Records of protected dragonflies from Rio Tera, Zamora province, Spain (Odonata)

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Abstract: Breeding records of Gomphus gracilinii, Macromia splendens, and Oxygastra curtisi were provided from Rio Tera, the outlet of Lago de Sanabria, in Zamora province, Castilla y León. With 1000 m a.s.l this site is the highest altitude at which the three spp. have hitherto been recorded. This is most probably due to the exceptionally warm waters feeding Rio Tera at the outlet that are provided by the summer stratification of the lake.

Keywords: Odonata, Gomphus gracilinii, Macromia splendens, Oxygastra curtisi, altitude, exuviae, Iberian Peninsula, Zamora.

Introduction

Within the Odonata, six European taxa are listed on the IUCN Red List of threatened species, assessed under 1994 categories (IUCN, 2004); four of these also inhabit the Iberian peninsula: Coenagrion mercuriale (Charpentier, 1840), Gomphus gracilinii Rambur, 1842, Macromia splendens (Pictet, 1843), and Oxygastra curtisi (Dale, 1834). In addition, these four species are also protected by the Fauna-Flora-Habitat (FFH) directive of the European Union, and, with the exception of O. curtisi, are still regarded as threatened according to present criteria (Sahlén et al., 2004). However, distributional data regarding these species are still scarce, providing only an unsatisfactory and patchy picture, especially for Spain. In this note we record a previously unknown Spanish breeding site of G. gracilinii, M. splendens and O. curtisi in order to document another piece of the distributional puzzle of these EU-wide protected species.

Study site and methods

On 9 August 2005, we visited Rio Tera close to its outlet from Lago de Sanabria, approximately 9 km NW of Puebla de Sanabria, Zamora province, Castilla y León (42°08'N, 06°41'W). The investigated site, situated close to Galicia where M. splendens is probably less known than that of the more spectacular M. splendens, is regarded as widespread and not endangered (Cordero Rivera, 2000), and not far from northeastern Portugal, where likewise it seems not to be rare (Malkmus, 1996, 2002; Vanappelghem & Fernandez 2003). Assuming that those records pertain to a more or less coherent population that is not constrained by political borders, northwestern Iberia is obviously a centre of M. splendens distribution of a hitherto unknown size. Zamora province is also included in the range of G. gracilinii mapped by, e.g., Dommanget (1996). Although the situation of G. gracilinii is probably less known than that of the more spectacular M. splendens, their sympatric occurrence – along with O. curtisi – is a typical coenosis of southwestern European streams and rivers that are close to their natural state (e.g., Bilek, 1969; Dommanget, 1996; Lohr, 2005).

However, what we regard as especially noteworthy is the evidence of a breeding site of those spp., especially for Spain, at the confirmed altitude. In neighbouring Galicia, Cordero Rivera (2000) sampled 28 localities and found M. splendens in 11 of them at altitudes below 320 m above sea level, stating that “almost all populations occur at low-altitude rivers, up to 250-300 m”. This opinion is shared by the species reviews of Lieftinck (1965: “appar-ently confined to the plains and hills not above 300 m”) and Grand & Dommanget (1996: “up to 350 m”). To our knowledge the hitherto recorded extremes in altitude were in France at 620 m (Chausasdas & Dommanget, 1988), in Spain at 640 m (J. Cabezas Flores in Cordero Rivera, 2000) and in Portugal at 680 m above sea level (Malkmus, 2002). The Spanish record pertain to “a single larva”, the other two only to sightings of single M. splendens adults, respectively. The next recording sites to the south of Rio Tera are situated in northeastern Portugal at 200-475 m (Malkmus, 1996, 2002), and in Extremadura at 350 m (Río Jerte; Benítez-Donoso & García-Parrón, 1989; Benítez-Donoso, 1990). The vertical range inhabited by G. gracilinii is obviously almost identical (Dommanget,
1996: “in France up to an approximate elevation of 400 m”). Concerning *O. curtisi*, records of imagines during maturation were taken in Switzerland at approximately 900 m, but the uppermost reproduction site there is situated at 416 m (Hoess, 2005). The highest breeding population for *O. curtisi* hitherto published was found in France at 695 m above sea level (Ladet, 1995).

Hence, the new site constitutes by far the highest records of these spp., especially for successful reproduction, ever published. But there is a simple explanation for this fact: Rio Tera flows through Spain’s largest natural lake, Lago de Sanabria. Although this is an oligotrophic glacier lake with a size of 318 ha and a depth of 51 m, it develops during summer stratification a huge epilimnion of 8 m, with temperatures up to 24°C in August (Luque Marin, 2003) – meaning that warm water feeds Rio Tera at the outlet. The phenomenon that a larger, stratified lake may serve as a sort of ‘continuous-flow water heater’, offering at its outlet optimal temperature conditions for the development of running-water Odonata like gomphids, is well-known to us from a number of examples in Germany and explains why spp. typical of lowland streams and rivers like *G. graslinii*, *M. splendens* or *O. curtisi* are able to breed exceptionally at this altitude.

Another phenomenon that we consider worth mentioning is the discrepancy between species observed on the wing and species recorded as exuviae, especially in an extremely dry year like 2005 that allowed exuviae to remain in situ at emergence sites for probably several weeks. If we had not looked for exuviae even at a date late in summer –especially within the watercourse – most of the presented spp. would have stayed undetected.

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**References:**