

ONYCHOGOMPHUS UNCATUS (CHARP.) AND OXYGASTRA CURTISII (DALE) IN SOUTHERN MOROCCO IN APRIL (ANISOPTERA: GOMPHIDAE, CORDULIIDAE)

During a trip to Morocco in early April 1999, exuviae were collected at the stream Tamrhakht, 50 km NE of Agadir (31°N, 10°W, alt. 350 m approx.), which is situated in the western foothills of the Haut Atlas. The banks of the stream were covered with shrub and palm-trees. The velocity was 30 - 100 cm s⁻¹, depending on the width of the bed, which varied between 10 and 20m. Due to low precipitation that spring, the water depth was between a few cm and 40 cm. The bed consisted of sand, gravel and boulder. There was no aquatic vegetation. The small collection (8-IV-1999) contained four exuviae: one *Oxygastrea curtisii*, one *Onychogomphus uncatatus* and two *Gomphus simillimus maroccanus* Lieftinck. Additionally, some mature *O. uncatatus* males were observed perching at the stream.

For *O. curtisii* this is the fourth record from Morocco and the first one of an exuvia. The previous observations are from the Rif mountains (H.J. DUMONT, 1972, *Bull. Soc. Sc. nat. phys. Maroc* 52: 149-179; G. JACQUEMIN, 1994, *Odonatologica* 23: 217-237) and from a locality near Rabat (M.A. LIEFTINCK, 1966, *Bull. Inst. r. Sci. nat. Belg.* 42: 1-63) which is about 500 km NE of our site. Apparently, this is the southernmost record of *O. curtisii*. *O. uncatatus* is well known from the Haut Atlas and also from the southern side of the range, but not from the vicinity of the Atlantic Ocean (G. Jacquemin, pers. comm.). *G. simillimus maroccanus*, in contrast, was already known from the Agadir region (P. AGUESSE & J.P. PRUJA, 1958, *Bull. Soc. Sc. nat. phys. Maroc* 37: 149-160).

In *O. curtisii* and *O. uncatatus* the beginning of emergence at the Tamrhakht was rather early compared with the other populations of the species in Morocco. The previous observations of *O. curtisii* from the Rif are from July (DUMONT, 1972; JACQUEMIN, 1994). In the coastal plain near Rabat J. Dorgelo collected a juvenile specimen on 15 May (LIEFTINCK, 1966), which indicates an emergence in early May. In the case of *O. uncatatus*, all previous observations on emergence are from the end of May (G. Jacquemin, pers. comm.). LIEFTINCK (1966) observed a mass emergence on 26-V-1965 near Ifrane in the Moyen Atlas. The observation of mature adults at the Tamrhakht indicates that the beginning of emergence must have been at least one week prior to our observation, i.e. early in April. So, the emergence of *O. uncatatus* was nearly two months earlier than known from the other populations. It is well known that the emergence pattern of *O. uncatatus* may vary between the "spring species" type and the "summer species" type (sensu P.S. CORBET, 1954, *Nature, Lond.* 174: 655, erratum 777) with the latitude and even between populations at the same latitude (F. SUHLING, 1995, *Hydrobiologia* 302: 113-118; M. FERRERAS-ROMERO et al., 1999, *Arch. Hydro-biol.* 144: 215-228). The main factor influencing the synchronization and beginning of emergence seems to be the range between minimum winter and maximum summer ambient water temperatures (SUHLING, 1995).

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