

## Does the Common Kingfisher *Alcedo atthis* prey on adult dragonflies? (Aves: Alcedinidae; Odonata: Anisoptera)

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**Abstract.** A male Common Kingfisher *Alcedo atthis* was observed and photographically documented in Germany with a captured adult male *Libellula fulva*. It is speculated how and from where the prey was caught and the extent to which dragonfly imagines contribute to the nutrition of the various kingfisher species that either feed mainly on aquatic or predominantly on terrestrial prey is discussed.

Further key words. Dragonfly, Anisoptera, *Libellula fulva*, foraging, prey

### Introduction

In Europe a few bird species such as the Eurasian Hobby *Falco subbuteo* and the European Bee-eater *Merops apiaster* are known to regularly prey on adult dragonflies caught in flight (CLARKE et al. 1996; FRY & BOESMAN 2014; ORTA & KIRWAN 2014). Otherwise, dragonfly imagines are almost exclusively captured during or shortly after emergence predominantly by various passerines (e.g., WESENBERG-LUND 1913; LIEFTINCK 1965; UBUKATA 1973; WILLEY 1974; ARNOLD 1985; RUDOLPH 1985; TSCHAN 1995; GASSE 1997). The Common Kingfisher *Alcedo atthis* mainly feeds on fish and to a lesser extent on aquatic arthropods (COLLINGE 1921; IRRIBARREN & NEVADO 1982; BUNZEL 1987; ISOTTI & CONSIGLIO 2002) which are captured by plunge-diving (KNIPRATH 1969; BEZZEL 1980). Therefore dragonfly larvae of various species may constitute a substantial portion of its insect nutrition (WILDERMUTH & SCHNEIDER 2014). On the other hand, adult dragonflies have not hitherto been documented as prey of the Common Kingfisher. Here we report on a male kingfisher that was photographed with an adult dragonfly it had caught.

### Material and methods

Common Kingfishers *Alcedo atthis* were observed and photographed from a hide at the Kocherbach near Köttinger See north of Ertstadt-Köttingen, Germany (50°50'44"N, 06°48'38"E, 100 m a.s.l.). The hide was mounted beside a perch where the kingfishers often landed before they flew to their breeding burrow nearby.

### Results

On 24-v-2013 at 10:40 h CEST a male kingfisher landed on the perch, holding a young male *Libellula fulva* in his bill (Fig. 1). The thorax of the dragonfly appeared heavily mutilated, with the fore wings missing, obviously having been torn off.

Shortly after the bird carried the dragonfly to the breeding burrow without knocking it on the branch as kingfishers usually do with fish prey.

### Discussion

The Common Kingfisher captures its prey, mainly fish and to a lesser extent aquatic arthropods, usually by plunge-diving (e.g., BEZZEL 1980; WILDERMUTH & SCHNEIDER 2014). Occasionally, it may also take prey items from the water surface, even when these are motionless (KNIPRATH 1969), or from the ground (RUTHKE 1968; HAVELKA 2010). SHARROCK (1962) reports a kingfisher hovering over reed beds and picking off an unidentified settled dragonfly from the vegetation. Exceptionally, kingfishers may even hunt flying insects by hovering or, like a flycatcher or bee-eater, by sallying out from an exposed perch (HODSON 1961; RUTHKE 1968). Nevertheless, we doubt that the adult dragonfly held in the kingfisher's bill (Fig. 1) was captured in mid-air or taken from a perch. It seems more likely that the prey was seized from the water surface or the ground. This assumption is supported by the fact that the dragonfly was teneral and had both fore wings torn off. As to our knowledge no members of the kingfisher family (Alcedinidae) are known to tear off the wings from dragonflies before swallowing or delivering their prey to their



**Fig. 1.** Male Eurasian Kingfisher *Alcedo atthis* with captured teneral male *Libellula fulva*. Kocherbach north of Köttingen, Germany (24-v-2013; 10:40 h CEST). Photo: UH

nestlings, it may be speculated that the insect was picked up by a small songbird that subsequently lost its prey while in the process of detaching the wings from the dragonfly's body. Removal of the wings before devouring or feeding the prey item to nestlings is a well-known behaviour of various passerines, especially wag-tails (*Motacilla* spp.) (e.g., SØMME 1933; HARTUNG 1996; SUHLING & MÜLLER 1996: 42). In Europe quite a number of bird species are reported to exploit emerging or teneral dragonflies as a profitable food source (e.g., WESENBERG-LUND 1913; LIEFTINCK 1965; ARNOLD 1985; MÜLLER 1995; GASSE 1997). Depending on the wetland habitat type different odonate species are involved, for instance *Libellula quadrimaculata* (RUDOLPH 1985), *Somatochlora flavomaculata* (TSCHAN 1995) or *Aeshna cyanea* (CHAM 2012). In the case reported here, prey and predator typically share the same habitats: lake shores, ponds, and slow-flowing rivers with lush emergent bankside vegetation are used by *L. fulva* for reproduction and by *Alcedo atthis* for foraging.

Internet search revealed two more photographs of kingfishers with a captured adult dragonfly: a Pied Kingfisher *Ceryle rudis* with a Common Tigertail *Ictinogomphus ferox* (DZIUBINSKA 2015) and a Malachite Kingfisher *Corythornis cristata* with a Wandering Glider *Pantala flavescens* (VAN DEN BERG 2015). In both cases the dragonflies' wings are shiny, giving the impression of not having been completely hardened yet. As in the case of *L. fulva*, it is possible that the tenerals fell into the water or onto muddy ground and were then seized by these kingfishers. Both species mainly feed on fish (LIBOIS & LAUDELOUT 2004). Yet, *C. cristata* can be partially insectivorous (VAN SOMEREN 1956; NEWMAN 1974; FRY et al. 1988) and in unusual situations it may change its nutrition completely to invertebrates such as aquatic insects including adult odonates obtained by aerial feeding (MEADOWS 1977). Another photograph from the Internet showing a Common Kingfisher from the Danube Delta with an adult *Gryllotalpa gryllotalpa* indicates that this bird may also take large terrestrial prey (PETRESCU 2015). However, in this case too, the prey animal typically inhabits moist ground, often close to the water. On the other hand, ISOTTI & CONSIGLIO (1995, 2002) report that some kingfisher individuals even sometimes capture terrestrial arthropods, Coleoptera and Hymenoptera among them.

In summary, dragonflies are obviously only very rarely preyed on as adults by the Common Kingfisher, depending on the individual and on the particular situation. Odonates, if at all, are predominantly caught in the larval stage, by plunge-diving as shown on photo and video film documents and by analyses of the contents of regurgitated pellets (WILDERMUTH & SCHNEIDER 2014). This is in contrast to other kingfishers such as members of the genus *Halcyon* that feed predominantly on terrestrial prey. In the Woodland Kingfisher *H. senegalensis* and the Brown-hooded Kingfisher *H. albiventris* for example, diet consists of small reptiles and other vertebrates as well as of various insects including adult dragonflies (FRY et al. 1988, 1992; WOODALL 2001).

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