

SHORT COMMUNICATION

Two new North American *Theridion* species (Araneae: Theridiidae)

Herbert W. Levi¹ and L. Brian Patrick²: ¹Museum of Comparative Zoology, Harvard University, 26 Oxford Street, Cambridge, MA, 02138-2902, USA. E-mail: levi@fas.harvard.edu; ²Department of Biological Sciences, Dakota Wesleyan University, 1200 W. University Ave., Mitchell, SD, 57301, USA

Abstract. Two new species in the genus *Theridion* Walckenaer 1805 (Araneae: Theridiidae) are described: *T. logan*, sp. nov., from Utah, USA, and *T. pierre*, sp. nov., from South Dakota, USA. Diagnoses, descriptions and habitat notes are provided for both sexes of these new species. Both species are from open, grassland-type habitats.

Keywords: cobweb weavers, grassland, prairie, sagebrush steppe

The cosmopolitan genus *Theridion* Walckenaer 1805 has over 570 species worldwide, and over 50 species in North America north of Mexico (Platnick 2013). The last major taxonomic revisions of North American species of the genus were by Levi (1957, 1963), and there has been recent molecular phylogenetic work on the genus (Arnedo et al. 2007). Here we report two new North American species in the genus. One of these is from a well-collected area near Salt Lake City, Utah, and the other from the Fort Pierre National Grassland in central South Dakota, both collected using pitfall traps. Following Levi (1957, 1963), both species are placed in the genus *Theridion* based on the lack of colulus, the sub-spherical abdomen, the male palpus with a well-developed radix and median apophysis, and an alveolus of the male palpus that occupies the whole cymbium.

Specimens were examined using a Leitz dissecting scope, and drawings were made by hand using a reticule with a grid on the dissecting scope eyepiece, and drawn on tracing paper placed on top of gridded paper. Measurements were made using the reticule grid; all measurements are in millimeters. Abbreviations: AMNH - American Museum of Natural History; MCZ - Museum of Comparative Zoology, Harvard University.

Theridion logan sp. nov. (Figs. 1–5)

Type material.—Male holotype with 2 female paratypes from Logan Canyon, Cache Co., Utah, USA. Woodcamp, 41°47.97'N, 111°38.96'W, at 1715 m from sagebrush steppe, 9 July 2008 (coll. S.M. Cobbold) in MCZ.

Etymology.—The species is named after the type locality, the name being a noun in apposition.

Diagnosis.—The species is most similar to *Theridion rabuni* Chamberlin & Ivie 1944 but differs from it as follows: the male median apophysis of *T. logan* has three prongs (MA in Fig. 4), its radix is reduced (R in Fig. 5) and the conductor rises diagonally to the tip (C in Fig. 5); in contrast to *T. rabuni*, the female epigynum of *T. logan* lacks the pair of secondary depressions within the central depression and possesses a posterior transverse sclerotization (PTS in Fig. 3).

Description.—*Female*: Paratype from Logan Canyon. Carapace dusky yellow with black marks (Fig. 1). Sternum black. Dorsum of abdomen with median lobed, light band, sides speckled (Fig. 1); venter with a pair of light spots on black (Fig. 2). Anterior median eyes slightly smaller than others, 1.5 diameters apart and less than one diameter from lateral median eyes, others subequal in size. Posterior median eyes one diameter apart from each other and from posterior lateral eyes. Total length 2.2; carapace 0.7 long, 0.7 wide. First femur 1.0, patella and tibia 1.0, metatarsus 0.7, tarsus 0.5. Second patella and tibia 0.7, third patella and tibia 0.4, fourth patella and tibia 0.7.

Male: Holotype from Logan Canyon. Carapace and sternum slightly lighter than in female. Abdomen as in female. Eye size and spacing as in female. Total length 1.7. Carapace 0.7 long, 0.6 wide. First femur 1.7, patella and tibia 1.2, metatarsus 0.9, tarsus 0.5. Second patella and tibia 0.6, third patella and tibia 0.5, fourth patella and tibia 0.8.

Note.—The thin internal female ducts could not be discerned, the seminal receptacles are pear-shaped, their narrow end to the posterior. The few females available show variation in their epigynum. The seminal receptacles may be closer together and the posterior of the depression wider than in Fig. 3. There is a posterior slit-shaped, transverse depression with a lip (Fig. 3), which in some is less distinct. The pair of ventral white patches varies in size.

Other specimens.—*Paratypes*: USA: *Utah*, Cache Co., Hardware Ranch, 41°36.11'N, 111°33.94'W, sagebrush steppe, 25 June 2009, 2 females (coll. L.F. Spears, MCZ); Logan Canyon, Forestry Station, 41°52.42'N, 111°33.74'W, 1915 m, sagebrush steppe, 30 June 2008, 1 male, 2 females (coll. S. M. Cobbold, AMNH).

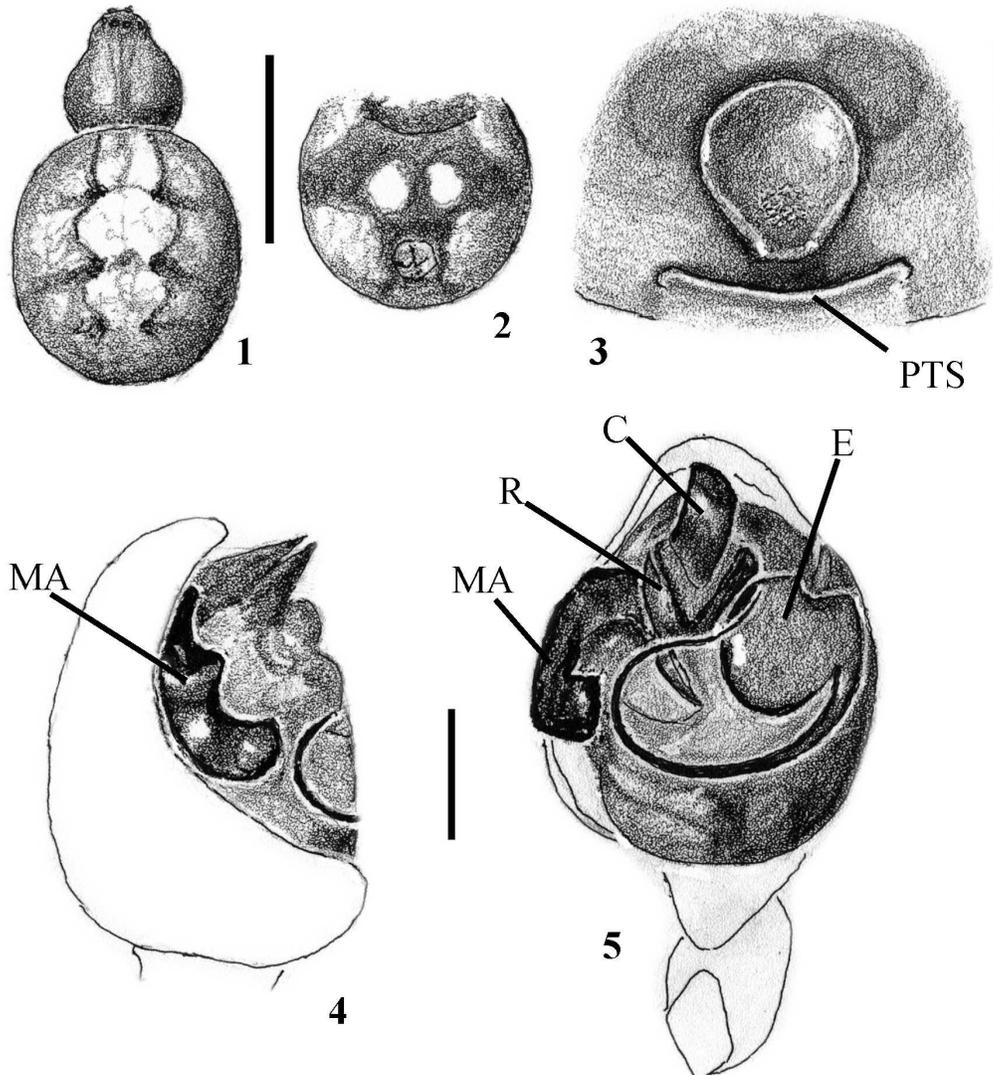
Theridion pierre sp. nov. (Figs. 6–12)

Type material.—Male holotype, with two male and one female paratypes from Fort Pierre National Grassland, 596 m, Stanley Co., South Dakota, USA, 44°11.52'N, 100°02.52'W, 26 May to 9 June 2010, (coll. L.B. Patrick, J. Werner, A. Walter) from pitfall traps, in MCZ.

Etymology.—The species is named after the type locality, and the name is a noun in apposition. As the species is named after a location, the proper pronunciation of the specific epithet should follow the pronunciation of the geographic area of the location. The name of the capital of South Dakota, USA, is Pierre, and is pronounced the same as the American English word “peer.”

Diagnosis.—The palpus has a short embolus like *T. dulcineum* Gertsch & Archer 1942 (E in Fig. 12), but differs by having a distal sclerotized hooked conductor (C in Fig. 12) and by the median apophysis bearing a long tooth (MA in Fig. 11). The epigynum differs from all other *Theridion* species by having an indistinct transverse depression (Fig. 7), which may have a copulatory plug (Fig. 8).

Description.—*Female*: Carapace dusky yellow with black eye region and black line around margin (Fig. 9). Abdomen light gray, with a black mark above and dorsal of spinnerets. Eyes subequal in size. Anterior medians 1.2 apart, 0.3 from laterals. Posterior median eyes one diameter apart from each other, 0.5 diameter apart from posterior lateral eyes. Total length 1.3; carapace 0.6 long, 0.6 wide. First femur 0.7, patella and tibia 0.8, metatarsus 0.6, tarsus 0.4. Second patella and tibia 0.5, third patella and tibia 0.4, fourth patella and tibia 0.6.



Figures 1–5.—*Theridion logan* new species. 1–3, female. 1, habitus, dorsal. 2, abdomen, ventral. 3, epigynum, ventral. 4–5, left male palpus. 4, mesal. 5, ventral. Scale bars = 1.0 mm, and 0.1 mm for genitalia. Abbreviations: C, conductor; E, embolus; MA, median apophysis; PTS, posterior transverse sclerotization; R, radix.

Male: Coloration as in female, with only some black pigment spots between eyes. Eyes subequal. Anterior median eyes one diameter apart from each other, 0.5 diameter from anterior lateral eyes. Posterior median eyes one diameter apart from each other and from posterior lateral eyes. Total length 1.3. Carapace 0.7 long, 0.6 wide. First femur 0.9, patella and tibia 1.0, metatarsus 0.7, tarsus 0.4. Second patella and tibia 0.7, third patella and tibia 0.5, fourth patella and tibia 0.7.

Note.—The thin internal female ducts traverse a loop (Fig. 6). The epigynum (Fig. 7) may have a plug (Fig. 8).

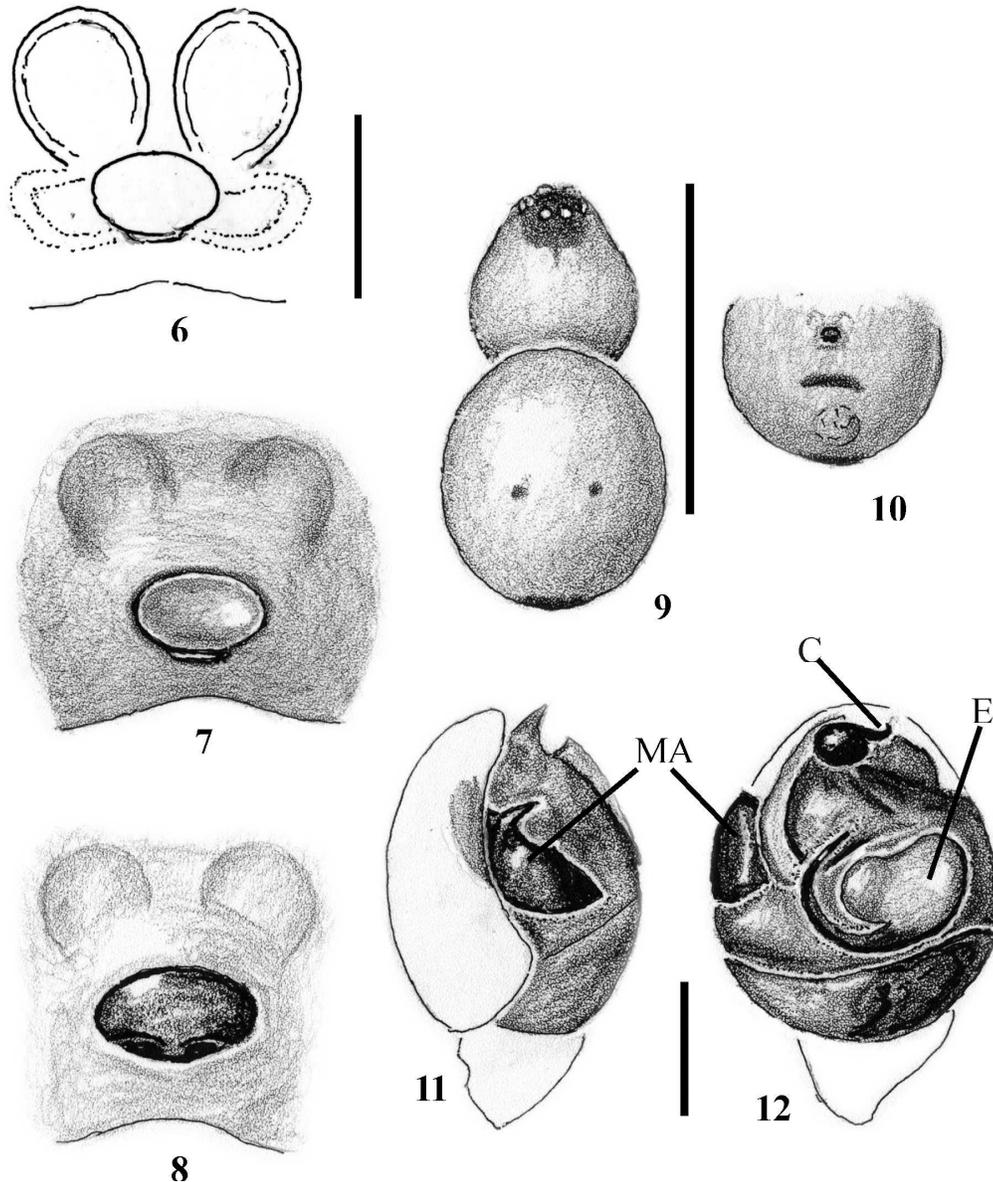
Remarks and Natural History.—All specimens reported here were collected with pitfall traps open for 14 days and containing 100% propylene glycol. The species has been collected from multiple locations within the Fort Pierre National Grassland. The dominant vegetation cover of these northern wheatgrass-needlegrass plains include western wheatgrass (*Pascopyrum smithii*), various needlegrasses (*Stipa* sp.) and blue grama grass (*Bouteloua gracilis*). Additional specimens (not reported here) were caught through litter sifting, with ramp traps and with vacuum sampling. Other spider

species commonly caught with this species included *Ozyptila conspurcata* Thorell 1877 (Thomisidae), *Xysticus bicuspis* Keyserling 1877 (Thomisidae), *Schizocosa crassipalata* Roewer 1951 (Lycosidae), *Pardosa saxatilis* (Hentz 1844) (Lycosidae) and *Eridantes erigonoides* (Emerton 1882) (Linyphiidae).

Other specimens.—*Paratypes:* USA: *South Dakota*, Stanley Co., Fort Pierre National Grassland, pitfall traps, 26 May–9 July 2010, 50 males, 18 females (coll. L.B. Patrick, in MCZ); 2 males, 1 female (coll. L.B. Patrick, in AMNH); Sept., Oct. 1 male (coll. L.B. Patrick, in MCZ).

ACKNOWLEDGMENTS

We thank James A. MacMahon for the specimens from Utah and for supplying additional data on Utah sites and collecting method, and I. Agnarsson and M. Kuntner for helpful reviews of this manuscript. This research was partially funded by a South Dakota Game, Fish, and Parks Small Grant to LBP, and by the South Dakota Biomedical Research Infrastructure Network (SD BRIN): “Research reported in this publication was supported by the National



Figures 6–12.—*Theridion pierre* new species. 6–10, female. 6–8, epigynum. 6, cleared. 7, ventral. 8, ventral with plug. 9, habitus, dorsal. 10, abdomen, ventral. 11–12, left male palpus. 11, mesal. 12, ventral. Scale bars = 1.0 mm, and 0.1 mm for genitalia. Abbreviations: C, conductor; E, embolus; MA, median apophysis.

Institute of General Medical Sciences of the National Institutes of Health under award number R01GM085232. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.”

LITERATURE CITED

- Arnedo, M.A., I. Agnarsson & R.G. Gillespie. 2007. Molecular insights into the phylogenetic structure of the spider genus *Theridion* (Araneae, Theridiidae) and the origin of the Hawaiian *Theridion*-like fauna. *Zoologica Scripta* 36:337–352.
- Levi, H.W. 1957. The spider genera *Enoplognatha*, *Theridion*, and *Paidisca* in America north of Mexico (Araneae, Theridiidae). *Bulletin of the American Museum of Natural History* 112:1–123.
- Levi, H.W. 1963. American spiders of the genus *Theridion* (Araneae, Theridiidae). *Bulletin of the Museum of Comparative Zoology* 129:481–589.
- Platnick, N.I. 2013. The world spider catalog, version 13.5. American Museum of Natural History, online at <http://research.amnh.org/iz/spiders/catalog>

Manuscript received 1 July 2012, revised 4 July 2013.