

**Genus *Nusa* WALKER, 1851: three new species from Cambodia
and notes on the genus
(Diptera: Asilidae: Laphriinae)**

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Abstract

Three new species of *Nusa* WALKER, 1851 are described from Cambodia: *N. smetsi* sp.n., *N. vari* sp.n., and *N. pursati* sp.n., the inner structure of the male genitalia, similar to that of *Nusa ramicosa* (LOEW, 1871) and *Nusa grisea* (HERMANN, 1914) are figured for the first time. The lectotype of *Nusa grisea* (HERMANN, 1914) is designated and a male specimen of *N. ramicosa* (LOEW, 1871) is reported from Turkey for the first time.

Keywords: Oriental region, Asilidae, Cambodia, *Nusa*, new species.

Résumé

Trois nouvelles espèces de *Nusa* WALKER, 1851 sont décrites du Cambodge: *N. smetsi* sp.n., *N. vari* sp.n. et *N. pursati* sp.n. Les structures internes des genitalia mâles de *Nusa ramicosa* (LOEW, 1871) et *Nusa grisea* (HERMANN, 1914) sont illustrés pour la première fois. Un lectotype est désigné pour *Nusa grisea* (HERMANN, 1914) et un spécimen mâle de *N. ramicosa* (LOEW, 1871) est renseigné de Turquie pour la première fois.

Introduction

The genus *Nusa* WALKER, 1851 has as type-species, *Nusa aequalis* WALKER, 1851 from India. This distinctive genus has been recognized by OLDROYD (1974), it is placed in the subfamily Laphriinae, which have a life-history related to trees.

The main characters of the genus are the closed first posterior cell, the costa ending above wing apex and the absence of the ambient vein.

Only a few species were reported in the genus *Nusa* until 1985, when 15 species endemic to India have been described (JOSEPH AND PARUIS, 1987-1989-1992a-1992b). Three species are reported from South-East Asia: *N. albibasis* RICARDO, 1927 from Burma; *N. grisea* (HERMANN, 1914) from Taiwan; and *N. yerburyi* RICARDO, 1927 from Sri Lanka.

Material

The studied specimens have been collected in Cambodia between 3.IV and 27.IV.2005, by Koen SMETS - Royal Belgian Institute of Natural

Sciences, Brussels and Inariddh VAR - Sam Veasna Center for Wildlife Conservation, Siem Reap, Cambodia.

Description of the new species

***Nusa smetsi* sp.n**

Medium-sized, black species with lightly infuscated wings. Length = 17 mm.

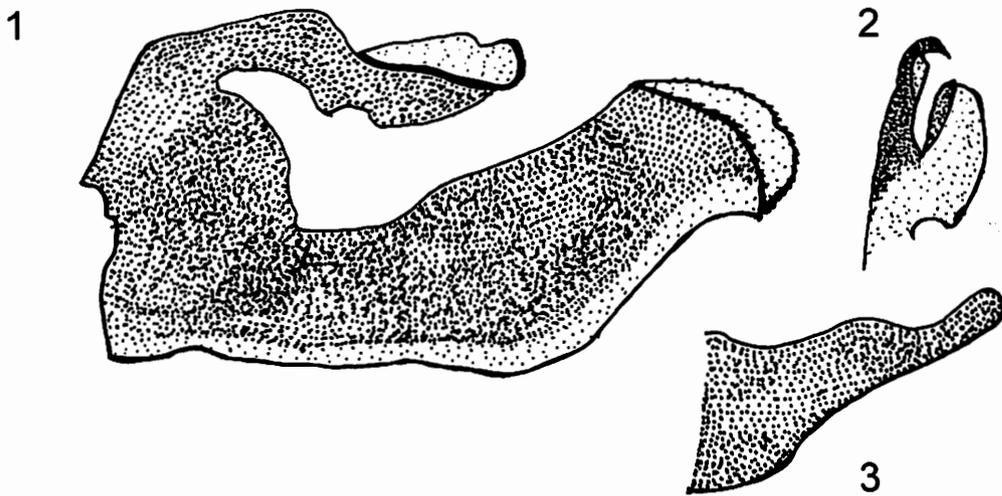
The specimens have been caught in the forest north of the Phnom Samkos Wildlife Sanctuary office in Pramaoy. Most of the forest in this area is clear dipterocarp forest which seems to burn regularly, with denser forest along the rivers.

Material: Holotype: 1 male, Cambodia (Pursat Prov.), Phnom Samkos Wild. Sanct.14-15.IV.2005, Forest between Pramaoy & Phnom Tumpok. Leg. K. Smets & I. Var.

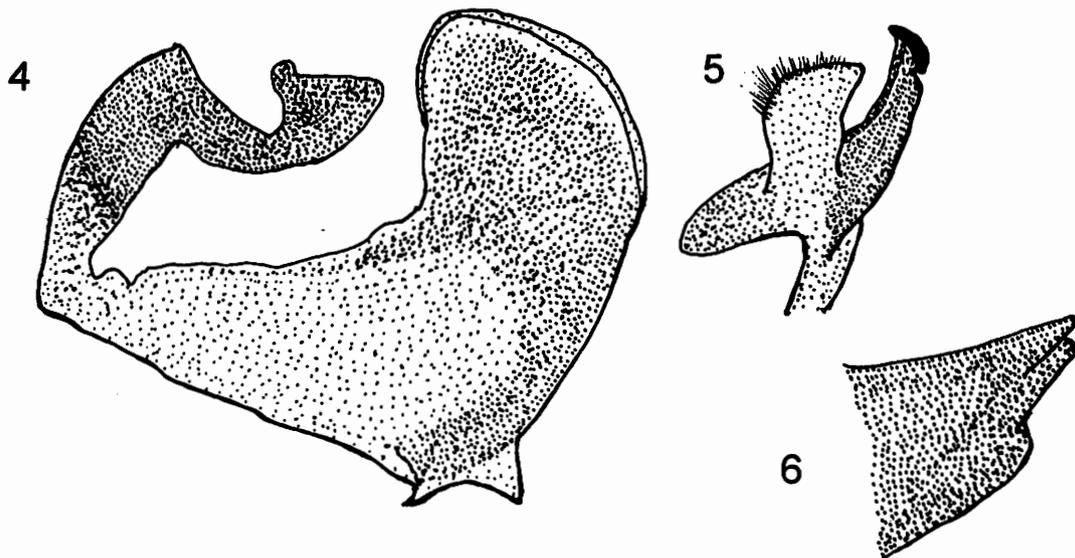
Paratype: 1 male from the same origin as the holotype.

The holotype and the paratype have been deposited in the collection of the Royal Belgian Institute of Natural Sciences.

Head: black with white tomentum. Face beard



Figs. 1-3. *Nusa smetsi* sp.n. Male. 1: Aedeagus; 2: Dististylus and apical process; 3: Apex of gonocoxites.



Figs 4-6. *Nusa vari* sp.n. Male. 4: Aedeagus; 5: Dististylus and apical process; 6: Apex of the gonocoxites.

with white setae; orbital hairs white; 2 black and strong ocellar bristles; postocular bristles strong and black. Antennae black; scape with white setae, pedicel with black setae; scape larger than the pedicel; first flagellomere smaller than the two first segments. Palpus and proboscis black with white hairs.

Thorax: black with yellowish-grey tomentum; anterior antepronotum with black setae; scutum and mesonotum with short black hairs; setae: 1 posthumeral, 3 notopleural, 2 supraalar, 3 postalar and 7 scutellar; katatergite with long, white bristle setae; anepisternum with 3 black setae at the posterior corner; halteres yellowish.

Legs black with upper part of the tibia reddish,

the setae white mixed with some black ones.

Wing lightly blackish and characteristic of the genus.

Abdomen: tergites covered by greyish tomentum with white strong setae on the lateral slope; 4 on the segment I; 3 on the segments 2-3; 2 on the segments 4-5 and 1 on the segment 6. Sternites of the same colour as the tergites with a few fine white hairs on the 3 first segments.

Male genitalia: (Figs 1-3) Hypopygium and hypandrium amber with short clear hairs.

Epandrium with the distal part narrow and a club-shaped apical process. Gonocoxites with apical process rounded at the apex, dististylus with pointed, hooked end. Aedeagus large, with

an apical crevice and bristles on the slopes.

Derivatio nominis: this species is named after the collector of the specimens, Ir Koen SMETS.

Nusa vari sp.n.

Greyish species with slightly infuscated wings. Length = 17 mm.

The specimens have been caught in the *Pinus merkusii* forest on the plateau of Kirirom National Park, with deciduous vegetation (many dipterocarps) on the slopes, in valleys on the plateau and sometimes as under storey in the pine forest. On the sandy roads in the pine forest, many Cicindelidae and Asilidae of several species were captured.

Material: Holotype: 1 male, Cambodia Kirirom N.P. 21-22.IV.2005, Pine Forest. Leg. K. SMETS & I. VAR.

Paratypes: 1 male and 5 females from the same origin as the holotype. The holotype and the paratypes have been deposited in the collection of Royal Belgian Institute of Natural Sciences.

Head: black with white tomentum. Face beard with white setae and some black setae; orbital hairs white; 2 black and strong ocellar bristle; postocular bristles strong, white or black. Antennae black, scape with white setae and some black ones on the posterior face, pedicel with black setae, scape more stout and larger than the pedicel; first flagellomere smaller than the two first segments. Palpus and proboscis black with white hairs.

Thorax: black with yellowish-grey tomentum; anterior anteprepronotum with black setae; scutum and mesonotum with short black hairs; setae: 2 posthumeral, 3 notopleural, 3 supraalar, 4 postalar, 7 scutellar; katatergite with long, white bristle setae; anepisternum with 2 black setae at the posterior corner; halteres white-yellowish.

Legs black with upper part of the tibia reddish, the setae white mixed with some black ones.

Wings slightly blackish and characteristic of the genus.

Abdomen: greyish with white setae on the lateral slope of tergites; setae: 5 on the segments I-II-III; 3 on the segment IV; 1 on the segments V-VI. Sternites greyish with some fine hairs.

Male genitalia: (Figs 4-6) Hypopygium and hypandrium black with black hairs. Hypandrium greyish with a fringe of black hairs. Apex of epandrium with two tubercles at the superior end, rounded at the inferior apex. Aedaegus broad,

bearing a crevice at the apex, basal part of the sheath bearing a double pointed process.

Female: similar to the male, ovipositor typical of the genus with one row of setae on the tergite VIII.

Derivatio nominis: this species is named after the name of the collector of the specimens, Mr Inariddh Var.

Nusa pursati sp.n

Greyish species with slightly infuscated wings. Length = 13 mm.

The specie has been collected in the same place as *Nusa smetsi*.

Material: holotype: 1 male: Cambodia (Pursat Prov.), Phnom Samkos Wild. Sanct. 14-15.IV.2005, Forest between Pramaoy & Phnom Tumpok. Leg. K. SMETS & I. VAR

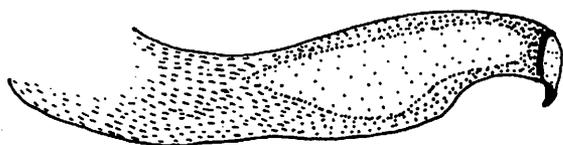
Head: black with white tomentum. Face beard with mixed of white and black setae; orbital hairs black; 2 black and strong ocellar bristle; postocular bristles long and black. Antennae black, scape with white and black setae, pedicel with black setae, pedicel sub-equal to the scape; first flagellomere smaller than the two first segments. Palpus and proboscis black with white hairs.

Thorax: black with yellowish-grey tomentum; anterior anteprepronotum with black setae; scutum and mesonotum with short black hairs; setae: 1 posthumeral, 2 notopleural, 3 supraalar, 2 postalar. Scutellum with fine, black hairs on the disc and 9 scutellar bristles; katatergite with long, white bristle setae and one black setae in the third part; anepisternum with 2 black setae at the posterior corner and covered with fine black or yellow hairs; halteres white-yellowish. Legs black, the setae white mixed with some black ones. Wings slightly blackish and characteristic of the genus.

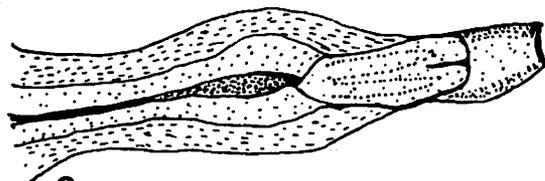
Abdomen: black with greyish tomentum. Setae weak; 5 on the segment 1; 3 on the segments 2-3; 1 on the segments 5-6. Sternites with fine white hairs.

Male genitalia: (Figs 7-9) Hypopygium brown with black hairs, hypandrium with a tuft of black hairs. Gonocoxites with a dististylus slender and fold up at the end, apical process flat and wide. Aedaegus, sheath almost cylindrical with a very little hook at the apex.

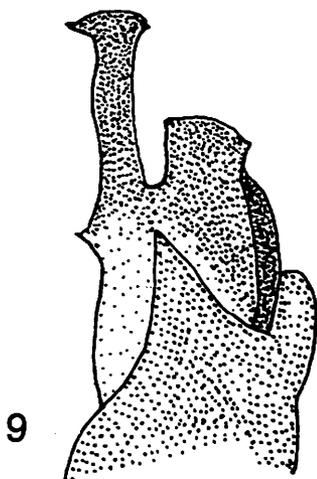
Derivatio nominis: this species is named after the name of the province where the holotype has been caught.



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Figs 7-9. *Nusa pursati* sp.n. Male. 7: Aedeagus in lateral view; 8: Aedeagus in ventral view; 9: Dististylus and apical process.

Key to the species of *Nusa* from South East Asia

1. First flagellomere elongate *albibasis* RICARDO
- First flagellomere not elongate 2
2. Mystax white 4
- Mystax with black and white setae 3
3. Tibia entirely black. Genitalia (Figs 7-8-9) .
..... *pursati*, sp. nov.
- Tibia with upper part reddish. Genitalia (Figs 4-5-6) *vari* sp. nov.
4. Tibia with the anterior face yellowish. Genitalia (Figs 12-13-14-15)
..... *grisea* (HERMANN)
- Tibia with only a slight reddish ring at the upper part. Genitalia (Figs 1-2-3)
..... *smetsi* sp. nov.

Other species of *Nusa*

***Nusa ramicosa* (LOEW, 1871)**

In his revision, LEHR (1977) gives some

information on the behaviour of *N. ramicosa* and cites the species from former USSR, Iraq, Iran, and NE China but he did not illustrate the aedeagus.

BOSÁK & HRADSKY (2001) mentions one female of *N. ramicosa* (LOEW, 1871) from Turkey, Denizli, Acigö, 07.VII.1993, leg. M. HRADSKY.

I have identified one male of *Nusa ramicosa* from the collections of « Faculté universitaire des Sciences agronomiques de Gembloux (Belgium) », collected in Turkey, Izmir, 10.VIII.1964. Leg. M. LECLERCQ. This is the first male reported from Turkey to date. The genitalia have been studied and the aedeagus, dististylus and apical process are illustrated (Figs 10-11).

***Nusa grisea* (HERMANN, 1914)**

Male genitalia: (Figs 12-15)

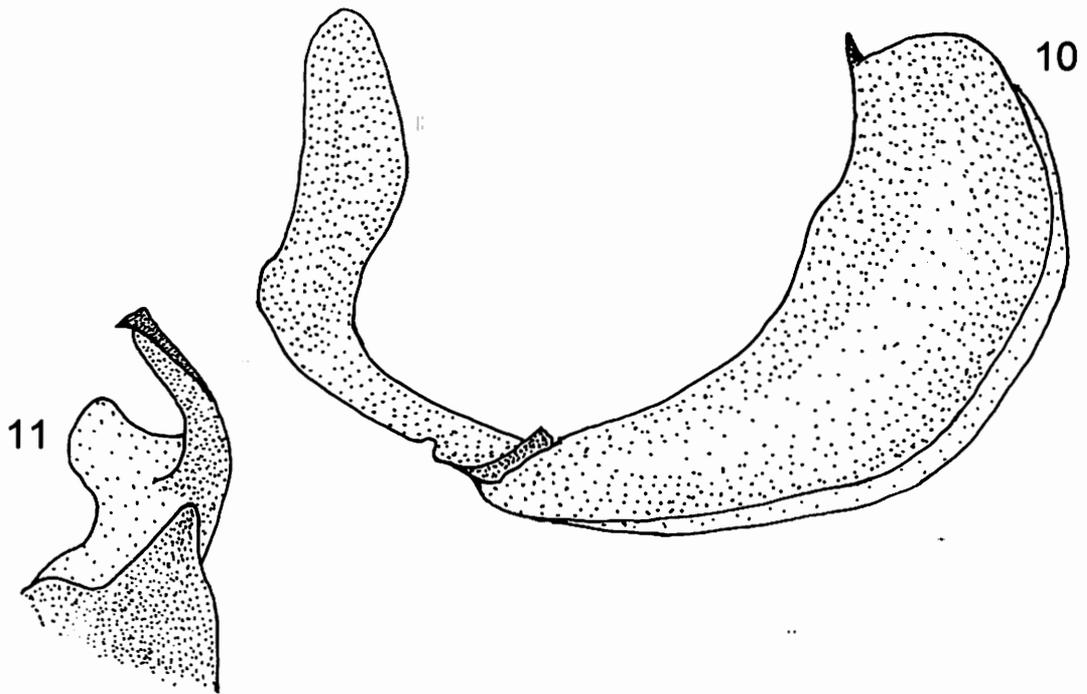
In the collection of the Museum für Naturkunde der Humboldt-Universität zu Berlin (curator DR. ZIEGLER), there are 2 male of *Nusa grisea* (HERMANN, 1914). We have studied the genitalia of one male and, in order to avoid ambiguity concerning the taxon *Nusa grisea*, this male is designated here as lectotype (3 printed labels: Kankau (Koshum) Formosa, H. SAUTER 1912/ 7-VIII/ Typus ; 1 manuscript label: *Dasythrix grisea* HERMANN. The other male is designated as paralectotype (3 printed labels: Kankau (Koshum) Formosa, H. SAUTER 1912/ 7-VIII/ Typus).

Commentary

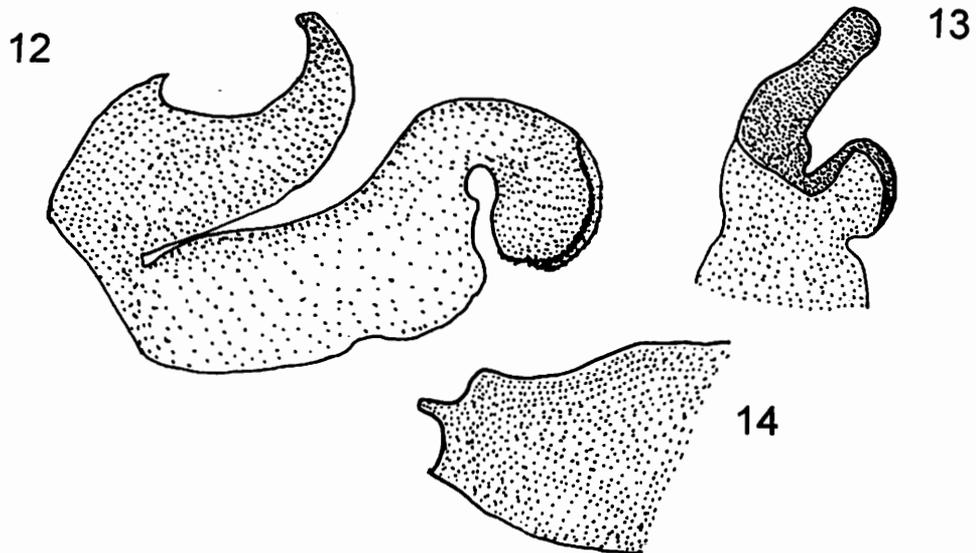
We observe that the aedeagus of the species of *Nusa* studied here is usually well distinct and is different from the one of most of the Laphriinae that has a prong with 3 short or long tubes. For that reason, their aedeagus seems to be closer to that of the Laphystiini or even to that of some Dasypogoninae.

OLDROYD (1970) draw attention that "There is, however, variation in this, and among a complex of specimens there are many males with black moustache and some with the moustache white, though no clear differences can be seen in the genitalia", but he did not study the components of the genitalia. In the same way, JOSEPH & PARUI, in their descriptions of new species of *Nusa*, did not illustrate the inner part of the male genitalia.

Nevertheless, the illustrations of the external genitalia given by the last authors show that



Figs 10-11. *Nusa ramicosa* (LOEW, 1871). Male. 10: Aedeagus; 11: Dististylus and apical process.



Figs 12-14. *Nusa grisea* (HERMANN, 1914). Male. 12: Aedeagus; 13: Dististylus and apical process; 14: Apex of gonocoxites.

Acknowledgements

several species have the aedeagus with prong well developed. For those reasons, as long as the inner structures of the male genitalia of all *Nusa* species (especially those of *N. aequalis*) are not studied, the status of the species of *Nusa* will remain unclear.

We are very grateful to Dr. J. ZIEGLER for the loan of the syntypes of *Nusa grisea* (HERMANN, 1914) and to the collectors Mr VAR INARIDDH and K. SMETS for the material from Cambodia. The author thanks Mr J. CONSTANT and Mr P. LIMBOURG (IRSNB) for improving the manuscript and their help in preparing the specimens.

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