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THE ANT-LIONS OF FLORIDA. II. GENERA BASED ON LARVAE (NEUROPTERA:MYRMELEONTIDAE)[1]

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INTRODUCTION: Ant-lion larvae are important predators in sand and certain special habitats such as dry tree hollows and cave mouths. Wheeler (1930) called them "demons of the dust", whereas children in the southern United States coined the term "doodlebugs" to describe their antics. Although most people associate them with the funnel-shaped pitfall traps, most of the genera have other habits often reflected by their movements which can be very fast across the surface of the sand (Brachynemurus); slow, creeping movements (Dendroleon); or fast backward movements under the sand (Vella). Nine genera are known in Florida, and the larvae of 8 genera have been identified (Abatoleon Banks is unknown.).

IDENTIFICATION: Ant-lion larvae share with other Planipennean Neuroptera the singular modification of the mandibles and maxillae (fig. 2) to form a pair of sucking tubes. The curved, toothed mandibles and fusion of the hind tibia and tarsus are diagnostic in Florida except for the related Ascalaphidae. Ascalaphid larvae are easily distinguished by the cordate posterior margin of the head (fig. 13). Many of the genera can be distinguished by the mandible which can have 1 (Paranthaclisis), 2 (Glenurus), or 3 (rest of the genera) teeth. The placement of the teeth is distinctive in the Brachynemurini.

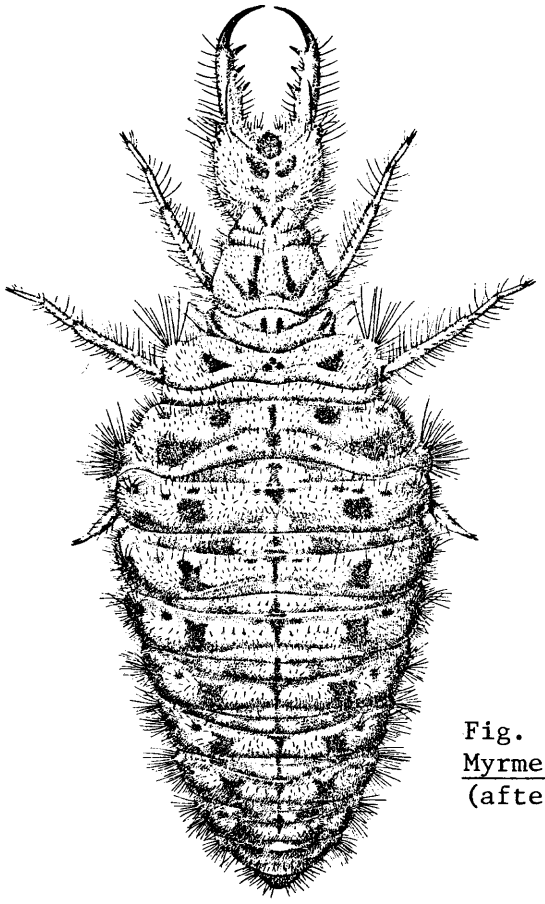

Fig. 1. Myrmeleon larva (after Principi, 1943)

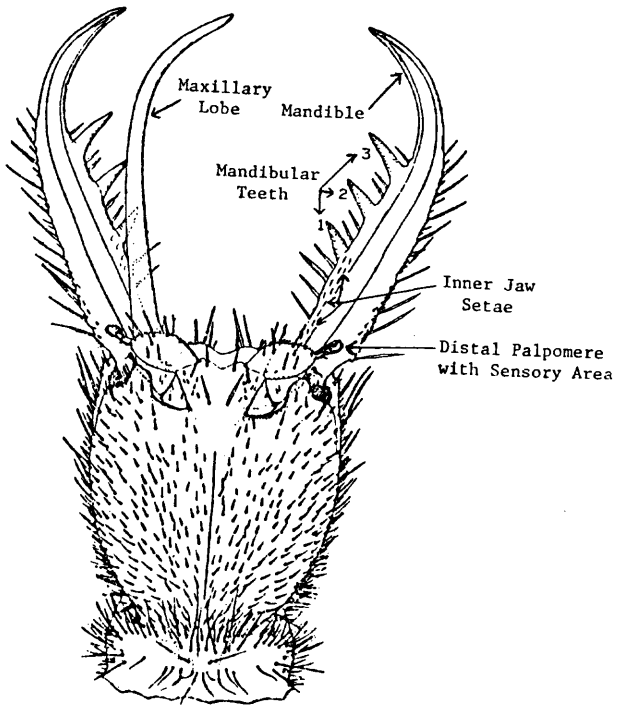

Fig. 2. Ventral view of head capsule of Myrmeleon (modified from Principi, 1943)

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KEY TO GENERA IN FLORIDA

1a. Mandible with 1 or 2 teeth (fig. 3, 4) 2

1b. Mandible with 3 teeth (fig. 2, 6) 3

2a. Mandible with 1 tooth (fig. 3); ventral surface of head capsule nearly glabrous; antenna much shorter than basal width of mandible .. Paranthaclisis Banks

OBSERVATIONS: One species is found in Florida. Larvae have been found in coastal sand dunes and move both forward and backward. The larva is highly modified. Its habits are poorly known, but it will eat soft-bodied larvae in the laboratory.

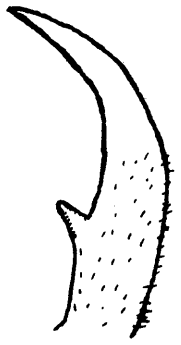


Fig. 3. Paranthaclisis mandible

2b. Mandible with 2 teeth (fig. 4); ventral surface of head capsule with many setae including dolichogasters (fig. 5); antenna as long or longer than bassal width of mandible ..... Glenurus Hagen

OBSERVATIONS: G. gratus (Say) is widespread in Florida (except Keys) but is restricted to forested areas since the larvae live in dry tree hollows where they feed on termites and other insects. They are slow movers.

Fig. 4. Glenurus mandible

3a. Mandible with distal tooth shorter than proximal tooth, and closer to middle tooth than is the proximal tooth (fig. 6a, 11); sternite VIII with small submedian tooth (fig. 12); Tribe Brachynemurini 4

3b. Mandible with distal tooth longer than proximal tooth, teeth nearly evenly spaced (fig. 2, 6b); sternite VIII without submedian tooth 5

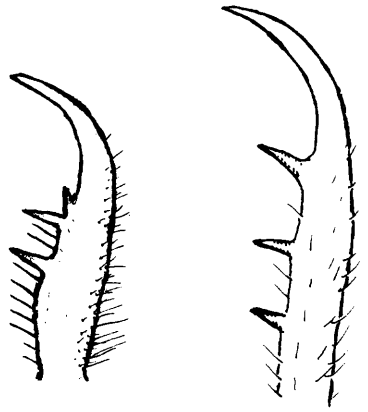
Fig. 5. Dolichogaster

4a. Ventral surface of head capsule with well-developed setae including narrow dolichogasters toward center (fig.5); mandible nearly parallel-sided to distal tooth ..... Chaetoleon Banks

OBSERVATIONS: C. pumilis (Burmeister) is rare in northern Florida. The larva has not been found, but the very close western species has been reared and generic characters indicated here may need to be modified when C. pumilis is discovered.

4b. Ventral surface of head capsule nearly glabrous toward middle or with small simple setae; mandible usually wider before proximal tooth than beyond (fig. 6a) ..... Brachynemurus Hagen

OBSERVATIONS: Five of the 6 species in Florida have been reared. B. abdominalis (Say) larvae have not been found in Florida, but I have seen one from



a. Brachynemurus

b. Psammoleon

Fig. 6. Mandible

North Dakota. The larva of B. nebulosus (Olivier) mimics mutillid wasps (fig. 11) according to Brach (1978). All of the species live in sand, sometimes leaving conspicuous trails on the surface, and can run fast on top of the sand to chase down prey.

5a. Mandible with curved distal part beyond distaltooth longer than proximal part to distal tooth (fig. 7); teeth close together with few small setae .... Vella Navas

OBSERVATIONS: V. americana (Drury) larvae live in open tracts of sand from Central Florida northward. These large larvae (length to 27 mm) can only move backward in the sand, construct no pitfall traps, and prey on various insects including other antlions. They take several years to complete development. They often leave conspicuous trails on the surface of the sand. Hagen (1887) has given the only published account on this species.

5b. Mandible with curved distal part beyond distal tooth shorter than proximal part (fig. 2); spaces between teeth with well-developed setae (fig. 2, 6b) 6

6a. Labial palpus with distal 3 palpomeres shorter than base of mandible (fig. 8); distal palpomere less than twice as long as wide; thorax without scoli ..... Myrmeleon Linnaeus

OBSERVATIONS: Six species are in Florida. Lucas and Stange provide keys to separate 5 of the 6 species. The larvae construct pitfall traps and can only move backward.

6b. Labial palpus with distal 3 palpomeres as long or longer than base of mandible (fig. 9); distal palpomere at least 2 times longer than wide; thorax with scoli 7

7a. Mesoscutum with tuft of long setae at middle (fig. 10); 9th abdominal segment longer than median width ..... Dendroleon Brauer

OBSERVATIONS: D. obsoletus (Say) lives on logs and is a trash bearer. It is a slow moving larva and is apparently uncommon in Florida although known from the Everglades to North Florida.

7b. Mesoscutum without tuft of setae; 9th abdominal segment shorter than median width . Psammoleon Banks

OBSERVATIONS: Two of the 4 Florida species are known in the larval stage. P. guttipes Currie lives in sand around trees and P. bistictus Hagen lives in coastal sand dunes in the Keys (Bahia Honda Key). They are slow moving.

Fig. 7. Vella mandible

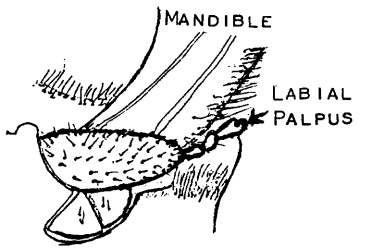


Fig. 8. Myrmeleon

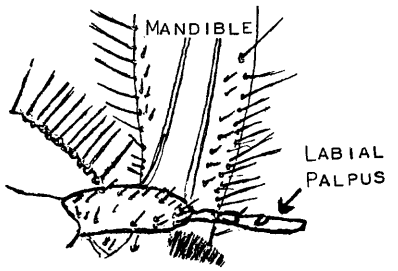


Fig. 9. Dendroleon

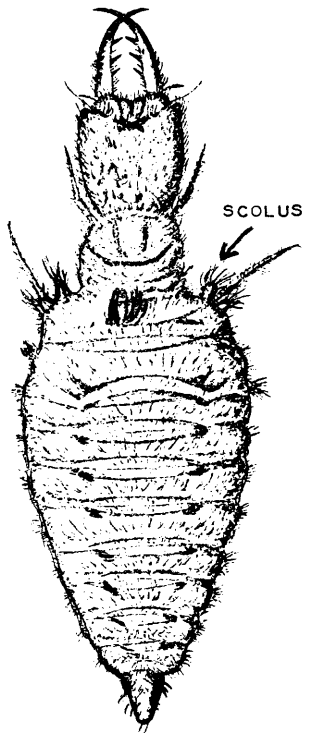


Fig. 10. Dendroleon larva (after Redtenbacher)

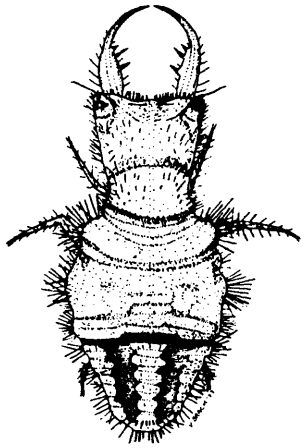


Fig. 11. B. nebulosus larva (after Brach, 1978).

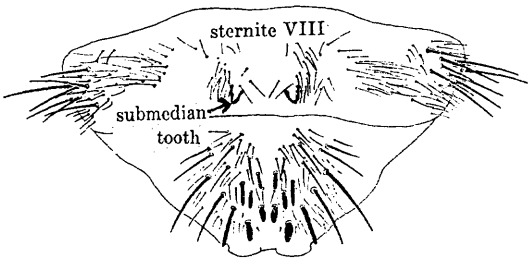


Fig. 12. Posterior abdominal sternites of B. longicaudus group

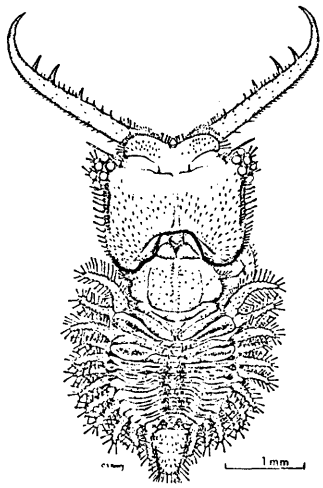


Fig. 13. Ascaloptynx furciger larva (after Henry, 1976).

DETECTION AND SURVEY: Many of the species are found by sifting sand and sometimes are spotted by trails on the surface of the sand. The pitfall traps of Myrmeleon are easily detected, whereas dry tree hollows and cave mouths should be examined for some species. Dendroleon larvae can be found on logs or under very loose bark.

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