

**PAMPHAGULUS PENERI (ORTHOPTERA: ACRIDIDAE: DERICORYTHINAE):
A NEW SPECIES OF APTEROUS, DESERT-DWELLING GRASSHOPPER
FROM ISRAEL**

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ABSTRACT

Pamphagulus peneri n. sp. is described from southern Israel. Closely resembling *P. bodenheimeri* Uvarov (1929), it differs from this species in several meristic characters compiled in a comparative table. *P. peneri* is a typical dweller in *Zygophyllum dumosum* Boiss. vegetation.

KEY WORDS: *Pamphagulus peneri*, grasshopper, apterous, Israel.

INTRODUCTION

The genus *Pamphagulus*, previously placed by Uvarov (1929) and Chopard (1943) within the Pamphaginae and later recognized by Johnston (1956), Descamps (1970), and Fishelson (1985) as belonging to the Dericorythinae, includes a few species distributed from North Africa to Sinai and now the southern part of Israel. In 1929 Uvarov described the species *P. bodenheimeri* from a female collected in Sinai (Suez). Fishelson (1985) assigned to the same species some additional specimens collected later in the Negev desert of Israel.

A recent re-examination of this sample of five specimens and its comparison with the type of *P. bodenheimeri* in the Natural History Museum, London, as well as with other species of the genus *Pamphagulus*, showed that the Israeli specimens differ markedly from all others and, in fact, belong to a new species, *P. peneri*, which is described below.

Pamphagulus peneri n. sp.

(Figs. 1 A, 2)

Female

Apterous, small, very rugose, tuberculated.

Head: Opisthognathous, rugose, carinae radiating around eye; fastigium strongly protruding between eyes, sharp below vertex, densely punctated. Facial carinae above clypeus widely separated, converging between antennal bases, diverging above the median ocellus. Ocular sulci clear, with sharp carinae. Antenna short, 5 terminal segments strongly punctated. Vertex of head slightly raised, with a longitudinal carina and 3 large tubercles, of which the central one continues on the frontal ridge. Above the eye a single, large tubercle, from which a ridge continues towards the ocellus.

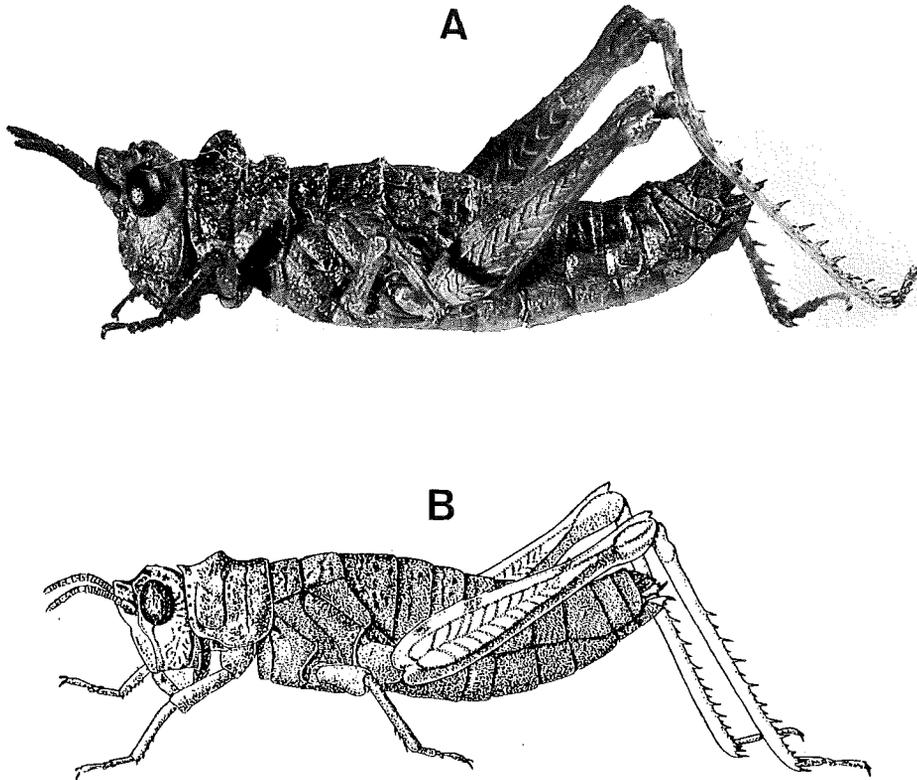


Fig. 1. Habitus. A. *Pamphagus peneri* n. sp. (female, holotype). B. *P. bodenheimeri* Uvarov (female, holotype, redrawn from Uvarov, 1929).

Thorax: Pronotum with prozona 4 times longer than metazona, upper part strongly raised, forming a crest-like median carina, much higher in prozona than in metazona. This crest is intersected by a single transverse sulcus. On both sides of the crest 3–4 strong tubercles (Fig. 2A). Anterior and posterior margins of pronotum incurved, margins of lateral lobes rounded. The median, longitudinal ridge of pronotum and of 3–4 anterior terga with a flat sulcus. Prosternum slightly globular, granulated, meso- and metasternum with widely separated lobes, densely punctated (Fig. 2B).

Legs: Short, slightly hairy, tarsi without arolia. Hind femur shorter than hind tibia, with regular plates dorsally. Hind tibia with 10 spines on the ventral and 10–11 spines along the dorsal margins. Posterior spurs long, almost half the length of first tarsal segment.

Abdomen: Anterior 2–3 abdominal terga with longitudinal, lateral ridges that become vertical on the more posterior terga. Ovipositor with strong valves, upper almost oval, inside rounded, outside sharp, pointed; lower valves with a prominent sulcus behind the sharp apex. Cercus short, thick. Supra-anal plate wide, triangular, twice as wide as long, with pointed end and hairy margins.

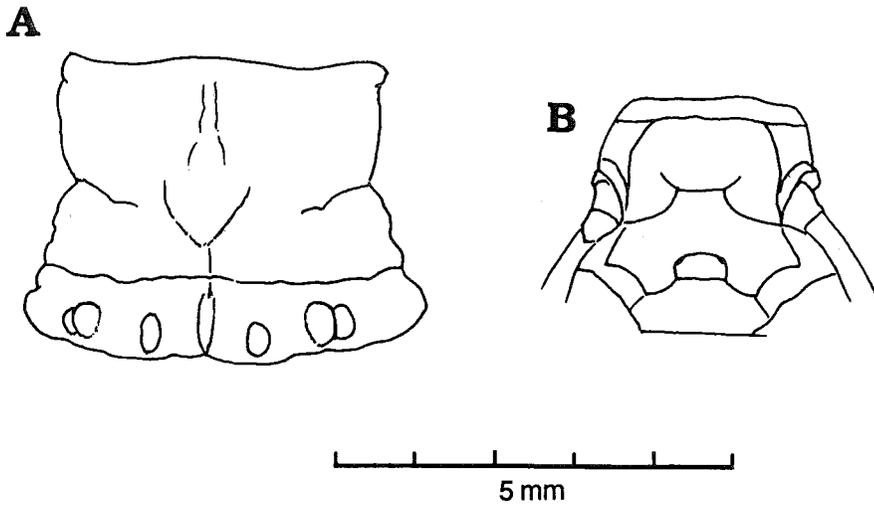


Fig. 2. *Pamphagulus peneri* n. sp. A. Pronotum, dorsal view. B. Sternal plate.

Color: Grayish white, with a dense pattern of whitish tubercles and carinules. Numerous shining black tubercles along the pronotal margins and posterior margins of terga. Sternal plate whitish, hind femur gray, with a dark, dull band on the upper surface. Hind tibia violet-gray, tips of tibial spines blackish.

Measurements: Holotype ♀: Body length 22 mm; pronotum length 2.94 mm; height 3.63 mm; head length 3 mm; antenna 3.6 mm; hind femur length 10.4 mm; height 2.43 mm; hind tibia 11.5 mm.

Paratype ♀: Body length 18.25 mm; pronotum length 3 mm; height 3.6 mm; head length 3.1 mm; antennae 3.12 mm.

Male

Unknown.

MATERIAL EXAMINED. Holotype ♀, ISRAEL: Birkat Hayareakh (Negev), 16.iv.1980, L. Fishelson; Paratypes: 2 ♀, ISRAEL: Nahal Nafkha (Negev) 30.iv.1959, M.P. Pener. The holotype and one paratype are deposited at the Entomological Collection, Zoological Museum, Tel Aviv University. The second paratype is deposited in the Entomological Collection, Natural History Museum, London.

ETYMOLOGY. This species is named in honour of Prof. M.P. Pener, the Hebrew University, Jerusalem, who is one of the leading entomologists in Israel and who collected many grasshoppers, including the paratypes of this species.

BIOLOGY. *Pamphagulus peneri* is one of the most mimetic grasshoppers in Israel. It would appear that they dwell entirely in the dense bushes of *Zygophyllum dumosum* Boiss. and occasionally in *Artemisia herba-alba* Asso, firmly perched on the dry branches. They feed on

the softer parts of these plants. If disrupted, they attach themselves more strongly or drop down between the branches. Even when the bush is severely disturbed and its branches spread out, they merely jump up onto the nearest branch and re-attach themselves. Oviposition occurs at the end of summer and the hoppers hatch in March and April.

AFFILIATION. Some of the characters of *Pamphagulus peneri* bear a strong resemblance to those of *P. bodenheimeri* (Fig. 1B), especially of the subspecies *P. b. dumonti* Uvarov 1929, collected in Tunisia, but not to *P. b. bodenheimeri* Uvarov 1929 from Sinai (Table 1). The pronotal crest in the new species is the highest observed in the genus (see key). The configuration of the frontal ridges of *P. peneri* is closer to *P. lepinyei* Chopard 1943, and *P. uvarovi* Ramme 1931, than to *P. bodenheimeri* and the doubtful *P. mateui* Morales 1949. It would appear, therefore, that *P. peneri*, with the most eastern distribution of this genus, forms a well separated population in the northern Negev of Israel and is endemic to this region.

TABLE 1
Comparison of some morphological characters of *P. peneri* and *P. bodenheimeri*

Character	<i>P. peneri</i>	<i>P. bodenheimeri</i>
Pronotal lateral lobe height/length ratio	0.6	0.72
Pronotum		
length	2.94	3.3
height	3.63	4.68
length/height ratio	0.8	0.7
Pronotal crest		
height/length ratio	0.64	0.5
Hind femur		
length	9.5	10.28
height	2.48	2.26
height/length ratio	0.64	0.5
Body rugosity	strongly callose	moderately callose
Pronotum margins	indented	straight
Sternal plate	strongly punctuated	smooth
Facial carina	diverging	converging

The regular plates on the outer surface of the hind femur preclude the affiliation of *Pamphagulus* with the Pamphaginae, affiliating it, rather, with the Catantopinae. The inclusion of this genus in the Dericorythinae is based on its very close resemblance to the apterous *Corystoderes escaleraei* (Bolivar, 1936) from Spanish Morocco, which surely belongs to this subfamily.

Following the description of the new species of *Pamphagulus*, and although most species of the genus are known from single specimens, it is possible to present a key to the few, well established species known from North Africa, Sinai and Israel.

KEY TO THE SPECIES OF *PAMPHAGULUS*

1. Median carina on the pronotum strongly elevated, forming prominent crest 2
— Pronotum without median crest or with very feebly marked carina 4
2. Pronotal crest triangular, sharp on the apex (Spanish Morocco) . . . *P. ifniensis* (Bolivar)
— Pronotal crest high, rounded on the apex 3
3. Elevated pronotal crest high in prozona (height = 0.64 length) and low in metazona (Fig. 1A); facial carinae diverge towards clypeus (Israel, Negev) *P. peneri* n. sp.
— Pronotal crest lower (height = 0.5 length), absent in metazona (Fig. 1B); facial carinae converge towards clypeus (Egypt, Suez, Abu Salima) *P. bodenheimeri* Uvarov
4. Facial carinae run parallel and widely separated from each other above middle ocellus (Mauritania) *P. vicinus* Ramme
— Facial carinae converge above middle ocellus and merge on vertex 5
5. Facial carinae diverge towards clypeus (Mauritania) *P. uvarovi* Ramme
— Facial carinae converge towards clypeus (Morocco) *P. lepineyi* Chopard

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