

PELITROPIS ROTULATA (HOMOPTERA :
TROPIDUCHIDAE) : HOST PLANTS AND DESCRIPTIONS
OF NYMPHS

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ABSTRACT

The 3rd, 4th, and 5th instars of *Pelitropis rotulata* Van Duzee are described and illustrated. Features useful in separating the nymphal instars include differences in body and wingpad sizes, spination of metatibiae and tarsomeres, and numbers of metatarsomeres and body pits. A list of 19 host plants observed in Florida and North Carolina is given.

RESUMEN

Se describen y se ilustran el tercero, el cuarto y el quinto instar de *Pelitropis rotulata* Van Duzee. Las características útiles en distinguir los instares ninfales incluyen diferencias en el tamaño del cuerpo y de los rudimentos de alas, las espinas de las metatibias y las piezas tarsales, y los números de las piezas de los metatarsos y de los fosos del cuerpo. Se presenta una lista de 19 plantas hospederas de Florida y Carolina del Norte.

Pelitropis rotulata Van Duzee is a little-studied tropiduchid known from Florida, Mississippi, North Carolina, and Cuba (Metcalf 1954). Van Duzee (1909) noted that specimens were "beaten from bushes" in Florida. In Cuba, Bruner et al. (1945) reported collections from soursop or guanabana (*Annona muricata* L., Annonaceae), sugar apple (*A. squamosa* L.), and Australian pine (*Casuarina equisetifolia* J. R. & G. Forst., Casuarinaceae). This species also has been taken in blacklight traps (Frost 1964).

Little information is available on the morphology or ecology of the immatures of any tropiduchid. Metcalf and Bruner (1930) provided a brief, partial description of a *P. rotulata* nymph and illustrated but did not describe the 5th instar of *Neurotmeta sponsa* (Guerin-Meneville). Fletcher (1979, 1981) provided information on biology and described and illustrated the eggs and 5 nymphal instars of *Kallitambinia australis* Muir. Harris (1970) and Carnegie (1967) studied *Numicia viridis* Muir under laboratory and field conditions, respectively.

This paper presents descriptions of the 3rd, 4th, and 5th instar nymphs (by SWW), and lists host plants observed at the Archbold Biological Station, Florida and in North Carolina during 1982-1983 (by AGW).

MATERIALS AND METHODS

Specimens were preserved in 70% ethyl alcohol. The 5th instar is described in detail, but only major differences are described for 4th and 3rd

instars. Comparative statements refer to later instars (e.g., less numerous). Measurements are given in mm as mean \pm SE. Length was measured from apex of vertex to apex of abdomen, width across the widest part of the body, and thoracic length along the midline from the anterior margin of the pronotum to the posterior margin of the metanotum.

The collecting data for specimens used in the descriptions are: NORTH CAROLINA: Mecklenburg Co., Charlotte, 4-VII-1982, on amur privet (*Ligustrum amurense* Carr.) (3 third, 8 fourth, 1 fifth instar); FLORIDA: Highlands Co., Archbold Biological Station, 27-IV-1982, on Virginia creeper (*Parthenocissus quinquefolia* (L.) Planch.) (3 fourth, 10 fifth instars), on wax-myrtle (*Myrica cerifera* L.) (1 fourth, 1 fifth instar).

DESCRIPTIONS OF NYMPHS

FIFTH INSTAR (Fig. 3, 4). Length 4.82 ± 0.072 ; thoracic length 1.91 ± 0.026 ; width 2.07 ± 0.049 . Twelve specimens examined.

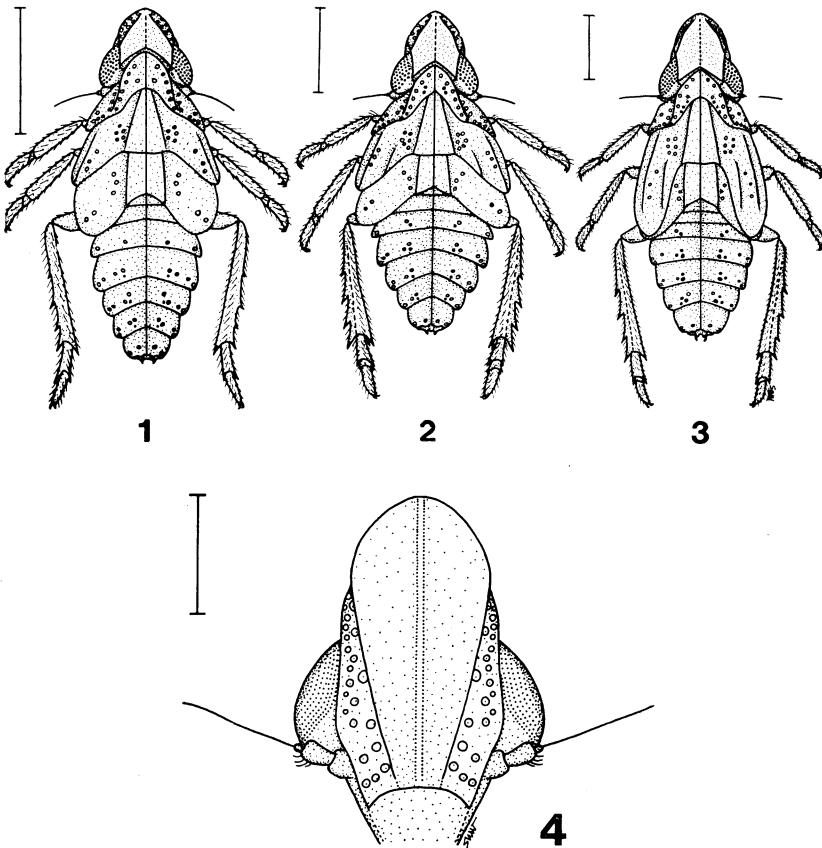


Fig. 1-3. Nymphs of *P. rotulata*. 1. Third instar. 2. Fourth instar. 3. Fifth instar. Vertical bars = 1.0 mm.

Fig. 4. Ventral view of frons of fifth instar *P. rotulata*. Vertical bar = 0.5 mm.

Form elongate, greatly flattened dorsoventrally, widest across mesothoracic wingpads. Body green in life with "tails" of wax; stramineous in alcohol.

Vertex produced anteriorly, narrowing and rounded at apex; lateral carinae extending anteromedially, fading just before apex; divided by longitudinal mid-dorsal intermembranous line into right and left halves. Frons (Fig. 4) ca. $1\frac{1}{2}X$ longer than wide, rounded apically, broadening gradually to level of antennae then narrowing, concave at frontoclypeal juncture; outer lateral carinae originating anterior to eye and extending to frontoclypeal juncture, inner lateral carinae extending from border of frons and vertex almost to frontoclypeal juncture and paralleling outer lateral carinae in posterior $\frac{3}{4}$; with weak longitudinal median carina fading before apex and base; with numerous pits in 2 irregular rows between each inner and outer lateral carina. Clypeus narrowing distally, consisting of subconical, basal postclypeus and elongate, subconical, distal anteclypeus. Beak 3-segmented, extending to mesocoxae; segment 1 covered by anteclypeus, segment 2 ca. $1\frac{1}{2}X$ length of 3. Eyes red. Antennae 3-segmented; scape ringlike; pedicel ca. $2X$ length of scape, lacking pitlike sensoria but covered with small setae on dorsal aspect; flagellum whiplike distally with bulbous base ca. $\frac{1}{4}$ length of pedicel.

Thoracic nota divided by longitudinal mid-dorsal line into 3 pairs of plates. Pronotum with anterior margin rounded, posterior margin sinuate; each plate with outwardly curved carina originating anteromedially, forming part of anterior margin, and extending posterolaterally almost to posterior margin of plate; with ca. 22 pits on plate (lateralmost pits often not visible in dorsal view). Mesonotum with median length ca. $2\frac{1}{2}X$ that of pronotum; each plate with longitudinal oblique (inner) carina in median $\frac{1}{4}$, partial longitudinal (intermediate) carina originating near middle of plate and extending almost to medial edge of wingpad in lateral $\frac{1}{2}$ - $\frac{3}{8}$, and outwardly curved partial (outer) carina paralleling lateral margin in lateral $\frac{1}{4}$; group of 6 pits just lateral to inner carina and row of 3 pits just medial to outer carina; wingpad extending to tip of metanotal wingpad. Metanotum with median length ca. $\frac{3}{4}X$ that of mesonotum; each plate with longitudinal carina in median $\frac{1}{4}$, group of 3 pits lateral to carina; wingpad extending to abdominal tergite 4. Pro- and mesocoxae elongate, posteromedially directed; metacoxae globose, fused to metasternum; remaining segments of legs with rows of setae. Metatibiae with 3 black-tipped spines on lateral aspect of shaft and transverse row of 5 black-tipped spines at apex on ventral aspect. Pro- and mesotarsi each with 2 tarsomeres; tarsomere 1 wedge-shaped, tarsomere 2 subconical and curved near apex, with pair of brown claws and pulvillus apically. Metatarsi with 3 tarsomeres; tarsomere 1 elongate, subcylindrical with transverse row of 5 black-tipped spines at apex on ventral aspect; tarsomere 2 somewhat wedge-shaped, with 2 small black-tipped teeth on ventral aspect, 1 at apex and 1 laterally; tarsomere 3 similar to tarsomere 2 of other legs.

Abdomen 9-segmented; segments 1-7 visible dorsally, segments 8-9 telescoped anteriorly. Tergites 2-7 with weak median longitudinal carina; tergites 3-7 curving around lateral margin to ventral aspect; tergites 3-6 each with black mark on either side near posterior margins near lateral $\frac{1}{2}$; tergite 7 with reddish marks on caudal margin. Each tergite with the following number of pits on either side of midline (lateralmost and ventral

pits often not visible in dorsal view): tergite 3 with 2-3, tergites 4-6 with 6, tergite 7 with 4. Segments 7-8 each with pair of obscure, white caudal wax-pads. Segment 9 elongate vertically, surrounding anus.

FOURTH INSTAR (Fig. 2). Length 3.82 ± 0.112 ; thoracic length 1.48 ± 0.021 ; width 1.54 ± 0.019 . Twelve specimens examined.

Antennae with bulbous portion of flagellum ca. $1/3$ length of pedicel.

Pronotal plates each with ca. 19 pits. Each mesonotal wingpad strongly lobate, covering ca. $1/2$ of metanotum laterally. Each metanotal plate with 2 pits in posterolateral corner, wingpad extending to abdominal tergite 2 or 3. Metatarsomere 2 obscure, with 1 very small black-tipped tooth on ventral aspect.

THIRD INSTAR (Fig. 1). Length 3.07 ± 0.067 ; thoracic length 1.17 ± 0.183 ; width 1.17 ± 0.183 . Three specimens examined.

TABLE 1. HOST PLANTS OF *Pelitropis rotulata* OBSERVED IN FLORIDA AND NORTH CAROLINA DURING 1982-83. EACH COLLECTION RANGED FROM 1-10 + INDIVIDUALS.

Species	No. of collections	Locality
Aquifoliaceae		
<i>Ilex</i> sp.	1	FL
Compositae		
<i>Baccharis halimifolia</i> L.	5	FL, NC
Elaeagnaceae		
<i>Elaeagnus multiflora</i> Thunb.	3	NC
Ericaceae		
<i>Lyonia</i> sp.	1	FL
<i>Rhododendron</i> sp.	1	FL
<i>Vaccinium corymbosum</i> L.	1	FL
<i>Vaccinium</i> sp.	1	FL
Fagaceae		
<i>Quercus phellos</i> L.	1	FL
Hamamelidaceae		
<i>Liquidambar styraciflua</i> L.	1	NC
Hypericaceae		
<i>Ascyrum edisonianum</i> Small	1	FL
Lauraceae		
<i>Persea borbonia</i> (L.) K. Spreng.	1	FL
Myricaceae		
<i>Myrica cerifera</i> L.	4	FL
Oleaceae		
<i>Ligustrum amurense</i> Carr.	2	NC
Polygonaceae		
<i>Coccoloba uvifera</i> (L.) L.	1	FL
Rosaceae		
<i>Prunus serotina</i> J. F. Ehrh.	2	NC
<i>Pyrus communis</i> L.	1	NC
Ulmaceae		
<i>Ulmus alata</i> Michx.	2	NC
Vitaceae		
<i>Parthenocissus quinquefolia</i> (L.) Planch.	5+	FL, NC
<i>Vitis rotundifolia</i> Michx.	1	FL

Pronotal plates each with ca. 15 pits. Mesonotal plates each lacking intermediate carina, with group of 5-6 pits just lateral to inner carina; wingpad slightly lobate, covering ca. 1/3 of metanotum laterally. Metatarsi with 2 tarsomeres; tarsomere 2 similar to 3 of later instars.

Abdominal tergites 3-6 with black marks reduced. Each tergite with the following number of pits on either side of midline: tergite 3 with 2, tergites 4-6 with 5, tergite 7 with 3.

HOST PLANTS

Nymphs of *Pelitropis rotulata* were collected on 19 plant species (Table 1). Based on observations and collections made in Florida during mid-April, the largest populations (4th and 5th instars) of this apparent general feeder developed on Virginia creeper (*P. quinquefolia*), and wax-myrtle (*M. cerifera*). The various hosts were growing in bayheads, sand pine scrub, scrubby flatwoods, and palmetto flatwoods at the Archbold Biological Station, 13 km south of Lake Placid in Highlands County.

At Charlotte, North Carolina, the largest numbers were observed on groundsel bush (*Baccharis halimifolia* L.) and amur privet (*Ligustrum amurense* Carr.) growing along railroad tracks and in vacant lots. Third to fifth instars were collected during the 1st week of July; 5th instars and adults, during the 1st week of August. Based on 2 years of intermittent collecting from April through August, we believe that the North Carolina populations are univoltine.

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REFERENCES CITED

- BRUNER, S. C., L. C. SCARAMUZZA, AND A. R. OTERO. 1945. Catalogo de los insectos que atacan a las plantas economicas de Cuba. Bol. Estac. Exp. Agron., Cuba 63: 1-246.
- CARNEGIE, A. J. M. 1967. Field populations of *Numicia viridis*, Muir. Proc. South African Sugar Techn. Assoc. 41: 178-9.
- FLETCHER, M. J. 1979. Egg types and oviposition behaviour in some fulgoroid leafhoppers (Homoptera, Fulgoroidea). Australian Ent. Mag. 6: 13-8.
- . 1981. The external morphology of *Kallitambinia australis* Muir (Homoptera: Tropiduchidae). J. Australian Ent. Soc. 20: 157-65.
- FROST, S. W. 1964. Insects taken in light traps at the Archbold Biological Station, Highlands County, Florida. Florida Ent. 47: 128-61.
- HARRIS, R. H. G. 1970. Rearing *Numicia viridis* Muir (Homoptera: Tropiduchidae). J. Ent. Soc. Southern Africa 33: 49-52.
- METCALF, Z. P. 1954. General Catalogue of the Homoptera. Fasc. IV. Fulgoroidea, Part 11. Tropiduchidae. 176 p.
- , AND S. C. BRUNER. 1930. Cuban Fulgorina, 1. The families Tropiduchidae and Acanaloniidae. Psyche 37: 395-424.
- VAN DUZEE, E. P. 1909. Observations on some Hemiptera taken in Florida in the spring of 1908. Bull. Buffalo Soc. Nat. Sci. 9: 149-230.