

# TORTYRA METALMARK MOTHS OF FLORIDA (LEPIDOPTERA: CHOREUTIDAE)

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**ABSTRACT.**— The two known Florida and North American species of the Neotropical genus *Tortyra* are reviewed, including *Tortyra slossonia* (Fernald) and *Tortyra iocyaneus*, **new species**. Both species occur only in southern Florida and the Bahamas.

**KEY WORDS:** Bahamas, biology, Cuba, hostplants, Moraceae, Neotropical, *Saptha*, *Tortyra iocyaneus* n. sp., West Indies.

The genus *Tortyra* is a group of brilliantly colored small day-flying moths in the metalmark moth family, Choreutidae, with 21 described species and at least half again as many undescribed species. The genus is only known from the Neotropical region, barely entering the subtropical portions of the Nearctic region in southern Florida. *Tortyra* was restricted to the New World species in a previous paper (Heppner, 1981), leaving its former synonym, *Saptha*, as the corresponding genus in the Old World tropics with another 18 known species. Both genera include species only known to utilize hostplants in the genus *Ficus* (Moraceae). Neither genus has had a modern description, thus *Tortyra* is redescribed herein.

Florida harbors two species of *Tortyra*, one of which is here described as new. Both species also occur in the Bahamas and have close relatives among the Caribbean *Tortyra*.

## TORTYRA Walker

*Tortyra* Walker, 1863:510. (Type-species: *Tortyra spectabilis* Walker, 1863 [designated by Walsingham, 1914])

*Choregia* Felder & Rogenhofer, 1875:6 [preocc. by Warren, 1899 (Geometridae)]. (Type-species: *Choregia fulgens* Felder & Rogenhofer, 1875 [by present designation])

*Choregia* Zeller, 1877:191, redesc. (Type-species: *Choregia fulgens* Felder & Rogenhofer, 1875 [by present designation])

**Diagnosis.**— *Tortyra* moths are easily recognized by their bright metallic iridescence of the forewings and body, and the "thickened" appearance of the antennae. The Old World *Saptha* are the only Choreutidae that appear similar, but are not found in the New World and have differences in the wing venation.

**Description.**— Adults small to moderate (8-22mm wingspread). *Head:* frons smooth, with scale tufts at antennal bases; vertex with scales loosely appressed; labial palpus upcurved, smooth-scaled, usually metallic iridescent, with segment 2 twice length of apical segment; antenna with long dorsal scales to near apex, producing thickened



Fig. 1. *Tortyra slossonia* (Fernald): a) ♂, Pahokee, Palm Beach Co., FL, 31 Mar 1975, J. B. Heppner (FSCA); b) ♀, Dreher Park, W. Palm Beach, Palm Beach Co., FL, 1 Apr 1975, J. B. Heppner (FSCA).

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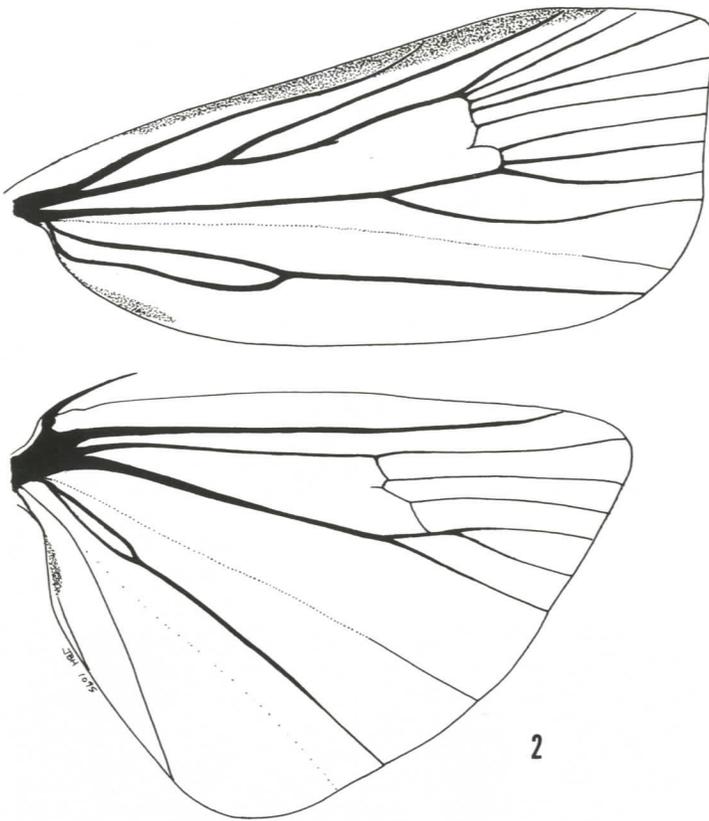


Fig. 2. Wing venation of *Tortyra slossonia* (Fernald) (USNM 77636).

appearance, and sexually dimorphic ventral setae (long in males, minute in females). *Thorax*: robust, smooth-scaled. *Forewing* (Fig. 2) elongate with long pterostigma; apex acute; termen truncate; tornus rounded; dorsal margin slightly convex; chorda incomplete; Sc to near middle of pterostigma;  $R_1$ - $R_3$  to costal margin;  $R_4$  to apex;  $R_5$  to termen;  $M_3$  separated from  $CuA_1$ ;  $CuA$  veins convergent, with  $CuA_2$  distant from end of cell;  $CuP$  present at termen;  $A_{1+2}$  long-stalked at base. *Hindwing*: triangular, with costal margin somewhat convex; apex acute; termen oblique to distinct tornus;  $Sc+R_1$  to near apex;  $R_s$  to apex;  $M_1$ - $M_3$  nearly equidistant;  $M_3$  short-stalked to  $CuA_1$ ;  $CuA$  veins parallel to termen; cubito-anal field enlarged;  $A_{1+2}$  with long basal stalk;  $A_3$  prominent;  $A_4$  minute, ending in stigmal field at anal margin.

*Male genitalia*: uncus absent; tuba analis well developed, with reduced lateral socii, or socii absent, and two elongate sclerotized plates on central membrane; tegumen moderate; vinculum strong, with saccus undeveloped; gnathos absent; valva elongate, usually a protruded apex or saccular tip, sometimes both protruded; setal field largely only on costal margin near apex; juxta-anellus a small flat plate; aedeagus with phallobase, ductus ejaculatorius arising from central area; cornutus reduced, usually absent.

*Female genitalia*: large setose ovipositor; apophyses usually strong; ostium membranous, on intersegmental membrane between segments 7 and 8; sterigma absent; ductus seminalis arising before first loop of ductus bursae near ostium; bulla seminalis moderate; ductus bursae membranous except for a short antrum sclerotization near ostium, followed by spiral coils on remainder of ductus to bursa; corpus bursae rounded and spiculate, with an elongated appendage which fits into anterior spirals of ductus bursae; signum a spicule band.

**Remarks.**— *Tortyra* differ from *Saptha* in having a more quadratic forewing termen and with veins  $R_2$  and  $R_3$  very close together. The forewing chorda is absent or vestigial in *Tortyra*, but present in *Saptha*. Many *Tortyra* species appear the same in maculation,

particularly among species spread over the West Indies and into Mexico. Certain identification requires genitalia dissection. The unusual bursa appendage, which normally is held within the anterior coils of the ductus bursae, is known only among *Tortyra* species in the family Choreutidae. The long ventral antennal setae of male *Tortyra*, and the reduced setae of females is a noticeable sex difference (this can be clearly seen in Fig. 1).

### *Tortyra slossonia* (Fernald)

*Walsinghamia slossonia* Fernald, 1900:244.

**Diagnosis.**— This species is distinguished from other Florida *Tortyra* by the red, occasionally even golden, iridescence of the forewings and their major bands, and the purple head scaling. The male genitalia have the apical protrusion of the valvae pointed distally and upwards, not ventral as in the new species.

**Description.**— Forewing length: 5.2-6.5mm.

**Male** (Fig. 1).— *Head*: purple metallic-iridescent; labial palpus silver with fuscous on apical segment, and white mesad; antenna purple with white band near black apex. *Thorax*: purple iridescent; patagia silver or golden; venter silver, with fuscous and white bands on tarsal segments. *Forewing*: markings metallic-iridescent bronze-red to golden on a fuscous field of white-tipped scales, with the main markings a median vertical band bordered in black and a red-purple band on distal quarter of wing with about 5 linear black streaks basad; a black area near tornus and centrally in apical quarter of forewing; fringe iridescent silvery red; hindwing dark fuscous; venter of both wings fuscous. *Abdomen*: golden iridescent on fuscous, with pale segmental bands; venter silver. *Male Genitalia* (Fig. 4): generic characters, with socii absent and tuba analis plates short (somewhat longer than anellus height); valva with dorsal margin bent towards medial apex, then rounded below apex ventrally; juxta-anellus (Fig. 6) triangular; aedeagus (Fig. 4a) with series of small cornuti.

**Female.**— Same as for male. *Female genitalia* (Fig. 8): generic characters, with papilla analis having two rows of lateral setae; apophyses subequal; ductus bursae with 3 coils near bursa; signum well developed.

**Types.**— *Lectotype* ♀: Biscayne Bay, [Dade Co.], Florida, [ca. 1899, A. T. Slosson], (USNM 77255). *Paralectotypes* (4♂): [same data], USNM (3) and LACM (1). *Lectotype* and *paralectotypes* by present designation.

**Distribution.**— Additional specimens examined total 151, ranging on the east coast of Florida from Palm Beach Co. to the Florida Keys as far south as Windley Key, and on the west coast from Sarasota Co. to Monroe Co. The species occurs generally only near its hostplant, species of *Ficus* trees, in native hardwood hammocks of south Florida. There is one record for Gainesville, Alachua Co., but this evidently is either a transplanted individual, since no *Ficus* grows in nature in Alachua Co., or the specimen is mislabelled. The species probably occurs on Key West but no specimen record is known for this island.

Specimens are known from the northern Bahamas (Nassau).

**Flight Periods.**— Generations are almost continuous in south Florida, with records for every month of the year. The 6 known Bahamas specimens were collected in May and July.

**Hosts.**— *Ficus aurea* (Moraceae) [possibly other species of *Ficus* as well].

**Biology.**—*Tortyra slossonia* can be very common locally and will come to lights whenever collecting is done under or near a host tree, but otherwise adults are active only in bright sunshine. Larvae feed internally on branch leaf buds before the new leaf has opened. Pupation is within the excavated leaf bud.

**Remarks.**—The adults of *T. slossonia* are noticeably more red than the new species described below and generally are somewhat smaller. The type-species of the genus, *Tortyra spectabilis* Walker, shows some similarities to *T. slossonia*, both in maculation and in the genital characters, but *T. slossonia* is most related to *Tortyra ignita* (Zeller) from Cuba. Another new species from eastern Mexico also is very similar, but as in *T. ignita*, there are consistent small differences in the genitalia to distinguish these species, as for example, the shape of the anellus.

### *Tortyra iocyanus* Heppner, new sp.

**Diagnosis.**—A larger species than *T. slossonia*, with a noticeably more blue-green to violet coloration (Fig. 3). The head vertex of gray with white-tipped scales is distinctive. The male genitalia have the apical valval point directed ventrally instead of upwards.

**Description.**—Forewing length: 6.0-7.0mm.

Male (Fig. 3).—**Head:** shining fuscous scales with white-tips; labial palpus silvery laterally, with fuscous on apical segment and white mesally; antenna iridescent purple with white band near black apex. **Thorax:** same as head, with patagia silver iridescent; venter silver; legs silver with fuscous and white bands. **Forewing:** fuscous with white-tipped scales, with metallic iridescent blue-green to violet on basal quarter, as a large median vertical band bordered by black, and as an apical band having about 15 linear black streaks towards base of wing on apical third; a fuscous line on costal margin from basal third to apex; fringe iridescent silver to violet; venter fuscous with white on anal field. **Hindwing:** dark fuscous with pale white streak along cubital vein from base; fringe fuscous and white; venter fuscous with some white as subapical line. **Abdomen:** like thorax; venter white and silver. **Male genitalia** (Fig. 5): generic characters, with socii absent and tuba analis plates long and prominent (about 2.5x length of anellus); valva rectangular with rounded apex, with ventral protruded blunt point; juxta-anellus (Fig. 7) quadrate and indented towards base; aedeagus (Fig. 5a) with minute cornutus.

Female.—Same as for male. **Female genitalia** (Fig. 9): generic characters, with papilla analis having a single row of larger setae; apophyses with posterior pair twice as long as free ends of anterior pair; ductus bursae with 4 coils near bursa; signum moderate.

**Types.**—**Holotype** ♂: FLORIDA.—2 mi N Tavernier, Key Largo, Monroe Co., 20 Jun 1973, J. B. Heppner (FSCA/JBH 182). **Allotype** ♀: same data (FSCA/JBH 599).

**Paratypes** (158♂, 18♀).—FLORIDA.—**Dade Co.:** Matheson Hammock, Miami, 18 Jan 1974 (1♂), J. B. Heppner (FSCA). **Paradise Key,** [Everglades Natl. Park], 1919 (1♂), Schwarz & Barber (USNM). **Homestead,** 23 Feb 1979 (1♂), T. S. Dickel (TSD). **Long Pine Key,** Royal Palm Park, Everglades Natl. Park], 18 Mar 1938 (1♂), E. P. Darlington (ANSP); 26 Apr 1975 (1♂), 28 Apr 1975 (3♂), J. B. Heppner (FSCA).

**Monroe Co.:** Big Pine Key, 25 Mar 1945 (3♂, 3♀) (USNM). Key Largo, 30 Jan 1959 (2♂), H. A. Denmark (FSCA); 4 Apr 1968 (1♀), C. V. Covell Jr (ULK); 17 Jun 1971 (1♂ - AMNH), 21 Jun 1968 (4♂ - CNC), 5 Jul 1965 (1♂), 10 Jul 1965 (1♂), 21 Jul 1965 (2♂ - FSCA,



Fig. 3. *Tortyra iocyanus*, new sp.: a) Paratype ♂, 2 mi N Tavernier, Monroe Co., FL, 20 Jun 1973, J. B. Heppner (FSCA); b) Paratype ♂, Long Pine Key,

1♂ - USNM), 8 Aug 1965 (1♀ - AMNH), 9 Aug 1965 (1♂ - AMNH), 26 Aug 1965 (6♂, 2♀ - AMNH), 14 Sep 1968 (1♂ - CNC), 17 Oct 1967 (2♂ - CNC), 26 Oct 1967 (1♂ - CNC), S. Kemp (MCZ); 2 Oct 1955 (1♂), [J. N. Todd] (FSCA); 9 mi NE Key Largo P.O., 18 Jun 1973 (1♂), J. B. Heppner & J. A. Powell (UCB); 10 mi NE Key Largo [P.O.], 18 Jun 1973 (5♂), J. B. Heppner (FSCA); 15 mi NE Key Largo City, 16 Jun 1974 (1♂), J. B. Heppner (FSCA); N. Key Largo, 3 Jul 1989 (13♂), 26 Dec 1987 (2♂), L. C. Dow (LCD). **Tavernier,** 12 Aug 1955 (1♂), 16 Aug 1955 (1♂ - CNC); 17 Aug 1955 (1♀), 27 Aug 1955 (1♂ - FSCA, 1♀ - AMNH), 13 Sep 1955 (1♂), 16 Sep 1955 (1♂), 13 Oct 1955 (1♂), J. N. Todd (FSCA); 2 mi N Tavernier, Key Largo Key, 20 Jun 1973 (29♂, 10♀), J. B. Heppner (FSCA); 20 Jun 1973 (3♂, 1♀), J. B. Heppner & J. A. Powell (UCB). **Upper Matecumbe Key,** 1 mi SW Islamorada, 27 Apr 1975 (1♂), 18 Jun 1974 (54♂), 21 Jun 1974 (13♂), 23 Jun 1974 (1♂), J. B. Heppner (FSCA). **No Name Key,** 20 Jun 1974 (6♂), J. B. Heppner (FSCA). **Sugarloaf Key,** 2 May 1963 (1♂), H. V. Weems Jr (FSCA). [All in FSCA unless otherwise noted]. **Additional specimens** (1♂, 1♀).—BAHAMAS.—Nassau, 1902 (1♂, 1♀), Carter (BMNH).

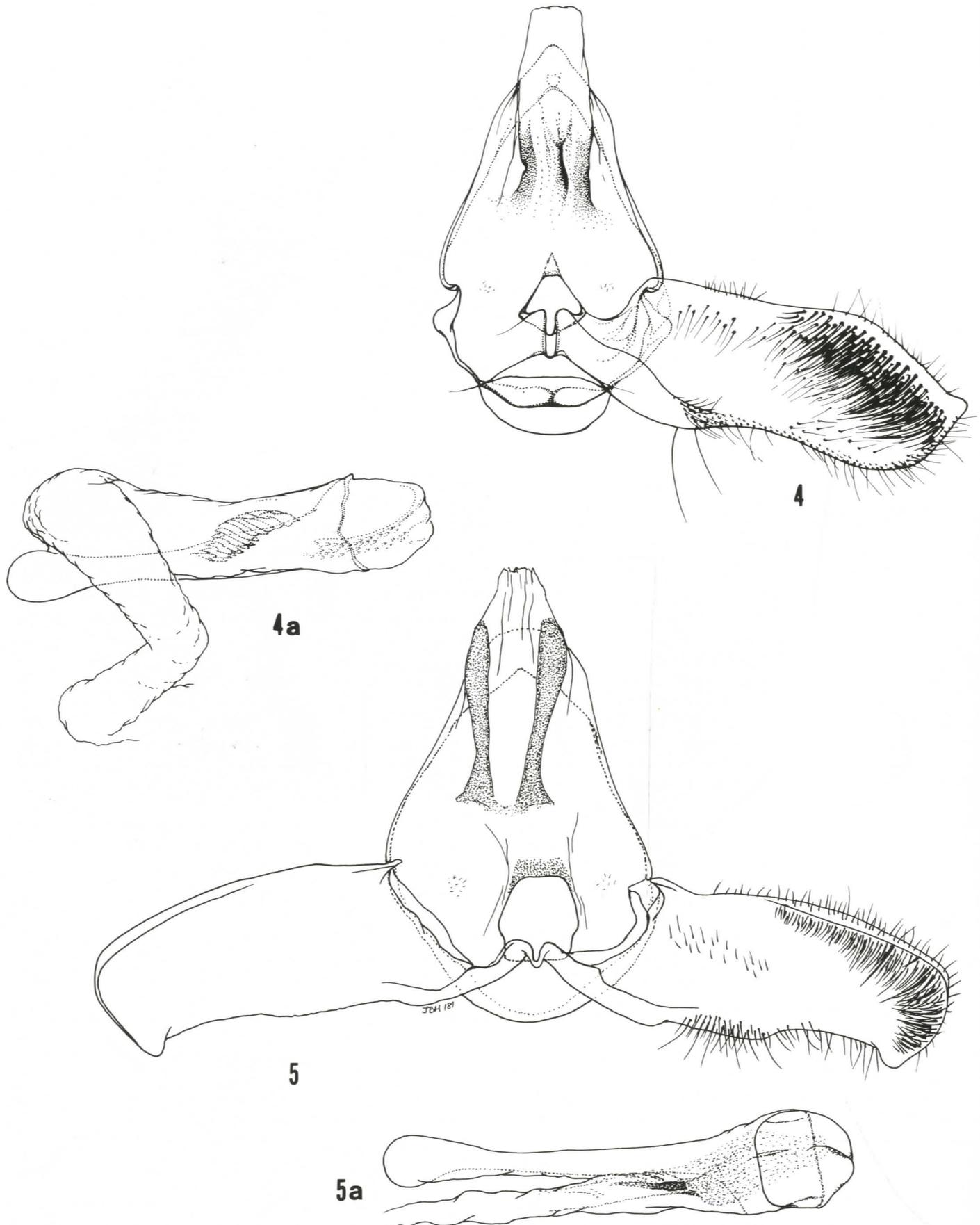


Fig. 4-5. Male Genitalia.— 4. *Tortyra slossonia* (Fernald), Everglade, [Dade Co.], Florida (USNM 77093); 4a) aedeagus. 5. *Tortyra iocyaneus*, new sp., paratype, Islamorada, Monroe Co., Florida, 18 Jun 1974, J. B. Heppner (FSCA/JBH 181); 5a) aedeagus. [Fig. 4 and 4a by George Venable]

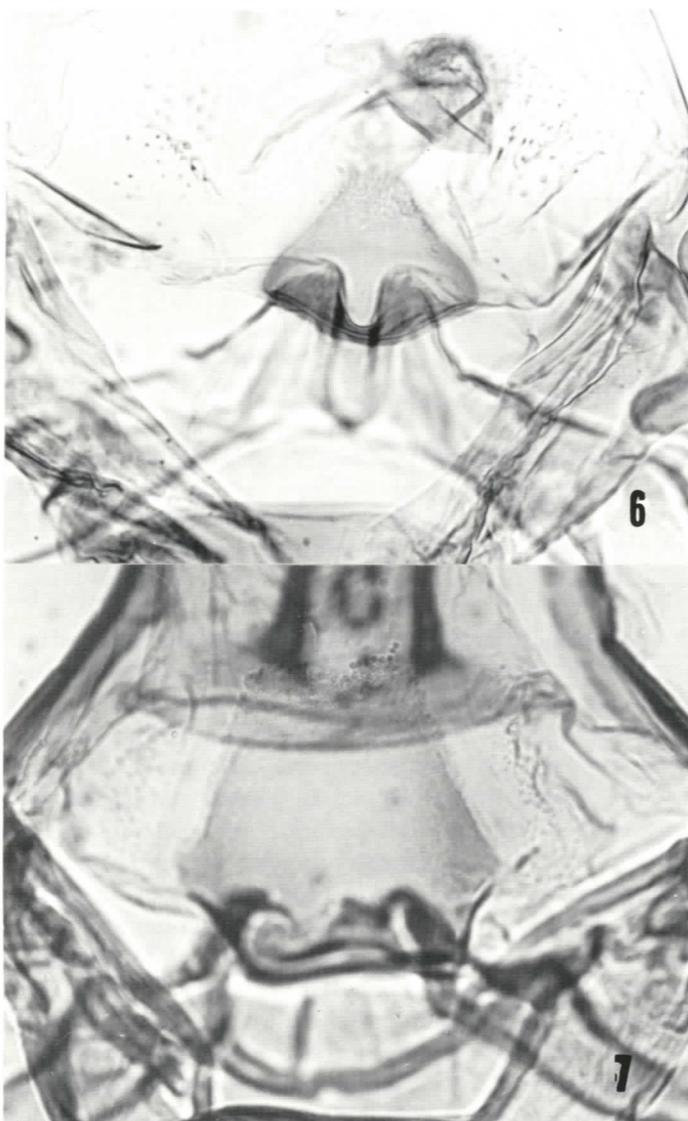


Fig. 6-7. Details of male genitalia anellus.— 6. *Tortyra slossonia* (Fernald), Everglade, [Dade Co.], Florida (USNM 77093). 7. *Tortyra iocyaneus*, new sp., paratype, Islamorada, Monroe Co., 18 Jun 1974, J. B. Heppner (USNM 77812).

**Distribution.**— In the United States *T. iocyaneus* is known only from the Florida Keys and southern Dade County. The species is also recorded from the northern Bahamas (Nassau).

**Flight Periods.**— Generations are almost continuous, with adults recorded for every month of the year except November, and the lack of that month probably represents inadequate collecting.

**Hosts.**— Unknown, but one or more *Ficus* sp. (Moraceae) are suspected.

**Remarks.**— This new species is very similar to *Tortyra aurofasciana* (Snellen) from St. Martin, and undescribed species from Puerto Rico and St. Vincent. The genitalia show consistent small differences, indicating that *T. iocyaneus* has been isolated just long enough from *T. aurofasciana* to become a separate species.

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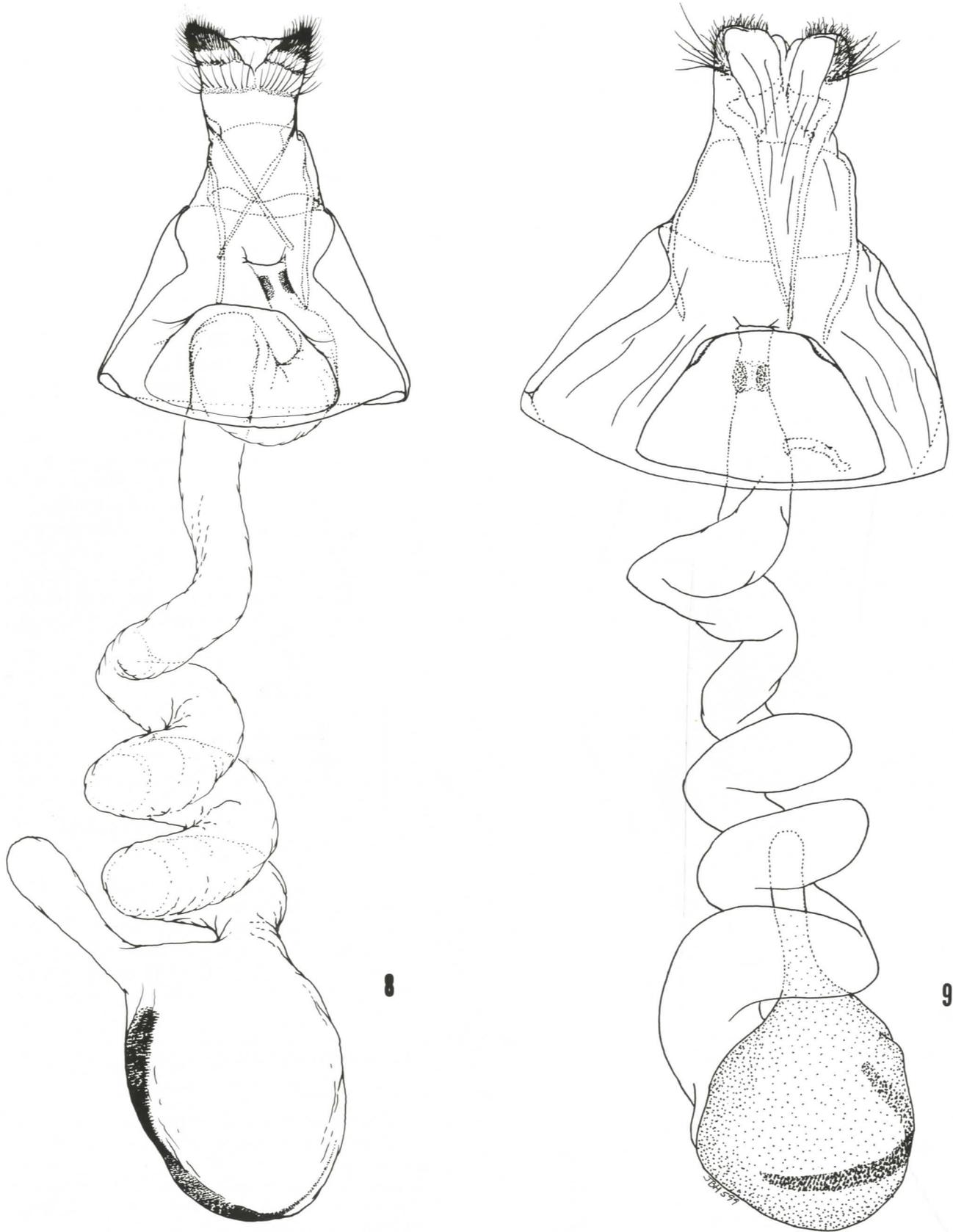


Fig. 8-9. Female genitalia.— 8. *Tortyra slossonia* (Fernald), Siesta Key, Sarasota Co., Florida, 1 Nov 1958, C. P. Kimball (FSCA/JBH 171) [shown with bursa appendage outside of ductus bursae coils]. 9. *Tortyra iocyaneus*, **new sp.**, Allotype, 2 mi N Tavernier, Monroe Co., 20 Jun 1973, J. B. Heppner (FSCA/JBH 599) [Fig. 8 by George Venable].