

Ann. Naturhist. Mus. Wien, B	120	9–13	Wien, Jänner 2018
------------------------------	-----	------	-------------------

The first specimen of Paraphrynoveliidae (Insecta: Hemiptera: Heteroptera) in the Natural History Museum Vienna

H. Bruckner* & H. Zettel*

Abstract

A male of *Paraphrynovelia brincki* POISSON, 1957, collected by Herbert Franz in 1975, is the first and only specimen of the family Paraphrynoveliidae in the collection of the Natural History Museum Vienna. Paraphrynoveliidae consist of one genus comprising two very rarely collected species restricted to southern Africa. We provide field notes and the first photographs of Paraphrynoveliidae, and add a map with all hitherto published records of *Paraphrynovelia*.

Key words: *Paraphrynovelia brincki*, Paraphrynoveliidae, illustration, distribution.

Zusammenfassung

Ein männliches Exemplar der Art *Paraphrynovelia brincki* POISSON, 1957, welches von Herbert Franz im Jahr 1975 gesammelt wurde, ist das erste und bisher einzige Exemplar der Paraphrynoveliidae in der Sammlung des Naturhistorischen Museums Wien. Die Familie Paraphrynoveliidae besteht aus einer Gattung, die zwei sehr seltene Arten aus dem südlichen Afrika umfasst. Wir liefern die Feldnotizen zu dem seltenen Fund sowie die ersten fotografischen Aufnahmen der Paraphrynoveliidae. Ergänzend zeigen wir eine Verbreitungskarte mit allen bisher publizierten Nachweisen der *Paraphrynovelia*-Arten.

Introduction

Because of restricted staff and funding, the work of volunteers in scientific collections of natural history museums is essential for a continuous progress of collection building. In entomological collections the sorting and labelling of specimens from old and new acquisitions can be such a most welcomed contribution. We report on a unique and scientifically important specimen of *Paraphrynovelia brincki* POISSON, 1957 which was collected in 1975 and has remained unrecognized for 15 years among unsorted insect materials of the Natural History Museum Vienna (which is not a long period for a century-old institution) until it was labelled by a volunteer.

The family Paraphrynoveliidae (Heteroptera: Gerromorpha) consists of two species that are geographically restricted to the Afrotropical Region, specifically to southern Africa. The family status of Paraphrynoveliidae has been questioned by DAMGAARD (2008) who suggested a possible synonymy with Macroveliidae, a family distributed in the New World, but has been maintained since.

Screening literature (POISSON 1957, ANDERSEN 1978, DAMGAARD 2008) yielded records of 21 paraphrynoveliid specimens reported so far. Paraphrynoveliidae were not

* Mag. Harald Bruckner & Dr. Herbert Zettel, Entomological Department, Natural History Museum Vienna, Burgring 7, 1010 Vienna, Austria – harald.bruckner@nhm-wien.ac.at, herbert.zettel@nhm-wien.ac.at

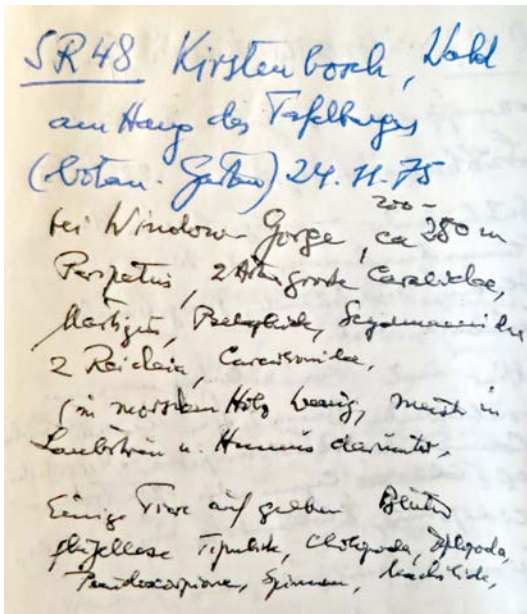


Fig. 1: Extract of Herbert Franz' itinerary (volume SR) with collecting information on site SR48.

represented in the Natural History Museum Vienna until now, although Gerromorpha are among the prioritized taxa in the collection.

Material and methods

We illustrate the single male specimen of *P. brincki* in the Natural History Museum Vienna (NHMW). The specimen was unidentified and unlabelled, but a collection code number could be linked to the data obtained from the itinerary books of Herbert Franz. The specimen was identified using the paper of ANDERSEN (1978) after dissection of genitalia; the paramere shape of *P. brincki* is diagnostic.

Digital stacked images were acquired with a Leica DFC camera attached to a Leica MZ16 binocular microscope with the help of Leica Application Suite V3 and stacked with Zerene-Stacker 64-bit.

The distribution map was created with ArcMap 10.3.1 for Desktop (Version 10.3.1.4959). Source of the map: National Geographic World Map. Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

The specimen of *Paraphrynovelia brincki* POISSON, 1957 in NHMW (Figs. 1–4)

Locality data and collecting information: Notes about the collecting circumstances and arthropods collected together with the *Paraphrynovelia* specimen can be taken from the itinerary of Herbert Franz. The original text is in German and can be seen in Figure 1. A translation reads (authors' additions in square brackets): [Locality number] SR48: Kirstenbosch, forest at slope of Table Mountain (Botanical Garden), 24 November 1975, near Window Gorge, at ca. 200–250 m [a.s.l.] – *Peripatus* [Peripatidae, Onychophora], 2 species of large Carabidae, Mastigitae, Pselaphidae, Scydmaenidae [the last three taxa now under Staphylinidae], 2 *Reicheia*, Curculionidae [all Coleoptera]. – In rotten wood few [beetles], mostly in leaf litter and humus below. Some specimens on yellow flowers. – Wingless Tipulidae [Diptera], Chilopoda, Diplopoda, pseudoscorpions, spiders, machilid.

Specimen acquisition: The specimen was formerly part of the private collection of Herbert Franz (1908–2002), a renowned soil biologist and coleopterist. He donated his Hemiptera collection to the Natural History Museum Vienna in 1989. The heteropteran specimens of his collection were integrated into the museum's systematical main



Figs. 2–3: Male of *P. brincki* (HEMI-21781) in (2) dorsal and (3) lateral aspect.

collection in the early 1990ies. However, the specimen of *P. brincki* was not part of this collection, but was in a box among other unsorted and unlabelled specimens that came to the Natural History Museum Vienna together with Herbert Franz' Coleoptera collection after his death in 2002 (JÄCH & SCHÖNMANN 2002).

Illustrations: Photographs of Paraphrynoveliidae have not been published so far. The specimen of *P. brincki* is illustrated in dorsal and lateral view (Figs. 2–3).

Distribution: The new locality of *P. brincki* (Fig. 4) fits to the species' general distribution.

Discussion

The paucity of records of Paraphrynoveliidae might be connected with terrestrial habits in forests, which is relatively exceptional in Gerromorphan bugs which mostly inhabit the water surface (see ANDERSEN 1982 and references therein). Previously, *P. brincki* specimens were collected on a very wet rock wall covered by water-soaked moss and in a small stony stream, or sieved from wet debris (POISSON 1957, habitat descriptions from BRINCK & RUDEBECK 1951). Consequently, Paraphrynoveliidae were categorised as



Fig. 4: Distribution of Paraphrynoveliidae, including data from literature and new finding. Red circles: *P. brincki* (new record with black centre). Yellow circle: *P. slateri*. Source of the map see under Material and methods.

preferring marginal aquatic habitats like, e.g., most species of Mesoveliidae, Hebridae, Macroveliidae, Ocelloveliinae, Microveliinae (Veliidae), and Eotrechinae (Gerridae) (ANDERSEN 1982). However, it can be concluded from the collecting information of Herbert Franz that the studied specimen was collected in a forest from leaf litter and humus. This indicates that the family can also be found in humid terrestrial habitats, similar to Hebrinae, Heterocleptinae, and a few species of Eotrechinae, Mesoveliinae (Mesoveliidae), Macroveliidae, Microveliinae, and probably Hydrometrinae (cf. ANDERSEN 1982).

The family Paraphrynoveliidae is restricted to the Afrotropical Region. Most records lie in the Western Cape Province of South Africa, but some in the Kingdom of Lesotho. The northernmost record is from S 30°06'36". As suggested by the distribution data provided by ANDERSEN (1978), *P. brincki* could be sympatric with *P. slateri* ANDERSEN, 1978 in the region of Oudtshoorn. A map of all hitherto published records is given in Figure 4.

Previous illustrations of Paraphrynoveliidae were given as drawings in POISSON (1957) and ANDERSEN (1978, 1982).

Acknowledgements

We cordially thank Wolfgang Schönleithner, whose voluntary sorting work in the Entomology Department of NHMW prompted the availability of the specimen. We acknowledge the help of Prof. Dr. Ernst Heiss (Tiroler Landesmuseen) and Dr. Jakob Damgaard (Zoological Museum, Natural History Museum of Denmark), who kindly provided useful comments on the manuscript, and of Alice Laciny MSc (NHMW), who improved the English.

References

- ANDERSEN N.M., 1978: A new family of semiaquatic bugs for *Paraphrynovelia* POISSON with a cladistic analysis of relationships (Insecta, Hemiptera, Gerromorpha). – *Steenstrupia* 4: 211–225.
- ANDERSEN N.M., 1982: The Semiaquatic Bugs (Hemiptera, Gerromorpha). Phylogeny, Adaptations, Biogeography and Classification. – *Entomograph* 3, 455 pp.
- ARCGIS FOR DESKTOP (10.3.1) [Software]. <http://desktop.arcgis.com/de/arcmap/>
- BRINCK P. & RUDEBECK G., 1955: Chapter II. List of localities investigated by the Swedish expedition to southern Africa in 1950–1951. – In: HANSTROM B., BRINCK B. & RUDEBECK G. (eds.): *South African Animal Life* 1: 62–100.
- DAMGAARD J., 2008: Phylogeny of the semiaquatic bugs (Hemiptera-Heteroptera, Gerromorpha). – *Insect Systematics and Evolution*, 39: 431–460.
- JÄCH M.A. & SCHÖNMANN R., 2002: Zum Verbleib der Käfer-Sammlungen von Rudolf Kenyery und Herbert Franz. – *Koleopterologische Rundschau* 72: 112.
- POISSON R., 1957: Chapter 8. Hemiptera Heteroptera: Hydrocorisae and Geocorisae – Gerroidea. – *South African Animal Life* 4: 327–373.

