

Mydidae of the central Namib Desert at the Gobabeb Namib Research Institute, Namibia

Torsten Dikow

ORCID 0000-0003-4816-2909

@TDikow

Introduction

The Namib Desert is one of the oldest deserts on Earth stretching along the Atlantic Ocean coast of south-westernmost Angola and Namibia for a total of 1,500 km. Earlier hypotheses proposed that the Namib is up to 80 Million years old, but modern, more robust estimates postulate an age of 34 Million years with hyperarid conditions prevailing for at least the past 22 Million years (Lovegrove 2021). Nevertheless, the animal and plant life is unique in many respects with a high insect diversity and endemism.

The Gobabeb Namib Research Institute (23°33'41"S 015°02'28"E) is a research facility dedicated to the study of this desert and is located in the central Namib in the Namib-Naukluft National Park. It is uniquely situated between the ephemeral Kuiseb River, a linear oasis, the Namib Sand Sea, with towering shifting dunes, and the desert gravel plains (Figs 1–5).

Diptera of the central Namib

Holm & Scholtz (1980), Wharton (1982), and Prinsloo (1990) provided the first data on the insect fauna of the Lower Kuiseb River, including Gobabeb. While Holm & Scholtz recorded five species from four Diptera families and Prinsloo 50 species from 24 Diptera families including the Mydidae species *Namadytes vansonii*, Wharton specifically studied Mydidae at Gobabeb over a one-year period in 1978–1979.

Some of the entomologists who have collected Asiloidea at Gobabeb (in addition to sources cited above) are: A. Moore (1963), Erwin Lindner (1970), the BMNH Southern Africa Expedition (1972), Mike & Bonnie Irwin (1974), and Ole Lomholdt (1978).

The iNaturalist project *Diptera of Gobabeb* has so far recorded 20 species through field photography (inaturalist.org/projects/diptera-of-gobabeb).

Mydidae at Gobabeb

Mydas flies—predatory as larvae and flower-feeders as adults—are well-adapted to life in arid environments. Of the 182 southern African species, 32 have been recorded from Namibia and 26 are endemic to the country. Of these, 13 species and two genera, *Eremohaplomydas* Bequaert, 1959 and *Notosyllegomydas* Hesse, 1969, are endemic to the Namib Desert.

The data on Mydidae at Gobabeb summarized here originate from Wharton's 1982 study, taxonomic revisions by T. Dikow (2012, 2014, 2022), field work by T. Dikow in 2012, 2017–2019, and 2023, and specimens deposited in several natural history collections.

During November 1978 to November 1979, Wharton (1982) observed 10 species at Gobabeb. Study of his voucher specimens, deposited at the KwaZulu-Natal Museum, recognizes eight species. Three additional species, for a total of 11, have been collected at and recorded from Gobabeb to date. These species represent nine genera and two subfamilies (Table 1). Of these, six species and three genera remain undescribed.

Discussion

With eleven species from nine genera, Gobabeb harbors the highest species and generic diversity of Mydidae at a single locality world-wide. That such a high alpha diversity is found in the hyperarid Namib Desert may be a surprise. However, Wharton (1982) already observed that the majority of species at Gobabeb have a vestigial proboscis (7) and postulated that the imagines do not feed—all feeding is done by the predatory larvae living in the cooler and moister sand.

Gobabeb is also the only area where at least one mydas-fly species occurs in any season and month of the year (Table 1).

Open access

Poster at figshare – <http://dx.doi.org/10.6084/m9.figshare.7303856>

Acknowledgments

Thanks to the staff at Gobabeb and in particular to Gillian Maggs-Kölling, Eugene Marais, Leena Kapulwa, Theo Wassenaar, Rhita Kapitango, and Taimi Kapalanga for research support in Namibia and at Gobabeb. The Namibian Ministry of Environment & Tourism, especially Mr. Iita Matheus, and the Namibian National Commission on Research, Science & Technology are thanked for issuing research, collecting, and export permits. Funding for field work at Gobabeb was provided by a Field Dreams award from the Field Museum of Natural History, Chicago, IL, USA and a grant from the Smithsonian National Museum of Natural History, Washington, DC, USA.

References

Boschert & Dikow 2022 doi.org/10.3897/AfrInvertebr.63.76309; Dikow 2012 doi.org/10.5733/afin.053.0105; Dikow & Leon 2014 doi.org/10.3897/BDJ.2.e1071; Lyons & Dikow 2010 doi.org/10.3897/zookeys.73.840; Holm & Scholtz 1980 hdl.handle.net/10520/AJA10115498_226; Lovegrove 2021 struiknatureclub.co.za/details/9781775847045; Prinsloo 1990 hdl.handle.net/10520/AJA090799001_173; Wharton 1982 hdl.handle.net/10499/AJ00411752_165

Central Namib & Gobabeb

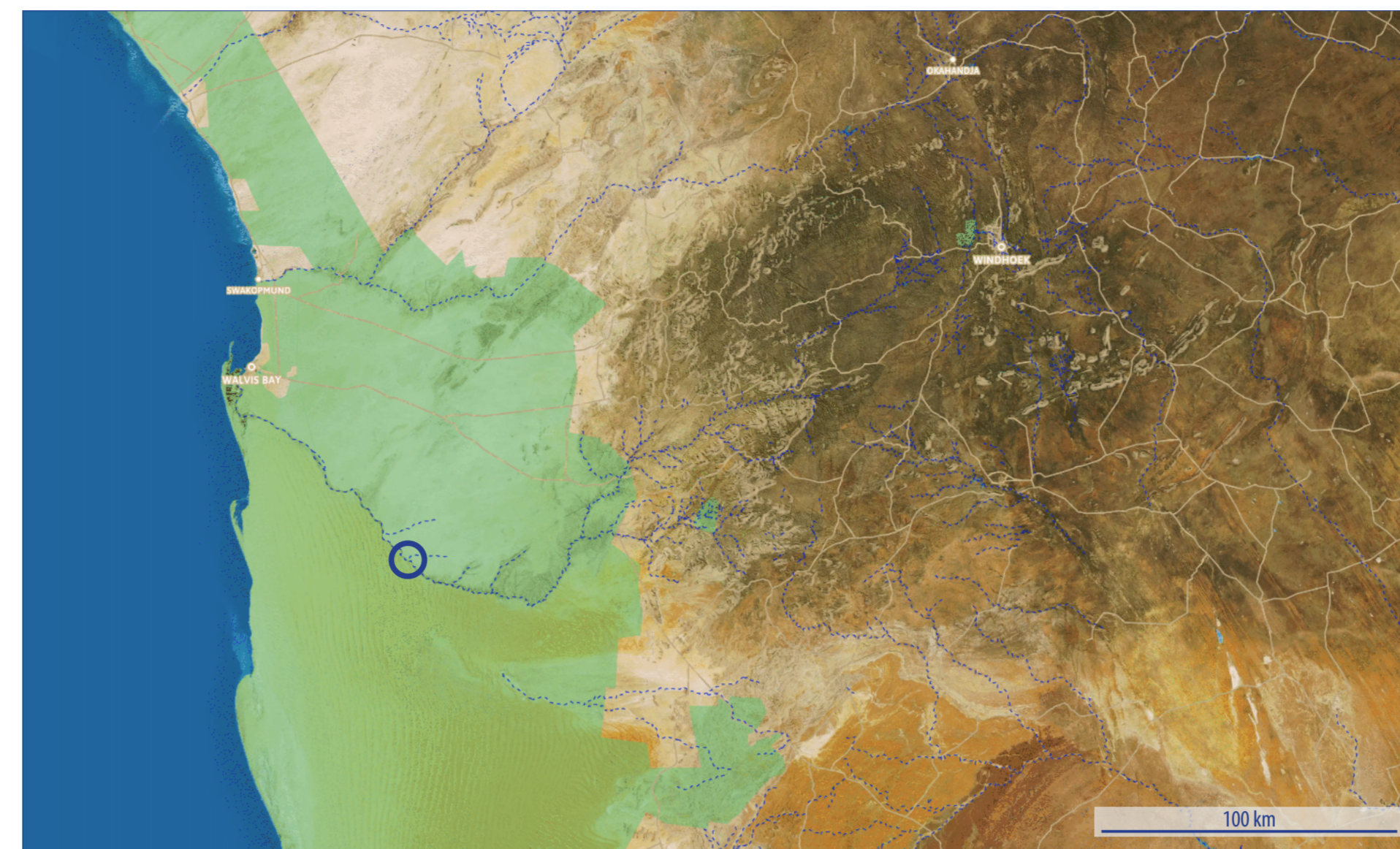


Fig. 1. Map of west-central Namibia with elevational relief and protected areas in green and rivers in dotted blue. Blue circle shows position of Gobabeb Namib Research Institute.

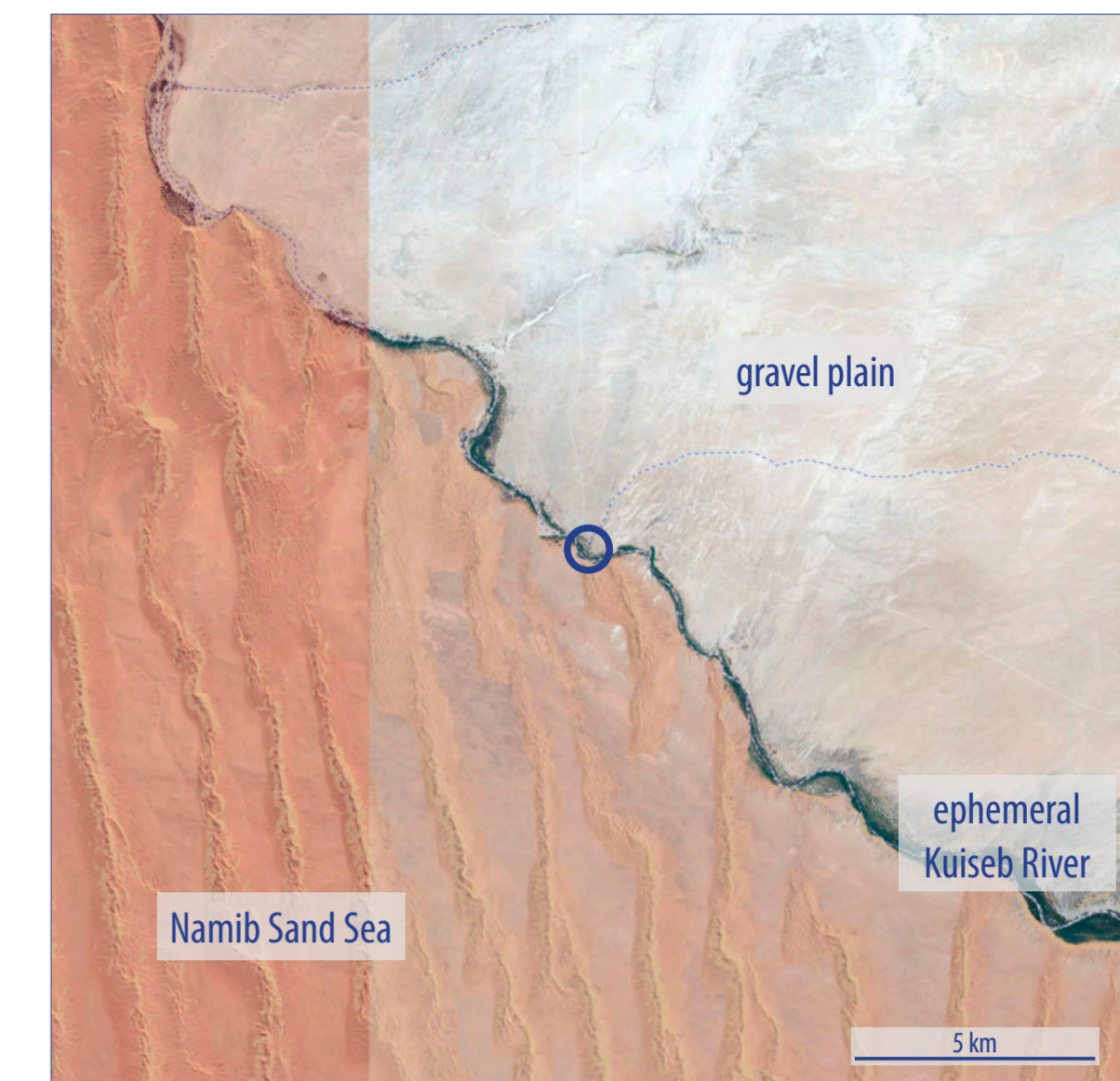


Fig. 2. Map of Gobabeb area with elevational relief showing three main biomes surrounding the research station (position shown by blue circle).



Fig. 3. Habitats at Gobabeb Namib Research Institute. Gravel plains (foreground), ephemeral Kuiseb River bed (center, green tree line), Namib Sand Sea (background).



Fig. 4. Habitats: ephemeral Kuiseb River bed (left), small dunes (center), Namib Sand Sea (background).



Fig. 5. Habitats: Small dunes with Inara (*Acanthosicyos horrida*, Curcubitaceae) and small interdune valleys.

Table 1. List of Mydidae species in the central Namib Desert at/near the Gobabeb Namib Research Institute with seasonal imago flight activity, number of specimens known to date, earliest and most recent collection, endemism, and collection by either R. Wharton and T. Dikow.

subfamily	taxon	species	Month												collection		endemic	vestigial proboscis	Wharton coll.	Dikow coll.	Ref.				
			Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	earliest	most recent									
Ectypinae	<i>Parectyphus namibiensis</i>	Hesse, 1972	1	1	2													<1972	2017				✓	Fig. 19	
Syllegomydinae	<i>Afrotopomydas</i> sp. n.						6	9	4	12	3							1976	2018			✓		Fig. ????	
	<i>Eremohaplomydas gobabebensis</i>	Boschert & Dikow, 2022					7											2018	2018		✓		✓	Fig. ????	
	<i>Eremohaplomydas whartoni</i>	Boschert & Dikow, 2022													7			1979	1979	✓	✓		✓	Fig. ????	
	<i>Namadytes vansonii</i>	Hesse, 1969									2	10	16	4	6			1959	2023	✓	✓		✓	Figs 14–15	
	<i>Namibimydas psammios</i>	Dikow, 2012					11				1	3						1972	2018		✓		✓	Figs 17–18	
	<i>Syllegomydas</i> sp. n. 1														6			1979	1979	✓	✓		✓	Fig. ????	
	<i>Syllegomydas</i> sp. n. 2							3										1978	2018		✓	✓		✓	Fig. ????
	genus 1 sp. n.					3												1979	1979		✓	✓		✓	Fig. ????
	genus 2 sp. n.					27	1	38	3	1					1			1976	2019		✓	✓	✓	✓	Figs 13, 16
	genus 3 sp. n.											1						1978	1978				✓		✓
			1	1	32	1	65	13	6	17	13	17	17	7			1959	2023							

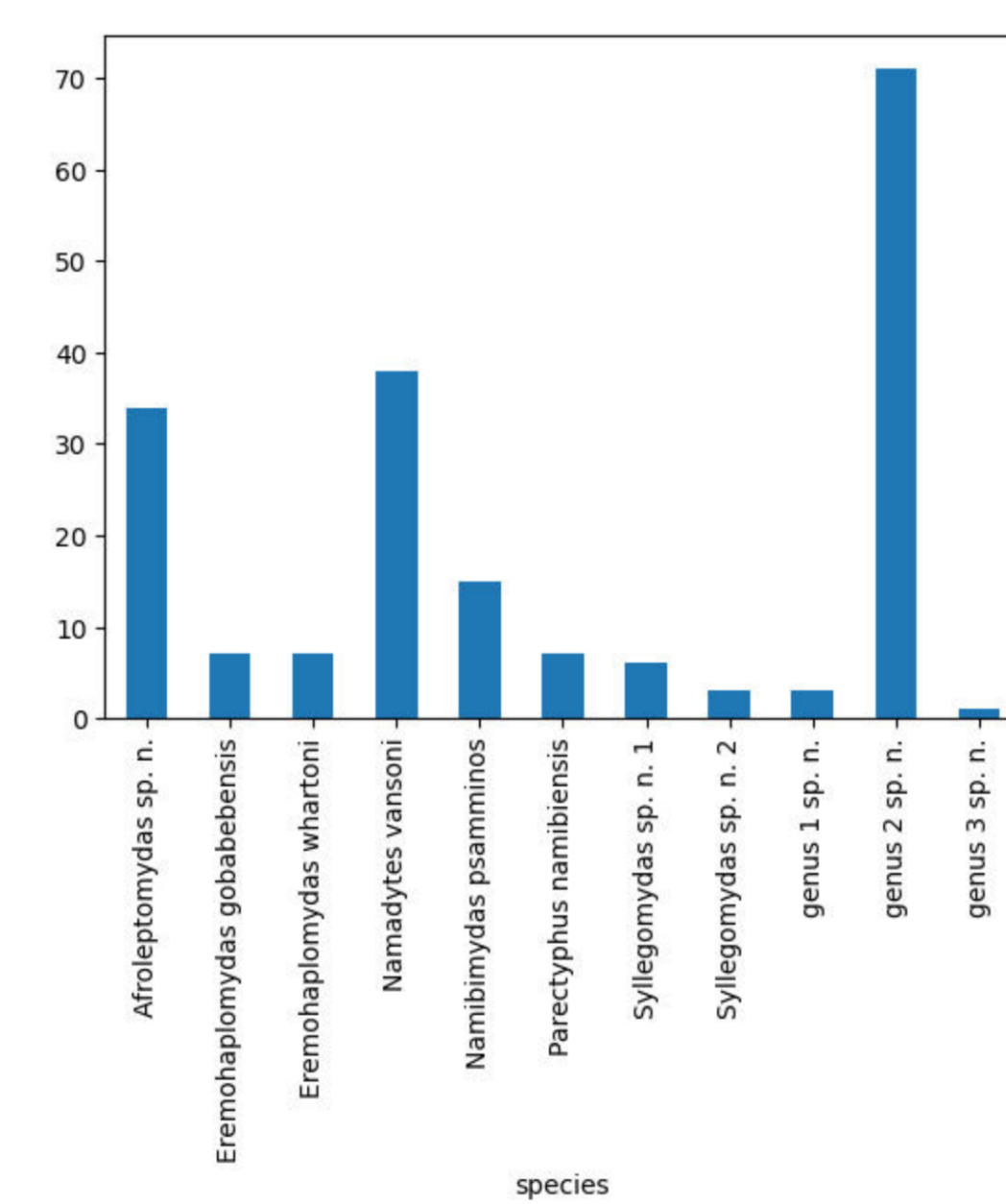


Fig. 6. Studied number of specimens for each species.

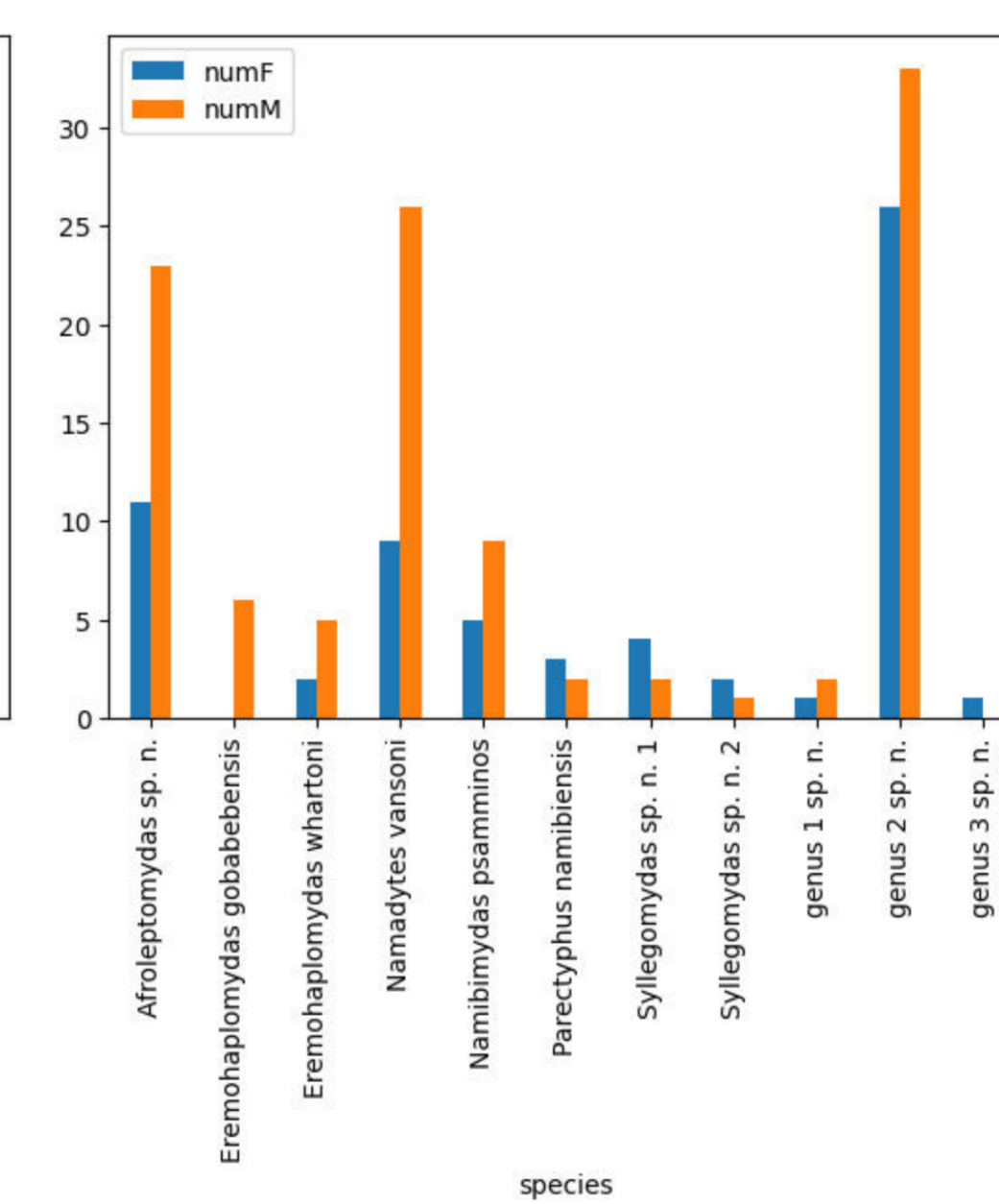


Fig. 7. Studied number of specimens for each species divided into females (blue) and males (orange).



Fig. 13 genus 2 sp. n. female

Mydidae at Gobabeb



Fig. 14 *Namadytes vansonii* male



Fig. 15 *Namadytes vansonii* female



Fig. 16 genus 2 sp. n. male



Fig. 17 *Namibimydas psammios* male



Fig. 18 *Namibimydas psammios*: female

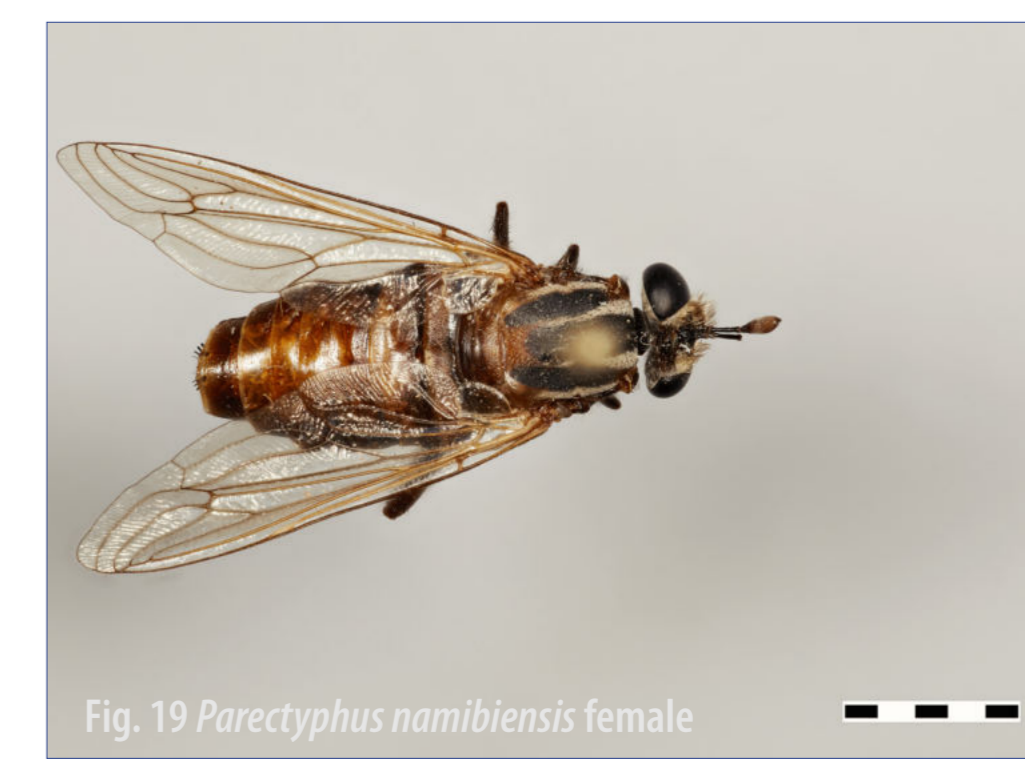


Fig. 19 *Parectyphus namibiensis* female