

RISK-SENSITIVE BEHAVIOUR AND DOMESTIC CAT PREDATION ON *AESHNA CYANEA* (MÜLL.) (ANISOPTERA: AESHNIDAE)

Predation on adult odonates by invertebrates has been reported several times (for an overview see G. REHFELDT, 1995, *Odonatol. Monogr.* 1: 1-175). On the contrary, vertebrate predation is less well documented and mostly limited to birds, with fewer cases in fishes, amphibians, reptiles and mammals (see references in REHFELDT, 1995, *ibid.*). This is because these other vertebrate classes have mostly non-flying members. As a result, records of predation by ground-living mammals on adult dragonflies are rather rare, and given for only one carnivore, the domestic cat (see REHFELDT, 1995, *ibid.*). We report here on several cases of cat predation on adult *A. cyanea* and discuss these observations in the light of the risk-sensitive behaviour of the species.

During 1995 we noted three occasions of domestic cat predation on adult *A. cyanea*. The first of these was under artificial conditions. A male raised in an aquarium emerged in February 1994,

when it was too cold to release it. Therefore it was kept in the living room where it was very active. The dragonfly was twice caught by the house cat, once while flying against the window and once while patrolling around the table. We observed the other occasions in gardens. The local cat caught and killed a male in July 1994 in a private garden in Merchtem (Belgium) and the same thing happened on 3 September in another garden in Merchtem. On all occasions the cat was familiar with the place and had watched the male for some time before trying to catch it. In the last record the male was able to escape the first time, but stayed flying in the same area and was finally caught by the cat.

There were several aspects of their flight behaviour that made the males vulnerable to cat predation. They were all flying low above the ground as typical for the species (see P.-A. ROBERT, 1958, *Les libellules*, Delachaux & Niestlé, Paris; G. PETERS, 1987, *Die Edellibellen Europas*, Ziemsen, Wittenberg-Lutherstadt). Furthermore, they showed the typical repeated flight route pattern of the species (PETERS, 1987, *ibid.*; H. KAISER, 1974, *Oecologia* 34:398-429), thereby regularly standing still in the air (ROBERT, 1958, *ibid.*; J. d'AGUILAR, J.-L. DOMMANGET & R. PRECHAC, 1985, *Guide des libellules d'Europe et d'Afrique du Nord*, Delachaux & Niestlé, Paris; G. JURZITZA, 1988, *Welche Libelle ist das?*, Kosmos, Stuttgart). This of course makes them vulnerable to 'eye-chasers' like cats that typically watch their potential prey for a while, waiting for the right moment to spring upon it. F. TERZANI (1992, *Notul. odonatol.* 3: 154) described the same strategy of the cat in the only other report of an *A. cyanea* killed by a cat.

It seems worthwhile noting that these dragonflies seem to be very curious of all large organisms in their surroundings, such as men (as is reported by ROBERT, 1958, *ibid.* and H. BELLMAN, 1993, *Libellen, beobachten, bestimmen*, Naturbuch-Verlag, Augsburg) and cats, approaching them, even after an attack. A striking example of this was observed by one of us (RS) on 6 September. While watching oviposition behaviour of *Lestes viridis*, on a small pool in a forest, he was approached by a female *A. cyanea*. She hovered in front of him and landed on his papers. Then she curled her abdomen and probed this substrate several times

with her ovipositor. After some trials, she landed on his head and repeated this behaviour. Something similar is reported by ROBERT (1958, *ibid.*).

This risk-sensitive behaviour is exacerbated by the species' habitat preferences. They typically fly in parks and gardens (C. LONGFIELD, 1949, *The dragonflies of the British Isles*, Warne, London; D.C. GEUSKES & J. VANTOL, 1983, *De libellen van Nederland*, KNNV, Hoogwoud; PETERS, 1987, *ibid.*; R. ASKEW, 1988, *The dragonflies of Europe*, Harley, Colchester). In October 1994, one of us (RS) even saw a male that had entered a cycle store at the University campus of Antwerp, and could easily be caught by hand; MDB saw one in september 1995 trapped in a spider web in a summerhouse in Merchtem. They are also reported to enter houses (LONGFIELD, 1949, *ibid.*; J. d'AGUILAR, et al., 1985, *ibid.*). It is not surprising, therefore, that predation by a cat was noticed earlier in this species by TERZANI (1992, *ibid.*). Because of the typical risk-sensitive behaviour, coupled with adult habitat preferences, it is tempting to conclude that such cause of death may be quite common in adult *A. cyanea*, despite the few reported observations.

The other European aeshnid, also regularly occurring in gardens, *A. mixta*, on the other hand, has only once been reported to be grasped by cats (K. MILLER & P. MILLER, 1996, *Kimminsia*, 7: 3). This could be due to the fact that this species flies higher (ROBERT, 1958, *ibid.*), does not normally hover, is not so highly territorial and does not show such well-developed patrolling behaviour as *A. cyanea*.

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