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(LEPIDOPTERA: HEPIALIDAE)**

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**Notes on larval feeding and habitat of *Gorgopis zellerii* Dewitz
in Western Cape, South Africa (Lepidoptera: Hepialidae)**

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Abstract

Above ground larval feeding tubes and webs are reported for *Gorgopis zellerii* Dewitz, 1881 for the first time. We illustrate the adult moth, the pre-emergent pupa, and examples of larvae and larval feeding webs observed in Western Cape province. Larvae construct feeding tubes of silk and plant fragments extending above ground within plant tussocks. The distinctive dorsal forewing pattern of white longitudinal bands allowed the moth to be identified by comparing with the holotype illustration for *G. zellerii*. The biological observations represent the second documented example of *Gorgopis* Hübner, [1820] constructing subaerial larval feeding webs.

Keywords. Biology, Fynbos, pupa, rearing.

Introduction

Southern and eastern Africa has a ghost moth fauna of 85 described species that are distributed among eight genera (Grehan *et al.* 2023b). Sixty-nine of these species are represented by two genera only - *Eudalaca* Viette, 1950 and *Gorgopis* Hübner, [1820]. Both genera are known to have species with ground dwelling larvae that feed on herbaceous surface vegetation, and possibly non-woody roots (Grehan 2023a), but details on larval biology are limited to brief accounts for very few species. In recent years, observations reported on iNaturalist.org (iNaturalist 2025) have drawn attention to a larval feeding behaviour currently unique to some southern African species. These larvae construct feeding tubes and webs that extend vertically above the ground surface within herbaceous host-plant vegetation. The tubular structures are made up of silk bound plant fragments, faecal pellets, and soil, and are used by larvae as feeding tubes or webs by which they access host-plant leaves or herbaceous stems. One or more unknown species from various localities in Western Cape construct a feeding web that expands into a bag-like web or ‘silk purse’ within shrubs of Restionaceae (Grehan & Rebelo 2021), and a narrow tube-shaped web with tussocks of *Eragrostis curvula* (Poaceae) was reported for an undetermined species of *Gorgopis* in southeastern Western Cape (Grehan *et al.* 2023a).

Observations

On 16 May 2024, a pupa was dug up from soil in a shrub-grassland habitat near Plettenberg Bay airport, close to the eastern boundary of Western Cape province. It was placed on tissue

paper in a plastic container and checked daily. A moth emerged four days later, being observed at 11:22 am on 20 May 2024. The moth had not damaged itself by attempting to fly within the container, and the wing pattern was not obscured. Because of its intact condition it is thought that the moth emerged earlier in the morning rather than the previous evening. After the specimen was photographed it was released outdoors.

Photos of the moth, larvae, pupae and larval webs were posted on iNaturalist.org.

(<https://www.inaturalist.org/observations/267027984>).

The forewing pattern is sufficiently distinctive to allow identification of the species as *Gorgopis zellerii* Dewitz, 1881. The forewing has two narrow, white longitudinal bands. The anterior band extends from near the wing base, across the anterior discal cell parallel to the costal margin and bifurcates distally near the central outer margin (see blue arrows, Figs 1a-d). The posterior band extends along the cubital region without reaching the wing margin. The moth was identified from Janse (1942) and the original description by Dewitz (1881) who illustrated, and referred to, the presence of two white bands on the dorsal forewing, the anterior band being distally bifurcated (arrowed in Fig. 1d). As there is no other named *Gorgopis* species with a wing pattern that may be confused with *G. zellerii*, we are confident that this species name best represents the reared moth. The type locality of *G. zellerii* is the Cape of Good Hope, about 450 km west of the Plettenberg Bay moth.

Larvae observed at the site, but not reared, were found within tubes of silk and plant fragments, including long thin shoots (Figs 2a-b). The diameter of larval tubes expands distally within plant tussocks (Figs 2a, 2d). Below ground level, feeding tubes comprise sand particles bound together with silk, with the inner surface lined by a thin layer of silk, similar in appearance to a very fine fabric (Figs 2e-f). The pupa was collected from within the subterranean portion of a tube, and two larvae were observed in the subaerial portion of the tube. Their morphology is typical of Hepialidae (cf. Wagner 1987, Kristensen 1999) in having a strongly sclerotized and blunt tear-drop shaped head, and similarly robust prothoracic shield (Fig. 2b). The pupa is characteristically hepialid in appearance, with prominent dorsal and ventral transverse spine rows and a strongly sclerotized, almost black, head and dorsal prothorax (Fig. 2c). It is similar in form to the pupa of *Gorgopis* sp. recorded from Mossel Bay (cf. Grehan *et al.* (2023a: fig. 8), but there is a broader angle between the anterior surface of the head and dorsal surface of the prothorax (about 70° vs 40° measured in lateral view).

The collecting site comprises a dense mixture of shrubs and grasses, including Restionaceae, *Bobartia* sp. (Iridaceae), and Bitou Bush (*Osteospermum moniliferum*, Asteraceae) (Figs 2g-h) that has regenerated following fire in 2017. The habitat falls within the coastal fynbos biome characterized by poor, sandy or stony soils, and a predominance of proteaceous and ericoid shrubs, and Restionaceae (Bengtsson *et al.* 2011). The soil has a fine dusty, sandy texture with a compact density. The sandy soil overlays white and red clays about a metre or more below. The May emergence corresponds to late autumn preceding the onset of winter rainfall between June and August

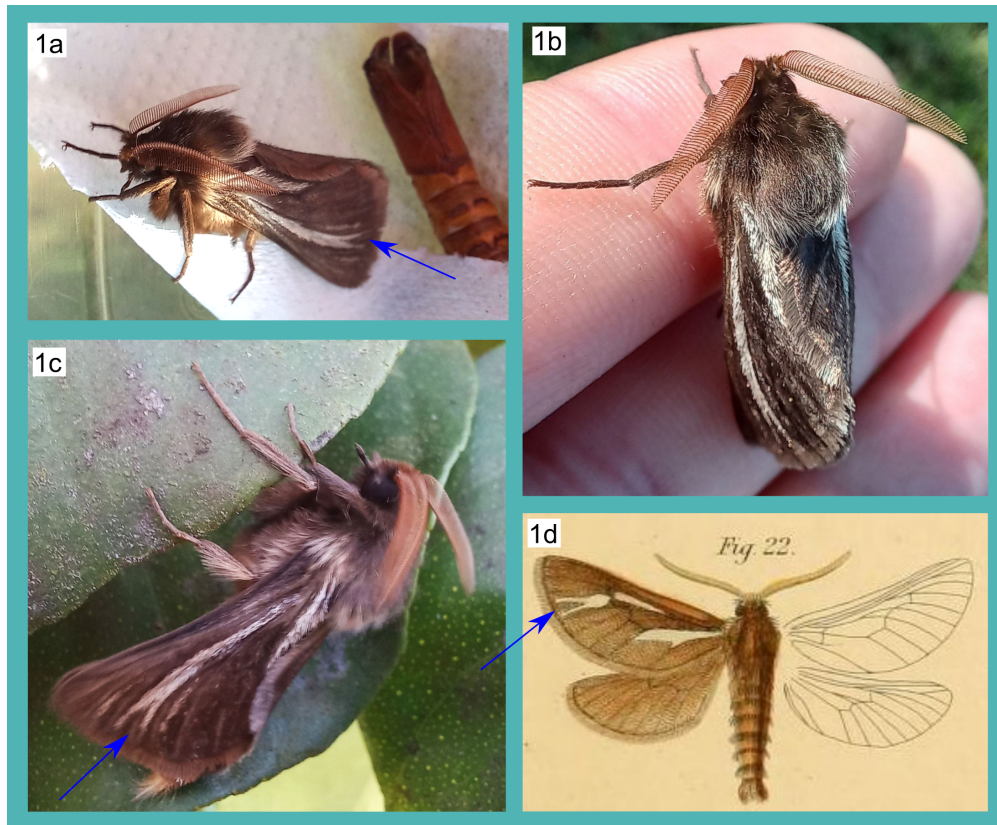


Fig. 1. *Gorgopis zellerii*. (a-c) habitus of reared moth, (d) species illustration by Dewitz (1881).
Blue arrow - bifurcation of anterior white band at distal end. Habitus photos by Vinia Zaayman.



Fig. 2. *Gorgopis zellerii*. Immature stages and habitat. (a-b) larvae (**not reared**) within feeding tubes, (c) pupa in lateral view, (d) feeding web within tussock, (e) basal section of larval tube with lower portion extending into the soil, (f) detail of lower section showing incorporation of sand grains from the soil, (g-h) tussock and general habitat. Photos (a-b) by Bradley Raath, (c-h) by Vinia Zaayman.

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