ON THE IMMATURE STAGES OF *PSALYDOLYTTA FUSCA* (COLEOPTERA: MELOIDAE)

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Abstract. – Egg masses laid by 27 females of Psalydolytta fusca (Olivier) from The Gambia contained a mean of 125.2 eggs. Mean incubation time at 27°C was 22.3 days in 19 masses that produced larvae. Within individual egg masses the hatching period extended over a period of 2–9 days (mean 5.1). Anatomical characteristics of the triungulin (first instar) larva, described in detail, confirm that *Psalydolytta* is an epicautine. The larva is the largest known in Meloidae and has unusually abundant setae on the dorsum of the head and body. Triungulin larvae of *P. fusca* and first grub larvae presumed to represent this species were found in egg pods of the grasshopper *Cataloipus fuscocoeruleipes* (Sjöstedt) at Tumani Tenda, Western Division, The Gambia. This is the first record of a meloid preying on an acridid of the subfamily Epyrepocnemidinae.

The genus Psalvdolvtta Péringuey is represented in Africa by 42 species and in India by an additional 10 (Kaszab, 1954; Saha, 1979; Selander, 1986). In both regions adults feed primarily or exclusively on grasses, including wild species of Andropogon and Cymbopogon as well as cultivated species of Eleucine, Oryza, Panicum, Pennisetum, Setaria, Sorghum, and Zea. Feeding, which generally occurs at night, destroys flowers and developing grains. When adults are numerous they may seriously reduce crop yields or, at worst, destroy an entire harvest. In addition, adults attracted to lights at night in public places are sometimes a nuisance because, when crushed against the skin, they cause blistering and other irritation (Giglioli, 1965; Zethner et al., 1985; and other references in Selander, 1986).

In the taxonomic literature of the Meloidae *Psalydolytta* has been associated consistently with the genus *Epicauta* Dejean, which is assigned, together with its close relatives, to a separate tribe or subtribe of Meloinae (e.g., Kaszab, 1954, 1959, 1969; Selander, 1955; MacSwain, 1956; Saha, 1979). Indeed, there is little to distinguish Psalydolytta as a genus apart from Epicauta except the peculiar conformation of the mandibles of the adult, and even this is paralleled to a certain extent in some Nearctic and Ethiopian species that undoubtedly belong in Epicauta. The mandibles in Psalydolytta are enlarged, strongly bent backward (vaulted), and do not overlap distally as they do in most Meloidae. It has been conjectured that these modifications are in some way adaptive in feeding on the inflorescences of wild grasses (Selander, 1986). Additional evidence for associating Psalydolytta with Epicauta is found in Fletcher's (1914) report that young larvae of the Indian P. rouxi (Castelnau) fed freely on the eggs of the pyrgomorphid Colemania

sphenarioides Bolívar in the laboratory and that a pupa was found associated with the eggs of this grasshopper in nature. Fletcher did not describe the larva of *P. rouxi*, and there are no other references to the immatures of *Psalydolytta* in the literature.

Recently, interest in the biology of Psalydolytta has been stimulated by economic losses resulting from attacks on pearl millet (Pennisetum americanum) in West Africa by several species, the most important of which are P. vestita (Dufour), in Mauritania and Mali, and P. fusca (Olivier), in southern Senegal, The Gambia, and northeastern Guiné-Bissao. Partial results of a three-year study of the bionomics, economic impact, and control of P. fusca in The Gambia are given in the present paper. Specifically, the egg stage is treated briefly, the triungulin (first instar) larva is described in detail, and evidence concerning the mode of larval development is reported. The principal results of the study will be published elsewhere (Zethner and Laurense, 1987).

EGG STAGE

Between 18 September and 20 October 1985, 50 gravid females of Psalvdolvtta fusca collected in pearl millet fields, at a light trap in Yundum, and at lights at the Yundum airport were confined individually in cotton-stoppered glass vials 10 cm in height and 2.5 cm in internal diameter. Each vial contained a strip of paper that, by limiting the movement of the female, prevented eggs from being trampled after they had been laid. No food was provided. This procedure was adopted after trials in which adults were maintained in groups of 2-11 in plastic cages with earheads of pearl millet as food resulted in short survival (median 10 days) and little oviposition. (In retrospect it appears that the poor results were caused by overcrowding.)

Over a period of 1–5 days of confinement (mean = 2.0 days), 27 of the females oviposited, producing from 36 to 225 eggs each

(mean = 125.2, SE = 9.08). Comparable figures for *P. rouxi* reported by Fletcher (1914) were 50 and 125, respectively. The egg masses of both species are numerically smaller than average for Meloidae but well within the normal range for species of *Epicauta*, which characteristically produce relatively large eggs in masses of at most a few hundred (Adams and Selander, 1979; Selander, 1981). Individually, the eggs of *P. fusca* are cream colored, weakly tapered, about 3.5 mm in length, and roughly $\frac{1}{3}$ as wide as long.

Shortly after deposition, eggs were removed from the glass vials and, using a fine brush, transferred in groups of five to plastic vials 7 cm in height and 1 cm in internal diameter in which they were incubated in darkness at 100% R.H. and 30°C. Hatching was recorded in 15 of the egg masses from individually confined females and in four additional masses from females kept in plastic cages with food material. Among these 19 masses the percentage of hatching ranged from 0.5 to 89.9, with a mean of only 33.8 (SE = 6.48). The low mean value is attributable, we believe, partly to failure of females, under starvation, to fertilize eggs properly and partly to damage to eggs as a result of handling. Except for four cases in which only one or two eggs hatched, hatching of the eggs in a mass occurred over a period of 2-9 days (mean = 5.1, SD (pooled estimate) = 1.42, n = 15). Mean days to hatching in the 19 masses ranged from 20.1 to 25.0 days, with an unweighted mean of means of 22.3 days (SE = 0.31). According to Fletcher (1914), eggs of P. rouxi, at unspecified temperature, hatched in about 15 days.

DESCRIPTION OF TRIUNGULIN LARVA Figs. 1–3, 4b

Anterior, median and posterior rows of setae on a sclerite are denoted AR, MR, and PR, respectively. Within a row, a seta is referenced by its ordinal position from the midline of the body. Lengths of segments of the antenna and maxillary and labial palpi were measured on the ventral midline.

Color medium brown; pronotum dark brown in posterior ²/₃ and along lateral margins in anterior ¹/₃. Sclerotized cuticle with weak, transverse reticulations, becoming obsolete medianly on dorsum and venter of head and medianly on pronotum; weak tendency for reticulations on abdominal pleurites and posterior abdominal tergites to be drawn into short spines; membranous cuticle, except that of clypeus, smooth. Setae in general long, conspicuous; those on dorsum of head, thorax, and abdomen unusually numerous, for most part bifid (very rarely trifid) at apex; ventral setae normal in number, very rarely divided at apex.

Head (excluding labrum) as long as proand mesothorax combined, barely wider than long, widest across stemmata; sides constricted, sinuate behind middle, reducing basal width to 7/10 maximum width. Stem of epicranial suture about $\frac{2}{3}$ as long as head; lateral arms attaining antennal foramina. Stemma unusually large and prominent, perfectly spherical; diameter greater than $1-\frac{1}{2}$ width of antennal segment II, greater than width of maxillary palpal segment II. Epicranium with 114-118 setae (12-14 on front, 10-14 lateral, 10 ventral); dorsal setae posteriad of level of stemmata clustered as in Fig. 1, not arranged in recognizable rows; major ocular seta inserted just mesad of stemma, not bifid, longer than antenna, at least $2 \times$ as long as most setae outside ocular area; seta directly posteriad of stemma longer than most other setae, inserted very near stemma; four minor setae on each side of epicranium at base, arranged longitudinally in nearly straight line; sensory cone mesad of posteriormost minor seta and another just anteriad of major ocular seta. Four or (as shown in Fig. 1) five setae on each side of frontal area, their insertions inset from branch of epicranial suture but roughly paralleling it; setae subequal in length. Row of

4 setae on anterior margin of front; AR₂ much longer than other frontal setae; sensory cone and pit between AR₁ and AR₂. Clypeus semimembranous, microstriate. Labrum with anterior 1/2 of dorsal surface membranous in median 1/2; anterior margin rounded, very long seta (1/2 as long as mandible) on anterior corner, shorter one submarginally between corner and midline, and short, heavy marginal seta between these two setae; median transverse of 6 setae (MR₃ nearly at lateral margin); 4 setae on each lateral margin. Venter of labrum densely set with spines that project anteriad, anteriormost spines projecting well beyond anterior labral margin; each side with seta near lateral margin and another near midline at level of clypeolabral suture. Gula sharply tapered posteriad, reducing minimum width to $\frac{1}{12}$ maximum width; length of gula 1/2 greatest width of head; gular setae exceeding anterior margin of gula, length of setae about 4/5 gular width. Antenna about 1/4 as long as head; segment I $2 \times$ as wide as long; II sinuate, nearly $3 \times$ as long as I, nearly $2 \times$ as long as wide; III $\frac{2}{5}$ as long as II, $2 \times$ as long as wide; sensory cone of II perfectly conical, 7/8 as wide as long, as long as, and nearly $2 \times$ as wide as, III; short, setiform organ in membrane beside cone; 3 apical setae on segments II and III (1 dorsal, 2 lateral), seta on posterior (outer lateral) margin of each segment longer than other two; terminal seta of III short, $1\frac{1}{5}$ × as long as II. Mandible robust; length (ventral condyle to apex) $\frac{3}{5}$ head length, $2 \times$ basal mandibular width; 6 coarse, rounded teeth on mesal margin; proximal seta slightly longer than distal seta, as long as gular seta. Maxilla with cardo slender; stipes each with 3 long setae and 2 sensory pits ventrally near base, middle seta longer than others, longer than maxillary palpal segment III, mesal margin of stipes with several seta; mala with 2 long and 2 short, rather stubby setae. Maxillary palpus ³/₅ as long as mandible; segments I and II equal in length, $2\frac{1}{2} \times$ as wide as long, seta

on mesal margin of II as long as longest malar seta; III $2\frac{1}{3} \times$ as long as II, nearly $2 \times$ as long as wide, widest at basal ²/₅, lateral margin evenly curved; sensory area of III extending about ³/₅ length of segment, not overlapping onto ventral surface, papillae rodlike, separated by average distance equal to their length, not obscuring one another in dorsal view, 2-segmented sensory appendix ²/₃ as long as II. Labium with prementum II transverse, emarginate anteriorly, with pair of short setae and sensory pits; prementum I deeply emarginate anteriorly, with pair of short and pair of long setae; pair of long setae on anterior labral margin between palpi; dorsal surface of prementum I densely spinous, with anteriormost spines visible along anterior margin in ventral view (not shown in Fig. 1). Labial palpus 1/2 as long as maxillary palpus, slender, cylindrical; segment I $2\frac{1}{4}$ × as wide as long, with short ventral seta; II weakly tapered, $4^{3/4} \times$ as long as I, $2\frac{1}{10}$ × as long as wide, mesal margin nearly straight, lateral margin slightly curved, with 1 dorsal seta, inserted at basal ¹/₃, attaining sclerotized distal margin, 2-segmented sensory appendix slightly narrower than that of maxillary palpus.

Thorax with line of dehiscence complete on pro- and mesonotum, weak, incomplete on metanotum. Pronotum widest at base, about $1\frac{1}{2}$ × as wide as long, as wide as head and $\frac{1}{10}$ as long; sides nearly straight; about 134 setae, not arranged in recognizable rows. Mesonotum a little more than $\frac{2}{5}$ as long as pronotum, nearly as wide; sides rounded, convergent anteriad; about 42 long setae. Metanotum similar to mesonotum; about 46 long setae. Thoracic venter not sclerotized; each sternum with 4 setae in two rows; setae in AR of prosternum very short, widely separated from each other; setae of mesoand metasternum much longer than longest setae on prosternum.

Abdomen moderately tapered; tergite V slightly shorter than metanotum, ¹/₃ as long as wide. All long setae on tergites I–VIII divided at apex. Long setae on tergites I– VIII arranged in median and posterior (marginal) rows (MR actually well posteriad of middle); MR setae shorter than PR setae; MR with 16 or 18 setae; PR with 32 setae on I-V, 28 on VI and VII, 20 on VIII. Spinelike evaginations at bases of PR setae strongly developed on tergites I-IV, weak on V, absent on VI-IX; no evaginations at bases of MR setae; tergite V with PR setae ⁴/₅ as long as tergite. One pair of caudal setae on segment IX, a little shorter than segments VII-IX combined. Seta just laterad of caudal seta thicker than other tergal setae, ¹/₃ as long as caudal seta. Setae on pleurites and abdominal venter not divided at apex, generally longer than tergal setae. Pleurites large, distinctly separated from tergites, wider than long; pleurite I with 2 setae, II-VIII each usually with 3 (sometimes with only 2) long setae. Sternites of segments I-VII reduced to pair of small, narrow sclerites; sternites VIII and X well developed, undivided; sternum I with 2 setae of equal length on each sternite; II-IX each with PR of 6 setae, PR1 longer than rest on II-VII, inserted at posterior end of sternite; II-VIII with MR of 2 setae, these shorter than PR₁, inserted at anterior end of sternite on II-VII.

Spiracles round. Mesothoracic spiracle ventral; diameter ²/₅ that of stemma; sclerous ring produced anteriad to support an erect seta. Abdominal spiracles set in lateral ¹/₃ of pleurite, equidistant from anterior and posterior margins; spiracle I ⁷/₁₀ diameter of mesothoracic spiracle; II–VIII progressively slightly smaller; VIII about ⁴/₅ diameter of I.

Legs with coxae $2 \times$ as long as wide. Femora I–III progressively slightly longer, tibiae I–III markedly so. All lanceolate setae heavy. Coxae each with 4 long setae, one of which is lanceolate on I and II. Trochantins each with 4 setae, 3 of which are lanceolate on I and II. Femur I with 6 anterior and 5 posterior lanceolate setae; II and III each with 5 anterior and 4 posterior lanceolate setae; femur III ¹/₄ as deep as long. Tibiae with







Fig. 2. Triungulin larva of *Psalydolytta* fusca, dorsal (left) and ventral (right) views of abdomen.

heavy curved seta dorsally at apex; tibia III with 11 setae in anteroventral rows. Tarsungulus III nearly $\frac{2}{5}$ as long as tibia; anterior seta $\frac{1}{2}$ as long as tarsungulus; posterior seta $\frac{4}{5}$ as long as anterior seta.

Body length 5.2(5.1-5.3) mm; caudal seta length 1.0 mm.

Material studied. – 12 larvae, from eggs laid by a female taken at light at the Yundum airport, Western Division, The Gambia, 17 September 1985, by A. A. Laurense; eggs 18 September 1985, larva ca. 7 October 1985.

Remarks.—On the basis of the anatomy of the triungulin larva P. fusca the genus Psalvdolvtta clearly belongs in the Epicautina. The larva agrees with MacSwain's (1956) diagnoses of the Epicautina and Epicauta except for the large number of setae on the dorsal surface of the head and body and runs to Epicauta in his key to genera of Meloidae. [MacSwain's specification that the long ventral ("tactile") seta of the femur is inserted near the middle of that leg segment in the Epicautina is erroneous.] Within the Epicautina distinctive features of the larva of P. fusca are its (1) large body size, (2) the size and shape of its stemmata, and (3) numerous details of chaetotaxy resulting from a proliferation of setae.

As far as we can determine, the triungulin of P. fusca is the largest yet described in the Meloidae. The only larvae of comparable size are those of the South American species Epicauta leopardina (Haag-Rutenberg) (4.9 mm long) (Agafitei and Selander, 1980), the North American species Megetra cancellata (Brandt and Erichson) (4.0-4.5 mm) (Selander, 1965), and the Asian species Mylabris quadripunctata (Linnaeus) (4.0-4.5 mm) (Priamikova and Iukhnevitch, 1958). Otherwise, meloid triungulins do not exceed 4 mm in length, and most are considerably smaller. The larval stemmata are larger and more prominent in P. fusca than in other epicautines and are, among Meloidae, unusual in being perfectly spherical in shape.



Fig. 3. Triungulin larva of Psalydolytta fusca, fore- (a), mid- (b), and hindleg (c), anterior views.

The most obvious diagnostic feature of the triungulin of P. fusca is the large number of setae on the head, body, and (to a lesser extent) legs. MacSwain (1956) specified a maximum of 60 pronotal setae in the Epicautina, but P. fusca has nearly twice that number. In most Meloidae the triungulin has six setae in MR and 10 in PR on abdominal tergites I-VIII. The number in PR is increased to 12 or 14 in several New World Epicautina (Agafitei and Selander, 1980; Selander and Agafitei, 1982) and reaches a maximum of 16 in E. funesta (Chevrolat) (Selander and Agafitei, 1982) and E. dubia (Fabricius) (Zakhvatkin, 1954) (attained also in the mylabrine genus Coryna Billberg, according to MacSwain, 1956). In contrast, Psalydolytta fusca has 16-20 setae in MR and 28–32 in PR. The tergal MR setae in P. fusca are also unusual for Epicautina in being more than 1/2 as long as the PR setae. Ventrally the pattern of setation is more nearly normal in P. fusca, although here again there are more setae than usual (six rather than four in PR of abdominal sterna II-VIII and three rather than two on the pleurites). The number of lanceolate setae on the femora (11) is greater than usual for Epicautina but is matched in four species of the North American Vittata Group of Epicauta, where it varies intraspecifically from nine to 11 (Agafitei and Selander, 1980). One might expect a positive correlation between number of setae and body size in meloid triungulins, but except in the case of the lanceolate femoral setae there is no indication of such a relationship in the available data.

Apical division or branching of setae on the head, thorax, and abdomen of the triungulin larva has been recorded heretofore only

in the genus Epicauta, where it takes a variety of forms (Fig. 4). In the Old World the setae are simply bifid in the Palearctic species E. ruficeps (Illiger), E. dubia, E. ervthrocephala (Pallas), and E. rufidorsum (Goeze) [= E. verticalis (Illiger)] and the Ethiopian species E. albovittata (Gestro) (Cros, 1938; Zakhvatkin, 1929, 1954) and undivided in Palearctic species E. gorhami Marseul (Chu and Wang, 1956; Nagatomi and Iwata, 1958) and E. megalocephala (Gebler) (Zakhvatkin, 1954). Since the four species having bifid setae represent three of the 16 species groups of Old World Epicauta recognized by Kaszab (1952, 1953), we may presume that the characteristic is of widespread occurrence among Old World Epicauta. In the New World, where triungulin larvae of many species have been described, branched setae are known in only three species. In the Vittata Group, as studied by Agafitei and Selander (1980), E. monachica (Berg) has bifid setae similar to those of P. fusca.1 In the same group the setae of E. temexa (Adams and Selander) are basically bifid, but there is a strong tendency for one or both of the branches of the seta to be further subdivided and the incidence of purely trifid setae is much higher than in P. fusca. Finally, in E. niveolineata (Haag-Rutenberg), representing the subgenus Macrobasis LeConte, there are, typically, multiple branches, some of which arise from the sides of the seta, well before the apex (Selander and Agafitei, 1982). The functional significance of setal branching is unknown, although one might suppose that adaptation to burrowing in a particular type of substrate, such as sand, is involved.

In view of the limited nature of the descriptive material available for larvae of the

Old World species of Epicauta, it is not possible to determine which Old World species group is phenetically closest to P. fusca or, for that matter, whether the *Psalvdolvtta* is phenetically closer to one or more of the New World groups of the genus than to the Old World groups. Kaszab (1952) described his Group I of Epicauta, which includes E. cognata (Haag-Rutenberg) and relatives in the Oriental Region and E. canescens (Klug) and relatives in the Ethiopian Region, as forming a link between Epicauta and Psalvdolvtta on the basis of similarities in the conformation of the adult mandibles. Unfortunately, the triungulin larva of this group is unknown. Among the New World groups, the Vittata Group is perhaps the most similar to Psalydolytta. However, judging from Cros' (1938) description of the triungulin larva of the Ethiopian E. albovittata, there is at least an equally strong phenetic relationship between Psalvdolvtta and that species.

THE MODE OF LARVAL LIFE

Adults of Psalydolytta fusca attacking pearl millet spend their adult lives in the millet fields, feeding at night and hiding in the bases of the plants during the day. Captive females have been observed laying eggs in cavities in the soil, and it is probable that soil in and near millet fields is commonly used for oviposition. Although we were not aware in 1985 of Fletcher's (1914) association of P. rouxi with the eggs Colemania sphenarioides, the systematic position of Psalydolytta suggested that the larva of P. fusca would prove to be a predator of grasshopper eggs. Further, knowledge of the adult behavior suggested that larvae would be most readily found near infested millet fields. After several unsuccessful attempts to find grasshopper eggs by scraping off the top layer of soil in square-meter quadrats at several localities, one of us (AAL) finally discovered a substantial number of egg pods of acridid Cataloipus fuscocoeruleipes (Sjöstedt) in soil at Tumani Tenda, Western Division, in an

¹ MacSwain (1956), Agafitei and Selander (1980), and Selander and Agafitei (1982) erred in attributing branched setae in Old World species of *Epicauta* only to *E. albovittata*. Agafitei and Selander (1980) also erred in characterizing the setae of *E. monachica* as divided several times apically, rather than as bifid.

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Fig. 4. Apically branched PR setae of abdominal tergite III of the triungulin larvae of *Epicauta albovittata* (after Cros, 1938) (a), *Psalydolytta fusca* (b), *E. monachica* (c), *E. temexa* (d), and *E. niveolineata* (e).

area of weeds and shrubs between swamprice fields and a pearl millet field that was heavily infested with adult *Psalydolytta fusca.*² Meloid larvae were found in three *Cataloipus* egg pods on 25 October 1985 and in four pods on 7 November 1985. All of the pods containing larvae showed evidence of having been punctured. All were subsequently kept in darkness at 100% R.H. and 29–30°C in an attempt to rear the meloid larvae. An inventory of the contents of the pods follows, using the nomenclature of larval phases of Selander and Mathieu (1964). Except as noted, all larvae died in the instar in which they were found.

Pod 1: One triungulin (T_1) larva, which escaped.

² In the classification of Dirsh (1965) *Cataloipus* Bolívar is placed in the Eyprepocnemidinae, a subfamily of Acrididae with which larval Meloidae have not been associated previously.

Pod 2: A last-instar first grub larva (FG₅?) that ecdysed to the coarctate (C) phase two weeks after collection.

Pod 3: An FG larva of undetermined instar.

Pod 4: A T_1 larva positively identified as *Psalydolytta fusca* by comparison with reared triungulins and an FG₂ larva that reached FG₃ in captivity. The left side of the head of the T_1 possessed a large black scar, possibly the result of combat with the other larva.

Pod 5: An FG₃ larva and two FG larvae of undetermined instar. The left midleg of the FG₃ larva was missing except for the coxa, but there was no indication of injury to the cuticle.

Pod 6: A last-instar FG larva (FG₅?) that ecdysed to the C phase two weeks after collection.

Pod 7: An FG₅ larva, not fully fed, and the exuvia of FG₄ (of which only the head capsule was preserved). This larva may have been injured during handling; when examined after death it had a large bubble on the left side of the thorax, as though hemolymph had extruded and coagulated.

Comparison of the FG larvae and exuvia with respect to size, setation, and numerous characters of the antennae, mouthparts, and legs leads us to believe that all of the grubs represent a single species. The instar of the exuvia identified as FG₂ can be specified confidently on the basis of its resemblance to a T larva in several characters, particularly those of the legs. The larva that produced this exuvia is, then, an FG₃, and since the exuvial head capsule associated with the larva in pod 7 is larger than that of the FG_3 , it must represent FG4 and its associated larva FG₅. Very likely the two larvae that reached the C phase were, when found, in instar FG₅ also, since this is commonly the last instar of the FG phase in Meloidae. The assignment of instar numbers, as well as our contention that the larvae are conspecific, is supported by the fact that a plot of the logarithm of the width of the frontal sclerite of the head against known or inferred instar number is quite linear (n = 6, r = .990, P = .00015). The estimated regression equation for the relationships is $\hat{y} = -.2640 + .1274x$.

As for the identification of the FG larvae, the exuvia of the FG₂ larva is so large as virtually to rule out its representing any species but P. fusca. In particular, the size of the FG₂ would seem definitely to exclude the possibility of its representing Mylabris holosericea (Klug), a relatively small meloid, as an adult, often occurring in millet fields with P. fusca, although generally less abundantly. Additional evidence bearing on the identity of the larvae associated with Cataloipus is the fact that the spiracles of the C larvae obtained by rearing occupy mound-like protuberances of the cuticle that appear to sag posteriad, tipping the spiracular cones in that direction. Until now this feature has been regarded as diagnostic of the genus Epicauta, but its occurrence in Psalvdolvtta would not be surprising, given the close relationship of the two genera. At the very least it would seem to establish that the larvae are epicautine.

In summary, while it is clear that T_1 larvae of *Psalydolytta fusca* are capable of entering the egg pods of *Cataloipus*, our data provide only circumstantial evidence that *P. fusca* larvae eat the eggs of this grasshopper, since the T_1 larvae found in the field had not fed to an appreciable extent and the FG larvae cannot be identified with certainty as *P. fusca* at this time. Nevertheless, we are reasonably confident that *P. fusca* is, in fact, a larval predator of *Cataloipus*.³

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³ After submission of this paper for publication, one of us (AAL), by releasing groups of T_1 larvae on moist sand containing egg pods of *Cataloipus fuscocoeruleipes*, successfully reared two larvae of *P. fusca* to the C larval phase. The C larvae from this rearing are similar to those obtained earlier from FG larvae collected in the field.

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