

A NEW *CHROSIOTHESES* SPIDER FROM WEST VIRGINIA (ARANEAE, THERIDIIDAE)

William H. Piel: Museum of Comparative Zoology, Harvard University, Cambridge,
Massachusetts 02138 USA

ABSTRACT. A new species, *Chrosiothes jenningsi*, is described. The presence of this species in West Virginia is remarkable because other members of the genus *Chrosiothes* are limited to the American Southwest, Mexico, and the Neotropics. The morphology of this new species is compared and contrasted with its close relatives, *C. jocosus* and *C. tonala*.

In the most recent revision of *Chrosiothes* Simon 1894, Levi (1964) described five new species and synonymized the genus name *Theridiotis* Levi 1954 with the older genus, resulting in eight new combinations. The most widespread species, *C. silvaticus* Simon, has been collected between Florida and Ecuador, especially in the humid tropical regions of Mexico and Central America. The most northern species is *C. chirica* (Levi 1954), stretching across hot and dry habitats from Utah to Mexico City. Given these distributions, it came as a surprise when D. T. Jennings captured *Chrosiothes* using pitfall traps in a West Virginian mixed oak-hardwood forest. These specimens appear to belong to a new species, *C. jenningsi*.

What makes this discovery even more interesting is the fact that a closely related Mexican species, *C. tonala* (Levi 1954), was found to specialize on eating the termite species *Tenuirostritermes bricidae* (Snyder) (Eberhard 1991). It would be well worth examining the prey preference of *C. jenningsi* and comparing its predatory behavior with that of *C. tonala*.

METHODS

Specimens in alcohol were photographed and computer digitized with a Panasonic WV-CL320® color camera and a QuickImage 24 digitizing board (Figs. 3, 6, 9 and 12). Drawings of palps and epigynum were made by tracing over digitized images (Figs. 1, 2, 4, 5, 7, 8, 10). The epigynum was cleared in clove oil and traced with the help of a camera lucida (Fig. 11).

Chrosiothes jenningsi new species

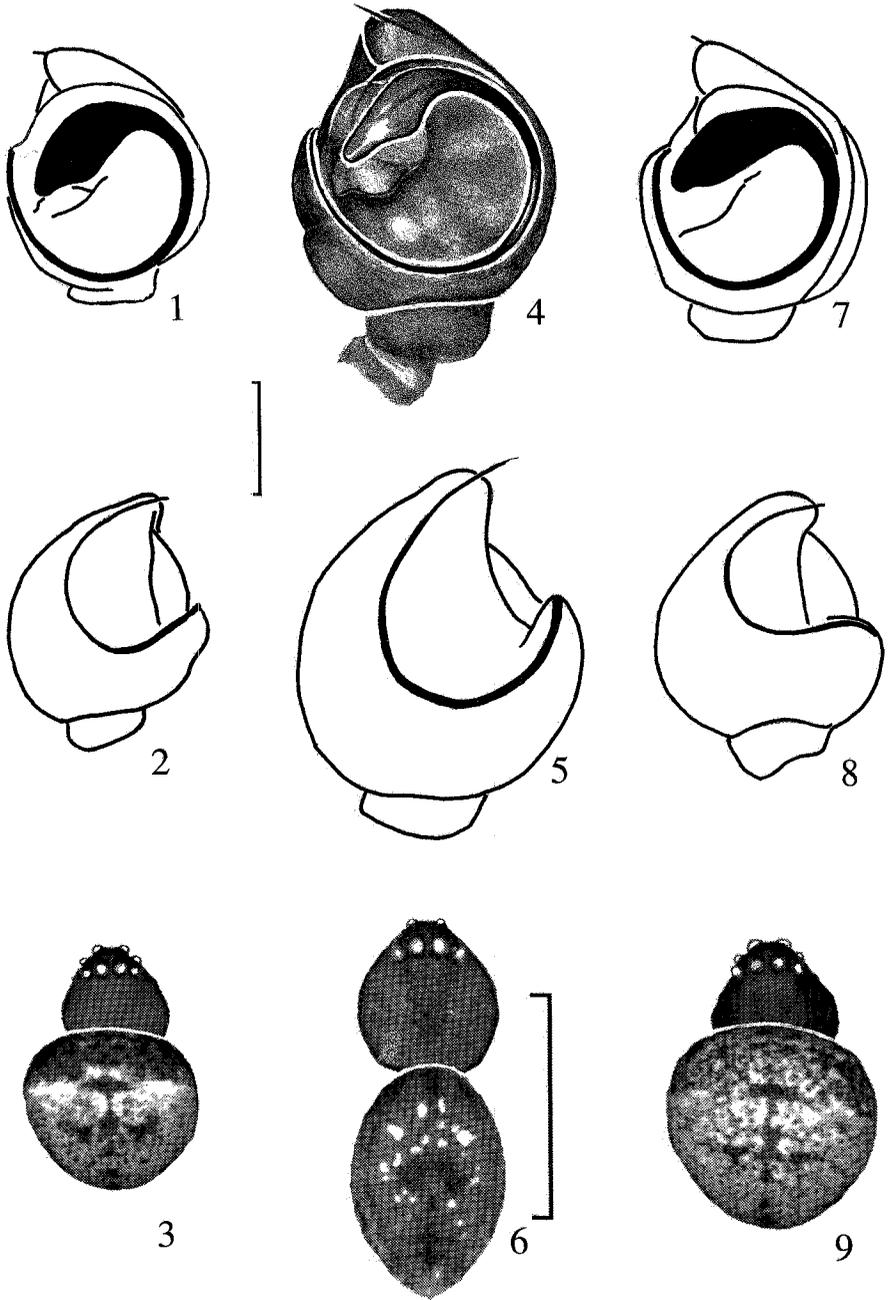
Figures 4-6, 10-12

Type.—Male holotype was collected by pitfall trap from Chestnut Ridge, West Virginia Uni-

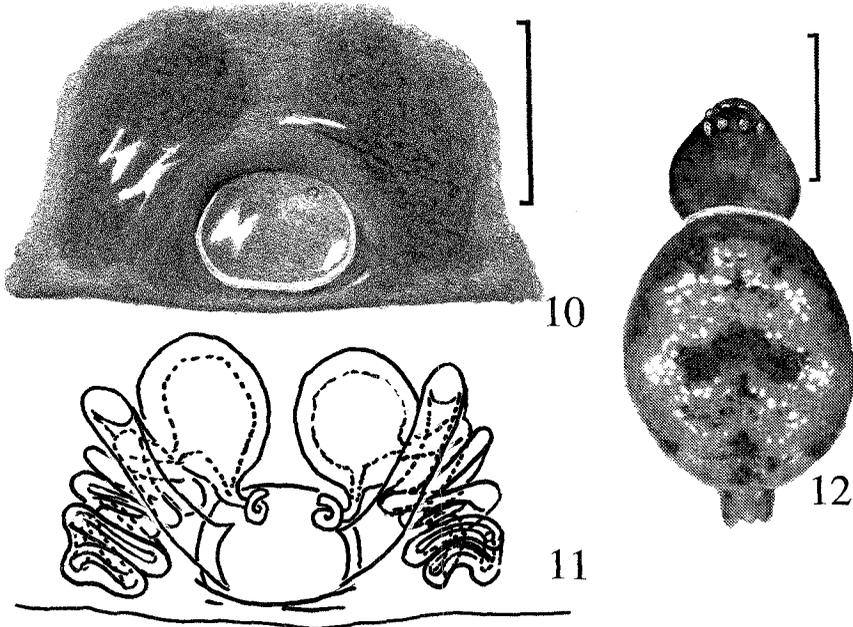
versity Forest, Monongalia County, West Virginia, 25 June 1991 (D. T. Jennings); in the Museum of Comparative Zoology. The specific name is after the collector who noticed that the species is new.

Description.—*Male:* Sternum, carapace dull yellow with stippling of brown, darkest around eyes, edges. Coxae, legs match color of carapace, but patellae and ventral surfaces of legs slightly lighter yellow. Dorsal surface of abdomen gray with white patches and dark brown stippling indistinctly resembling anteriorly pointing arrow (Fig. 6). Ventral surface with uniform dark brown stippling extending up around sides. Carapace highest at row of posterior eyes. Those eyes equally spaced, separated by almost half the diameter of posterior median eyes. All eyes subequal in size. Anterior median eyes separated by more than half their diameters, almost touching lateral eyes; lateral eyes barely touching. Height of clypeus $2.3 \times$ diameter of anterior median eyes; length of chelicerae, $2.9 \times$ that diameter. First pair of legs about same length as fourth pair. Each patella with small bump on posterior side, strongest on fourth pair. Length of males from 1.4-1.6 mm; holotype 1.5 mm. Carapace 0.60 mm wide, long; 0.53 mm high. First femur 0.95 mm; patella and tibia 0.95; metatarsus 0.72; tarsus 0.40. Second patellae and tibiae 0.60; third, 0.48; fourth, 0.88 mm.

Female: Coloration similar but somewhat darker than male; brown stippling on carapace and sternum more uniform, not as pronounced around edges. Coxae much lighter than sternum; femora gradually darkening distally until matching color of sternum at femur-patella joint. Same pattern repeating along tibia, metatarsi. As in male, female with bump on posterior side of each patella; most prominent on fourth leg. Abdom-



Figures 1-9.—Males of the genus *Chrosiothes*. 1-3, *Chrosiothes tonala*, male from Jalisco. 1, ventro-lateral aspect of palp; 2, dorso-medial aspect of palp; 3, dorsal aspect of carapace and abdomen. 4-6, *Chrosiothes jenningsi* new species, male holotype from West Virginia. 4, ventro-lateral aspect of palp; 5, dorso-medial aspect of palp; 6, dorsal aspect of carapace and abdomen. 7-9, *Chrosiothes jocosus*, male from Tamaulipas. 7, ventro-lateral aspect of palp; 8, dorso-medial aspect of palp; 9, dorsal aspect of carapace and abdomen. Scale line for palps = 0.1 mm; scale line for dorsal surfaces = 1.0 mm.



Figures 10–12.—*Chrosiothes jenningsi* new species, female allotype from West Virginia. 10, ventral view of epigynum; 11, dorsal view of cleared epigynum; 12, dorsal view of carapace and abdomen. Scale line for epigynum = 0.1 mm; scale line for dorsal surface = 1.0 mm.

inal pattern as in male (see Fig. 12). Posterior eye row and anterior median eyes equally spaced by close to $\frac{2}{3}$ their diameters. Lateral eyes touching each other; anterior lateral eyes almost touching anterior median eyes. Female allotype 2.75 mm total length; carapace 0.84 mm wide, long; 0.60 mm high. First femur, 1.26 mm; patella and tibia, 1.26; metatarsus, 1.0; tarsus, 0.52. Second patella and tibia, 0.84 mm; third, 0.70; fourth, 1.2.

Diagnosis.—The male genitalia of *C. jenningsi*, *C. chirica*, *C. jocosus* (Gertsch & Davis) and *C. tonala* are similar and difficult to distinguish. The basal expansion of the embolus in *C. jenningsi* is seated at a slightly different angle and is relatively slimmer (Fig. 4) than that of *C. jocosus* (Fig. 7) and *C. tonala* (Fig. 4; fig. 8 in Levi 1954). The embolus thread starts on the dorso-lateral surface of the left palp, loops clockwise and makes an S-curve as it passes over to the dorso-medial side (Fig. 5). The counterclockwise segment of this S-curve is higher in *C. jenningsi* (Fig. 5) than in the other species (Figs. 2, 8); likewise, the final loop of the embolus is relatively deeper and more oval (Fig. 5) than the others (Figs. 2, 8). The abdomen of both *C. jocosus* and *C. tonala* is sub-triangular with two

anterior humps (Figs. 3, 9), whereas that of *C. jenningsi* is oval and widest in the middle (Fig. 6). Differences in dorsal patterns are evident from Figs. 3, 6, and 9; *C. jenningsi* lacks the ventral white spot found in *C. jocosus* (Levi 1954). *C. jenningsi* appears to fall out at step 14 in Levi's key (1964).

Externally, the epigynum (Fig. 10) lacks features other than an oval depression similar to those found in congeners. To diagnose this species accurately, the epigynum should be removed and cleared in clove oil or Hoyer's solution. The dorsal view of a cleared epigynum (Fig. 11) reveals three descending loops of the spermacéal receptacle from the external opening, and four ascending loops; these loops spirally interlock with one another. The number of spirals, the relative thickness of the posterior rim of the oval depression, the height of the first spiral, and the shape of the abdomen are all features that distinguish *C. jenningsi* from other species (compare Fig. 11 with Levi 1954, plate III). The female falls out with *C. chirica* in Levi's key (1964).

Paratypes.—WEST VIRGINIA: *Monongalia County*: West Virginia University Forest: Chestnut Ridge, 19–26 June 1989, male (D. T. Jennings) (MCZ); 26 June–3 July 1989, male (D. T.

Jennings) (MCZ); 10–17 July 1989, female allotype (D. T. Jennings) (MCZ); 28 June 1994, male (W. H. Piel) (MCZ).

Acknowledgments

Many thanks to D. T. Jennings for providing specimens for this study and to H. W. Levi for his advice and encouragement. Thanks also to G. Alpert and E. O. Wilson for use of their equipment, and to R. Muzika for her time and help. A grant from the Northeastern Forest Experiment Station facilitated completion of the paper.

LITERATURE CITED

- Eberhard, W. G. 1991. *Chrosiothes tonala* (Araneae, Theridiidae): a web-building spider specializing on termites. *Psyche*, 98:7–19.
- Levi, H. W. 1954. Spiders of the new genus *Theridiotis* (Araneae: Theridiidae). *Trans. American Microscopical Soc.*, 73:177–189.
- Levi, H. W. 1964. The spider genera *Stemmops*, *Chrosiothes*, and the new genus *Cabello* from America. *Psyche*, 71:73–92.

Manuscript received 2 June 1994, revised 25 August 1994.