

NOTE

**NEW RECORDS OF *CROCOTHEMIS SANGUINOLENTA*
(BURMEISTER, 1839) FROM ISRAEL, WITH A CRITICAL NOTE ON
THE SUBSPECIES *ARABICA* SCHNEIDER, 1982**

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Received 30 October 1999; revised 1 December 1999; accepted 22 December 1999.

Key words: Odonata, dragonfly, *Crocothemis*, taxonomy, Middle East, distribution.

Crocothemis sanguinolenta (Burmeister, 1839) is a widespread Afrotropical species whose area of distribution extends into the south of the Arabian Peninsula (Schneider & Krupp 1993; Schneider & Dumont 1997; Schneider & Parr 1998). Additionally, isolated populations have been found in the Dead Sea Basin. The first report from this region is by Morton (1924), although his locality "Dead Sea" is not very specific. The species is now known from three localities in Jordan (Schneider 1982, 1985). In Israel it is thus far known only from En Gedi on the Dead Sea coast (31°27'N, 35°22'E), where a male was photographed by the second author on 14 April 1996. The species was numerous at this locality on 23 July 1997 and a male was collected (observation E. Grootveld). The habitat, an oasis stream, is similar to that in Jordan. The presence of this species at this locality has gone almost unnoticed, even though a female and a male were collected there on 16 March 1958 and 10 May 1958 respectively. These are in the collection of Tel Aviv University and were originally misidentified as *Crocothemis erythraea* (Brullé, 1832) and *Brachythemis leucosticta* (Burmeister, 1839) respectively (W. Schneider pers. comm.). Adding *Crocothemis sanguinolenta*, the number of dragonfly species known from Israel now stands at 63 (Dumont 1991; De Marmels 1995). These authors and Furth (1983) list sixteen species for En Gedi. It is surprising that this striking species was not recorded more frequently, despite an extensive limnological survey of the oasis (Furth 1983). Larvae uncertainly assigned to *Sympetrum fonscolombii* (Sélys, 1837) in that study may refer to *C. sanguinolenta*.

Morton (1924) already noticed that his specimens differed from African ones. These were later described as a separate subspecies, *Crocothemis sanguinolenta arabica* Schneider, 1982. According to Schneider (1982) the male of the subspecies *arabica* differs from the nominate in being smaller, having a more open venation, less yellow on the wing bases and no dark markings on the abdomen. The single male from Israel is compared with material from Jordan, Yemen, Oman and Uganda in Table 1. It must be noted that the Ethiopian specimen illustrated by Schneider (1982) has extremely extensive yellow bases, invading at least ten cells of the anal loop. The Israeli specimen fits *arabica* in most features, besides having more yellow on the wing. The Yemenite

males are most typical of the nominate, although the yellow is even more restricted than in known specimens of *arabica*. Waterston (1984) describes a male from southwest Saudi Arabia as being similar to the Yemenite examples. The specimen from Oman combines characteristics of both subspecies. In conclusion, it is impossible to assign the South-Arabian material to either of them.

Despite the small sample size studied, it is obvious that the distinction between *arabica* and *sanguinolenta* is not clear-cut and that intermediate forms occur. According to Buchholz (1959) the species is variable in size and markings throughout Africa. This variation includes the extremes shown by *arabica*. It appears that individuals in hot, dry areas tend to be smaller with a more open venation, less yellow on the wing bases and less abdominal markings. Whether this is merely a developmental response to environmental variation is unknown. If so, only geographical arguments would warrant the distinction of a Levantine subspecies. We do not believe that this justifies the recognition of the subspecies *arabica*.

Table 1. Features of male *Crocothemis sanguinolenta* from various countries (sample sizes between brackets)¹.

	AbdL	Hwngl	Postd	Disc	Mark	Ybase
Israel (1)	22	26.5	2	1	-	2-3
Jordan (5)	20-22	24.5-26.5	2	0-1	-	1
Oman (1)	19.5	23.5	3	2	-	2-3
Yemen (3)	21.5-25	26-29	3	2	3-4	0
Uganda (3)	23-25	27.5-29	3	2	3-7	2-3

¹Data obtained from Schneider (1982) and studied material. AbdL: range of abdominal length (mm), Hwngl: range of hindwing length (mm). Postd: minimal number of rows of cells in postdiscoidal field of forewing. Disc: discoidal cell of both forewings not crossed (0) or crossed in one (1) or both (2) forewings. Mark: numbers of the tergites with blackened lateral carina. Ybase: extent of yellow on base of hindwing, expressed as the number of cells of the anal loop invaded by it.

Material studied

1 male, En Gedi, Israel. 23 July 1997. leg. E. Grootveld; 3 males, Wadi al-Ahjar in Samiq al-Ahjar, Yemen. 22 March 1996. leg. H.J. Dumont & W. Schneider; 1 male, Wadi Hinna, Salalah, Oman. 10 January 1993. leg. D. Tobias; 1 male, Kanyawara, Kibale National Park, Uganda. 11 November 1995. leg. K.-D.B. Dijkstra & N.J. Dingemans; 1 male, Chambura Gorge, Queen Elizabeth National Park, Uganda. 3 January 1996. leg. K.-D.B. Dijkstra & N.J. Dingemans; 1 male, Chambura Gorge, Queen Elizabeth National Park, Uganda. 5 January 1996. leg. K.-D.B. Dijkstra & N.J. Dingemans.

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