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v.66 (1974-1975): <https://www.biodiversitylibrary.org/item/127147>

Page(s): Page 25, Page 26, Page 27, Page 28, Page 29, Page 30, Page 31, Page 32, Page 33, Page 34

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A NEW SOUTH AFRICAN REPRESENTATIVE OF THE SOUTH WEST
AFRICAN GENUS *NAMIBIMYDAS* HESSE (DIPTERA: MYDAIDAE),
WITH SOME ECOLOGICAL NOTES ON THE HABITS OF THE SPECIES

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(With 1 figure)

[MS. accepted 8 October 1973]

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INTRODUCTION

Since the publication of my paper (Hesse 1972) on new Mydidae from the Namib Desert and south-western Africa a new representative of the genus *Namibimydas*, described therein, was obtained from the west coastal region of South Africa.

As the genus *Namibimydas* is remarkable in many respects and as another representative of it has now been discovered far south of the Namib Desert, but also along the sandy coastal belt, a description of this new species is imperative.

This discovery of another species, represented by several specimens of both sexes, also enables me to supplement the original description of the genus which was based on only two old, somewhat damaged, specimens in the Stuttgart Museum.

Moreover the discoverer of the interesting new species also made some field observations on the habits of this mydaid which are as remarkable as the insects themselves and which, in view of our extreme ignorance of the ecology of Mydidae, deserve to be recorded.

It all began early in January 1973 when Mr A. J. Prins, our Assistant Entomologist, was on vacation at Paternoster on the west coast between Saldanha Bay and Stompneus Bay and, when unprepared for the occasion, he first noticed a ♀ of these mydaids ovipositing in the sand.

To obtain specimens for the Museum Mr Prins, accompanied by Mr V.

Branco, our artist, visited the same locality again early in February 1973. As in the case of most South African species and the Mydaiidae in general, they also found that the desired insects were by no means plentiful and they were able to obtain only 8 specimens during the two days they spent there.

DESCRIPTION

Subfamily *Syllegomydinae*

Tribe Halterorchini

Genus *Namibimydas* Hesse

Namibimydas prinsi sp. nov.

This new species which I have great pleasure in dedicating to Mr A. J. Prins, who first discovered it, is characterized as follows:

Body-colour with the head and body mainly dark or blackish, appearing darker or more black in ♂♂, sometimes more greyish black in ♀♀; pleural and sternal parts and venter in some ♀♀ (teneral) appearing pallid; sides of mesonotum, postalar calli, scutellum and metanotum in some ♀♀ (probably teneral) also sometimes paler, more obscurely pallid to dirty yellowish; lower part of buccal cavity (more extensive in ♀♀), anterior spiracles and notopleural suture, sclerites below wing-bases, posterior thoracic spiracles or part below halteres, hind margins of tergites 3-7 in ♂♂ and 2-7 in ♀♀, especially on sides, the sides of tergites obscurely in teneral ♀♀, lateral and posterior margins of hypopygial tergite 9 of ♂♂, processes and broad sides of navicular sternite 9 in ♂♂, and the acanthophorites and spines in ♀♀ yellow or yellowish; bullae, even in ♂♂, rather small, dull blackish red to black, elongate-oval, far apart along hind margins of tergite 2, very much smaller in ♀♀; antennae mainly dark blackish brown to black, only the articulations between the joints and the terminal tubercles usually paler, more pallid or yellowish (the entire antennae in teneral ♀♀ appearing subpallid or dirty yellowish); proboscis blackish brown to black, paler in teneral; legs in ♂♂ with the coxae blackish brown to black, the middle and hind ones, especially latter, more yellowish brown towards apex below, the front femora mainly blackish brown, only the lower apical half yellowish, the middle and hind femora blackish brown above, yellowish below, the bases of hind ones also tending to be more yellow, with all the tibiae narrowly darkened above to a variable extent, the hind ones more evidently so apically, the tarsi mainly yellowish, but also slightly darkened above on apical parts of the joints, the last 2 or 3 joints sometimes more extensively darkened, the claws black in apical halves; legs in ♀♀ more extensively pallid or yellowish, more indistinctly or scarcely darkened on femora and tibiae above, the legs entirely pallid or yellowish in teneral forms.

Integument of head and body mainly dull, covered with greyish white tomentum to a variable extent; part of median ocellar ridge, antennal joint 3, head below on each side of buccal cavity, and the proboscis more or less shining;

thorax above mainly dull, leathery, with setiferous puncturation; pleurae also mainly dull, the middle part of sternopleuron, not covered with tomentum, shining to a variable extent; metanotum dull, leathery; abdomen dull above, setiferously punctured, the minute punctures lodging the hairs, the extreme sides of tergites tending to be more shiny, especially in ♀♀; the sides of tergites 2-7 in ♀♀, especially intramarginally, rugose, transversely striate in ♂♂, tergite 7 in ♀♀ transversely coarsely striated or grooved discally, and to a certain extent also on tergite 6 laterally and posteriorly; hood-like tergite 8 in ♀♀ punctured, less coarsely transversely striate, also more shining; sternum shining; venter in both sexes shining or subshining, transversely striated in ♀♀, less distinctly so in ♂♂; hypopygium in ♂♂ mainly dull, but basal junction between tergite and sternite 9, to a certain extent sides of 9, and keel of 9 shining; acanthophorites and their spines in ♀♀ also shining; legs, including coxae, more or less shining, the femora finely transversely striate, and the coxa, also more or less striate laterally.

Vestiture on head, body and legs mainly snow white in both sexes, longer and denser in ♂♂ than in ♀♀; that on head long, dense and conspicuous in ♂♂, slightly shorter in ♀♀; postvertical bristles white, slender, hair-like, difficult to see among the dense occipital hairs, more discernible in ♀♀; hairs on occipital part laterally behind eyes shorter than rest of cephalic hairs, shorter in ♀♀; palps with a tuft of long hairs and base of proboscis below also with some long hairs; head in front and sides of occiput dull, covered with fine greyish tomentum, denser and more evident along eye-margins; hairs on thorax above in front longer and denser than on rest of thorax, shorter in ♀♀; those on disc of mesonotum shorter and sparser, shorter in ♀♀, leaving a bare streak on each side in posterior half in both sexes, with a tuft of longish hairs medially in front of scutellum, and also with longish ones along notopleural part, above wing-bases, and on postalar calli; metanotum mainly bare on greater middle part, but with long hairs on sides; pleurae thinly covered with greyish tomentum, dull, except for the more shiny sutural and sternopleural parts, with an upper posterior tuft of long hairs on mesopleuron, long hairs along its posterior margin, long ones on pteropleuron and dense ones on metapleuron anterior to halteres and posterior thoracic spiracles, the hypopleuron mostly bare except for some long hairs along its posterior coxal border; abdomen in ♂♂ with fairly dense and long snow white hairs, those on tergites 1 and 2, especially on sides, slightly longer and denser, but those on sides of 3-5 in tufts, scarcely shorter, and those on sides of rest of tergites also long, but less in tufts, those on hypopygium, where present, also long and conspicuous, the hairs on venter in ♂♂ slightly sparser than on abdomen above, but also long, with the hairs on abdomen above in ♂♂, when viewed from above, more or less concentrated medially on tergites 3-7 in form of rosette-like tufts; hairs on abdomen above in ♀♀ long and dense only on tergite 1, especially on sides, with only a small tuft of shortish ones on sides of tergites 2 and 3, the rest of surface above on tergites 2-6 with minute, decumbent hairs in fine setiferous punctures and which in certain

lights have a sericeous yellowish tint, with the hairs on tergite 7 and the posterior genital tergite 8 longer than the minute ones on preceding tergites, more sericeous white and directed forwards, with the abdomen above in ♀♀ also densely covered with greyish white or slaty grey tomentum on tergites 3–7 (this is sometimes denuded to a variable extent), the hairs on acanthophorites and anal lobes yellowish to golden yellowish, with the hairs on venter in ♀♀ minute, much sparser than on tergites, tinted slightly sericeous yellowish in certain lights, those on sternite 7 also sparser, but longer than on preceding sternites and directed forwards as on tergite 7; hairs on legs in ♂♂, especially on femora, denser, longer and more bushy than in ♀♀ in which sex the longer ones are distinctly less dense, especially on hind legs.

Head much broader than across broadest part of thorax, quite 3,8–4 mm in ♂♂ and 3,68–4,04 mm in ♀♀, though on the whole the head of ♀♀ appears relatively narrower; interocular space on vertex markedly broad as originally described for the genus, on the average slightly narrower in ♂♂ (2,32–2,68 mm) than in ♀♀ (2,4–2,72 mm), vertex not much sunk in, the central ocellar ridge also ends on vertex in a fairly deep sulcus as described for the type-species of the genus, the boss-like part on each side however less conspicuously prominent; antennae (cf. Fig. 1A) distinctly much shorter than interocular space, joint 1 thickened, about $1\frac{1}{2}$ to nearly 3 times length of 2, joint 3 stout, columnar, about, to even slightly more than, twice length of 1 and 2 combined, much shorter than club, its apical part broadened, the club itself nearly or about $1\frac{1}{2}$ times as long as joint 3, subspindle-shaped, especially in side view, thickest just before to about the middle, covered with a faint, but distinct, brassy pruinescence or tomentum, except on sensory area, with a belt of minute, spine-like hairs around the thickest middle part and across this part also a few longer, gleaming hairs mainly across the inner, upper and outer sides, especially in ♀♀, with the distinctly-demarcated sensory area, in more or less apical half below, large, elongate-ovate and bordered, ending apically in the crater-like terminal prominence lodging a minute stylet; proboscis (Fig. 1B) relatively long, slender, somewhat variable in length, about 2–2,6 mm (the latter when fully extended), on the whole slightly shorter than antennae, with a few, scarcely discernible, hairs along lower part on each side, at least in ♀, its labella short, oval, the apex bluntly rounded, sometimes appearing obliquely subtruncated; palps small, subglobular.

Wings comparatively short, not reaching tip of abdomen, entirely and markedly transparent, with a faint milky white tint in certain lights; veins white and transparent, only the extreme base of wings, costal vein and to a certain extent second vein slightly yellowish; venation like that of *Afroleptomydas*; first posterior cell obtusangular apically, either angular and shortly stalked apically or narrowly opening apically on second vein; second submarginal cell with an appendix basally; discoidal cell acute and shortly stalked apically; axillary lobe and alula moderately developed; halteres whitish.

Legs rather short, slender, the femora in ♂♂ slightly thicker than in ♀♀,

the hind ones in ♀♀ longer, but in ♂♂ very slightly more thickened, the legs in ♂♂ distinctly more densely hairy; femora in ♂♂ with only dense long and short hairs below, no distinct spines being discernible, even on hind ones below; femora in ♀♀ also with long and short hairs, more above than below, but much fewer and less dense than in ♂♂, the front and middle ones without any detectable spines below, the hind ones less hairy, mainly short-haired above, with comparatively only a few long ones basally above and, in addition to a row of long bristly hairs along inner side below, with more or less two irregular rows of comparatively short, slender, white, bristle-like spines, as well as irregularly disposed, shorter, spine-like setae or seta-like spinelets below; tibiae curved in both sexes, the hind ones so near apex, hairy in both sexes, but more densely and to a certain extent longer so in ♂♂, especially the hind ones in latter sex with dense long and shorter hairs, with the front and middle tibiae in ♂♂ armed below with fine hair-like or bristle-like spicules, these in ♀♀ very slightly thicker, and hind tibiae in ♀♀ with stouter and more distinct spicules; apical spicules or spurs of tibiae below well developed, fairly long, golden yellow, equally developed in both sexes; tarsi with the spicules below, especially on hind ones, also well developed and golden yellow; claws in ♂♂ longer, more developed than in ♀♀; pulvilli in ♀♀ shorter and less developed than in ♂♂.

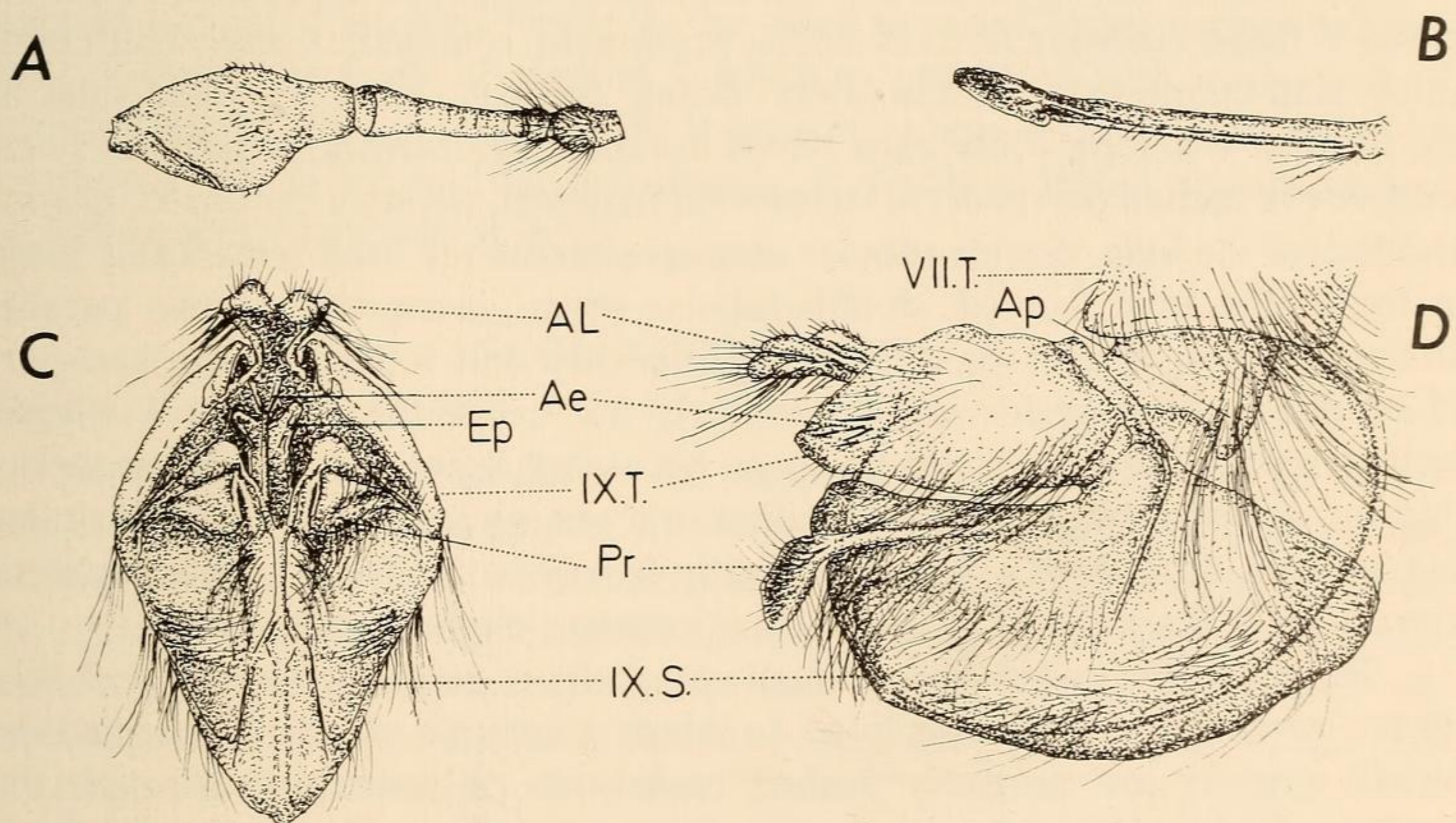


Fig. 1. *Namibimydas prinsi* sp. nov.

A. Side view of left antenna of ♀ allotype. B. Side view of proboscis of ♀ allotype. C. Posterior view of hypopygium of ♂ (vestiture partially omitted to show some structures more clearly). D. Right side view of the partially extruded hypopygium of a ♂. (AE = the characteristically long, curved aedeagus lodged in the keel part of sternite 9; AL = anal lobes; Ap = appendage of concealed or semi-concealed segment 8; Ep = epimere; IX.S. = large boat- or shell-shaped sternite 9; IX.T. = lid-like tergite 9, immovably attached to sternite 9; Pr = processes of sternite 9; VII.T. = tergite 7 partially or entirely covering tergite 8.)

Hypopygial complex of ♂ (Fig. 1C–D) with tergite 8 sometimes exposed as a short half-moon-shaped posterior part, depending on the upward or downward movements of the hypopygium, its projecting lateral lobe on each side of base of sternite 9 lobe-like; sternite 7 with only its hindermost part exposed, being almost entirely pushed forwards by base of sternite 9, its exposure or concealment being due to the upward, downward and forward movements of the hypopygium; hypopygium itself large and conspicuous as described for the genus (Hesse 1972: 160), in form of an oval box-like structure in side view, tergite 9 and anal lobes constituting a sort of fixed lid, the tergite itself about 1,6–1,8 mm long, convex, deeply and angularly incised posteriorly in which the anal lobes are situated, basally slightly transversely depressed above and on sides basally firmly and immovably united by a shining, weal-like, strongly-chitinized connection on each side dorsally to sternite 9, and which also constitutes the base of the prong on each side of the latter sternite; sternite 9 large, navicular, about 2,72–2,8 mm long, compressed from side to side, the more strongly-chitinized keel of the ‘boat’ being narrower than the sides above, posteriorly the sternite is deeply and angularly incised V-like; upper chitinized and ridge-like side or ‘gunwale’ of this boat-like sternite is continued posteriorly as a lateral flange to form the posteriorly projecting, flattened, downwardly-directed, tongue-shaped process or prong on each side, the upper posterior part of the ‘gunwale’, which also constitutes the upper part or corner of the V-shaped incision on each side, is prominent, rounded, strongly chitinized, shiny, and connected with the lateral prong, the less chitinized, paler sides of the sternite with long white hairs which are directed downwards posteriorly on each side of incised part; keel of sternite 9 is flattened, strongly chitinized, brown, and lodges the long, double-tubular aedeagus; aedeagus itself remarkably long, in form of a long, curved, double-tubular organ, composed of two parallel adherent tubes, thicker basally than posteriorly and lodged in the keel-part of sternite 9, bending forwards posteriorly just inside the posterior V-shaped incised part of the sternite and there becoming separated as two separate, thinner, aedeagal branches, each ending in a gonopore; epimere, as far as this can be seen, in form of a flattened bluntly-forked or bifid structure anterior to the aedeagal branches of aedeagus and pointing slightly backwards.

The process of copulation, though not observed by the collectors, probably takes place end to end as in Asilidae. In this case both the aedeagal tubes and the forked epimere are probably pushed backwards or posteriorly through the posterior V-shaped incision of sternite 9 to engage the genital organs of the ♀ in which they are also aided by the posterior lateral processes of the sternite which probably act as hooking structures.

Genital segments of ♀ structurally more or less as described and figured for the genus (Hesse 1972: 161, 164); hood-like tergite 8 with its hind margin slightly produced medially, there rounded and carinate, the disc transversely coarsely striate and punctured, more coarsely punctured intramarginally posteriorly; acanthophorites each with about 7 flattened, apically slightly

broadened, yellowish spines, the first one at the base being more slender and rod-like; anal lobes with dense, short, stiff hairs or setae; sternite 8 half hidden, its hind margin emarginate or indented and its sides slightly rugose.

From 1 ♂ holotype, 1 ♀ allotype, 3 ♂ paratypes and 3 ♀ paratypes in the South African Museum.

Distribution

South-western Cape: Paternoster (A. J. Prins, 13 February 1973) (♂ holotype, ♀ allotype, ♀ paratype, and 3 ♂ paratypes); Paternoster (V. Branco, 13 February 1973) (2 ♀ paratypes).

Compared with the type-species *gaerdesi* Hesse (Hesse 1972: 161) from the Namib Desert, this new species may at once be distinguished by its much smaller size, relatively shorter, more slender legs, comparatively denser and entirely white vestiture in ♂♂, distinctly very much shorter or minute hairs on abdomen above in ♀♀, hairs on metanotum confined to sides, joint 3 of antennae proportionally longer relative to the other joints, much shorter and relatively less slender proboscis which is slightly shorter, not longer, than antennae and with a more bluntly-rounded apex of labella, the finer and more numerous spines and spinelets on hind femora below, especially in ♀♀, comparatively shorter apical spurs on tibiae, the more boat-shaped, not *Argonauta*-shell-shaped, sternite 9 of the ♂ hypopygium, the broader, more lobe-shaped lateral appendages of the half-concealed tergite 8, the more rounded upper corners of posterior V-shaped incision of sternite 9 which is not fused with lower part of posterior lateral lobes of tergite 9, the fewer (only about 6 or 7, not 8) spines on acanthophorites of ♀♀, and the less sharply or deeply indented hind margin of the half-concealed sternite 8 in ♀♀.

ECOLOGICAL NOTES

Habitat

According to the observations of Mr Prins this mydaid is by no means plentiful and occurs only along the littoral sandy zone on the coast near the sea, and is practically confined to the superlittoral part of it not reached by high tide. The region frequented is between the limit of the vegetation and the high tide mark, a white sandy environment strewn with broken shells, fragments of seaweed, especially those of *Ecklonia*, and also other debris washed up by the high tide or blown there by wind.

To this type of environment the mydaid is eminently adapted procryptically. Its dense snow white vestiture, transparent wings, greyish tomentum, and bare blackish patches on the abdomen of the ♀♀, render the species almost invisible against the background, and more so if individuals rest on the sand.

Movement and flight

According to Mr Prins this insect appears to be remarkably agile in moving to and fro and sideways on the sand, being able to crawl backwards as easily

as forwards. In flight it appears to be as agile and even faster, darting backwards, forwards and sideways, within limits, with equal ease. These movements render it a difficult insect to catch. Moreover it appears to be very sensitive to vibrations in the sand caused by approaching footsteps or the slightest thump on the sand.

Oviposition

By sheer coincidence Mr Prins observed the procedure adopted by the ♀ in the deposition of her eggs. During his first visit he was resting on the sand when, a little distance away from him, a ♀ alighted and began to insert the tip of her abdomen in the sand. This she wriggled in until the entire abdomen disappeared in the loose sand. Not content with the depth reached she wriggled still further in until the entire thorax, wings and legs disappeared. Eventually the only parts of her anatomy still exposed were the pair of protruding antennae and front half of the eyes, frons, and clypeal part.

Equally rapidly she wriggled out of the sand again. Mr Prins then very carefully scooped out the patch of sand, containing some whitish eggs, and placed the sample in a glass tube with the intention of experimenting with it later on. Unfortunately some unauthorized visitor at the hotel, who wanted a glass tube for some other purpose, threw the sand away. Since then and during subsequent visits to the same area all efforts on the part of Mr Prins to observe another ovipositing female and to collect her eggs have been in vain.

As far as I am aware this is the first record of a dipterous insect ovipositing in this remarkable way of penetrating and almost disappearing backwards into a sandy medium. This method of oviposition appears to be still another adaptive response of this mydaid to a loose sandy environment.

Enemies

It was observed that a great enemy of this mydaid is a sand-loving and dune-frequenting species of lizard which, according to the two collectors, snapped up several specimens which they themselves tried to obtain.

SUPPLEMENTARY NOTES TO ORIGINAL GENERIC DESCRIPTION

As the original generic description of *Namibimydas* (Hesse 1972: 158–161) was based on only two old specimens (♂ and ♀) of the type-species *gaerdesi*, the addition of 8 specimens of the new representative of the same genus enables me to supplement, redefine or correct the original description of some of its structures as follows:

Head with the broad interocular space on vertex proportionally either more or less equally broad in both sexes or slightly broader in ♀♀ than in ♂♂; club of antennae longer than joint 3, elongate pyriform to spindle-shaped; the labella of the elongate and slender proboscis either spear-blade- or lance-blade-shaped and sharply pointed or subtruncately rounded apically.

Abdomen with tergite 8 in ♂♂ either entirely concealed or only partly exposed above base of tergite 9, saddle-shaped; sternite 7 in ♂♂ either displaced forwards and hidden under 6 or its posterior part exposed as a short cover over extreme base of sternite 9.

Hypopygium of ♂♂ remarkably and conspicuously large, in form of an oval, box-like structure, with tergite 9 and anal lobes constituting the lid, but the tergite itself immovably united on each side basally to sternite 9; latter sternite enormously developed and also as described for this species, boat-like, shell-like, keeled below, with a projecting process or prong on each side postero-dorsally, posteriorly vertically deeply incised (V-shaped), the upper angles or corners of the incision (or posterior angles of sides of sternite 9) prominent, rounded, or broadly projecting upwards under the apical part of posterior lateral lobes of lid-like tergite 9 (this latter condition described by me for the type-species *gaerdesi* (Hesse 1972: 162, fig. 6 right) as an obvolvnt structure connected or fused to tergite 9 may probably not be united to tergite 9 at all, for it could not be seen as an unconnected structure in the old dried ♂ holotype); aedeagus (which also could not be seen properly in the unique ♂ of the type-species) is, as described for this new species, remarkably long, in form of a long, curved, strongly-chitinized, double-tubular organ, composed of two parallel, adherent tubes, lodged in the keel part of sternite 9 and which posteriorly become separated into two separate aedeagal branches which point forwards; epimere flattened and forked.

Legs with either a double row of distinct spines on slight tubercles, or with more numerous seta-like spinelets, on hind femora below.

DISTRIBUTION OF THE GENUS

In view of the fact that most of the known genera of Mydidae in South Africa occur as separate, more or less geographically-restricted species and not as very widely distributed forms, the genus *Namibimydas*, which now occurs as two separate species, at Walvis Bay and Paternoster respectively, may also be represented by still other unrecorded species along the coastal, littoral, sandy belt, stretching from the south-western Cape to Angola. Judging from the habitat of the new species and that of the type-species it appears that this genus will be found to be restricted to the comparatively narrow, sandy or dune-sand environment along the west coast between the high tide mark and the landward limit of the non-marine vegetation.

SUMMARY

A new species *prinsi* of the genus *Namibimydas* Hesse, originally described from the Namib Desert, is described from Paternoster on the west coast between Saldanha Bay and Stompneus. Some ecological notes on the habits of the new species are added, and supplementary notes to the original generic description

are appended. A text-figure is given to illustrate the more important generic and specific characters of the new mydaid.

ACKNOWLEDGEMENTS

My thanks are due to the Assistant Entomologist Mr A. J. Prins and one of the Museum's artists, Mr V. Branco, who collected the specimens of the new species at Paternoster. To Mr Prins I am indebted for the interesting observations he made on the habits of this species.

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