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Migrating dragonflies as a food source for breeding Eleonora's falcons and migrating raptors

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Łukasz Ławicki

373. Whooper Swans *Cygnus cygnus* with nine cygnets, Dzwonowo ponds, northwest Poland, 4th June 2010.

over, larger broods (from clutches of up to 14 eggs) have been reared in captivity (Zubko 1988). The clutches with 11 and 12 eggs described in this note appear to be the largest observed and documented in the wild.

* These data were collected as part of a dedicated Whooper Swan monitoring programme during 2007–10, organised by the Chief Inspectorate for Environmental Protection and funded by the National Fund for Environment Protection and Water Management.

Lukasz Ławicki, West-Pomeranian Nature Society, Flisacza 35e/6, 74-100 Gryfino, Poland; e-mail izuzal@interia.pl

Maria Wieloch, Ornithological Station, Museum and Institute of Zoology, Polish Academy of Sciences, Nadwiślańska 108, 80-680 Gdańsk, Poland; e-mail mwieloch@miiz.waw.pl

Piotr Dombrowski, Biebrza National Park, Osowiec-Twierdza 8, 19-110 Goniądz, Poland; e-mail pdombrowski@biebrza.org.pl

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Migrating dragonflies as a food source for breeding Eleonora's Falcons and migrating raptors

The island of Pantelleria and the smaller islets of Lampedusa, Linosa and Lampione, in the Sicilian Channel, are important migration stopover sites in the central Mediterranean. Since 2004, members of MISC (Malati di Isolitidine allo Stadio Cronico) have spent up to three months of each year, in spring and autumn, studying bird migration through the islands. In addition to birds, these islands attract an abundance of migrating dragonflies (Odonata) and hawk-moths (Sphingidae), particularly on days with strong winds between southwest and southeast (Corso in press.). Hundreds, some-

times thousands of *Sympetrum* dragonflies, mostly Red-veined Darters *S. fonscolombii*, have been observed, together with hundreds of Emperors *Anax imperator*, Lesser Emperors *A. parthenope* and Vagrant Emperors *A. ephippiger*.

In July 2009, during the boat trip from Lampedusa to Lampione, we encountered many migrant dragonflies at sea, mostly Vagrant Emperors and Red-veined Darters. As we approached Lampione we realised that several Eleonora's Falcons *Falco eleonora*, which breed on the island, were actively hunting the dragonflies, which they caught

readily in flight. Similar behaviour has previously been documented at other Sicilian sites, including Lampedusa, the Eolie Archipelago and Pantelleria (Lo Cascio 1999; pers. obs.). Lampione is a small islet (700 m × 180 m) and, compared with larger islands, attracts relatively few passerines during migration. At times when avian prey is scarce or absent, it seems likely that migrating dragonflies constitute an important food source for Eleonora's Falcons during the breeding season. Others have also reported the predation of dragonflies by Eleonora's Falcons, for example Walter (1979), Spina (1992) and Ristow (2004).

During this study we observed other raptors (Red-footed Falcons *F. vespertinus*, Lesser Kestrels *F. naumanni*, Hobbies *F. subbuteo*, Pallid Circus *Circus macrourus* and Montagu's Harriers *C. pygargus* and, less frequently, Black Kites *Milvus migrans*, Marsh Harriers *C. aeruginosus* and Honey-buzzards *Pernis apivorus*) hunting over the sea. At the Strait of Messina raptors have frequently been observed feeding on dragonflies (Giordano *et al.* 1995; Corso 2001), as have several other bird species such as European Roller *Coracias garrulus*, European Bee-eater *Merops apiaster*, Great Spotted Cuckoo *Clamator glandarius* and various shrikes *Lanius*. On days with a heavy passage of dragonflies and hawk-moths, the appearance of these invertebrates is often a prelude to the arrival of birds that feed upon them.

Our observations support the suggestion by Anderson (2009) that dragonflies migrating over the Indian Ocean were not only an important food source for Amur Falcons and several other migrant birds, but that the birds' flyway routes had evolved in response to those used by the insects. The

opportunity of mid-air refuelling during a long sea-crossing must be a significant attraction for many long-distance migrants, and Wikelski *et al.* (2006) also explored the similarities between migration routes of dragonflies and birds.

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Andrea Corso, Via Camastra, 10 – 96100 Siracusa, Sicily, Italy; e-mail volerrante@yahoo.it

Turtle Doves breeding in the uplands

The Turtle Dove *Streptopelia turtur* was formerly a common breeding bird in South Yorkshire, especially during the late 1960s and 70s, when national population levels were at a long-term high (Gibbons *et al.* 1993). Since then the population has declined drastically, as in other parts of the country,

and by 2005 was restricted to only one site in the Barnsley recording area. It was therefore of no surprise when birds failed to return in 2009 to the last remaining lowland site, at Wintersett, near Wakefield.

More surprisingly, a singing male was present on the edge of a Sitka Spruce *Picea*