

A contribution to the knowledge of Coniopterygidae (Neuroptera) in Madagascar: genera *Nimboa* Navás, 1925 and *Semidalis* Endelein, 1905

GYÖRGY SZIRÁKI

ABSTRACT: *Nimboa timnewi* sp. n. and *N. vkrivohatszki* sp. n. are described, while *N. natalensis* Tjeder, 1957 is reported as new to the fauna of Madagascar on the basis of coniopterygids collected in the framework of the Madagascar Project of the California Academy of Sciences. A number of new data from Madagascar is given in the case of *N. pauliani* Kimmnis, 1960 and *Semidalis mascarenica* Fraser, 1952. Distributionsal pattern and annual flying activity of *N. benyovszkyi* Sziráki, 2023, *N. pauliani* and *S. mascarenica* is discussed, and clarification of a questionable morphological feature of *N. pauliani* is given. The abundant and generally distributed *S. mascarenica* may have a significant role in controlling of phytophagous arthropods and may have even some economic importance.

Introduction

At the end of the last century three dusty lacewing species were known from Madagascar (MEINANDER 1990). In the framework of the Madagascar Project of the California Academy of Sciences (CAS) – among others – an extraordinarily large number of coniopterygids was collected. In course of the working up this dusty lacewing material (SZIRÁKI 2015, 2020, 2021, 2023) presence of further 24 – mostly new – species, belonging to the family Coniopterygidae, came to light from this country. New results of this study are given in the present paper, including description of two new species of the genus *Nimboa* Navás, 1925.

In addition to males, a considerable number of females of both studied genera were in the Madagascan coniopterygid material at my hand, but certain identification of them impossible according to our present knowledge. Nevertheless, the annual flying activity of *Semidalis* Endelein, 1905 females is discussed, because all of the examined *Semidalis* males are representatives of *S. mascarenica*. Data of the collecting time usually covered a period rather than a single day. When this period touched two months, that month was taken in evaluation of flying activity which included more days. (When the number of the days was equal, the later month was chosen.)

Abbreviations: The names of collectors of *N. natalensis*, *N. pauliani* and *S. mascarenica* are given in the following abbreviations: ES = Evert I. Schlinger, F = Brian Fischer, FP = Frank Parker, G = Charles E. Griswold, HH = Rasolandalao Harin'Hala, I = Michael Irwin, JR = Jean S. Randrianarisoa, JS = Jere Schweikert, K = David H. Kavanaugh, MR = Marie J. Raheirilalao, P = Norman D. Penny, U = Darell Ubick.

Results and discussion

Nimboa Navás, 1925

Nimboa benyovszkyi Sziráki, 2023

Specimens of this recently described insect were collected in all the twelve months of the year, without any indication of seasonality. Majority (19 specimens) of them have been found in Fianarandsoa Province, one in Mahajanga and further 10 in Toliara Provinces. For the detailed collecting data see the original description of the species (SZIRÁKI 2023).

Geographical distribution: At present this species is known only from Madagascar.

Nimboa natalensis Tjeder, 1957

Examined material: Madagascar, Mahajanga Province, Ampijoroa National Park, 160 km N of Maevatana on RN 04, 16°19'10"S, 46°48'48"E, 43 m a.s.l., deciduous forest, Malaise trap, 28.IX–5.X.2003, 1 male, leg. HH; Toliara Province, Andohahela National Park, Tsimelamy, Parcelle II, 24°56'13"S, 46°37'36"E, 180 m a.s.l., transitional forest, Malaise trap, 30.IX–9.XI.2003, 1 male, leg. I, FP & HH.

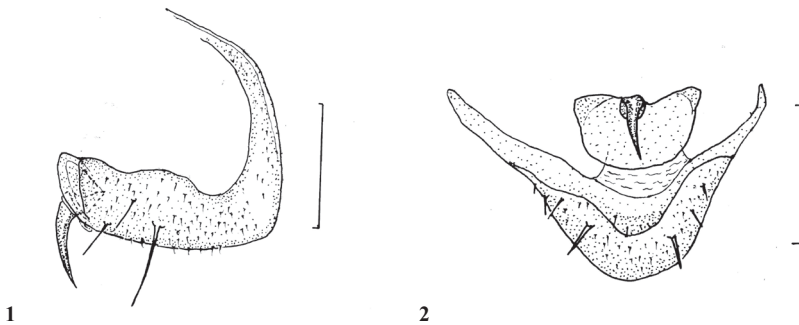
New to the fauna of Madagascar.

Geographical distribution other than Madagascar: Natal National Park, South Africa (TJEDER 1957, MEINANDER 1983, 1998 (partim, as *N. capensis*)), Zambia (MONSERRAT 1998). In work of SZIRÁKI (2011) erroneously was mentioned Zimbabwe instead of Zambia.

Nimboa pauliani Kimmins, 1960 (Figs 1, 2)

Examined material: Madagascar, Antsiranana Province, 7 km N of Jofferville, 12°20'S, 49°15'E, 360 m a.s.l., dry forest, Malaise trap, 13–16.V.2021, 1 male, leg. HH; Antsiranana Province, Montagne d'Ambre National Park, 12°30'52"S, 49°10'53"E, 960 m a.s.l., Malaise trap, 19.III–5.IV.2001, 1 male, leg. I, ES & HH; Antsiranana Province, Montagne d'Ambre National Park, 12°31'13"S, 49°10'45"E, 1125 m a.s.l., Malaise trap, 14–30.V.2001, 1 male, leg. HH; Antsiranana Province, Montagne des Français, 12°18'08"S, 49°38'51"E, 150 m a.s.l., along a forested limestone ridge, Malaise trap, 23–27.I.2001, 1 male, 16.II–6.III.2001, 1 male, leg. HH; Antsiranana Province, Sakalava Beach, 12°15'46"S, 49°23'51"E, 10 m a.s.l., dwarf littoral forest, Malaise trap, 13–16.V.2001 (code: MA-01-04B-09), 1 male, without time data (code: MA-01-04B-18), 2 males, without time data (code: MA-01-04B-19), 1 male, leg. HH; Fianarantsoa Province, near to Isalo National Park, E of Interpretive Center, 22°37'36"S, 45°21'29"E, 885 m a.s.l., dry stream bed, Malaise trap, 3–17.X.2002, 1 male, leg. HH; Madagascar, Mahajanga Province, Ampijoroa National Park, 160 km N of Maevatana on RN 04, 16°19'10"S, 46°48'48"E, 43 m a.s.l., deciduous forest, Malaise trap, 17–24.VIII.2003, 1 male, 24–31.VIII.2003, 7 males, 7–14.IX.2003, 1 male, 22–28.IX.2003, 5 males, 28.IX–5.X.2003, 4 males, 12–18.X.2003, 1 male, 19–26.X.2003, 1 male, 9–20.XI.2003, 3 males, 8–17.XII.2003, 1 male, leg. HH; Mahajanga Province, Forêt de Tsimembo, 8.7 km NNW of Soatana, 19°01'17"S, 44°26'26"E, 20 m a.s.l., tropical dry forest, Malaise trap, 21–25.XI.2001, 2 males, leg. F, G *et al.*; Mahajanga Province, Mahavavy River, 6.2 km of Mitsin-jo, 16°03'06"S, 45°54'30"E, 20 m a.s.l., gallery forest, 1–5.XII.2002, 7 males, leg. F, G *et al.*; Toamasina Province, 7 km SE of Andasibe National Park headquarters, 18°57'46"S, 48°27'10"E, 1050 m a.s.l. tropical forest, Malaise trap, 23.III–7.IV.2001, 1 male, leg. HH; Toamasina Province,

botanic garden near to entrance to Andasibe National Park, 18°55'35"S, 48°24'28"E, 1025 m a.s.l. tropical forest, Malaise trap, 19–26.IX.2001, 1 male, leg. HH; Toliara Province, Andohahela National Park, Forêt de Manantalinjo, 7.6 km E of Hazofotsy, 24°49'01"S, 46°36'36"E, 150 m a.s.l., spiny forest thicket, Malaise trap, 12–26.I.2002, 3 males, leg. F, G *et al.*; Toliara Province, Andohahela National Park, Ihazofotsy, Parcelle III, 24°50'05"S, 46°29'21"E, 80 m a.s.l., dry spiny forest, Malaise trap, 26.I–3.II.2003, 2 males, 20.V–3.VI.2003, 1 male, 24.VII–3.VIII.2003, 5 males, 7–17.XII.2003, 1 male, leg. I, FP & HH; Toliara Province, Andohahela National Park, Tsimelahy, Parcelle II, 24°56'13"S, 46°37'36"E, 180 m a.s.l., transitional forest, Malaise trap, 22–29.VI.2003, 2 males, 10–21.IX.2003, 1 male, 20–30.XI.2003, 1 male. leg. I, FP & HH; Toliara Province, Berenty Special Reserve, 8 km NW of Amboasary, 25°01'16"S, 46°18'20"E, 35 m a.s.l., spiny forest, Malaise trap, 15–29.IV.2004, 1 male, 23.VI–4.VII.2004, 2 males, 31.VII–15.VIII.2004, 1 male, 15–29.VIII.2004, 3 males, leg. I, FP & HH; Toliara Province, Berenty Special Reserve, 8 km NW of Amboasary, 25°00'24"S, 46°18'12"E, 85 m a.s.l., gallery forest, Malaise trap, 7–17.I.2003, 3 males, 25.II–7.III.2003, 1 male, leg. I, FP & HH; Toliara Province, Beza Mahafaly Reserve, Parcelle I, near to research station, 23°44'19"S, 44°35'28"E, 165 m a.s.l., dry deciduous forest, Malaise trap, 22.XI–2.XII.2002, 1 male, leg. HH; Toliara Province, Forêt de Kirindy, 15.5 km ENE of Marofandilea, 20°02'44"S, 44°39'44"E, 100 m a.s.l., tropical dry forest, at light, 28.XI–3.XII.2001, 1 male, leg. F, G *et al.*; Toliara Province, Mikea Forest, NW of Manambo, 22°54'13"S, 43°28'32"E, 30 m a.s.l., dry deciduous forest, Malaise trap, 6–17.III.2003, 1 male, leg. HH; Toliara Province, Mikea Forest, NW of Manambo, 22°54'48"S, 43°28'56"E, 37 m a.s.l., spiny forest, Malaise trap, 15–20.XI.2001, 1 male, leg. HH; Toliara Province, Tsimanampetsotsa National Park, Forêt de Bemanateza, 20.7 km E of Efoetse, 23°59'32"S, 43°52'50"E, 90 m a.s.l., spiny forest thicket, Malaise trap, 22–26.III.2002, 1 male, leg. F, G *et al.*



Figs 1–2. *Nimboa pauliani*. Fig. 1 = hypandrium and penis, lateral view; Fig. 2 = hypandrium and penis caudal view. Scale: 0.04 mm

Though specimens of the given species were collected in all of the five provinces of Madagascar where collectings have been carried out in the framework of Madagascar project of CAS, most of the 77 males were found in provinces Mahajanga (33) and Toliara (32). Some periodicity of flying activity seems to be detectable within the year: from the middle of the dry season (beginning of August) to the middle of the wet season (end of January) 54, while

in the other six months 20 specimens were captured. (In the case of 3 specimens the time data were absent.)

Taxonomical remarks: MEINANDER (1972) mentioned and figured a ventrocaudal pointed sclerite of male genitalia, which was regarded by him as penis, as it generally is accepted in the genus *Nimboa*. Later on he altered his opinion (MEINANDER 1976), and stated that this sclerite is a ventral appendage of hypandrium. Examination of the present material verified that the given sclerite is indeed a penis, however, it is connected membranously to the inner surface of hypandrium (Figs 1, 2), and in the second case the connective membrane was thought by Meinander as caudal part of hypandrium.

Geographical distribution: Type locality of *Nimboa pauliani* is Glorioso Island (KIMMINS 1960), which is under administration of France, as a territory of French Southern and Antarctic Lands. Later on it was collected on Aldabra Islands (MEINANDER, 1976) and at a single locality of Madagascar (MEINANDER 1998). MEINANDER (1990), in connection of this species, wrote as follows: "Distribution: Madagascar, Seychelles". Really, Aldabra is part of the Republic Seychelles, but it situated in about 1000 km distance from the islands usually known as Seychelles. In contrary, the island Glorioso newer was an effective part of Madagascar, though the Union of the Comoros and Madagascar also claimed it – in addition to France.)

Nimboa timnewi sp. n. (Figs 3–8)

Type material – Holotype: male, **Madagascar**, Fianarandsoa Province, near to Isalo National Park, E of Interpretive Center, 22°37'36"S, 45°21'29"E, 885 m a.s.l., dry stream bed, Malaise trap, 29.IV–4.V.2002, leg. R. Harin 'Hala. Deposited in the collection of CAS.

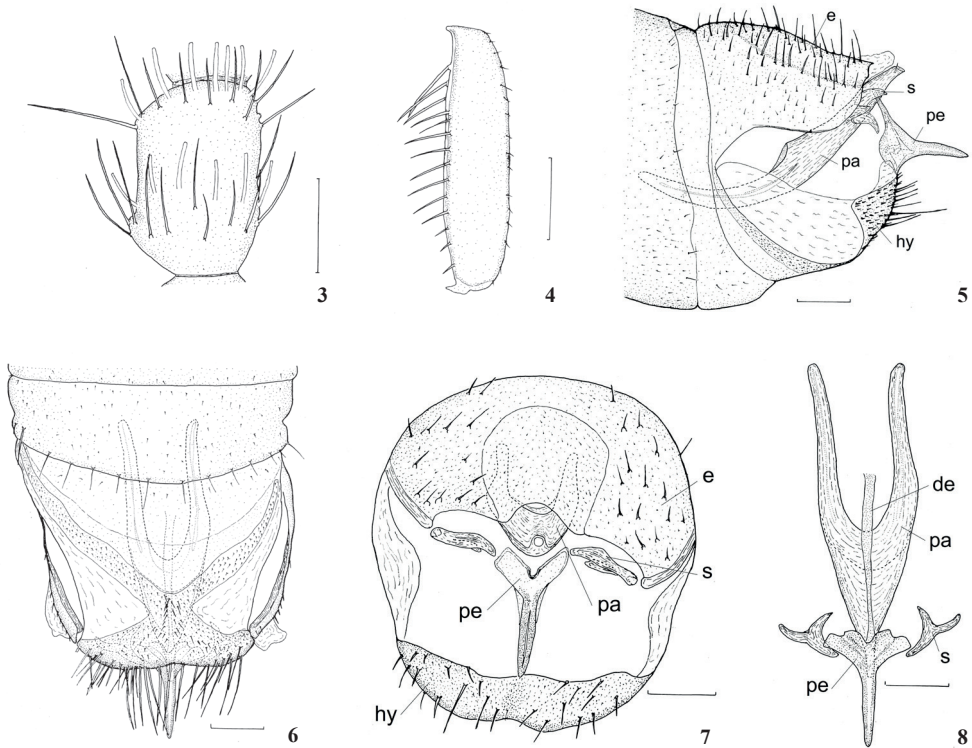
Description – Length of body 1.5 mm. Head capsule and palpi pale ochreous. Eyes large, black. Both antennae broken (remaining parts 20 and 17 segmented). Flagellum slightly darker than two pale ochreous basal segment. Scape as long as broad, pedicel little longer than broad. Most of flagellar segments about 1.7 times as long as broad, with long seta. Scape and pedicel covered by ordinary hairs, distributed irregularly. Both ordinary and scale-like hairs of flagellar segments placed very loosely; each of them forming regular apical and more or less irregular ring (Fig. 3).

Thorax dorsally light brown, ventrally and laterally pale ochreous. Thoracal sutures and apodemes light brown, shoulder spots indistinct. Legs light brown. Inner edge of first femur armed with row of very strong spines, proximal ones long, distal ones short. Row of spines reaching distal end of femur (Fig. 4). Length of fore wing 2.1 mm, of hind wing 1.8 mm. Wing membrane light brownish tint, without any pattern. Veins light brown. Pregenital part of abdomen pale ochreous.

Most parts of male terminalia (Figs 5–8) well sclerotized, light brown. Apodeme of ninth segment indistinct. Hypandrium with normally sclerotized, in ventral view roughly x-shaped, in middle with narrow setose pattern, which continuing laterally in wide membranous structure. Caudal edge of ectoproct with shallow median incision. Ventral apodeme of this sclerite present but narrow. Stylus small, moderately sclerotized, forked near to its middle, with in lateral view stout side branch. Parameres forming relatively narrow structure, their fused tubular part reaching tapering caudal edge of this organ, where short inner thorn visible. Tubular distal part of fused parameres about as long as proximal (not tubular) part. Penis sclerite having narrow, bilobed, dorsally extended basal part, with complicated inner structure and strong, slightly arched, pointed, caudally directed apical part.

Differential diagnosis – Because of the strong, caudally directed apical part of the penis and the relatively long, tapering caudally tubular part of the paramere *Nimboa timnewi* differs sharply from all of the hitherto described species of the genus *Nimboa*, and impossible to put it in either of the two groups sensu SZIRÁKI (2005) of this genus. A further curious feature of the new species is the unusual sclerotized pattern of the hypandrium.

Etymology – I dedicate the new species to Dr. Timothy Richard New, the excellent expert of Neuroptera and Psocoptera.



Figs 3–8. *Nimboa timnewi* sp.n. Fig. 3 = 13th antennal segment of male; Fig. 4 = first femur of male; Fig. 5 = male terminalia, lateral view; Fig. 6 = male terminalia, ventral view; Fig. 7 = male terminalia, caudal view; Fig. 8 = male internal genitalia, ventral view. Abbreviations: de = ductus ejaculatorius, hy = hypandrium, pa = paramere, pe = penis, s = stylus. Scale in Fig. 3: 0.02 mm, in Fig. 4: 0.12 mm, in Figs 5–8: 0.04 mm

***Nimboa vkrihovatszkii* sp. n.** (Figs 9–16)

Type material – Holotype: male, **Madagascar**, Fianarandsoa Province, near to Isalo National Park, E of Interpretive Center, 22°37'36"S, 45°21'29"E, 885 m a.s.l., dry stream bed, Malaise trap, 16–21.XII.2001, leg. R. Harin 'Hala. Deposited in the collection of CAS.

Description – Length of body 1.6 mm. Head capsule and palpi light brown. Eyes large, black, not protruding. Antennae very light brown, 1.2 mm, 24 segmented. Palpi light brown. Scape as long as broad, pedicel about 2 times as long as broad. Most of flagellar segments 1.3

times as long as broad and provided with several moderately long setae. Scape and pedicel covered by irregularly situated ordinary hairs. Ordinary hairs of flagellar segments form moderately irregular apical and more regular basal ring. Wohrls of scale-like hairs situated apically each of them (Fig. 9). Thorax ochreous laterally and ventrally, light brown dorsally. Thoracal apodemes and sutures medium brown. Shoulder spots indistinct. Legs very light brown. Inner edge of first femour armed with moderately strong spines, proximal ones not longer than some of others, and row of spines not reaching distal end of femur (Fig. 10). Length of fore wing 2.1 mm, of hind wing 1.6 mm. Wing membrane light yellowish brown, without any pattern. Veins light brown. Pregenital part of abdomen pale ochreous. Terminalia medium brown, most part of them well sclerotized (Figs 11-16). Apodeme of ninth segment indistinct. Hypandrium with well sclerotized, roughly x-shaped, but in middle rather wide setose part continuing laterally in membranous structure. Caudal edge of ectoproct slightly scalloped, with deep median incision. Ventral apodeme of this sclerite almost invisible. Stylus moderately sclerotized, investigable in caudal view, unforked and consists of two arches. (Ventral part of this sclerite was not visible in lateral view – consequently it is absent in the corresponding drawings (Figs 11, 15). Besides, the two styli probable turned somewhat in a vertical plane when the investigated abdomen with the genitalia was placed in different positions.) The fused tubular part of parameres curiously narrow, and reaching tapering caudal edge. Tubular distal part of fused parameres only slightly longer than half of proximal (not tubular) part. Penis sclerite having wide, bilobed basal and caudally directed apical part. Basal part moderately extended dorsally, and having simple inner structure. Well sclerotized apical part tapering caudally, bent down distinctly and having truncated ending.

Differential diagnosis – Through the peculiar structure of paramere and penis *Nimboa vkrivohatszkii* sharply differs from all of the earlier described species of the given genus, and closely related to the above described *Nimboa timnewi* sp. n.

The main distinctive features of *N. vkrivohatszkii* in comparison with *N. timnewi* are: the shorter row of only moderately strong spines of first femur; the wider x-shaped pattern of hypandrium; scalloped caudal edge of ectoproct, with a deep median incision; the shorter tubular part of paramere; the unforked stylus, consisting of two arches; the wider basal part of penis; the caudally tapering, distinctly bent down apical part of penis. with truncated ending.

For sure judgement of taxonomical value of differences in antennae mentioned above examination of more specimens would be necessary.

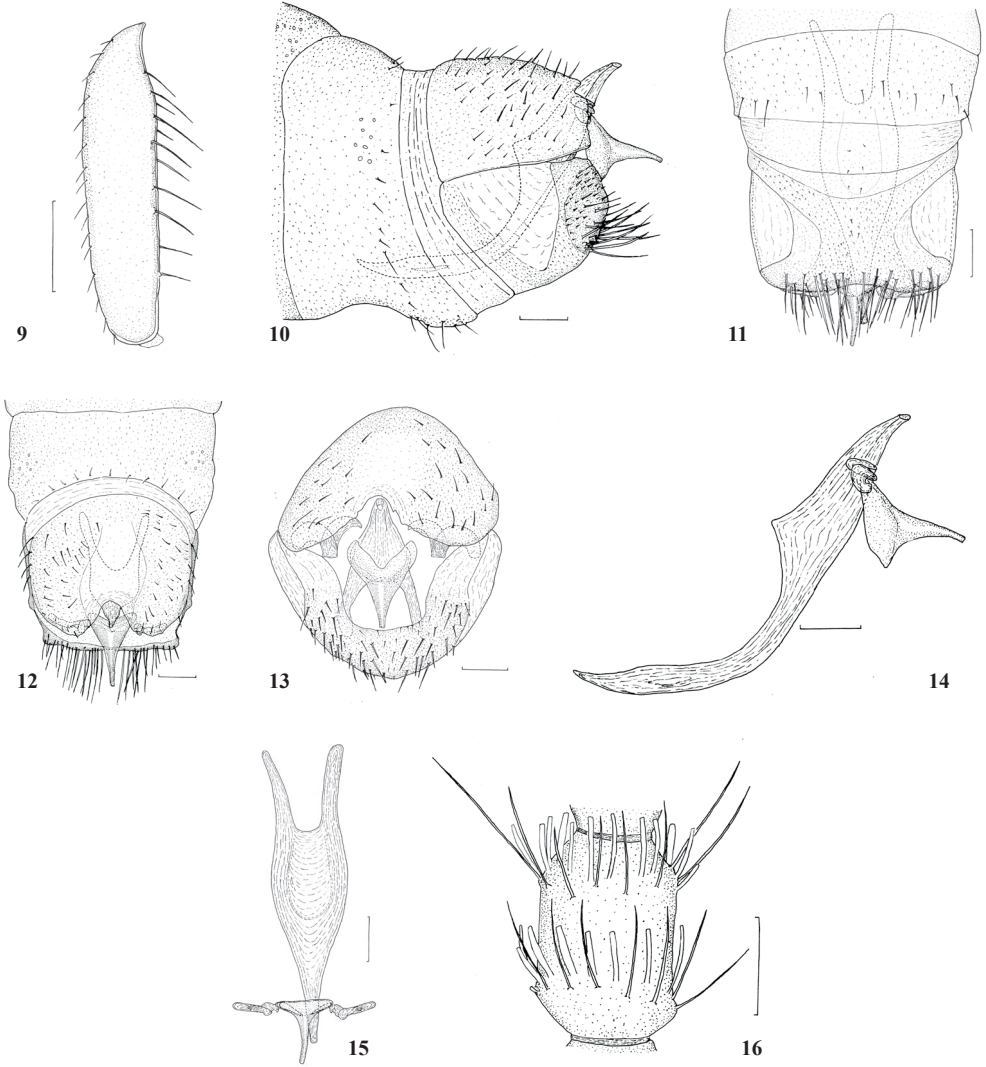
Etymology – I dedicate the new species to the late Dr. Viktor Anatolievich Krivokhatsky, the outstanding expert of antlions. ("Krivohatszki" is the transliteration to Hungarian of the Russian family name of V. A. Krivokhatsky.)

Semidalis Endelein, 1905

Semidalis mascarenica Fraser, 1952

Examined material: Madagascar, Antsiranana Province, 7 km N of Jofferville, 12°20'S, 49°15'E, 360 m a.s.l., dry forest, Malaise trap, 22–26.I.2001, 1 male, 6–20.III.2001, 2 males, leg. HH; Antsiranana Province, Montagne d'Ambre National Park, 12°30'52"S, 49°10'53"E, 960 m a.s.l., Malaise trap, 12.II–4.III.2001, 1 male, 19.III.2001, 3 males, leg. I, ES & HH; Antsiranana Province, Montagne d'Ambre National Park, 12°31'13"S, 49°10'45"E, 1125 m

a.s.l., Malaise trap, 30.V–6.VI.2001, 1 male, leg. HH; Antsiranana Province, Montagne des Français, 12°18'08"S, 49°38'51"E, 150 m a.s.l., along a forested limestone ridge, Malaise trap, 30.I–15.II.2001, 1 male, 15.II–6.III.2001, 2 males, 19.III–5.IV.2001, 2 males, leg. HH; Antsiranana Province, Sakalava Beach, 12°15'46"S, 49°23'51"E, 10 m a.s.l., dwarf littoral forest, Malaise trap, 7–22.IV.2001, 2 males, 13–16.V.2001, 1 male, 31.V–7.VI.2001, 1 male, 25.VI–6.VII.2001 (code: MA-01-04B-13), 1 male, without time data (code: MA-04B-17), 2 males, without time data (code: MA-01-04B-18), 3 males, leg. HH; Antsiranana Province, 3



Figs 9–16. *Nimboa vkrivohatszkii* sp. n. Fig. 9 = 13th antennal segment of male; Fig. 10 = first femur of male; Fig. 11 = male terminalia, lateral view; Fig. 12 = male terminalia, ventral view; Fig. 13 = male terminalia, dorsal view; Fig. 14 = male terminalia, caudal view; Fig. 15 = male internal genitalia, lateral view; Fig. 16 = male internal genitalia, ventral view. Scale in Fig. 9: 0.02 mm, in Fig. 10: 0.12 mm, in Figs 11–16: 0.04 mm

km W of Sakalava Beach, 12°17'10"S, 49°22'00"E, 40 m a.s.l., Malaise trap, 27–30.I.2001, 1 male, leg. I, ES, HH; Fianarantsoa Province, near to Isalo National Park, E of Interpretive Center, 22°37'36"S, 45°21'29"E, 885 m a.s.l., dry stream bed, Malaise trap, 3–10.II.2002, 1 male, 20–27.V.2002, 1 male, 7–22.IX.2002, 1 male, leg. HH; Fianarantsoa Province, Ranomafana National Park, Belle Vue at Talatakely, 21°15'59"S, 47°25'13"E, 1200 m a.s.l., secondary tropical forest, Malaise trap, 8–15.XI.2001, 4 males, 15–22.XI.2001, 1 male, 28.XI–6.XII.2001, 2 males, 24.XII.2001–2.I.2002, 1 male, 2–10.I.2002, 1 male, 4–12.II.2002, 1 male, 26.II–10.III.2003, 1 male, 15–18.V.2003, 1 male, leg. HH; Fianarantsoa Province, Ranomafana National Park, Jirama Water Works, 21°14'55"S, 47°27'08"E, 690 m a.s.l., near to the river, Malaise trap, 21–24.XII.2001, 1 male, 2–10.I.2002, 1 male, leg. HH; Fianarantsoa Province, Ranomafana National Park, radio tower at forest edge, 21°15'03"S, 47°24'26"E, 1130 m a.s.l., mixed tropical forest, Malaise trap, 16.X–8.XI.2001, 1 male, 15–22.XI.2001, 2 males, 22–28.XI.2001, 1 male, 6–15.XII.2001, 3 males, 15–21.XII.2001, 2 males, 21–24.XII.2001, 2 males, 14–21.I.2002, 1 male, 28.I–4.II.2002, 1 male, 19–26.II.2002, 2 males, 23–30.IV.2002, 1 male, 3–15.IV.2003, 1 male, leg. HH; Fianarantsoa Province, Ranomafana National Park, Talatakely, 21°15'30"S, 47°25'28"E, 900 m a.s.l., 11.IV.1998, 4 males, leg. G, K, P. MR, JR, JS & U; Fianarantsoa Province, Ranomafana National Park, 23 km N of Vahiporana, 21°13'26"S, 47°22'51"E, 1100 m a.s.l., 12.IV.1998, 1 male, 28.IV.1998, 8 males, leg. G, K, P. MR, JR, JS & U; Fianarantsoa Province, Ranomafana National Park, lower part of Vahiporana, 21°14'15"S, 47°23'53"E, 1000 m a.s.l., 23.IV.1998, 9 males, leg. G, K, P. MR, JR, JS & U; Fianarantsoa Province, Ranomafana National Park, Vahiporana at broken bridge, 21°13'34"S, 47°22'11"E, 1100 m a.s.l., mountain rain forest, Malaise trap, 16.X–8.XI.2001, 1 male, 8–15.XI.2001, 1 male, 6–15.XII.2001, 1 male, 28.I–4.II.2002, 2 males, leg. HH; Fianarantsoa Province, Ranomafana National Park, Vateharanana, 21°17'17"S, 47°25'59"E, 1000 m a.s.l., 29.IV.1998, 2 males, leg. G, K, P. MR, JR, JS & U; Mahajanga Province, Ampijoroa National Park, 160 km N of Maevatana on RN 04, 16°19'10"S, 46°48'48"E, 43 m a.s.l., deciduous forest, Malaise trap, 17–24.VIII.2003, 3 males, 24–31.VIII.2003, 3 males, 14–22.IX.2003, 1 male, 22–28.IX.2003, 2 males, 28.IX–5.X.2003, 1 male, leg. HH; Toamasina Province, 7 km SE of Andasibe National Park, 18°56'00"S, 48°27'18"E, montaine rainforest, hand netted, 5.IX.2001, 5 males, leg. P; Toamasina Province, 7 km SE of Andasibe National Park headquarters, 18°57'46"S, 48°27'10"E, 1050 m a.s.l., tropical forest, Malaise trap, without time data (code: MA-01-08A-01), 2 males, without time data (MA-01-08A-20), 1 male, leg. HH; Toamasina Province, botanic garden near to entrance to Andasibe National Park, 18°55'35"S, 48°24'28"E, 1025 m a.s.l., tropical forest, Malaise trap, 30.IV–14.V.2001, 3 males, 15.VIII–1.IX.2001 (code: MA-01-08B-10), 2 males, without time data (code: MA-01-08B-15), 2 males, leg. HH; Toliara Province, Andohahela National Park, Forêt de Ambohibory, 1.7 km ENE of Tsimelahy, 24°55'48"S, 46°38'44"E, 300 m a.s.l., Malaise trap, 16–20.I.2002, 1 male, leg. F, G *et al.*; Toliara Province, Andohahela National Park, Forêt de Manautalinjo, 7.6 km E of Hazafotsy, 24°49'01"S, 46°36'36"E, 150 m a.s.l., spiny forest thicket, Malaise trap, 12–16.I.2002, 2 males, leg. F, G *et al.*; Toliara Province, Andohahela National Park, Ihazofotsy, Parcelle III, 24°50'05"S, 46°29'21"E, 80 m a.s.l., dry spiny forest, Malaise trap, 25.I–3.II.2003, 1 male, 20.V–3.VI.2003, 1 male, 21–29.VI.2003, 1 male, 13–24.VII.2003, 1 male, leg. I, FP & HH; Toliara Province, Andohahela National Park, Tsimelahy, Parcelle II, 24°56'13"S, 46°37'36"E, 180 m a.s.l., transitional forest, Malaise trap, 15–26.II.2003, 1 male, leg. I, FP & HH; Toliara Province, Antafokoy, 23°28'43"S,

44°03'51"E, 55 m a.s.l., gallery forest, Malaise trap, 25–28.I.2002, 1 male, leg. Frontier Project; Toliara Province, Beza Mahafaly Reserve, Parcelle II, near to Bellevue, 23°41'23"S, 44°34'32"E, 180 m a.s.l., spiny forest, Malaise trap, 18–25.XII.2001, 1 male, leg. HH; Toliara Province, Forêt de Kiringy, 15,5 km ENE of Marofandilia, 20°02'42"S, 44°30'44"E, 100 m a.s.l., tropical dry forest, Malaise trap, 28.XI–3.XII.2001, 1 male, leg. F, G *et al.*; Toliara Province, Ifaty, near Hotel Paradisia in costal dunes, 23°10'47"S, 43°37'01"E, 9 m a.s.l., vegetation in sandy area, 26.V–5.VI.2002, 1 male, leg. HH; Toliara Province, Mikea Forest, NW of Manambo, 22°54'13"S, 43°28'32"E, 30 m a.s.l., dry deciduous forest, Malaise trap, 8–19.II.2002, 1 male, 8–18.III.2002, 1 male, 18–28.III.2002, 1 male, 23.IX–3.X.2002, 1 male, 28–30.X.2002, 2 males, 14–28.XI.2002, 1 male, 15.I–11.II.2003, 1 male, 11–24.II.2003, 1 male, 6–17.III.2003, 1 male, leg. HH; Toliara Province, Mikea Forest, NW of Manambo, 22°54'48"S, 43°28'56"E, 37 m a.s.l., spiny forest, Malaise trap, 12–20.XI.2001, 2 males, 6–16.XII.2001, 1 male, 16–26.XII.2001, 3 males, leg. HH; Toliara Province, Réserve Privé Berenty, Forêt de Bealoka, Mandraré River, 14.6 km NNW of Ambossary, 24°57'25"S, 46°16'17"E, 35 m a.s.l., gallery forest, Malaise trap, 3–8.II.2002, 2 males, leg. F, G *et al.*; Toliara Province, Tsinamanpatsotsa, Forêt de Bemanatera, 20.7 km E of Efoetse, 23°59'32"S, 43°52'50"E, 90 m a.s.l., spiny forest thicket, 22–26.III.2002, 1 male, leg. F, G *et al.*; Toliara Province, Zombitse National Park, 22°50'25"S, 44°43'52"E, 825 m a.s.l., deciduous spiny forest, Malaise trap, 15.X–9.XI.2001, 1 male, 19–26.XI.2001, 1 male, 11–16.IV.2002, 1 male, 1–14.VIII.2002, 1 male, leg. HH.

The species *Semidalis mascarenica* exists in all of the six provinces of Madagascar. Its type locality was "Tanarive" (FRASER 1952) (now Antanarivo in the province with the same name). Later a considerable number of specimens were collected in different parts of this country – including Antanarivo Province (e.g.: MEINANDER 1974, 1998), while specimens from the other five provinces were present in the examined material listed above. Altogether 147 males were determined; the greatest number (63) of them from Fianarandsoa Province. As the seasonality of the flying activity regards, it is higher in the wet season (99 collected specimens from November to April), than in the dry season (38 specimens from May to October). (In the case of 10 specimens the time data were absent.) In the framework of present investigations 177 *Semidalis* females were recognized also. Though these were not determined definitively at species level, most of them (if not all) belong to *S. mascarenica* also, as all of the examined *Semidalis* males are representatives of this species. Therefore, the pattern of flying seasonality of *Semidalis* females (from November to April 122, from May to October 50 specimens, apart from the 5 specimens without time data) may be regarded as that of females of *Semidalis mascarenica*, and it supports that the flying activity of this species follows the known climate seasonality of Madagascar.

Regarding the data detailed above, *Semidalis mascarenica* is a frequent predaceous insect in Madagascar, which may have a significant role in controlling of phytophagous arthropods. Because this species lives in very different habitats (e.g.: vegetation in sandy area, spiny forest thicket, and montain rain forest) it may be present also on agriculturally cultivated areas, and may have even some economic importance.

Geographical distribution other than Madagascar: Mahé Island in the Seychelles (MEINANDER 1972), La Réunion (France) in the Mascarenen Archipelago (MEINANDER 1972, OHM & HÖLZEL 1997) and Mayotte Island (France), in Comoros (in sense of physical geography) (OHM & HÖLZEL 1998).

Acknowledgements: I am grateful to the late Dr. Norman D. Penny (CAS) for the possibility to examine the extremely interesting Madagascan coniopterygid material of CAS and to Aranka Grabant (Hungarian National Museum Public Collection Center, Hungarian Natural History Museum) for digitalization of drawings.

References

- FRASER F. C. (1952): New additions to the fauna of Madagascar. – Mémoires de l'Institut Scientifique de Madagascar. Serie E. Entomologie, 1: 135–143.
- KIMMINS D. E. (1960): On a small collection of Neuroptera from Glorioso Islands, with description of a new species of Coniopterygidae (Neuroptera). – Le Naturaliste Malgache, 12: 113–115.
- MEINANDER M. (1972): A revision of the family Coniopterygidae (Planipennia). – Acta Zoologica Fennica, 136: 1–357.
- MEINANDER M. (1974): Coniopterygidae from Madagascar (Neuroptera). – Notulae Entomologicae, 54: 60–63.
- MEINANDER M. (1976): Coniopterygidae from Africa (Neuroptera). – Notulae Entomologicae, 56: 475–499.
- MEINANDER M. (1983): The Coniopterygidae (Neuroptera) of southern Africa and adjacent Indian Ocean Islands. – Annals of the Natal Museum, 25: 475–499.
- MEINANDER M. (1990): The Coniopterygidae (Neuroptera, Planipennia). A check-list of the species of the world, descriptions of new species and other new data. – Acta Zoologica Fennica, 189: 1–95.
- MEINANDER M. (1998): Coniopterygidae (Neuroptera) from southern and eastern Africa. – African Entomology, 6: 117–146.
- MONSERRAT V. J. (1998): Nuevos datos sobre los coniopterigidos de Zimbabwe y Zambia (Neuroptera: Coniopterygidae). – Journal of Neuropterology, 1: 5–15.
- OHM P. & HÖLZEL H. (1997): Beitrag zur Kenntnis der Neuropterenfauna der Maskarenen (Neuroptera: Coniopterygidae, Hemerobiidae, Chrysopidae, Myrmeleontidae). – Entomofauna, 18(17): 221–236.
- OHM P. & HÖLZEL H. (1998): A contribution to the knowledge of the neuropterous fauna of the Comoros: The Neuroptera of Mayotte. – Acta Zoologica Fennica, 209: 183–194.
- SZIRÁKI GY. (2005): Species grouping of several genera and subgenera of Coniopterygidae. – Folia entomologica hungarica, 66: 101–136.
- SZIRÁKI GY. (2011): Coniopterygidae of the world. – Lambert Academic Publishing, Saarbrücken, 250 pp.
- SZIRÁKI GY. (2015): Identity of *Coniopteryx madagascariensis* Meinander, 1974 (Neuroptera: Coniopterygidae), with description of three new species. – Acta Zoologica Academiae Scientiarum Hungaricae, 61(2): 135–146. <https://doi.org/10.17109/AZH.61.2.135.2015>
- SZIRÁKI GY. (2020): A contribution to knowledge of the genus *Coniopteryx* (Neuroptera: Coniopterygidae) in Madagascar, with description of 18 new species. – Acta Zoologica Academiae Scientiarum Hungaricae, 66(3): 203–246. <https://doi.org/10.17109/AZH/66.3.203.2020>
- SZIRÁKI GY. (2021): A new *Hemisemidalis* species from Madagascar (Neuroptera: Coniopterygidae). – Folia entomologica hungarica, 82: 69–73. <https://doi.org/10.17112/FoliaEntHung.2021.82.69>
- SZIRÁKI GY. (2023): A new species of *Nimboa Navás, 1925* from Madagascar (Neuroptera: Coniopterygidae). – Folia entomologica hungarica, 84: 151–156. <https://doi.org/10.17112/FoliaEntHung.2023.84.151>
- TJEDER B. (1957): Neuroptera-Planipennia. The lace-wings of southern Africa 1. Introduction and families Coniopterygidae, Sisyridae, and Osmilidae. – South African Animal Life, 6: 95–188.

GYÖRGY SZIRÁKI
Hungarian Natural History Museum
Hungarian National Museum Public Collection Centre
H-1088 Budapest, Hungary
Baross utca 13.
E-mail: sziraki.gyorgy@nhmus.hu