A NEW SPECIES OF AULACIGASTRIDAЕ FROM PAPUA
NEW GUINEA AND CHARACTERISATION OF SPECIES
GROUPS IN THE GENUS NEMO (DIPTERA, SCHIZOPHORA)

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Abstract
A new species of the aulacigastrid genus Nemo from Papua New Guinea is
described. Three allopatric species groups in Nemo are defined.

Introduction
The minute nobody flies form the subfamily Nemininae of the family
Aulacigastridae (McAlpine, 1983). Of the two genera, Nemo McAlpine has
only been recorded from eastern Australia, and Ningulus McAlpine only from
South Africa. In describing these new forms, I stated that the available records
probably indicated only a small part of the world distribution of the sub-
family. The extension of the known distribution to New Guinea is not,
therefore, surprising.

Nemo arbelos n.sp
(Figs 1, 2)

MALE
Coloration. Head brownish, with grey pruinose; vertex with pale yellowish
mark on each side; face entirely pruinose, yellowish brown, paler below,
with dark grey spot near middle covering upper part of median carina; postgena
with yellowish mark next to eye. Antenna fulvous; arista dark brown.
Mesoscutum-dark greyish with dull yellowish blotch covering notopleural and
supra-alar regions and smaller one between dorsoventral bristle and scutellum
on each side; scutellum dark greyish with apex broadly pale yellow; post-
scutellum yellowish brown; postnotum dark grey; a creamy white stripe
covering humeral callus, upper margin of mesopieuron, and basalare; thoracic
pleura otherwise greyish brown with yellowish markings. Legs pale yellowish
with ill-defined brownish suffusion on tibiae and femora, darkest on hind
ones. Wing with pale zone at extreme base slightly differentiated from smoky
zone commencing near humeral crossvein. Haltere creamy white. Abdominal
tergites 1 to 4 brown-black, with their free margins narrowly pale yellow;
remainder of abdomen pale yellowish except for brownish sclerites of
protandrium and genital segment.

Head, in profile shaped somewhat as in N. centriseta McAlpine (1983: fig. 2),
except for the facial carina and narrower eye; eye distinctly setulose; face
narrower than in N. centriseta from encroachment of eyes, with short, sharp,
narrow median carina on lower part of anterior surface, not continued on to
ventral surface; no incline bristle present behind inner vertical bristle;
several minute, pale setulae situated in front of anterior fronto-orbital
bristle; interfrontal bristles as in other species of genus, but small and difficult
to discern in dried material.

Thorax. Anterior notopleural and humeral bristles minute; intra-alar bristle
distinct, with series of intra-alar setulae extending in front of it to before
transverse suture; one dorsocentral bristle present posteriorly; series of
dorsocentral setulae extending from near that bristle to in front of transverse
suture; acrostichal setulae short in a short irregular, partly double series.
Hind femur scarcely longer than mid femur; fore tarsus with no segment
noticeably thickened. Wing with veins 3 and 4 slightly convergent for some
distance beyond level of discal cell, becoming parallel to slightly divergent
for a short distance apically; discal crossvein more oblique than in other
species of genus; basal crossvein reduced to a minute stump; costal index
0.53-0.69; vein 4 index 3.1-3.6.

Abdomen. Tergite 5 desclerotized; surstylus (Fig. 1) elongate-oval, with margi-
nal teeth; aedeagus (Fig. 2) somewhat resembling that of N. lossini McAlpine,
but much stouter on about distal two-thirds of length, with many of the spines
short, triangular, and scale-like with short mucronate apices, other spines, par-
ticularly near middle of length of aedeagus, with broad bases and variably long
bristle-like apices; apical part of aedeagus, as in other species, devoid of erect
spines, but with complex pattern of sclerotized ridges.

Figs 1, 2. Nemo arbelos, paratype: (1) left surstylus; (2) aedeagus, to c. half scale of
Fig. 1.
Dimensions. Total length 0.77-0.79 mm; length of thorax 0.36-0.42 mm; length of wing 0.92-1.02 mm.

Distribution. Papua New Guinea–Central province, near coast.

Holotype δ. 20 km south-east of Port Moresby, 9.i.1982 (Australian Museum), J. W. Ismay.

Paratypes. Same locality, 27.xii.1981 and 9.i.1982 (1 δ, Department of Primary Industry, Konedobu, 1 δ, Australian Museum), J. W. Ismay.

Notes. The pale zone on the wing referred to in the above description does not correspond to that mentioned in my description for *N. centriseta* and *N. lossini*. In these two species the pale zone lies largely between the levels of the humeral crossvein and the apex of the subcosta, whereas in *N. arbelos* it lies on the basal side of the humeral crossvein.

The type series of this species consists of well-preserved, mature specimens, but, because of the light sclerotization of the cuticle characteristic of many minute flies, the head has collapsed in all three specimens. One specimen was rehydrated in dilute detergent, and this enabled a more accurate interpretation of head shape, chaetotaxy, and some points of coloration, as well as examination of postabdominal characters.

The collection data indicate that two of the specimens of *Nemo arbelos* were swept from bushes, while the third is simply labelled "bushes". This contrasts with the experience of my colleagues and me with the Australian species. The latter have not been taken by sweeping, all the specimens having been found on tree trunks or on the large leaves of *Alocasia* (McAlpine, 1983).

The specific epithet *arbelos* is from the Greek ἀρβηλός, a rounded knife as used by a shoemaker, and refers to the facial carina.

Discussion

This new species is closely related to the six described Australian species of *Nemo*. In my table of characters differentiating the two genera of Nemiminae (McAlpine, 1983: 75), *N. arbelos* agrees with *Nemo* rather than *Ningulus*, except in the inconspicuous costal break. This and the further reduction of the basal crossvein relative to other species of *Nemo* are probably due to the smaller size of *N. arbelos*, a condition which is often accompanied by simplification in wing structure.

*N. arbelos* further differs from other species of *Nemo* in the presence of a blade-like median carina on the lower part of the face. Despite its peculiar characters, it is possible that this species is phylogenetically closer to some of the Australian species of *Nemo* than to others, and, therefore, not the sister group of those species as a whole. The first couplet of my key to (Australian) species of *Nemo* differentiates a tropical group of species (anterior notopleural bristle very small; mesoscutum with extensive yellowish markings; 2 strong dorsocentral bristles with no intervening setulae; eye densely setulose) from
a temperate group (anterior notopleural bristle only slightly shorter than posterior one; mesoscutum grey to blackish, with at most the humeral callus paler; dorsocentral bristles generally otherwise, anterior ones, if present, usually relatively short; eye with sparse, inconspicuous setulae). As might be expected, *N. arbelos* more closely resembles the tropical group, but has the yellow zones on the mesoscutum less extensive and only one (posterior) dorsocentral bristle with a well developed series of dorsocentral setulae in front of it. The strongly toothed margin of the surstylus in *N. arbelos* is also more typical of the tropical group of Australian species.

I consider that the most appropriate way of classifying the species of *Nemo* on the available evidence of relationships is in three species groups, as in the following key.

**Key to species groups of Nemo**

1. Face with sharp, blade-like carina on lower part; costa without definite break; New Guinea ......................... *arbelos* group.  
   - Face without carina; costa with obvious break at end of subcosta; Australia ......................... 2

2. Anterior notopleural bristle very small; mesoscutum with extensive yellowish markings; 2 strong dorsocentral bristles present with no intervening setulae; tropical Queensland .......... *centriseta* group.  
   - Anterior notopleural bristle only slightly shorter than posterior one; mesoscutum grey to black, with at most the humeral callus paler; dorsocentral bristles generally otherwise, anterior ones, if present, usually relatively short; temperate south-eastern Australia. ...........  
      .......................... *corticeus* group.

The *corticeus* group is possibly paraphyletic, as there are no clearly apomorphic characters shared by all its species. On the other hand the species of the group are all very similar structurally and occupy a distinct geographic zone from that of other species groups. The assignment of species within the groups is as follows.


*Arbelos* group. *Nemo arbelos* McAlpine.

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**Reference**