

# Neuroptera of the Amazon Basin

## Part 4. Sialidae

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### Abstract

Sialidae is reported for the first time from the Amazon Basin, and a new species of *Protosialis* is described.

### INTRODUCTION

The neuropterous family Sialidae is relatively diverse in North America, with Ross (1938) recognizing 19 species within the genus *Sialis*. However, in South and Central America the diversity and abundance is greatly reduced, with Penny (1977) recording 7 species of *Protosialis* for all Latin America, and from all South America only five species are known, four of them from single females (Penny, 1981). The ongoing study of Neuroptera of the Amazon Basin has revealed a further species, new to science, from the central part of this region.

### BIOLOGY

The oblong, brown eggs of Sialidae have an elongate projection at the tip. They are placed in clusters of 200-500 on a slanting surface over water. Eggs hatch during the night after nine to ten days, whereupon they drop into the water. Larvae are carnivorous, living below the bottom substrate of streams and lakes, feeding on caddis-fly (Trichoptera) larvae. They may remain as larvae for two years or more and pass through as many as 10 larval instars (Evans, 1978). When ready to pupate, the larvae will leave the water and burrow into the soil a few meters away, where pupation occurs. Adults emerge after two or three weeks. Adults are weak fliers, preferring

to live at the water's margin. They live for only a few days, and probably do not feed (Davis, 1903).

### SYSTEMATICS

The genus *Protosialis* was described by Weele (1909) to include 4 species from Nearctic and Neotropical America. His new genus was separated from *Sialis* on the basis of angle of the costal crossveins and simple second branch of Rs. *Sialis americanus* was designated as type species. He further mentioned that body coloration was orange and black, and the costal area was not expanded at mid-length. Ross (1938) synonymized the two genera on the basis that Weele's genus was erected for species with a reduced number of costal crossveins, a character which is variable. However, Weele never made such a distinction, either in erecting the genus, or in his (1910) monograph of the family. However, both species of *Protosialis* described by Navás from Brazil and the new species from the Amazon Basin have the posterior branch of Rs forked. They retain the narrowed costal margin, angulate costal crossveins, and orange head and thoracic coloration. Thus, *Protosialis* is herein considered a valid genus, and the genus to which the Amazonian Sialidae belong.

Enderlein (1910) described the new genus *Ilyobius* for his new species of Sialidae from Colombia, but characters used conform to *Protosialis*, described one year earlier and probably in press when Weele's description was presented. Thus, *Ilyobius* is a junior synonym.

Larval *Protosialis* are completely unknown, but in general, larval Sialidae differ from

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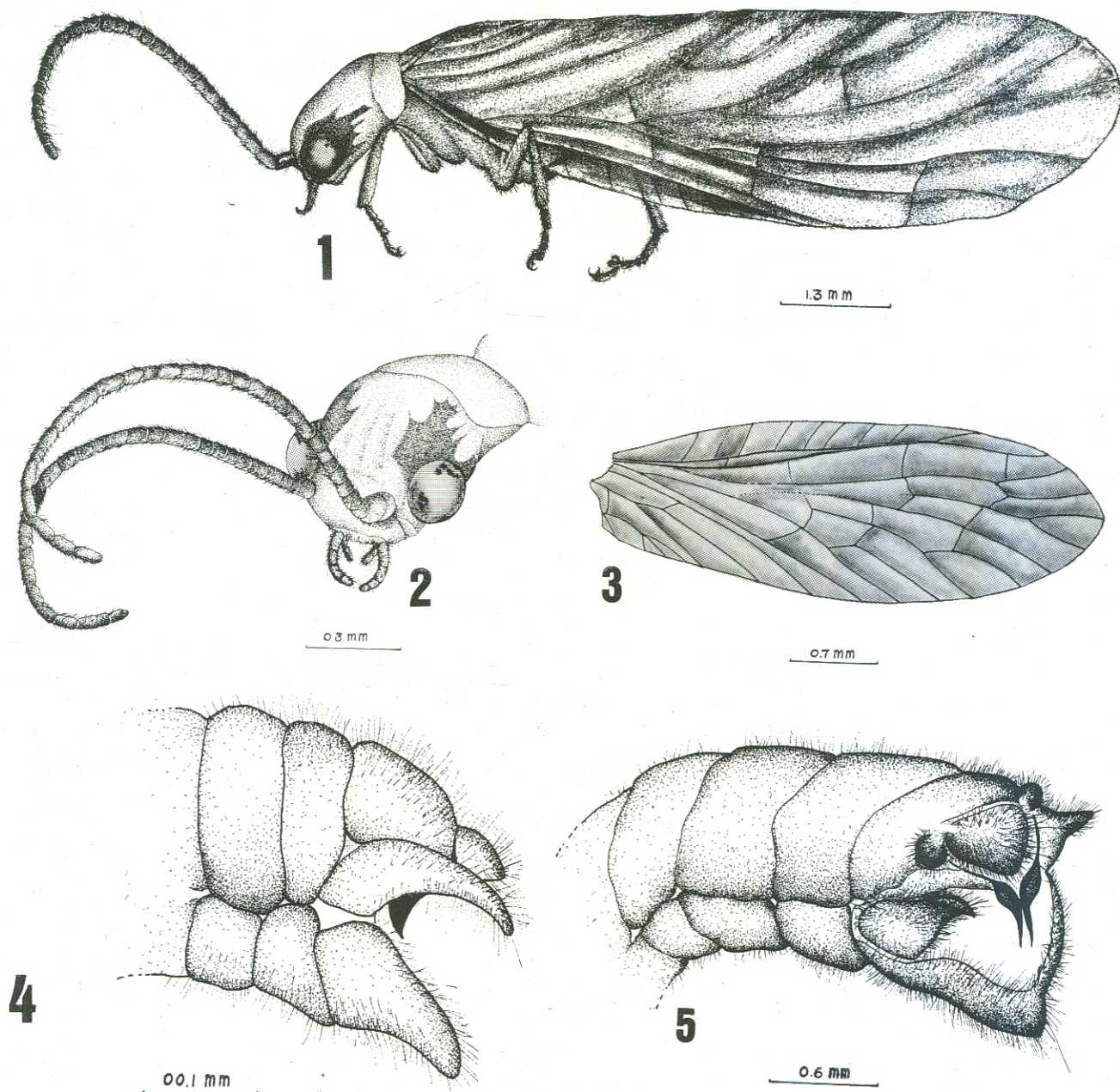
Corydalidae, the most closely related neuropterous family, by the presence of a caudal filament and seven rather than eight lateral abdominal filaments in Sialidae.

Head and thorax yellow to orange with variable dark markings. Legs orange to black. Abdomen and wings infusate to black. Forewings with costal area narrow, not expanded greatly at mid-length; with 6 to 10 costal crossveins. Radial sector twobranchied, with posterior branch apically forked or not.

The only known Amazonian species of this genus is the following new species.

Genus *Protosialis* Weele, 1909

*Protosialis* Weele, 1909, *Notes Leyden Mus.*, 30: 263.  
*Ilyobius* Enderlein, 1910, *Stett. ent. Ztg.*, 1910: 381.



Figs. 1-5 — *Protosialis flammatus* n.sp.: 1) — Lateral view; 2) — Dorso-lateral view of head; 3) — Right forewing; 4) — Lateral view of male genitalia; 5) — Caudal view of male genitalia (Drawing by Alberto Silva).



**Protosialis flammata**, n. sp.

Original description based on 2 males, pinned, with abdomens cleared in 10% KOH and phenol.

**Head:** Occiput bright orange with black mark surrounding the upper half of each compound eye, and flame-like, four-pronged posterior extensions. Compound eyes dark brown with black spots. Ocelli absent. Mandibles greatly reduced. Labrum orange with apical infuscation. Maxillary palpi five-segmented, third segment twice as large as others; apical segment with medio-apical tooth; dark brown and pilose. Antennae pilose; orange basally, changing to fuscous apically; of 26-29 segments.

**Thorax:** Pronotum orange; more than twice as wide as long; bearing numerous short, golden setae. Meso- and metanota and pleural regions orange with short, golden pilosity.

**Legs:** Coxae and femora orange. Tibiae black, without apical spurs. Tarsi of five segments; black; first segment as long as second and third combined; fourth segment bilobed, orange-tipped. Tarsal claws orange, with very large basal tooth.

**Forewing:** Dark fuscous. Costal area narrow, not greatly expanded at mid-length; with nine costal crossveins curved apically to wing margin. Three crossveins between  $R_1$  and  $R_s$ .  $R_s$  two-branched, both branches apically forked. Two r-m crossveins.

**Abdomen of Male:** Black. Ninth sternite apically, acutely pointed. Lateral plates oblong; dorsally with recurved point. Genital plates broadly triangular, with thin ventral prolongation, and thin, dorso-lateral prolongation. Terminal plate appearing as three, small, oval lobes (Figs. 4,5).

**Body Length:** male, 6 mm.

**Forewing Length:** male, 7-8 mm.

**Geographical Distribution:** The two specimens of this new species were collected at BRAZIL: Amazonas, Reserva Ducke, km 26 — AM-010, 11-XI-1976, N. D. Penny, 1 male; Reserva Ducke, km 26 — AM-010, 24-XI-1976, N. D. Penny, 1 male.

**Temporal Distribution:** This species has only been collected in November.

**Habitat:** Both specimens were collected from a light trap set beside Igarapé Barro Branco, and almost certainly came from this stream. This is a rapidly flowing (5-15 liters/sec), clear water stream, running through primary forest.

Male holotype (24-XI-1976) in Systematic Entomology Collections of INPA, Manaus. Paratype male (11-XI-1976) in National Museum of Natural History, Washington, D.C., U.S.A.

There have been four other species of Sialidae described from South America east of the Andes, all from single females. *P. flammata* differs from *P. bimaculata* from Bolivia, which only has a trifid mark behind the eye, and a distinct black spot behind the antennae. Both this latter species and *P. flavicollis* (Enderlein) from Colombia are much larger insects, with wings 14.5 to 15 mm long. *P. flammata* lacks the two basal r-m crossveins found in the two species described by Navás, *P. brasiliensis* and *nubila* from farther south in Brazil.

This species is named for the flame-like marks at the back of the compound eyes.

RESUMO

Sialidae foi observado pela primeira vez na Bacia Amazônica, e uma nova espécie de *Protosialis* é descrita.

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