

STUDIES ON THE APHIDS (HOMOPTERA: APHIDIDAE) FROM EASTERN INDIA XXXIV. TWO NEW GENERA, THREE NEW SUBGENERA, ONE NEW SPECIES AND SOME NEW RECORDS FROM NORTH EAST INDIA

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Two genera viz., *Neohyalomyzus* and *Scleromyzus*, three new subgenera viz., *Anacyrthosiphon*, *Neomacrosiphum* and *Paraneomyzus*, one new species viz., *Xenomyzus scabripes* are described. Further the genus *Xenomyzus* and the species *Dactynotus (Uromelan) gobonis* are reported for the first time from India.

Re-examination of the aphid fauna collected from Eastern India has necessitated erection of two new genera, viz., *Neohyalomyzus* with *Hyalomyzus raoi* HILLE RIS LAMBERS as type, *Scleromyzus* with *Myzus corylopsis* as type; three new subgenera, viz., *Anacyrthosiphon* with *Neoacyrthosiphon (Pseudoacyrthosiphon) takahashii*, as type, *Neomacrosiphum* with *Sitobion pseudoluteum* as type, *Paraneomyzus* with *Aulacorthum (Neomyzus) dicenirae* as type, and one new species, viz., *Aenomyzus scabripes*. Besides, the genus *xenomyzus* and the species *Dactynotus (Uromelan) gobonis* are reported for the first time from India. Further, the apterae viviparae of *Hyalomyzus ?sensoriatus* reported by GHOSH *et al.* (1971) has been described.

Anacyrthosiphon subgen. nov.

Anacyrthosiphon is described here as a new subgenus under *Pseudoacyrthosiphon*. *Pseudoacyrthosiphon* was described by GHOSH & RAYCHAUDHURI (1969) as a subgenus of *Neoacyrthosiphon* TAO with *holstii* TAKAHASHI as type species, because of presence of spinules on ultimate rostral segment and on hind tibiae of nymphs. Later another species viz., *takahashii* GHOSH was found to possess the above mentioned characters as in *holstii*.

All the material are in the collection of the Aphid Research Unit, Entomology Laboratory, Department of Zoology, University of Calcutta.

So it appears that in nature a population exists which has spinulosity on ultimate rostral segment as well as on hind tibiae of nymphs while some other population does not have them and it is for this reason that *Pseudoacyrthosiphon* has been given full generic status for accomodating species having the above named characters and *Neoacyrthosiphon* is reserved for those species which lack them. GHOSH & RAYCHAUDHURI (1969) wrongly described first tarsal chaetotaxy of *holstii* as 3, 3, 3 which should be as 4, 4, 4 as revealed by re-examination of the same material. In *takahashii* first tarsal is 4, 4, 4. Thus it appears that first tarsal chaetotaxy is variable in *Pseudoacyrthosiphon*. Here 4, 4, 4 hairs on first tarsal segment is considered as character for *Pseudoacyrthosiphon* s. s. and a new subgenus *Anacyrthosiphon* is erectep for species having first tarsal chaetotaxy as 3, 3, 3.

Type species : *Neoacyrihosphon (Pseudoacyrthosiphon) takahashii* GHOSH
Dactynotus (Uromelan) gobonis(MATSUMURA)
Many apterous viviparous $\begin{smallmatrix} \circ & \circ \\ + & + \end{smallmatrix}$, India: West Bengal: Darjeeling, from *Carthamus* sp.

Hyalomyzus ? sensoriatus (MASON)

Apterous viviparous female : Body about 1.54 mm long with 0.76 mm as the

maximum width. Head spinulose on both surfaces except the disc, which is smooth, without median frontal prominence; lateral frontal tubercles well developed, scabrous with the inner margin somewhat converging; anteriormost dorsal cephalic hairs long and fine while those on posterior part short and blunt. Antennae 6-segmented, shorter than to nearly as long as body; basal 2 segments scabrous and the inner margin of segment I bulged; flagellum imbricated but sometimes the outer margin of segment III smooth; flagellar hairs short with blunt to slightly acuminate apices; secondary rhinaria absent; primary rhinaria non-ciliated and not protuberant; p. t. distinctly longer than the base of the segment VI. Ultimate rostral segment nearly as long as h. t. 2 and normally with 2 secondary hairs. Thoracic and abdominal tergites pale, rugose, sometimes rugosities appearing as transversely elongated cells and with the post siphuncular segments bearing transverse rows of spinules. Dorsal abdominal hairs short and blunt but on tergite 8 rather long. Siphunculus distinctly swollen on distal 0.50 portion, strongly imbricated, much longer than cauda, apically constricted just before the thick distinct apical flange. Cauda short with a blunt apex and slightly constricted at middle, with 2 pairs of hairs. Abdominal venter with transverse spinulose striae; ventral hairs longer than the anterior dorsal hairs with incrassate apices. Femora and tibiae smooth; 2nd tarsal segment with normal imbrications F. T. C. 3, 3, 3. Nymphs with hind tibiae spinulose.

Measurements of one specimen in mm: Length of body 1.54, width 0.76: antenna 1.08, segments III: IV: V: VI 0.27: 0.16: 0.15: (0.11+0.25); u. r. s. 0.07; h. t. 2 0.07; siphunculus 0.31; cauda 0.06.

Material

2 apterous viviparous ♀♀ and 3 nymphs, India: West Bengal: Darjeeling, 13. iv. 1969

from an unidentified plant. coll. M. R. GHOSH.

Remark:

GHOSH *et. al.*, (1971) for the first time just reported the species by apterae viviparae from West Bengal. Their argument for naming the species as *sensoriatus* (MASON) was that the processus terminalis was twice as long as the base of antennal segment VI as is found in *sensoriatus*. That in the described alatae of *sensoriatus* processus terminalis is twice as long as base of segment VI has been quoted by RICHARDS (1958) as the only point of difference from the genotype of *Hyalomyzus*. In view of having only 2 apterae and in not having access to *eryobotriae* of which both apterae and alatae are known and to alatae of *sensoriatus*, the Indian material are described in detail as that of *sensoriatus* with a (?) mark before the specific name.

Neohyalomyzus gen. nov.

Head distinctly spinulose along the posterior margin both dorsally and ventrally and locally spinulose near the base of the antennae leaving the frons and median area of the dorsum smooth (Fig. 1 A), head is also spinulose anteriorly; lateral frontal tubercles well developed, scabrous with inner apices protracted inwards; median frontal prominence well developed; dorsal cephalic hairs stout, fairly long with incrassate apices and placed on high sockets. Antennae 6-segmented, shorter to slightly longer than body; segment I slightly shorter than wide, locally scabrous with the inner surface slightly bulged inwards, segment II much shorter than segment I, scabrous, imbrications on segment III sparse and restricted only near the base, rest of the flagellum in apterae smooth; apterae without any secondary rhinaria, alatae with secondary rhinaria on segments III and IV, flagellar hairs short, thick with incrassate apices; p. t. about 3.0-4.0 × the base of segment VI; primary

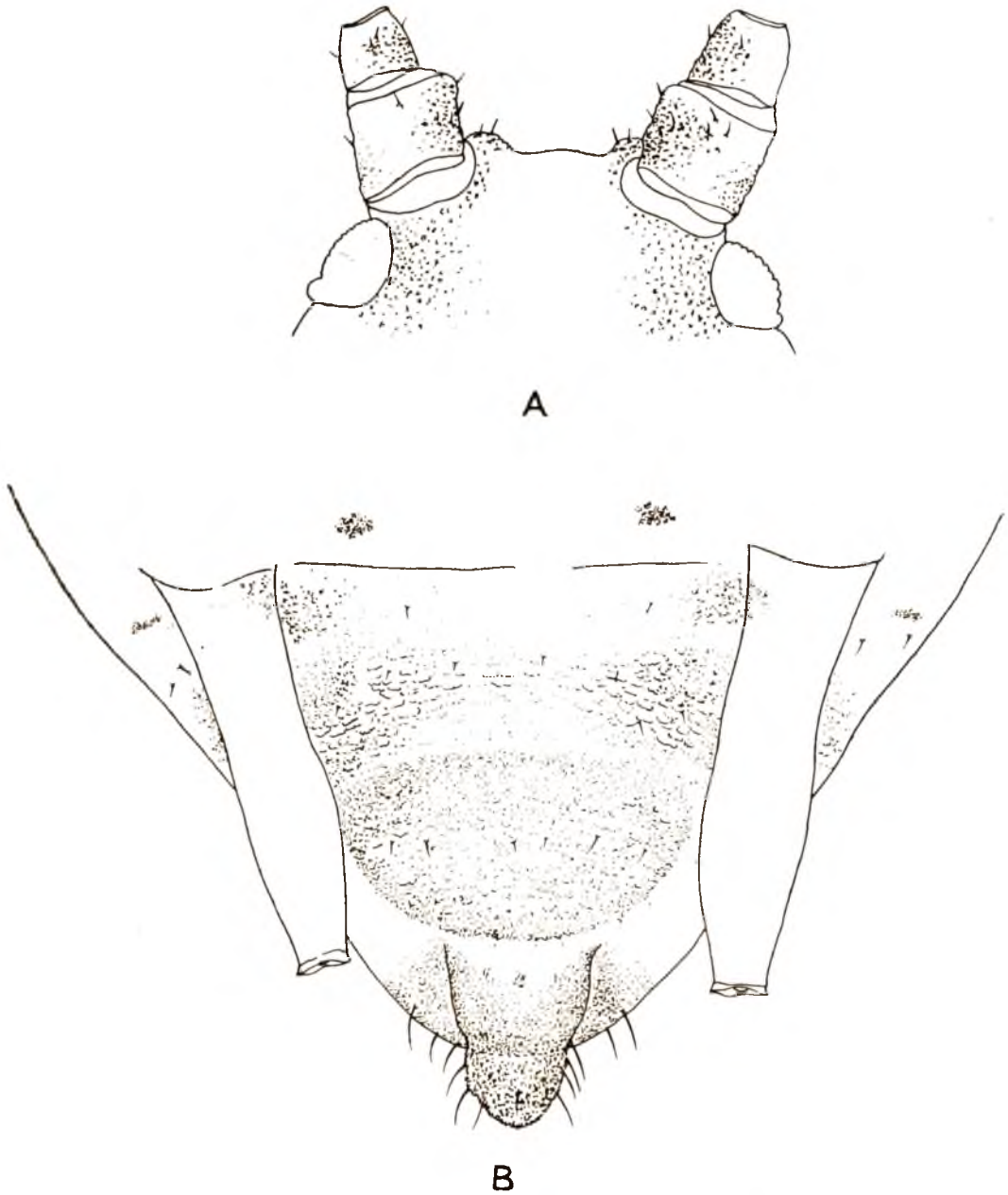


Fig. 1. *Neohyalomyzus raoi* (HILLE RIS LAMBERS), Apterous viviparous female.
A. Head. B. Posterior portion of abdomen.

rhinaria non protuberant and ciliated. Rostrum extends upto hind coxae; u. r. s. normal, about $1.12-1.30 \times$ h. t. 2 and bears a pair of secondary hairs. Thoracic dorsum in apterae wrinkled and venter locally spinulose. Mid thoracic furca with a short stalk. Abdominal dorsum in apterae wrinkled (Fig. 1 B) dusky with diffused brown paired muscle plates pleurally, in alatae pigmented, dorsal hairs short with increassate apices and placed on high sockets. Siphunculi more or less cylindrical on basal 0.50 portion and it is followed by a slightly swollen portion which gradually narrows distally, sparsely spinulose, with the apical flange indistinctly or distinctly developed and with a few rows of transverse striae in the preapical circumcised portion, about $0.16-0.22 \times$ the body. Cauda thick, blunt, with the basal 0.50 portion rather swollen, about $0.40-0.55 \times$ the siphunculi and bears 6-8 hairs. Coxae spinulose, rest of the leg rather smooth except the second tarsal segment which are with normal imbrications; hairs on legs short and blunt, F. T. C. 3, 3, 3 wing venation normal. Nymphs with hind tibiae spinulose.

Type Species:

Hyalomyzus raoi HILLE RIS LAMBERS 1973.

Remark:

The new genus is erected with *Hyalomyzus raoi*. HILLE RIS LAMBERS (1973) described the *raoi* under *Hyalomyzus* with reservations since his specimens had median frontal prominence and pre-apical incision on the siphunculi as in *Hyperomyzus* and *Nasonovia* along with characters of *Hyalomyzus*. Examination of a sizeable number of specimens has revealed the presence of inwardly directed apex of scabrous lateral frontal tubercles in both apterae and alatae and a median frontal prominence in apterae; nearly smooth dorsal of head in apterae; rugose body in apterae; pigmented dorsum of abdomen in alatae; clavate siphunculi

with a pre apical circumcision in apterae and alatae, hairs on 8th abdominal tergite with acute apices and presence of 3 hairs on first tarsal segments.

This combination of characters justifies the erection of the new genus *Neohyalomyzus* with *hyalomyzus raoi* HILLE RIS LAMBERS as the type.

Distribution: India

Neomacrosiphum subgen nov.

HILLE RIS LAMBERS (1939) while discussing in detail about the genus *Macrosiphum* did not mention about the spinulosity on the head and first tarsal segments with hairs for the species available to him then. In India beside typical *Macrosiphum* species some other species closely similar to typical *Macrosiphum* species have been found, some of these have first tarsal segments with 4 pairs and some have spinulose either on both surfaces of head or on only one surface. TAKAHASHI (1961) erected the genus *Unisitobion* for *Macrosiphum*-like species possessing spinulosity on the venter of head, pigmented abdominal dorsum and high antennal sockets but such species having first tarsal segments with 3 hairs. Since in India the *Macrosiphum*-like species viz, *microspinulosum* DAVID, RRJASINGH & NARAYANAN, *pseudoluteum* GHOSH, *pseudogeranii* CHAKRABARTI & RAYCHAUDHURI have 4, 4, 4 as the first tarsal chaetotaxy; a new subgenus *Neomacrosiphum* is erected under *Macrosiphum* to accomodate these.

Type species:

Sitobion pseudoluteum GHOSH, 1969

Distribution: India

Paraneomyzus sbgen nov.

All the species known under the genus *Neomyzus* have first tarsal segments bearing 3 hairs except the single species, viz, *dicentrae* BASU which possesses first tarsal segment with 4 hairs of which 2 of these hairs are

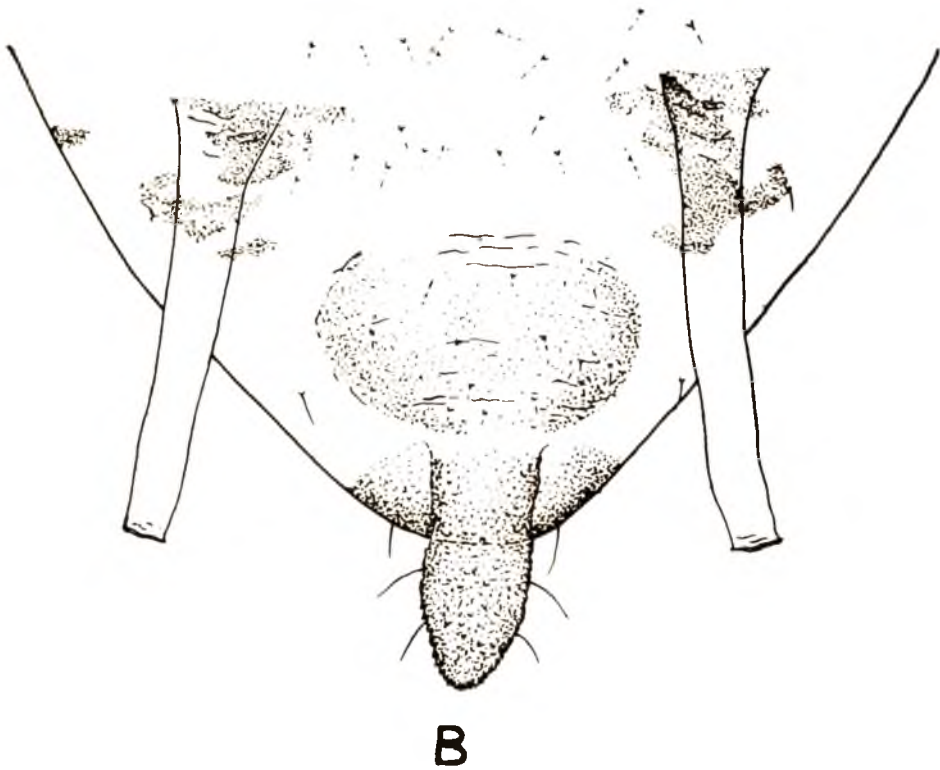
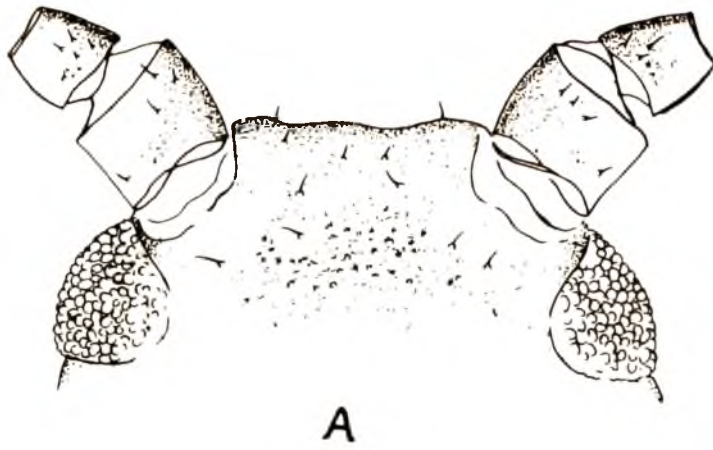


Fig. 2. *Scleromyzus corylopsis* (BASU, GHOSH & RAYACHAUDHURI), Apterous viviparous female. A. Head, B. Posterior portion of abdomen.

short, stout and blunt. So the new subgenus *Paraneomyzus* is erected under *Neomyzus* with *dicentrae* BASU. It may be mentioned here that *Neomyzus* treated as a subgenus of *Aulacorthum* by other workers has been given the generic status.

Type species: *Aulacorthum* (*Neomyzus*) *dicentrae* BASU (1967).

Scleromyzus gen. nov.

The characters for the monotypic genus is not provided here as the type species, *Myzus corylopsis* has recently been described in detail by BASU *et al.* (1973). So the species characters are also the generic characters. However, the justification for the erection of the new genus is discussed here.

The species with which the new genus is erected was sent to DR. D. HILLE RIS LAMBERS, Holland for comments when he wrote "species and genera not known to me, rough head, presence of pleural intersegmental sclerites exclude *Acyrtosiphon* but suggest relationship to *Myzus*. I do not suggest genus or species and shall file this with the 14 slides without genus name. An alate might help to solve the classification problem" DR. HILLE RIS LAMBERS was quite correct in suggesting the relationship with *Myzus* but the very ill developed lateral frontal tubercles, sparsely spinulose head (Fig. 2A) and the post siphuncular sclerite (Fig. 2B) found in the species distinguish the new genus from *Myzus*.

The new species *corylopsis* could possibly be considered under *Micromyzus* but then again one should expect to find well developed lateral frontal tubercles, strongly spinulose head and absence of post siphuncular sclerite.

The other genera, viz., *Eomyzus* TAKAHASHI and *Eumyzus* TAKAHASHI might be looked upon as close to the new genus since in both these genera the apterae viviparae have spinulose head, lack secondary rhinaria

and may or may not have segmental sclerites on abdomen. The present genus can, however, be distinguished from *Eumyzus* by the low lateral frontal tubercles and absence of tubercles at bases of the dorsal abdominal hairs which are short and from *Eumyzus* by the presence of sclerites on abdomen, smooth siphunculi and very short abdominal hairs.

Type species: *Myzus corylopsis* BASU, GHOSH and RAYCHAUDHURI, 1973

Distribution: India.

Xenomyzus scabripes spec. nov.

Apterous viviparous female: Body about 1.30—1.55 mm long with 0.67—1.09 mm as the maximum width. Head densely spinulose both dorsally and ventrally; lateral frontal tubercles low but distinct with scabrous rounded apices; frons rather concave; dorsal cephalic hairs short with blunt apices ventral one rather long with acuminate apices. Antennae 6-segmented, shorter than to nearly as long as body; segments I & II spinulosely scabrous; flagellum densely imbricated with few spinules on basal 0.50 portion of segment III; flagellar hairs short, sparse with blunt apices, the longest one on segment III about 0.17—0.37 × the basal diameter of the segment; secondary rhinaria absent; p.t. about 3.40—3.80 × the base of segment VI; primary rhinaria non ciliated. Rostrum extends upto mid coxae; u.r.s. normal, about 0.93—1.05 × h.t.2 and bears a pair of secondary hairs; prothorax free; segmentation between meso-, and metathorax and on first six abdominal segments obsolete. Thoracic segments dorsally wrinkled and ventrally spinulose particularly on prothorax. Mid thoracic furca sessile. Abdominal dorsum wrinkled upto segment 6, rest with transverse spinular striae muscle plates sometimes present pleurally on antesiphuncular segments, dorsal abdominal hairs sparse, short with blunt apices, the longest

one on anterior tergites about $0.15-0.25 \times$ the basal diameter of antennal segment III; segments 7 and 8, each with a pair of long hairs having acuminate apices which are about $0.40-0.55 \times$ the mentioned diameter. Abdominal spiracles on sclerotic areas, those on segments 6 and 7 much closer than those on segments 5 and 6. Siphunculi brown, subcylindrical with distinctly broad base which on outer margin slightly pushed inwards, remarkably narrowing apical (basal diameter being about $5.0 \times$ the diameter at apex), with dense spinular imbrications all over, with short, sparse and blunt hairs, without apical flange and with the pore placed slightly obliquely, about $0.20-0.25 \times$ the body. Cauda pale, blunt, sometimes slightly constricted near the base, about $0.30-0.42 \times$ the siphunculi and bears 4-5 hairs. Femora dorsally densely imbricated and ventrally spinulose; tibiae with spinular imbrications; tarsi with normal imbrications; hairs on legs short with blunt to acuminate apices, F.T.C. 3,3,2.

Measurements of the holotype in mm: Length of body 1.44, width 0.75; antenna 1.11, segments III:IV:V:VI 0.22:0.14:0.13: (0.10+0.34); u.r.s. 0.08; h.t.2 0.08; siphunculus 0.36; cauda 0.12.

Alate viviparous female: Head brown, lateral frontal tubercles hardly indicated. Antennae concolorous with the head, about $0.80-1.05 \times$ the body; segment III with 29-32, segment IV with 9-13 and segment V with 6-10 irregularly distributed protuberant secondary rhinaria; longest hair on segment III about $0.45-0.75 \times$ the basal diameter of the segment; p.t. about $3.30-5.15 \times$ the base of segment VI. Abdominal dorsum pale, with marginal spinular pigmented patches on each of segments 2-5 and a diffuse brown broad transverse pigmented bar on each of 7th and 8th tergites; legs

brown, femora dorsally imbricated and ventrally spinulose; tibiae smooth. Wing venation normal. Otherwise as in apterae viviparae.

Measurements of one specimen in mm: Length of body 1.65, width 0.77; antenna 1.74, segments III:IV:V:VI 0.37:0.24:0.24: (0.11+0.54); u.r.s. 0.08; h.t.2 0.08; siphunculus 0.26; cauda 0.10.

Holotype: Apterous viviparous ♀, India: West Bengal: Darjeeling: Kurseong, 10.i. 1971, from *Polygonum moli*, coll. M. R. GHOSH, Paratypes many apterous viviparous ♀♀, alate viviparous ♀♀ and nymphs, for same collection data same as for the holotype and some others collected from different localities of Arunachal, Meghalaya, Sikkim and West Bengal on different dates and from different species of *Polygonum*.

Remark: The new species comes close to *polygoni* but differs in having longer dorsal cephalic hairs, shorter body, rather short processus terminalis, dark siphunculi besides more scabrous femora and tibiae.

Re-examination of all the material previously reported as *Metaphorodon polygoni* reveals that only 6 apterae collected on *Polygonum barbatum* and *Polygonum* sp. in West Bengal are true *polygoni* and rest belong to this new species, *Scabripes*. *Metaphorodon* has been considered here as a synonym of *Xenomyzus*. This idea is also expressed by HILLE RIS LAMBERS (1969) and MIYAZAKI (1971).

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