

SHORT COMMUNICATIONS

**ORTHETRUM ABBOTTI CALVERT, 1892, A NEW ETHIOPIAN  
REPRESENTATIVE IN THE PALAEARCTIC FAUNA  
(ANISOPTERA: LIBELLULIDAE)**

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This Ethiopian sp. was found on the Arnon River (= Wadi Mujib), Dead Sea Depression, Jordan, in the company of some other Ethiopian spp., e.g. *Crocothemis sanguinolenta* (Burm.). It represents an addition to the list of spp. recorded from the palaearctic area, and is a relict of one of the Pleistocene (pluvial) expansions of tropical African faunas towards the shores of the Mediterranean.

INTRODUCTION

While examining the collection of dragonflies in the Department of Entomology, University of Tel Aviv, Israel, I was struck by a short series of animals from the River Arnon, East bank of the Dead Sea, Jordan, all collected on the same date (17.VIII.1941) by the well-known Jewish entomologist A. Bytinski-Salz. Among the species present were some wide-ranging Ethiopian animals such as *Trithemis arteriosa* (Burm.) and *Orthetrum chrysostigma* (Burm.). However, two male specimens of *Crocothemis sanguinolenta* (Burm.), a species from tropical Africa, were also found. The latter species had been reported once from the "Dead Sea", without further specifications, by MORTON (1924) only. Further, one slightly damaged male specimen of a small *Orthetrum* was found, which turned out to belong to *Orthetrum abbotti* Calvert, 1892. Since it represents an addition to the palaearctic fauna, it is worth being described and discussed in some detail.

## MATERIAL AND DESCRIPTION

**Material.** — 1 ♂, labelled Arnon River (= Wadi Mujib, approx. 31°25'N, 35°33'-35°55'E), Dead Sea, 17.VIII.1941, A. Bytinski-Salz leg. (printed label). An additional label (in handwriting, expert's name not stated) identifies the animal as *Orthetrum anceps*.

**Description.** — Measurements: total length 30.5 mm, length abdomen 20.5, forewing 23.0, hindwing 23.0 mm.

**Head** (Fig. 1). — Labrum and maxillae yellow, face greenish, with some linear, rather diffuse, black markings on the frons, and a strong black stripe along the margin of the compound eyes. Vertex and occiput black.

**Thorax.** — Olive green, black sutures rather narrow. An early onset in the development of a blue, pruinose patch is evident in front.

**Wings** (Fig. 2). — Costal vein dark yellow. Other main veins (especially R+M) black. Rest of venation, particularly cross-veins, yellow or orange-yellow. Pt dark yellow, its costal edge thickened, black. Some basal amber on hindwing, only a trace on forewing. Membranula partly destroyed, light grey. One row of cells in Rspl. Legs black, except for yellow base of femora.

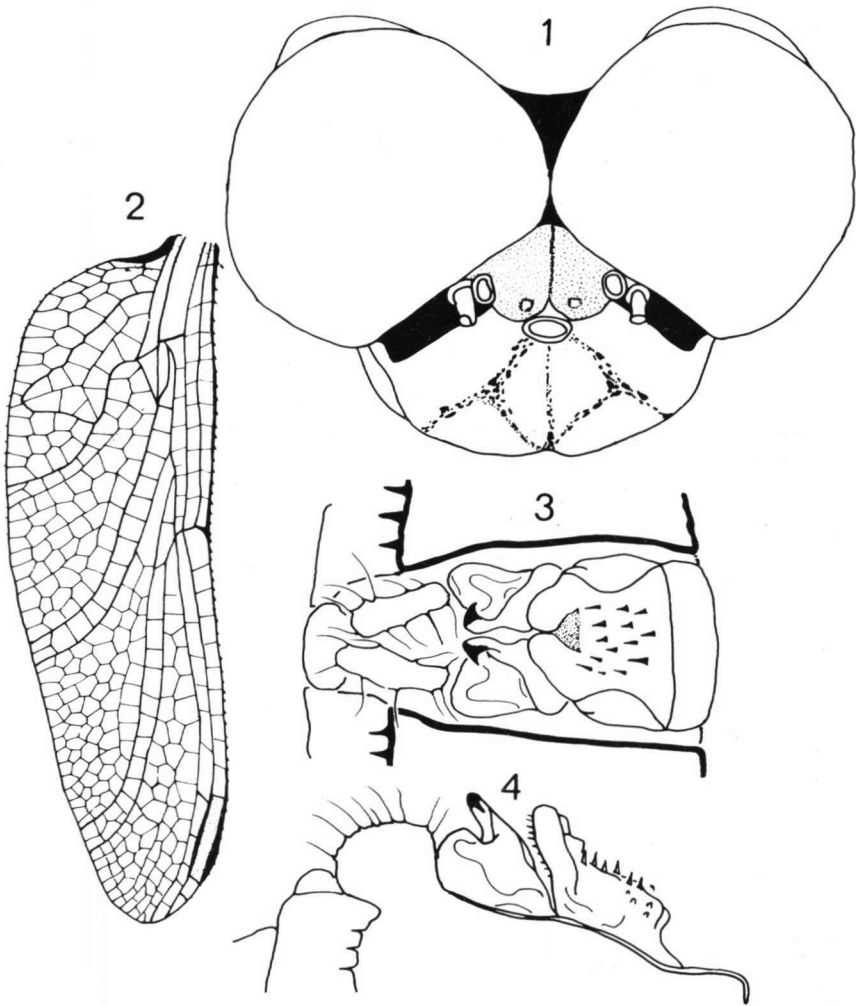
Abdomen almost entirely black (secondarily?), except  $S_1$ - $S_2$ , which are light brown with black sutures. Some rests (?) of blue pruinosity on dorsum of  $S_3$ . Appendages all black, superiors rather cylindrical in shape, parallel. Accessory genitalia (Figs. 3-4) typical for the species. Anterior lamina rather depressed, pointed apically in lateral view, set with some stout spines and short hairs, bifid at its tip, slightly produced over the hamuli. The latter with a conspicuous, strongly developed anterior hook, ending in an outwardly bent tip. Outer hamuli low, sinuous. Genital lobe rounded, set with comparatively short hairs.

**Ethiopian material used for comparative purposes.** — 1 ♂, Durban, S. Africa and 1 ♂, Molumbo, Zambezia Prov., Moçambique, both E.C.G. Pinhey leg.

The two species are slightly longer than the Levantine one (resp. tot. L. 34.0, abd. 23, fw. 25, hw. 25.5 and t.l. 33.5, abd. 22.5, fw. 24, hw. 24.5).

The Durban specimen is not fully mature; the sides of the synthorax are green, its dorsum is blue.

**Abdomen.** —  $S_1$ - $S_3$  with green sides, rest black. Wing amber as in the Levantine specimen. The Moçambique animal is fully pruinose, and has more extensive wing amber. The accessory genitalia in both specimens are exactly as in the animal from Arnon River. The specific status of the latter animal is, therefore, beyond any doubt. Whether it represents a distinct subspecies or not can, of course, not be decided until series eventually become available.



Figs. 1-4. *Orthetrum abbotti* Calvert, male: (1) head; - (2) hindwing; - (3) accessory genitalia, ventral view; - (4) the same, lateral view.

### DISCUSSION

The compound nature of the fauna and flora of the Levant, the mediterranean shoreland of the Near East, has been known for a long time, and was recently analyzed by POR (1975). Dragonflies are no exception to the rule and the presence of a strong Ethiopian element among the Levantine Odonata was estab-

lished by MORTON (1924) and SCHMIDT (1938). Ethiopian dragonflies were estimated to represent 35.5% of the total in Israel (POR, 1975). I showed (DUMONT, 1974) that among the different *Pseudagrion* of the Near East, all of Ethiopian origin, a variable degree of speciation has occurred, and the same applies to some Ethiopian *Libellulidae* (DUMONT, 1975), but not to all.

It was, thus, suspected that several "vagues" of Ethiopian immigrants entered the Jordan and Arava rift valley in the course of the Pleistocene. During most of the Pleistocene, the rift valley itself may have served as a pathway, but since the Nile came into existence (about 30,000 B.P.), the Egyptian shores of the Mediterranean have been lying open to any Ethiopian dragonfly that expanded North. The fact that today little more is known about Egyptian dragonflies than half a century ago (RIS, 1912; ANDRES, 1928), prevents us from having a good qualitative idea about the magnitude of this phenomenon, but even our fragmentary knowledge strongly indicates a vast majority of Ethiopian species in the Egyptian fauna. Lateral dispersal outside the Nile valley is, however, hindered by broad desert barriers on either side, but particularly towards the West (the Sahara).

In the East, the Sinai Desert is much less wide. Any pluvial period may have bridged this gap, and this probably happened a number of times during the Pleistocene. In fact, the most recent faunal rupture with the Jordan valley may have become fully effective as late as the end of the Arbin period (ca. 7000 BP) only. The result was an isolation of species from tropical Africa in the Near East, and the species discussed in this paper is a new example of this phenomenon. *Orthetrum abbotti* is among the most widespread *Orthetrum* of Africa. It occurs in every part of the Ethiopian (PINHEY, 1962, 1970), but had never been found North of the Tropic of Cancer. Its existence on River Arnon, which is one of the four permanent rivers draining water into the Dead Sea from the Jordan side of the Arava valley, is therefore highly significant. The Jordan Rift appears, indeed, to have preserved relicts of Ethiopian origin over its whole length, but before all in two main foci: the Hula basin, North of the Yarda basalt (MORTON, 1924; DUMONT, 1975) and the Dead Sea Depression. In the latter area, it is before all the Eastern slopes which, due to their relative richness in permanent surface waters, have yielded the largest number of interesting dragonfly discoveries. In view of the relatively difficult access, this region has also been comparatively less well explored than the West bank. It is thus not unrealistic to expect more similar findings here in future times.

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