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A NEW SPECIES AND NEW SYNONYMY IN THE GENUS *TEPA* ROLSTON AND MCDONALD (HEMIPTERA: PENTATOMIDAE)

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Abstract.—*Tepa vanduzeei* is described as new from the western United States and Mexico; *Thyanta punctiventris* Van Duzee is placed in the synonymy of *Tepa rugulosa* (Say); and *Thyanta coloradensis* Bliven is placed in the synonymy of *Tepa jugosa* (Van Duzee). Lectotype and paralectotype designations are made for *Thyanta brevis* Van Duzee and *Thyanta punctiventris*. *Tepa jugosa* is reported from the United States for the first time. A key is provided for the identification of the 6 species of *Tepa*.

Rolston (1972) reviewed the small species of *Thyanta* Stål which occur in North America. This work included 8 species, of which *T. antiguensis* (Westwood) and *T. elegans* Malloch have been transferred to *Cyptocephala* Berg by Rolston and McDonald (1984). The remaining 6 species formed a homogeneous group distinct from *Thyanta*, and Rolston and McDonald (1984) described the genus *Tepa* to hold these species.

Tepa is New World in distribution and occurs mainly in Mexico and the western United States with one species also occurring in southern Florida and Curacao. *Tepa* belongs to the group of pentatomine genera which lacks a spine or tubercle at the base of the abdominal venter. A key to separate those genera that occur in the Western Hemisphere north of South America is provided by Rolston and McDonald (1984).

The type specimens for most of the species of *Tepa* have been examined recently, and several corrections to previous contributions are necessary. *Thyanta punctiventris* Van Duzee is placed in the synonymy of *Tepa rugulosa* (Say), *Thyanta coloradensis* Bliven is placed in the synonymy of *Tepa jugosa* (Van Duzee), and *Thyanta punctiventris* of authors (not Van Duzee) is described as a new species.

The following key is a modification of the one provided by Rolston (1972). Rolston (1972) also provided excellent figures for all the species of *Tepa*.

KEY TO SPECIES OF *TEPA*

- 1. Distance from mesial margin of ostiole to apex of ruga much greater than distance from apex of ruga to lateral margin of supporting sclerite 2
- Distance from mesial margin of ostiole to apex of ruga equal to or less than distance from apex of ruga to lateral margin of supporting sclerite 4
- 2(1). Ostiolar canal widening toward apex; lateral lobe of paramere bent strongly entad. (Baja California, southwestern United States) *T. jugosa* (Van Duzee)
- Ostiolar canal narrowing toward apex; lateral lobe of paramere bent weakly entad 3
- 3(2). Anterior lobe of paramere narrowed apically, lateral lobe of paramere usually bent weakly toward anterior lobe (see Rolston, 1972, fig. 42) (western United States, Mexico) *T. vanduzeei*, n. sp.

- Anterior lobe of paramere not narrowed apically, lateral lobe of paramere bent strongly toward anterior lobe (see Rolston, 1972, fig. 36) (Baja California, Curacao, Florida keys) *T. panda* (Van Duzee)
- 4(1). Lateral margins of head converging sinuously, nowhere parallel; ostiolar ruga nearly evanescent apically in profile; lateral lobe of paramere bent strongly entad (western United States) *T. brevis* (Van Duzee)
- Lateral margins of head subparallel for some distance between eyes and apex of head; ostiolar ruga truncate apically in profile; lateral lobe of paramere not bent strongly entad 5
- 5(4). Anterolateral margins of pronotum straight; proctiger with prominent mesial ridge for much of its length, strongly impressed on each side of ridge; rim of genital cup continuing onto ventral surface of pygophore as short, oblique, mesially convergent carinae (western United States) *T. yerma* (Rolston)
- Anterolateral margins of pronotum concave; proctiger bulbous near base; ventral surface of pygophore not carinate (western United States) *T. rugulosa* (Say)

Tepa brevis (Van Duzee)

Thyanta brevis Van Duzee, 1904:53, 56-57.

Tepa brevis: Rolston and McDonald, 1984:77, 80, fig. 44.

Van Duzee described *Thyanta brevis* in 1904 from 10 specimens collected at Grand Junction, Colorado. Although he placed "holotype" and "paratype" labels on the pins with the specimens, he did not actually make these designations in his original description. Strict adherence to the rules of nomenclature dictates that these specimens should be considered syntypes, and lectotype and paralectotype designations are required.

Of the original syntype series only one male and one female were located. The male specimen labeled "Gnd Junc Col. 7-28-00/ E P Van Duzee collector/ HOLOTYPE brevis" is here designated as the lectotype, and the female specimen labeled "Gnd Junc Col. 7-28-00/ E P Van Duzee collector/ PARATYPE brevis" is designated the paralectotype.

Tepa brevis can be recognized by the relatively short ostiolar rugae which are evanescent apically when viewed in profile. It also has the jugal margins nowhere parallel with the apex of the head narrowly rounded. *Tepa rugulosa* and *T. yerma* both have the ostiolar rugae relatively short, but in both of these species it is truncate apically when viewed in profile; also the lateral margins of the head are subparallel for some distance between the eyes and the apex. Specimens of *T. brevis* have been examined from Arizona, California, Colorado, Nevada, New Mexico, Texas, Utah, and the Mexican states of Baja California Norte, Chihuahua, Nuevo Leon, and Sonora.

Tepa jugosa (Van Duzee)

Thyanta jugosa Van Duzee, 1923:129.

Thyanta coloradensis Bliven, 1956:5-6, pl. 1, fig. 9. **NEW SYNONYMY.**

Tepa jugosa: Rolston and McDonald, 1984:77, 80, fig. 45.

Rolston (1972) noted that the description and illustration of *Thyanta coloradensis* Bliven agreed in all significant respects with the characters of *Tepa punctiventris*, but

the type specimens of *Thyanta coloradensis* were not available for study at that time, and Bliven's description was inadequate for proper placement of the species. The holotype of *T. coloradensis* has now been examined, and it is a typical example of *Tepa jugosa*. The holotype of *T. jugosa* was also examined.

Tepa jugosa is probably the most easily recognizable species in the genus. The long ostiolar rugae which widen apically separates it from all other species in the genus. *Tepa jugosa* has previously been reported only from Baja California, Mexico. Specimens have been examined from the following U.S. localities: **Arizona:** *Cochise Co.*, Benson, 23 July 1907, CAS (♀); Douglas, F. H. Snow, SMEK (2♀♀). *Maricopa Co.*, Buckeye, 17 May 1932, E. D. Ball, UAT (♂), 7 June 1935, H. G. Johnston, TAMU (♂ ♀), 14 June 1935, H. G. Johnston, TAMU (♀), 11 May 1937, E. E. Russell, ASUT (♀); Litchfield Pk., 10 June 1948, M. H. Frost, Jr., UAT (♀); Phoenix, 6 May 1931, E. D. Ball, UAT (♀), 13 May 1937, ASU (♀). *Pima Co.*, Tucson, 24 July 1930, E. D. Ball, UAT (♂ ♀), 15 April 1933, Bryant, OSUC (♀), 2 Aug. to 14 Sept. 1935, J. R. de la Torre Bueno, SMEK (15♂♂ 20♀♀), 6 July 1958, G. D. Butler, at light, UAT (♀). *Pinal Co.*, Sacaton, 23 July 1931, E. D. Ball, UAT (♂), 2 Apr. 1932, E. D. Ball, UAT (2♂♂), 11 July 1947, R. E. Elbel, SMEK (♂). *Santa Cruz Co.*, Amado, 13 July 1958, G. D. Butler, UAT (♀). *Yuma Co.*, Yuma, 7 Apr. 1879, INHS (♂). **California:** *Riverside Co.*, Indio, 24 Apr. 1952, Bryant, CAS (2♂♂). *San Bernardino Co.*, Needles, 1–2 Jan. 1954, B. P. Bliven, CAS (3♀♀); San Bernardino, 17 Apr. 1879, INHS (♂). *San Diego Co.*, 25 June 1913, E. P. Van Duzee, CAS (♂). **Texas:** *Brewster Co.*, Terlingua, Sept. 1939, S. E. Jones, ISU (♂). *Hudspeth Co.*, Fort Hancock, 13 July 1938, R. I. Sailer, SMEK (♂ ♀). This is the first report of its occurrence in the United States.

Tepa rugulosa (Say)

Pentatoma rugulosa Say, 1832:319.

Thyanta rugulosa: Uhler, 1872:399.

Thyanta punctiventris Van Duzee, 1904:53, 55–56. **NEW SYNONYMY.**

Tepa rugulosa: Rolston and McDonald, 1984:77, 80, fig. 42.

The type specimen of *Pentatoma rugulosa* is no longer in existence; however, the original description is adequate to fix the species. Say (1832) stated that *P. rugulosa* has the "thorax much contracted before; lateral edge rather concave than rectilinear: tergum black at base, the three ultimate segments and the margin green." *Tepa rugulosa* is the only species in the genus with both the anterolateral margin of the pronotum distinctly concave and the tergum black as in the above description.

Van Duzee (1904) stated that his new species *Thyanta punctiventris* may only be a color variety of *T. rugulosa*. Several species of *Tepa* and the closely related genus *Thyanta* are now known to have several color forms. The different color forms are determined by environmental factors and have no geographical significance (McPherson, 1977, 1978; Ruckes, 1957). The type specimens of *Thyanta punctiventris* have been examined, and structurally they are typical specimens of *Tepa rugulosa*.

Once again, Van Duzee did not officially designate a holotype or paratypes in his original description of *Thyanta punctiventris*. Only 6 of the original 12 syntype specimens were located. The male specimen labeled "Willist'n N. D. Jun. 8–9 Wickham/ HOLOTYPE punctiventris" is here designated as the lectotype. The remaining 5 specimens are designated as paralectotypes. They have the following locality data:

"Willist'n N. D. Jun. 8-9 Wickham/ PARATYPE punctiventris" (♀); "Colo 1163/ Det. Uhler/ PARATYPE punctiventris" (♀); "Salt Lake, 14-6-98, Ut/ Heidemann Collector/ PARATYPE punctiventris/ E P Van Duzee Collection" (♀); "Gnd Junc Col. 7-28-00/ E P Van Duzee Collector/ PARATYPE punctiventris/ E P Van Duzee Collection/ Thyanta punctiventris Van D., Det. V. D." (♀); and "Gnd Junc Col. 7-27-00/ E P Van Duzee Collector/ PARATYPE punctiventris/ E P Van Duzee Collection" (? — abdomen missing).

Specimens of *T. rugulosa* have been examined from British Columbia, Canada, and from the following states: Arizona, California, Colorado, Idaho, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming.

***Tepa vanduzeei*, new species**

Thyanta punctiventris: Hart, 1919:217 (misidentification).

T. punctiventris: Torre-Bueno, 1939:232 (misidentification).

T. punctiventris: Rolston, 1972:283, figs. 37-42 (misidentification).

Tepa punctiventris: Rolston and McDonald, 1984:78, 80, fig. 47 (misidentification).

Description. Dorsum of typical form medium green, often with scutellum, head, connexivum, and anterior third of pronotum pale; punctation dense, shallow, rugulose, usually less dense on hemelytra; punctures green. Ventral surface pale green to yellow, each posterior abdominal angle black; punctures less dense than on dorsum, concolorous with surface. Antennae pale to medium green or brown, apical two segments usually darker. Legs pale to medium green, apices of tibiae often becoming fuscous. Dorsum of brown form light tan to brown, often tylus and area of head between ocelli darker, usually with pale mesial line on scutellum, this line often extending onto pronotum. Dorsal punctation concolorous with surface except on hemelytra, scutellum, and anterior and posterior margins of connexival segments, fuscous. Ventral surface pale brown with fuscous punctures; a series of black postspiracular spots usually present; anterior and posterior abdominal angles black. Antennae pale to medium brown, apical two segments usually fuscous. Legs pale to medium brown with numerous fuscous spots scattered over surface. Total length excluding membrane 5.1-7.7 mm.

Head declivent, broadly rounded apically, jugal margins distinctly sinuate, subparallel for middle third of distance from eyes to apex (see Rolston, 1972, fig. 37); juga equalling or usually slightly surpassing tylus. Length of head from apex to posterior margin of ocellus 1.1-1.5 mm, width across eyes 1.6-2.0 mm. Distance from ocellus to nearest eye equal to or usually greater than twice the diameter of ocellus, distance 0.18-0.22 mm, ocellar diameter 0.07-0.11 mm. Antennal segment 3 much shorter than segments 2, 4, or 5, length of segments 1-5 about 0.2-0.3, 0.5-0.8, 0.4-0.5, 0.5-0.6, 0.7-0.8 mm.

Pronotum 3.6-4.8 mm wide at humeri, mesial length 1.2-1.7 mm. Humeral angle rounded, scarcely produced beyond base of corium. Anterolateral margin of pronotum slightly concave, carinate for posterior half only (see Rolston, 1972, fig. 38). No black on cicatrices.

Scutellum usually slightly wider than long, width at base 2.2-2.9 mm, mesial length 2.1-2.9 mm. Scutellar tongue broader than long, width at base 1.0-1.4 mm, mesial

length 0.9–1.3 mm, margins nowhere parallel, tapering to an evenly rounded apex. Width across abdomen nearly as wide as width across humeri. Membrane vitreous, usually with flecks of fuscous scattered along veins.

Ostiolar ruga long, distance from mesial margin of ostiole to apex of ruga greater than distance from apex of ruga to lateral margin of supporting sclerite, ruga evanescent apically, canal not widening apically. Rostral segments 2–4 about 0.8–1.0, 0.5–0.6, 0.5–0.6 mm long.

Posterior margin of pygophore concave on each side of middle with a mesial v-shaped emargination; ventral surface of pygophore without carina. Head of paramere bilobed, lateral lobe small, directed laterally and usually bent weakly toward anterior lobe; anterior lobe bent slightly laterally, narrowed apically (see Rolston, 1972, fig. 42). Female genital plates typical for the genus.

Distribution. Western United States and Mexico.

Etymology. This species is named for the late E. P. Van Duzee, whose work has contributed much to the understanding of this genus and to many other hemipteran genera.

Holotype. UNITED STATES: **Texas:** *Cameron Co.*, Anacua Wildlife Area nr. St. Maria, 6–7 Oct. 1984, D. A. Rider, ♂. Deposited in the National Museum of Natural History, Washington, D.C.

Paratypes. 250 specimens. MEXICO: **Colima:** Armeria Bridge, 3 Sept. 1971, W. D. Nunes & T. F. Halstead, swept weeds, CAS (♂). **Guerrero:** Acapulco, Gro., 20 Aug. 1938, L. J. Lipousky, SMEK (♂). **Oaxaca:** Salina Cruz, 15 July 1952, E. E. Gilbert & C. D. MacNeil, UCB (♂). **Vera Cruz:** with orchids, Brownsville, Tex., 2 Sept. 1960, USNM (♂).

UNITED STATES: **Arizona:** *Maricopa Co.*, Phoenix, LSUC (♂), 3 May 1939, E. E. Russell, *Malva parviflora*, ASUT (♀). *Yuma Co.*, Yuma, 3 May 1951, L. A. Carruth, UAT (♀). **California:** *Kern Co.*, Bakersfield, 7 Apr. 1970, CAS (♀). *Kings Co.*, June 1933, CAS (♀). *Los Angeles Co.*, 4 Apr. 1879, INHS (♀). *Merced Co.*, Gustine, 12 Aug. 1966, T. F. Halstead, CAS (♀). **Colorado:** *El Paso Co.*, Rock Ck. Canyon, Colorado Springs, 30 Aug. 1937, H. H. Ruckes, CAS (♂). *Otero Co.*, Rocky Ford, 14 Sept. 1898, E. D. Ball, UAT (♂). **Kansas:** *Finney Co.*, 15 Aug. 1924, Lawson & Beamer, SMEK (♀); Garden City, July 1896, H. W. Menke, LHR (♂), 12 June 1940, R. H. Beamer, SMEK (3♂♂). *Hamilton Co.*, July, S. J. Hunter, SMEK (♂ 3♀♀). *Meade Co.*, Meade, LSUC (♂). *Morton Co.*, 5 Aug. 1911, F. X. Williams, SMEK (2♀♀); 20 July 1924, C. O. Bare, SMEK (♂); 3 Aug. 1924, SMEK (3♀♀). *Scott Co.*, F. X. Williams, SMEK (♂). *Sherman Co.*, F. N. Williams, SMEK (♂). *Thomas Co.*, Menlo, 23 Aug. 1940, R. H. Beamer, SMEK (♂); F. X. Williams, SMEK (2♂♂ ♀). **Missouri:** *Vernon Co.*, Metz, 21 Apr. 1940, N. L. Wright, UMC (♂). **Nebraska:** *Hayes Co.*, Hayes Ctr., 30 June 1941, on beets, UNL (2♂♂ 4♀♀). *Lancaster Co.*, Lincoln, Mar., UNL (♂). *Scotts Bluff Co.*, Mitchell, 14 July 1915, L. M. Gates, UNL (♀). **Nevada:** *Washoe Co.*, Nixon, 30 June 1927, E. P. Van Duzee, CAS (♀). **New Mexico:** 25 Aug., L. J. Munchmore, LACM (♂). *Sandoval Co.*, Bernalillo, 24 June 1938, R. P. Allen, CAS (♀). **Oklahoma:** *Beaver Co.*, 2 Sept. 1932, W. Davis, LSUC (♂). **South Dakota:** *Brule Co.*, Chamberlain, 24 July 1940, H. C. Severin, under lights, ISU (♂), LHR (♂ ♀). **Texas:** *Bell Co.*, Temple, 22 Aug. 1941, H. S. Dybas, at light, FMNH (♀). *Brazos Co.*, 25 Apr. 1927, R. K. Fletcher, TAMU (♀); College Station, 10 Nov. 1928, S. E. Jones, trap light, TAMU (♂). *Brewster Co.*, Alpine, Sept. 1939, S. E. Jones, ISU (3♂♂

5♀), LSUC (♂ ♀); Chisos Mts. Pk., Sept. 1939, S. E. Jones, ISU (♂); Babcock Ranch, 22 mi S Alpine, 26 Aug. 1969, V. V. Board & J. E. Hafernik, LHR (♀), TAMU (2♂♂ ♀). *Brooks Co.*, 25 July 1928, R. H. Beamer, SMEK (3♂♂ ♀); Falfurrias, 21 Aug. 1959, R. B. Selander & J. C. Shaffner, at light, TAMU (♀). *Cameron Co.*, Brownsville, 23 Nov. 1910, INHS (♂ ♀), 17 Dec. 1910, INHS (♂), 9 Oct. 1958, H. V. Weems, Jr., at light, ARH (4♂♂ 4♀♀), 5 Aug. 1973, J. E. Gillaspay, at light, LHR (♀); 6 mi E Brownsville, 14 June 1969, V. V. Board & J. E. Hafernik, TAMU (♀); Palmito Hill, 9 June 1970, V. V. Board, TAMU (♂); Anacua Wildlife Area nr. St. Maria, 6–7 Oct. 1984, E. G. Riley, LHR (16♂♂ 27♀♀), D. A. Rider, AMNH (5♂♂ 5♀♀), DAR (10♂♂ 20♀♀), LSUC (5♂♂ 5♀♀), USNM (5♂♂ 5♀♀). *Comanche Co.*, 15 Apr. 1925, R. H. Beamer, SMEK (♂). *Crockett Co.*, Hwy 349 at Pecos R., 31 May 1973, Gaumer & Clark, TAMU (♀); 24 mi E Iraan, 29 May 1979, Burke, Schaffner, and Friedlander, TAMU (2♂♂ 3♀♀). *Dimmit Co.*, 1 Apr. 1936, S. E. Jones, LSUC (♀); 13 Mar. 1933, S. E. Jones, LHR (♂). *Eastland Co.*, Grace Olive Wiley, 10 Aug. 1920, SMEK (♂). *Hemphill Co.*, Canadian, 10 July 1905, W. M. Mann, FMNH (♂). *Hildago Co.*, 28 July 1928, R. H. Beamer, SMEK (♂ ♀). *Jeff Davis Co.*, 10 mi NW Ft. Davis, 20 July 1968, J. E. Hafernik, TAMU (♂); 25 mi NW Ft. Davis, 20 July 1968, J. E. Hafernik, LHR (♂); 8 mi NE Ft. Davis, 11 Aug. 1968, J. E. Hafernik, TAMU (♀), 10 Aug. 1969, V. V. Board & J. E. Hafernik, TAMU (♂ ♀); 1.5 mi SW Hwy 118 on Hwy 166, 2 June 1983, D. A. Rider, DAR (♀). *Kleberg Co.*, Kingsville, 27 Sept. 1959, SIUC (♂), 13 Sept. 1973, J. E. Gillaspay, LHR (♂). *Motley Co.*, Matador, 15 June 1933, H. G. Johnston, TAMU (3♂♂ 3♀♀). *Pecos Co.*, Ft. Stockton, 23 Oct. 1938, S. E. Jones, LSUC (♀). *Potter Co.*, Amarillo, 5 Sept. 1928, R. H. Fletcher, TAMU (♂). *Presidio Co.*, Plata, 8 June 1968, J. E. Hafernik, TAMU (♂); 3 mi SE Presidio, 20 June 1968, J. E. Hafernik, LHR (♀); 7 mi N Shafter, 22 June 1968, J. E. Hafernik, UCB (♂); Estrada Ck., 8 mi SE Presidio, 9 July 1968, J. E. Hafernik, UCB (♀). *Reeves Co.*, 10 mi SE Pecos, 11 July 1936, R. H. Beamer, SMEK (♀). *Scurry Co.*, Snyder, 22 Aug. 1959, S. Jacobs, UMC (♂ ♀). *Starr Co.*, Falcon Hts., 22 Aug. 1981, R. Turnbow, at light, UGA (♂). *Terrell Co.*, Sanderson, 22 Oct. 1938, S. E. Jones, LSUC (2♀♀). *Val Verde Co.*, Del Rio, 21 Oct. 1938, S. E. Jones, ISU (6♂♂), LHR (♀), LSUC (4♂♂ 3♀♀); Langtry, 21 Oct. 1938, S. E. Jones, ISU (♀), LHR (♂), LSUC (♂ 3♀♀).

Remarks. All the species included in *Tepa* appear quite similar superficially. *Tepa vanduzeei* can be separated from *T. brevis*, *T. rugulosa*, and *T. yerma* by the longer ostiolar ruga. In *T. jugosa* the ostiolar canal widens apically. *Tepa vanduzeei* is most closely related to *T. panda* from which it can be separated reliably only by the male genitalia. The anterior lobe of the paramere is narrowed apically in *T. vanduzeei*; it is evenly rounded in *T. panda*.

Tepa vanduzeei is the species that most previous workers have called *T. punctiventris*. Most specimens in museums labeled as *T. punctiventris* will probably be this new species.

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