A REVIEW OF THE GENUS TIRIDATES STÅL
(HETEROPTERA: PENTATOMOIDEA: SCUTELLERIDAE)

J. E. EGER, JR.
Project Leader, Agricultural Products Department
Dow Chemical U.S.A., 5100 West Kennedy Blvd., Suite 450
Tampa, FL 33609 USA

and
Research Associate, Florida State Collection of Arthropods
Florida Department of Agriculture & Consumer Service
Gainesville, FL 32602 USA

ABSTRACT

The genus Tiritades Stål is redescribed and compared to Agonosoma Laporte. The
two included species and a new subspecies, T. rubrocinctus schaffneri, are described,
figured, and keyed. Tiritades rubrocinctus sezmaculata Kirkaldy, T. rubrocinctus dec-
color Kirkaldy, T. rubrocinctus decemmaculata Kirkaldy, and T. rubrocinctus mag-
nifica Kirkaldy, names proposed for Stål’s (1862) varieties a-d, are placed in the
synonymy of T. rubrocinctus rubrocinctus (Herrich-Schaeffer). Lectotypes and paralect-
totypes are designated for T. rubrocinctus sezmaculata and T. rubrocinctus decolor
and a lectotype is designated for T. rubrocinctus decemmaculata.

RESUMEN

El género Tiritades Stål se redescribe y compara con Agonosoma Laporte. Se
redescriben, figuran, y se le dan claves a las dos especies incluidas y a la nueva subes-
pesie T. rubrocinctus. Tiritades rubrocinctus sezmaculata Kirkaldy, T. rubrocinctus
decolor Kirkaldy, T. rubrocinctus decemmaculata Kirkaldy, y T. ruocinctus magnifica
Kirkaldy, ombres propuestos para las variedades de a-d de Stål (1862), se ponen de
sinónimos de T. rubrocinctus rubrocinctus (Herrich-Schaeffer). Se designan lectotipos
y paralectotipos para T. rubrocinctus sezmaculata y T. rubrocinctus decolor, y un lec-
totipo es designado para T. rubrocinctus decemmaculata.

Among scutellerid genera in the subfamily Pachycorinae, Tiritades Stål, 1867, is
unusual in having both male and female external genitalia almost entirely concealed by
the sixth visible abdominal sternite. Certain species in several other genera of Neotrop-
ical Pachycorinae also have concealed male genitalia (Agonosoma Laporte, 1832; Crathis
Stål, 1861; Diodera Mayr, 1864; Lobothyreus Mayr, 1864; and Symphylus Dallas, 1851).
Of these, only Agonosoma is similar to Tiritades in size (greater than 10 mm long) and
elongate oval shape. The sixth visible abdominal sternite also conceals the bulk of the
female genital plates in Agonosoma, but leaves more of the 8th and 9th paratergites
exposed than in Tiritades (Figs. 1, 4).

Several characters may be used to separate Tiritades from Agonosoma. The length
of the ostiolar rugae in Agonosoma is greater than 1/2 the distance from the ostiole to
the lateral margin of the metapleuron (Fig. 5). In Tiritades the rugae extend at most
1/3 of the distance from ostiole to lateral margin of the metapleuron (Fig. 2). The shape
of these rugae is also distinctive. In addition, the head of Tiritades is narrower and the
body more convex than in Agonosoma (Figs. 3, 6).

Stål (1867) proposed the genus Tiritades to include two species previously described
by Herrich-Schaeffer (1837), Pachycoris rubrocinctus and P. flavicinctus. A third
Figs. 1-6. 1-3. *Tiridates rubrocinctus rubrocinctus*. 1.) Female abdomen, ventral aspect. 2.) Meso- and metapleuron. 3.) Head. 4-6. *Agonosoma trivittata* (Panzer). 4.) Female abdomen, ventral aspect. 5.) Meso- and metapleuron. 6.) Head. Dimensional lines equal 1.0 mm.

species, *T. mexicanus*, also described by Herrich-Schaeffer (1837), has been considered a senior synonym of *T. flavicinctus* by some authors. Because color patterns vary considerably in this genus, several subspecific names persist for variously patterned specimens of *T. rubrocinctus*.

This study was undertaken to characterize the genus and to clarify the status of included taxa. All measurements are given in millimeters.
Eger: Review of Tiritades

Tiritades Stål 1867

Tiritades Stål, 1867, p. 494 (keyed, Pachycoris rubrocinctus and P. flavicinctus included); Stål, 1870, p. 13-14; Distant, 1880, p. 18 (described, distribution); Schouteden, 1904, pp. 68-69 (described, keyed); Kirkaldy, 1909, p. 278, 365.

Medium-large (10.8-14.8 long), elongate oval, strongly convex above and below; dorsal surface glabrous, punctuation fine, moderately dense, most dense on head and anterior border of pronotum. Ventral punctuation dense, coarse on head and pronotum, sparse medially on abdomen, becoming more dense laterally.

Head: convex, moderately declivent, gradually narrowing apically, apex narrowly rounded; lateral margins of juga sinuous, borders rounded. Tylus slightly surpassing juga: first antennal segment not reaching apex of head. First rostral segment longer than bucculae. Bucculae abruptly curving dorsal at posterior limit, rounded anteriorly. Antennae 5-segmented, arising midway down lateral surface of head and just anterior of eyes, terminal two segments not distinctly flattened.

Thorax: anterior, anterolateral and posterior margins of pronotum slightly concave, posterolateral margins convex; small tooth present at each anterolateral angle; anterolateral margins rounded dorseventrally, not compressed or carinate. Pronotum evenly rounded dorsally in lateral view. Prostethus entire. Tibiae sulcate. Ostiole arising nearer to metacoxae than to lateral margin of metapleuron. Ostiolar rugae auriculate, extending 1/3 or less of distance from ostiole to lateral margin of metapleuron, roughly 3 to 5 times as long as width of ostiole (Fig. 2). All sterna sulcate, rounded laterally, not distinctly carinate. Scutellum constricted basally; hasal 1/2 to 1/3 of lateral margins of hemelytra exposed.

Abdomen: lateral margins of connexiva evenly rounded. Abdominal sternites with slight lateral submarginal impression; small rounded projection present laterally at posterior extremity of each segment. Striated area present on third to fifth visible abdominal sternites.

Pygophore concealed by sixth visible abdominal sternite, caudal face with distinct projection in lateral aspect (Fig. 12); each lateral wall of pygophore with bifurcate process, thecal plate attached to anterior arm of process (Fig. 11). Parameres hook-shaped (Fig. 10). Theca with two elongate sclerotized processes; vesica elongate, finely spiculate (Fig. 8).

Sixth visible abdominal sternite expanded to conceal female genital plates, posterior margins of eighth and ninth paratergites narrowly exposed (Fig. 1). First gonoxoae bilobed, sclerotized posterior lobe narrow, elongate (Fig. 21); anterior lobe membranous with elongate sclerotized band along posterior margin. Ninth paratergites thin, moderately elongate. Genital chamber with sclerotized groove and two large sclerotized plates on floor of genital chamber. Spermathecal duct with large spherical dilatation; pump distinct, with well defined proximal and distal flanges; spermathecal bulb spherical, connected to pump by long stout duct (Fig. 26).

Type Species: Pachycoris rubrocinctus Herrich-Schaeffer, 1837, by subsequent designation (Schouteden 1904). Kirkaldy (1909) also listed P. rubrocinctus as the type species (p. 278), but subsequently (p. 365) designated Pachycoris flavicinctus Herrich-Schaeffer, 1837, as the type species. Kirkaldy (1909 p. XXXIV) believed that P. flavicinctus should be the type species because Stål (1870) doubted the specific distinction of P. rubrocinctus. However, at the time Stål described Tiritades (1867), both P. rubrocinctus and P. flavicinctus were included and both are available to be the type species. Schouteden's designation of P. rubrocinctus was the first valid designation making P. rubrocinctus the type species of the genus.

Distribution: Tiritades ranges from northern Mexico (Tamaulipas), south to Guatemala
and Nicaragua. It is generally uncommon in collections, most of the material examined
being from Mexico.

Types: Dr. Martin Baehr of the Zoologische Staatssammlung, Munich has informed me
that the Herrich-Schaeffer types for Packycoris flavicinctus, P. rubrocinctus, and P.
mexicanus could not be located and were probably destroyed by war action.

Comments: The female genitalia are unusual in Tiridates, having bilobed first gonocoxae
and sclerotized plates on the floor of the genital chamber. Bilobed first gonocoxae are
also found in Agonosoma (Scudder 1959).

Specimens of Tiridates exhibit considerable intra-specific variation in color patterns
and few useful taxonomic characters other than the genitalia. Some color patterns were
used in the following key and appeared to be consistent. However, dissection of genitalia
is recommended for definitive determination of species. The male aedeagus is diagnostic.
The sclerotized plates on the floor of the female genital chamber are somewhat variable,
but are usually useful for recognition of species.

Virtually nothing is known of the biology of species of Tiridates.

Key to species of Tiridates

1. Abdominal venter predominately dark brown to black, usually with basal
yellow to red macula, and scutellum bordered laterally and posteriorly by
continuous yellow to red macula; thecal processes acute apically (Fig 8) .......... 2.

1'. Abdominal venter predominately yellow to red, with dark brown to black
transverse vitta present basally and longitudinal vitta present laterally; or
venter black and scutellum with lateral marginal vitta incomplete; apex
of each thecal process hatchet-shaped (Fig. 10) ......................... T. mexicanus.

2. Thecal lobes short, not encircling vesica (Fig. 8); Mexico, north and west of
the isthmus of Tehuantepec ........................ T. rubrocinctus rubrocinctus.

2'. Thecal lobes long, encircling vesica (Fig. 13); Mexico, south and east of the
Isthmus of Tehuantepec into Nicaragua ..................... T. rubrocinctus schaffneri.

Tiridates rubrocinctus rubrocinctus (Herrich-Schaeffer, 1837)

Packycoris rubrocinctus Herrich-Schaeffer, 1837, p. 9, fig. 352; Germar, 1839, p. 103.
Agonosoma rubrocinctum: Dohrn, 1859, p. 4; Stål, 1862, p. 83 (vars. a-d described).
Agonosoma rubrocincta: Walker, 1867, p. 69.

Tiridates rubrocinctus: Stål, 1867, p. 494; Stål, 1870, p. 14; Distant, 1880, p. 19
(synonymy); Uhler, 1886, p. 2 (synonymy); Distant, 1889, p. 313; Lethierry and
Severin, 1893, p. 35 (synonymy); Schouteden, 1904, p. 69 (synonymy); Kirkaldy,
1909, p. 278.

Tiridates rubrocinctus decemmaculata Kirkaldy, 1909, p. 278 (–var. c Stål, 1862),
NEW SYNONYMY.

Figs. 7-14. 7-12. Tiridates rubrocinctus rubrocinctus. 7.) Aedeagus, dorsal aspect;
vesica (V); thecal process (TP); thecal lobe (TL). 8.) Aedeagus, lateral aspect. 9.) Pro-
tiger, caudal aspect. 10.) Right paramere, lateral aspect. 11.) Genital cup, caudal aspect,
omitting parameres and proctiger; anterior lobe of pygophoral process (A); posterior
lobe of pygophoral process (P). 12.) Genital cup, caudal margin, lateral aspect. 13-14,
Tiridates rubrocinctus schaffneri. 13.) Aedeagus, lateral aspect. 14.) Right paramere,
lateral aspect. Dimensional lines equal 1.0 mm.
Tiridates rubrocinctus decolor Kirkaldy, 1909, p. 278 (=var. b Stål, 1862), NEW SYNONYM.
Tiridates rubrocinctus magnifica Kirkaldy, 1909, p. 278 (=var. d Stål, 1862), NEW SYNONYM.
Tiridates rubrocinctus sexmaculata Kirkaldy, 1909, p. 278 (=var. a Stål, 1862), NEW SYNONYM.

Length of body 11.7-14.6. Head: broader than long (3.6-4.4 wide, 3.2 - 4.0 long), entirely black or dark brown to broadly orange or red bordered. Venter of head entirely black. Antennae dark brown to black; length of segments 1-5: 0.8-1.0; 0.6-0.8; 0.8-1.0; 1.3-1.7; 1.9-2.2. Rostrum dark brown to black, reaching 2nd to 3rd visible abdominal sternite.

Thorax: pronotum 3.5-4.7 long, 6.5-8.4 wide; typically black or dark brown with anterior, antero- and postero-lateral margins broadly yellow to red bordered and with median longitudinal yellow to red vitta. Colored borders and median vitta occasionally broken or absent, or expanded to cover entire pronotum. Dark brown maculae frequently present in colored borders; these occasionally reduced or absent. Thoracic venter typically dark brown to black with orange to red macula occasionally present laterally on each metapleuron; coxae and small portion of adjacent pleura occasionally red or yellow. Legs dark brown to black, occasionally with red to yellow band on femora. Ostial rugae 0.6-0.9 long; distance from ostiole to metacoxae 1.2-1.7, distance from ostiole to anterolateral corner of metapleuron 1.9-2.4. Scutellum 6.8-8.4 long, 6.5-8.5 wide; typically bordered on all sides by yellow to red vittae and with median transverse yellow to red vitta; median longitudinal vitta sometimes also present. Vittae frequently reduced, broken, or lacking, or vittae expanded to cover all of scutellum except 1 or 2 pairs of median black maculae.

Abdomen: venter dark brown to black, usually with red to yellow macula mesially on 2nd to 5th visible sternites (rarely extending onto 6th sternite); this macula frequently on fewer segments and occasionally lacking; broken lateral submarginal band of poorly defined red to yellow maculae infrequently present. Mid-ventral length of visible abdominal sternites 2-6: males 0.7-0.9, 0.5-0.6, 0.5-0.6, 0.6-0.7, 3.0-3.5; females 0.8-1.0, 0.7-0.8, 0.7-0.8, 0.7-0.8, 2.9-3.2.

Apex of posterior arm of pygophoral process truncate, apex of anterior arm rounded (Fig. 11). Parameres and proctiger as in Figs. 9 and 10. Thecal processes elongate, apices acute (Figs. 7, 8). Thecal lobes broadly rounded at apex, not encircling vesica. Vesica thin, abruptly curving ventrad.

Posterior lobe of each first gonocoxa directed mesad; anterior lobe with thin, weakly sclerotized band along posterior margin (Fig. 21). Plates on floor of genital chamber moderately sclerotized, relatively flat; widely separated mesially (Fig. 23).

Types. The type of Pachycoris rubrocinctus is apparently lost. Stål (1862) described four varieties of T. rubrocinctus as vars. a-d. Kirkaldy (1909) subsequently named each variety. Thus, Stål's specimens are the type specimens for Kirkaldy's varieties (subspecies) of T. rubrocinctus. Specimens of T. rubrocinctus from Stål's collection were located in the Naturhistoriska Riksmuseet in Stockholm. Stål did not label his vars. a-d.

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Figs. 15-20. Tiridates mexicanus. 15.) Aedeagus, dorsal aspect; vesica (V); thecal process (TP). 16.) Aedeagus, lateral aspect. 17.) Proctiger, caudal aspect. 18.) Right paramere, lateral aspect. 19.) Genital cup, caudal aspect, omitting parameres and proctiger; anterior lobe of pygophoral process (A); posterior lobe of pygophoral process (P). 20.) Genital cup, caudal margin, lateral aspect. Dimensional lines equal 1.0 mm.
Figs. 21-22. Female genital plates; first gonocoxae (Gx1); second gonocoxae (Gx2); eighth paratergites (Pt8); ninth paratergites (Pt9); sclerotized plates on floor of genital chamber (SP); 21.) *Tiridates rubrocinctus rubrocinctus*. 22.) *T. mexicanus*.

but specimens agreeing with the descriptions of three of the four varieties were located. Lectotypes and paralectotypes are designated as follows:

*Tiridates rubrocinctus sexmaculata* Kirkaldy

LECTOTYPE: Male, labelled: (a) “Mexico.” (b) “Boucard.” (c) “415, 86.” (d) “Riksmuseum, Stockholm”.

PARALECTOTYPES: 2 females: (a) “Mexico.” (b) “Sallé.” (c) “413, 86.” (d) “Riksmuseum, Stockholm”; and (a) “Mexico.” (b) “Sallé.” (c) “414, 86.” (d) “Riksmuseum, Stockholm”.

*Tiridates rubrocinctus decolor* Kirkaldy

LECTOTYPE: Male, Labelled: (a) “Mexico.” (b) “Tiridates rubrocinctus H.S.” (c) “417, 86.” (d) “Riksmuseum, Stockholm”.


Figs. 23-26. 23-25. Sclerotized plates in floor of genital chamber. 23.) T. rubrocinctus rubrocinctus. 24.) T. rubrocinctus schaffneri. 25.) T. mexicanus. 26.) T. rubrocinctus rubrocinctus, spermatheca and related structures; sclerotized groove in floor of genital chamber (SG); dilation of spermathecal duct (D); proximal flange of spermathecal pump (PF); distal flange of spermathecal pump (DF); spermathecal bulb (B). Dimensional lines equal 1.0 mm.

**PARALECTOTYPE:** Female: (a) "Mexico." (b) "Stål." (c) "412, 86." (d) "Riksmuseum, Stockholm".

**Tiridates rubrocinctus decemmaculata** Kirkaldy

**LECTOTYPE:** Female, labelled: (a) "Mexico." (b) "Stål." (c) "416, 86." (d) "Riksmuseum, Stockholm". Apparently no paralectotypes.

**Tiridates rubrocinctus magnifica** Kirkaldy

No specimens examined agreed with Stål's description of this var. d. although it probably belongs in the synonymy of the nominate subspecies as did Stål's other varieties. Specimens on which this variety was based are apparently not extant.

**Distribution:** Mexico, states of Veracruz, Oaxaca, Guanajuato, and Tamaulipas.

**Comment:** Although there is considerable variation in the color patterns in this and other species of *Tiridates*, all variations are apparently built on a typical pattern of marginal, median longitudinal and median transverse vitiae. These vitiae may be reduced or absent, or expanded to cover virtually all of the dorsum.

**Tiridates rubrocinctus schaffneri** n. ssp.

Length of body 10.8-14.6. Length of head 2.9-3.8, width 3.5-4.4. Length of antennal segments 1-5: 0.8-1.0, 0.6-0.9, 0.6-1.0, 1.2-1.6, 1.7-2.0. Pronotum 3.1-4.4 long, 6.0-8.2 wide. Scutellum 6.2-8.5 long, 5.8-8.3 wide. Mid-ventral length of visible abdominal sternites 2-6: males 0.7-0.8, 0.5-0.6, 0.5-0.6, 0.6-0.7, 2.4-3.0; female 0.8, 0.7-0.8, 0.7-0.9, 0.7-0.8, 2.3-3.0.
Coloration as in *T. rubrocinetus rubrocinetus*. Head: more commonly entirely dark brown to black, or red to yellow with dark markings restricted to small basal macula and apex.

Abdomen: parameres more robust than in nominate subspecies, shank shorter (Fig. 14). Thecal lobes elongate apically, encircling vesica (Fig. 13). Plates on floor of genital chamber moderately ocellotized; anterior margins curving ventrad, inner margins arculate; mesial separation narrow (Fig. 24).

Types.

Distribution: Mexican states of Yucatán and Quintana Roo south through Guatemala and Honduras to Nicaragua.

Comment: The distribution of this and the nominate subspecies appears to be distinct, being separated by the Isthmus of Tehuantepec. Genitalic differences are relatively slight but consistent, suggesting that the two taxa may be distinct species. The lack of other characters for separating the two and the allopatric distribution suggest subspecific status, however.

This subspecies is dedicated to Dr. J. C. Schaffner of Texas A&M University for his contributions to the knowledge of Mexican Heteroptera and for the help and support he has given me.

*Tiridates mexicanus* (Herrich-Schaeffer, 1837)

*Pachycoris mexicanus* Herrich-Schaeffer, 1837. p. 3, fig. 343; Germar, 1839, p. 89.

*Pachytricis flavicinctus* Herrich-Schaeffer, 1837. p. 8, fig. 351; Germar, 1839, p. 103.

*Agnosoma mexicanum*: Dohrn, 1859, p. 4.

*Agnosoma flavicinctum*: Dohrn, 1859, p. 4.

*Agnosoma mexicana*: Walker, 1867, p. 60.

*Agnosoma flavicincta*: Walker, 1867, p. 60.

*Tiridates flavocinctus*: Stål, 1867, p. 494.

*Tiridates mexicanus*: Stål, 1870, pp. 13-14 (*P. flavicinctus* listed as junior synonym); Distant, 1880, p. 19 (synonymy); Uhler, 1886, p. 2 (synonymy); Distant, 1889, p. 313; Lethierry and Severin, 1893, p. 35 (synonymy); Schouteden, 1904, p. 69, pl. 4, fig. 13 (synonymy); Kirkaldy, 1909, p. 278.


Length of body 12.5-14.8. Head: 3.2-3.6 long, 3.8-4.4 wide, dark brown to black with red to yellow markings usually present at least laterally and frequently most of dorsal surface red to yellow. Antennae dark brown to black, first 1 or 2 segments occasionally yellow to red; length of segments 1-5: 0.8-1.0; 0.6-0.8; 0.7-0.9; 1.4-1.6; 1.8-2.3. Rostrum
brown to black, segments 1-2 frequently yellow to red; apex reaching 2nd to 3rd visible abdominal sternite.

Thorax: pronotum broader than long (6.8-8.2 wide, 4.1-4.9 long), dark brown to black with yellow to orange vittae along anterior, antero-, and posterolateral margins and with median longitudinal vitta; vittae frequently reduced or expanded to cover entire pronotum. Dark brown submarginal maculae frequently present in marginal vittae. Thoracic venter typically dark brown to black, except following red to yellow structures: coxae and large macula on adjacent pleura, lateral margins of pro-, meta-, and occasionally mesopleura, margin of prosthetus, posterior border of metapleura and portions of evaporative area on metapleura. Legs dark brown to black except basal 2/3 to 5/6 of femora usually orange to red and tibiae infrequently with yellow or red median band. Ostiolar rugae 0.4-0.7 long; distance from ostiolar to metacoxae 1.3-1.6, distance from ostiolar to anterolateral corner of metapleuron 1.6-2.6. Scutellum 7.4-9.8 long, 6.7-7.9 wide; typically bordered on all sides by broad yellow vittae and with median transverse vitta, vittae frequently reduced or absent or expanded to cover nearly entire scutellum. Fovea in each basal angle of scutellum and 2 small maculae on anterior border dark brown to black, maculae absent in specimens lacking colored vitta on anterior margin.

Abdomen: venter orange to red with black markings as follows: basal transverse vitta on first to third visible sternites, broad lateral longitudinal vitta (this vitta frequently broken into series of maculae), broadly oval macula near posterior limit of last sternite, 3 to 6 smaller maculae on sternites 4 to 6. Abdominal venter rarely entirely dark brown to black or with basal red to yellow macula on 2nd to 5th visible segments. Mid ventral length of visible abdominal sternites 2-6: males 0.7-0.8, 0.7-0.9, 0.7-0.9, 0.6-0.7, 3.0-3.3; female 0.8-1.0, 0.9, 0.8-1.0, 0.8-0.9, 2.6-2.9.

Apox of both arms of each pygophoral process narrowly rounded (Fig. 19). Parameres and protiger as in Figs. 17 and 18. Theca relatively short, without distinct lobes (Figs. 15, 16). Thecal processes broad basally from dorsal aspect, narrowing apically to hatchet-shaped apices. Vesica relatively broad, angled ventrad and curving caudad.

Posterior lobe of each first gonocoxa directed mesad and cephalad (Fig. 22); anterior lobe with relatively broad, moderately sclerotized band along posterior margin. Plates on floor of genital chamber strongly sclerotized, broadly concave, anterior and mesial margins enlarged; narrowly separated mesially (Fig. 25).

Types: Apparently lost.

Distribution: South Mexico, states of Chiapas, Guerrero, Jalisco, Michoacan, Morelos, Nayarit, Oaxaca, and Veracruz.

Comments: There appear to be 3 color morphs of *T. mexicanus*, all of which are apparently sympatric and all of which have been collected together in series. Two of these morphs were figured by Herrich-Schaeffer (1837) and described as *Pachycoris flavicinctus* and *P. mexicanus*. I've seen only males of the former and both sexes of the latter. A third morph is almost entirely black ventrally and is black dorsally with red markings as follows: lateral band on head, anterior margin of pronotum, vittae along lateral margins of pronotum and scutellum (these relatively thin and frequently broken), submarginal vittae along lateral margins of pronotum, median longitudinal vitta on pronotum, and median transverse vitta on scutellum. Specimens of this morph consisted entirely of females.

Two small black maculae located just mesad of the fovea on the anterior margin of the scutellum were always present in specimens of the first two morphs (the anterior margin of the third morph was entirely black). No such maculae were present in specimens of *T. rubrocinctus*. 
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