

A new species and a new record of Zoicinae Lehtinen & Hippa, 1979 (Araneae: Lycosidae) from Sumatra Island, with notes on miniaturization in wolf spiders

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Abstract

A new species of wolf spider, *Zoica veloxilla* **sp. nov.**, from Sumatra (Indonesia) is described based on both sexes. *Lysania pygmaea* Thorell, 1890 is recorded from Sumatra for the first time, and its male is illustrated and redescribed. A distribution map for *Zoica* and *Lysania* is provided. The problem of miniaturization in wolf spiders is briefly discussed. Based on an analysis of the literature, 32 minute species of wolf spiders in four subfamilies and eleven genera have been reported. The smallest wolf spider known worldwide seems to be *Zoica minuta* (McKay, 1979) from Australia.

Key words: Aranei, Indonesia, biodiversity, *Lysania*, new species, new record, *Zoica*

Introduction

The spider family Lycosidae Sundevall, 1833, commonly known as wolf spiders, comprises 2510 extant species in 140 genera (World Spider Catalog 2026). Lycosidae are among the most morphologically distinctive and clearly defined spider families. The family is readily diagnosed by the unique arrangement of eyes into three rows (4:2:2) and the absence of a retrolateral tibial apophysis on the male palp (Jocqué & Dippenaar-Schoeman 2006; Marusik & Kovblyuk 2011). Although wolf spiders exhibit considerable size variation, the family is usually represented by medium-sized to large species. Among the largest known lycosids are the Palaearctic *Lycosa singoriensis* (Laxmann, 1770), with females reaching up to 45.8 mm in body length (Marikovskii 1956), and the Nearctic *Hogna carolinensis* (Walckenaer, 1805), with females up to 30 mm (Paquin & Dupérré 2003). Numerous lycosid genera (e.g. *Hogna* Simon, 1885, *Lycosa* Latreille, 1804, *Tasmanicosa* Roewer, 1959) include large-bodied representatives. In contrast, the opposite size extreme, the miniaturization, in wolf spiders has received considerably less scientific attention. Notably, most of the known cases of diminutive wolf spiders are from tropical regions, particularly Southeast Asia. While studying an unsorted material deposited in the Institute of Systematics and Ecology of Animals, SB RAS (Novosibirsk, Russia), we have discovered several miniature specimens of wolf spiders collected from Sumatra Island belonging to an undescribed species of *Zoica* Simon, 1898 and *Lysania pygmaea* Thorell, 1890, the type species of the genus *Lysania* Thorell, 1890. Both genera are newly recorded from Sumatra. This paper aims to: (1) describe a new species of *Zoica*; (2) provide a redescription of the male of *Lysania pygmaea*; (3) document the first records of *Lysania* and *Zoica* from Sumatra; (4) map the distributions of all species in the studied genera; and (5) discuss the problem of miniaturization in wolf spiders.

Material and methods

Specimens were photographed using a Nikon DSRi2 camera attached to a Nikon SMZ25 stereomicroscope at the Far Eastern Federal University (Vladivostok, Russia). Photographs were taken in dishes filled with ethanol, with

soft white paper or cotton at the bottom. Digital images were montaged using Zerene Stacker (<https://zerenesystems.com/cms/stacker>) software package. Epigyne was cleared in a KOH/water solution. A distribution map was produced using SimpleMappr (Shorthouse 2010). The coordinates of the collection localities were missing from the original labels and were subsequently obtained using Google Earth software. Recovered coordinates are placed in square brackets. All measurements are in millimeters. Length of leg segments were measured on the prolateral side, and are shown as: femur, patella, tibia, metatarsus, tarsus (total length). All examined material is shared between the Zoological Museum of the Moscow State University, Moscow, Russia (ZMMU; curator K.G. Mikhailov), the Institute of Systematics and Ecology of Animals SB RAS, Novosibirsk, Russia (ISEA; curator G.N. Azarkina) and in the Bioresource Collection of the Federal Scientific Centre of East Asia Terrestrial Biodiversity of the Far East Branch of the Russian Academy of Sciences (IBSS, reg. number 2797657). The format of description follows Li *et al.* (2013) with some modifications.

Abbreviations used in the text:

Eyes: ALE—anterior lateral eye, AME—anterior median eye, PLE—posterior lateral eye, PME—posterior median eye.

Leg and palp segments: Fe—femur, Mt—metatarsus, Pa—patella, Ti—tibia, Tr—tarsus, Cy—cymbium.

Spination: d—dorsal, p—prolateral, r—retrolateral, v—ventral. Leg spination is given as the number and position of true spines on each leg segment; ordinary setae are not considered.

Copulatory organs: C—conductor, CO—copulatory opening, DA—distal arm, LA—lateral apophysis, PA—proximal arm, Re—receptacle, SD—sperm duct, SR—stalk of receptacle, St—subtegulum, TA—terminal apophysis, Te—tegulum.

Taxonomy

Family Lycosidae Sundevall, 1833

Subfamily Zoicinae Lehtinen & Hippa, 1979

Comments. The subfamily Zoicinae currently comprises five genera: *Lysania* Thorell, 1890; *Margonia* Hippa & Lehtinen, 1983; *Shapna* Hippa & Lehtinen, 1983; *Zantheres* Thorell, 1887; and *Zoica* Simon, 1898 (Framenau *et al.* 2009, Li *et al.* 2013). The Zoicinae comprise minute to small wolf spiders, originally characterized as either web-builders or vagrant hunters (Lehtinen & Hippa 1979). All genera except *Lysania* and *Zoica* are monotypic (World Spider Catalog 2026). The subfamily is restricted to the Indo-Malayan and Australasian realms (World Spider Catalog 2026).

Genus *Zoica* Simon, 1898

Type species. *Zoica parvula* (Thorell, 1895), from Myanmar (Burma).

Comments. *Zoica* is a medium-sized genus comprising 15 described species (World Spider Catalog 2026). The genus is distributed across the Indo-Malayan and Australasian realms, with its highest diversity in southern China and Indochina (Lu *et al.* 2025; World Spider Catalog 2026). *Zoica* exhibits a notable trans-Wallacean distribution, with several species recorded from New Guinea and Australia (Lehtinen & Hippa 1979; McKay 1979). The genus is considered closely related to *Lysania* Thorell, 1890 (Lehtinen & Hippa 1979). Males of both genera share the following characters: an abdominal scutum, a distally originating embolus, and a bulb lacking a median apophysis (Lehtinen & Hippa 1979; Li *et al.* 2013). The male of *Zoica* can be diagnosed by the following combination of characters: (1) opisthosoma with a dorsal scutum; (2) gently sloping margins of the cephalic area; (3) absence of an articulated median apophysis; (4) presence of a lateral apophysis in the palp; (5) embolus thin, curved, spine-like, positioned apically on the bulb and mostly covered by the tegulum in ventral view (Framenau *et al.* 2009). The genus represents the smallest wolf spiders, with a body length range of 0.99–4.26 mm (Lu *et al.* 2025). It was long believed that all *Zoica* species are vagrant hunters, thereby distinguishing them from the web-building genus *Lysania* (Lehtinen & Hippa 1979). However, web-building behavior was recently documented in *Z. thailandica* Lu,

Zhang & Wang, 2025 from Thailand (Lu *et al.* 2025). Lu *et al.* (2025) hypothesize that *Zoica* species may construct small sheet webs within their retreats, but these structures are too inconspicuous to be readily observed.

***Zoica veloxilla* sp. nov.**

(Figs 1–11, 16)

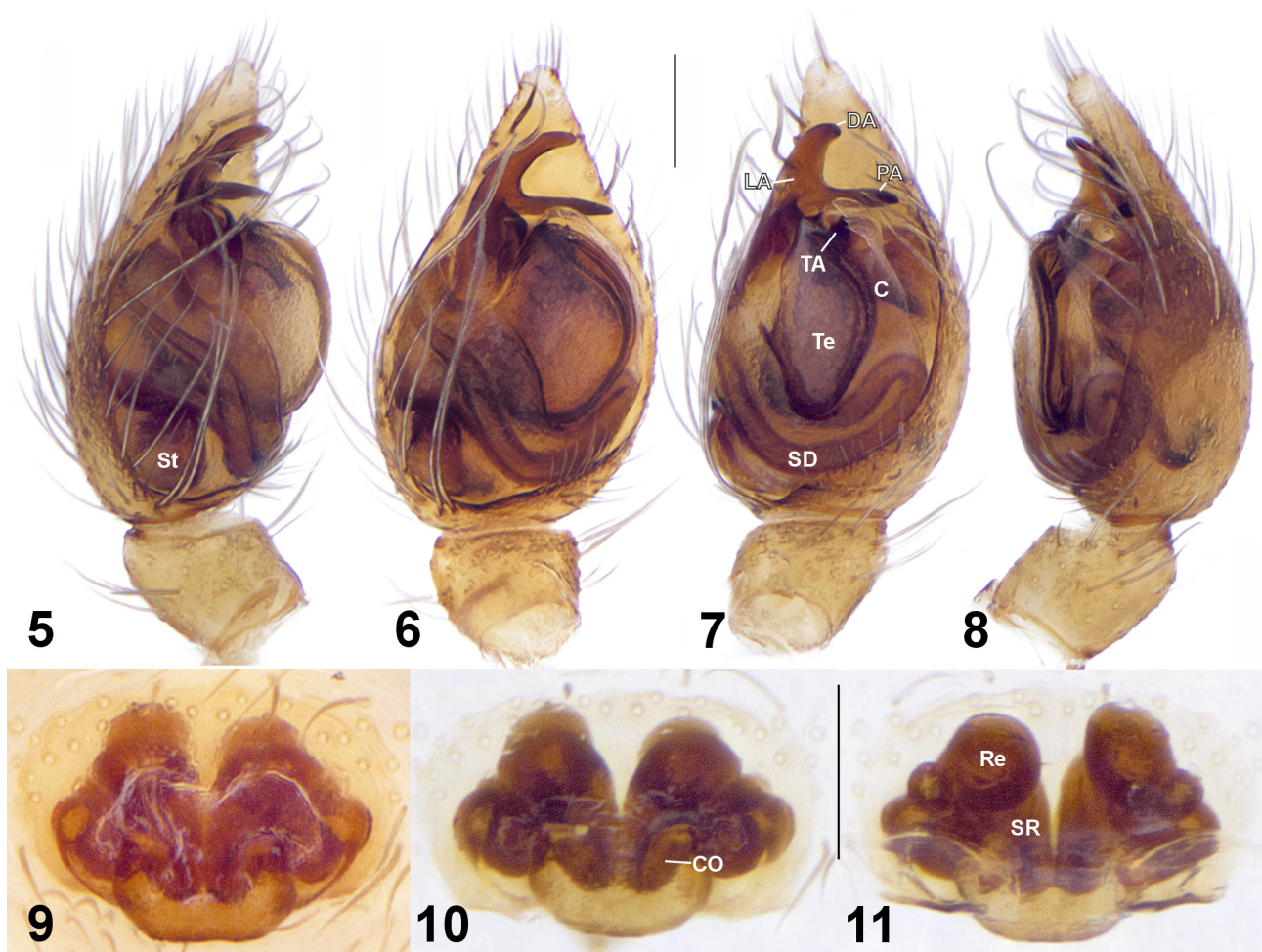
Material examined. INDONESIA, Sumatra Island, Aceh Province: Holotype: ♂ (ZMMU), Ketambe village, [03°41'N, 97°39'E], 400–500 m, 1988 (precise date unknown), unknown collector. Paratypes: 1♀ (ZMMU), 2♀ (ISEA 001.9332), together with holotype.

Etymology. The species name is derived from the Latin *velox* (“swift”, “rapid”) combined with the suffix *-illa*, referring to the small species’ size.

Diagnosis. The male of the new species can be easily distinguished from all congeners, except for *Z. dulong* Lu, Zhang & Wang, 2025 by the lateral apophysis (LA) bearing two large arms of nearly equal length (vs. the distal arm being much longer than the proximal one or proximal arm absent). The male of the new species can be easily distinguished from *Z. dulong* by the widely spaced arms of the tegular apophysis (vs. arms closely positioned; cf. Fig. 6 and Lu *et al.* 2025: figs 2A, 3C, E). In general epigynal conformation, the female of *Zoica veloxilla* sp. nov. resembles *Z. hainan* Wang, Li & Zhang, 2021 and *Z. unciformis* Li, Wang & Zhang, 2013 from China, but can be distinguished from these species by the long, nearly parallel stalks of receptacles (vs. short, strongly divergent ones; cf. Fig. 11 and Wang *et al.* 2021: fig. 72H, Li *et al.* 2013: figs 5E and 6F).



FIGURES 1–4. Habitus of *Zoica veloxilla* sp. nov., male (1–2), female (3–4). 1, 3—dorsal; 2, 4—ventral. Scale bar: 1 mm.



FIGURES 5–11. Male palp (5–8) and female epigyne (9–10) and internal genitalia (11) of *Zoica veloxilla* sp. nov. 5—prolateral view; 6, 9, 10—ventral; 7—ventro-retrolateral; 8—retrolateral; 11—dorsal. Intact epigyne: 9; macerated: 10–11. Scale bars: 0.1 mm. Abbreviations: C—conductor, CO—copulatory opening, DA—distal arm, LA—lateral apophysis, PA—proximal arm, Re—receptacle, SD—sperm duct, SR—stalk of receptacle, St—subtegulum, TA—terminal apophysis, Te—tegulum.

Description. *Male* (Figs 1–2). Total length 1.74. Prosoma 0.94 long, 0.67 wide. Opisthosoma 0.82 long, 0.56 wide. Carapace light brown with small gray spots and stripes near edges. Clypeus yellow. Chelicerae yellow without promarginal and with 2 retromarginal teeth. Labium, endites and sternum yellow. Dorsal part of opisthosoma light brown, anterior part with scutum, lighter than in posterior. Lateral sides of opisthosoma yellow. Ventral part of opisthosoma yellow, without any pattern. Spinnerets yellow. Eye diameters: AME 0.04, ALE 0.04, PME 0.08, PLE 0.08; interdistances: AME–AME 0 (eyes touching each other), AME–ALE 0.009, PME–PME 0.03, PME–PLE 0.02, AME–PME 0.03, ALE–PLE 0.06. Clypeus height 0.02.

Leg and palp measurements: Palp: 0.35, 0.15, 0.15, 0.42 (1.07). Leg I: 0.65, 0.30, 0.62, 0.52, 0.41 (2.50). Leg II: 0.66, 0.29, 0.55, 0.51, 0.37 (2.38). Leg III: 0.61, 0.24, 0.50, 0.48, 0.34 (2.17). Leg IV: 0.80, 0.31, 0.76, 0.73, 0.43 (3.03). Leg formula: IV > I > II > III. Palp coloration: Fe–Pa yellow; Ti–Cy light brown. Legs coloration: Fe and Pa I–IV yellow; Ti, Mt and Ta I–IV light brown. Palp spination: all segments unarmed. Legs spination: Fe I–IV 2d; Pa I–II unarmed, Pa III–IV 1d; Ti I–II 1-1v, Ti III 1d 2p 2r 1v + 2 apical, Ti IV 1d 2p 2r 1v + 1 apical; Mt I–II 2-0v, Mt III–IV 1p 1r 1v + 4 apical.

Palp as shown in Figs 5–8. Tibia ca. 3 times shorter than cymbium. Cymbium length/width ratio 1.7. Subtegulum (St) small, rounded, located on prolatero-basal side of the bulb. Tegulum (Te) circular, length/width ratio 1.1. Conductor (C) large, membranous, with wide distal side bearing a few pointed tips. Lateral apophysis (LA) with two long arms; distal arm (DA) with rounded tip and proximal arm (PA) with sharp tip. Terminal apophysis (TA) short, fang-shaped with pointed tip. Embolus short, tip covered by terminal apophysis.

Female (Figs 3–4). Total length 1.68. Prosoma 0.98 long, 0.75 wide. Opisthosoma 0.88 long, 0.68 wide. Carapace somewhat darker than in males, light brown with small gray spots and stripes near edges. Clypeus yellow. Chelicerae yellow without promarginal and with 2 retromarginal teeth. Labium, endites and sternum yellow. Dorsal part of opisthosoma gray with indistinct cardiac mark and yellowish spots. Lateral sides of opisthosoma gray with tiny light brown spots. Ventral part of opisthosoma yellowish. Spinnerets yellow. Eye diameters: AME 0.04, ALE 0.04, PME 0.07, PLE 0.07; interdistances: AME–AME 0.10, AME–ALE 0.06, PME–PME 0.04, PME–PLE 0.04, AME–PME 0.03, ALE–PLE 0.10. Clypeus height 0.03.

Leg and palp measurements: Palp: 0.35, 0.15, 0.22, 0.33 (1.05). Leg I: 0.74, 0.33, 0.65, 0.55, 0.38 (2.65). Leg II: 0.66, 0.31, 0.55, 0.49, 0.38 (2.39). Leg III: 0.64, 0.29, 0.48, 0.48, 0.33 (2.22). Leg IV: 0.83, 0.26, 0.76, 0.73, 0.44 (3.02). Leg formula: IV > I > II > III. Palp coloration: Fe–Pa yellow; Ti–Tr light brown. Legs coloration: Fe and Pa I–IV yellow; Ti, Mt and Ta I–IV light brown. Palp spination: Fe 1d; Pa unarmed; Ti 1p. Legs spination: Fe I–IV 2d; Pa I–IV 1d; Ti I 2-2v, Ti II 1v, Ti III–IV 2d 2p 2r 1v + 2 apical; Mt I 2-2v, Mt II 1v + 4 apical, Mt III–IV 1p 1r 1v + 4 apical.

Epigyne and female internal genitalia as shown in Figs 9–11. Copulatory openings (CO) elliptical, located in the posterior half of epigyne, separated by approximately one opening width. Receptacle stalks (RS) wide, almost straight. Receptacles (Re) round, right one more oval; with small round extensions.

Distribution. Known only from the type locality: Sumatra, Indonesia (Fig. 16).

Genus *Lysania* Thorell, 1890

Type species. *Lysania pygmaea* Thorell, 1890, from Penang (Malaysia).

Comments. *Lysania* is a small genus comprising four described species (World Spider Catalog 2026). The genus is distributed from southern China through India and the Malay Peninsula to Borneo Island (World Spider Catalog 2026). *Lysania* can be distinguished from the closely related *Zoica* by the following characters: a beak-shaped lateral apophysis, a broader conductor, and longer copulatory ducts. Species of *Lysania* are generally larger than those of *Zoica*. The body length of *Lysania* species ranges from 3.30 to 6.08 mm (Barrion *et al.* 2013; Li *et al.* 2013). Species of *Lysania* inhabit small sheet-webs, a behavior that is apparently absent in most *Zoica* species (Li *et al.* 2013). All *Lysania* species are known from both sexes, with the exception of *L. sabahensis* Lehtinen & Hippa, 1979, which is known only from females from Borneo (Lehtinen & Hippa 1979; World Spider Catalog 2026).

Lysania pygmaea Thorell, 1890

(Figs 12–16)

Lysania pygmaea Thorell, 1890: 313. Lehtinen & Hippa 1979: 14, figs 4, 10, 49, 52–54, 63, 68 (♂); Li *et al.* 2013: 28, figs 3A–D, 4A–F (♂♀); Wang *et al.* 2021: 40, figs 30A–H, 31A–C, 32A–D (♂♀). Female holotype from Pulau Pinang, Malaysia, L. Fea coll., deposited in Museo Civico di Storia Naturale “Giacomo Doria”, Genoa, not examined.

Material examined. INDONESIA, Sumatra Island, North Sumatra Province: ♂ (IBSS), Bukit Lawang Vil. [03°32'N, 98°7'E], 200–250 m, 1988 (precise date unknown), unknown collector.

Diagnosis. By the dark coloration of the body and metallic-shining opisthosoma, as well as the general conformation of the palp, males of *L. pygmaea* resemble those of *L. deangia* Li, Wang & Zhang, 2013 from Yunnan Province of China, but can be distinguished by the relatively narrow, drop-shaped base of the lateral apophysis (LA) (vs. broad and rounded), and by the long embolus (Em) (vs. very short; cf. Fig. 14 and Li *et al.* 2013: figs 1A, 2G).

Description. *Male* (Figs 12–13). Total length 2.94. Prosoma 1.48 long, 1.02 wide. Opisthosoma 1.44 long, 0.81 wide. Carapace dark brown, almost black with poorly visible radial stripes and edges with short white setae. Clypeus brown. Chelicerae light brown with 2 promarginal and 5 retromarginal teeth. Labium and endites brown. Sternum yellow, without pattern. Dorsal part of opisthosoma dark brown, almost black with four brown transverse stripes; covered with long sparse setae. Lateral sides of opisthosoma dark gray with tiny yellow spots. Ventral part of opisthosoma yellow. Spinnerets brown. Eye diameters: AME 0.04, ALE 0.04, PME 0.14, PLE 0.10; interdistances: AME–AME 0.02, AME–ALE 0.03, PME–PME 0.10, PME–PLE 1.12, AME–PME 0.05, ALE–PLE 0.26. Clypeus height 0.05.



FIGURES 12–15. Male habitus (12–13) and palp (14–15) of *Lysania pygmaea* Thorell, 1890. 12—dorsal; 13, 14—ventral; 15—retrolateral. Scale bars: 12–13=1 mm; 14–15=0.2 mm. Abbreviations: C—conductor, LA—lateral apophysis, SD—sperm duct, St—subtegulum, Te—tegulum.

Leg and palp measurements: Palp: 0.57, 0.23, 0.36, 0.53 (1.69). Leg I: 1.44, 0.48, 1.49, 1.33, 0.89 (5.63). Leg II: 1.23, 0.45, 1.15, 1.15, 0.76 (4.74). Leg III: 1.21, 0.37, 1.01, 1.14, 0.65 (4.38). Leg IV: 1.71, 0.41, 1.69, 1.94, 0.94 (6.69). Leg formula: IV > I > II > III. Palp coloration: Fe–Ti brown; Cy light brown. Legs coloration: Fe I greenish brown; Fe II light brown; Fe III–IV light brown with indistinct semi-rings. Pa I–II light brown with white setae antero-dorsally; Pa III–IV light brown with yellow stripe dorsally. Ti I uniform brown; Ti II–III brown with white setae in middle part; Ti IV brown with white setae in middle part and antero-dorsally. Mt I yellow with white setae; Mt II–III yellow; Mt IV yellow with white setae. Ta I yellow with white setae; Ta II–III yellow; Ta IV yellow with white setae. Palp spination: Fe 3d 1p; other segments unarmed. Legs spination: Fe I 3d 1p; Fe II–IV 3d 1p 1r. Pa I–IV 2d. Ti I 2d 2-2v; Ti II 2d 2p 1-1v; Ti III–IV 2d 2p 1r 1-1v. Mt I 2-2v + 4 apical; Mt II 1p 1-1v + 4 apical; Mt III 1p 1r 1-1v + 4 apical; Mt IV 2p 2r + 4 apical.

Palp as shown in Figs 14–15. Tibia 1.5 times shorter than cymbium. Cymbium length/width ratio 2.2. Subtegulum (St) located almost mesally on bulb. Tegulum (Te) circular, length/width ratio 1.2. Conductor (C) wide, membranous. Lateral apophysis (LA) with drop-shaped base and hooked, pointed tip. Embolus (Em) long, thin, slightly curved.

Female. Described by Li *et al.* (2013).

Notes. According to Li *et al.* (2013), *L. pygmaea* normally has six retromarginal teeth on the chelicerae. Our specimen has five.

Distribution. Southern China; Malaysia: Peninsular; Indonesia: Sumatra (new record) (Fig. 16).

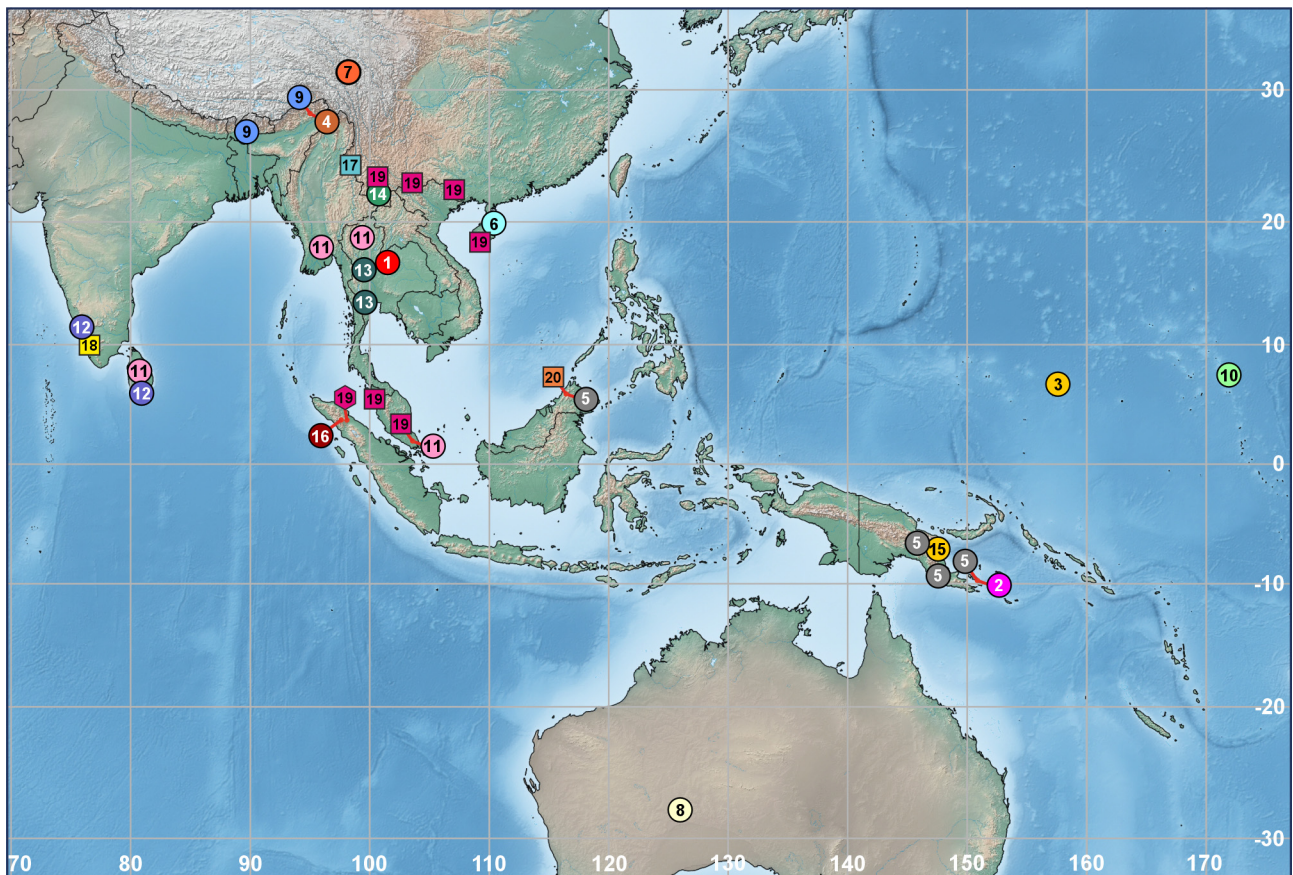


FIGURE 16. Distribution records of *Zoica* and *Lysania* spp. in Indomalayan Realm: *Zoica bambusicola* Lehtinen & Hippa, 1979 (1), *Z. bolubolu* Lehtinen & Hippa, 1979 (2), *Z. carolinensis* Framenau, Berry & Beatty, 2009 (3), *Z. dulong* Lu, Zhang & Wang, 2025 (4), *Z. falcata* Lehtinen & Hippa, 1979 (5), *Z. hainan* Wang, Li & Zhang, 2021 (6), *Z. medogensis* Lu, Zhang & Wang, 2025 (7), *Z. minuta* (McKay, 1979) (8), *Z. oculata* Buchar, 1997 (9), *Z. pacifica* Framenau, Berry & Beatty, 2009 (10), *Z. parvula* (Thorell, 1895) (11), *Z. puellula* (Simon, 1898) (12), *Z. thailandica* Lu, Zhang & Wang, 2025 (13), *Z. unciformis* Li, Wang & Zhang, 2013 (14), *Z. wauensis* Lehtinen & Hippa, 1979 (15), *Z. veloxilla* **sp. nov.** (16), *Lysania deangia* Li, Wang & Zhang, 2013 (17), *L. prolixa* Malamel, Sankaran, Joseph & Sebastian, 2015 (18), *L. pygmaea* Thorell, 1890 (19), *L. sabahensis* Lehtinen & Hippa, 1979 (20). *Zoica* species are marked with circles; *Lysania* species with squares; new record with hexagon.

Discussion

Here we adopt the size classes of Lehtinen & Hippa (1979) and use “minute” for adult lycosids with total body length of ca. 1.5–3.0 mm. Because body length can vary with opisthosoma turgor and preservation, we also report carapace length in Table 1 as a more stable metric for cross-study comparisons. During the analysis of published data, we encountered cases in which one sex (usually the male) has a total body length of less than 3 mm, whereas the female exceeds this threshold. In addition, several species exhibit intraspecific size variation, with some adult specimens measuring less than 3 mm in total length and others exceeding this value. Therefore, we assign a species to the minute size-group if at least one of the following criteria is met: (1) at least one sex has a total body length $\leq$ 3 mm; (2) at least part of adult specimens has a total body length $\leq$ 3 mm. Whenever possible, ranges of total body length and carapace length are provided in the Table 1. According to these criteria, the smallest wolf spider known worldwide is *Zoica minuta* (McKay, 1979) from Australia. The female has a total body length of about 1 mm, and the male, which is currently unknown, is presumably even smaller.

At present, only a small fraction of described Lycosidae appears to fall within this size class (32 species; roughly 1.3% of the family), although exact numbers are difficult to compile given the size of the family and the uneven availability of standardized measurements. Minute species occur in eleven genera (*Artoria* Thorell, 1877, *Foveosa* Russell-Smith, Alderweireldt & Jocqué, 2007, *Allotrochosina* Roewer, 1960, *Venonia* Thorell, 1895, *Katableps*

TABLE 1. Size and distribution of minute wolf spiders (Lycosidae).

Taxon	Male		Female		Distribution	References
	Total length	Carapace length	Total length	Carapace length		
Artoriinae						
<i>Artoria</i>						
<i>A. equipalus</i> Framenau & Baehr, 2018	3.0	1.7	5.3	2.5	Australasian	Framenau & Baehr 2018
<i>A. maroota</i> Framenau & Baehr, 2018	2.5	1.4	♀ unknown	♀ unknown	Australasian	Framenau & Baehr 2018
<i>A. mummorah</i> Framenau & Baehr, 2018	2.9	1.7	3.4	1.7	Australasian	Framenau & Baehr 2018
<i>A. palustris</i> Dahl, 1908	2.6–3	1.2–1.5	3.2–4	1.75–2	Australasian	Dahl 1908; Framenau 2002
<i>A. parvula</i> Thorell, 1877	2.35–3.48	1.5–1.79	2.65–3.38	1.49–1.8	Australasian, Indomalayan	Framenau 2002; Li <i>et al.</i> 2012
Pardosinae						
<i>Foveosa</i>						
<i>F. albicapillis</i> Russell-Smith, Alderweireldt & Jocqué, 2007	2.75–3.33	1.75	4.17	1.75	Afrotropical	Russell-Smith <i>et al.</i> 2007
Venoniinae						
<i>Allotrochosina</i>						
<i>A. huangi</i> Wang, Li & Zhang, 2021	2.66–2.91	1.60	5.37	2.52	Indomalayan	Wang <i>et al.</i> 2021
<i>Venonia</i>						
<i>V. spirocysta</i> Chai, 1991 (in Chen & Zhang 1991)	2.57–3.37	1.53–1.80	3.27–4.05	1.90	Indomalayan	Kamura 2022; Tso & Chen 2004
<i>V. sungahae</i> Yoo & Framenau, 2006	2.73	1.34	3.32	1.30	Australasian	Yoo & Framenau 2006
Zoicinae						
<i>Katableps</i>						
<i>K. perinet</i> Jocqué, Russell-Smith & Alderweireldt, 2011	♂ unknown	♂ unknown	2.83	1.20	Afrotropical	Jocqué <i>et al.</i> 2011
<i>Lysania</i>						
<i>L. sabahensis</i> Lehtinen & Hippa, 1979	♂ unknown	♂ unknown	2.3–2.85*	1.2–1.35	Indomalayan	Lehtinen & Hippa 1979
<i>Piratula</i>						
<i>P. minuta</i> (Emerton, 1885)	2.55–3.11	1.29–1.83	2.84–3.74	1.44–1.76	Nearctic	Dondale & Redner 1990

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TABLE 1. (Continued)

Taxon	Male		Female		Distribution	References
	Total length	Carapace length	Total length	Carapace length		
<i>Zoica</i>						
<i>Z. bambusicola</i> Lehtinen & Hippa, 1979	♂ unknown	♂ unknown	2.05*	1.05	Indomalayan	Lehtinen & Hippa 1979
<i>Z. bolubolu</i> Lehtinen & Hippa, 1979	♂ unknown	♂ unknown	1.65–1.9*	0.85–0.9	Australasian	Lehtinen & Hippa 1979
<i>Z. carolinensis</i> Framenau, Berry & Beatty, 2009	1.63	0.90	1.77	0.92	Australasian	Framenau <i>et al.</i> 2009
<i>Z. dulong</i> Lu, Zhang & Wang, 2025	2.90	1.56	3.03	1.46	Indomalayan	Lu <i>et al.</i> 2025
<i>Z. falcata</i> Lehtinen & Hippa, 1979	1.7–1.8	0.9	1.7–1.8	0.9	Australasian, Indomalayan	Lehtinen & Hippa 1979
<i>Z. hainan</i> Wang, Li & Zhang, 2021	0.99–1.39	0.56	1.40	0.68	Indomalayan	Wang <i>et al.</i> 2021
<i>Z. medogensis</i> Lu, Zhang & Wang, 2025	2.07–2.20	1.11	2.17–2.41	1.19	Indomalayan	Lu <i>et al.</i> 2025
<i>Z. minuta</i> (McKay, 1979)	♂ unknown	♂ unknown	0.9–1.1	not measured	Australasian	McKay 1979
<i>Z. oculata</i> Buchar, 1997	2.77–3.26	1.69	2.5–4.26	1.1	Indomalayan	Buchar 1997; Lu <i>et al.</i> 2025
<i>Z. pacifica</i> Framenau, Berry & Beatty, 2009	1.65–1.92	0.90–0.98	1.65–1.87	0.90–0.94	Australasian	Framenau <i>et al.</i> 2009
<i>Z. parvula</i> (Thorell, 1895)	1.55–1.7	0.75–0.8	1.7–1.9	0.8–0.9	Indomalayan	Lehtinen & Hippa 1979
<i>Z. puellula</i> (Simon, 1898)	1.8–1.9*	0.9	1.9–2.05*	0.9–0.95	Indomalayan	Lehtinen & Hippa 1979
<i>Z. thailandica</i> Lu, Zhang & Wang, 2025	2.15–2.43	1.16	2.16–2.73	1.13	Indomalayan	Lu <i>et al.</i> 2025
<i>Z. unciiformis</i> Li, Wang & Zhang, 2013	1.96–2.68	0.96	1.99	0.94	Indomalayan	Wang & Zhang 2013
<i>Z. veloxilla</i> sp. nov.	1.74	0.94	1.68	0.98	Indomalayan	Present data
<i>Z. wauensis</i> Lehtinen & Hippa, 1979	1.8–2.05	0.9–0.95	1.8–2.3	0.9–1.1	Australasian	Lehtinen & Hippa 1979
Not assigned to a subfamily						
<i>Lobizon</i> **						
<i>L. humilis</i> (Mello-Leitão, 1944)	2.82–5.20	1.6–2.73	3.17–5.24	1.73–2.50	Neotropical	Piacentini & Grismado 2009
<i>L. otamendi</i> Piacentini & Grismado, 2009	2.87–3.43	1.47–1.83	1.63–3.97	1.83–1.90	Neotropical	Piacentini & Grismado 2009
<i>Minicosa</i>						
<i>M. neptuna</i> Alderweireldt & Jocqué, 2007	1.72	1.00	2.27	1.15	Afrotropical	Alderweireldt & Jocqué 2007
<i>Trabeops</i>						
<i>T. aurantiacus</i> (Emerton, 1885)	2.78–3.12	1.53–1.71	3.3–3.78	1.58–1.82	Nearctic	Dondale & Redner 1990

* For these species, Lehtinen & Hippa (1979) did not explicitly report the total body length; we therefore provide it as the sum of the prosoma and opisthosoma lengths.

** This genus has not been assigned to any subfamily; however, the authors of the original description suggested that it may belong to Artorinae or Venoniinae (Piacentini & Grismado 2009).

Jocqué, Russell-Smith & Alderweireldt, 2011, *Lysania* Thorell, 1890, *Piratula* Roewer, 1960, *Zoica* Simon, 1898, *Lobizon* Piacentini & Grismado, 2009, *Minicosa* Alderweireldt & Jocqué, 2007 and *Trabeops* Roewer, 1959) distributed across four subfamilies (Artoriinae Framenau, 2007, Pardosinae Simon, 1898, Venoniinae Lehtinen & Hippa, 1979 and Zoicinae Lehtinen & Hippa, 1979). This apparent rarity likely reflects both genuine scarcity and sampling/reporting bias, as some old taxonomic descriptions omit body length/carapace length for both sexes. *Zoica* is the most species-rich genus with respect to minute species, comprising 16 species. More than half of the known minute species are concentrated in the subfamily Zoicinae (19 species).

Known minute lycosids are recorded from five zoogeographic realms: Afrotropical (3 species), Australasian (11), Indomalayan (14), Nearctic (2) and Neotropical (2). Two species occur across both Australasian and Indomalayan realms (see Table 1). We note that the low number of minute lycosid species recorded in temperate regions may be due to the high diversity of liniphid spiders in the litter, which could act as competitors. In tropical regions, the actual number of species is likely higher and could be revealed through more intensive use of litter sifting methods.

The biology of not all minute species has been studied; however, based on available literature, most of them are free-roaming hunters (e.g., *Artoria*, *Allotrochosina*, *Foveosa*, *Katableps*, *Lysania*, *Lobizon*, *Minicosa*, *Piratula*, *Trabeops*) and occupy a wide range of habitats, including both open and forested environments (Framenau & Baehr 2018; Russell-Smith *et al.* 2007; Jocqué *et al.* 2011; Piacentini & Grismado 2009; Alderweireldt & Jocqué 2007). *Venonia* is one of the few web-building genera within Lycosidae; however, details of the biology of the two minute species (see Table 1) of this genus remain unknown. Species of *Zoica* are generally considered free-roaming hunters, but web-building behavior was recently documented for *Z. thailandica* (Lu *et al.* 2025). It is possible that the number of web-building *Zoica* species will increase as more detailed data on their biology become available. Minute lycosids tend to be cryptic, substrate-bound predators most probably capturing small arthropods like collembolans, early-instar insects. The pitfall-trap method, traditionally used for collecting wolf spiders, is not particularly effective for minute species (pers. obs.). However, some authors have reported (Piacentini & Grismado 2009; Dondale & Redner 1990) collecting minute species using pitfall traps, for example *Lobizon humilis* (Mello-Leitão, 1944) and *L. otamendi* Piacentini & Grismado, 2009 and *Trabeops aurantiacus* (Emerton, 1885). In general, to collect such spiders, it is necessary to employ leaf-litter sifting or manual inspection of dry leaves and stones, followed by extraction of specimens using an aspirator (pooter).

We anticipate that the number and proportion of minute lycosids will increase as tropical litter faunas become better surveyed. Many regions remain undersampled; historically, inventories have focused on larger, ground-active groups, which are easier to collect and study.

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