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AN *OXALIS* (OXALIDACEAE) FEEDING LARVA, *GALGULA PARTITA* (NOCTUIDAE)

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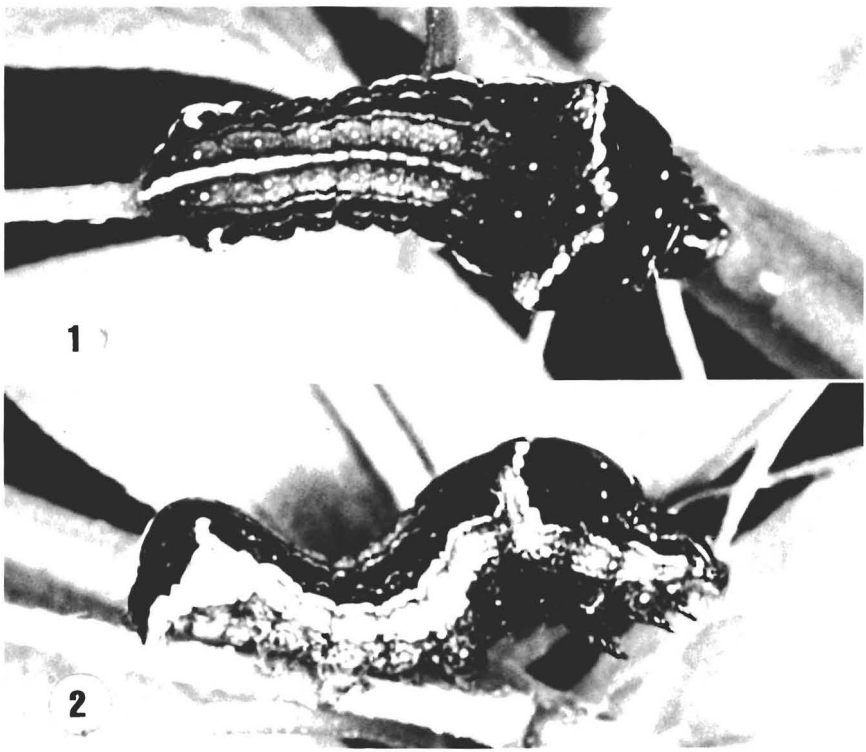
ABSTRACT. The ultimate instar larva of *Galgula partita* Guenée (Lepidoptera: Noctuidae) is described and illustrated. The hostplant for the larva of *G. partita* is documented as *Oxalis* (Oxalidaceae) which apparently is an unique larva/plant association among North American Lepidoptera.

This paper presents the first description of the ultimate instar larva of *Galgula partita* Guenée (Noctuidae: Amphipyrinae) and the first substantiated, published report of the larva's host. The detailed larval account may in time help establish the phylogenetic position of *Galgula* Guenée, which has no obvious relative, according to Forbes (1954), and is represented only by *partita* in Canada and the U.S.A. (McDunnough, 1938).

The only known larval host of *partita* is *Oxalis*. This statement is based on McFarland's (1965) indication, on the information in the description that follows, and on unpublished information at the U.S. National Museum of Natural History. Records from the latter source show that *Galgula partita* larvae were collected on *Oxalis* in Clemson, South Carolina, 15 December 1956 and were intercepted by USDA Plant Quarantine officials at Nogales, Arizona, 4 December 1960 and 4 August 1962 (Weisman, pers. comm.).

Associations of lepidopterous larvae feeding on species of Oxalidaceae apparently are rare. This is intriguing because there are seven genera and approximately 800 species in this plant family (Robertson, 1975). The situation may be related to the high concentration of oxalate in these plants. Details of the plants' chemistry were summarized by Hegnauer (1969), but additional speculation regarding possible plant resistance, etc., is beyond the scope of this paper. Basic larval hostplant indices and bibliographies (e.g., Forbes, 1954; Kimball, 1965; Kingsolver & Sanderson, 1967; Godfrey, unpubl. computerized host catalog) do not list any North American larvae of Lepidoptera from the Oxalidaceae. To my knowledge the only other published account of a lepidopteran being associated with an oxalid is McFarland's (1979) rearing of a geometrid, *Metallochlora militaris* (Lucas), on *Averrhoa carambola* L. (introduced plant) in Australia.

All line drawings in the following illustrations were done to scale, and explanation of the abbreviations was published previously (Godfrey, 1972).



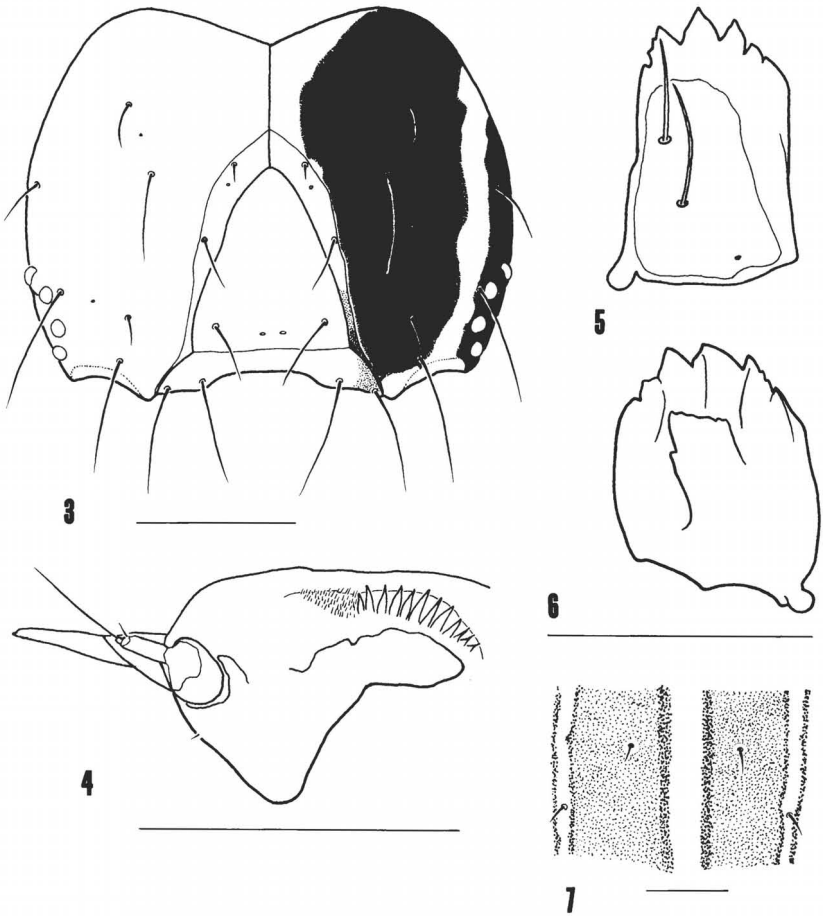
FIGS. 1–2. *Galgula partita:* **1,** dorsal view; **2,** lateral view (photographs by J. G. Franclemont).

Galgula partita Guenée

General. Head: integument smooth; width 1.40–1.50 mm ($\bar{x}$ = 1.47). Total length 12–17 mm ($\bar{x}$ = 14.57). **Body:** integument smooth; distinctly swollen at first abdominal segment (Abl) (Fig. 1), abruptly tapering cephalad and slightly tapering caudad to Ab3; segments Ab4–7 of equal width, declivous from Ab8–Ab10 (Figs. 2, 9). All setae simple. Prolegs present on Ab3–6, 10; size increasing only slightly caudad on Ab3–6, those on Ab10 slightly smaller than on Ab6. Crochets mesoseric, uniordinal.

Head (Fig. 3). Postgenal sutures parallel to each other; length of epicranial suture 0.42–0.46 mm ($\bar{x}$ = 0.45); height of frons (apex to Fa's 0.44–0.50 mm ($\bar{x}$ = 0.46); distance F1–F1 0.28–0.34 mm ($\bar{x}$ = 0.30); AFa cephalad and AF2 caudad of apex of frons; A1–3 forming right to slightly obtuse angle at A2; P1–P1 0.70–0.81 mm ($\bar{x}$ = 0.73); P2–P2 0.84–0.91 mm ($\bar{x}$ = 0.87); P1 insertion approximately midway between epicranial suture and L; L cephalad of juncture of adfrontal ecdysial lines; antennaria concave; Oc1–Oc2 0.03–0.04 mm ($\bar{x}$ = 0.03); Oc2–Oc3 0.02–0.03 mm ($\bar{x}$ = 0.03); Oc3–Oc4 0.03 mm ($\bar{x}$ = 0.03).

Mouthparts. Hypopharyngeal complex (Fig. 4): spinneret elongate, tubular, its apex and tip of Lp2 extending subequally, length about 4.0 times length of Lpsl; length of Lpsl about 6.0 times that of stipular seta, 2.2 of Lpl, 10.0 of Lps2, 0.38 of Lp2; distal and proximal regions rather continuous; distal and proximomedial regions void of spines; proximolateral region bearing short, thin spines distally and about 12 flat, stout, lateral spines. **Mandible** (Figs. 5, 6): two outer setae present, distant from each other;

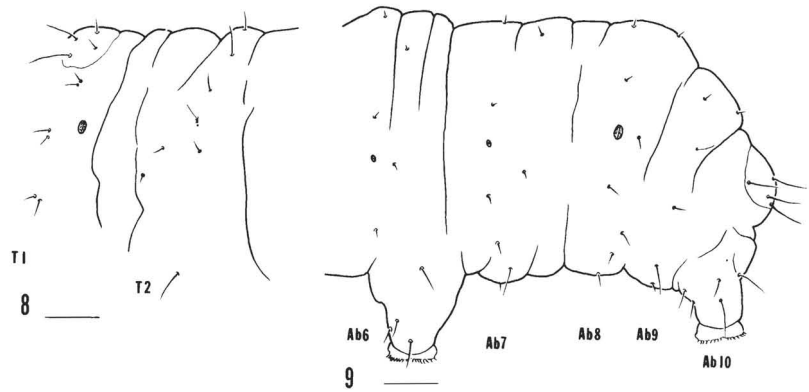


FIGS. 3–7. *Galgula partita:* **3,** head capsule, frontal view; **4,** hypopharyngeal complex, left lateral view; **5,** left mandible, outer surface; **6,** left mandible, oral surface; **7,** dorsum of seventh abdominal segment. Scale lines equal 0.5 mm.

inner ridges two and three terminating about at tips of outer teeth; inner tooth present, prominent, flat, longer than wide, sometimes broken and represented only by basal scar; first outer tooth small; second outer tooth serrated on side opposite first tooth; third and fourth teeth prominent, acutely angular; fifth tooth reduced but angular; sixth tooth reduced, rounded.

Thorax. Segment T1: SD1 & 2 setal insertions separated from edge of cervical shield (Fig. 8): interspace D1–D1 about 0.78 XD1–XD1; D2–SD2 about 1.53 SD2–XD2; setae SD1 and L2 present; spiracle elliptical, peritreme uniformly narrow. T2 (Fig. 8): D1–D2 about 1.0 D2–SD2; SD1 hairlike; coxal bases contiguous to narrowly separated; tarsal setae 1–3 slightly thickened, 4 merely setose; base of tarsal claw produced, rounded to obtusely angulate.

Abdomen. Segment Ab1: 2 SV setae. Ab2–6 with 3 SV setae, 1 on Ab 7 & 8. Dorsal and lateral chaetotaxy of Ab6–10 as in Fig. 9. Setae D2 set in white subdorsal lines on



FIGS. 8–9. *Galgula partita:* **8,** dorsolateral chaetotaxy of prothoracic (T1) and mesothoracic (T2) segments; **9,** dorsolateral chaetotaxy of abdominal segments (Ab6–10). Scale lines equal 0.5 mm.

Ab2–7 (Fig. 7). Ab9: SD1 semi-hairlike, weaker than and distant from D1 and D2. Ab10: posterior margin of anal shield entire; dorsal surface of anal shield broadly convex; subanal setae merely setose, subequal to lateral setae of anal proleg. Height of spiracle on Ab7 0.08–0.11 mm ($\bar{x}$ = 0.09), on Ab8 0.12–0.15 mm ($\bar{x}$ = 0.13). Length of dorsal setae on Ab7 0.12–0.16 mm ($\bar{x}$ = 0.14).

Coloration (living material). **Head** (Fig. 3): contrastingly marked, coronal and ocellar stripes glossy black, remainder of head essentially white or yellowish white; gular regions tinged with pink. **Body** (Figs. 1, 2): ground color brown; dorsal and subdorsal areas of T1–3 and subdorsal area of Ab1–9 dark brown; subdorsal area on Ab1–7 divided into dorsal and ventral stripes by thin, white line; dorsal area of Ab1–9 tannish brown; lateral area white with strands of tannish brown, continuous to tip of anal proleg; ventral area with strands of dark brown underlaid by white flecks; middorsal and subdorsal lines white, prominent on dark brown cervical shield, diffuse to absent on T2–Ab2; middorsal line of Ab3–10 white, continuous, becoming more distinct caudad; subdorsal lines on corresponding segments white and continuous but thinner, less distinct; dorsal margin of lateral area white, passing beneath spiracles on T1 and Ab1 then curving sharply dorsad on Ab1 and ending at D2, resuming at normal level at posterior margin of Ab1 and continuing caudad, running under but touching spiracles on Ab2 & 3 and passing above spiracles on Ab4–8, bending sharply dorsad on Ab8 to SD1. Spiracles dark brown to black with black peritremes. Thoracic legs black.

Material examined. 4 specimens: Highlands, Macon Co., North Carolina, August–September 1958, J. G. Franclemont, *Oxalis* sp. (yellow) (Franclemont collection). 3 specimens: IL.: Cook Co., University of Illinois Chicago Circle Campus, 16 August 1979; host—*Oxalis* sp. in greenhouse; coll. Larry Sykora (Illinois Natural History Survey collection).

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