

OBSERVATIONS ON REPRODUCTIVE BEHAVIOUR OF *HEMIANAX EPHIPPIGER* (BURM.) IN ANDALUSIA, SPAIN (ANISOPTERA: AESHNIDAE)

The records of *H. ephippiger* in the Iberian Peninsula are very scarce (C. AGUIAR & S. AGUIAR, 1985, *Bolm Soc. port. Ent.* 4 [Suppl. 1]: 245-268; — F.J. OCHARAN, 1987, *Los odonatos de Asturias y de España: aspectos sistemáticos y faunísticos*, Tesis doctoral, Univ. Oviedo) and do not prove its breeding here. Its reproductive behaviour has been watched both in Morocco (G. JACQUEMIN & J.P. BOUDOUT, 1986, *Notul. odonatol.* 2: 112-113) and in France (C. DELIRY, 1989, *Sympetrum* 3: 39-43).

On 28th February, 1992, we saw two males of this species overflying several temporary pools located in an unused limestone mine (UTM

30SUG4598) near the town of Cordoba. The vegetation of these pools, with a cover less than 15% and a maximum height of about 1 m, consisted mainly of *Typha domingensis* (Per.) Steudel, *Juncus* sp., *Aster* sp., *Ranunculus peltatus* Schrank, and *Diitrichia viscosa* (L.) Greuter. This loose habitat structure allowed us an easy and clear dragonfly watching by means of binoculars.

During the subsequent visits we noted an increase in the number of individuals of both sexes. Reproductive activity (copulation and oviposition) were first recorded between 15-21 March. In this period, 15 males and 13 females were marked individually, using waterproof wing labels.

Between 22 March and 11 April, with the occurrence of strong gusts of wind, a decrease in the number of individuals overflying the pools was apparent. We only saw several males, and no reproductive activity was detected then.

The activity related to reproduction was observed again during 12-15 April. None of the previously marked individuals were seen during this period. From 15th April onwards, individuals of *H. ephippiger* did not visit the pools, with the exception of two males that were seen on 27th April (these are the last observations). Reproductive behaviour has been simultaneously watched also at temporary pools near the town of Sevilla (Santos Quirós, pers. comm.).

The activity started at 11.00 h. (GMT 9 h), with the arrival of males, that were overflying the pools and the adjacent land, catching prey. They perched either on the ground or on plants (perhaps for thermoregulation). We also recorded frequent chasing and clashes among males. Females always arrived later than males, at about 13.00 h (GMT 11h), they were seized by the males in the neighbourhood of the pools, whereupon copulation and sperm transfer took place. Females were never seen alone while overflying the ponds.

With the exception of a single female laying eggs alone, the rest of ovipositions (100 approx.) were performed in tandem. Tandem duration was variable, depending on weather conditions: tandem formation was prevented by gusts of wind. On some occasions tandems lasted for several hours.

Oviposition was usually (98%) endophytic,

both on vegetation and on tires scattered in the pools. In the rare cases of exophytic oviposition, female submerged abdomen and then dropped the eggs near the banks of the shallow pools. On several occasions we also saw a tandem flying low over the water, with the female introducing the tip of abdomen under the water, arching it slightly. This is perhaps to be interpreted as an exophytic egg-laying. The reproductive activity was prolonged until about 19.00 h (GMT 17h).

Besides *H. ephippiger*, *Sympecma fusca* (Vander L.) and *Tarnetrum fonscolombei* (Sél.), shared these pools as reproductive habitat.

The first four months of 1992 were in Andalusia remarkably dry and temperatures higher than usual. We do not know whether the phenomenon here recorded occurs regularly, or the local reproduction of *H. ephippiger* in Andalusia is confined solely to the exceptionally warm years.

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