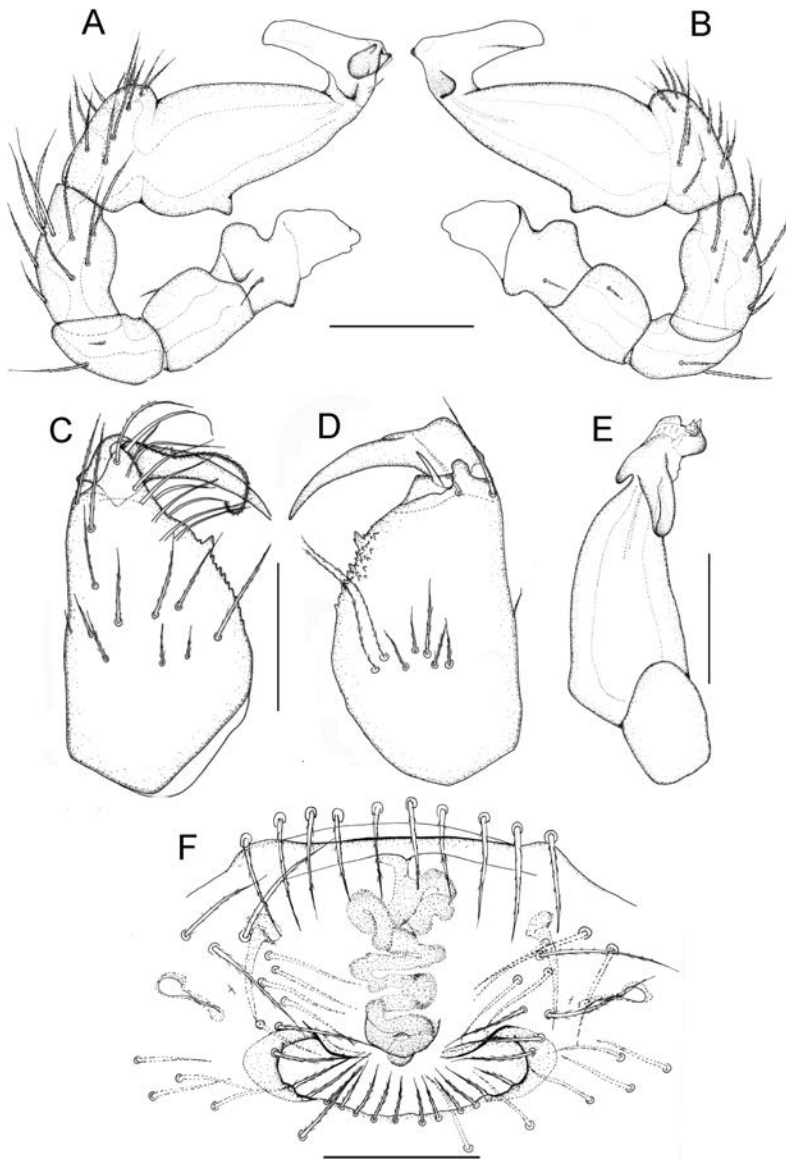


Fig. 48. *Ischnothyreus ovinus*, sp. nov. Holotype male (PBI_OON 00025969): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00025970): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

Lambs Head, 10 km W Edmonton, rainforest, 1200 m, 17.03333°S, 145.65000°E, Dec. 10, 1989, to Jan. 8, 1990 (G. Monteith, G. Thompson, H. Janetzki, QM S79684, PBI_OON 21783), 1 ♂; Millstream CP, open forest, 1040 m, 17.53717°S, 145.48680°E, Dec. 6, 1998, to Feb. 4, 1999 (G. Monteith, D. Cook, QM S57151, PBI_OON 22168), 1 ♂; Mount Edith Road, Lamb Range, rainforest,

1000 m, 17.10000°S, 145.61670°E, Oct. 12, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16033, PBI_OON 25780), 1 ♀; Mount Edith Road, Lamb Range, rainforest, leaf litter, 1000 m, 17.10000°S, 145.61670°E, Oct. 12, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16060, PBI_OON 25783), 1 ♂; Mount Edith Road, Lamb Range, rainforest, leaf litter, 780 m, 17.10000°S, 145.61670°E,

Oct. 12, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16061, PBI_OON 25786), 2 ♀; Mount Edith, Lamb Range, rainforest, leaf litter, 1050 m, 17.10000°S, 145.61670°E, Oct. 12, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16078, PBI_OON 25784), 2 ♂, 1 ♀; Wooroonooran National Park, Josephine Falls section, start of Mount Bartle Frere trail, rainforest, leaf litter, 17.44055°S, 145.85833°E, Apr. 25, 2009 (K. Edward and P. Cullen, QM S95951), 4 ♂, 2 ♀; Wooroonooran National Park, Josephine Falls section, start of Mount Bartle Frere trail, rainforest, leaf litter, 17.44055°S, 145.85833°E, Apr. 25, 2009 (K. Edward and P. Cullen, QM S95952, PBI_OON 5538), 1 ♀.

DISTRIBUTION: This species is only known from three central subregions of the Wet Tropics Bioregion (AU, LU, and BK), in northeastern Queensland (map 7).

Ischnothyreus eacham, new species

Figures 49–50, map 8

TYPES: AUSTRALIA: **Queensland:** Male holotype, female allotype, and two female paratypes from Eacham National Park, 17.2833°S, 145.6167°E, 760 m (20 Feb 1973, R.W. Taylor), deposited in ANIC (♂ holotype: PBI_OON 00005883; ♀ allotype and paratypes: PBI_OON 00005854).

ETYMOLOGY: The specific epithet is a noun in apposition, taken from the type locality.

DIAGNOSIS: The male of this species exhibits a simplified male palp, with a broad, obtusely bent distal tip. A small lateral process bends backward on the retrolateral side of the embolic region (fig. 50A, B, E). The female epigynal region is equally simple, and consists of a small triangular extension pointing anteriorly and positioned at the base of a long convoluted duct (figs. 49I, 50F).

MALE (PBI_OON 5883, figs. 49A–C, G–H, 50A–E). Total length 1.63. **CEPHALOTHORAX:** Carapace orange-brown, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica smooth, sides finely reticulate. Clypeus margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius;

setae dark. **Eyes:** ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE–PLE touching. **Sternum** longer than wide, pale orange, uniform; setae dark, evenly scattered. Labium and endites dark red brown, chelicerae pale. Chelicerae slightly divergent, anterior face unmodified; promargin with one or two slightly larger denticles; fang shape normal, without prominent basal process; setae dark. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, much more heavily sclerotized than sternum. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering 1/2 to 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites present. Postepigastric scutum pale orange, covering about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. **LEGS:** Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II p0-2-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur one to two times as long as trochanter; patella about as long as femur; cymbium dark red-brown; bulb dark red-brown, 1 to 1.5 times as long as cymbium, stout; embolic region stout, broad, obtusely bent, small lateral process bent backward on retrolateral side (fig. 50A, B, E).

FEMALE (PBI_OON 00005854, figs. 49D–F, I, 50F). Total length 1.90. **CEPHALOTHORAX:** Carapace pale orange, pars cephalica slightly elevated in lateral view, surface of elevated portion of pars cephalica finely reticulate. Clypeus straight in front view. Chelicerae, endites, and labium pale orange. **ABDOMEN:** Dorsal scutum between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, only around epigastric furrow. **LEGS:** Leg spination: femora: I p0-1-1; II p0-2-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Ventral view: epigynal region

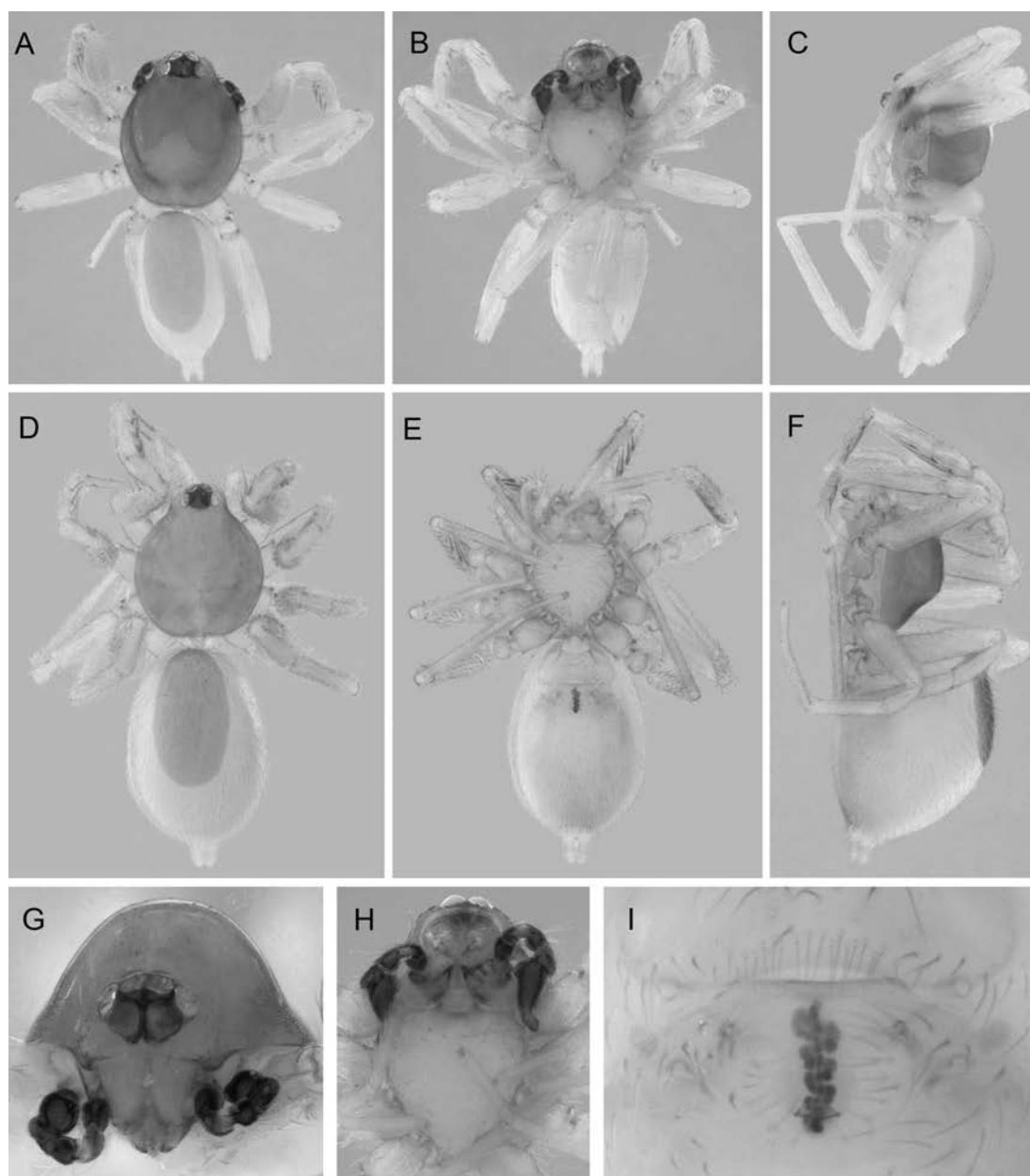


Fig. 49. *Ischnothyreus eacham*, sp. nov. Holotype male (PBI_OON 00005883): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005854): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

simple, epigynal atrium not clearly visible but with slight depression, posterior portion of depression with small triangular extension pointing anteriorly; convoluted duct thicker than apodemes, long (figs. 49I, 50F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** Curtain Fig Tree, 1 km SW of Yungaburra, rainforest, leaf litter, 17.27472°S, 145.57333°E, Dec. 3, 1969 (J.G. Brooks, ANIC, PBI_OON 5839), 1 ♀; 1

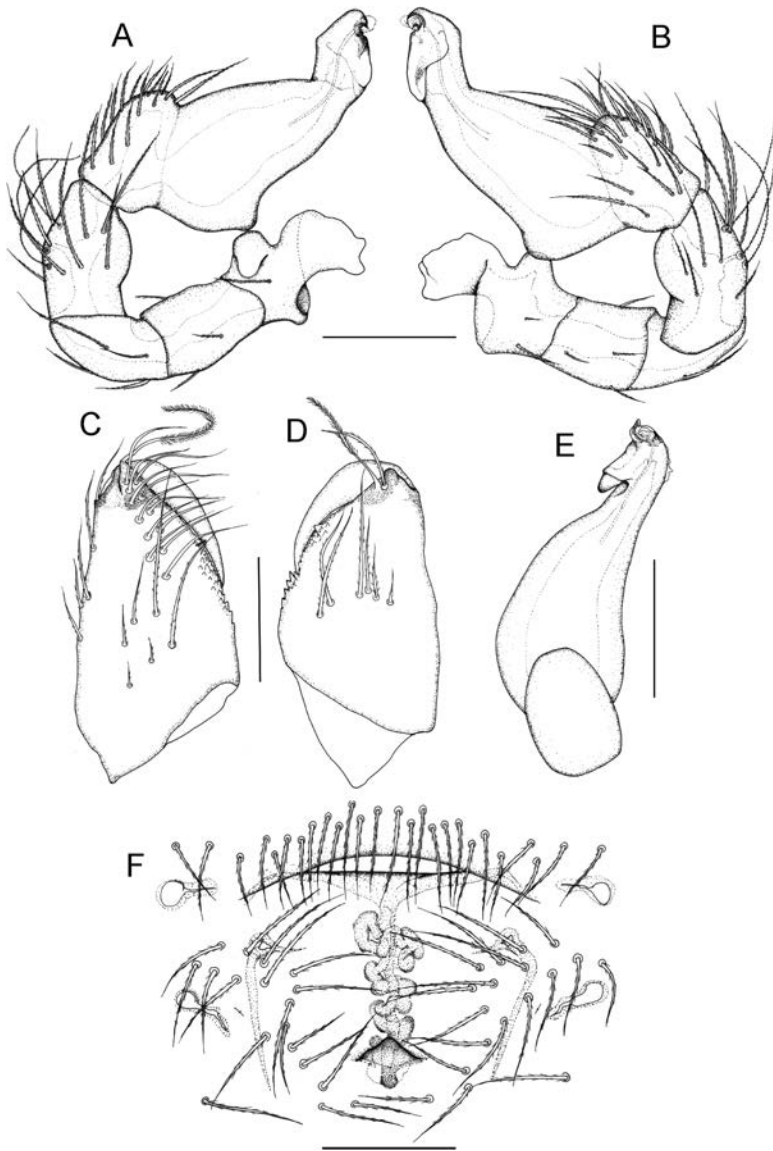


Fig. 50. *Ischnothyreus eacham*, sp. nov. Holotype male (PBI_OON 00005883): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00005854): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

♀ (ANIC PBI_OON 5839); Danbulla National Park, Mobo Creek crater circuit walk, rainforest, leaf litter, 17.16944°S, 145.63888°E, Apr. 22, 2009 (K. Edward and P. Cullen, QM S95953, PBI_OON 26316), 1 ♂; Dinden National Park, start of Kahlpahlim rock trail, rainforest, leaf litter, 17.03388°S, 145.61305°E, Apr. 11, 2009 (K. Edward and J. Waldock, QM S95954), 3 ♀; Dinden National Park, start

of Kahlpahlim rock trail, rainforest, leaf litter, 17.03388°S, 145.61305°E, Apr. 11, 2009 (K. Edward and J. Waldock, QM S95955, PBI_OON 26318), 3 ♀; Boar Pocket Road, 5 miles N. of Gillies highway, rainforest, leaf litter, 17.20000°S, 145.66666°E, Dec. 13, 1969 (J.G. Brooks, ANIC, PBI_OON 25850), 1 ♂, 2 ♀; Boar Pocket Road, 5 miles N. of Gillies highway, rainforest, leaf mould, 17.20000°S,

145.66666°E, Nov. 15, 1969 (J.G. Brooks, ANIC, PBI_OON 25872), 1 ♀; Cathedral Tree, 720 m, 17.18333°S, 145.65000°E, Feb. 7, 1996 (G. Monteith, QM S43828, PBI_OON 22053), 1 ♀; Crater Lakes National Park, Lake Barine walk trail, rainforest, leaf litter, 17.23722°S, 145.64083°E, Apr. 23, 2009 (K. Edward and P. Cullen, QM S95956, PBI_OON 5562), 1 ♀; Crater Lakes National Park, Lake Eacham walk, rainforest, leaf litter, 17.28805°S, 145.62166°E, May 18, 2007 (K. Edward and K. Pitz, QM S95957), 1 ♀; Crater Lakes National Park, Lake Eacham walk, rainforest, leaf litter, 17.28805°S, 145.62166°E, May 18, 2007 (K. Edward and K. Pitz, QM S95958, PBI_OON 25719), 2 ♀; Crater Lakes National Park, Lake Eacham walk, rainforest, leaf litter, 17.28805°S, 145.62166°E, May 18, 2007 (K. Edward and K. Pitz, QM S95959, PBI_OON 25720), 1 ♂; Davies Creek Road, 20 km ESE Mareeba, 750 m, Dec. 4–13, 1988 (G. Monteith, G. Thompson, QM S49364, PBI_OON 22080), 1 ♀; Eacham National Park, rainforest, leaf litter, 760 m, 17.2833°S, 145.6167°E, Oct. 1–7, 1972 (R.W. Taylor, ANIC, PBI_OON 5842, 5854), 4 ♀; Eacham National Park, rainforest, 760 m, 17.2833°S, 145.6167°E, Feb. 16, 1973 (R.W. Taylor, ANIC, PBI_OON 5859), 1 ♀; Eacham National Park, rainforest, 760 m, 17.2833°S, 145.6167°E, Mar. 23, 1975 (R.W. Taylor, ANIC, PBI_OON 5862), 1 ♂, 2 ♀; Eacham National Park, rainforest, leaf litter, 760 m, 17.2833°S, 145.6167°E, Oct. 1–7, 1972 (R.W. Taylor, ANIC, PBI_OON 25851), 1 ♀; Eacham National Park, rainforest, leaf litter, 760 m, 17.2833°S, 145.6167°E, Mar. 21, 1975 (R.W. Taylor, ANIC, PBI_OON 25854), 1 ♀; Gadgarra Road, 5 km E Lake Eacham, 700 m, 17.26667°S, 145.66670°E, Dec. 9, 1989 (G. Monteith, G. Thompson, H. Janetzki, QM S31926, PBI_OON 22232), 1 ♂, 2 ♀; Mount Edith Road, rainforest, leaf litter, 1000 m, 17.06777°S, 145.57305°E, Apr. 9, 2009 (K. Edward and J. Waldock, QM S95960, PBI_OON 5533), 1 ♂, 1 ♀; Mount Edith Road, rainforest, leaf litter, 1000 m, 17.06777°S, 145.57305°E, Apr. 9, 2009 (K. Edward and J. Waldock, QM S95961, PBI_OON 26317), 2 ♂, 3 ♀; same data (WAM T130762), 2 ♂, 2 ♀; North Bell Peak, Malbon Thompson Range, 17.11667°S, 145.88330°E, Nov. 20–22, 1990 (G. Monteith,

G. Thompson, QM S47016, PBI_OON 22066), 1 ♀; Tolga, near Atherton, rainforest, leaf litter, 17.17805°S, 145.45916°E, June 14, 1978 (A. and M. Walford-Huggins, ANIC, PBI_OON 25806), 1 ♂; Wongabel SF, rainforest, 17.32167°S, 145.49080°E, Nov. 05, 1991, to July 23, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S24209, PBI_OON 21747), 2 ♀; Wongabel SF, 17.32167°S, 145.49080°E, July 23–Nov. 26, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S22607, PBI_OON 22098), 1 ♂; Wongabel SF, forest walk, rainforest, under bark, 17.32500°S, 145.49583°E, Apr. 22, 2009 (K. Edward and P. Cullen, QM S95962, PBI_OON 5561), 1 ♀; Wooroonooran National Park, Tchupala Falls track, rainforest, leaf litter, 17.61000°S, 145.77722°E, Apr. 27, 2009 (K. Edward and P. Cullen, QM S95963, PBI_OON 5557), 1 ♂; Wooroonooran National Park, Tchupala Falls track, rainforest, leaf litter, 17.61000°S, 145.77722°E, Apr. 27, 2009 (K. Edward and P. Cullen, QM S95964, PBI_OON 26307), 2 ♂.

DISTRIBUTION: This species is known only from three central subregions of the Wet Tropics Bioregion (AU, LU, and MT), in northeastern Queensland (map 8).

Ischnothyreus collingwoodi, new species

Figures 51–52, map 8

TYPES: AUSTRALIA: **Queensland:** Male holotype and female allotype from Bellenden Ker Range, Cableway Base Station, 17.26667°S, 145.9°E, 100 m (17–31 Oct 1981, EARTHWATCH/Qld Museum), deposited in QM (♂ holotype: QM S95965, PBI_OON 00005890; ♀ allotype: QM S95966, PBI_OON 00005594).

ETYMOLOGY: The specific name is a patronym in honor of Ludo Collingwood, a world-renowned painter of rainforest creatures occurring in the Wet Tropics Bioregion.

DIAGNOSIS: The male of this species is distinguished by unique modifications of the palpal embolic region, which is enlarged and consists of a stout lateral process that curves around the distal end toward the prolateral aspect (fig. 52E). The distal tip is also curved backward and pointed (fig. 52A, B). The female epyginal region consists of a small triangular projection posterior to the epigynal

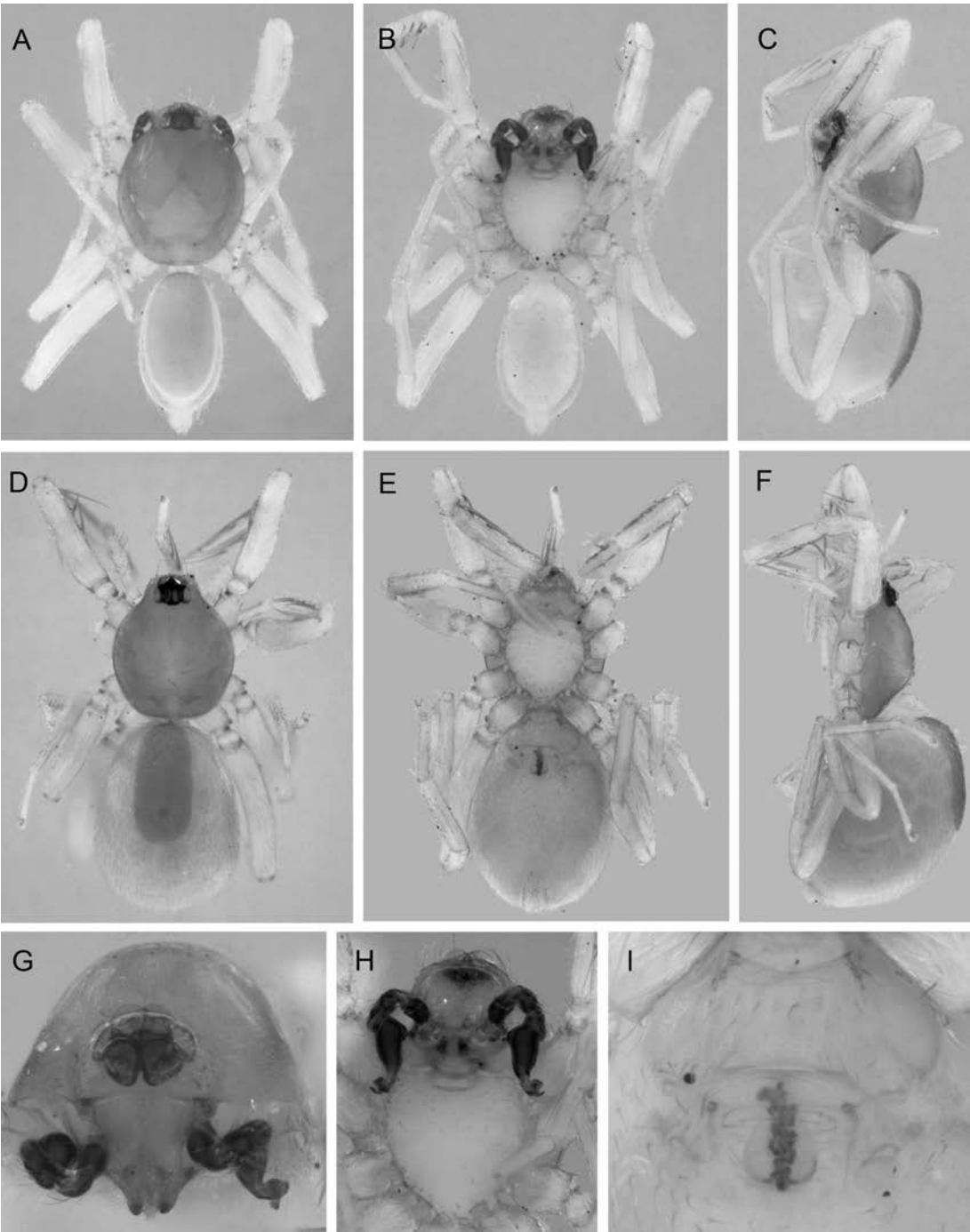


Fig. 51. *Ischnothyreus collingwoodi*, sp. nov. Holotype male (PBI_OON 00005890): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005594): **D.** habitus, dorsal view; **E.** habitus, ventral view. **F.** habitus, lateral view; **I.** epigynum, ventral view.

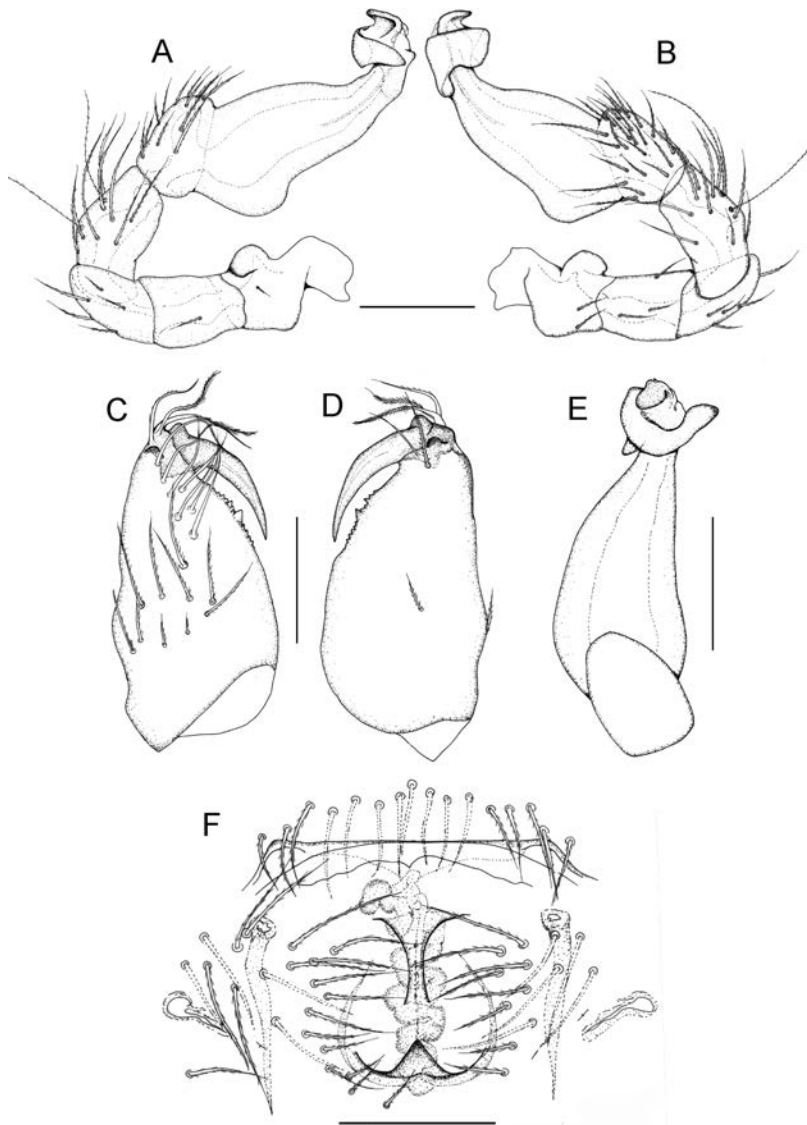


Fig. 52. *Ischnothyreus collingwoodi*, sp. nov. Holotype male (PBI_OON 00005890): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00005594): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

atrium depression with the sclerotization heavier in the posterior portion, forming a U-shape. A narrow “necklike” structure is evident halfway along convoluted duct, but is not very distinct (figs. 51I, 52F).

MALE (PBI_OON 5890, figs. 51A–C, G–H, 52A–E). Total length 1.70. **CEPHALOTHORAX:** *Carapace* pale orange, broadly oval in dorsal view, pars cephalica strongly

elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, anterolateral corners with slightly sclerotized triangular projections, surface of elevated portion of pars cephalica smooth, sides finely reticulate. *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae light. *Eyes:*

ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE-PLE touching. *Sternum* as long as wide, pale orange, uniform; setae light, evenly scattered. Chelicerae, endites, and labium orange-brown. Chelicerae straight, anterior face unmodified, fang normal, basal process small and knoblike; promargin with one or two larger denticles; setae light. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, much more heavily sclerotized than sternum; with six or more setae on anterior margin. Endites distally not excavated, anteromedian tip with one strong, toothlike projection, much more heavily sclerotized than sternum. ABDOMEN: Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Post-epigastric scutum pale orange, covering about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae light. LEGS: Pale yellow, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-2; II p0-0-1; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter, without posteriorly rounded lateral dilation; patella shorter than femur; cymbium dark red-brown; bulb dark red-brown, 1 to 1.5 times as long as cymbium, stout; embolic region, enlarged and clublike, stout lateral process curved around distal end toward prolateral aspect (fig. 52E), distal tip curved backward and pointed (fig. 52A, B).

FEMALE (PBI_OON 5594, figs. 51D–F, I, 52F). Total length 1.95. CEPHALOTHORAX: *Carapace* pars cephalica slightly elevated in lateral view. *Sternum* longer than wide. Chelicerae, endites, and labium pale orange. ABDOMEN: Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, only around epigastric furrow. LEGS: Yellow; patella plus tibia I near as long as carapace. Leg spination: femora: I p0-1-1; II p0-0-1; tibiae: I, II p2-2-

0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0; 2 smaller spinelike setae on retrolateral aspect of femora I and II. GENITALIA: Ventral view: epigynal atrium with small posterior triangular projection, sclerotization heavier in posterior portion, forming U-shaped depression, narrow “necklike” indents evident halfway along convoluted duct; convoluted duct thicker than apodemes (fig. 52F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland**: Barron Gorge National Park, Stoney Creek Road walk, rainforest, leaf litter, 16.89805°S, 145.63972°E, Apr. 21, 2009 (K. Edward and P. Cullen, QM S95967, PBI_OON 5534), 1 ♂, 1 ♀; Bellenden Ker Range, 0.5 km S Cable tower 7, rainforest, 500 m, 17.26667°S, 145.85000°E, Nov. 1–7, 1981 (EARTHWATCH/Qld Museum, QM S27626, PBI_OON 22147), 3 ♂, 16 ♀; Bellenden Ker Range, 0.5 km S Cable tower 7, rainforest, 500 m, 17.26667°S, 145.85000°E, Oct. 17–24, 1981 (EARTHWATCH/Qld Museum, QM S27629, PBI_OON 22151), 1 ♂; Bellenden Ker Range, Cableway Base Station, rainforest, leaf litter, 100 m, 17.26667°S, 145.90000°E, Oct. 17–24, 1981 (EARTHWATCH/Qld Museum, QM S27758, PBI_OON 22152), 3 ♂, 3 ♀; Black Mountain Road, 30 km N. Kuranda, rainforest, leaf mold, rotten wood, 760 m, 16.63166°S, 145.46472°E, Nov. 4, 1969 (J. G. Brooks, ANIC, PBI_OON 25865), 5 ♂, 3 ♀; Black Mountain Road, 5 km N Kuranda, rainforest, leaf litter, 360 m, 16.78333°S, 145.65000°E, June 8, 1980 (G. Monteith, QM S95968), 1 ♀; Black Mountain Road, 5 km N Kuranda, rainforest, leaf litter, 360 m, 16.78333°S, 145.65000°E, June 8, 1980 (G. Monteith, QM S16059, PBI_OON 5599), 1 ♀; Black Mountain Road, 5 km N Kuranda, rainforest, leaf litter, 1200 m, 16.78333°S, 145.65000°E, Dec. 2, 1988 (G. Monteith, G. Thompson, QM S58110, PBI_OON 22166), 1 ♀; Copperlode Dam Road, rainforest, 16.97500°S, 145.70833°E, July 23–Nov. 26, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S21707, PBI_OON 22783), 1 ♂; Crystal Cascades, carpark, rainforest, 16.96667°S, 145.67330°E, July 23–Nov. 26, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S19986, PBI_OON 6432), 1 ♂; Crystal Cascades, carpark, rainforest, 16.96667°S, 145.67330°E, Oct. 27, 1991, to

July 23, 1992 (R. Raven, P. Lawless, M. Shaw, QM S24521, PBI_OON 21762), 1 ♂, 1 ♀; Crystal Cascades, via Redlynch, rainforest, leaf litter, 50 m, 16.96666°S, 145.70000°E, Oct. 21, 1980 (G. Monteith, QM S16014, PBI_OON 5614), 3 ♂, 2 ♀; Graham Range, rainforest, 350 m, 17.28333°S, 145.95000°E, Nov. 1–Dec. 8, 1995 (G. Monteith, G. Thompson, D. Cook, QM S37982, PBI_OON 21716), 2 ♀; Graham Range, rainforest, leaf litter, 550 m, 17.28333°S, 145.96670°E, Nov. 1, 1995 (G. Monteith, QM S41043, PBI_OON 21781), 2 ♀; Kuranda, rainforest, leaf litter, 430 m, 16.75000°S, 145.58333°E, July 29, 1977 (R. Taylor, ANIC, PBI_OON 5613), 1 ♂, 1 ♀; Kuranda National Park, Black Mountain Road, rainforest, leaf litter, 16.64388°S, 145.47388°E, Apr. 7, 2009 (K. Edward and J. Waldock, QM S95969, PBI_OON 5684), 2 ♂, 1 ♀; Kuranda Range Road, 0.5 km up from Henry Ross Lookout, rainforest, 16.83750°S, 145.66666°E, Oct. 29, 1992, to July 23, 1993 (R. Raven, P. Lawless, M. Shaw, QM S24675, PBI_OON 22095), 1 ♂; Kuranda, Black Mountain Road, rainforest, 390 m, 16.76666°S, 145.60000°E, June 22, 1971 (Taylor and Feehan, ANIC, PBI_OON 5869), 1 ♂, 2 ♀; Mowbray National Park, Black Mountain Road between Twin Bridge walk and Rifle Creek Road, rainforest, leaf litter, 16.62694°S, 145.46138°E, Apr. 7, 2009 (K. Edward and J. Waldock, QM S95970, PBI_OON 5682), 1 ♂; Mowbray National Park, Black Mountain Road between Twin Bridge walk and Rifle Creek Road, rainforest, leaf litter, 16.62694°S, 145.46138°E, Apr. 7, 2009 (K. Edward and J. Waldock, QM S95971, PBI_OON 5683), 1 ♀; Mount Murray Prior, rainforest, leaf litter, 770 m, 16.93333°S, 145.85000°E, Oct. 30, 1995 (G. Monteith, QM S43813, PBI_OON 22038), 1 ♀; Russell River National Park, rainforest, 17.30833°S, 145.96250°E, Oct. 30, 1991, to June 24, 1992 (P. Lawless, R. Raven, M. Shaw, QM S19914, PBI_OON 25877), 2 ♀; Russell River National Park, rainforest, 17.30833°S, 145.96250°E, Oct. 30–Nov. 25, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S21752, PBI_OON 25921), 1 ♀; Saddle Mountain summit, rainforest, leaf litter, 650 m, 16.81667°S, 145.66670°E, Nov. 21, 1994 (G. Monteith, QM S27968,

PBI_OON 21775), 3 ♂; Saddle Mountain summit, rainforest, leaf litter, 650 m, 16.81667°S, 145.66670°E, Nov. 21, 1994 (G. Monteith, QM S27962, PBI_OON 21960), 5 ♀.

DISTRIBUTION: This species is known only from four central subregions of the Wet Tropics Bioregion (BMC, LU, BK, MT), in northeastern Queensland (map 8).

Ischnothyreus bualveus, new species

Figure 53, map 7

TYPES: AUSTRALIA: **Queensland:** Female holotype and one female paratype from Baldy Mountain, SW. of Atherton, 17.26666°S, 145.41666°E, 1200 m (10 Oct 1980, G. Monteith), deposited in QM (S12956, PBI_OON 00025963).

ETYMOLOGY: The specific epithet is derived from the Latin *bu* and *alveus* meaning “large cavity” (Brown, 1956), and refers to the extremely large epigynal atrium of the female epigynum region of this species.

DIAGNOSIS: The female has a uniquely shaped epigynal atrium, which consists of an incredibly large, U-shaped depression and extends the entire length of the convoluted duct (fig. 53B, C).

MALE: Unknown.

FEMALE (PBI_OON 25963, fig. 53A–C). Total length 1.68. **CEPHALOTHORAX:** *Carapace* pale orange, broadly oval in dorsal view, pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. *Clypeus* straight in front view, high, ALE separated from edge of carapace by their radius or more; setae light. *Eyes:* ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE separated by less than their radius, ALE–PLE separated by less than ALE radius. *Sternum* as long as wide, pale orange; setae dark, evenly scattered. *Chelicerae*, endites, and labium yellow. *Chelicerae* straight; setae light; Labium elongated hexagon, anterior margin indented at middle; with six or more setae on anterior margin. **ABDOMEN:** Ovoid, dorsum soft portions white. Book lung covers ovoid. Dorsal scutum pale orange, covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen

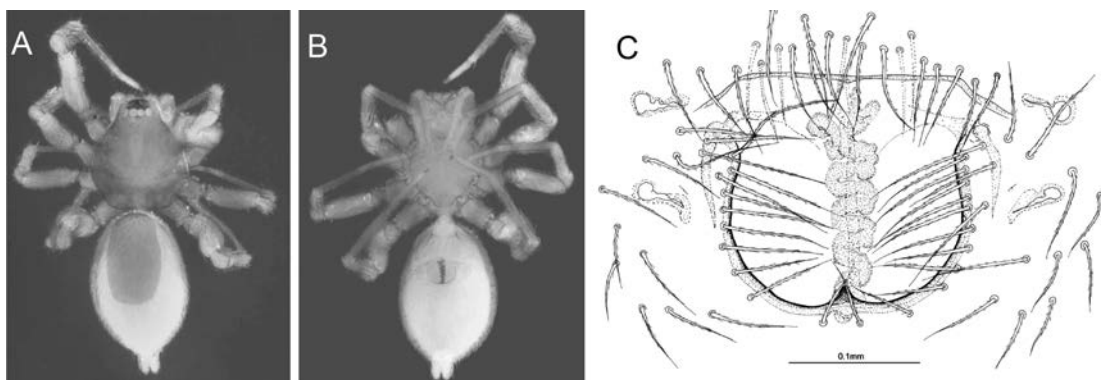


Fig. 53. *Ischnothyreus bualveus*, sp. nov. Holotype female (PBI_OON 00025963): A. habitus, dorsal view; B. habitus, ventral view; C. epigynum, ventral view. Scale lines = 0.1 mm.

width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites present. Postepigastric scutum yellow, short, only around epigastric furrow. LEGS: Yellow, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Ventral view: epigynal atrium incredibly large, U-shaped, posterior portion with small triangular projection, edges extend entire length of convoluted duct (fig. 53B, C); convoluted duct thicker and longer than apodemes.

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland**: Baldy Mountain, Herberton Range SF, 17.26666°S, 145.41666°E, Dec. 5, 1977 (R.I. Storey, ANIC, PBI_OON 5933), 2 ♀.

DISTRIBUTION: This species is known only from Baldy Mountain on the Atherton Tablelands (AU) of the Wet Tropics Bioregion, in northeastern Queensland (map 7).

Ischnothyreus piricius, new species

Figures 54–55, map 9

TYPES: AUSTRALIA: **Queensland**: Male holotype, female allotype, and 3 male paratypes from Emmett Creek area S of Townsville (NQ 4/1), 19.45°S, 147.4°E (26 Oct 1991–27 Jul 1992, P. Lawless, R. Raven, M. Shaw), deposited in QM (♂ holotype: QM S21948, PBI_OON 00022002; ♀ allotype and ♂ paratypes: QM S95972, PBI_OON 00005623).

ETYMOLOGY: The specific epithet is derived from the Latin *pirum* and *-anus* meaning

“pertaining to the pear” (Brown, 1956), and refers to the pear-shaped epigynal atrium of the female epigynum.

DIAGNOSIS: This species can be easily recognized by an orange-brown bulbous male palp, which has an elongate and distally tapered, obtusely bent embolic region (figs. 54H, 55A, B). Females exhibit an epigynal atrium that is distinctly pear shaped (figs. 54I, 55E).

MALE (PBI_OON 22002, figs. 54A–C, G–H, 55A–D). Total length 1.28. CEPHALOTHORAX: *Carapace* orange, broadly oval in dorsal view, pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae light. *Eyes*: ALE largest, ALE circular, PME oval, PLE oval; posterior eye row procurved from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, pale orange, uniform. Chelicerae, endites, and labium pale orange. Chelicerae straight, anterior face unmodified; fang shape normal, without prominent basal process; setae light. Labium elongated hexagon, not 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. Endites anteromedian tip with one strong, toothlike projection, same as sternum in sclerotization. ABDOMEN:

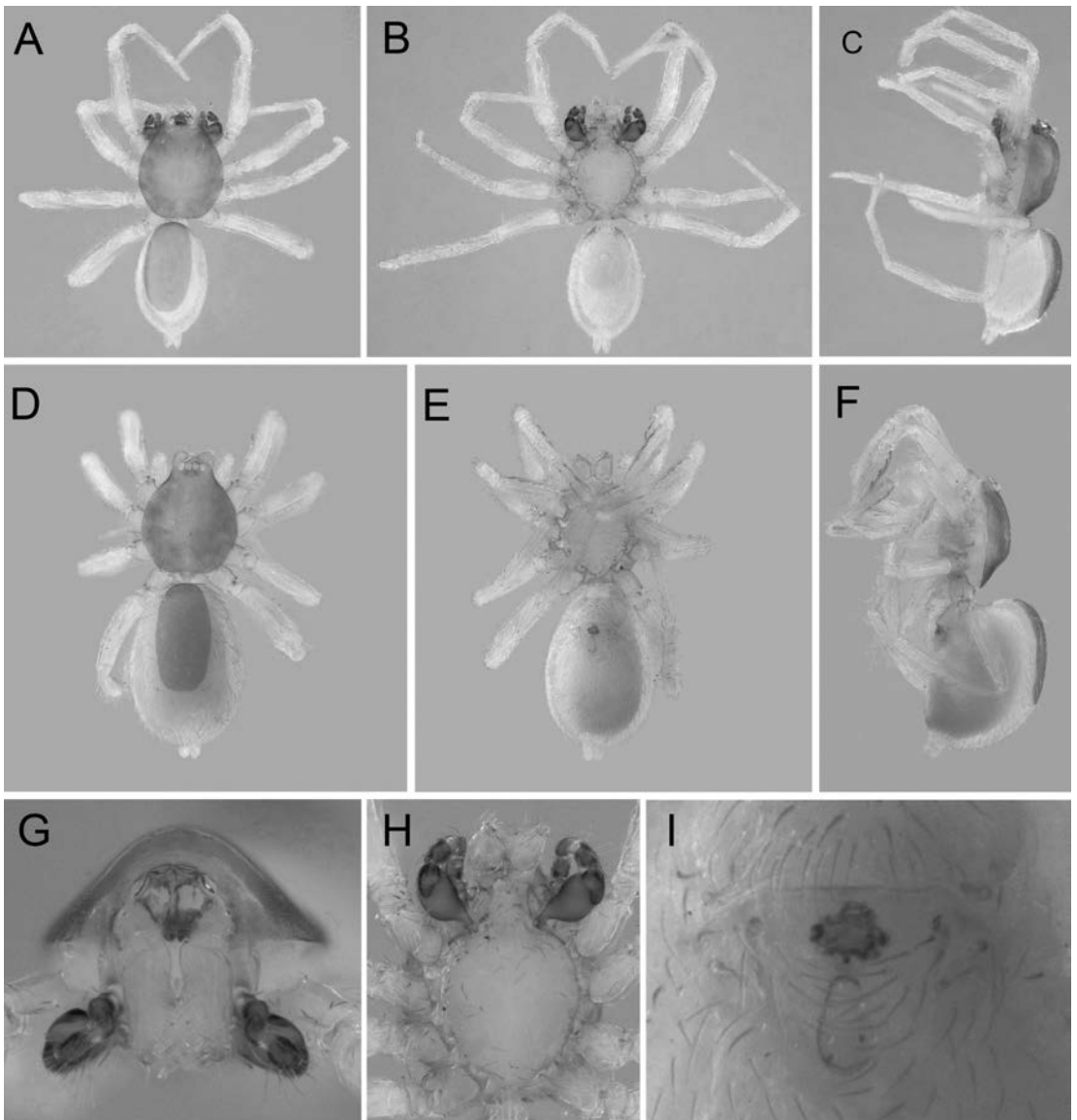


Fig. 54. *Ischnothyreus piricius*, sp. nov. Holotype male (PBI_OON 00022002): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005623): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum orange-brown, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites present. Post-epigastric scutum pale orange, covering about 2/3 of abdominal length. Dorsum, epigastric

area, and postepigastric area setae dark. LEGS: Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments orange-brown; embolus dark; femur shorter than trochanter; patella about as long as femur;

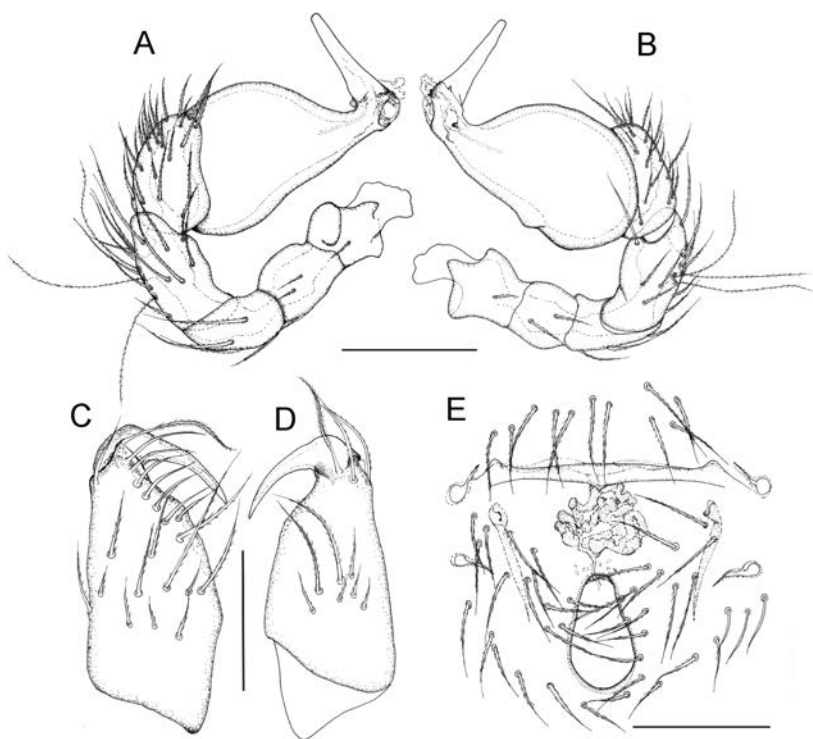


Fig. 55. *Ischnothyreus piricius*, sp. nov. Holotype male (PBI_OON 00022002): **A**, left palp, prolateral view; **B**, left palp, retrolateral view; **C**, left chelicerae, anterior view; **D**, left chelicerae, posterior view. Allotype female (PBI_OON 00005623): **E**, epigynum, ventral view. Scale lines = 0.1 mm.

cymbium orange-brown; bulb orange-brown, 1 to 1.5 times as long as cymbium; palpal bulb bulbous; embolic region obtusely bent at right angles to palpal bulb, elongate, distally tapered (figs. 54H, 55A, B).

FEMALE (PBI_OON 5623, figs. 54D–F, I, 55E). Total length 1.51. **CEPHALOTHORAX**: *Carapace* nonmarginal pars cephalica setae dark. *Clypeus* setae dark. *Eyes*: PME circular; posterior eye row straight from above. **ABDOMEN**: Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, only around epigastric furrow. **LEGS**: Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA**: Ventral view: epigynal atrium distinctly pear shaped, without sclerotized projections; convoluted duct tightly coiled, stout, thicker than apodemes (figs. 54I, 55E).

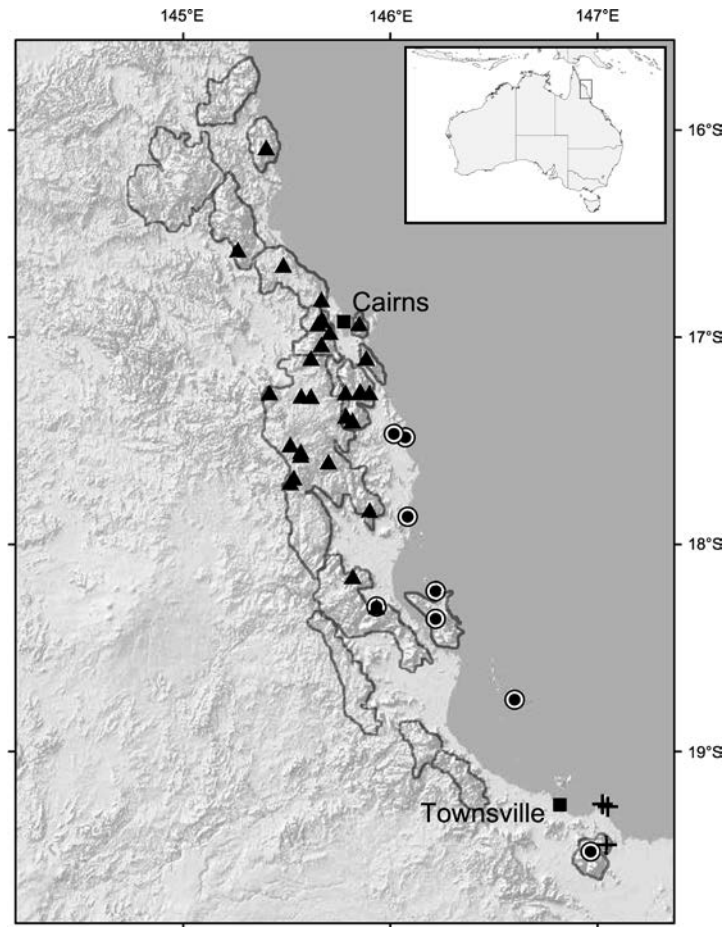
OTHER MATERIAL EXAMINED: **AUSTRALIA**: **Queensland**: Emmett Creek area

S of Townsville (NQ 4/1), 19.45000°S, 147.40000°E, July 27–Dec. 2, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S24753, PBI_OON 21731), 1 ♀; Mount Cleveland summit, 560 m, 19.25433°S, 147.02430°E, Jan. 19, 1991 (A. Graham, QM S33471, PBI_OON 22222), 1 ♀; Mount Cleveland, summit, 500 m, 19.26667°S, 147.05000°E, Mar. 23, 1991 (G. Monteith, QM S31881, PBI_OON 22059), 1 ♀.

DISTRIBUTION: This species is known only from Emmett Creek and Mount Cleveland, south of Townsville, in northeastern Queensland (map 9).

Ischnothyreus barratus, new species
Figures 56–57, map 9

TYPES: **AUSTRALIA**: **Queensland**: Male holotype from Mount Elliot National Park, Upper North Creek, 19.48334°S, 146.9667°E, 1000 m (3–5 Dec 1986, G. Monteith, G. Thompson, D. Hamlet), deposited in QM (S18696, PBI_OON 00021981). Female allo-



Map 9. Map of northeastern Queensland showing recorded distributions of *Ischnothyreus piricius* (+), *I. barratus* (⊙) and *I. monteithi* (▲). Wet Tropics upland subregions outlined in grey (see map 1).

type from Mount Elliot National Park, summit, 19.48334°E, 146.9667°E, 1150 m (1 Jan 1900, A. Graham), deposited in QM (S37946, PBI_OON 00021734).

ETYMOLOGY: The specific epithet is derived from the Latin *barrus* and *-atus*, meaning “elephant, pertaining to” (Brown, 1956), and refers to the trunklike embolic part of the male palp.

DIAGNOSIS: Male fang with slight basal process that is dorsally flattened, embolic part of palp without enlarged or complex distal tip, but shaped like an elephants trunk, with rounded tip (fig. 57A, B). Females have a simple epigynal region with a thick convoluted duct, and a very small, rounded epigynal atrium (figs. 56I, 57F). The posterior edge of

the female dorsal scute is wider than the anterior edge (fig. 56D).

MALE (PBI_OON 21981, figs. 56A–C, G–H, 57A–E). Total length 1.43. **CEPHALOTHORAX:** *Carapace* pale orange, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica finely reticulate, sides strongly reticulate. *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes:* ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above;

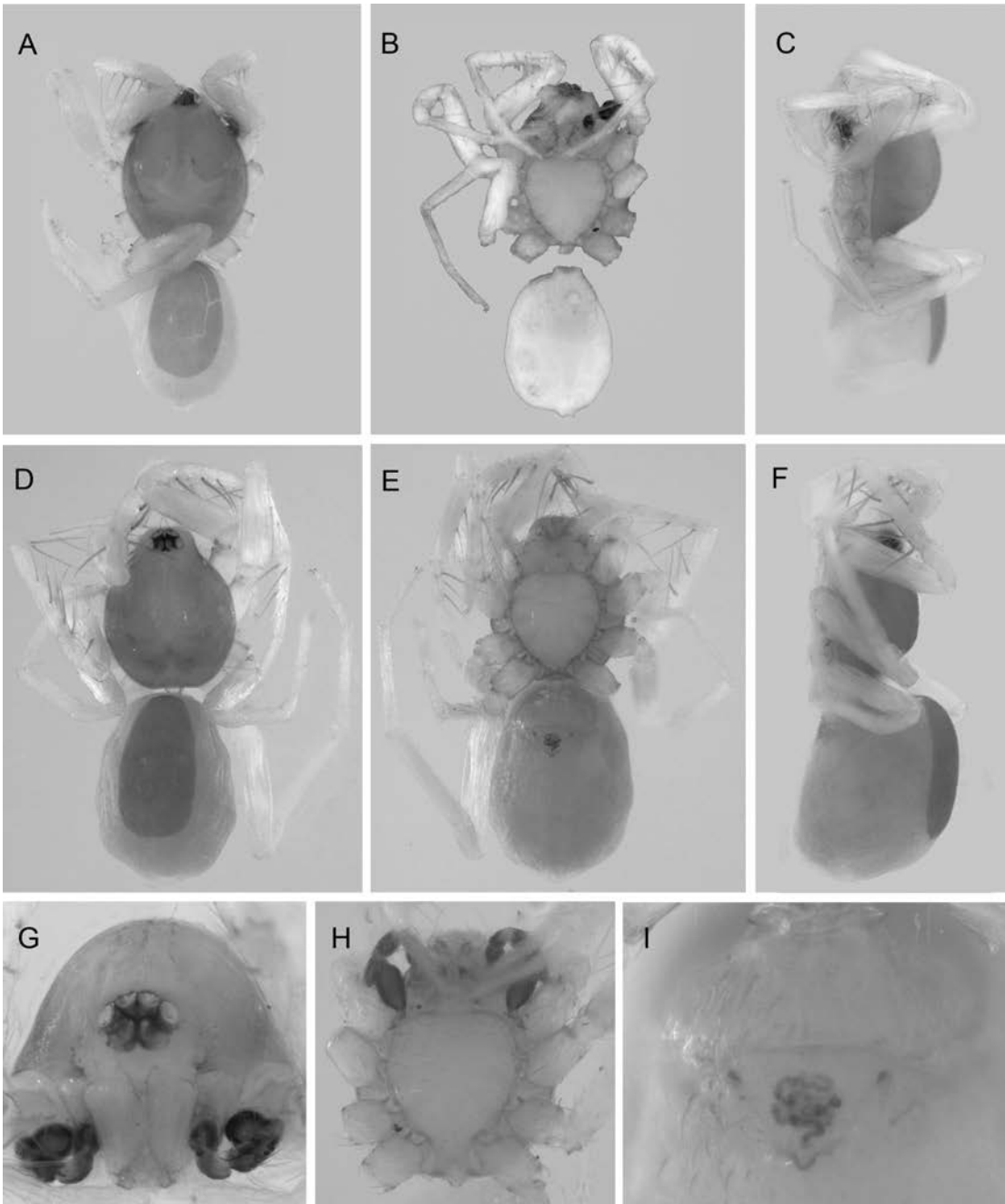


Fig. 56. *Ischnothyreus barratus*, sp. nov. Holotype male (PBI_OON 00021981): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00021734): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

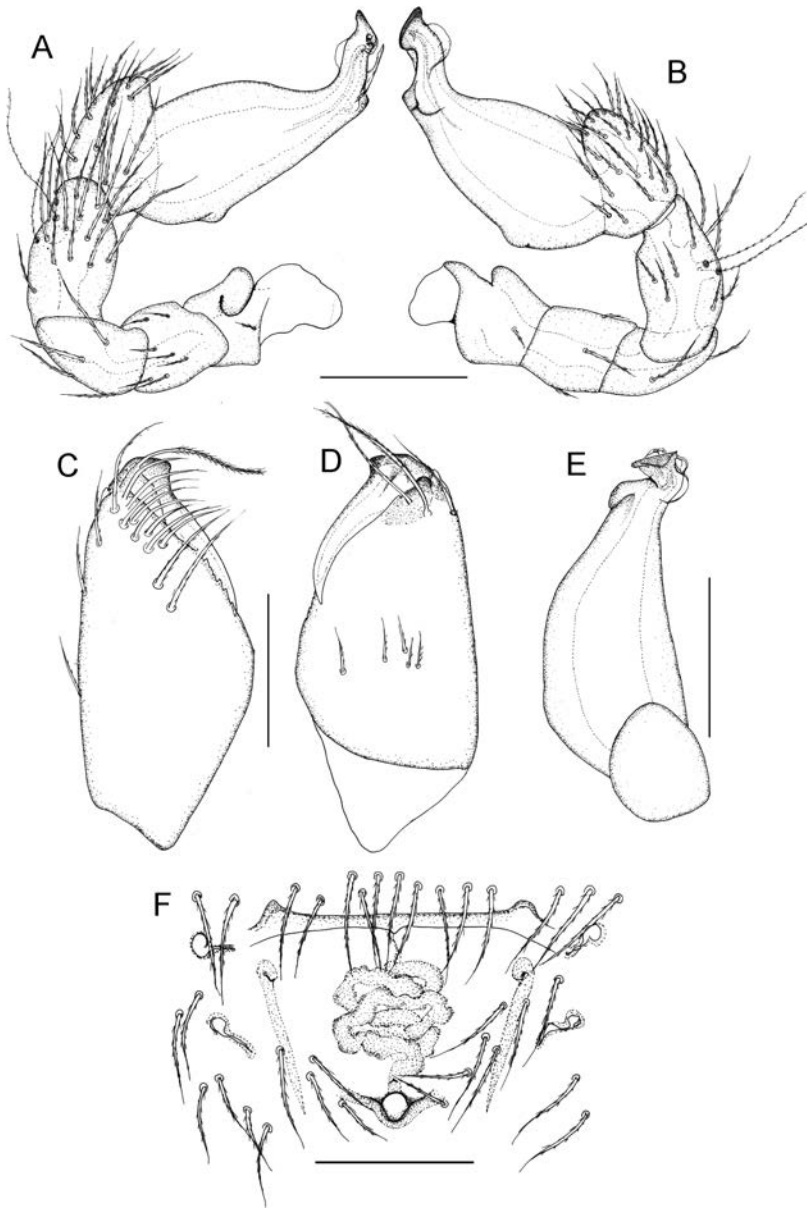


Fig. 57. *Ischnothyreus barratus*, sp. nov. Holotype male (PBI_OON 00021981): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00021734): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

ALE touching, ALE-PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark, evenly scattered. Chelicerae, endites, and labium pale orange. Chelicerae straight, anterior face unmodified; promargin with one larger denticle; shape normal, with dorsally flattened basal process; setae dark.

Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, same as sternum in sclerotization. **ABDOMEN:** Ovoid; dorsum soft portions

white. Book lung covers elliptical. Dorsal scutum pale orange, covering 1/2 to 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Postepigastric scutum yellow, covering about 1/2 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. LEGS: White, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella about as long as femur; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region without enlarged or complex distal tip, shaped like elephant's trunk, elongate, distal edge rounded, subdistal transparent membranous structure on dorsal aspect (fig. 57A, B).

FEMALE (PBI_OON 21734, figs. 56D–F, I, 57F). Total length 1.58. CEPHALOTHORAX: *Carapace* pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less. ABDOMEN: Dorsal scutum between 1/4 and 1/2 abdomen width. Epigastric scutum small lateral sclerites present. Postepigastric scutum pale orange, widely hexagonal. LEGS: Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Ventral view: epigynal atrium simple, small and rounded, sclerotization heavier around posterior edge; convoluted duct thicker than apodemes (figs. 56I, 57F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** Ella Bay National Park (NQ 10), rainforest, 17.48334°S, 146.07170°E, July 24–Nov. 25, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S24917, PBI_OON 21717), 1 ♂; Hinchinbrook Island, Gayundah Creek, rainforest, 10 m, 18.35983°S, 146.21820°E, Nov. 8–17, 1984 (V. Davies, J. Gallon, QM S58702, PBI_OON 22212), 1 ♂; Hinchinbrook Island, Bowen Creek, rainforest, leaf litter, 18.30000°S, 146.23333°E, July 11, 1977 (R.W. Taylor, ANIC, PBI_OON 25824), 1 ♀; Hinchinbrook Island, Missionary Bay, rainforest, leaf litter, 18.23333°S, 146.21666°E, July 10, 1977 (R.W. Taylor, ANIC, PBI_OON

25825), 1 ♀; Hinchinbrook Island, Missionary Bay, rainforest, leaf litter, 18.23333°S, 146.21666°E, July 10, 1977 (R.W. Taylor, ANIC, PBI_OON 25826), 2 ♂, 2 ♀; Hinchinbrook Island, Missionary Bay, rainforest, leaf litter, 18.23333°S, 146.21666°E, July 10, 1977 (R.W. Taylor, ANIC, PBI_OON 25827), 2 ♀; Hinchinbrook Island, Missionary Bay, rainforest, leaf litter, 18.23333°S, 146.21666°E, July 10, 1977 (R.W. Taylor, ANIC, PBI_OON 25828), 2 ♂; Mission Beach, 20 m, 17.52000°S, 146.05000°E, Jan. 29–Mar. 4, 1996 (M. Cermak, ANIC, PBI_OON 5855), 1 ♂; Mount Elliot National Park, Upper North Creek, rainforest, 1000 m, 19.48334°S, 146.96670°E, Dec. 3–5, 1986 (G. Monteith, G. Thompson, D. Hamlet, QM S18690, PBI_OON 22158), 8 ♀; Palm Island, site 1, rainforest, leaf litter, 450 m, 18.73800°S, 146.58920°E, Feb. 20–21, 2001 (G. Monteith, QM S67575, PBI_OON 22249), 1 ♀; Polly Creek (Hasenpusch property), rainforest, 50 m, 17.46667°S, 146.01670°E, Nov. 25, 1994, to Jan. 10, 1995 (G. Monteith, J. Hasenpusch, QM S27946, PBI_OON 22229), 1 ♂.

DISTRIBUTION: This species is known from Ella Bay south of Cairns to Elliot Uplands, Hinchinbrook, and Palm Island, in north-eastern Queensland (map 9).

Ischnothyreus monteithi, new species

Figures 58–59, map 9

TYPES: AUSTRALIA: **Queensland:** Male holotype, female allotype and 1 male and 1 female paratypes from Bellenden Ker Range, cable tower 3, 17.26667°S, 145.85000°E, 1054 m (25–31 Oct 1981, EARTHWATCH/Qld Museum), deposited in QM (♂ holotype: QM S27906, PBI_OON 22150; ♀ allotype and 1 ♂, 1 ♀ paratype: QM S27906, PBI_OON 5610).

ETYMOLOGY: The specific name is a patronym in honor of Geof Monteith, in recognition of his enormous contribution to entomology and numerous collections within the Wet Tropics Bioregion.

DIAGNOSIS: This species is similar to *I. barratus*, sp. nov., but can be identified by a rounded disc-shaped basal process on the male cheliceral fang (fig. 59D), a distal concavity on the distal edge of the male palp (fig. 59A, B), the lack of a clear epigynal

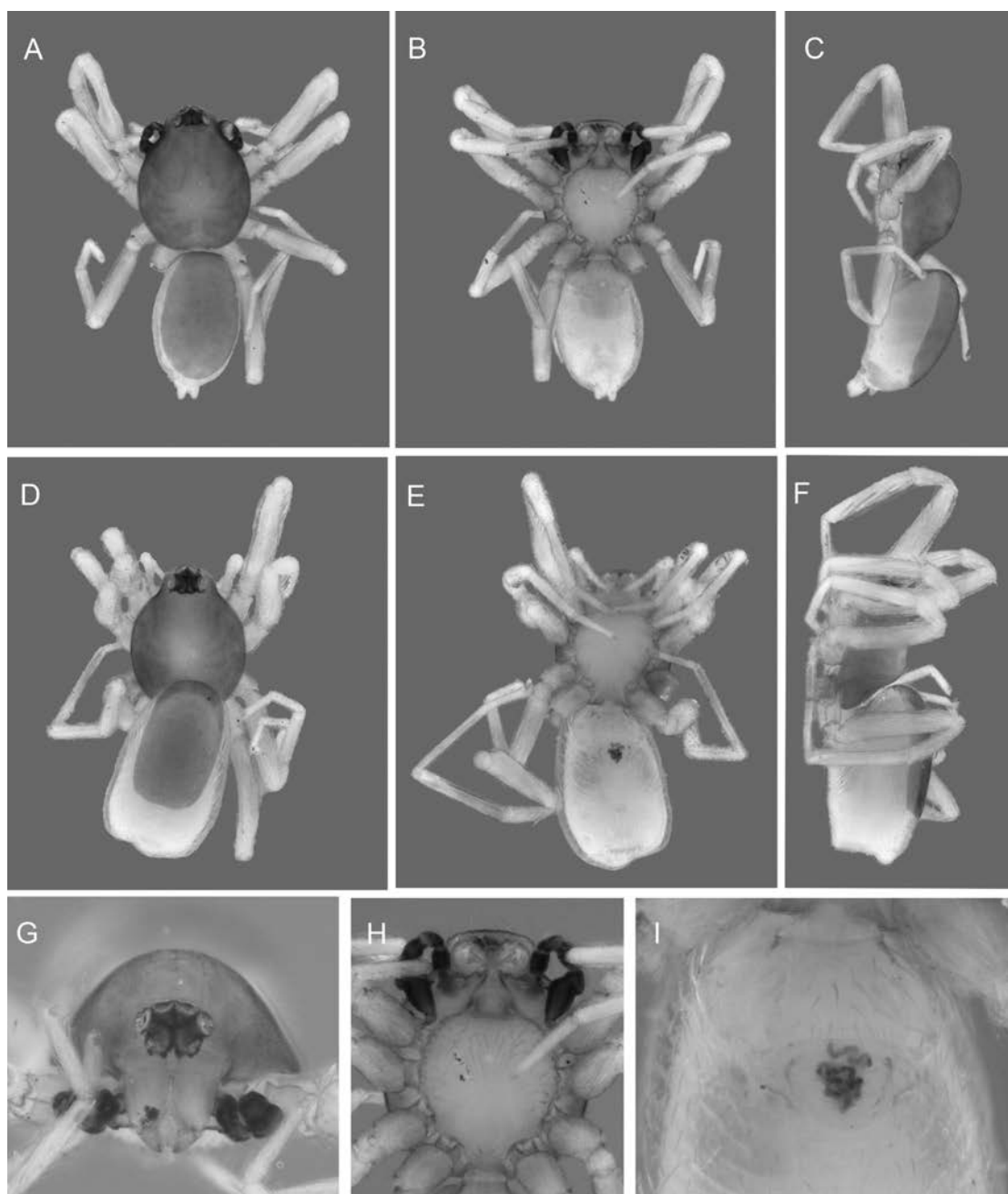


Fig. 58. *Ischnothyreus monteithi*, sp. nov. Holotype male (PBI_OON 00022150): A. habitus, dorsal view; B. habitus, ventral view; C. habitus, lateral view; G. carapace, anterior view; H. sternum, ventral view. Allotype female (PBI_OON 00005610): D. habitus, dorsal view; E. habitus, ventral view. F. habitus, lateral view; I. epigynum, ventral view.

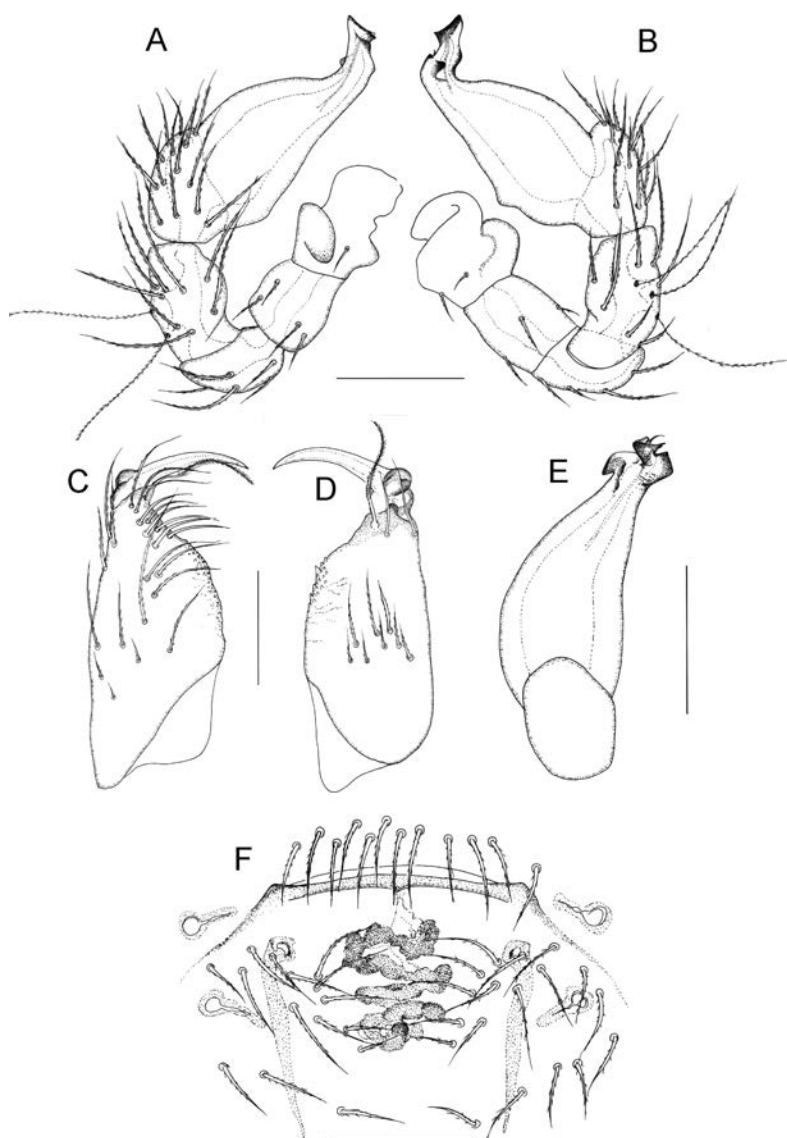


Fig. 59. *Ischnothyreus monteithi*, sp. nov. Paratype male (PBI_OON 00005633): **A**. left palp, prolateral view; **B**. left palp, retrolateral view; **C**. left chelicerae, anterior view; **D**. left chelicerae, posterior view; **E**. left palp, dorsal view. Paratype female (PBI_OON 00005622): **F**. epigynum, ventral view. Scale lines = 0.1 mm.

atrium or sclerotized structure in the female epigynal region, and a long dorsal scute covering 2/3 of the female abdomen.

MALE (PBI_OON 22150, fig. 58 A–C, G, H; paratype (PBI_OON 05633), fig. 59A–E). Total length 1.43. **CEPHALOTHORAX**: Carapace pale orange to live green, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum

width, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica strongly reticulate, sides strongly reticulate. *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes*: ALE largest, ALE circular, PME oval, PLE oval; posterior eye row procurved from above; ALE touching, ALE-PLE touching.

Sternum longer than wide, pale orange, uniform; setae dark, evenly scattered. Chelicerae, endites, and labium pale orange. Chelicerae slightly divergent, anterior face unmodified; promargin with one slightly larger denticle; fang shape normal, with prominent disc-shaped basal process; setae dark. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, slightly stronger sclerotization than sternum; with six or more setae on anterior margin. Endites distally not excavated, anteromedian tip with one strong, toothlike projection, stronger sclerotization than sternum. ABDOMEN: Ovoid; dorsum soft portions pale orange. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface finely reticulate, sides finely reticulate. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale orange, covering about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. LEGS: Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella about as long as femur; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region simple, without enlarged or complex processes, shaped like elephant's trunk, stout, distal edge with concavity (fig. 59A, B).

FEMALE (PBI_OON 5610, fig. 58D–F, I; paratype (PBI_OON 05622), fig. 59F). Total length 1.54. CEPHALOTHORAX: *Carapace* pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less. ABDOMEN: Epigastric scutum small lateral sclerites present. Postepigastric scutum widely hexagonal, only around epigastric furrow. LEGS: Orange. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Ventral view: epigynal region very simple, no discerning epigynal atrium, without sclerotized projections; convoluted duct very dark, thicker than apodemes (fig. 59F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** Bell Peak North, rainforest, 950 m, 17.10000°S, 145.88330°E, Oct. 13, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16051, PBI_OON 26270), 2 ♂, 2 ♀; Bell Peak North, rainforest, 950 m, 17.10000°S, 145.88330°E, Oct. 13, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S12983, PBI_OON 26272), 4 ♀; Bellenden Ker Range, cable tower 3, rainforest, leaf litter, 1054 m, 17.26667°S, 145.85000°E, Oct. 17–24, 1981 (EARTHWATCH/Qld Museum, QM S27896, PBI_OON 25934), 1 ♂; Bellenden Ker Range, Cableway Base Station, rainforest, leaf litter, 100 m, 17.26667°S, 145.90000°E, Oct. 17–31, 1981 (EARTHWATCH/Qld Museum, QM S27758, PBI_OON 25878), 1 ♀; Bellenden Ker Range, summit, rainforest, 1560 m, 17.26472°S, 145.85805°E, Oct. 08, 1991 (G. Monteith, H. Janetzki, QM S79688, PBI_OON 22175), 1 ♀; Bellenden Ker Range, Summit TV Station, rainforest, 1560 m, 17.26667°S, 145.85000°E, Nov. 01, 1981, to Nov. 07, 1981 (EARTHWATCH/Qld Museum, QM S27848, PBI_OON 22153), 1 ♂; Bellenden Ker Range, Summit TV Station, 1560 m, 17.26667°S, 145.85000°E, Oct. 28, 1983 (G. Monteith, D. Yeates, G. Thompson, QM S16811, PBI_OON 26279), 1 ♂; Bellenden Ker Range, Westgid Creek (N Branch), 100 m, 17.26667°S, 145.90000°E, Nov. 1, 1981 (EARTHWATCH/Qld Museum, QM S26274, PBI_OON 22154), 1 ♀; Black Mountain, 17 km ESE Julatten, 900 m, 16.65000°S, 145.48330°E, Apr. 29–30, 1982 (G. Monteith, D. Yeates, D. Cook, QM S16093), 2 ♂, 2 ♀; Cardwell Range, Mount Macalister, 900 m, 18.30000°S, 145.93330°E, Dec. 19, 1986 (G. Monteith, G. Thompson, D. Hamlet, QM S31596, PBI_OON 21770), 1 ♂; Cardwell SF, Murray Falls boardwalk, rainforest, leaf litter, 18.15250°S, 145.81777°E, May 2, 2009 (K. Edward and P. Cullen, QM S95973, PBI_OON 5552), 1 ♂; Charmillin Creek, 940 m, 17.70000°S, 145.51670°E, Dec. 1, 1997 (G. Monteith, QM S43099, PBI_OON 22039), 2 ♂, 1 ♀; Chujeba Peak summit, 7 km SW Redlynch, 750 m, 16.93333°S, 145.65000°E, Dec. 14, 1989 (G. Monteith, G. Thompson, QM S41516, PBI_OON 22218), 1 ♂; Copperlode Dam Road, rainforest, 16.97500°S, 145.70833°E, July 23–Nov. 26, 1992 (R. Raven,

P. Lawless, E. Lawless, M. Shaw, QM S78927, PBI_OON 20882), 1 ♀; Curtain Fig tower, 2 km SW Yungaburra, 750 m, 17.28333°S, 145.58330°E, Dec. 25, 1989 (G. Monteith, QM S33918, PBI_OON 21757), 1 ♀; Douglas Creek, Lamb Range, 900 m, 17.10000°S, 145.61670°E, Oct. 12, 1982 (G. Monteith, D. Yeates, G. Thompson, QM S16032, PBI_OON 25781), 1 ♀; Lake Eacham, rainforest, 17.28300°S, 145.63300°E, Dec. 9, 1989 (G. Monteith, G. Thompson, H. Janetzki, QM S79687, PBI_OON 22178), 2 ♀; Lambs Head, East end, 1180 m, 17.03333°S, 145.66670°E, Nov. 29, 1993 (G. Monteith, H. Janetzki, QM S34824, PBI_OON 22023), 1 ♀; Maalan Road, 2 km S Palmerston highway, 17.60000°S, 145.70000°E, May 18, 1995 (G. Monteith, QM S41060, PBI_OON 21710), 1 ♂; Mount Bartle Frere, Sth. Peak summit, 17.40000°S, 145.81666°E, Nov. 6–8, 1981 (EARTH-WATCH/Qld Museum, QM S75928, PBI_OON 25802), 1 ♀; Mount Edith Road, rainforest, 900 m, 17.10500°S, 145.61166°E, May 30, 2008 (G. Monteith, QM S86446), 1 ♀; Mount Fisher, summit, rainforest, 1360 m, 17.56666°S, 145.56666°E, Feb. 8, 1999 (G. Monteith, QM S78835, PBI_OON 20613), 1 ♂, 2 ♀; Mount Fisher, 7 km SW Millaa Millaa, Whiteing Road, 1200 m, 17.55000°S, 145.56670°E, May 5, 1983, G. Monteith, D. Yeates, 1 ♂ (QM S16119 PBI_OON 26275); Mount Kooroomool saddle, 7 km S, rainforest, 860 m, 17.90000°S, 145.68333°E, Dec. 3, 1998 (G. Monteith, QM S78694, PBI_OON 7155), 1 ♂; Mount Kooroomool summit, 7 km S, site 2, rainforest, 1000 m, 17.90150°S, 145.67580°E, Dec. 4, 1998 (G. Monteith, QM S69623, PBI_OON 22241), 2 ♀; Mount Lewis Road, 16 km from highway, 950 m, Dec. 18, 1989 (G. Monteith, G. Thompson, QM S29981, PBI_OON 21743), 1 ♀; Mount Murray Prior, Casuarina, 770 m, 16.93333°S, 145.85000°E, Dec. 7, 1998 (G. Monteith, QM S78935, PBI_OON 20867), 1 ♀; Mount Pieter-Botte summit, 950 m, 16.08333°S, 145.40000°E, Nov. 21, 1993 (G. Monteith, H. Janetzki, QM S49632, PBI_OON 22133), 1 ♂; Mount Williams 0.5 km NW, 870 m, 16.91667°S, 145.66670°E, Nov. 28, 1997 (G. Monteith, QM S43218, PBI_OON 22173), 4 ♂; Mount Williams, 1 km ENE, 800 m, 16.90767°S, 145.66900°E, Dec. 2, 1993 (G. Monteith, H. Janetzki, QM S58217, PBI_OON 22138),

1 ♀; Saddle Mountain, 640 m, 16.81667°S, 145.66670°E, Nov. 3, 1995 (G. Monteith, D. Cook, QM S38705, PBI_OON 22238), 2 ♀; Saddle Mountain, 640 m, 16.81667°S, 145.66670°E, Nov. 3, 1995 (G. Monteith, D. Cook, QM S38704, PBI_OON 22239), 3 ♂; Sluice Creek, 9 km WSW Millaa Millaa, 1150 m, 17.51667°S, 145.51670°E, Dec. 5, 1988 (G. Monteith, G. Thompson, QM S16430, PBI_OON 25952), 1 ♂, 2 ♀; Too-loombah Creek (NQ 41), 22.70500°S, 149.56670°E, July 29–Nov. 24, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S24642, PBI_OON 21983), 1 ♂, 1 ♀; Upper Boulder Creek, Walter Hill Range, 1000 m, 17.83333°S, 145.90000°E, Dec. 7, 1989 (G. Monteith, G. Thompson, H. Janetzki, QM S49688, PBI_OON 22135), 2 ♂; Vine Creek, Majors Mountain, 1100 m, 17.67633°S, 145.53370°E, Nov. 24, 1994 (G. Monteith, QM S60285, PBI_OON 22075), 1 ♂; Wooroonooran National Park, Mount Bartle Frere, western side on track to summit, 1000 m, 17.37833°S, 145.78578°E, Apr. 23, 2009 (H. Wood, CASENT 9035057, PBI_OON 00005633), 1 ♂; Wooroonooran National Park, Mount Bartle Frere, western side on track to summit, 1000 m, 17.37833°S, 145.78578°E, Apr. 23, 2009 (H. Wood, CASENT 9035053, PBI_OON 00005622), 1 ♀.

DISTRIBUTION: This species is relatively widespread from Thornton Uplands in the Wet Tropics Bioregion, south to Rockhampton, Queensland (map 9).

Ischnothyreus julianneae, new species

Figures 60–61, map 10

TYPES: AUSTRALIA: Queensland: Male holotype and female allotype from sifted leaf litter in Davies Creek National Park, Emerald Creek Falls, 17.05083°S, 145.54000°E (9 Apr., 2009; K. Edward and J. Waldock), deposited in QM (♂ holotype: QM S95974, PBI_OON 5532, ♀ allotype: QM S95975, PBI_OON 5531).

ETYMOLOGY: The specific name is a patronym in honor of Julianne Waldock, one of the collectors of the holotype and many other oonopid spiders.

DIAGNOSIS: The male can be distinguished by the slightly swollen and clublike obtusely bent embolic part of the palp and the small

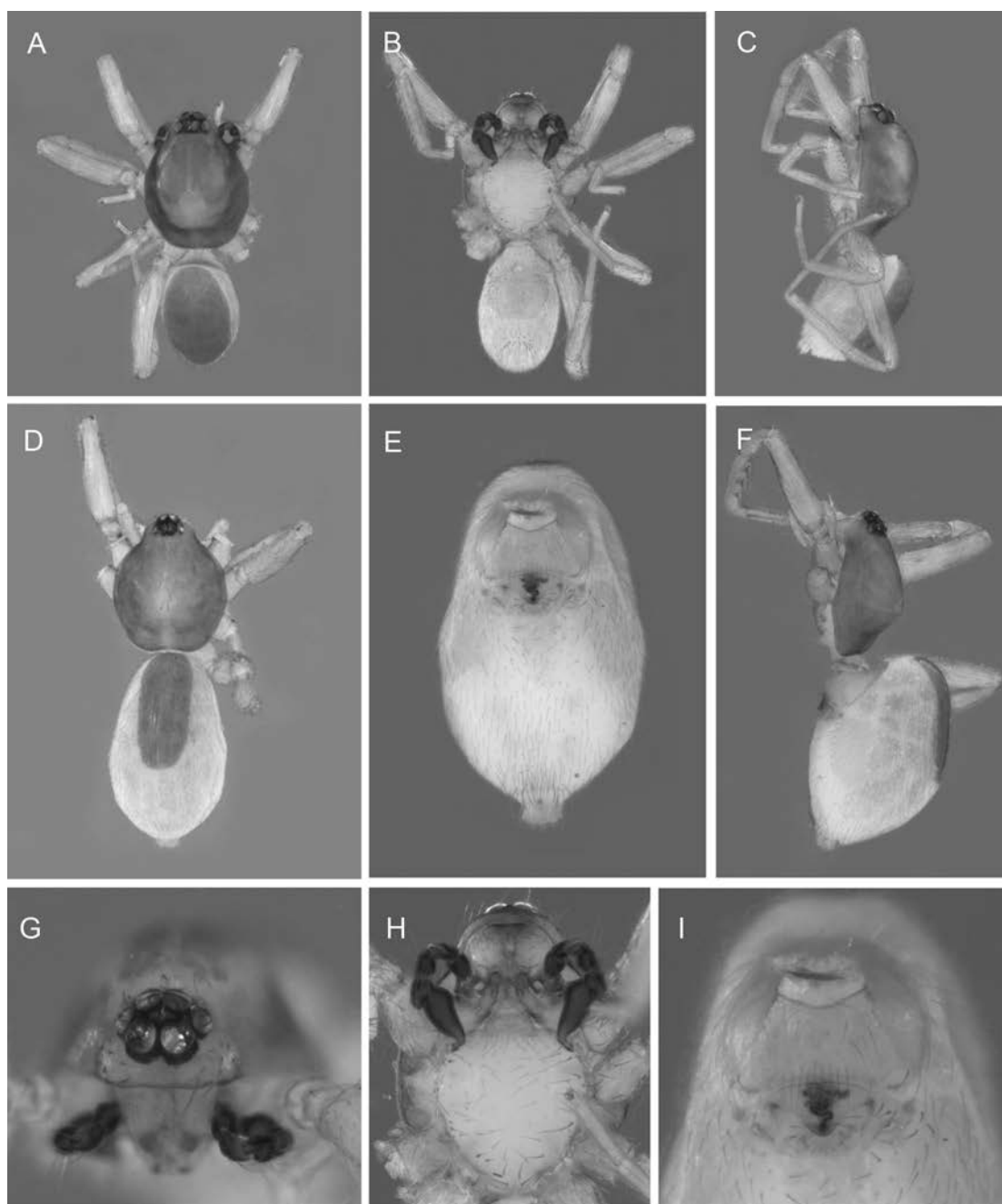


Fig. 60. *Ischnothyreus julianneae*, sp. nov. Holotype male (PBI_OON 5532): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 5531): **D.** habitus, dorsal view; **E.** abdomen, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

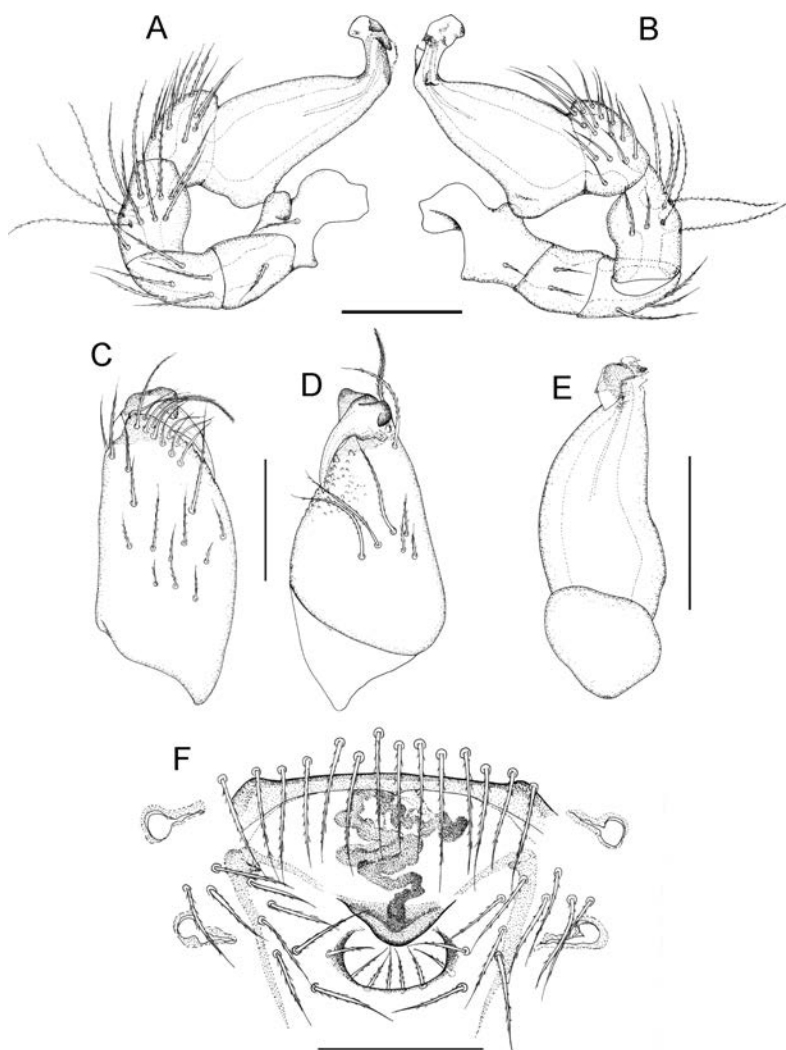
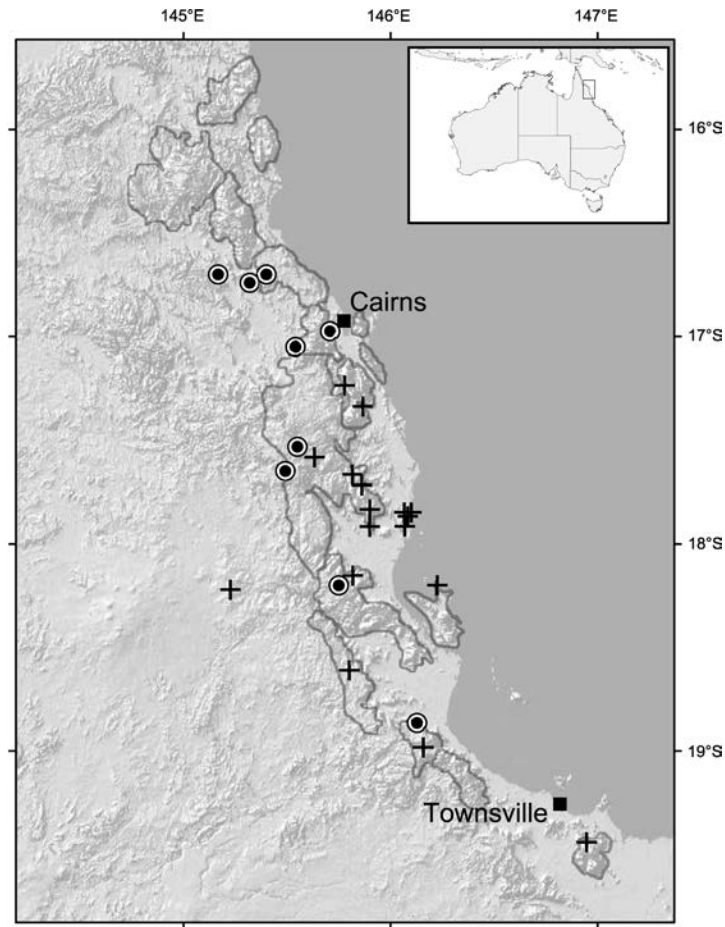


Fig. 61. *Ischnothyreus julianneae*, sp. nov. Holotype male (PBI_OON 5532): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 5531): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

basal process of the fang, which has small ridges on the anterior aspect (fig. 61A–D). The female epigynal region has a triangular process that overhangs the anterior edge of an oval epigynal atrium (figs. 60I, 61F).

MALE (PBI_OON 5532, figs. 60A–C, G–H, 61A–E). Total length 1.50. **CEPHALOTHORAX:** *Carapace* yellow-brown, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, anterolateral corners without extension or projections, surface of elevated portion of

pars cephalica strongly reticulate, sides strongly reticulate. *Clypeus* curved downward in front view, high, ALE separated from edge of carapace by their radius or more; setae dark. *Eyes:* ALE largest, ALE circular, PME circular, PLE oval; posterior eye row straight from above; ALE touching, ALE–PLE touching. *Sternum* as long as wide, pale orange, uniform. Chelicerae, endites, and labium pale orange. Chelicerae straight, anterior face unmodified; fang shape normal, basal process small and rounded, anterior face with small ridges; setae dark; promargin of chelicerae



Map 10. Map of northeastern Queensland showing recorded distributions of *Ischnothyreus julianneae* (●) and *I. stauntoni* (▲). Wet Tropics upland subregions outlined in grey (see map 1).

with one larger denticle. Labium elongated hexagon, not fused to sternum, anterior margin slightly indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin. Endites antero-medial tip with one strong, toothlike projection, much more heavily sclerotized than sternum. ABDOMEN: Cylindrical. Book lung covers elliptical. Dorsal scutum yellow-brown, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum pale orange, covering about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. LEGS: Pale orange, femora and basal

half of tibiae darkened. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter, without posteriorly rounded lateral dilation; patella about as long as femur; tibia with three trichobothria; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region obtusely bent, short (less than 1/2 length of bulb), distally rounded, and slightly clubbed.

FEMALE (PBI_OON 5531, figs. 60D–F, I, 61F). Total length 1.78. CEPHALOTHORAX: Carapace pars cephalica slightly elevated in lateral view, anteriorly narrowed to

0.49 times its maximum width or less; nonmarginal pars cephalica setae present in one row. *Clypeus* straight in front view, low, ALE separated from edge of carapace by less than their radius. *Eyes*: PME oval; posterior eye row procurved from above. *Sternum* longer than wide, lateral margins unmodified. **ABDOMEN**: Ovoid. Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Epigastric scutum small lateral sclerites present. Postepigastric scutum pale orange, widely hexagonal, only around epigastric furrow. **LEGS**: Without color pattern. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA**: Ventral view: epigynal atrium oval, triangular process over anterior edge; convoluted duct very dark, thicker than apodemes, weak horizontal sclerotization anterior to epigynal atrium clearly joins posteriorly directed apodemes (figs. 60I, 61F).

OTHER MATERIAL EXAMINED: **AUSTRALIA**: **Queensland**: Bakers Blue Mountain, 17 km W Mount Molloy, vacant lots, 900 m, 16.70000°S, 145.16670°E, Jan. 1–18, 1990 (ANZSES expedition, QM S16436, PBI_OON 25940), 1 ♀; Bakers Blue Mountain, 17 km W Mount Molloy, rainforest, 1050 m, 16.70000°S, 145.16670°E, Jan. 1–18, 1990 (ANZSES expedition, QM S16435, PBI_OON 25948), 1 ♂, 3 ♀; Bally Knob, summit, open forest, 1100 m, 17.65000°S, 145.50000°E, Dec. 6, 1998, to Feb. 6, 1999 (G. Monteith, D. Cook, QM S57178, PBI_OON 21998), 1 ♂; Copperlode Dam Road, rainforest, 16.97500°S, 145.70833°E, July 23–Nov. 26, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM S24384, PBI_OON 21694), 1 ♂; Kirrama Range, Yuccabine Creek, rainforest, leaf litter, 700 m, 18.20000°S, 145.75000°E, Dec. 10, 1986 (G. Monteith, G. Thompson, QM S31966, PBI_OON 25933), 1 ♀; Mount Fisher, Kjellberg Road, rainforest, 1100 m, 17.53333°S, 145.55000°E, May 17, 1995 (G. Monteith, QM S38141, PBI_OON 21753), 1 ♂; Mount Molloy, riparian forest, 400 m, 16.74083°S, 145.32000°E, Jan. 1, 1992, to Jan. 1, 1993 (S. Burnett, QM S72983, PBI_OON 22112), 1 ♂; Mount Molloy, riparian forest, 400 m, 16.74083°S, 145.32000°E, Jan. 1, 1992, to Jan. 1, 1993 (S. Burnett, QM S79705,

PBI_OON 22503), 2 ♀; Paluma Range National Park, Jourama Falls track, rainforest, leaf litter, 18.86416°S, 146.12777°E, May 7, 2009 (K. Edward and P. Cullen, QM S95976, PBI_OON 5546), 1 ♂; Paluma Range National Park, Jourama Falls track, rainforest, leaf litter, 18.86416°S, 146.12777°E, May 7, 2009 (K. Edward and P. Cullen, QM S95977, PBI_OON 26308), 1 ♂, 1 ♀; Spear Creek, Mount Molloy (site 37), vine forest, leaf litter, 16.70000°S, 145.40000°E, Nov. 3–10, 1975 (R. Raven, V. Davies, QM S16139, PBI_OON 25883), 6 ♂, 10 ♀.

DISTRIBUTION: This species is widespread from Bakers Blue Mountain (east of CU) south to Paluma Range National Park, Wet Tropics Bioregion, in northeastern Queensland (map 10).

Ischnothyreus stauntoni, new species

Figures 62–63, map 10

TYPES: **AUSTRALIA**: **Queensland**: Male holotype and female allotype from Tam O'Shanter National Park, Licuala Fan Palm walk, 17.915°S, 146.06833°E (7 May 2009, K. Edward and P. Cullen), deposited in QM (♂ holotype: QM S95978, PBI_OON 00005545; ♀ allotype: QM S95979, PBI_OON 00005624).

ETYMOLOGY: The specific epithet is a patronym in honor of Kyran Staunton, the collector of this species and many other interesting invertebrates of the Wet Tropics.

DIAGNOSIS: Male similar to that of *I. monteithi*, sp. nov., and *I. barratus*, sp. nov., but differs in a rounded basal bump on the fang (fig. 63C, D), and the palp has a stouter embolic region (fig. 63A, B). The female epigynal region of this species has a heavily sclerotized round epigynal atrium with a very small triangular process overhanging the anterior section (fig. 63F).

MALE (PBI_OON 5545, figs. 62A–C, G–H, 63A–E). Total length 1.48. **CEPHALOTHORAX**: *Carapace* yellow-brown, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica finely reticulate, sides strongly reticulate. *Clypeus* margin unmodified, curved downward in front view,

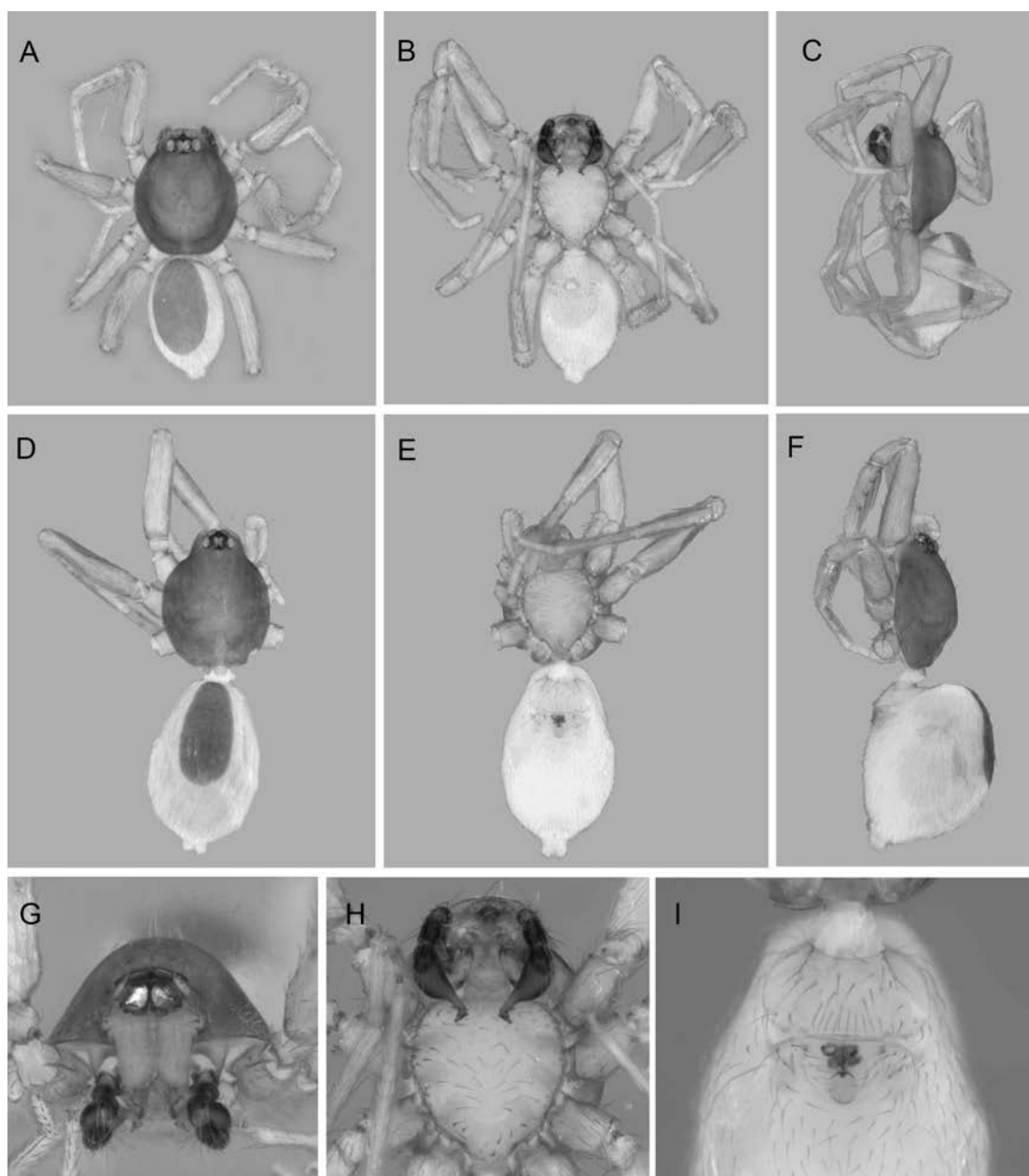


Fig. 62. *Ischnothyreus stauntoni*, sp. nov. Holotype male (PBI_OON 00005545): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005624): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

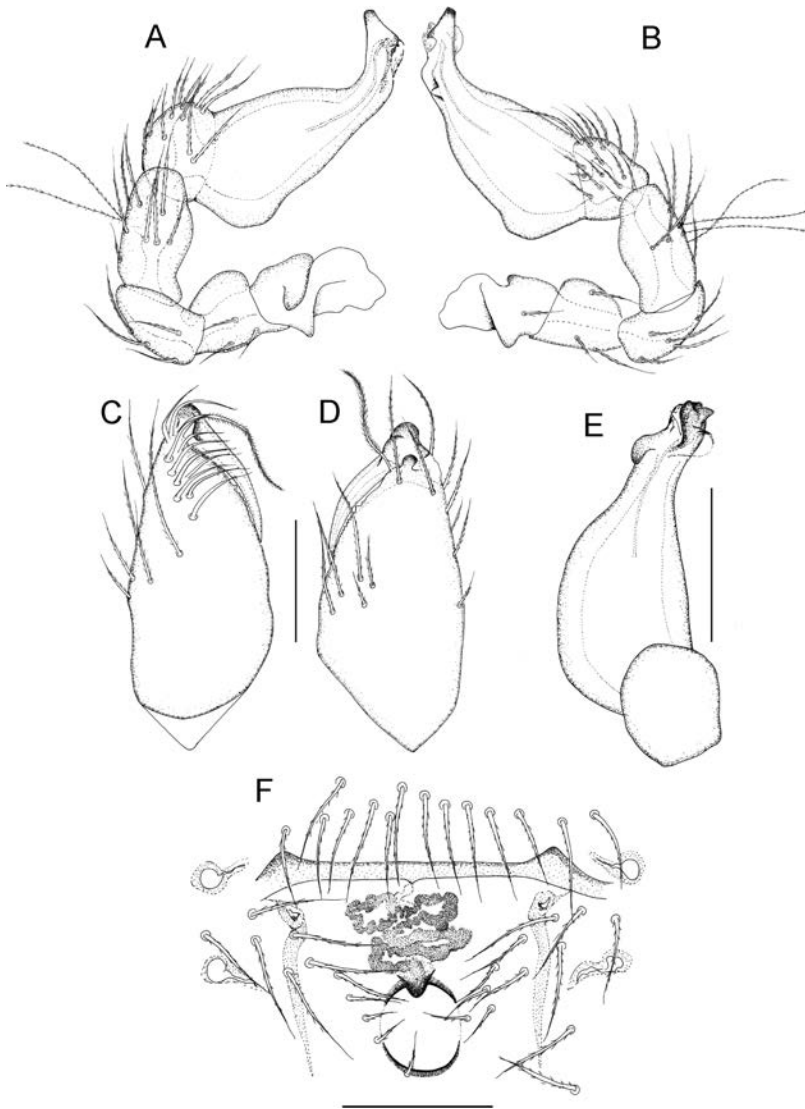


Fig. 63. *Ischnothyreus stauntoni*, sp. nov. Holotype male (PBI_OON 00005545): **A**. left palp, prolateral view; **B**. left palp, retrolateral view; **C**. left chelicerae, anterior view; **D**. left chelicerae, posterior view; **E**. left palp, dorsal view. Allotype female (PBI_OON 00005624): **F**. epigynum, ventral view. Scale lines = 0.1 mm.

low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes*: ALE largest, ALE circular, PME circular, PLE oval; posterior eye row procurved from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark, evenly scattered. Chelicerae, endites, and labium pale orange. Chelicerae straight, anterior face unmodified; promargin with one slightly larger denticle;

fang shape normal, with small basal process; setae dark. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin. Endites distally not excavated, anteromedian tip with one strong, toothlike projection, same as sternum in sclerotization. **ABDOMEN**: Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum

yellow-brown, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites present. Postepigastric scutum pale orange, covering about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. LEGS: Orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella about as long as femur; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region simple, without enlarged or complex processes, stout, distal edge straight, small subdistal transparent membranous structure on dorsal aspect (fig. 63A, B).

FEMALE (PBI_OON 5624, figs. 62D–F, I, 63F). Total length 1.68. CEPHALOTHORAX: *Carapace* pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less. *Eyes*: posterior eye row straight from above. **ABDOMEN**: Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. LEGS: Leg spination: femora: I p0-2-0; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Ventral view: epigynal atrium circular, small triangular process over anterior edge, heavily sclerotized around epigynal atrium, lateral edges with weaker sclerotization; convoluted duct tightly coiled, stout, thicker than apodemes (figs. 62I, 63F).

OTHER MATERIAL EXAMINED: AUSTRALIA: Queensland: Atherton Tableland, Japonvale, rainforest, leaf litter, 80 m, 17.71694°S, 145.86111°E, Mar. 26, 2009 (K. Staunton, QM S95980, PBI_OON 5577), 1 ♀; Bowling Green Bay National Park, Alligator Creek section, rainforest, leaf litter, 19.44055°S, 146.94722°E, May 5, 2009 (K. Edward and P. Cullen, QM S95981, PBI_OON 5549), 1 ♂; Cardwell SF, Murray Falls boardwalk, rainforest, leaf litter, 18.15250°S, 145.81777°E, May 2, 2009 (K. Edward and P. Cullen, QM S95982,

PBI_OON 5553), 1 ♂; Clump Mountain National Park, Bicton Hill Track, rainforest, leaf litter, 17.84722°S, 146.10027°E, May 1, 2007 (K. Edward and K. Pitz, QM S95983, PBI_OON 25724), 2 ♀; Clump Mountain National Park, Bicton Hill Track, rainforest, leaf litter, 17.84722°S, 146.10027°E, May 1, 2007 (K. Edward and K. Pitz, QM S95984, PBI_OON 25725), 1 ♂; Clump Mountain National Park, Rainforest Walk, rainforest, leaf litter, 17.84722°S, 146.06611°E, May 1, 2007 (K. Edward and K. Pitz, QM S95985, PBI_OON 5627), 1 ♀; Eungella National Park, Sky Window, 21.15000°S, 148.50000°E (April 24, 1993, M.S. Harvey, B.J. Scott, WAM T66794, PBI_OON 00004324), 1 ♂, 3 ♀; Girringun National Park, Wallaman Falls area, Banggurru walk, rainforest, leaf litter, 18.61000°S, 145.80083°E, May 2, 2009 (K. Edward and P. Cullen, QM S95986, PBI_OON 25844), 3 ♂; same data (WAM T130763), 1 ♂; Hinchinbrook Island, Macushla to north Shepherd Beach, rainforest, leaf litter, 18.22138°S, 146.22666°E, May 3, 2009 (K. Edward and P. Cullen, QM S95987, PBI_OON 5551), 1 ♂; Hinchinbrook Island, Macushla to north Shepherd Beach, rainforest, leaf litter, 18.22138°S, 146.22666°E, May 3, 2009 (K. Edward and P. Cullen, QM S95988, PBI_OON 25842), 2 ♂, 1 ♀; Hinchinbrook Island, track to Cape Richards from north Shepherd, rainforest, leaf litter, 18.19916°S, 146.22583°E, May 3, 2009 (K. Edward and P. Cullen, QM S95989, PBI_OON 25840), 2 ♀; McNamee Creek, rainforest, 400 m, 17.00000°S, 145.00000°E, July 8, 1971 (Taylor and Feehan, ANIC, PBI_OON 25869), 1 ♀; Mission Beach, rainforest, 20 m, 17.52000°S, 146.05000°E, Jan. 29–Mar. 4, 1996 (M. Cermak, ANIC, PBI_OON 25875), 1 ♀; Mount Father Clancy, rainforest, leaf litter, 840 m, 17.58333°S, 145.63330°E, May 4, 1983 (G. Monteith, D. Yeates, QM S16081, PBI_OON 25832), 2 ♀; Mount Tyson, 2 km W Tully, rainforest, leaf litter, 650 m, 17.91667°S, 145.90000°E, May 7, 1983 (D.K. Yeates, QM S12974, PBI_OON 25834), 1 ♀; 7 km NW of Paluma, rainforest litter, 18.96700°S, 146.15000°E (April 20, 1993, M.S. Harvey, B.J. Scott, WAM T78967, PBI_OON 00004319), 2 ♀; Paluma Range National Park; Birthday Creek Falls track, rainforest,

leaf litter, 18.98277°S, 146.15833°E, May 6, 2009 (K. Edward and P. Cullen, QM S95990, PBI_OON 5547), 1 ♂; Paluma Range National Park; Birthday Creek Falls track, rainforest, leaf litter, 18.98277°S, 146.15833°E, May 6, 2009 (K. Edward and P. Cullen, QM S95991, PBI_OON 5628), 1 ♂; Upper Boulder, via Tully, rainforest, leaf litter, 17.83333°S, 145.90000°E, Oct. 27, 1983 (G. Monteith, D. Yeates, G. Thompson, QM S16808, PBI_OON 25833), 1 ♀; Wooroonooran National Park; Goldsborough section, Kearneys Falls walking track, rainforest, leaf litter, 17.23722°S, 145.77833°E, Apr. 25, 2009 (K. Edward and P. Cullen, QM S95992, PBI_OON 5537), 1 ♂, 1 ♀; Wooroonooran National Park; Goldsborough section, Kearneys Falls walking track, rainforest, leaf litter, 17.23722°S, 145.77833°E, Apr. 25, 2009 (K. Edward and P. Cullen, QM S95993, PBI_OON 5625), 1 ♂; Wooroonooran National Park; the boulders, start of Goldsborough track, rainforest, leaf litter, 17.33888°S, 145.86694°E, Apr. 24, 2009 (K. Edward and P. Cullen, QM S95994, PBI_OON 25845), 2 ♀.

DISTRIBUTION: This species is found within the southern section of Wet Tropics Bioregion, from Atherton Uplands, Hinchinbrook Island, south to Elliot Uplands, in northeastern Queensland (map 10).

Ischnothyreus raveni, new species

Figures 64–65, map 11

TYPES: AUSTRALIA: **Queensland:** Male holotype, female allotype, and one female paratype from Hinchinbrook Island, Macushla Cove, 18.22666°S, 146.21777°E (3 May 2009, K. Edward and P. Cullen), deposited in QM (♂ holotype: QM S95995, PBI_OON 00005641; ♀ allotype and paratype: QM S95996, PBI_OON 00005642).

ETYMOLOGY: The specific epithet is a patronym in honor of Robert J. Raven of the Queensland Museum (Brisbane), in recognition of his enormous contribution to taxonomy and collections of Queensland spiders.

DIAGNOSIS: Males of this species can be distinguished by the slight bifurcated distal tip of the obtusely bent embolic region of the palp (fig. 65A–D) and the fang basal process, which has small ridges on the anterior aspect

(fig. 65C). Convolute duct of the female epigynum becoming thinner posteriorly and ending at a darkened circle. The process overhanging the epigynal atrium is heavily sclerotized, broad, and relatively straight with a very slight medial indent (figs. 64I, 65F).

MALE (PBI_OON 5641, figs. 64A–C, G–H, 65A–E). Total length 1.75. **CEPHALOTHORAX:** *Carapace* pale orange, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. *Clypeus* margin unmodified, curved downward in front view, high, ALE separated from edge of carapace by their radius or more; setae dark. *Eyes:* ALE largest, ALE circular, PME circular, PLE oval; posterior eye row procurved from above; ALE touching, ALE–PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark, evenly scattered. *Chelicerae*, endites, and labium pale orange. *Chelicerae* straight, anterior face unmodified; promargin with one larger denticle; fang shape normal, with prominent basal process, small ridges on anterior aspect of basal process; setae dark. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin. Endites anteromedian tip with one strong, toothlike projection, same as sternum in sclerotization. **ABDOMEN:** Cylindrical; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites present. Postepigastric scutum pale orange, covering about 1/2 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. **LEGS:** Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur shorter than

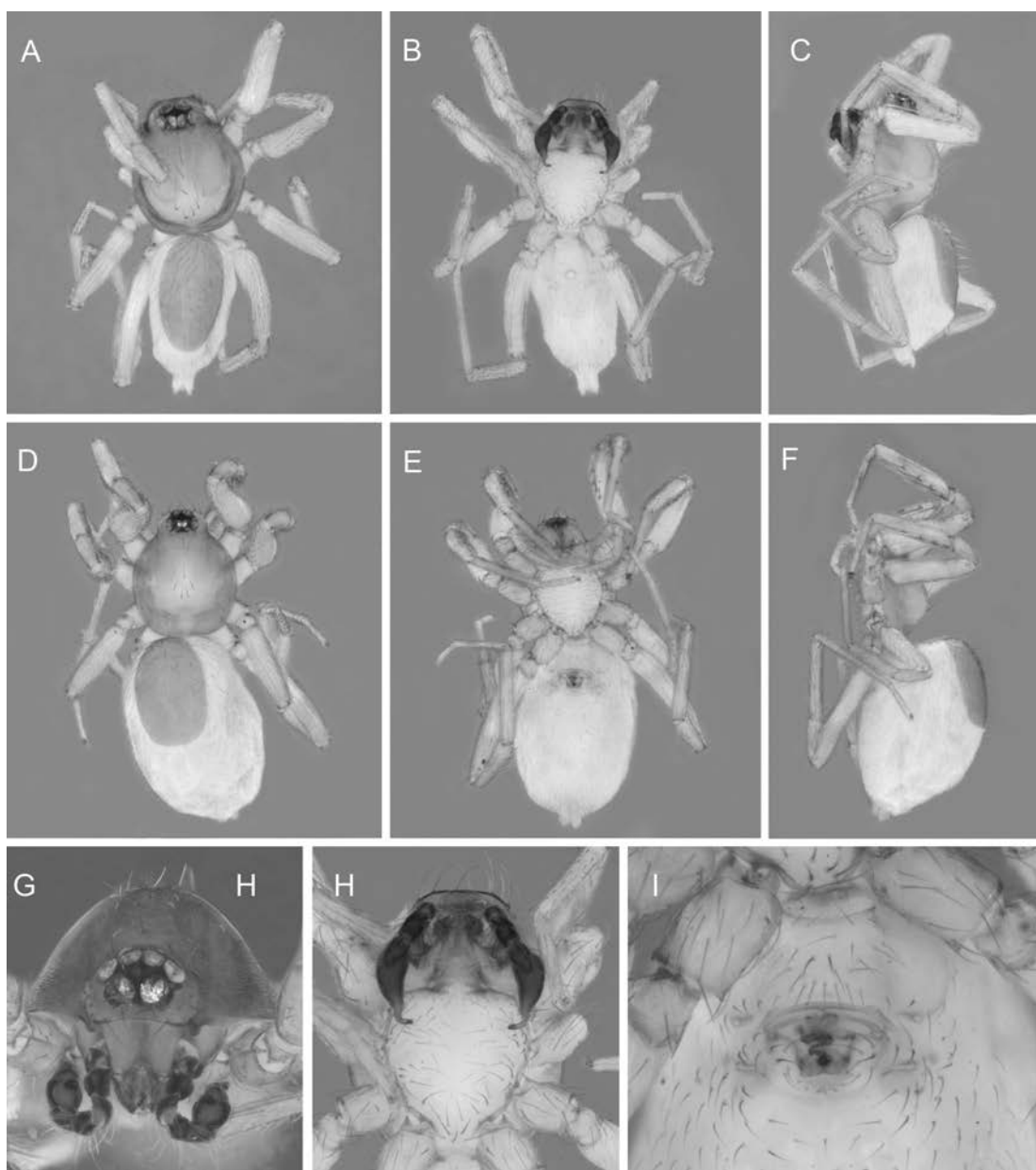


Fig. 64. *Ischnothyreus raveni*, sp. nov. Holotype male (PBI_OON 00005641): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005642): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

trochanter; patella about as long as femur; cymbium dark red-brown; bulb dark red-brown, more than 2 times as long as cymbium, stout; embolic region elongate, obtusely bent, curved distally toward prolateral

aspect, distal tip slightly bifurcated (figs. 4H, 65A, B).

FEMALE (PBI_OON 5642, figs. 64D–F, I, 65F). Total length 2.20. **CEPHALOTHORAX:** *Carapace* pars cephalica slightly elevated in

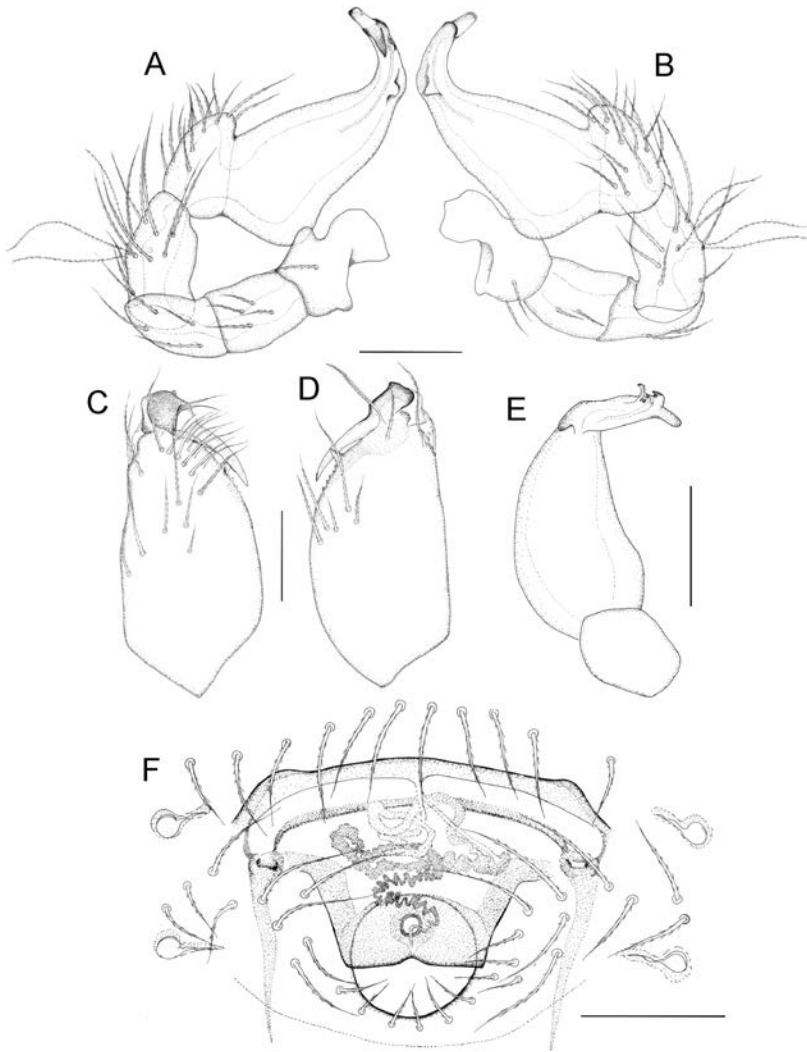
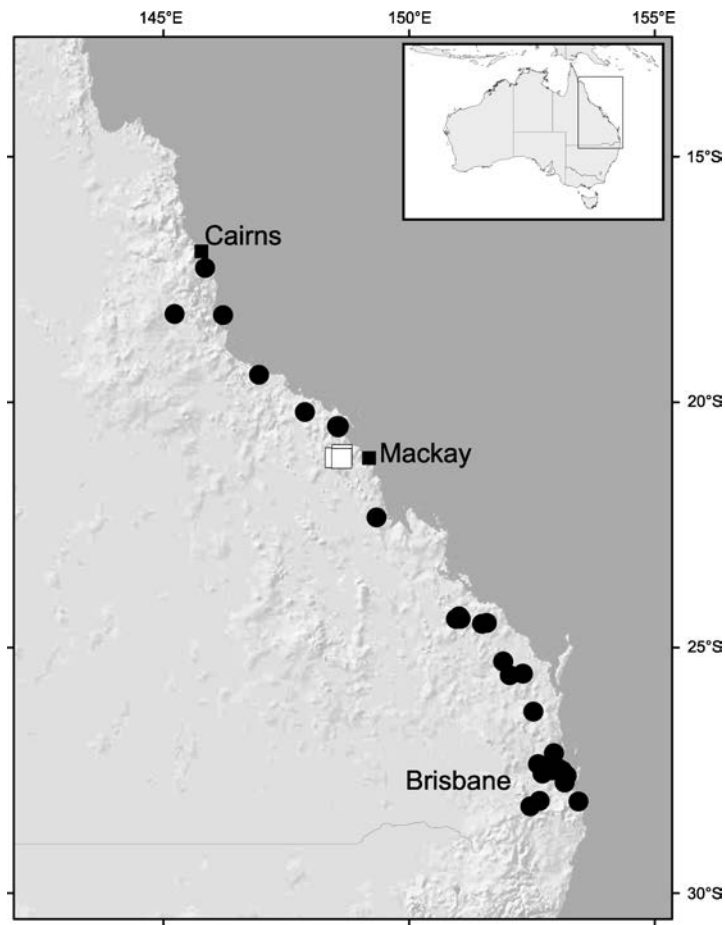


Fig. 65. *Ischnothyreus raveni*, sp. nov. Holotype male (PBI_OON 00005641): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00005642): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

lateral view, anteriorly narrowed to 0.49 times its maximum width or less. *Clypeus* low, ALE separated from edge of carapace by less than their radius. ABDOMEN: Ovoid. Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Post-epigastric scutum widely hexagonal, only around epigastric furrow. LEGS: Leg spination: femora: I p0-2-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Ventral view: strong horizontal sclerotization anterior to rounded epigynal

atrium, thick, clearly joins posteriorly directed lateral apodemes; heavily sclerotized process overhanging epigynal atrium mostly with straight edge, slight medial indent; convoluted duct much thinner than apodemes in posterior section, widening anteriorly (figs. 64I, 65F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** 1.6 km ENE of One Tree Hill, semievergreen vine thicket, 160 m, 25.28417°S, 151.91830°E, Sept. 26–Dec. 14, 1999 (D. and I. Cook, QM S22115, PBI_OON



Map 11. Map of Queensland showing recorded distributions of *Ischnothyreus raveni* (●) and *I. eungella* (□).

20839), 1 ♀; 1.6 km ENE of One Tree Hill, semievergreen vine thicket, 160 m, 25.28417°S, 151.91830°E, Sept. 26–Dec. 14, 1999 (D. and I. Cook, QM S86144, PBI_OON 26262), 1 ♂; 18.5 km W of St. Lawrence, rainforest, 240 m, 22.35067°S, 149.33880°E, Mar. 25, 2001 (G. Monteith, QM S69579, PBI_OON 22122), 1 ♀; 3.5 km SE Fairlies Knob, Hoop pine scrub, 120 m, 25.53333°S, 152.31666°E, Oct. 20–Dec. 20, 2000 (D. Cook, G. Monteith, QM S78671, PBI_OON 7141), 1 ♀; Bahrs Scrub, Beenleigh, rainforest, 200 m, 27.75000°S, 153.16670°E, Apr. 30, 1980, to Jan. 29, 1981 (G. and S. Monteith, QM S16017, PBI_OON 25957), 4 ♂, 4 ♀; Bellenden Ker Range, cable tower 3, rainforest, leaf litter, 1054 m, 17.26667°S, 145.85000°E, Oct. 17–24, 1981 (EARTHWATCH/Qld Museum,

QM S27896, PBI_OON 25935), 1 ♂; Bellenden Ker Range, Summit TV Station, rainforest, 1560 m, 17.26667°S, 145.85000°E, Nov. 1–7, 1981 (EARTHWATCH/Qld Museum, QM S27838, PBI_OON 22146), 1 ♂; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 27.50784°S, 153.11750°E, Oct. 30–Dec. 1, 2003 (Queensland Museum Party, QM S65212, PBI_OON 22187), 1 ♀; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 80 m, 27.51305°S, 153.11805°E, Feb. 19, 2004 (Queensland Museum Party, QM S79870, PBI_OON 22833), 1 ♂, 1 ♀; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 27.50784°S, 153.11750°E, Mar. 1–31, 2004 (Queensland Museum Party, QM S65177, PBI_OON 25912), 1 ♀; Belmont

Hills Bushlands, site 1, dry eucalypt woodland, 27.50784°S, 153.11750°E, Jan. 30–Mar. 1, 2004 (Queensland Museum Party, QM S65174, PBI_OON 25926), 1 ♂; Black Rock Scrub, rainforest, 350 m, 28.12200°S, 152.65800°E, Dec. 2, 2000, to May 13, 2001 (G. Monteith, QM S78699, PBI_OON 7161), 2 ♂, 1 ♀; Black Rock Scrub, rainforest, 350 m, 28.12200°S, 152.65800°E, Oct. 6–Dec. 3, 2000 (C. Burwell, QM S72826, PBI_OON 21961), 2 ♂, 1 ♀; Black Rock Scrub, rainforest, 350 m, 28.12200°S, 152.65800°E, Dec. 2, 2000, to May 13, 2001 (G. Monteith, QM S57470, PBI_OON 22089), 1 ♂; Boombana National Park, site 1, rainforest, 27.40133°S, 152.78700°E, Jan. 2–30, 2004 (Queensland Museum Party, QM S54583, PBI_OON 22189), 1 ♀; Bowling Green Bay National Park, Alligator Creek section, rainforest, leaf litter, 19.44055°S, 146.94722°E, May 5, 2009 (K. Edward and P. Cullen, QM S95997, PBI_OON 5548), 1 ♂; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, Apr. 17–May 27, 2003 (C. Burwell, S. Wright, E. Volschenk, QM S62536, PBI_OON 22417), 1 ♂; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, June 30–July 28, 2003 (S. Wright, E. Volschenk, QM S62854, PBI_OON 22419), 2 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, July 28–Sept. 2, 2003 (Queensland Museum Party, QM S62552, PBI_OON 22425), 2 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, May 27–June 30, 2003 (S. Wright, E. Volschenk, QM S62925, PBI_OON 25925), 1 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, Mar. 1–31, 2004 (Queensland Museum Party, QM S79866, PBI_OON 26261), 1 ♂, 1 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, Jan. 30–Mar. 1, 2004 (Queensland Museum Party, QM S65765, PBI_OON 26290), 1 ♀; Bulburin Forestry Nursery NW of Bundaberg, rainforest, leaf litter under rocks, 24.51666°S, 151.48333°E, Mar. 1, 1975 (M. Gray, C. Horseman, AM KS6707, PBI_OON 26285), 1 ♀; Bulburin SF, leaf litter, 500 m, 24.50000°S, 151.58330°E, Mar. 25–28, 1977 (V. Davies, R. Raven, QM S16102, PBI_OON 26280), 1 ♂, 3 ♀; Bulburin SF, 500 m, 24.50000°S, 151.58330°E, Mar. 25–28, 1977 (V. Davies, R. Raven, QM S16137, PBI_OON 26283), 1 ♂; Burleigh Headland National Park, rainforest, 80 m, 28.13333°S, 153.45000°E, Jan.

1–Mar. 4, 1992 (D.J. Cook, QM S47120, PBI_OON 22468), 1 ♂; Burpengary, rainforest, 27.15000°S, 152.95000°E, Sept. 27, 1978 (G. Monteith, QM S16123, PBI_OON 5920), 1 ♀; Burpengary, rainforest, 27.15000°S, 152.95000°E, July 25, 1987 (G. Monteith, QM S12987, PBI_OON 5922), 2 ♀; Enoggera Reservoir (site 3), rainforest, 100 m, 27.45000°S, 152.91670°E, Mar. 15–18, 2000 (C. Burwell, S. Evans, QM S39614, PBI_OON 22109), 1 ♀; Fig Tree Pocket, Brisbane, open forest, 27.46667°S, 153.05000°E, June 1, 1983 (V.E. Davies, QM S78321, PBI_OON 20588), 1 ♂, 1 ♀; Fig Tree Pocket, Brisbane, open forest, 27.46667°S, 153.05000°E, Feb. 1, 1983 (V.E. Davies, QM S78315, PBI_OON 20603), 1 ♀; Hinchinbrook Island, Macushla Cove, rainforest, 18.22666°S, 146.21777°E, May 3, 2009 (K. Edward and P. Cullen, QM S95998), 1 ♂, 2 ♀; Hinchinbrook Island, N. end of north Shepherd Beach, rainforest, leaf litter, 18.20250°S, 146.22888°E, May 3, 2009 (K. Edward and P. Cullen, QM S95999, PBI_OON 5550), 1 ♂, 1 ♀; Hinchinbrook Island, N end of north Shepherd Beach, rainforest, leaf litter, 18.20250°S, 146.22888°E, May 3, 2009 (K. Edward and P. Cullen, QM S96000, PBI_OON 26303), 1 ♀; Kroombit Tops, 45 km SSW. of Calliope, rainforest, leaf litter, 940 m, 24.41666°S, 151.05000°E, Dec. 15, 1983 (G. Monteith, V. Davies, J. Gallon, G. Thompson, QM S16015, PBI_OON 25906), 1 ♂; Kroombit Tops, 65 km SW. Gladstone, rainforest, leaf litter, 1100 m, 24.41916°S, 150.95444°E, Feb. 22–26, 1982 (G. Monteith, G. Thompson, QM S16053, PBI_OON 26282), 1 ♀; Kroombit Tops, Beauty Spot 98, rainforest, 1000 m, 24.36666°S, 151.01670°E, Dec. 9–19, 1983 (V. Davies, J. Gallon, QM S12981, PBI_OON 25907), 3 ♀; Kroombit Tops, Three Moon Creek, rainforest, 1000 m, 24.36666°S, 151.01670°E, Dec. 9–19, 1983 (V. Davies, J. Gallon, QM S16012, PBI_OON 25893), 1 ♂, 1 ♀; 11 km by road, E of Marburg, 27.56666°S, 152.71667°E (June 26, 1986, M.S. Harvey, P.J. Vaughan, WAM T90/911, PBI_OON 00004310), 1 ♀; Marys Creek, via Gympie, rainforest, 180 m, 26.25000°S, 152.58330°E, Aug. 11–Nov. 10, 1974 (G. and S. Monteith, QM S16815, PBI_OON 5927), 2 ♀; Mount Aberdeen, summit saddle, rainforest, 800 m, 20.20000°S, 147.88330°E, Dec. 5, 1996, to Apr. 8, 1997 (G. Monteith, D. Cook, QM S40697, PBI_OON 21713), 3 ♀; Mount Coot-tha,

Brisbane, 27.48334°S, 152.95000°E, Dec. 1–22, 1979 (R.J. Raven, QM S16202, PBI_OON 25942), 2 ♀; Mount Cotton, Scott's Dam, rainforest, 200 m, 27.60967°S, 153.20350°E, Dec. 12, 1997, to May 7, 1998 (G. Monteith, QM S56979, PBI_OON 22049), 1 ♂; Mount Cotton, upper gully, rainforest, 150 m, 27.60967°S, 153.20530°E, Dec. 12, 1997, to May 7, 1998 (G. Monteith, QM S60084, PBI_OON 22128), 1 ♀; Mount Superbus Summit, 1300 m, 28.23333°S, 152.46670°E, Feb. 8–Mar. 12, 1990 (G. Monteith, G. Thompson, H. Janetzki, QM S41562, PBI_OON 21721), 1 ♂; Mount Walsh, 1 km N., vinescrub, 320 m, 25.56666°S, 152.05000°E, June 26–Oct. 9, 1999 (D.J. Cook, QM S72907, PBI_OON 22055), 1 ♀; Proserpine, Airport Drive (site XY12), closed forest, 32 m, 20.48777°S, 148.56500°E, Feb. 16–May 10, 2007 (R. Raven, QM S85145, PBI_OON 23143), 1 ♀; Proserpine, Deadman Creek (site XY17), open forest, 21 m, 20.50500°S, 148.55583°E, May 10–Aug. 15, 2007 (R. Raven, QM S79993, PBI_OON 23109), 1 ♂; Proserpine, Thompson Creek (site XY14), closed forest, 44 m, 20.51083°S, 148.56500°E, Feb. 16–May 10, 2007 (R. Raven, QM S85065, PBI_OON 23194), 2 ♀; Proserpine, Thompson Creek (site XY14), closed forest, 44 m, 20.51083°S, 148.56500°E, Nov. 5, 2007, to Feb. 13, 2008 (R. Raven, QM S85647, PBI_OON 25900), 2 ♀; Proserpine, Thompson Creek (site XY15), closed forest, 21 m, 20.51888°S, 148.55694°E, Feb. 13–Mar. 12, 2008 (R. Raven, QM S85443, PBI_OON 23112), 1 ♂; Proserpine, Thompson Creek (site XY18a), closed forest, 30 m, 20.51500°S, 148.55888°E, Feb. 14–Mar. 12, 2008 (R. Raven, QM S85434, PBI_OON 23129), 1 ♀; Proserpine, track north Airport Drive (site XY11), closed forest, 32 m, 20.48694°S, 148.53583°E, Feb. 13–Mar. 12, 2008 (R.J. Raven, QM S85299, PBI_OON 23139), 1 ♂; Proserpine, track north Airport Drive (site XY11), closed forest, 32 m, 20.48694°S, 148.53583°E, Feb. 10–16, 2007 (R. Raven, QM S85476, PBI_OON 23171), 1 ♂; Proserpine, track north Airport Drive (site XY11), closed forest, 32 m, 20.48694°S, 148.53583°E, Nov. 5, 2007, to Feb. 13, 2008 (R. Raven, QM S85612, PBI_OON 25901), 1 ♂; Proserpine, WSC track (site XY13), closed forest, 37 m, 20.48694°S, 148.57194°E, May 10–Aug. 15, 2007 (R. Raven,

QM S79983, PBI_OON 23069), 2 ♀; Proserpine, WSC track (site XY13), closed forest, 37 m, 20.48694°S, 148.57194°E, Feb. 11–16, 2007 (R. Raven, QM S85371, PBI_OON 23126), 1 ♂, 1 ♀; Sankey's Scrub, rainforest, 60 m, 27.51683°S, 153.08430°E, Dec. 12, 1997, to May 07, 1998 (G. Monteith, QM S60206, PBI_OON 22072), 1 ♀; Split Yard Creek, semievergreen vine thicket, 150 m, 27.37350°S, 152.62600°E, Dec. 27, 1998, to Jan. 13, 1999 (G. Monteith, D. Cook, G. Thompson, QM S69618, PBI_OON 21984), 1 ♀; Upper Brookfield, rainforest, leaf litter, 100 m, 27.50000°S, 152.91670°E, Jan. 12, 1982 (R.J. Raven, QM S16000, PBI_OON 26250), 1 ♀; Upper Brookfield, rainforest, leaf litter, 100 m, 27.50000°S, 152.91670°E, Aug. 14–Sept. 1, 1981 (V. Davies, R. Raven, QM S16491, PBI_OON 26251), 1 ♀; Upper Brookfield, vine forest, leaf litter, 100 m, 27.50000°S, 152.91670°E, Apr. 8–23, 1981 (V. Davies, R. Raven, QM S16697, PBI_OON 26252), 1 ♂, 2 ♀.

DISTRIBUTION: This species is relatively widespread from the border of Queensland and New South Wales, to Bellenden Ker Range in the Wet Tropics (map 11).

Ischnothyreus bupariorbis, new species

Figures 66–67, map 12

TYPES: AUSTRALIA: **Queensland:** Male holotype and female allotype from North Stradbroke Island, “Yarraman,” 27.44867°S, 153.5167°E, 50 m (1 Jan 1900, U. Nolte), deposited in QM (♂ holotype: QM S40927, PBI_OON 00021970; ♀ allotype: QM S96001, PBI_OON 00025760).

ETYMOLOGY: The specific epithet derived from the Latin *bu*, *par*, and *orbis*, meaning “pair of large circles” (Brown, 1956), and refers to large paired circles of the female epigynal region.

DIAGNOSIS: This species can be easily distinguished by the elongate lateral process of the male palp, which is bent retrolaterally, ending with a curved, caplike distal tip (fig. 67A, B). Dorsal scute of both sexes small and covering only 1/2–2/3 of the abdomen length (fig. 66A, D). The female epigynum is characterized by a pair of large epigynal atriums positioned posteriorly to a short convoluted duct (figs. 66I, 67F).

MALE (PBI_OON 00021970, figs. 66A–C, G–H, 67A–E). Total length 1.43. **CEPHALOTHORAX:** *Carapace* pale orange, broadly

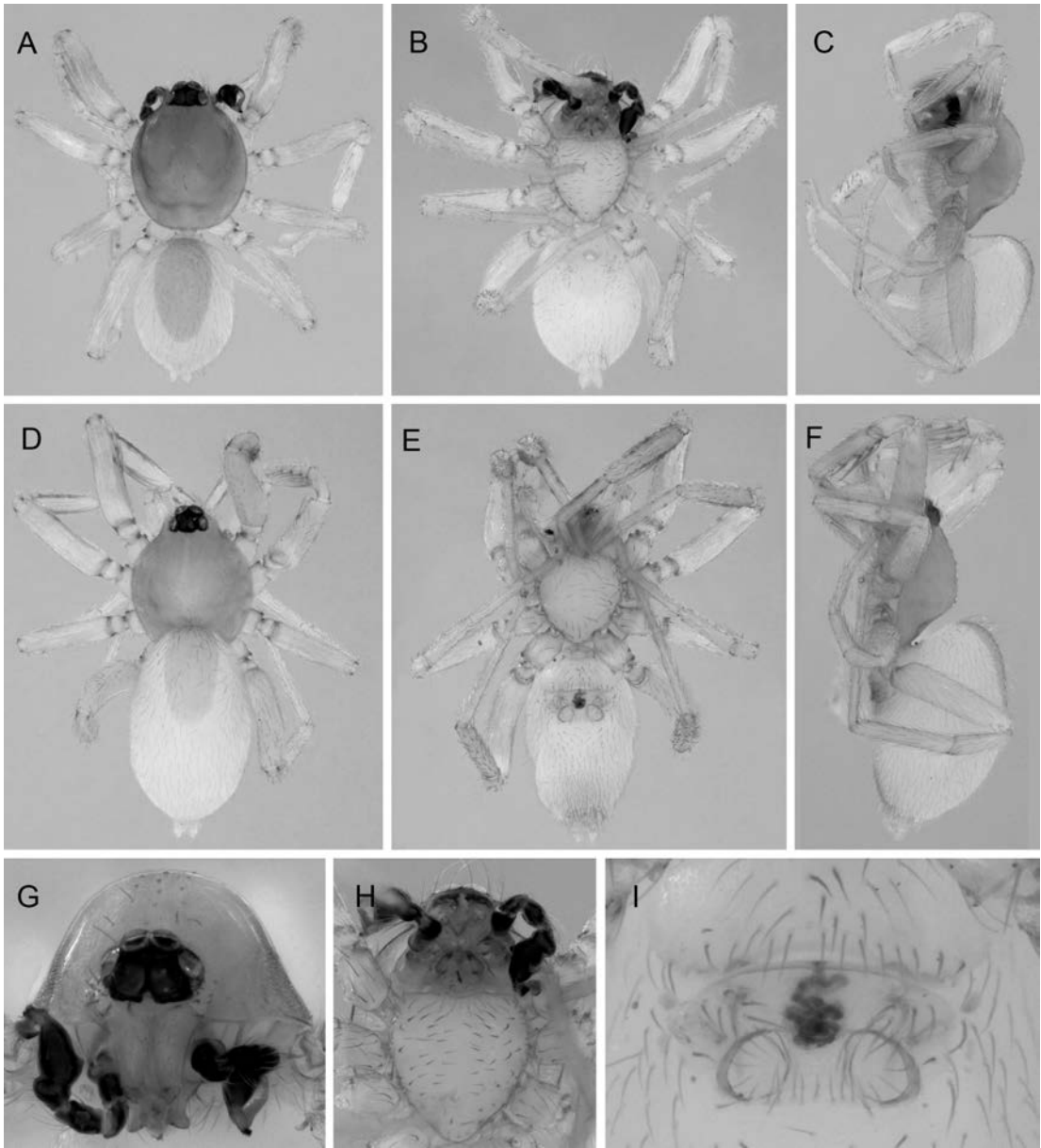


Fig. 66. *Ischnothyreus bupariorbis*, sp. nov. Holotype male (PBI_OON 00021970): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00025760): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of

pars cephalica smooth, sides finely reticulate. *Clypeus* margin unmodified, straight in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes*: ALE largest, ALE circular, PME oval,

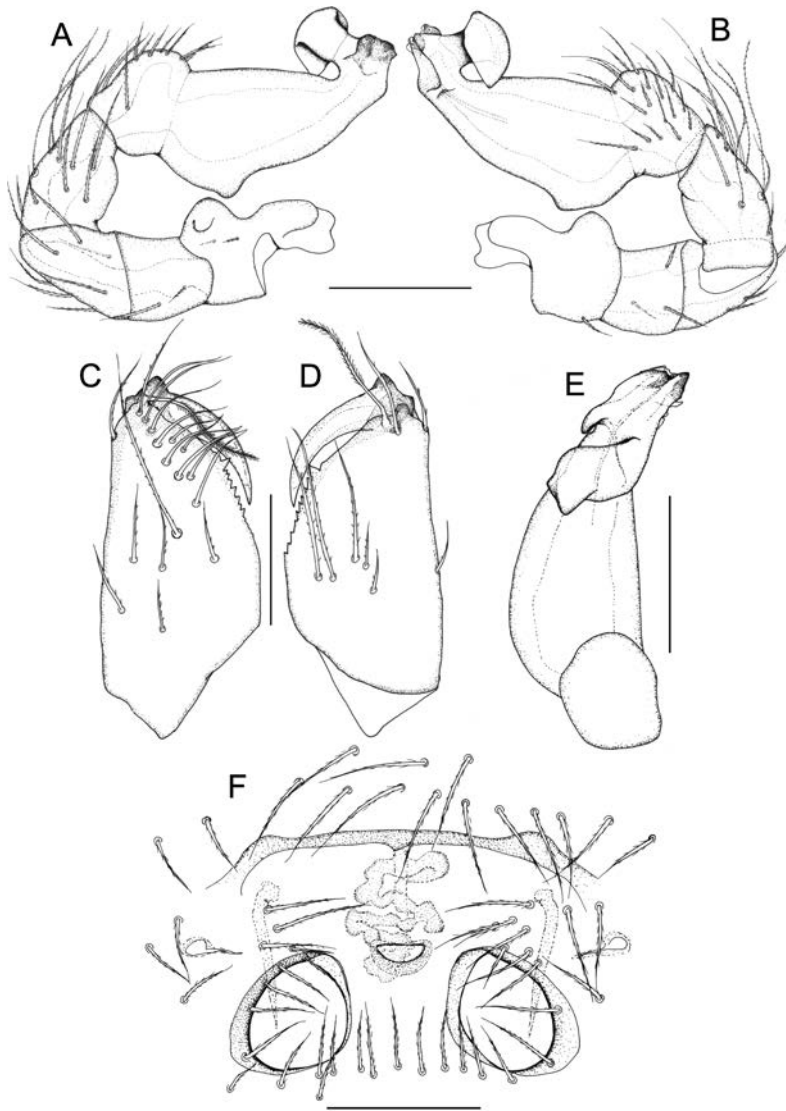
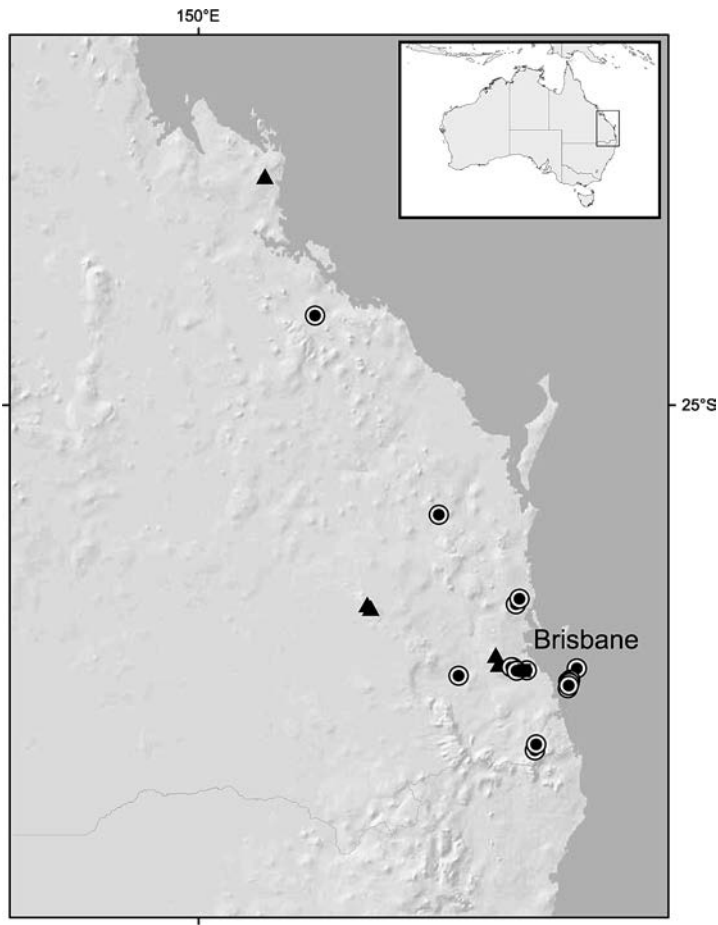


Fig. 67. *Ischnothyreus bupariorbis*, sp. nov. Holotype male (PBI_OON 00021970): **A**. left palp, prolateral view; **B**. left palp, retrolateral view; **C**. left chelicerae, anterior view; **D**. left chelicerae, posterior view; **E**. left palp, dorsal view. Allotype female (PBI_OON 00025760): **F**. epigynum, ventral view. Scale lines = 0.1 mm.

PLE oval; posterior eye row straight from above; ALE touching, ALE-PLE touching. Sternum longer than wide, pale orange, uniform; setae dark, evenly scattered. Chelicerae pale orange, endites, and labium dark red brown. Chelicerae slightly divergent, anterior face unmodified; promargin with one larger denticle; fang shape normal, with small basal process; setae dark. Labium elongated hexagon, not fused to sternum, anterior margin

indented at middle, more sclerotized than sternum, with six or more setae on anterior margin. Endites anteromedian tip with one strong, broad toothlike projection, much more heavily sclerotized than sternum. ABDOMEN: Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth.



Map 12. Map of southern Queensland and northern New South Wales showing recorded distributions of *Ischnothyreus bupariorbis* (●) and *I. rixi* (▲).

Epigastric scutum small lateral sclerites present. Postepigastric scutum pale orange, covering about 1/2 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. LEGS: Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella about as long as femur; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region with enlarged and complex processes, obtusely bent, lateral process bent retrolaterally, distal tip caplike (fig. 67A, B).

FEMALE (PBI_OON 25760, figs. 66D–F, I, 67F). Total length 1.53. CEPHALOTHORAX: Carapace pars cephalica slightly elevated in lateral view. Chelicerae, endites, and labium pale orange. ABDOMEN: Dorsal scutum covering about 1/2 of abdomen, between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. LEGS: Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Ventral view: epigynal atrium paired, large, circular, sclerotization uniform; convoluted duct very short, thicker than apodemes (figs. 66I, 67F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** Beerwah Forestry

Reserve (B3), 26.85000°S, 152.95000°E, Aug. 25, 1991 (M. Glover, QM S63197, PBI_OON 22228), 1 ♂; Canungra, 21 km SSW, IBISCA Plot IQ-900-OF, open forest, fungi and litter, 900 m, 28.21000°S, 153.12694°E, Jan. 14–19, 2007 (G. Monteith, QM S86444, PBI_OON 26268); Dan Dan Scrub (Site 1), 100 m, 24.16667°S, 151.08330°E, Dec. 14, 1983 (G. Monteith, V. Davies, J. Gallon, G. Thompson, QM S16090, PBI_OON 25762), 1 ♀; Enoggera Reservoir, site 1, 100 m, 27.43850°S, 152.92120°E, Dec. 21, 1999, to Jan. 27, 2000 (G. Monteith, J. Holt, QM S57280, PBI_OON 22096), 1 ♀; Enoggera Reservoir, site 1, 100 m, 27.43850°S, 152.92120°E, Jan. 27–Mar. 15, 2000 (G. Monteith, J. Holt, QM S57327, PBI_OON 22110), 1 ♀; Enoggera Reservoir, site 1, 100 m, 27.43850°S, 152.92120°E, Mar. 15–18, 2000 (G. Monteith, QM S57364, PBI_OON 22113), 1 ♀; Enoggera Reservoir, site 2, 125 m, 27.43800°S, 152.91930°E, Mar. 15–18, 2000 (G. Monteith, QM S57386, PBI_OON 22118), 1 ♀; Enoggera Reservoir, site 9, 130 m, 27.43833°S, 152.90780°E, Jan. 27–Mar. 15, 2000 (G. Monteith, J. Holt, QM S57324, PBI_OON 22076), 1 ♀; Enterprise Mine, Blackbutt #1, 90 m, 27.55383°S, 153.45570°E, Jan. 8, 2002 (C. Burwell, QM S55563, PBI_OON 20674), 3 ♀; Enterprise Mine, Blackbutt #2, 60 m, 27.55617°S, 153.45100°E, Jan. 9, 2002 (Queensland Museum Party, QM S56552, PBI_OON 6433), 1 ♀; Enterprise Mine, Mallee #1, 120 m, 27.57117°S, 153.43670°E, Jan. 10, 2002 (C. Burwell, QM S55521, PBI_OON 20663), 1 ♂; Enterprise Mine, Mallee #2, 100 m, 27.58733°S, 153.43920°E, Jan. 10, 2002 (C. Burwell, QM S56239, PBI_OON 20673), 1 ♀; Enterprise Mine, Scribbly Gum #2, 120 m, 27.60800°S, 153.44180°E, Jan. 9, 2002 (C. Burwell, QM S55550, PBI_OON 20675), 2 ♀; Ewan Maddock Dam (B/3), 26.80000°S, 152.98330°E, Oct. 27, 1992, to Jan. 30, 1993 (M. Glover, QM S48856, PBI_OON 22051), 1 ♂; Fig Tree Pocket, Brisbane, 27.46667°S, 153.05000°E, Nov. 5, 1976 (V.E. Davies, QM S16116, PBI_OON 5912), 1 ♂; Laidley Creek, 27.51667°S, 152.41670°E, Apr. 28, 1981 (M. Grant, QM S16009, PBI_OON 25885), 1 ♂; Lamington National Park IBISCA, 300 B, rainforest, leaf litter, 300 m, 28.00000°S, 153.00000°E, Jan. 25, 2008 (S.

Wright, A. Nakamura, QM S86453, PBI_OON 26266), 1 ♀; Mount Coot-tha, Brisbane, 27.47050°S, 152.95580°E, Nov. 4, 1996, to July 4, 1997 (R.J. Raven, QM S31382, PBI_OON 21953), 1 ♀; Mount Coot-tha, Brisbane, 27.48334°S, 152.95000°E, Dec. 1–22, 1979 (R.J. Raven, QM S16202, PBI_OON 25941), 4 ♂; Mudlo Gap, bottom, rainforest, 200 m, 26.16667°S, 152.23330°E, Dec. 17, 1998, to Jan. 25, 1999 (G. Monteith, C. Gough, QM S57661, PBI_OON 22240), 1 ♀; N Stradbroke Island: “Ibis Alpha,” 20 m, 27.63333°S, 153.43330°E, Jan. 1, 1900 (U. Nolte, QM S40960, PBI_OON 22032), 1 ♂, 1 ♀; N Stradbroke Island: “Ibis Alpha,” 30 m, 27.63333°S, 153.43330°E, Jan. 1, 1900 (U. Nolte, QM S40962, PBI_OON 21969), 1 ♂, 1 ♀; N Stradbroke Island: “Yarraman,” 50 m, 27.44867°S, 153.51670°E, Jan. 1, 1900 (U. Nolte, QM S40941, PBI_OON 21958), 1 ♀.

DISTRIBUTION: This species can be found from Stradbroke Island, Lamington National Park to north of Bundaberg, in northeastern Queensland (map 12).

Ischnothyreus rixi, new species

Figures 68–69, map 12

TYPES: AUSTRALIA: **Queensland:** Male holotype, female allotype and one female paratype from Bunya Mountains, 26.88333°S, 151.6°E (7–10 Nov 2005, M. Rix), deposited in QM (♂ holotype: QM S96002, PBI_OON 00005888; ♀ allotype and paratype: QM S96003, PBI_OON 00005597).

ETYMOLOGY: The specific epithet is a patronym in honor of Michael Rix of the Western Australian Museum (Perth), the collector of the holotype and other wonderful tiny spiders, in recognition of his contribution to taxonomy and systematics.

DIAGNOSIS: Males of this species are similar to *I. tragicus*, sp. nov., but can be distinguished by the stout palpal embolic region that tapers to a rounded tip (fig. 69A, B). The female epigynum has a triangular process overhanging circular epigynal atrium and the horizontal sclerotization anterior to epigynal atrium is very thick and strong (figs. 68I, 69F).

MALE (PBI_OON 5888, figs. 68A–C, G–H, 69A–E). Total length 1.65. **CEPHALOTHORAX:** *Carapace* brown, broadly oval in

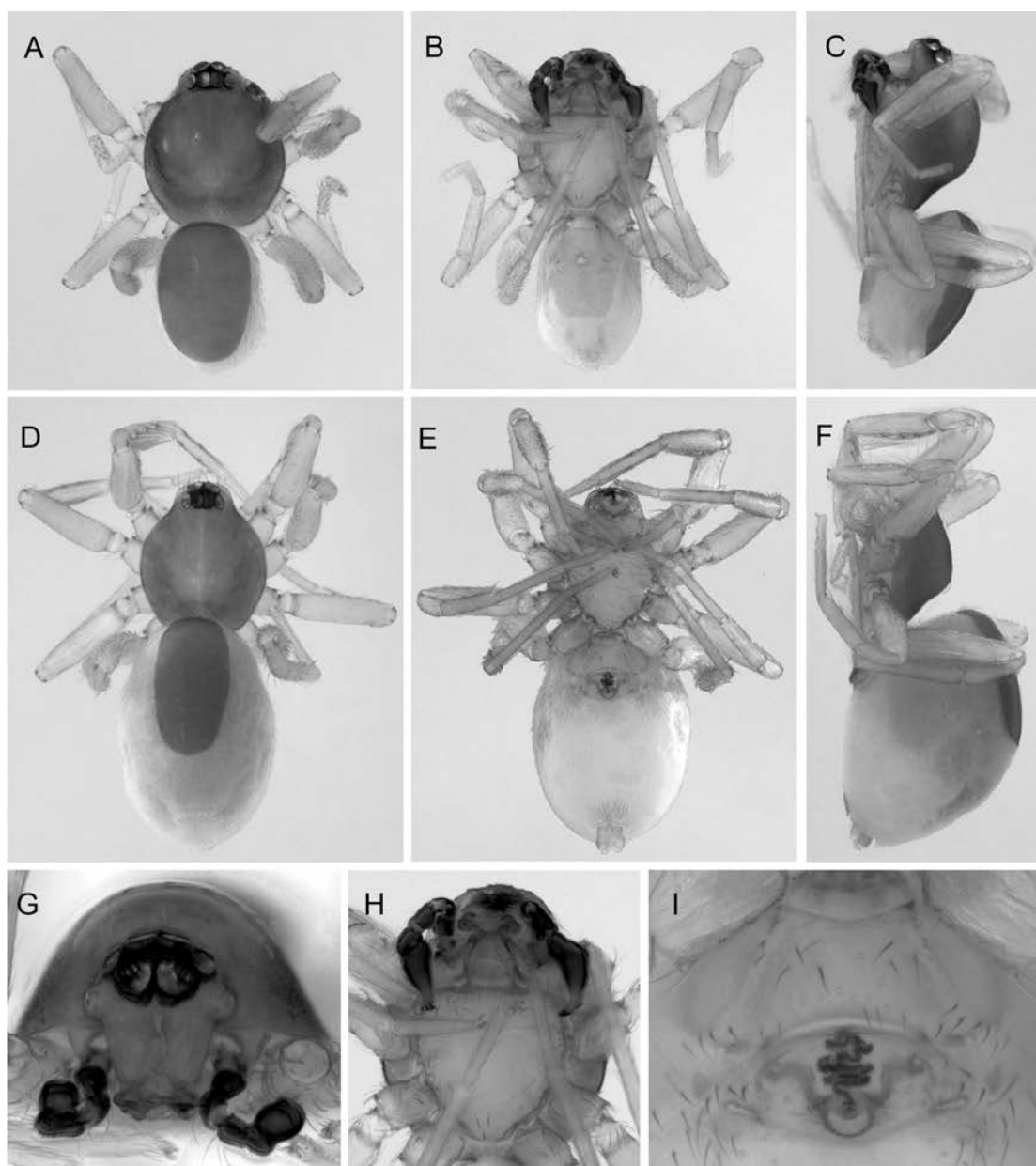


Fig. 68. *Ischnothyreus rixi*, sp. nov. Holotype male (PBI_OON 00005888): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005597): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica

finely reticulate, sides strongly reticulate. *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes*: ALE largest, ALE circular,

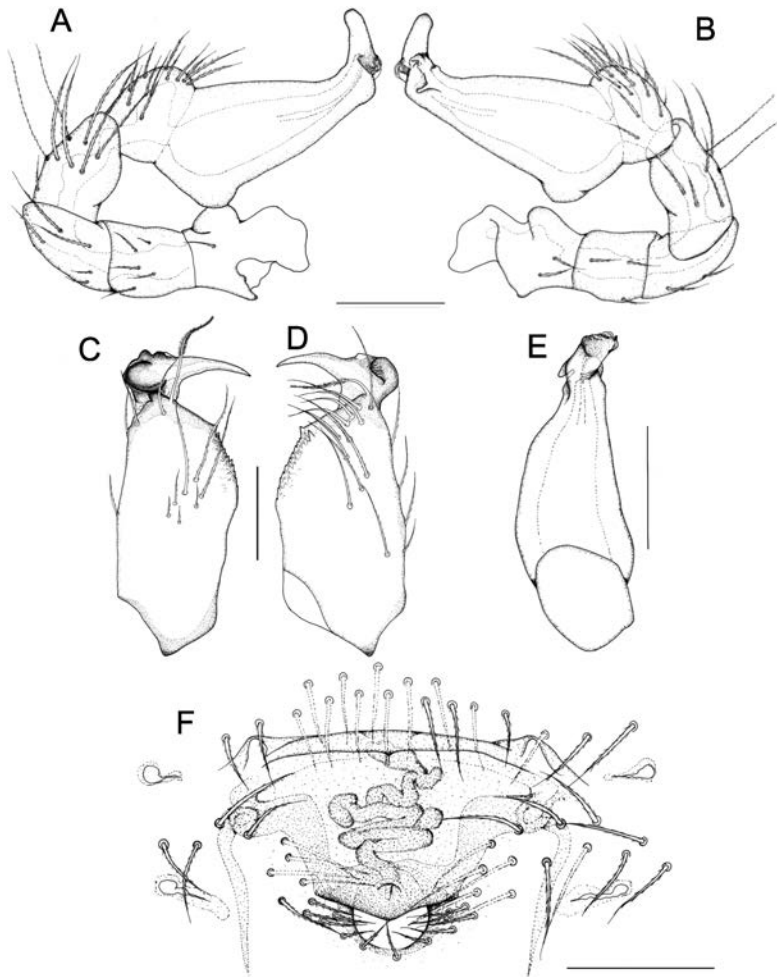


Fig. 69. *Ischnothyreus rixi*, sp. nov. Holotype male (PBI_OON 00005888): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00005597): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

PME circular, PLE oval; posterior eye row straight from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, pale orange, uniform; setae dark, densest laterally. Chelicerae, endites, and labium labium and endites dark red brown, chelicerae pale. Chelicerae slightly divergent, anterior face unmodified; promargin with one to two larger denticles; fang shape normal, with prominent basal process; setae dark. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, much more heavily sclerotized than sternum; with six or more setae on anterior margin, subdistal portion with unmodified setae.

Endites anteromedian tip with one strong, toothlike projection, much more heavily sclerotized than sternum. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum brown, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites present. Post-epigastric scutum pale orange, covering about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. **LEGS:** Orange-brown, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II

p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur one to two times as long as trochanter; patella about as long as femur; cymbium dark red-brown; bulb dark red-brown, 1 to 1.5 times as long as cymbium, stout; embolic region obtusely bent, simple, without enlarged or complex processes, stout, tapered to rounded tip (fig. 16A, B).

FEMALE (PBI_OON 5597, figs. 68D–F, I, 69F). Total length 1.88. **CEPHALOTHORAX:** *Carapace* pars cephalica slightly elevated in lateral view. *Clypeus* straight in front view. Chelicerae, endites, and labium pale orange. **ABDOMEN:** Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Postepigastric scutum widely hexagonal, only around epigastric furrow. **LEGS:** Pale orange. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Ventral view: strong horizontal sclerotization anterior to rounded epigynal atrium, thick, clearly joins posteriorly directed lateral apodemes; heavily sclerotized process overhanging epigynal atrium with triangular edge; convoluted duct thicker than apodemes (figs. 68I, 69F).

OTHER MATERIAL EXAMINED: **AUSTRALIA: Queensland:** Boombana National Park, Jollys Lookout, sieved litter, dry forest, 27.40000°S, 152.80000°E (June 30, 1991, D. Black, WAM T78964, PBI_OON 00004322), 2 ♀; Bunya Mountains, Mowbullen, rainforest, leaf litter, 26.85000°S, 151.56666°E, Aug. 10, 1955 (T.E. Woodward, QM S78056, PBI_OON 26300), 1 ♀; D'Aguilar National Park, Boombana Walk, rainforest, leaf litter, 27.40611°S, 152.79083°E, May 12, 2007 (K. Edward and K. Pitz, QM S96004, PBI_OON 25730), 1 ♂; D'Aguilar National Park, Mount Glorious Walk, rainforest, leaf litter, 27.32194°S, 152.76250°E, May 12, 2007 (K. Edward and K. Pitz, QM S96005, PBI_OON 25734), 1 ♀; D'Aguilar National Park, Mount Glorious Walk, rainforest, leaf litter, 27.32194°S, 152.76250°E, May 12, 2007 (K. Edward and K. Pitz, QM S96006, PBI_OON 25735), 1 ♂; D'Aguilar Range National Park, Boombana, 24 km W of Brisbane, eucalypt woodland, leaf litter, 520 m, 27.40194°S, 152.79222°E, May 4–5, 2009

(H. Wood, CASENT 9035024), 1 ♀; D'Aguilar Range National Park, Boombana, 24 km W of Brisbane, eucalypt woodland, leaf litter, 520 m, 27.40194°S, 152.79222°E, May 4–5, 2009 (H. Wood, CASENT 9035025, PBI_OON 5635), 1 ♀; Nob Creek, Byfield (BandR Healy Property), 22.86667°S, 150.61670°E, Aug. 1, 1994, to Jan. 1, 1995 (D. Wallace, Healy, QM S57991, PBI_OON 21957) 10 ♂, 4 ♀.

DISTRIBUTION: This species is widespread from Brisbane to north of Rockhampton, in northeastern Queensland (map 12).

Ischnothyreus hamatus, new species

Figures 70–71, map 13

TYPES: **AUSTRALIA: Queensland:** Male holotype and female allotype from Upper Brookfield, 27.5°S, 152.9167°E, 100 m (28 Jan 1982, R. Raven, V. Davies), deposited in QM (♂ holotype: QM S16002, PBI_OON 00005886; ♀ allotype: QM S16002, PBI_OON 00005596).

ETYMOLOGY: The specific epithet is of the Latin *hamatus* meaning “hooked” (Brown, 1956), and refers to the hooked distal tip of the male palp.

DIAGNOSIS: This species can be easily recognized by the curved and pointed distal tip of the male palpal embolic region (fig. 71E), the greatly enlarged base of the male fang, which also exhibits a thin process that curves around the anterior aspect (fig. 71C, D). The female possesses a heavily sclerotized postepigastric scutum and epigynal area. The process overhanging an indistinct epigynal atrium has rectangular-shaped edges and is most heavily sclerotized at the base of the convoluted duct (figs. 70I, 71F).

MALE (PBI_OON_005886, figs. 70A–C, G–H, 71A–E). Total length 1.63. **CEPHALOTHORAX:** *Carapace* orange-brown, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica smooth, sides strongly reticulate. *Clypeus* margin unmodified, sinuous in front view, high, ALE separated from edge of carapace by their radius or more; setae light. *Eyes:* ALE largest, ALE circular, PME

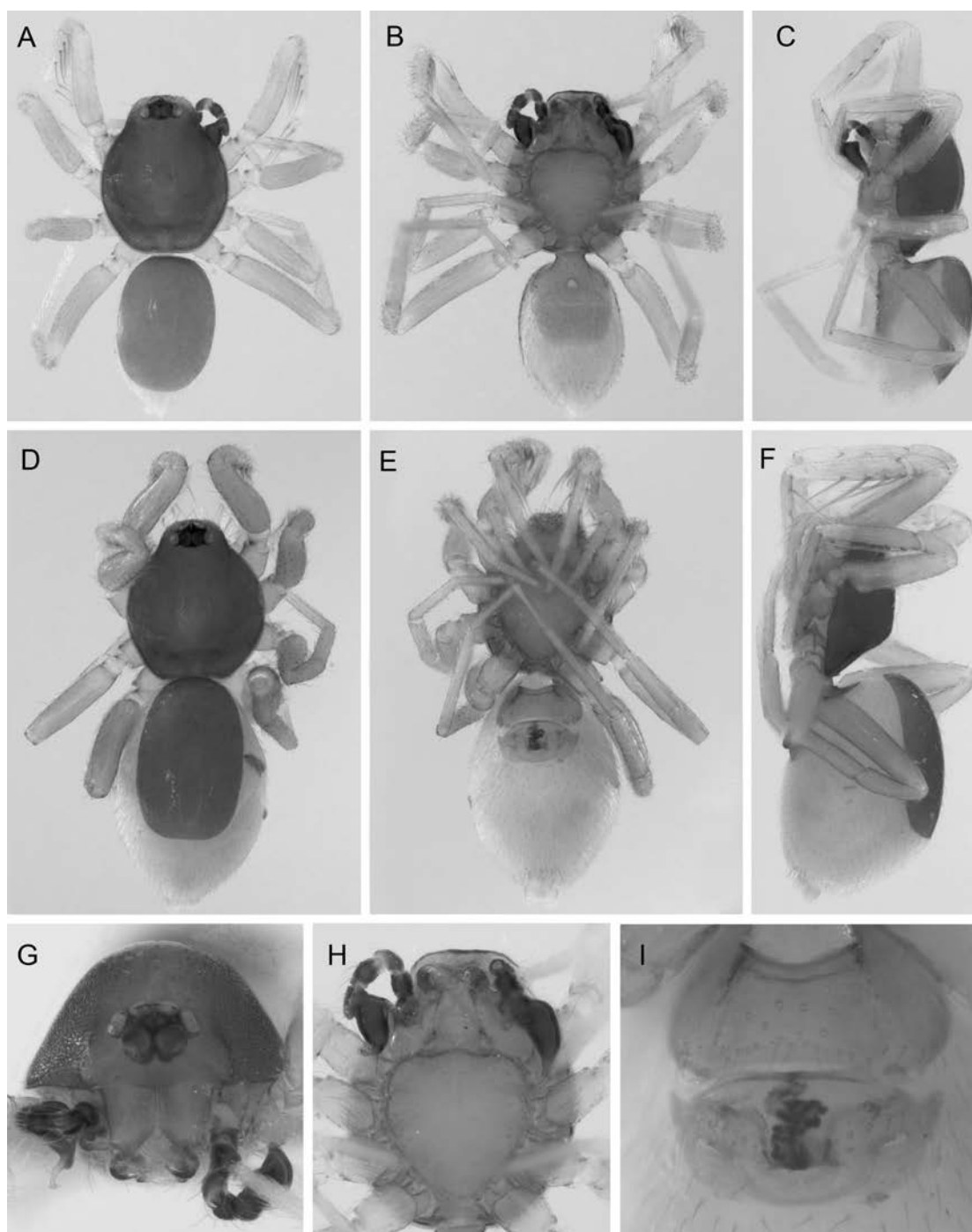


Fig. 70. *Ischnothyreus hamatus*, sp. nov. Holotype male (PBI_OON 00005886): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005596): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

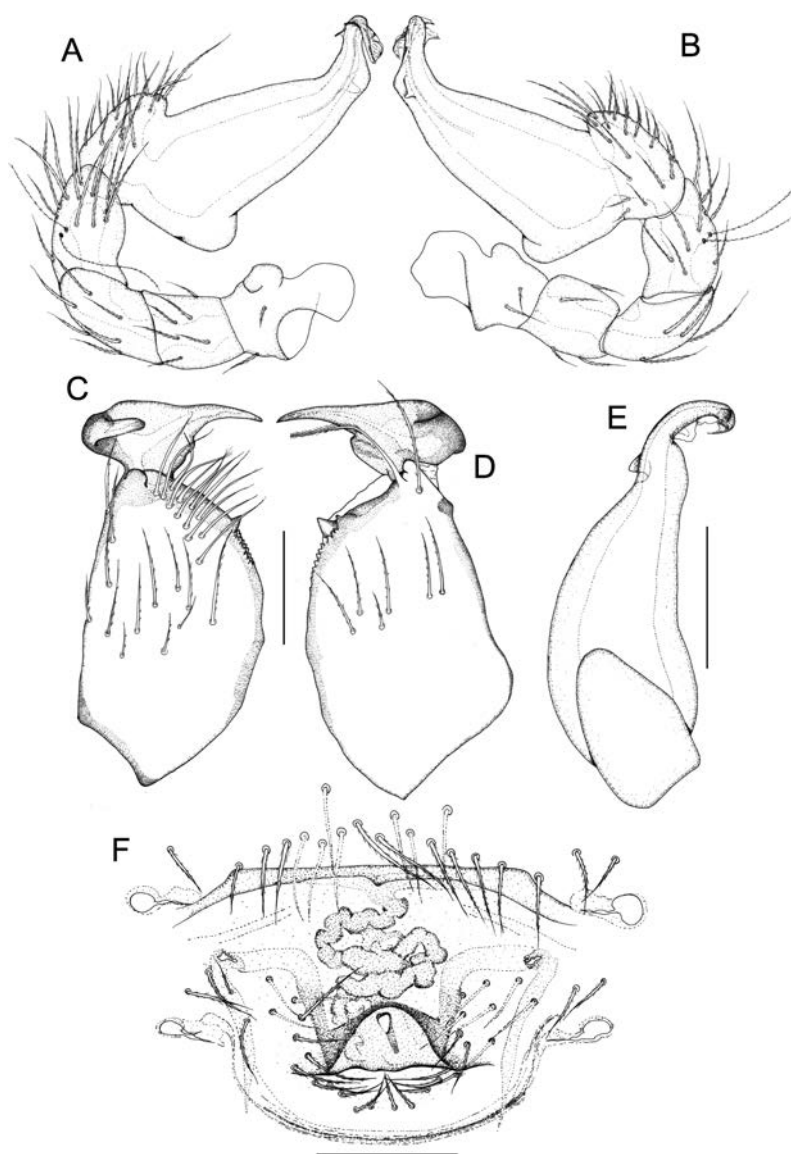
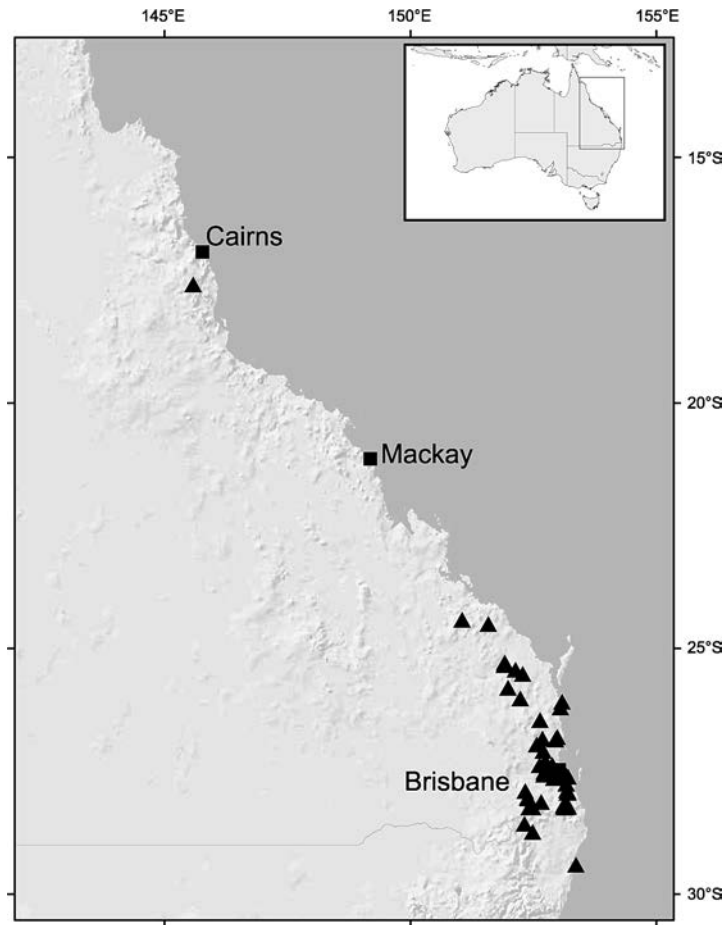


Fig. 71. *Ischnothyreus hamatus*, sp. nov. Holotype male (PBI_OON 00005886): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 00005596): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

circular, PLE oval; posterior eye row straight from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, orange-brown, uniform; setae dark, evenly scattered. Chelicerae straight, anterior face unmodified; promargin with two larger denticles; fang dorsoventrally flattened and strongly bent medially, with prominent basal process,

anterior aspect with thin curved process (fig. 71C); setae light. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; without setae. Endites anteromedian tip with one strong, toothlike projection, same as sternum in sclerotization. **ABDOMEN:** Ovoid; dorsum soft portions white. Book lung covers ovoid. Dorsal



Map 13. Map of Queensland showing recorded distribution of *Ischnothyreus hamatus* (▲).

scutum orange-brown, covering full length of abdomen, no soft tissue visible from above, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites absent. Postepigastric scutum orange-brown, covering about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. LEGS: Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella longer than femur; cymbium dark red-brown; bulb dark red-brown, 1 to 1.5 times as long as cymbium, stout; embolic region elongate, obtusely bent, curved strongly toward prolateral aspect, tapered to fine hooked tip,

small transparent membranous tissue visible (fig. 71A, B, E).

FEMALE (PBI_OON 5596, figs. 70D–F, I, 71F). Total length 1.75. CEPHALOTHORAX: Carapace pars cephalica slightly elevated in lateral view, surface of elevated portion of pars cephalica finely reticulate. Clypeus straight in front view, low, ALE separated from edge of carapace by less than their radius. Chelicerae, endites, and labium orange-brown. ABDOMEN: Dorsal scutum dark orange-brown, covering 1/2 to 3/4 of abdomen, more than 1/2 to most of abdomen width. Epigastric scutum small lateral sclerites present. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. LEGS: Orange-brown. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0.

GENITALIA: Ventral view: strong horizontal sclerotization anterior to rounded epigynal atrium, clearly joins posteriorly directed lateral apodemes; heavily sclerotized process overhanging epigynal atrium rectangular, straight to slightly sinuous edge, epigynal atrium shape not distinct but slightly oval; convoluted duct thicker than apodemes (figs. 70I, 71F).

OTHER MATERIAL EXAMINED: **AUSTRALIA:** **New South Wales:** Bald Mountain, via Emuvalle, rainforest, 1130 m, 28.71667°S, 152.26670°E, Nov. 17–Dec. 28, 1974 (G. and S. Monteith, QM S16832, PBI_OON 5925), 3 ♂, 2 ♀; Bald Mountain, via Emuvalle, rainforest, 1130 m, 28.71667°S, 152.26670°E, Nov. 17–Dec. 28, 1974 (G. and S. Monteith, QM S16839, PBI_OON 26228), 1 ♀. **Queensland:** 0.7 km SW of McAfee's Lookout, wet sclerophyll forest, 150 m, 27.43333°S, 152.86666°E, July 6–Oct. 18, 1999 (G. Monteith, QM S78945, PBI_OON 20837), 1 ♂, 2 ♀; 1 km E of One Tree Hill, semi-evergreen vine thicket, 180 m, 25.28333°S, 151.91666°E, Sept. 27–Dec. 14, 1999 (D. and I. Cook, QM S78942, PBI_OON 20840), 1 ♂; 1 km SW of McAfee's Lookout, wet sclerophyll forest, 140 m, 27.43583°S, 152.86900°E, Oct. 18, 1999, to Feb. 6, 2000 (G. Monteith, QM S57390, PBI_OON 22101), 4 ♂, 4 ♀; 3 km SE of "Stockhaven," 450 m, 25.80000°S, 151.98333°E, Oct. 10–Dec. 19, 1998 (G. Monteith, C. Gough, QM S49538, PBI_OON 22062), 1 ♂; 3 km SE of "Stockhaven," 450 m, 25.80050°S, 151.98420°E, Dec. 19, 1998, to Jan. 25, 1999 (G. Monteith, C. Gough, QM S69563, PBI_OON 22162), 1 ♂; 3 km SE of "Stockhaven," rainforest, 450 m, 25.80000°S, 151.98333°E, Oct. 10–Dec. 19, 1998 (G. Monteith, C. Gough, QM S79855, PBI_OON 26265), 1 ♂; 5.5 km E of One Tree Hill, semievergreen vine thicket, 120 m, 25.33583°S, 151.90970°E, Sept. 26–Dec. 14, 1999 (D. and I. Cook, QM S72916, PBI_OON 22006), 1 ♂; 5.5 km E of One Tree Hill, 120 m, 25.33583°S, 151.90970°E, Dec. 14, 1999, to Mar. 19, 2000 (G. and S. Monteith, QM S57855, PBI_OON 22247), 1 ♂; Bahrs Scrub, Beenleigh, 100 m, 27.75000°S, 153.16670°E, Dec. 10, 1991, to Jan. 21, 1992 (D.J. Cook, QM S25027, PBI_OON 21724), 1 ♂; Bare Rock, 2 km N Mount Cordeaux, 1100 m, 28.03333°S, 152.38330°E, Dec. 31, 1993, to Feb. 20, 1994

(G. Monteith, QM S49210, PBI_OON 22081), 1 ♂; Beerwah Forestry Reserve (A2), 26.85000°S, 152.95000°E, June 27, 1990 (M. Glover, QM S33552, PBI_OON 22017), 1 ♂; Beerwah Forestry Reserve (A3), 26.85000°S, 152.95000°E, June 6, 1990 (Estuarine Research Group, QM S63464, PBI_OON 21792), 1 ♀; Beerwah Forestry Reserve (A3), 26.85000°S, 152.95000°E, Sept. 19, 1990 (M. Glover, QM S63470, PBI_OON 22013), 1 ♂; Beerwah Forestry Reserve (A4), heathland, 26.85000°S, 152.95000°E, June 26, 1991 (M. Glover, QM S69635, PBI_OON 21795), 1 ♂; Beerwah Forestry Reserve (A4), 26.85000°S, 152.95000°E, May 16, 1990 (M. Glover, QM S48814, PBI_OON 21948), 2 ♀; Beerwah Forestry Reserve (A4), heathland, 26.85000°S, 152.95000°E, June 26, 1991 (M. Glover, QM S63784, PBI_OON 22104), 1 ♂, 1 ♀; Beerwah Forestry Reserve (A5), 26.85000°S, 152.95000°E, June 26, 1991 (M. Glover, QM S63129, PBI_OON 21971), 1 ♀; Beerwah Forestry Reserve (D4), heathland, 26.85000°S, 152.95000°E, July 18, 1990 (M. Glover, QM S19506, PBI_OON 21945), 1 ♀; Beerwah Forestry Reserve (D4), heathland, 26.85000°S, 152.95000°E, Aug. 29, 1990 (M. Glover, QM S18937, PBI_OON 22045), 1 ♀; Beerwah Forestry Reserve (E3), heathland, 26.85000°S, 152.95000°E, Jan. 2, 1991 (M. Glover, QM S19504, PBI_OON 22015), 1 ♀; Beerwah Forestry Reserve (A3), 26.85000°S, 152.95000°E, Feb. 27, 1991 (M. Glover, QM S63565, PBI_OON 21942), 1 ♂; Beerwah Forestry Reserve (A4), 26.85000°S, 152.95000°E, Aug. 29, 1990 (M. Glover, QM S24002, PBI_OON 7246), 1 ♀; Bellthorpe, 26.83333°S, 152.68330°E, Mar. 9–May 05, 1997 (G. Monteith, QM S37682, PBI_OON 21988), 1 ♀; Belmont Hills Bushlands, site 1, 27.50784°S, 153.11750°E, Apr. 22, 2003 (C. Burwell, S. Wright, E. Volschenk, QM S62326, PBI_OON 22199), 1 ♂; Black Rock Scrub, rainforest, 350 m, 28.12200°S, 152.65800°E, Dec. 2, 2000, to May 13, 2001 (G. Monteith, QM S57470, PBI_OON 25913), 1 ♂; Brookfield, Gold Creek Reservoir, 100 m, 27.50000°S, 152.91670°E, Aug. 19, 1980 (R.J. Raven, G. Gordh, QM S16001), 1 ♂, 2 ♀; Buhot Creek, Burbank, riparian forest, leaf litter, 27.58783°S, 153.16980°E, Feb. 18, 2004 (Queensland Museum Party, QM S65763, PBI_OON 22421), 1 ♂; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, July 28–Sept. 2, 2003

- (Queensland Museum Party, QM S65761 PBI_OON 25909), 1 ♀; Camerons Scrub, Snig track, 120 m, 27.50817°S, 152.72380°E, Jan. 13–May 16, 1999 (G. Monteith, QM S69587, PBI_OON 22012), 1 ♂; Camerons Scrub, snig track, 120 m, 27.50817°S, 152.72380°E, Nov. 11, 1998, to Jan. 13, 1999 (G. Monteith, D. Cook, G. Thompson, QM S69607, PBI_OON 22205), 3 ♂; Camerons Scrub, snig track, 80 m, 27.51667°S, 152.73330°E, Jan. 13–May 16, 1999 (G. Monteith, QM S54102, PBI_OON 22029), 1 ♀; Camira, 50 m, 27.63333°S, 152.91670°E, Feb. 11, 1985 (R.J. Raven, QM S16472, PBI_OON 26230), 1 ♂; Cooloola National Park, L Poona, 20 m, 26.20000°S, 153.05000°E, Oct. 9–19, 1978 (G. Monteith, QM S16036, PBI_OON 5909), 1 ♂; Cooloola Village turnoff (CV1), 26.08333°S, 153.08330°E, July 8–Dec. 4, 1998 (R. Raven, P. Lawless, QM S53391, PBI_OON 21964), 2 ♀; Cooloola Village turnoff (CV1), 26.08333°S, 153.08330°E, July 8–Dec. 4, 1998 (R. Raven, P. Lawless, QM S51756, PBI_OON 22014), 3 ♀; Cunninghams Gap, 790 m, 28.05000°S, 152.40000°E, Jan. 6–Mar. 01, 1992 (D.J. Cook, QM S25047, PBI_OON 21738), 1 ♂; Cunninghams Gap, 790 m, 28.05000°S, 152.40000°E, Jan. 6–Mar. 1, 1992 (D.J. Cook, QM S25050, PBI_OON 21759), 1 ♀; D'Aguilar National Park, Mount Glorious Walk, rainforest, leaf litter, 27.32194°S, 152.76250°E, May 12, 2007 (K. Edward and K. Pitz, QM S96007, PBI_OON 25732), 1 ♂; Deer Reserve, via Kilcoy, rainforest, 460 m, 26.95000°S, 152.56670°E, Mar. 29–June 1, 1975 (G. and S. Monteith, QM S12939, PBI_OON 6430), 1 ♀; Dwyer Creek, Imbil, 100 m, 26.45883°S, 152.63480°E, May 27, 2002 (G. Monteith, QM S69614, PBI_OON 22179), 1 ♀; Enoggera Reservoir, site 3, 120 m, 27.44067°S, 152.91980°E, Nov. 10, 1999 (G. Monteith, G. Thompson, QM S57868, PBI_OON 22219), 2 ♂, 2 ♀; Enoggera Reservoir, site 3, 120 m, 27.44067°S, 152.91980°E, Nov. 15, 1999 (G. Monteith, QM S57676, PBI_OON 22265), 3 ♀; Enoggera Reservoir, site 3, 120 m, 27.44067°S, 152.91980°E, Jan. 27–Mar. 15, 2000 (G. Monteith, J. Holt, QM S57291, PBI_OON 22097), 1 ♂; Enoggera Reservoir, site 4, rainforest, 110 m, 27.44117°S, 152.92050°E, Aug. 7–Oct. 16, 1999 (G. Monteith, QM S78941, PBI_OON 20856), 1 ♂; Enoggera Reservoir, site 4, 110 m, 27.44117°S, 152.92050°E, Mar. 15–18, 2000 (G. Monteith, QM S57365, PBI_OON 22111), 1 ♀; Enoggera Reservoir, site 5, 120 m, 27.44067°S, 152.91980°E, Oct. 16–21, 1999 (G. Monteith, QM S57309, PBI_OON 22129), 2 ♂; Enoggera Reservoir, site 8, rainforest, 100 m, 27.43950°S, 152.90230°E, Dec. 21, 1999, to Jan. 27, 2000 (G. Monteith, J. Holt, QM S72911, PBI_OON 21992), 1 ♀; Ewan Maddock Dam (site D/3), closed forest, 26.80000°S, 152.98333°E, June 26, 1993 (M. Glover, QM S32192, PBI_OON 7331), 1 ♀; Ewan Maddock Dam (site E/2), heathland, 26.80000°S, 152.98330°E, Nov. 21, 1993, to Mar. 22, 1994 (M. Glover, QM S28517, PBI_OON 21758), 1 ♂; Fairlies Knob, 0.5 km S, vine forest, 300 m, 25.51666°S, 152.28333°E, July 21–Oct. 20, 2000 (D. Cook, S. Wright, E. Vanderduys, QM S78702, PBI_OON 7146), 1 ♀; Joalah National Park, rainforest, leaf litter, 380 m, 27.91666°S, 153.20000°E, Mar. 14, 1973 (R.W. Taylor, ANIC, PBI_OON 25873), 1 ♂; Kroombit Tops (Site 8), open forest, leaf litter, 740 m, 24.36666°S, 150.95000°E, Dec. 11, 1983 (G. Monteith, V. Davies, J. Gallon, G. Thompson, QM S12980, PBI_OON 26232), 1 ♂; Lamington IBISCA 0.6 km N of Ballanju Falls, rainforest, leaf litter, 460 m, 28.33333°S, 153.33333°E, Mar. 19, 2008 (S. Wright, A. Nakamura, QM S86459, S16111), 2 ♀; Lamington National Park, O'Reilly's, rainforest, leaf litter, 28.23333°S, 153.13333°E, Nov. 22–27, 1978 (Lawrence, Weir, ANIC, PBI_OON 5571), 1 ♀; Lamington National Park, O'Reilly's, rainforest, 28.23333°S, 153.13333°E, Nov. 1, 1980, to Jan. 30, 1981 (J. Grimshaw, QM S78253, PBI_OON 7227), 1 ♀; Lamington Np IBISCA, 0.5 km SSE Binna Burra Lodge, rainforest, leaf litter, 770 m, 28.33333°S, 153.31666°E, Mar. 18, 2008 (S. Wright, A. Nakamura, QM S86438, S86448, S86449), 1 ♂, 4 ♀; Lamington National Park IBISCA, 300 B, rainforest, leaf litter, 300 m, 28.00000°S, 153.00000°E, Jan. 25, 2008 (S. Wright, A. Nakamura, QM S86453, PBI_OON 26267), 1 ♀; Lamington National Park IBISCA, 500 A, rainforest, leaf litter, 560 m, 28.35000°S, 153.23333°E, Jan. 28, 2008 (S. Wright, A. Nakamura, QM S86454), 1 ♀; Lamington National Park IBISCA, 500 B, rainforest, 28.35000°S, 153.23333°E, Jan. 15–24, 2007 (K. Staunton, QM S86463, PBI_OON 26264), 1 ♂; Lamington National Park IBISCA, 500 C,

rainforest, leaf litter, 500 m, 28.00000°S, 153.00000°E, Jan. 28, 2008 (S. Wright, A. Nakamura, QM S86440, S86447, S86460, S86461, S86456), 2 ♂, 4 ♀; Lamington National Park IBISCA, 700B, rainforest, leaf litter, 775 m, 28.31666°S, 153.20000°E, Jan. 18, 2008 (S. Wright, QM S86458, PBI_OON 26263), 1 ♂, 1 ♀; Lamington National Park IBISCA, 900 A, rainforest, 900 m, 28.00000°S, 153.00000°E, Jan. 15–24, 2007 (K. Staunton, QM S78045, S86450, S86451), 1 ♂, 2 ♀; Lamington National Park, Binna Burra, leaf mold, rotten wood, 28.18333°S, 153.18333°E, Sept. 7, 1952 (T.E. Woodward, QM S78044, PBI_OON 26249), 1 ♀; Lamington National Park, IBISCA Plot #IQ-300-A, rainforest, leaf litter, 267 m, 28.14777°S, 153.13694°E, Jan. 25, 2008 (S. Wright, A. Nakamura, QM S86439, S86440, S86445, S86462, S86464), 3 ♂, 3 ♀; Lower Coomera, 350 m, 28.18333°S, 153.18330°E, Dec. 3, 1994, to Jan. 9, 1995 (G. Monteith, H. Janetzki, QM S31904, PBI_OON 22263), 4 ♂, 2 ♀; Lower Coomera, 350 m, 28.18333°S, 153.18330°E, Jan. 9–Apr. 6, 1995 (G. Monteith, QM S49208, PBI_OON 22420), 1 ♂, 1 ♀; Malaan SF, rainforest, leaf litter, 1000 m, 17.58333°S, 145.58330°E, Apr. 20–24, 1978 (R. Raven, V. Davies, QM S16126, PBI_OON 25916), 1 ♂; Miala National Park, rainforest, leaf litter, 635 m, 27.20000°S, 152.46000°E, Mar. 13, 1973 (R.W. Taylor, ANIC, PBI_OON 25849), 1 ♂, 1 ♀; Mistake Mountains (middle), 950 m, 27.96667°S, 152.38330°E, Jan. 9–Feb. 13, 1977 (G. and S. Monteith, QM S16823, PBI_OON 25956), 2 ♀; Mount Coot-tha, Brisbane, leaf litter, 27.48334°S, 152.95000°E, Feb. 1, 1980 (R. Raven, V. Davies, QM S16175, PBI_OON 5924), 1 ♀; Mount Coot-tha, Brisbane, 27.48334°S, 152.95000°E, June 6, 1980 (R. Raven, V. Davies, QM S16109, PBI_OON 25886), 1 ♂, 1 ♀; Mount Coot-tha, Brisbane, leaf litter, 27.48334°S, 152.95000°E, Feb. 20, 1980 (R.J. Raven, QM S16181, PBI_OON 26227), 1 ♀; Mount Cotton, 200 m, 27.60967°S, 153.20350°E, Sept. 3–Dec. 12, 1997 (G. Monteith, QM S60473, PBI_OON 22090), 2 ♂, 2 ♀; Mount Cotton, upper gully, 150 m, 27.60967°S, 153.20530°E, Dec. 12, 1997, to May 7, 1998 (G. Monteith, QM S60085, PBI_OON 22136), 2 ♂, 2 ♀; Mount Glorious, 690 m, 27.33333°S, 152.76670°E, Sept. 20, 1979 (G. Monteith, QM S16049, PBI_OON 5905), 1 ♀; Mount Glorious, 760 m, 27.33333°S,

152.76666°E, May 1, 1970 (K. Plowman, ANIC S16164, PBI_OON 5915), 2 ♀; Mount Glorious, 760 m, 27.33333°S, 152.76666°E, Oct. 15, 1970 (H. Williams, ANIC S16184, PBI_OON 5928), 1 ♀; Mount Glorious, wet sclerophyll forest, leaf litter, 760 m, 27.33333°S, 152.76666°E, Sept. 18, 1968 (G. Monteith, ANIC, PBI_OON 25852), 1 ♂, 1 ♀; Mount Glorious, 690 m, 27.33333°S, 152.76670°E, June 7–20, 1974 (V.E. Davies, QM S16193, PBI_OON 26234), 1 ♂, 1 ♀; Mount Goonaneman, 670 m, 25.43333°S, 152.13330°E, Nov. 3–7, 1980 (V. Davies, R. Raven, QM S16149, PBI_OON 5918), 9 ♂, 15 ♀; Mount Mee, Neurum Creek, 210 m, 27.08333°S, 152.70000°E, Oct. 28, 1977, to Jan. 20, 1978 (G. and S. Monteith, QM S12988, PBI_OON 5916), 2 ♀; Mount Superbus, base, rainforest, 1350 m, 28.23333°S, 152.48333°E, Mar. 12–June 13, 1990 (T.B. Churchill, R.J. Raven, QM S15884, PBI_OON 26231), 1 ♀; Mount Superbus, half ascent, 28.73333°S, 152.48330°E, June 13–Oct. 30, 1990 (T. Churchill, R. Raven, K. Williams, QM S26287, PBI_OON 21995), 1 ♂, 2 ♀; Mount Superbus, halfway. Site 3, 28.23333°S, 152.48330°E, Oct. 30, 1990 (T. Churchill, R. Raven, K. Williams, QM S25890, PBI_OON 21979), 1 ♀; Mount Tamborine National Park, rainforest, 27.88333°S, 153.18333°E, Feb. 21–Mar. 29, 1984 (J. Grimshaw, QM S78260, PBI_OON 7228), 1 ♂; Mount Tamborine National Park, Palm Grove, rainforest, 27.88333°S, 153.18333°E, Oct. 13, 1956 (T.E. Woodward, QM S78049, PBI_OON 26248), 1 ♀; Mount Tenison Woods, 620 m, 27.32333°S, 152.72170°E, May 15, 1997 (G. Monteith, QM S43063, PBI_OON 21976), 1 ♀; Mount Tenison Woods, 760 m, 27.30000°S, 152.75000°E, Mar. 22, 1979 (G. Monteith, QM S16071, PBI_OON 26226), 1 ♂; Mudlo gap, bottom, rainforest, 170 m, 26.01666°S, 152.23333°E, Oct. 9–Dec. 17, 1998 (G. Monteith, C. Gough, QM S78706, PBI_OON 7144), 1 ♂; Samford, dry eucalypt woodland, 320 m, 27.36666°S, 152.88333°E, Sept. 18, 1968 (G. Monteith, ANIC, PBI_OON 25858), 1 ♂; Searys Scrub, Cooloola National Park, 26.20000°S, 153.05000°E, Feb. 3–8, 1976 (R. Raven, V. Davies, QM S16147, PBI_OON 5929) 10 ♂, 10 ♀; Tamborine Mountain, Joalah National Park, rainforest, leaf litter, 27.93333°S, 153.20000°E, Oct. 18–21, 1978 (Lawrence, Weir, ANIC, PBI_OON 5569), 1 ♂; Tamborine Mountain, Joalah National Park, rainforest, leaf litter,

27.93333°S, 153.20000°E, Oct. 18–21, 1978 (Lawrence, Weir, ANIC, PBI_OON 5570), 1 ♀; Tamborine National Park, Curtis Falls Track, rainforest, leaf litter, 27.93194°S, 153.19388°E, May 11, 2007 (K. Edward and K. Pitz, QM S96008, PBI_OON 25731), 1 ♂; Tamborine National Park, Curtis Falls Track, rainforest, leaf litter, 27.93194°S, 153.19388°E, May 11, 2007 (K. Edward and K. Pitz, QM S96009, PBI_OON 25733), 2 ♂, 1 ♀; Tullawallal, Binna Burra, 950 m, 28.20000°S, 153.20000°E, Dec. 3, 1994, to Jan. 9, 1995 (G. Monteith, H. Janetzki, QM S37823, PBI_OON 22116), 1 ♂; Upper Brookfield, 100 m, 27.50000°S, 152.91670°E, June 2, 1981 (V. Davies, R. Raven, QM S16476, PBI_OON 5911), 1 ♀; Upper Brookfield, 100 m, 27.50000°S, 152.91670°E, Nov. 14–28, 1980 (V. Davies, R. Raven, QM S16480, PBI_OON 25953), 1 ♂; Upper Brookfield, 100 m, 27.50000°S, 152.91670°E, July 3, 1981 (V. Davies, R. Raven, QM S16495, PBI_OON 25954), 1 ♀; Upper Brookfield, 100 m, 27.50000°S, 152.91670°E, Apr. 8–23, 1981 (V. Davies, R. Raven, QM S16697, PBI_OON 25955), 3 ♀; Upper Brookfield, 100 m, 27.50000°S, 152.91670°E, Jan. 28, 1982 (V. Davies, R. Raven, QM S16002, PBI_OON 25958), 4 ♂, 1 ♀; Upper Brookfield, 100 m, 27.50000°S, 152.91670°E, June 17, 1981 (V. Davies, R. Raven, QM S16492, PBI_OON 26229), 2 ♂; Upper Brookfield, 100 m, 27.50000°S, 152.91670°E, Aug. 14, 1981 (V. Davies, R. Raven, QM S16491, PBI_OON 26233), 2 ♀; Upper Brookfield, 100 m, 27.50000°S, 152.91670°E, Nov. 14–28, 1980 (V. Davies, R. Raven, QM S16694, PBI_OON 26235), 1 ♀; Upper Brookfield, 100 m, 27.50000°S, 152.91670°E, Jan. 12, 1982 (R.J. Raven, QM S16000, PBI_OON 26237), 2 ♀; Upper Brookfield, 100 m, 27.50000°S, 152.91670°E, Mar. 19, 1982 (R.J. Raven, QM S12998 PBI_OON 5923), 2 ♀.

DISTRIBUTION: This species is relatively widespread from Bald Mountain near the border of New South Wales to north of Bundaberg, in northeastern Queensland (map 13).

Ischnothyreus pterodactyl, new species

Figures 72–73, map 14

TYPES: AUSTRALIA: **Queensland:** Male holotype and female allotype from Mount

Superbus, false summit, 28.23333°S, 152.46670°E, 1200 m (12 Mar–13 June 1990 T.B. Churchill, R.J. Raven), deposited in QM (♂ holotype: QM S16568, PBI_OON 21959; ♀ allotype: QM S16568, PBI_OON 5609).

ETYMOLOGY: The specific epithet is a noun in apposition.

DIAGNOSIS: This species can be easily recognized by the extremely elongate, obtusely bent embolic region of the male palp (fig. 73A, B) and the basal process of the fang consisting of numerous heavily sclerotized lobes (fig. 73C, D). The female possesses a heavily sclerotized circular epigynal atrium, which appears to be fused to the overhanging process and the horizontal sclerotization anterior to the epigynal atrium is less sclerotized than *I. rixi*, sp. nov. (figs. 72I, 73E).

MALE (PBI_OON 21959, fig. 72 A–C, G, H; paratype (PBI_OON 05631), fig. 73A–D). Total length 1.73. **CEPHALOTHORAX:** *Carapace* brown, broadly oval in dorsal view, pars cephalica slightly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, antero-lateral corners without extension or projections, surface of elevated portion of pars cephalica strongly reticulate, sides strongly reticulate. *Clypeus* margin unmodified, curved downward in front view, low, ALE separated from edge of carapace by less than their radius; setae dark. *Eyes:* ALE largest, ALE circular, PME oval, PLE circular; posterior eye row straight from above; ALE touching, ALE-PLE touching. *Sternum* as long as wide, pale orange, uniform; setae dark, evenly scattered. *Chelicerae*, endites, and labium pale orange. *Chelicerae* slightly divergent, anterior face unmodified; promargin with one larger denticle; fang shape normal, basal process consisting of numerous heavily sclerotized lobes, anterior lobe with distal ridges; setae dark. Labium elongated hexagon, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; with six or more setae on anterior margin. Endites distally not excavated, anteromedian tip with one strong, toothlike projection, same as sternum in sclerotization. **ABDOMEN:** Ovoid; dorsum soft portions pale orange. Book lung covers elliptical. Dorsal scutum brown, covering

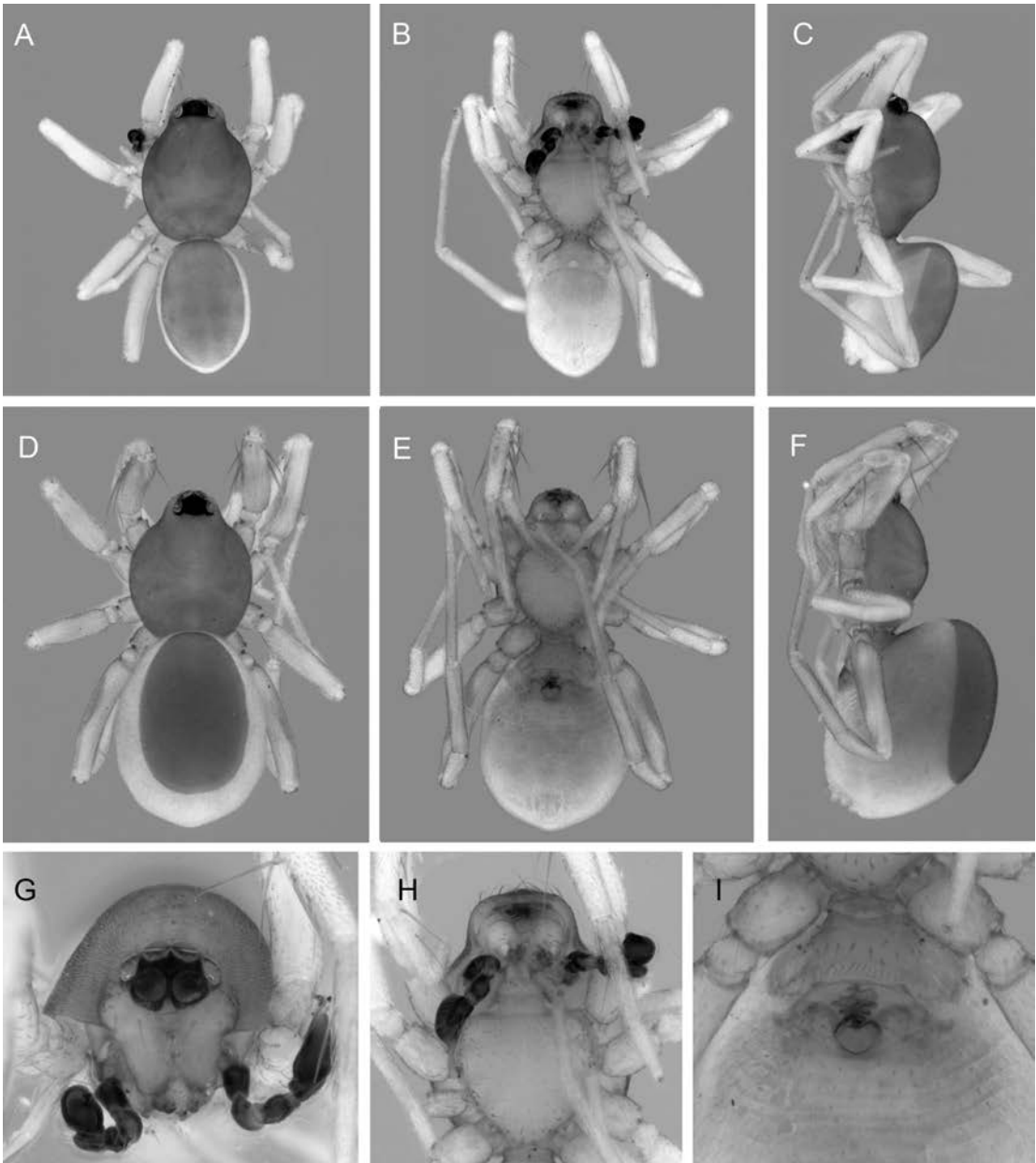


Fig. 72. *Ischnothyreus pterodactyl*, sp. nov. Holotype male (PBI_OON 00021959): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00005609): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** Epigynum, ventral view.

more than 3/4 of abdomen, no soft tissue visible from above, middle surface finely reticulate, sides finely reticulate. Epigastric scutum small lateral sclerites absent. Post-epigastric scutum orange-brown, covering

about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. LEGS: Orange-brown, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II

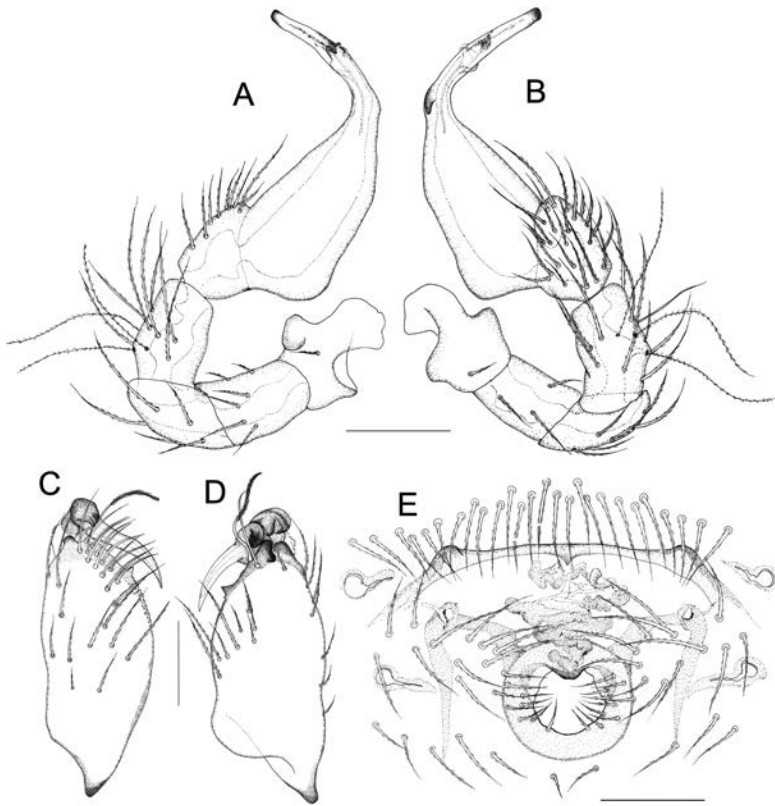


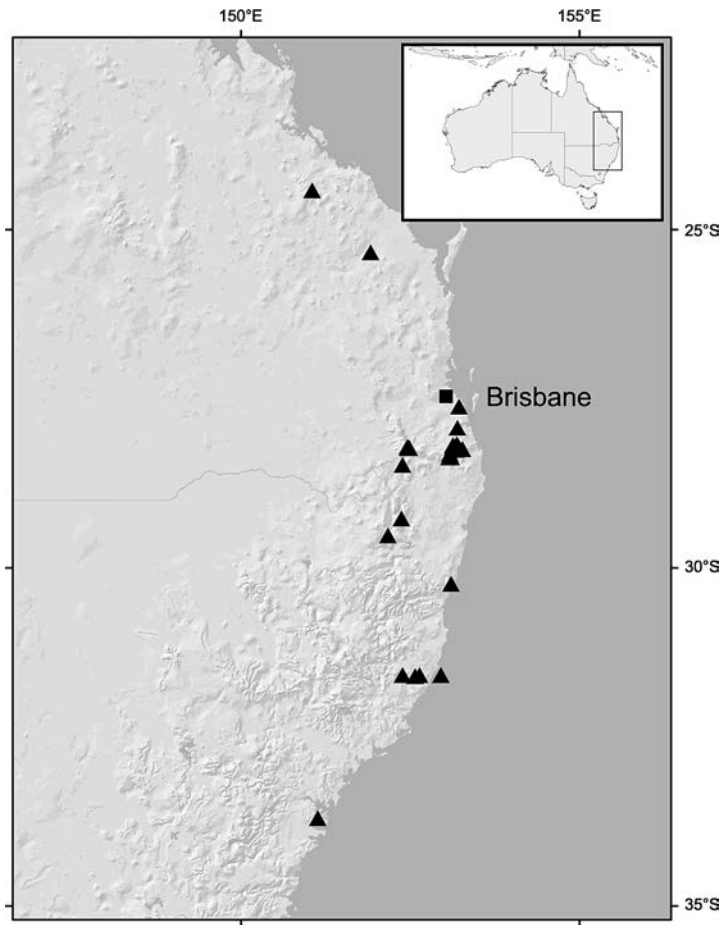
Fig. 73. *Ischnothyreus pterodactyl*, sp. nov. Paratype male (PBI_OON 00005631): **A**. left palp, prolateral view; **B**. left palp, retrolateral view; **C**. left chelicerae, anterior view; **D**. left chelicerae, posterior view. Paratype female (PBI_OON 00005639): **E**. epigynum, ventral view. Scale lines = 0.1 mm.

p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter; patella about as long as femur; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region extremely narrow and elongate, obtusely bent, tip rounded, transparent membranous tissues visible medially (fig. 73A, B).

FEMALE (PBI_OON 5609, fig. 72D–E, I; paratype (PBI_OON 5639), fig. 73E). Total length 1.98. **CEPHALOTHORAX:** Carapace anteriorly narrowed to 0.49 times its maximum width or less. **ABDOMEN:** Dorsal scutum covering 1/2 to 3/4 of abdomen, more than 1/2 to most of abdomen width. Postepigastric scutum widely hexagonal, covering about 1/3 of the abdominal length. **LEGS:** Leg spination: femora: I p0-2-2; II p0-1-0;

tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. **GENITALIA:** Ventral view: strong horizontal sclerotization anterior to rounded epigynal atrium clearly joins posteriorly directed lateral apodemes; heavy sclerotization around epigynal atrium circular, thick; overhanging process slightly triangular, sides appear fused to postepigastric scutum; convoluted duct thicker than apodemes (figs. 72I, 73E).

OTHER MATERIAL EXAMINED: **AUSTRALIA:** **New South Wales:** Beech Picnic Area, Wiangaree, 1000 m, 28.37300°S, 153.10070°E, Apr. 22, 2002 (G. Monteith, QM S69613, PBI_OON 22217), 3 ♀; Border Ranges National Park, Brindle Creek, rainforest alongside Creek, leaf litter, 28.37277°S, 153.06916°E, May 9, 2007 (K. Edward and K. Pitz, QM S96010, PBI_OON 25729), 1 ♀; Bruxner Pk, via Coffs Harbour, rainforest,



Map 14. Map of southern Queensland and northern New South Wales showing recorded distribution of *Ischnothyreus pterodactyl* (▲).

leaf litter, 150 m, 30.23333°S, 153.10000°E, Mar. 22, 1980 (G. Monteith, QM S16054), 1 ♀; Bruxner Park, 150 m, 30.23333°S, 153.10000°E, Mar. 22–Nov. 13, 1980 (G. Monteith, QM S16045, S16151), 7 ♂, 9 ♀; Bruxner Park, 150 m, 30.23333°S, 153.10000°E, Nov. 13–Mar. 17, 1980 (G. Monteith, QM S16114), 1 ♀; Bruxner Pk, via Coffs Harbour, rainforest, leaf litter, 150 m, 30.23333°S, 153.10000°E, May 14, 1969 (R.W. Taylor, ANIC, PBI_OON 25871), 2 ♂; Bruxner Pk, via Coffs Harbour, rainforest, leaf mold, rotten wood, 150 m, 30.23333°S, 153.10000°E, June 25, 1967 (R.W. Taylor, ANIC, PBI_OON 26297), 1 ♂, 1 ♀; Gibraltar Range National Park, rainforest, 450 m, 29.58333°S, 152.21670°E,

Mar. 30, 1980 (G. Monteith, QM S16112), 1 ♂; Washpool State Forest, Coombadjah Creek, leaf litter, 29.26666°S, 152.36666°E, Feb. 12, 1982 (C. Horseman, AM KS9354, PBI_OON 26293), 2 ♀. **Queensland:** 5.5 km E of One Tree Hill, semievergreen vine thicket, 120 m, 25.33583°S, 151.90970°E, Dec. 14, 1999, to Mar. 19, 2000 (G. and S. Monteith, QM S57432, PBI_OON 22134), 1 ♂; 5.5 km E of One Tree Hill, semievergreen vine thicket, 120 m, 25.33583°S, 151.90970°E, Dec. 14, 1999, to Mar. 19, 2000 (G. and S. Monteith, QM S47072, PBI_OON 22246), 1 ♂, 1 ♀; Kroombit Tops, 45 km SSW. of Calliope, rainforest, leaf litter, 890 m, 24.41666°S, 151.01666°E, Dec. 10, 1983 (G. Monteith, V. Davies, J. Gallon, G. Thomp-

son, QM S16096, PBI_OON 25890), 1 ♂; Lamington National Park, Binnaburra Lodge, 28.18333°S, 153.18333°E (July 2, 1986, M.S. Harvey, P.J. Vaughan, WAM T90/912, PBI_OON 00004311–2), 1 ♂, 1 ♀; Lamington National Park, O'Reillys Guest House, rainforest, leaf litter, 28.23333°S, 153.13333°E, Dec. 14, 1981 (G. Monteith, D. Yeates, QM S12990, S16064, S16185, S12985), 3 ♂, 4 ♀; Lamington National Park, O'Reilly's, rainforest, 28.23333°S, 153.13333°E, Mar. 2–Apr. 26, 1980 (G. Monteith, D. Yeates, QM S78262, PBI_OON 7218), 4 ♂; Lamington National Park, O'Reilly's, rainforest, 28.23333°S, 153.13333°E, Mar. 2–Apr. 26, 1980 (G. Monteith, D. Yeates, QM S78249, PBI_OON 7230), 1 ♂, 1 ♀; Lamington National Park, O'Reilly's, rainforest, leaf litter, 28.23333°S, 153.13333°E, Nov. 22–27, 1978 (Lawrence, Weir, ANIC, PBI_OON 26295), 1 ♂; Lamington National Park, O'Reilly's, rainforest, leaf litter, 28.23333°S, 153.13333°E, Nov. 22–27, 1978 (Lawrence, Weir, ANIC, PBI_OON 26296), 1 ♂, 1 ♀; Lamington National Park, rainforest, leaf litter, 960 m, 28.20000°S, 153.16670°E, July 9–10, 1977 (R. Raven, QM, S16198, S86457, S86440, S86437, S86465–S86466, S86448, S86459), 8 ♂, 3 ♀; Lamington National Park, Binna Burra, rainforest, leaf litter, 28.18333°S, 153.18333°E, Mar. 21–23, 2006 (M. Ramírez, QM S72917, PBI_OON 21974), 1 ♀; Lamington National Park, IBISCA Plot #IQ–700–CKA, rainforest, leaf litter, 720 m, 28.23694°S, 153.15194°E, Jan. 22, 2008 (C. Burwell, QM, S86441, S86443, S86455, S16018–S16021), 11 ♂, 4 ♀; Mount Superbus, Site 7, 850 m, 28.23333°S, 152.48330°E, Mar. 12–June 13, 1990 (T.B. Churchill, R.J. Raven, QM S15910, PBI_OON 21994), 1 ♀; Mount Superbus, summit, 1350 m, 28.22183°S, 152.45280°E, Oct. 24, 1998 (G. Monteith, QM S54213, PBI_OON 21973), 1 ♀; Mount Superbus, Trap 1, 1350 m, 28.23333°S, 152.48330°E, Mar. 12–June 13, 1990 (T.B. Churchill, R.J. Raven, QM S15911, PBI_OON 22004), 1 ♀; Tamborine National Park, Curtis Falls Track, rainforest, leaf litter, 27.93194°S, 153.19388°E, May 11, 2007 (K. Edward and K. Pitz, QM S96011, PBI_OON 25728), 1 ♀; Upper Tallebudgera Creek, 550 m, 28.25000°S, 153.26670°E, Jan. 8, 1984 (G. Monteith, G. Thompson, QM S69632, PBI_OON 22041), 1 ♂; Upper Tallebudgera valley, below Springbrook, rainforest,

leaf litter, 550 m, 28.25000°S, 153.26666°E, Jan. 8–Mar. 17, 1985 (G. Monteith, D. Cook, G. Thompson, QM S16473, PBI_OON 5910), 2 ♀; Lamington National Park, Binna Burra, along Border Track, 900 m, 28.19861°S, 153.1875°E, Apr 29–30, 2009 (H. Wood, CASENT 9035029, PBI_OON 00005631), 1 ♂; Lamington National Park, Binna Burra, along Border Track, 900 m, 28.19861°S, 153.1875°E, Apr 29–30, 2009 (H. Wood, CASENT 9035032, PBI_OON 00005639, 1 ♀.

DISTRIBUTION: This species is relatively widespread from Coffs Harbour, New South Wales to Bundaberg, northeastern Queensland (map 14).

Ischnothyreus arcus, new species

Figures 74–75, map 15

TYPES: AUSTRALIA: **Queensland:** Male holotype and female allotype from Bulburin State Forest, 500 m, 24.50000°S, 151.58330°E (25–28 Mar. 1977, V. Davies, R. Raven), deposited in QM (♂ holotype: QM S16137, PBI_OON 25959; ♀ allotype: QM S16137, PBI_OON 25751).

ETYMOLOGY: The specific epithet is the Latin *arcus*, meaning “bow” (Brown, 1956), and refers to the distinctive sclerotized shape of the female epigynum region, similar to an archer's bow.

DIAGNOSIS: The male can be distinguished by the presence of both a medial and basal process on the fang, as well as a stout, simple palpal embolic region (fig. 75A–D). The female epigynal region possesses a distinctive horizontal sclerotized processes above a circular epigynal atrium that resembles an archer's bow (fig. 75F). The curved edge of this overhanging process has a very slight medial triangular extension.

MALE (PBI_OON 25959, figs. 74A–C, G–H, 75A–E). Total length 1.48. **CEPHALOTHORAX:** *Carapace* pale orange, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica smooth, sides strongly reticulate; nonmarginal pars cephalica setae light. *Chypeus* margin unmodified, straight in front view, low, ALE separated from edge of

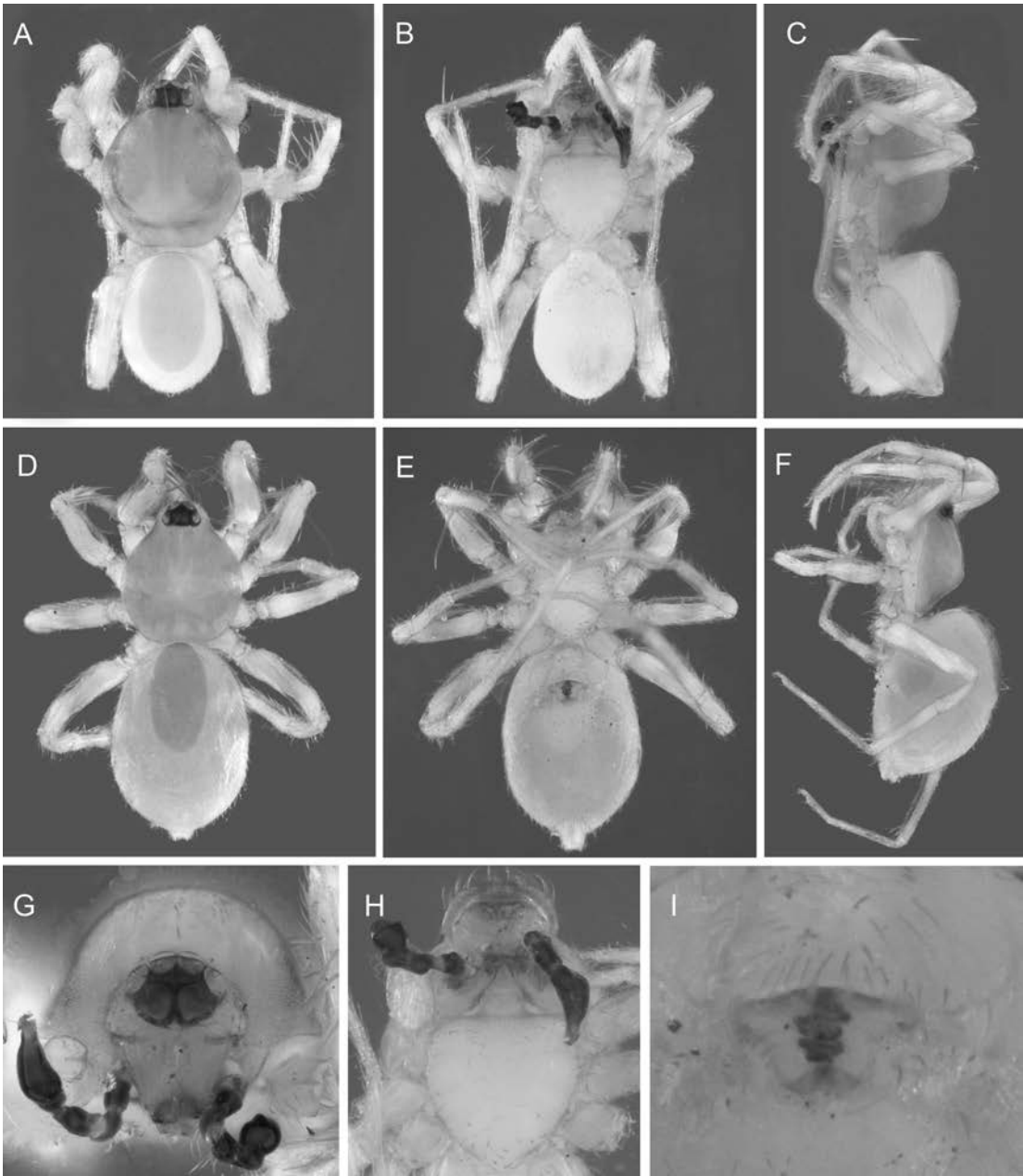


Fig. 74. *Ischnothyreus arcus*, sp. nov. Holotype male (PBI_OON 25959): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 25751): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

carapace by less than their radius; setae light. *Eyes*: ALE largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE-PLE touching.

Sternum as long as wide, pale orange, uniform, setae light, evenly scattered. Chelicerae, endites, and labium pale orange. Chelicerae straight, anterior face unmodified;

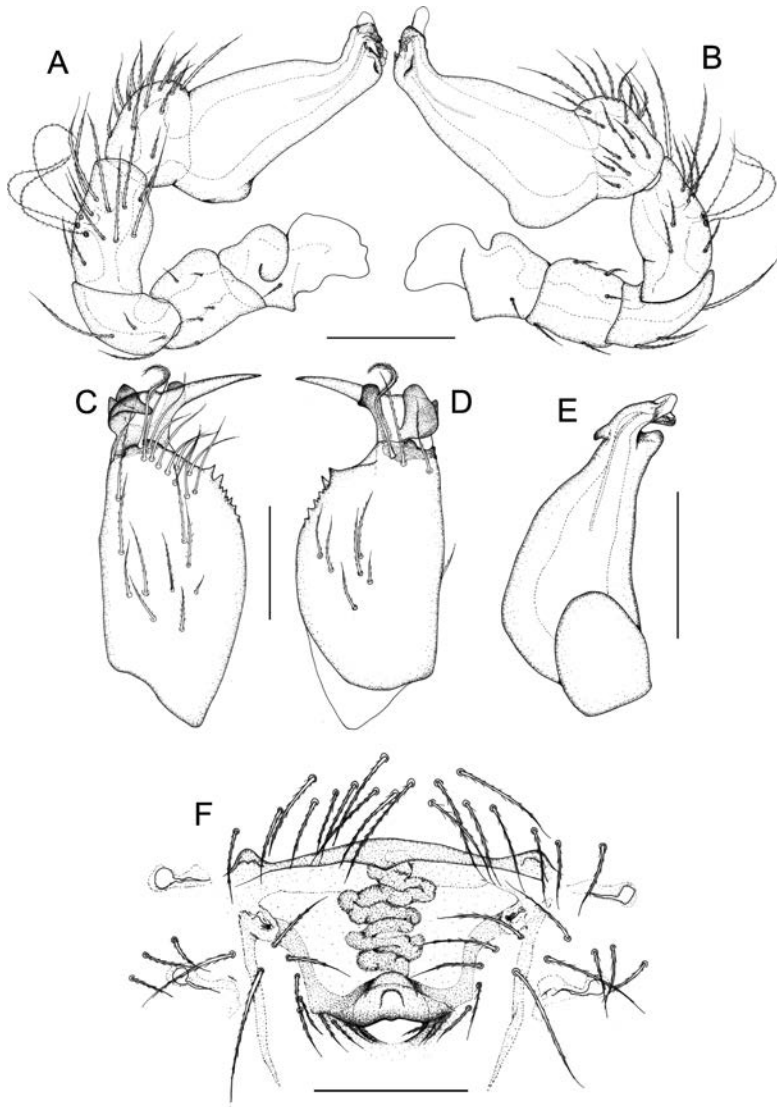
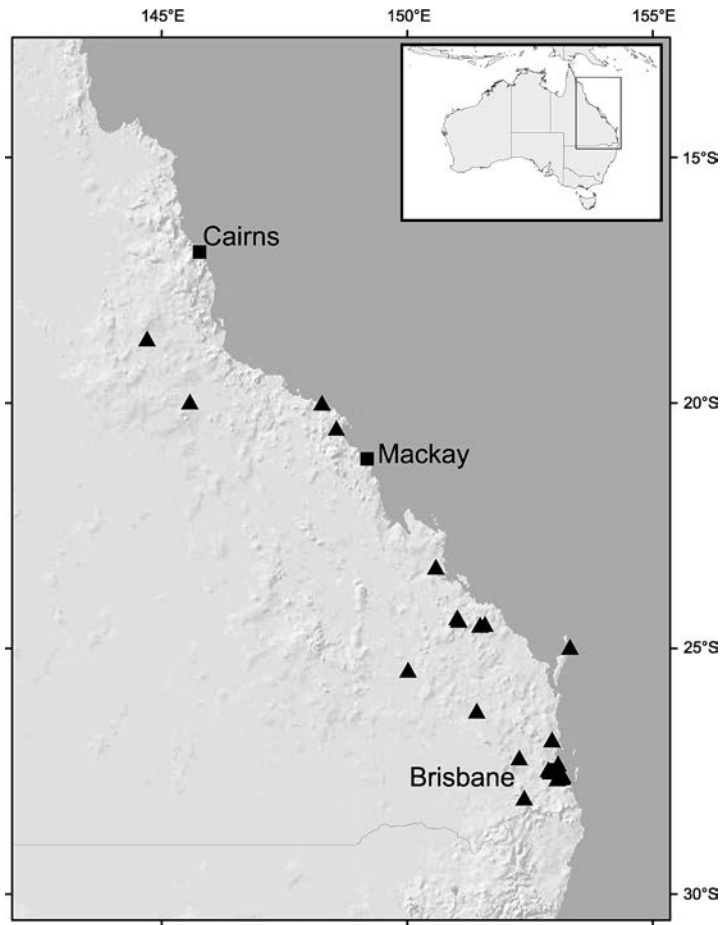


Fig. 75. *Ischnothyreus arcus*, sp. nov. Holotype male (PBI_OON 25959): **A.** left palp, prolateral view; **B.** left palp, retrolateral view; **C.** left chelicerae, anterior view; **D.** left chelicerae, posterior view; **E.** left palp, dorsal view. Allotype female (PBI_OON 25751): **F.** epigynum, ventral view. Scale lines = 0.1 mm.

promargin of chelicerae with two or three larger denticles; fang shape normal, with prominent basal process and medial process; setae light, densest medially; paturon inner margin with scattered setae, inner margin unmodified. Labium elongated hexagon, not fused to sternum, anterior margin slightly indented at middle, same as sternum in sclerotization. Endites anteromedian tip with one strong, toothlike projection, more heavi-

ly sclerotized than sternum. **ABDOMEN:** Ovoid; dorsum soft portions white. Posterior spiracles not connected by groove. Dorsal scutum pale orange, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Postepigastric scutum yellow, covering about 1/3 of the abdominal length. Spinneret scutum not visible, specimen bleached. Dorsum, epigastric area, and post-



Map 15. Map of Queensland showing recorded distribution of *Ischnothyreus arcus* (▲).

epigastric area setae light. LEGS: Yellow, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus dark; femur shorter than trochanter, without posteriorly rounded lateral dilation; patella shorter than femur; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region stout, simple, without enlarged or complex processes, rounded transparent membrane visible near distal tip, tip split into a number of small processes, one slightly hook shaped (fig. 75A, B, E).

FEMALE (PBI_OON 25751, figs. 74D–F, I, 75F). Total length 1.85. CEPHALOTHORAX:

Chelicerae, endites, and labium yellow. ABDOMEN: Book lung covers ovoid. Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Postepigastric scutum pale orange, widely hexagonal, only around epigastric furrow. LEGS: Leg spination: femora: I p0-1-1; II p0-1-0; tibiae: I, II p2-2-0; v2-2-0; metatarsi: I, II p1-1-0; v1-1-0. GENITALIA: Ventral view: strong horizontal sclerotization anterior to rounded epigynal atrium, thick, clearly joins posteriorly directed lateral apodemes, shaped like archer's bow; heavily sclerotized process overhanging epigynal atrium with sinuous edge, slight medial triangular extension; convoluted duct thicker than apodemes (figs. 74I, 75F).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland**: 2 km SE of Mount

- Deongwar, rainforest, 150 m, 27.21667°S, 152.28330°E, Oct. 14–Dec. 30, 1998 (G. Monteith, D. Cook, QM S54221, PBI_OON 22008), 1 ♂; Beerwah Forestry Reserve, heathland, 26.85000°S, 152.95000°E, Nov. 21, 1990 (M. Glover, QM S19529, PBI_OON 21980), 1 ♂; Beerwah Forestry Reserve, 26.85000°S, 152.95000°E, Aug. 29, 1990 (M. Glover, QM S19172, PBI_OON 22009), 1 ♀; Beerwah Forestry Reserve (C4), heathland, 26.85000°S, 152.95000°E, June 26, 1991 (M. Glover, QM S63172, PBI_OON 22169), 1 ♂; Beerwah Forestry Reserve (D4), 26.85000°S, 152.95000°E, Sept. 19, 1990 (M. Glover, QM S25219, PBI_OON 21956), 1 ♀; Beerwah Forestry Reserve (D5), heathland, 26.85000°S, 152.95000°E, Apr. 24, 1991 (M. Glover, QM S63181, PBI_OON 22182), 2 ♀; Beerwah Forestry Reserve (D5), heathland, 26.85000°S, 152.95000°E, Apr. 24, 1991 (M. Glover, QM S63196, PBI_OON 22255), 1 ♂; Beerwah Forestry Reserve (C4), 26.85000°S, 152.95000°E, Feb. 27, 1991 (M. Glover, QM S63577, PBI_OON 21991), 1 ♀; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 80 m, 27.51305°S, 153.11805°E, Feb. 19, 2004 (Queensland Museum Party, QM S79867), 1 ♀; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 27.50784°S, 153.11750°E, Mar. 1–31, 2004 (Queensland Museum Party, QM S65179, PBI_OON 6431), 1 ♀; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 27.50784°S, 153.11750°E, June 30–July 28, 2003 (S. Wright, E. Volschenk, QM S62263, PBI_OON 22185), 1 ♂; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 27.50784°S, 153.11750°E, Mar. 31–Apr. 29, 2004 (Queensland Museum Party, QM S65209, PBI_OON 22194), 2 ♂, 1 ♀; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 27.50784°S, 153.11750°E, Jan. 2–29, 2004 (Queensland Museum Party, QM S65180, PBI_OON 22195), 1 ♂, 2 ♀; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 27.50784°S, 153.11750°E, Mar. 1–31, 2004 (Queensland Museum Party, QM S65177, PBI_OON 22197), 1 ♂; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 27.50784°S, 153.11750°E, Apr. 16–May 27, 2003 (C. Burwell, S. Wright, E. Volschenk, QM S62479, PBI_OON 22209), 1 ♂, 1 ♀; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 27.50784°S, 153.11750°E, Jan. 30–Mar. 1, 2004 (Queensland Museum Party, QM S65174, PBI_OON 22221), 2 ♂, 1 ♀; Belmont Hills Bushlands, site 1, dry eucalypt woodland, 27.50784°S, 153.11750°E, Dec. 1, 2003, to Jan. 2, 2004 (Queensland Museum Party, QM S65211, PBI_OON 22223), 2 ♂, 2 ♀; Boggomoss No 3 via Taroom, open forest, 25.43333°S, 150.01670°E, Nov. 11, 1996, to Jan. 12, 1997 (P. Lawless, QM S37179, PBI_OON 22126), 5 ♂, 2 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, Mar. 4, 2004 (C. Burwell, QM S65199, PBI_OON 22190), 5 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, Apr. 17–May 27, 2003 (C. Burwell, S. Wright, E. Volschenk, QM S62246, PBI_OON 22414), 1 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, Jan. 2–29, 2004 (Queensland Museum Party, QM S65764, PBI_OON 22415), 6 ♂, 2 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, Dec. 12, 2003, to Jan. 1, 2004 (Queensland Museum Party, QM S65762, PBI_OON 22416), 4 ♂, 6 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, Jan. 30–Mar. 1, 2004 (Queensland Museum Party, QM S65765, PBI_OON 22418), 2 ♂; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, July 28–Sept. 2, 2003 (Queensland Museum Party, QM S65761, PBI_OON 22423), 1 ♂, 1 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, May 27–June 30, 2003 (S. Wright, E. Volschenk, QM S62925, PBI_OON 22424), 1 ♂; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, Nov. 6, 2003 (Queensland Museum Party, QM S65766, PBI_OON 22426), 1 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, Mar. 1–31, 2004 (Queensland Museum Party, QM S79866, PBI_OON 22836), 2 ♀; Buhot Creek, Burbank, riparian forest, leaf litter, 27.58783°S, 153.16980°E, Feb. 18, 2004 (Queensland Museum Party, QM S65763, PBI_OON 25939), 1 ♀; Buhot Creek, Burbank, riparian forest, 27.58783°S, 153.16980°E, July 28–Sept. 2, 2003 (Queensland Museum Party, QM S62552, PBI_OON 26292), 1 ♂; Bulburin Forestry Nursery NW of Bundaberg, rainforest, leaf litter, 24.51666°S, 151.48333°E, Mar. 1, 1975 (M. Gray, C. Horseman, AM KS6707, PBI_OON 26284),

1 ♂; Bulburin Forestry Nursery NW of Bundaberg, rainforest, leaf litter under rocks, 24.51666°S, 151.48333°E, Mar. 1, 1975 (M. Gray, C. Horseman, AM KS6708, PBI_OON 26286), 2 ♀; Bulburin SF, 500 m, 24.50000°S, 151.58330°E, Mar. 25–28, 1977 (V. Davies, R. Raven, QM S16137, PBI_OON 25752), 5 ♂, 3 ♀; Bulimba Creek, Carindale, red gum woodland, 27.50150°S, 153.10570°E, Mar. 1–31, 2004 (Queensland Museum Party, QM S65202, PBI_OON 22211), 3 ♀; Bulimba Creek, Carindale, red gum woodland, 27.50150°S, 153.10570°E, Jan. 2–29, 2004 (Queensland Museum Party, QM S65200, PBI_OON 22234), 2 ♀; Bulimba Creek, Carindale, red gum woodland, 27.50150°S, 153.10570°E, Jan. 30–Mar. 1, 2004 (Queensland Museum Party, QM S65204, PBI_OON 22250), 3 ♀; Bulimba Creek, Carindale, red gum woodland, 27.50150°S, 153.10570°E, Dec. 1, 2003, to Jan. 2, 2004 (Queensland Museum Party, QM S65203, PBI_OON 22252), 1 ♂, 1 ♀; Bulimba Creek, Carindale, red gum woodland, 27.50150°S, 153.10570°E, Mar. 31–Apr. 29, 2004 (Queensland Museum Party, QM S65201, PBI_OON 22476), 7 ♀; Eight Mile Creek (NQ 31), eucalypt woodland, 18.68333°S, 144.70500°E, Nov. 6, 1991, to July 26, 1992 (R. Raven, P. Lawless, M. Shaw, QM S24689, PBI_OON 21751), 1 ♂; Eight Mile Creek (NQ 31), eucalypt woodland, 18.68333°S, 144.70500°E, Nov. 6, 1991, to July 26, 1992 (R. Raven, P. Lawless, M. Shaw, QM S49313, PBI_OON 22413), 1 ♀; Fraser I: Orchid Beach, Eliza Ave (FO2), heathland, 24.96667°S, 153.30980°E, Aug. 20, 1997 (R. Raven, P. Fishburn, P. Lawless, QM S43432, PBI_OON 21744), 1 ♂; Fraser Island, Orchid Beach, Eliza Ave, 24.96666°S, 153.31638°E, Oct. 1, 1996, to Aug. 20, 1997 (R. Raven, P. Fishburn, P. Lawless, QM 72783, PBI_OON 22000), 1 ♂; Gold Creek Reservoir, Brookfield, closed forest, leaf litter, 100 m, 27.50000°S, 152.91670°E, Dec. 15, 1980 (V. Davies, R. Raven, QM S12997, S16481–S16483, S16485), 2 ♂, 4 ♀; Gold Creek Reservoir, site 1, open forest, 27.45883°S, 152.87200°E, Apr. 20–May 26, 2003 (C. Burwell, QM S65194, PBI_OON 22188), 1 ♂; Gold Creek Reservoir, site 1, open forest, 27.45883°S, 152.87200°E, Sept.

1–Oct. 01, 2003 (Queensland Museum Party, QM S62431, PBI_OON 22192), 1 ♀; Gold Creek Reservoir, site 1, open forest, 27.45883°S, 152.87200°E, Mar. 31–Apr. 30, 2004 (Queensland Museum Party, QM S65197, PBI_OON 22200), 5 ♂, 12 ♀; Gold Creek Reservoir, site 1, open forest, 27.45883°S, 152.87200°E, July 28–Sept. 1, 2003 (Queensland Museum Party, QM S62292, PBI_OON 22201), 2 ♀; Gold Creek Reservoir, site 1, open forest, 27.45883°S, 152.87200°E, Oct. 30, 2003, Queensland Museum Party, QM S65191, PBI_OON 22208), 2 ♂, 2 ♀; Gold Creek Reservoir, site 1, open forest, 27.45883°S, 152.87200°E, Jan. 2–30, 2004 (Queensland Museum Party, QM S65193, PBI_OON 22237), 1 ♂, 1 ♀; Gold Creek Reservoir, site 1, open forest, 27.45883°S, 152.87200°E, Jan. 30–Mar. 1, 2004 (Queensland Museum Party, QM S63992, PBI_OON 22253), 1 ♂; Gold Creek Reservoir, site 1, open forest, leaf litter, 27.45883°S, 152.87200°E, Oct. 30, 2003 (Queensland Museum Party, QM S65196, PBI_OON 22254), 1 ♂; Gold Creek Reservoir, site 1, open forest, 27.45883°S, 152.87200°E, Mar. 1–29, 2004 (Queensland Museum Party, QM S65195, PBI_OON 22259), 5 ♂, 3 ♀; Gold Creek Reservoir, site 1, open forest, 27.45883°S, 152.87200°E, Oct. 1–30, 2003 (Queensland Museum Party, QM S65198, PBI_OON 22472), 1 ♂; Illaweena Street, Drewvale, scribbly gum open forest, 27.63983°S, 153.05780°E, Mar. 31–Apr. 29, 2004 (Queensland Museum Party, QM S65210, PBI_OON 22244), 3 ♂, 1 ♀; Illaweena Street, Drewvale, scribbly gum open forest, 27.63983°S, 153.05780°E, Mar. 31–Apr. 29, 2004 (Queensland Museum Party, QM S67579, PBI_OON 22245), 1 ♂, 3 ♀; Illaweena Street, Drewvale, scribbly gum open forest, 27.63983°S, 153.05780°E, Apr. 17–May 26, 2003 (C. Burwell, S. Wright, E. Volschenk, QM S67575, PBI_OON 22248), 1 ♀; Karawatha Forest, site 6, dry eucalypt woodland, 27.62217°S, 153.08730°E, Jan. 2–30, 2004 (Queensland Museum Party, QM S65207, PBI_OON 22207), 1 ♂, 5 ♀; Karawatha Forest, site 6, dry eucalypt woodland, 27.62217°S, 153.08730°E, Mar. 31–Apr. 29, 2004 (Queensland Museum Party, QM S65208, PBI_OON 22242), 6 ♀; Karawatha Forest, site 6, dry eucalypt woodland, 27.62217°S, 153.08730°E, Jan. 30–Mar. 1, 2004 (Queensland

Museum Party, QM S65206, PBI_OON 22262), 4 ♀; Koy Property, Brigooda, vinescrub, leaf litter, 400 m, 26.26667°S, 151.41670°E, July 3, 1995 (G. Monteith, QM S57845, PBI_OON 22170), 1 ♂, 1 ♀; Kroombit Tops (Upper TA47 Creek.); 45 km SSW Calliope, rainforest, 24.40381°S, 150.94275°E, Dec. 9–19, 1983 (V. Davies, J. Gallon, QM S12976, S12978), 3 ♂; Kroombit Tops, 45 km SSW of Calliope, rainforest, leaf litter, 890 m, 24.41666°S, 151.01666°E, Dec. 10, 1983 (G. Monteith, V. Davies, J. Gallon, G. Thompson, QM S12967, PBI_OON 5572), 1 ♂; Kroombit Tops, 45 km SSW of Calliope, rainforest, leaf litter, 940 m, 24.41666°S, 151.05000°E, Dec. 10, 1983 (G. Monteith, V. Davies, J. Gallon, G. Thompson, QM S16096, PBI_OON 25889), 1 ♂; Kroombit Tops, 45 km SSW of Calliope, rainforest, leaf litter, 940 m, 24.41666°S, 151.05000°E, Dec. 15, 1983 (G. Monteith, V. Davies, J. Gallon, G. Thompson, QM S16015, PBI_OON 25905), 2 ♂, 1 ♀; Kroombit Tops, 45 km SSW of Calliope, rainforest, 890 m, 24.41666°S, 151.01666°E, Dec. 10, 1983 (G. Monteith, V. Davies, J. Gallon, G. Thompson, QM 16043, PBI_OON 26287), 2 ♂; Kroombit Tops, Beauty Spot 98, rainforest, 1000 m, 24.41667°S, 151.05000°E, Dec. 9–19, 1983 (V. Davies, J. Gallon, QM S12981, PBI_OON 25908), 2 ♀; Kroombit Tops, Beauty Spot 98, rainforest, 1000 m, 24.41667°S, 151.05000°E, Dec. 9–19, 1983 (V. Davies, J. Gallon, QM S16044, PBI_OON 25947), 3 ♀; Kroombit Tops, Three Moon Creek, rainforest, 1000 m, 24.36666°S, 151.01670°E, Dec. 9–19, 1983 (V. Davies, J. Gallon, QM 16012, PBI_OON 25892), 5 ♂; Kroombit Tops, Three Moon Scrub, rainforest, leaf litter, 940 m, 24.41667°S, 151.05000°E, Sept. 30, 1985 (G. Monteith, QM 16025), 1 ♂, 1 ♀; Mount Archer (DW 13), open forest, 650 m, 23.33333°S, 150.58330°E, Sept. 4–Nov. 11, 1991 (D. Wallace, R. Raven, QM 46018, PBI_OON 21755), 1 ♀; Orchid Beach, Fraser I., eucalypt woodland, 24.96667°S, 153.31670°E, Mar. 7–Oct. 1, 1996 (R.J. Raven, QM 31281, PBI_OON 21978), 1 ♀; Proserpine, Lilypool site XY18, closed forest, 30 m, 20.50694°S, 148.55888°E, Feb. 11–16, 2007 (R. Raven, QM 85252, PBI_OON 23108), 1 ♂; Rochedale SF, rainforest, leaf litter, 27.61667°S,

153.15000°E, Aug. 30, 1979 (R. Raven, V. Davies, QM 16007, PBI_OON 5913), 1 ♀; Rose Bay, Bowen. Site 33, vine forest, 20.00000°S, 148.26670°E, July 27–Dec. 2, 1992 (R. Raven, P. Lawless, E. Lawless, M. Shaw, QM 24954, PBI_OON 22121), 2 ♂; Toomba Homestead site, Rainforest on basalt ridge with Brachychiton, 395 m, 19.96736°S, 145.57485°E, Feb. 13, 2007 (R. Raven, QM 75374, PBI_OON 25904), 2 ♂.

DISTRIBUTION: This species is relatively widespread from Brisbane to northeastern Queensland, west of the Wet Tropics Biorregion (map 15).

Ischnothyreus eungella, new species

Figures 76–77, map 11

TYPES: AUSTRALIA: **Queensland:** Male holotype and female allotype from Eungella National Park, Cedar Grove Track, 21.13555°S, 148.49805°E (14 May 2007, K. Edward and K. Pitz), deposited in QM (♂ holotype: QM S96012, PBI_OON 00025722; ♀ allotype: QM S96013, PBI_OON 00025721).

ETYMOLOGY: The specific epithet is a noun in apposition, taken from the type locality.

DIAGNOSIS: The carapace and dorsal scutes of this species are pale yellow-green in coloration. Males can be easily distinguished by the extremely large and long palpal embolic region that broadens to a fan shape distally (fig. 77A, B). Females are equally distinct with a very large epigynal atrium, which is wider at the posterior edge. Weak horizontal sclerotization is present from the anterior edge of the epigynal atrium and extends to the small lateral apodemes (fig. 77E).

MALE (PBI_OON 25722, figs. 76A–C, G–H, 77A–D). Total length 1.43. **CEPHALOTHORAX:** Carapace yellow, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75 times its maximum width, anterolateral corners without extension or projections, surface of elevated portion of pars cephalica finely reticulate, sides strongly reticulate. *Clypeus* margin unmodified, straight in front view, high, ALE separated from edge of carapace by their radius or more; setae dark. *Eyes:* ALE

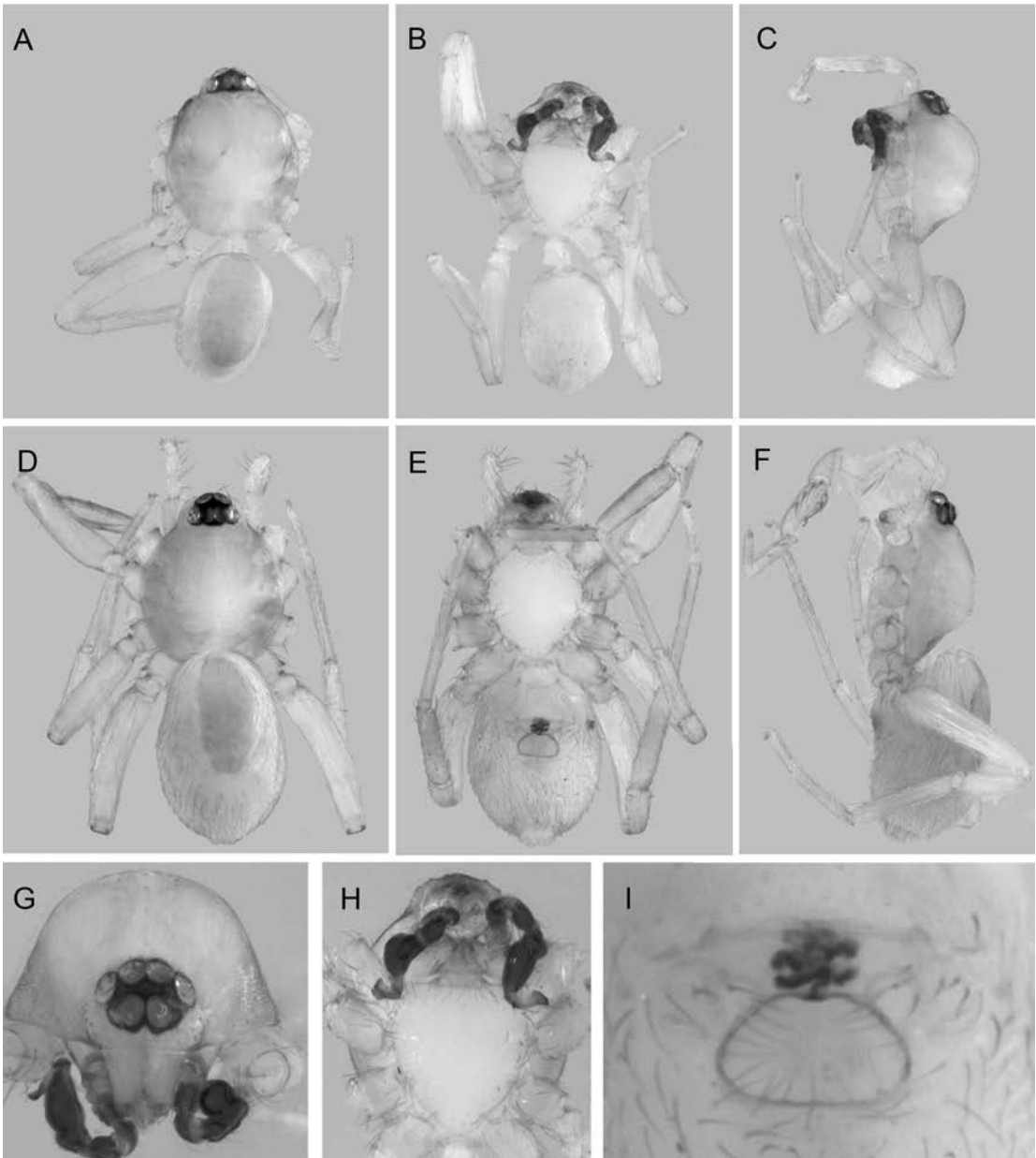


Fig. 76. *Ischnothyreus eungella*, sp. nov. Holotype male (PBI_OON 00025722): **A.** habitus, dorsal view; **B.** habitus, ventral view; **C.** habitus, lateral view; **G.** carapace, anterior view; **H.** sternum, ventral view. Allotype female (PBI_OON 00025721): **D.** habitus, dorsal view; **E.** habitus, ventral view; **F.** habitus, lateral view; **I.** epigynum, ventral view.

largest, ALE circular, PME oval, PLE oval; posterior eye row straight from above; ALE touching, ALE-PLE touching. *Sternum* longer than wide, yellow, uniform; setae dark, evenly scattered. Chelicerae, endites, and

labium orange-brown. Chelicerae straight, anterior face unmodified; promargin one or two slightly larger denticles; fang shape normal, with very small basal process; setae dark. Labium elongated hexagon, not fused

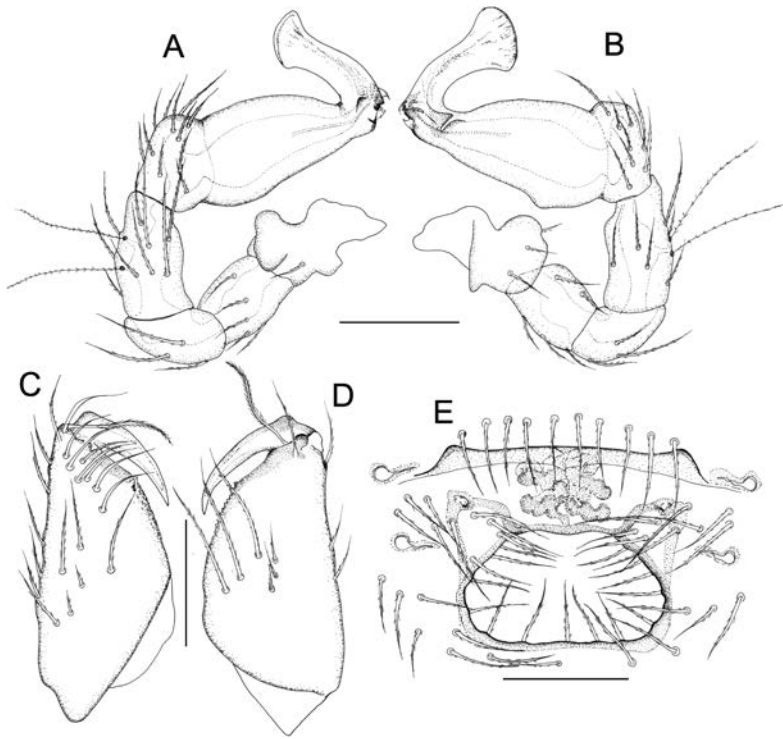


Fig. 77. *Ischnothyreus eungella*, sp. nov. Holotype male (PBI_OON 00025722): **A**, left palp, prolateral view; **B**, left palp, retrolateral view; **C**, left chelicerae, anterior view; **D**, left chelicerae, posterior view. Allotype female (PBI_OON 00025721): **E**, epigynum, ventral view. Scale lines = 0.1 mm.

to sternum, anterior margin indented at middle, slightly stronger sclerotization than sternum; with six or more setae on anterior margin, subdistal portion with unmodified setae. Endites anteromedian tip with one strong, toothlike projection, slightly more heavily sclerotized than sternum. ABDOMEN: Ovoid; dorsum soft portions white. Book lung covers elliptical. Dorsal scutum yellow, covering more than 3/4 of abdomen, more than 1/2 to most of abdomen width, middle surface smooth, sides smooth. Epigastric scutum small lateral sclerites present. Postepigastric scutum yellow, covering about 2/3 of abdominal length. Dorsum, epigastric area, and postepigastric area setae dark. LEGS: Pale orange, without color pattern; patella plus tibia I shorter than carapace. Leg spination: femora: I p0-2-0; II p2-2-0; v2-2-0; patellae: II p1-1-0; v1-1-0; tibiae: I p2-2-0; v2-2-0; metatarsi: I p1-1-0; v1-1-0; tarsi: I p0-1-0. GENITALIA: Palp proximal segments dark red-brown; embolus dark; femur shorter than

trochanter; patella shorter than femur; cymbium dark red-brown; bulb dark red-brown, more than two times as long as cymbium, stout; embolic region extremely large, elongate, broadening to fan-shaped tip, obtusely bent back toward cymbium (fig. 77A, B).

FEMALE (PBI_OON 25721, figs. 76D–F, I, 77E). Total length 1.43. CEPHALOTHORAX: *Carapace* pars cephalica slightly elevated in lateral view, anteriorly narrowed to 0.49 times its maximum width or less, sides finely reticulate. *Clypeus* curved downward in front view, low, ALE separated from edge of carapace by less than their radius. Chelicerae, endites, and labium yellow. ABDOMEN: Dorsal scutum covering 1/2 to 3/4 of abdomen, between 1/4 and 1/2 abdomen width. Postepigastric scutum pale orange, widely hexagonal, covering about 1/3 of the abdominal length. LEGS: Leg spination: femora: I p0-2-0; II p2-2-0; v2-2-0; patellae: II p1-1-0; v1-1-0; tibiae: I p2-2-0; v2-2-0; metatarsi: I p1-1-0; v1-1-0; tarsi: I p0-1-0. GENITALIA:

Ventral view: epigynal atrium very large, posterior section wider than anterior, with rounded edges; without heavily sclerotized overhanging processes; convoluted duct thicker than apodemes, stout (fig. 76F, 77E).

OTHER MATERIAL EXAMINED: AUSTRALIA: **Queensland:** Eungella National Park, Finch Hatton Gorge (NQ 37), 21.07166°S, 148.63830°E, Dec. 3, 1992, to Apr. 23, 1993 (R.J. and S. Raven, P. and E. Lawless, QM S24627, PBI_OON 21690), 2 ♂; Finch Hatton National Park, 350 m, 21.15000°S, 148.63330°E, Feb. 14, 1986 (R. Raven, J. Gallon, QM S9937, PBI_OON 21962), 3 ♂.

DISTRIBUTION: This species is known only from Eungella National Park, in northeastern Queensland (map 11).

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