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Addition of three new species of *Nesoselandria* Rohwer to the Indian fauna (Hymenoptera, Symphyta, Tenthredinidae: Selandriinae)

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(With 21 figures)

Abstract

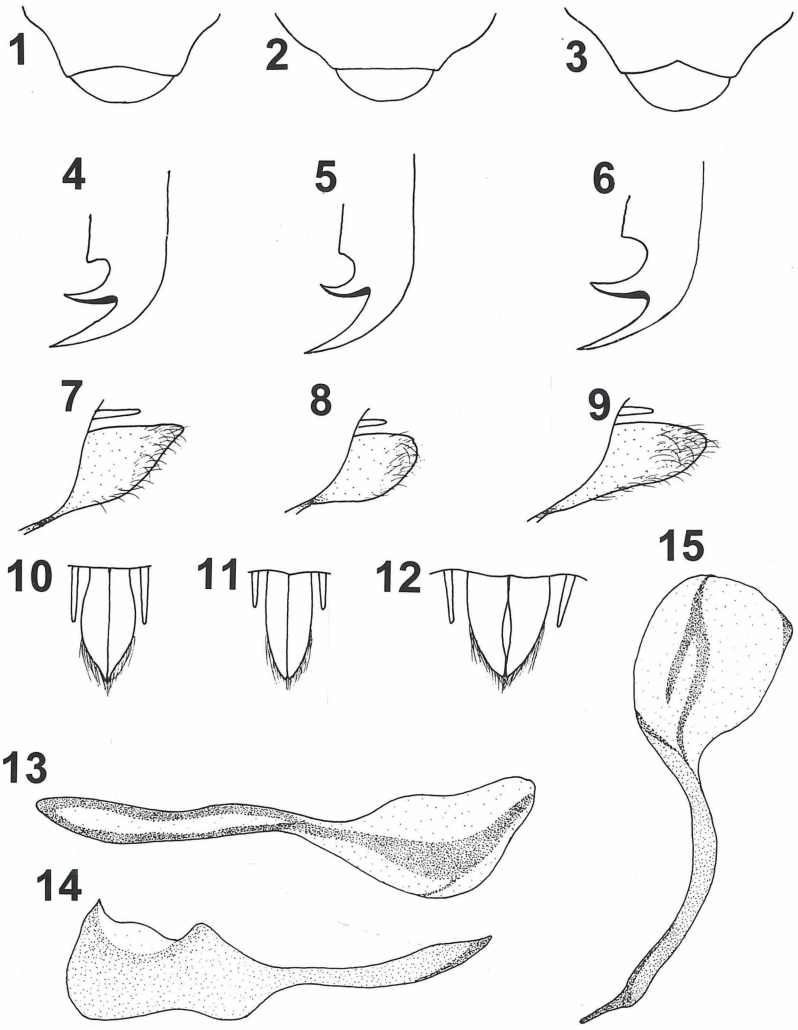
Three new species of *Nesoselandria* Rohwer, *N. ruga* sp. n., *N. puparum* sp. n. and *N. khasi* sp. n. are described and illustrated. Some sexual dimorphism observed is mentioned in the text. A key to the Indian species of this genus is provided.

Introduction

Rohwer (1910) erected the genus *Nesoselandria* taking *Paraselandria imitatrix* Ashmead from the Philippines as its type species. Again, Rohwer (1915) added a new species to this genus from Calcutta. Malaise (1944) transferred *Aneugmenus annandalei* Rohwer and *Neobusarbia flavipes* Takeuchi to this genus. Benson (1939) erected a new genus *Melisandra* taking *Selandria morio* (Fabricius) from the Holarctic region as its type species, but Smith (1969) synonymized it under *Nesoselandria*. Malaise (1944) made two new additions i.e. *Nesoselandria sulciceps* from Dehradun and *Nesoselandria turneri* from Shillong. Some of the other important works, concerning this genus from the Oriental region include those of Enslin (1912), Rohwer (1916), Takeuchi (1928) and Forsius (1929-1933). Prior to this work, the genus *Nesoselandria* was represented by 22 species from the Oriental region, of which only four species were on record from the Indian subcontinent. This genus is now represented by seven species in India, out of which three species are added new to science. This genus is widely distributed throughout Holarctic and Oriental region.

The present text deals with the systematic descriptions and illustrations of the three new species, and provides a key to the species of this genus known from the Indian subcontinent. The terminology used in the text is after Ross (1937, 1945) and Malaise (1945).

The members of this genus can be identified as follows: front wings with 2 radial and 3 or 4 cubital cells. Basalis and 1st recurrent vein strongly converging. Anal cell without crossvein. Hind wings with 2 closed middle cells and anellan cell mostly petio-



Figs 1-15. Clypeus and labrum (Figs 1-3): **1**- *Nesoselandria ruga* sp. n., **2**- *N. puparum* sp. n., **3**- *N. khasi* sp. n.; tarsal claw (Figs 4-6): **4**- *N. ruga* sp. n., **5**- *N. puparum* sp. n., **6**- *N. khasi* sp. n.; lateral view of ovipositor sheath (Figs 7-9): **7**- *N. ruga* sp. n., **8**- *N. puparum* sp. n., **9**- *N. khasi* sp.; dorsal view of ovipositor sheath (Figs 10-12): **10**- *N. ruga* sp. n., **11**- *N. puparum* sp. n., **12**- *N. khasi* sp. n.; penis valve (Figs 13-15): **13**- *N. ruga* sp. n., **14**- *N. puparum* sp. n., **15**- *N. khasi* sp. n.

late at the apex. Malar space linear to half the diameter of median ocellus. Clypeus truncate or shallowly emarginate. Frontal area mostly poorly or not defined, subconvex. Inner margins of eyes faintly to distinctly converging downwards. Hind orbits extremely short and strongly narrowing behind the eyes, ecarinate even below. Antennae slender, mostly filiform, sometimes faintly incrassinated in middle. Pedicel slender, almost as long as scape; antennal joint 3 longer than 4. Claws with acute but short basal lobe sometimes difficult to notice, subapical tooth almost as long as or shorter than apical one. Hind basitarsus mostly somewhat shorter than following tarsal joints combined.

Abbreviations used in text are: *EL*- eye length, *IATS*- inner apical tibial spur, *ICD*- intercenchri distance, *IDMO*- inter-ocular distance at level of median ocellus, *ITD*- inter-tegular distance, *LID*- lower interocular distance, *MB*- metabasitarsus, *OATS*- outer apical tibial spur, *OCL*- ocello-occipital line, *OOL*- oculo-ocellar line, *POL*- post-ocellar line.

Nesoselandria ruga sp. n.
(Figs. 1, 4, 7, 10, 13, 16, 19)

FEMALE. C o l o u r: Body fuscous to black. Wings hyaline, venation including costa, subcosta and stigma fuscous.

S t r u c t u r e: Average length 4.5 mm. Antenna filiform, 1.9x head width, scape and pedicel equal, segments 3 and 4 as 6:5. Clypeus (Fig. 1) truncate, labrum (Fig. 1) broader than long as 2:1 with truncate anterior margin, malar space 0.75x diameter of median ocellus. LID:IDMO:EL = 1:1.2:1, POL:OCL:OOL = 1:0.8:1.3. Supraantennal pits shallow, transversely elongate, area between them uneven, frontal area flat, almost at level of eyes, median fovea in form of distinct elliptical pit above supraclypeal area, post-, inter- and circumocellar furrows absent, lateral furrows deep, diverging posteriorly and abruptly ending just before hypothetical hind margin of head, postocellar area convex, broader than long as 3:1, head narrowing behind eyes. Mesoscutellum subconvex, appendage ecarinate, ICD:ITD = 1:5, epicnenium separated from mesopleuron by fine furrow. Tarsal claw (Fig. 4) with subapical tooth shorter than apical one, basal lobe distinct; metabasitarsus longer than following 3 joints combined as 4:3, IATS:MB:OATS = 1:3:0.9. Ovipositor sheath as in Fig. 7 (lateral view) and in Fig. 10 (dorsal view). Lancet (Fig. 19) with 7 serrulae.

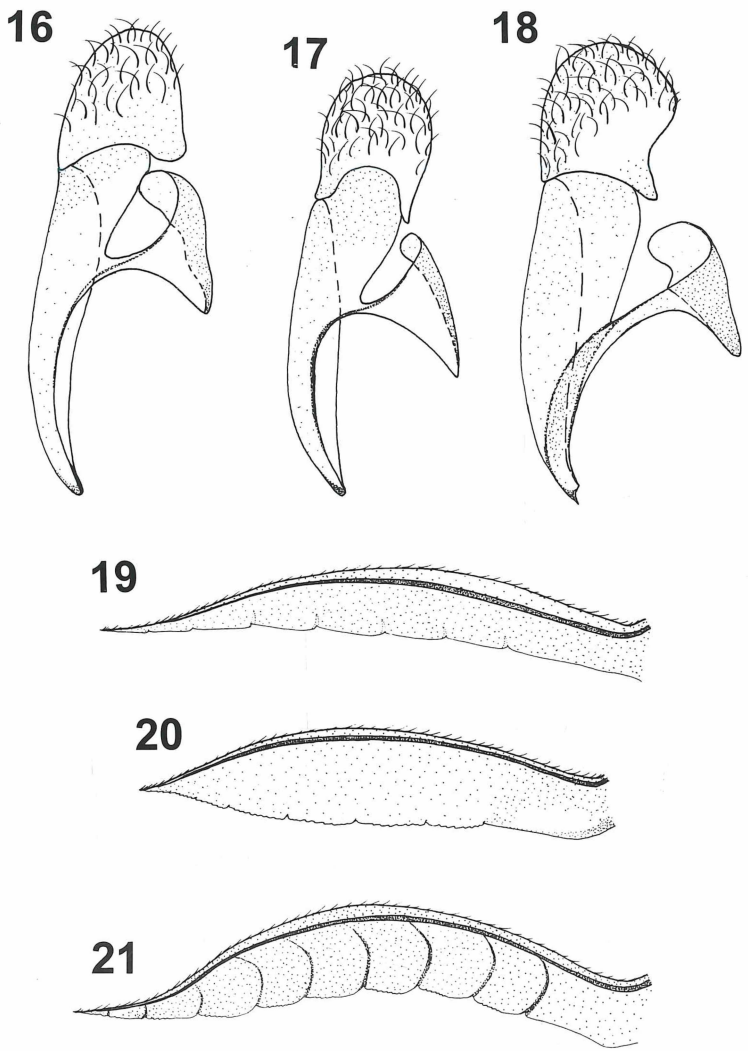
S c u l p t u r e: Body almost impunctate, shining with general oily lustre. Frontal area between supraantennal tubercles wrinkled.

P u b e s c e n c e: Fuscous, 0.4x scape length.

MALE. - Average length 3.5 mm. Similar to female. Genitalia: Penis valve see Fig. 13, gonoforceps see Fig. 16.

MATERIAL EXAMINED. H o l o t y p e: ♀, Meghalaya, Shillong, 1500 m, 25.5.1992, coll. V. Vasu. Deposited at the Zoologisches Museum Hamburg, Germany, Reg. No. ZMH 1-1999.

P a r a t y p e s: ♂ with same data as holotype; Meghalaya, Jowai, 1500 m, ♀, 20.4.1983, coll. M. S. Saini; Elephant Falls (Shillong), 1500 m, ♀, 25.5.1992, coll. V. Vasu; Smit, 1500 m, ♀, ♂,



Figs 16-21. Gonoforceps (Figs 16-18): **16**- *N. ruga* sp. n., **17**- *N. puparum* sp. n., **18**- *N. khasi* sp. n.; lancet (Figs 19-21): **19**- *N. ruga* sp. n., **20**- *N. puparum* sp. n., **21**- *N. khasi* sp. n.

5.9.1993, coll. V. Vasu; Himachal Pradesh, Kalatop, 2400 m, ♀, 2 ♂, 2.8.1982, coll. M. S. Saini; Kasol, 1500 m, 2 ♀, ♂, 1.5.1990, coll. M. S. Saini; Uttar Pradesh, Mandal, 2300 m, ♂, 21.6.1985, coll. M. S. Saini; West Bengal, Darjeeling, 2200 m, 2 ♀, 2 ♂, 6.5.1990, coll. V. Vasu; Tamil Nadu, Anamalai Hills, 3500 ft. ♀, ? x.1969, coll. T. R. S. Nathan. One female and two males in ZMH (No. 1-1999); the remaining paratypes are housed at the Division of Entomology, Pusa National Collections, Indian Agricultural Research Institute, New Delhi, India.

Etymology. - Species name pertains to wrinkled frontal area between supraantennal pits.

Distribution. - India: Himachal Pradesh, Uttar Pradesh, West Bengal, Tamil Nadu, Meghalaya.

DISCUSSION. - With entirely black abdomen, absent post- and interocellar furrows and entirely brownish to black legs, *N. ruga* sp. n. and *N. turneri* Malaise, 1944 represent similar taxa. However, both can be easily separated by the following characters. In *N. ruga* sp. n. circumocellar furrow is absent, supraantennal pit shallow and elongate, the ratio of antennal segments 3 and 4 as 6:5; malar space 0.75x diameter of median ocellus, postocellar area broader than long (ratio 3:1), and lateral furrows sunken. In *N. turneri* circumocellar furrow is distinct, supraantennal pit deep and rounded, antennal segments 3 and 4 as 4:3, malar space linear, postocellar area broader than long (ratio 2:1) and lateral furrows shallow.

N. ruga is a widely distributed species covering almost the entire Himalayan belt and South Indian Hills. From April to November it can be easily collected from different sites. It seems to be a multivoltine species. In the field it prefers mid hours of the day when relative humidity is comparatively low. It prefers road side scanty and low lying vegetation in comparison to deep and dark forests.

Nesoselandria puparum sp. n.
(Figs. 2, 5, 8, 11, 14, 17, 20)

FEMALE: Colour: Body black, golden-yellow are: sternites 2-5, all legs except infuscated front four coxae, basal 1/2 of metacoxa, front four femora and apical 3 joints of all tarsi. Wings hyaline, venation including costa, subcosta and stigma fuscous.

Structure: Average length 4.5 mm. Antenna filiform, 1.7x head width, scape and pedicel equal, segment 3 and 4 as 5:4. Clypeus (Fig. 2) almost truncate, labrum (Fig. 2) broader than long as 3:1 with rounded anterior margin, malar space linear. LID:IDMO:EL = 1:1.3:1, POL:OCL:OOL = 1:0.6:1. Supraantennal pits deep, almost rounded, area between them uneven. Frontal area convex, median fovea in form of distinct semicircular pit above supraclypeal area, post-, inter- and circumocellar furrows absent, lateral furrows distinct, diverging posteriorly, postocellar area subconvex, broader than long as 4:1, head narrowing behind eyes. Mesoscutellum subconvex, appendage ecarinate, ICD:ITD = 1:4, epicnemium separated from mesopleuron by distinct furrow. Tarsal claw (Fig. 5) with subapical tooth shorter than apical one, basal lobe minute, metabasitarsus longer than following 3 joints combined as 3:2, IATS:MB:OATS = 1:3:1. Ovipositor sheath as in Fig. 8 (lateral view) and in Fig. 11 (dorsal view). Lancet (Fig. 20) having 7 serrulae.

Sculpture: Body impunctate, shining with general oily lustre.

P u b e s c e n c e: Fuscous, 0.5x scape length.

MALE. - Average length 4 mm. Similar to female except infuscation on legs more prominent, sternites pale to light brownish. Genitalia: penis valve (Fig. 14), gonoforceps (Fig. 17).

MATERIAL EXAMINED. H o l o t y p e : ♀, Sikkim, Gangtok, 1600 m, 13.5.1993, coll. V. Vasu. Deposited at the Zoologisches Museum Hamburg, ZMH Reg. No. 1-1999.

P a r a t y p e s: Meghalaya, Jowai, 1500 m, ♀, 2 ♂, 20.4.1983, coll. M. S. Saini; Uttar Pradesh, Joshimath, 1800 m, ♀, 12.6.1981, coll. M. S. Saini; Barkot, 1800 m, ♀, 8.6.1983, coll. M. S. Saini; Ramgarh, 1800 m, ♀, 20.6.1989, coll. M. S. Saini; Arunachal Pradesh, Lazu, 2200 m, ♀, 6.5.1994, coll. V. Vasu. One female and one male in ZMH (No. 1-1999); the remaining paratypes are housed at the Division of Entomology, Pusa National Collections, Indian Agricultural Research Institute, New Delhi, India.

ETYMOLOGY. - The species name is derived as an arbitrary combination of letters, "PUP" taken from the name of the institution, Punjabi University Patiala, where this work was carried out.

D i s t r i b u t i o n. - India: Sikkim, Meghalaya, Arunachal Pradesh, Uttar Pradesh.

DISCUSSION. - Because of area between supraantennal pits uneven, tegula black, legs with some broad pale yellow markings and abdomen entirely pale below in male and sternites 2-5 in female, *N. puparum* sp. n. can be easily differentiated from the rest of Indian species of this genus. The characters differentiating it from its allied species, *N. sulciceps* Malaise are as follows: abdomen with sternites 2-5 pale yellow, antennal segment 3 and 4 as 5:4; circumocellar furrows absent, lateral furrows distinct, metafemur entirely yellow in *N. puparum*, whereas abdomen entirely black, antennal segments 3 and 4 as 4:3, circumocellar furrows present, lateral furrows indistinct, metafemur black except pale apex in *N. sulciceps.*

It is a widely distributed species covering the entire Himalayan belt. As compared to other species of this genus, it is quite sluggish during early and late hours of the day and just after mild showers. Being small in size it is better hand picked rather than collected with the help of net or Malaise's trap.

Nesoselandria khasi sp. n.
(Figs. 3, 6, 9, 12, 15, 18, 21)

FEMALE. - Colour: Body black, pale-yellow are: sternites 2-5, protrochanters and adjoining parts of coxa and femur, hind four coxae, trochanters and femora entirely, rest of parts of all legs infuscated. Wings hyaline, venation including costa, subcosta and stigma fuscous.

S t r u c t u r e : Average length 5 mm. Antenna filiform, 1.6x head width, scape and pedicel equal, segments 3 and 4 as 3:2. Clypeus (Fig. 3) shallowly emarginate, labrum (Fig. 3) broader than long as 3:2 with rounded anterior margin, malar space 1x diameter of median ocellus. LID:IDMO:EL = 1:1.1:0.9, POL:OCL:OOL = 1:0.8:1.3. Supraantennal pits deep, rounded, area between them smooth. Frontal area flat, abo-

ve level of eyes, median fovea in form of shallow transverse pit above supraclypeal area, post- and interocellar furrows absent, circumocellar furrow distinct, lateral furrows sunken, parallel, abruptly ending at hypothetical hind margin of head, postocellar area convex, broader than long as 3:1, head narrowing behind eyes. Mesoscutellum subconvex, appendage ecarinate, ICD:ITD = 1:6, epicnemium separated from mesopleuron by fine furrow. Tarsal claw (Fig. 6) with subapical tooth shorter than apical one, basal lobe minute; metabasitarsus longer than following 3 joints combined as 4:3, IATS:MB:OATS = 1:3:0.9. Ovipositor sheath as in Fig. 9 (lateral view) and in Fig. 12 (dorsal view). Lancet (Fig. 21) having 9 serrulae.

S c u l p t u r e: Body impunctate, shining with general oily lustre.

P u b e s c e n c e: Fuscous, 0.5x scape length.

MALE. Average length 4.5 mm. Similar to female except malar space 0.75x diameter of median ocellus. Genitalia: Penis valve see Fig. 18, gonoforceps see Fig. 21.

MATERIAL EXAMINED. H o l o t y p e: ♀, Meghalaya, Elephant Falls (Shillong), 1500 m, 1.5.1991, coll. V. Vasu. Deposited at the Zoologisches Museum Hamburg, ZMH Reg. No. 1-1999.

P a r a t y p e s: 2 ♀, ♂, with same data as holotype. Meghalaya, Jowai, 1500 m, ♂, 20.4.1983, coll. M. S. Saini. One female and one male in ZMH (No. 1-1999); the remaining paratypes are housed at the Division of Entomology, Pusa National Collections, Indian Agricultural Research Institute, New Delhi, India.

ETYMOLOGY. The species is named after the tribal population of the area where its type locality is situated.

D i s t r i b u t i o n: India: Meghalaya.

DISCUSSION. *Nesoselandria khasi* sp. n. is recorded from Khasi hills of Meghalaya during the onset of premonsoon season. As compared to many other species of this genus, it is robustly built and comparatively more active even when it is drizzling. There is every possibility of occurrence of this species in Pfutsero (Nagaland) and Ukhrul (Manipur), since all the ecological factors are quite similar to that of type locality. However, these areas should be visited quite early.

On the basis of some key characters related to general colour pattern of body and sculpture of head region, the new species is somewhat similar to *N. annandalei* (Rohwer), but some other characters clearly distinguishing it from the latter taxon. They are: abdomen with sternites 2-5 pale yellow, antennal segments 3 and 4 as 3:2; malar space more than 0.5x diameter of median ocellus, circumocellar furrow distinct, lateral furrows distinct in *N. khasi* sp. n., whereas abdomen entirely black, antennal segments 3 and 4 as 5:4; malar space linear, circumocellar furrow indistinct, lateral furrows indistinct in *N. annandalei.* A combination of some other specific characters in the new species such as clypeus shallowly emarginate, interocellar furrow absent, postocellar area broader than long as 3:1, supraantennal pits deep and rounded, malar space 1x diameter of median ocellus in female and 0.75x in male and entire body impunctate with fuscous pubescence, keep it distinct from the rest of all taxa described in this genus.

Key to the Indian species of *Nesoselandria* Rohwer

1. Abdomen black at least above 2

- Abdomen pale at least in the middle (antennal segments 3 and 4 as 3:2; postocellar area not broader than long as 3:1, malar space 0.5x diameter of median ocellus, interocellar furrow distinct, lateral furrows indistinct) . . . . . *N. rufiventris* Rohwer

2. Legs entirely brownish to black 3

- Legs with some broad pale yellow markings 4

3. Circumocellar furrow distinct, supraantennal pit deep and rounded, antennal segments 3 and 4 as 4:3, malar space linear, postocellar area broader than long as 2:1; lateral furrows shallow . . . . . *N. turneri* Malaise

- Circumocellar furrow absent, supraantennal pit shallow and elongate, antennal segments 3 and 4 as 6:5; malar space 0.75x diameter of median ocellus, postocellar area broader than long as 3:1, lateral furrows sunken . . . . . *N. ruga* sp. n.

4. Area between supraantennal pits uneven 5

- Area between supraantennal pits smooth 6

5. Abdomen entirely black, antennal segment 3 and 4 as 4:3, circumocellar furrows present, lateral furrows indistinct, metafemur black except pale apex . . . . . *N. sulciceps* Malaise

- Abdomen with sternites 2-5 pale yellow, antennal segment 3 and 4 as 5:4; circumocellar furrows absent, lateral furrows distinct, metafemur entirely yellow . . . . . *N. puparum* sp. n.

6. Abdomen with sternites 2-5 pale yellow, antennal segments 3 and 4 as 3:2; malar space more than 0.5x diameter of median ocellus, circumocellar furrow distinct, lateral furrows distinct . . . . . *N. khasi* sp. n.

- Abdomen entirely black, antennal segments 3 and 4 as 5:4; malar space linear, circumocellar furrow indistinct, lateral furrows indistinct . . . . . *N. annandalei* (Rohwer)

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References

Benson, R. B., 1939: Four new genera of British sawflies (Hymenoptera: Symphyta). - Ent. monthly Mag., **75**: 110-113. London.

Enslin, E., 1912: Edward Jacobson's Java-Ausbeute, Fam. Tenthredinoidea (Hym.) nebst Bestimmungstabelle der einschlägigen Gattungen. - Tijdschr. V. Ent., **55** (5): 104-126. Amsterdam.

Forsius, R., 1929: Ueber neue oder wenig bekannte Tenthredinoiden aus Sumatra. - Notul. Ent., **9**: 53-70. Helsingfors.

Forsius, R., 1931a: Notes on a collection of Ethiopian Oryssoidea and Tenthredinoidea (Insecta: Hymenoptera). - Ann. Mag. Nat. Hist., London, **8** (10): 1-36. London.

Forsius, R., 1931b: Ueber einige neue oder wenig bekannte orientalische Tenthredinoiden. - Ann. naturh. Mus. Wien., **46**: 29-48. Wien.

Forsius, R., 1932: Eine neue *Anapeptamena* Art aus Formosa (Hymenoptera, Tenthredinoidea). - Notul. Ent., Helsingfors, **12**: 51-53. Helsingfors.

Forsius, R., 1933: Notes on a collection of Malaysian Tenthredinoidea (Hym.). - Raffles Mus. (Singapore) Bull., **8**: 169-193. Singapore.

Malaise, R., 1944: Entomological results from the Swedish expedition 1934 to Burma and British India. - Ark. Zool:, **35.A** (10): 1-58. Stockholm.

Malaise, R., 1945: Tenthredinoidea of South-eastern Asia with a general zoogeographical review. - Opusc. Entomol., Suppl., **4**: 1-288. Stockholm.

Rohwer, S. A., 1910: Some new Hymenopterous insects from the Philippine Islands. - Proc. U. S. nat. Mus., **37**: 657-660. Washington.

Rohwer, S. A., 1915: Some Oriental sawflies in the Indian Museum (Hymenoptera). - Rec. Ind. Mus. Calcutta, **11**: 39-53. Calcutta.

Rohwer, S. A., 1916: H. Sauter's Formosa-Ausbeute, Chalastogastra (Hymenoptera). - Sup. Ent., **5**: 81-113. Berlin.

Ross, H. H., 1937: A generic classification of the Nearctic sawflies (Hymenoptera: Symphyta). III. - Biol. Monog., **34**: 1-173.

Ross, H. H., 1945: Sawfly genitalia: terminology and study techniques. - Ent. News, **56**: 261-268. Philadelphia.

Smith, D. R., 1969: Nearctic sawflies II. Selandriinae; Adults (Hymenoptera : Tenthredinidae). - U. S. Dept. Agri., Agri. Tech. Bull., **1398**: 1-48. Washington.

Takeuchi, K., 1928: New sawflies from Formosa II (Hymenoptera). - Trans. Nat. Hist. Soc. Formosa, **18**: 38-45. Taihoku.

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