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Tenuiphantes zelatus (Zorsch), *T. zibus* (Zorsch), and
Centromerus mariannae sp. nov. (Araneae:
Linyphiidae) in the Pacific Northwest

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Tenuiphantes zelatus (Zorsch), *T. zibus* (Zorsch),
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in the Pacific Northwest

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Tenuiphantes zelatus (Zorsch), *T. zibus* (Zorsch), and *Centromerus mariannae* sp. nov. (Araneae: Linyphiidae) in the Pacific Northwest

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Abstract. The linyphiid spiders *Tenuiphantes zelatus* (Zorsch, 1937), *T. zibus* (Zorsch, 1937), and *Centromerus mariannae* sp. nov. are diagnosed, described or redescribed and illustrated, including the previously undescribed female of *T. zibus*. All are common species of the Pacific Northwest of North America but were previously inadequately described (*T. zelatus* and *T. zibus*) or illustrated only but not described or named (*C. mariannae*).

Key words. *Lepthyphantes*, ex-*Lepthyphantes*, species description, new species, DNA barcode.

Introduction

The linyphiid spider genus *Tenuiphantes* Saaristo and Tanasevitch, 1996 was erected for species of *Lepthyphantes* Menge, 1866 having a similar embolus shape to *Tenuiphantes tenuis* (Blackwall, 1852) the type for the genus. It currently comprises 44 species (World Spider Catalog 2018), of which six occur in North America. In the east; *T. cracens* (Zorch, 1937), *T. sabulosus* (Keyserling, 1886), *T. zebra* (Emerton, 1882), and in the west; *T. zelatus* (Zorch, 1937), *T. zibus* (Zorch, 1937), and across the continent the introduced Palearctic species, *T. tenuis* (Blackwall, 1852). Although many *Lepthyphantes* sensu lato species were originally poorly described, detailed descriptions of many species have now been provided through the efforts of van Helsdingen et al. (1977), Saaristo and Tanasevitch (1996), and Tu et al. (2006) among other workers. Two western Nearctic species lacking clear descriptions are *T. zelatus* and *T. zibus*. Zorch's (1937) descriptions were based upon very few specimens and the female of *T. zibus* was then unknown. Both species are common forest dwellers in the Pacific Northwest of North America eastward to the Rocky Mountains and often occur sympatrically with each other and *T. tenuis* as well as with other species of *Lepthyphantes* sensu lato. Because of the unclear descriptions of the two species and their sympatry with closely related species, identification errors are common. Thus, here I redescribe *T. zelatus* and *T. zibus* and provide the first description of the female *T. zibus*.

Centromerus Dahl, 1886 is a larger linyphiid genus compared to *Tenuiphantes*, currently containing 87 species (World Spider Catalog 2018). Although generally regarded as non-monophyletic (e.g., van Helsdingen 1973; Eskov and Marusik 1992) the genus (e.g., Wiehle 1956) is well defined and the new species described here is clearly a *Centromerus*.

Materials and Methods

For this work, 359 *T. zelatus*, 70 *T. zibus*, and 504 *Centromerus mariannae* sp. nov. specimens were examined during the course of this study. Specimens were identified using available descriptions (Zorch 1937) and through discussion with experienced colleagues. Males and females of *T. zibus* were associated through general morphological similarities as well as collection localities. Selected specimens (noted below) were measured using an ocular micrometer; all specimens examined are held in the University of Alaska Museum (UAM), the Denver Museum of Nature and Science (DMNS), and the University of Washington Burke Museum (UWBM). Illustrations were made freehand. Taxonomic nomenclature follows version 19 of the World Spider Catalog (2018). All measurements are in millimeters (mm). Chaetotaxy is presented as the leg segment followed by the leg number and follows the format dorsal-prolateral-retrolateral-ventral. Abbreviations: F = femur, Ti = tibia, Pt = patella, Mt = metatarsus, Tm = metatarsus trichobothria, L:W = length divided by width, BDP = basal denticle of paracymbium.

Redescriptions

Tenuiphantes Saaristo and Tanasevitch, 1996

Type species: *Leptyphantes tenuis* Blackwall, 1852 (Saaristo and Tanasevitch 1996)

Tenuiphantes zelatus (Zorch, 1937)

Fig. 1–4.

Lepthyphantes zelata Zorsch 1937

Lepthyphantes zelatus Roewer 1942

Tenuiphantes zelatus Saaristo and Tanasevitch 1996

Type. Male with male and 12 female allotypes. Sol Duc Hot Springs, Washington, USA. 12 August 1927. Coll: C. R. Crosby. In AMNH. Examined.

Specimens measured. USA: **Alaska:** 1 male, Prince of Wales Island, Stanley Ck. 1B, 55.872°N 133.06523°W 77 m elv., 12–27 June 2010 coll: J. Stockbridge, C. Bickford, clear cut, pitfall 4, UAM:Ento:227012; 1 male, Prince of Wales Island, Luck Pt., 55.98256°N 132.77943°W 129 m elv., 9 July–1 Aug 2010 coll: J. Stockbridge, C. Bickford, 2nd growth, pitfall 2, UAM:Ento:227024; 1 male, Prince of Wales Island, Stanley Ck. 1B, 55.872°N 133.06523°W 77 m elv., 30 May–12 June 2010 coll: J. Stockbridge, C. Bickford, clear cut, pitfall 4, UAM:Ento:226958; 3 Female, Prince of Wales Island, Hatchery Ck.2, 55.89356°N 132.9437°W 134 m elv., 2–29 June 2010 coll: J. Stockbridge, C. Bickford, 2nd growth, pitfall 1, UAM:Ento:226966; 1 male, Prince of Wales Island, Stanley Ck., 55.79726°N 133.1363°W 50 m elv., 30 May–10 June 2010 coll: J. Stockbridge, C. Bickford, thin. 2nd growth, pitfall 3, UAM:Ento:226954; 1 male, Prince of Wales Island, Hatchery Ck.4, 55.88602°N 132.8607°W 78 m elv., 14–27 June 2010 coll: J. Stockbridge, C. Bickford, old growth, pitfall 2, UAM:Ento:227007; 2 Female, Prince of Wales Island, Hatchery Ck.2, 55.89356°N 132.9437°W 134 m elv., 2–29 June 2010 coll: J. Stockbridge, C. Bickford, 2nd growth, pitfall 2, UAM:Ento:226967.

Diagnosis. Male *T. zelatus* can be distinguished from all other *Tenuiphantes* species in the Pacific Northwest by a paracymbium with a single basal denticle (Fig. 1 and 3, BDP) and a lamella characteristic with a right-angle bend prior to a rounded oblique ventral fork and a single dorsal fork originating near the right-angle bend and curving along the lamella characteristic (Fig. 2). Males of *T. zibus* lack any denticles on the paracymbium and have an additional dorsal fork originating near the bend in the lamella characteristic and projecting away from the ventral fork (Fig. 6). Males of *T. tenuis* have two denticles on the paracymbium and a lamella characteristic with both ventral and distal forks curving distally and ending in sharp points (van Helsdingen et al. 1977, figure 18).

Females can be distinguished by an inversely-heart shaped scape and a posterior plate with wide, laterally directed lateral lobes (Fig. 4). Both *T. zibus* and *T. tenuis* females have a longer narrow anterior section of the scape which flares out posteriorly (Fig. 7), creating a pronounced inverted “T” shape in *T. tenuis* (van Helsdingen et al. 1977, figure 16). They also have a posterior plate with narrow lateral lobes curving along the lateral edge of the scape. Additionally, specimens of *T. zelatus* tend to be smaller and darker than *T. zibus* or *T. tenuis*.

Description. Male ($n = 5$). Total length = 1.49–1.59 mm; carapace length = 0.77–0.81 mm; carapace width = 0.63–0.65 mm; carapace L:W ratio 0.82. TmI = 0.23, TmIV absent. Chaetotaxy: F I, 0-1-0-0; F II-IV, 0-0-0-0; Pt I-IV, 1-0-0-0; TiI, 2-1-1-0; TiII, 1-1-1-0; TiIII-IV, 2-0-0-0, MtI-IV, 1-0-0-0. Carapace uniformly dusky. ALE, PME, PLE similarly sized, AME about 3/4 size of other eyes, 1/2 eye width apart. Lateral eyes adjacent, PME separated from lateral eyes by 1/4 eye width, PME 1/2 eye width apart. Clypeus two ALE width. Sternum dusky to dark grey. Abdomen light grey with 2–5 dark chevrons. Dorso-lateral area lined with white. Sides dark. Ventro-lateral area lined with white. Venter uniformly dark. Legs yellow, without bands. Three cheliceral promarginal teeth and one retromarginal denticle. Paracymbium base with several stout hairs, and a single denticle located basally under the curve of the paracymbium thumb. It may be necessary to view the paracymbium dorsally to see the denticle (Fig. 3,

BDP). The distal ridge of the paracymbium has a circular to oval indentation along the proximal edge, distal section an elongated semi-spatulate shape (Fig. 1) occasionally twisting. Embolus narrow at the point of attachment to the suprategulum with a row of denticles along the base of the ridge, expanding to a denticle-covered bisected spatulate shape with a thumb. Embolus proper spear-shaped. Lamella characteristica directed distally then abruptly turning laterally and widening before narrowing to a tip along the retrolateral side (Fig. 2).

Female ($n = 5$). Total length = 1.70–1.80 mm; carapace length = 0.77–0.81 mm; carapace width = 0.64–0.66 mm; carapace L×W ratio 0.82. TmI = 0.24, TmIV absent. Chaetotaxy: F I, 0-1-0-0; F II-IV, 0-0-0-0; Pt I-IV, 1-0-0-0; TiI, 2-1-1-0; TiII, 1-1-1-0; TiIII-IV, 2-0-0-0, MtI-IV, 1-0-0-0. Coloration same as male, although generally lighter in color and chevrons on abdomen less visible. Scape inversely-cordate shaped, narrowing and curving under itself before terminating in a narrow projection which extends posteriorly (Fig. 4). Posterior plate wider than scape with a shallow indentation along the ventral edge. Lateral lobes of the posterior plate directed laterally.

Variation. There is some variation in how abrupt the lamella characteristica curve is and the darkness of the apical section which may lead to confusion with *T. tenuis*. There is little variation in the shape of the scape, which may be confused with that of *T. zebra*, found in eastern North America. However, the species can be separated by the smoothly curved inversely-cordate shaped scape, and larger atria (compare Fig. 4 to Figure 284 in Kaston (1948) or Figure 1653 in Paquin and Dupérré (2003)). All specimens measured came from coastal Alaska and do appear to be smaller than specimens collected elsewhere, Zorch (1937) states a total length of the males as 1.8–1.9 mm and 2 mm for the females.

DNA barcoding. One UAM specimen (UAM:Ento:149203) was DNA barcoded by Sikes et al. (2017) and falls into BIN BOLD:AAP4445 with 268 other specimens, which is 9.65% distant from its nearest neighbor.

Distribution. The species can be found throughout forested regions of the Pacific Northwest from Oregon to Alaska and eastward to the front range of the Rockies. It does not appear to have a forest habitat preference and is collected in old growth forests, second growth forests as well as clear cuts from sea level to tree line. Mature specimens have been collected from the middle of May to the middle of July, with the majority of adults being collected the first part of June.

Tenuiphantes zibus (Zorch, 1937)

Fig. 5–7.

Lepthyphantes ziba Zorsch 1937

Lepthyphantes zibus Roewer 1942

Tenuiphantes zibus Saaristo and Tanasevitch 1996

Type. Male and one male paratype. Lake Sutherland, Washington, USA. 11 Aug 1927, coll: C. R. Crosby. In AMNH. Examined.

Specimens measured. USA: **Alaska:** 1 female 1 male, Prince of Wales Island, Hatchery Ck.2, 55.89356°N 132.9437°W 134 m elv., 10–31 July 2010 coll: J. Stockbridge, C. Bickford, 2nd growth, pitfall 4, UAM:Ento:227060; 1 female, Prince of Wales Island, Hatchery Ck.2, 55.89356°N 132.9437°W 134 m elv., 2–29 June 2010 coll: J. Stockbridge, C. Bickford, 2nd growth, pitfall 1, UAM:Ento:227040; 2 Female, Prince of Wales Island, Hatchery Ck.2, 55.89356°N 132.9437°W 134 m elv., 2–29 June 2010 coll: J. Stockbridge, C. Bickford, 2nd growth, pitfall 2, UAM:Ento:227041; 1 male, Prince of Wales Island, Luck Lk. 3 Rd., 55.95347°N 132.7708°W 117 m elv., 8–30 July 2010 coll: J. Stockbridge, C. Bickford, old growth, pitfall 3, UAM:Ento:227896; 1 male, Prince of Wales Island, Luck Pt., 55.98256°N 132.77943°W 129 m elv., 2 June–27 June 2010 coll: J. Stockbridge, C. Bickford, 2nd growth, pitfall 2, UAM:Ento:226921; 1 female, Prince of Wales Island, Staney Ck. 1B, 55.872°N 133.06523°W 77 m elv., 30 May–12 June 2010 coll: J. Stockbridge, C. Bickford, clear cut, Pitfall #2; **Washington:** San Juan County: 1 male, Orcas Island, Mt. Constitution Bog #2, 48.677°N 122.834°W 670 m elv., 23 July 1993–18 March 1994, coll: J. Bergdahl, pitfall, DMNS ZA.14797; 1 male, San Juan Island, Streams S of Cady Mtn., 48.535°N 123.099°W 25 m elv., 8 September–7 October 1991, coll: J. Bergdahl, pitfall, DMNS ZA.12819.

Diagnosis. Male *T. zibus* can be distinguished from all other *Tenuiphantes* species by a paracymbium lacking denticles and a lamella characteristica with a rounded oblique ventral fork and a dorsal fork originating at the base of the curve and projecting away from the lamella characteristica (Fig. 6). The dorsal fork may curve behind the rest of the lamella characteristica towards the bulb and may not be visible from a ventral or pro-lateral angle. Females can be distinguished by an inverted “Y” shaped scape (Fig. 7) and a posterior plate with narrow, lateral lobes curving along the lateral side of the scape. For additional characters see *T. zelatus* diagnosis above.

Description. Male ($n = 5$). Total length = 1.43–1.45 mm; carapace length = 0.79–0.83 mm; carapace width = 0.65–0.73 mm; carapace L:W ratio 0.87. TmI = 0.22, TmIV absent. Chaetotaxy: FI, 0-1-0-0; FII-IV, 0-0-0-0; Pt I-IV, 1-0-0-0; TiI, 2-1-1-0; TiII, 1-1-1-0; TiIII-IV, 2-0-1-0; MtI-IV, 1-0-0-0. Carapace uniformly yellow. ALE, PME, PLE similarly sized, AME about 3/4 size of other eyes, 1/2 eye width apart. Lateral eyes adjacent, PME separated from lateral eyes by 1/2 eye width, PME 3/4 eye width apart. Clypeus two ALE width. Sternum yellow. Abdomen light grey, suffused with white along the median and lateral edges, 2–5 dark chevrons, often faint. Sides dark with a few white patches. Venter light grey to yellow. Legs yellow and unmarked. Three cheliceral promarginal teeth and one retromarginal denticle. Paracymbium base with several stout hairs, no teeth along the inner flange. The distal ridge with an oblong indentation along the proximal edge, narrower than wide, distal section a narrow elongated semi-spatulate shape, often twisted (Fig. 5). Embolus narrow at the point of attachment to the supratégulum with a single spine along the base of the ridge, expanding to a denticle-covered bisected spatulate shape with a thumb. Embolus proper spear-shaped. Lamella characteristica directed distally then curving at a right angle laterally, with the ventral fork widening into a right triangle shape, widest at the tip. A dorsal fork originates along the proximal edge at the point where the lamella characteristica curves laterally (Fig. 6) and projects away from the lamella characteristica. The extension is almost as long as the main part of the lamella characteristica and curves slightly towards the broader tip but may curve inward towards the bulb making it difficult to view.

Female ($n = 5$). Total length = 1.79–1.87 mm; carapace length = 0.77–0.85 mm; carapace width = 0.71–0.73 mm; carapace L:W ratio 0.9. TmI = 0.21, TmIV absent. Chaetotaxy: FI, 0-1-0-0; FII-IV, 0-0-0-0; Pt I-IV, 1-0-0-0; TiI, 2-1-1-0; TiII, 1-1-1-0; TiIII-IV, 2-0-1-0; MtI-IV, 1-0-0-0. Coloration same as male, although generally lighter in color and chevrons on abdomen less visible. Scape “Y” shaped, narrowing and curving under itself before terminating in a narrow projection which extends posteriorly (Fig. 7). Posterior median plate wider than scape, deep indentation along ventral edge. Lateral lobes of the posterior plate along the sides of the scape, directed medially.

Variation. In one male specimen the spur of the lamella characteristica was found to be directed towards the paracymbium, the opposite of its normal orientation. This specimen also had two large spines at the base of the palp. In females the extent of scape that is narrowed before the posterior expansion is a variable character. Females with a short stem may be confused with *T. zelatus* but can be separated by the distinct lateral lobes of the posterior plate. Females with a long stem may be confused with *T. tenuis* but can be separated by the arms, or posterior expansion of the scape, being directed posteriorly, whereas in *T. tenuis* they curve anteriorly (compare Fig. 7 to figure 16 in van Helsdingen et al. (1977)). As mentioned under *T. zelatus*, measured specimens all came from coastal Alaska and do appear to be smaller and darker than those collected elsewhere. Zorch (1937) gave a total length measurement for the male as 2.1 mm.

DNA barcoding. One specimen (UAM:Ento:113769) was DNA barcoded by Slowik and Blagoev (2012) and falls into BIN BOLD:AAL6435 with 17 other specimens, which is 9.98% distant from its nearest neighbor.

Distribution. The species can be found throughout forested coastal regions of the Pacific Northwest from Oregon to Alaska. In Washington, by far the best surveyed area in the region, it has not been found east of the Cascades (Rod Crawford pers. comm.). This species does not appear to have a forest habitat preference and has been collected in old growth forests, second growth forests as well as clear cuts from sea level to tree line. Adults have been collected from the end of May through July, with the highest proportion being collected in the end of June.

Discussion. In southeastern Alaska *T. zelatus* and *T. zibus* are very common forest floor inhabiting spiders, often building small sheet webs in the layers of moss and low shrubbery. Specimens collected in Washington were also collected from a similar habitat. Populations of *T. zelatus* extend much further east into very different habitats in Alberta and Colorado (Don Buckle pers. comm. Bennett et al. 2017, DMNS specimen za.4818).

For identification, the shape of the lamella characteristica and the scape are the primary useful characters. Except for the presence or absences of denticles the three *Tenuiphantes* species found in the Pacific Northwest share similar paracymbium shapes, with the distal thumb and indentation along the proximal edge showing much intraspecific variation. There is also much intraspecific variation in size and coloration. *Tenuiphantes zibus* and *T. tenuis* tend to be larger, lighter species, often with a light abdomen venter, but specimens of *T. zelatus* have been collected of similar size and color to *T. zibus* specimens.

There remains debate over the recognition of many of the ex-*Lepthyphantes* genera designated by Saaristo, Tanasevitch, Marusik and others (for example Saaristo and Tanasevitch 1996, Tanasevitch 1992, and Eskov and Marusik 1994 in which 17 new genera are designated for previous *Lepthyphantes* species). Because the defining character of *Tenuiphantes* has to do with an embolus character it is not known whether the genus is evolutionarily supported or a taxonomic convenience at this time. There are many other ex-*Lepthyphantes* genera which seem to share similar female morphology. Likely because of this, the recognition of the genus has not been universally accepted (for example see Thaler et al. 1994, Ubick et al. 2005 and Paquin et al. 2010 which retain *T. zelatus* and *T. zibus* in the genus *Lepthyphantes*). I have chosen to acknowledge the genus as there do appear to be synapomorphic characters among the species, and proper morphological identification will have to precede any molecular work that may clarify the relationships in the genus.

New species

Centromerus Dahl, 1886

Type species: *Centromerus brevipalpus* (Menge, 1866), Bosmans (2015)

Centromerus mariannae Slowik, new species

Fig. 8–11.

Centromerus sp. (van Helsdingen 1973)

Centromerus sp. #1 (Crawford 1988)

urn:lsid:zoobank.org:act:6279732C-C947-490A-8854-15A7875C53E8

Types. *Holotype Male*: USA. Alaska. Prince of Wales Island, Staney Creek, 55.79726°N, 133.1363°W, 50 m elv., 14–30 May 2010, coll: J. Stockbridge, C. Bickford, thinned 2nd growth, pitfall 3, UAM:Ento:225490.

Paratypes measured. USA. Alaska. 1 female, Prince of Wales Island, Hatchery Ck.2, 55.89356°N, 132.9437°W, 134 m elv., 28 May 2010, coll: J. Stockbridge, C. Bickford, unthinned 2nd growth, Berlese, UAM:Ento:225476; 1 female, Prince of Wales Island, Hatchery Ck.4, 55.88285°N, 132.89795°W, 82 m elv., 14 May–30 May 2010, coll: J. Stockbridge, C. Bickford, unthinned 2nd growth, pitfall 3, UAM:Ento:225483; 1 female, Prince of Wales Island, Coffman Cv, 55.98053°N, 132.8607°W, 78 m elv., 28 May–10 June 2010, J. Stockbridge, C. Bickford, unthinned 2nd growth, pitfall 3, UAM:Ento:225493; 1 female, Prince of Wales Island, Coffman Cv, 55.9795°N, 132.86256°W, 67 m elv., 38864, J. Stockbridge, C. Bickford, thinned 2nd growth, Berlese, UAM:Ento:225486; 1 female, Prince of Wales Island, Coffman Cv, 55.98053°N, 132.8607°W, 78 m elv., 10–30 June 2010, J. Stockbridge, C. Bickford, unthinned 2nd growth, pitfall 2, UAM:Ento:225499; 1 male, Prince of Wales Island, Staney Ck., 55.79726°N, 133.1363°W, 50 m elv., 27 April–15 May 2010, Jill Stockbridge, thinned 2nd growth, pitfall 4, UAM:Ento:225466; 1 male, Prince of Wales Island, Hatchery Ck.4, 55.88433°N, 132.89734°W, 82 m elv., 27 April–15 May 2010, Jill Stockbridge, thinned 2nd growth, pitfall 4, UAM:Ento:225467; 1 male, Prince of Wales Island,

Luck Point, 55.98261°N, 132.77986°W, 205 m elv., 18 May–2 June 2010, J. Stockbridge, C. Bickford, thinned 2nd growth, pitfall 2, UAM:Ento:238876; 1 male, Prince of Wales Island, Stanley Ck., 55.87126°N, 133.06697°W, 72 m elv., 11 May–22 May 2010, J. Stockbridge, C. Bickford, clearcut/ecotone, pitfall 4, UAM:Ento:225474; 1 male, Prince of Wales Island, Stanley Ck., 55.79901°N, 133.11782°W, 41 m elv., 27 June–14 July 2010, J. Stockbridge, C. Bickford, old growth, pitfall 2, UAM:Ento:225500; 2 females, Prince of Wales Island, Stanley Creek, 55.79723°N, 133.13467°W, 63 m elv., 10 June 2010, coll: J. Stockbridge, C. Bickford, 2nd growth, Berlese, UAM:Ento:225494; 1 male, Prince of Wales Island, Stanley Ck., 55.79726°N, 133.1363°W, 50 m elv., 14–30 May 2010, Jill Stockbridge, C. Bickford, thinned 2nd growth, pitfall 2 UAM:Ento:225489 (DNA Barcoded, bin = BOLD:AAU6230).

Specimen notes. Holotype deposited at UAM. Two pairs of paratypes deposited each at UWBM and the Royal British Columbia Museum. All other paratypes deposited at UAM. An additional 493 specimens were examined and are located at UAM. <http://arctos.database.museum/saved/Centromerusnsp>.

Etymology. The specific epithet refers to the late Marianne E. Parker (Hippisley) Clark who collected beetles in the Terrace area of British Columbia. She sent her spiders to J. H. Emerton in the early part of the 20th century and is responsible for the specimen originally illustrated and mentioned by van Helsdingen (1973). A historical character in the area, she originally was interested in minerals and bryophytes until she lost her right arm in a gun accident in 1911 and focused instead on beetles.

Diagnosis. Male *C. mariannae* can be separated from all other *Centromerus* species in the Pacific Northwest by the small size (1.86–1.94 mm), the presence of a row of denticles along the medial ridge of the paracymbium (Fig. 8), and a single thorn-like spur at the base of the radix and the lamella characteristica (Fig. 9). It may be separated from *C. longibulbus* (Emerton), which may be encountered along the Eastern edge of the species distribution, which has a single large point on the medial ridge of the paracymbium, and a different shaped radix with a broad projection at the base of the radix and lamella (van Helsdingen 1972, figure 20). It may be separated from *C. sylvaticus* (Blackwall), a Holarctic species, which is much larger, 2.5–3 mm total length, and has a different radix shape, with a curved anterior portion and a long extended basal fork which curves around towards the paracymbium (van Helsdingen 1973, Figure 29).

Females can be separated from close relatives by the shape of the scape, which is longer than wide with two pair of equally sized lateral lobes (Fig. 11). In *C. longibulbus* the scape has a single set of lateral lobes (van Helsdingen 1973, Figure 21), and in *C. sylvaticus* the scape is wrinkled with no lateral lobes (van Helsdingen 1973, Figure 31).

Description. *Holotype male.* Total length = 1.90 mm; carapace length = 1.0 mm; carapace width = 0.82 mm; L×W ratio 1.21. TmI = 0.51, TmIV absent. Chaetotaxy: FI, 1-1-0-0; FII-IV, 0-0-0-0; PtI-V, 1-0-0-0; TiI-IV, 1-0-0-0; MtI-V, 0-0-0-0. Carapace uniform yellow in color. ALE, PME, PLE similarly sized, AME 2/3 the size of the other eyes, 1/2 eye width apart. Lateral eyes adjacent, PME separated from lateral eyes by almost an eye width. PME 3/4 eye width apart. Clypeus three ALE width. Sternum yellow. Abdomen uniform grey. Legs yellow and unmarked. Three cheliceral promarginal teeth. Cymbium with a basal spur and a bump where the paracymbium sits. Paracymbium robust with a line of small triangular points or denticles running along the medial ridge (Fig. 8). Proximal end wide with a broad distal curve end. Radix with a single thorn shaped spur at the base pointing ventrally. Embolus and lamella characteristica originating from the base of the radix near the basal spur. Embolus proper with a twist about mid-length and two points. Lamella characteristica sickle shaped, broadest in the middle with the distal end transparent (Fig. 9). Median apophysis dark pointed sharply towards the lamella characteristica. Median membrane broad and transparent. Sclerite of the median membrane bifurcate.

Female (n = 5). Total length = 1.72 mm; carapace length = 0.82 mm; carapace width = 0.67 mm; L×W ratio 1.21. TmI = 0.46, TmIV absent. Chaetotaxy: FI, 0-1-0-0; FII-IV, 0-0-0-0; PtI-V, 1-0-0-0; TiI-IV, 2-0-0-0; MtI-V, 0-0-0-0. Coloration same as male only the abdomen tends to be slightly lighter in color. Scape bulbous with two basal and two distal lateral lobes (Fig. 11). Scape tip long as the lateral lobes are wide with a prominent scape hook. Spermatheca clearly visible, globular, located near the two basal lobes of the scape, protruding out on the dorsal surface of the epigynum (Fig. 10).

Variation. *Male (n = 5).* Total length = 1.86–1.94 mm; carapace length = 0.92–1.02 mm; carapace width

= 0.81–0.83 mm. *Female* ($n = 5$). Total length = 1.66–1.88 mm; carapace length = 0.79–0.85 mm; carapace width = 0.65–0.69 mm. There is some amount of variation in the size of the basal spur of the cymbium, being much more prominent in some specimens. The number of denticles on the paracymbium is also variable usually from 6–11. The amount the lateral lobes protrude laterally on the scape also shows variation, with the proximal pair sometimes not extending as far laterally as the distal pair.

DNA barcoding. One paratype from UAM (UAM:Ento:225489) was DNA barcoded by Sikes et al. (2017) and falls into BIN BOLD:AAU6230 with 8 other specimens, which is 6.48% distant from its nearest neighbor and shows a maximum within-BIN distance of 1.08%.

Distribution. The species is a common forest floor dweller which has been collected from the Pacific coast inland to the coastal mountains of Washington, up through British Columbia, and into southeastern Alaska. In British Columbia specimens have been collected inland as far as the Rockies. Specimens are collected in pitfall traps and from sifting litter or moss. Mature specimens are usually collected May–June with some additional adults being picked up as late as October in British Columbia.

Discussion. This species was originally illustrated and mentioned by van Helsdingen (1973) of a poorly preserved and damaged male sent to Emerton and found in the MCZ. At the time he realized the novelty of the species, but with only the damaged sample left it to be described at a later time when more samples in better condition could be obtained.

The genus *Centromerus* shows morphological variation among the species currently included in the genus. This species was included in the *cornupalpis*-group by van Helsdingen (1973) which includes *C. longibulbus* which is the nearest congener based on morphology, but it can be identified from the species by the characters mentioned previously. The species is the only member of the West Nearctic Pattern described in Eskov and Marusik (1992). Of the other two Pacific Northwest representatives of the genus, *C. longibulbus* (Emerton, 1882) and the holarctic *C. sylvaticus* (Blackwall 1841), this is by far the most commonly collected species of *Centromerus*.

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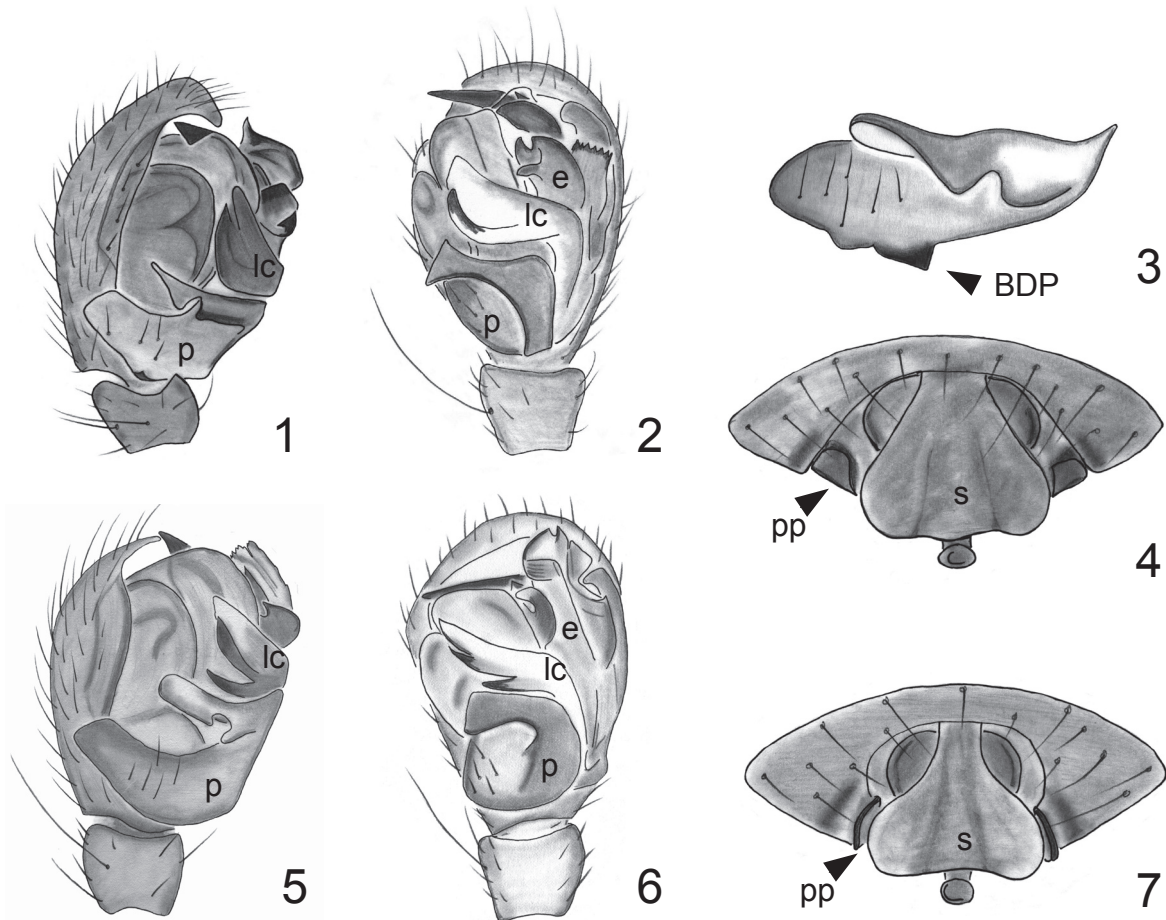
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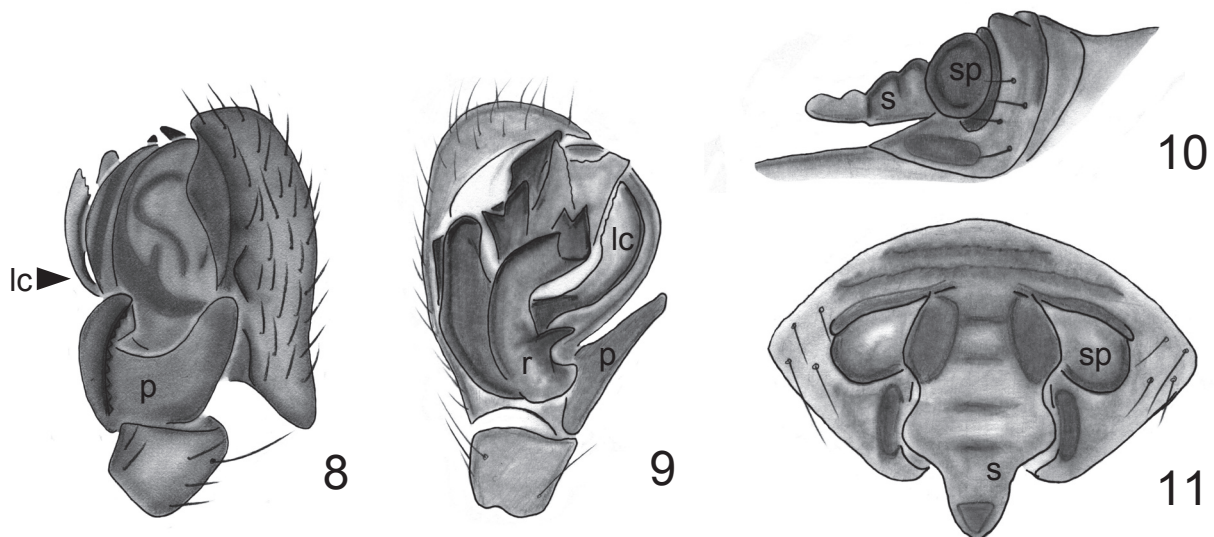
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Figures 1–7. *Tenuiphantes* spp. 1–4) *Tenuiphantes zelatus* (Zorch, 1937). 1) Lateral view of palp. 2) Ventral view of palp. 3) Mesal view paracymbium. 4) Ventral view of epigynum. 5–7) *Tenuiphantes zibus* (Zorch, 1937). 5) Lateral view of palp. 6) Ventral view of palp. 7) Ventral view of epigynum. p = paracymbium, lc = lamella characteristica, e = embolus, BDP = basal denticle of paracymbium, s = scape, pp = posterior plate.



Figures 8–11. *Centromeus mariannae* sp. nov. 8) Lateral view of palp. 9) Ventral view of palp. 10) Lateral view of epigynum. 11) Ventral view of epigynum. p = paracymbium, lc = lamella characteristica, r = radix, s = scape, sp = spermatheca.

