



CHARMING A STRANGER

ARE ALL PONDS EQUAL FOR THE NORTHWARD MIGRATION

OF *COENAGRION SCITULUM* (ODONATA)?

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Introduction

In the last 15 years, the southern Dainty Damselfly, *Coenagrion scitulum*, expanded remarkably northward up to southern Holland and Germany. A major migration route was along the Atlantic and Channel coast. The last few years, it became a common resident in the Belgian coastal dunes.

To investigate the possible role of pond habitat quality in this phenomenon, we examined its apparent requirements within this area.



Methods

The number of visiting specimens of all Odonata and the reproductive intentions *C. scitulum* were recorded for 163 ponds by standardized protocols. Detailed information on vegetation structure and composition and a selection of abiotic variables was collected.

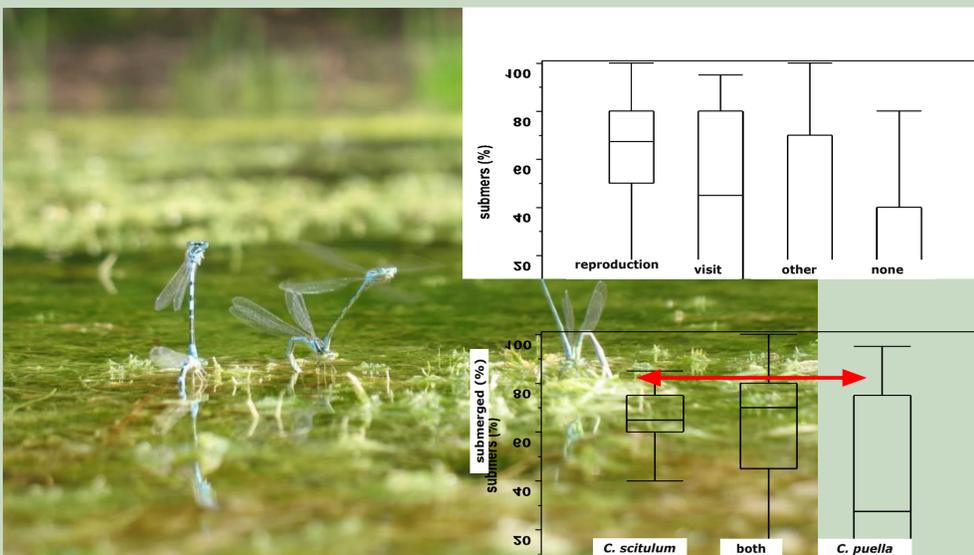
Habitat differences were explored between ponds where *C. scitulum* attempted to reproduce, ponds that were visited but where no such behaviour occurred, ponds that were only visited by other Odonata, and ponds that were unattractive to all.

Box plots show medians, quartiles and 1.5 x interquartile ranges. Some notable differences ($p < 0.05$) are marked by red arrows.

Results

1. Vegetation

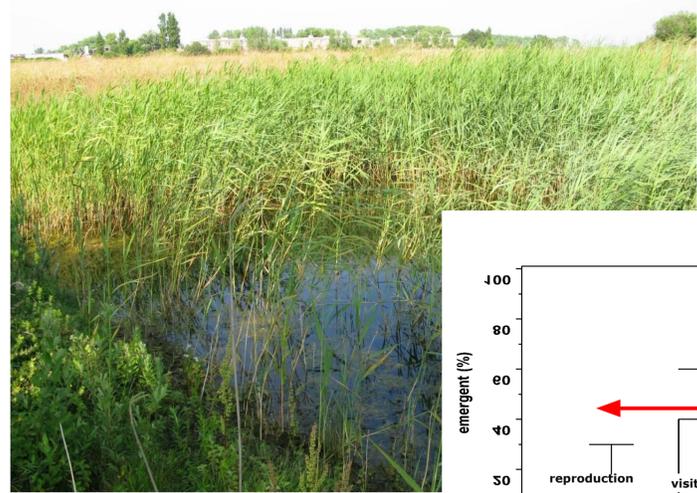
Reproductive behaviour is associated with higher cover, volume and diversity of submerged vegetation. Often, charophytes are abundant, although not chosen for oviposition. *C. puella* appears to be much more catholic in its choice of suited ponds.



Conclusions

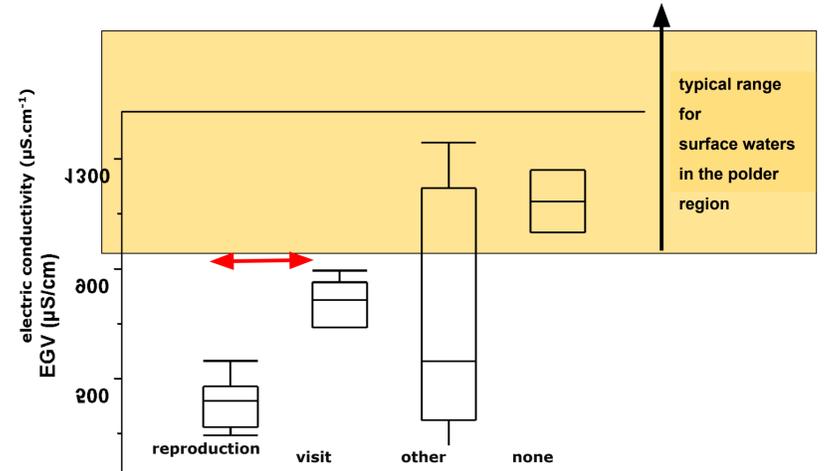
C. scitulum prefers permanent ponds with quite fresh water, limited emergent vegetation and a diverse, well-developed submerged vegetation as reproduction sites. The high density of such – fishless – high-quality ponds facilitated the rapid spread of this southern newcomer in the dune region. While it colonized this area, hardly any observations were reported from the adjacent polder region where similar habitats are only poorly represented.

An emergent plant cover vegetation of less than 30% is preferred for reproduction.



2. Water chemistry

Reproductive intentions are limited to ponds of relatively low conductivity ($< 650 \mu\text{S}\cdot\text{cm}^{-1}$); saline ($\text{Cl}^- > 70 \text{mg}\cdot\text{l}^{-1}$) and more alkaline ($> 3.3 \text{mmol}\cdot\text{l}^{-1}$) waters are avoided. As expected for ponds with much submerged vegetation, pH ($\approx 8-9$) and oxygen saturation (100-150%) are high.



3. Other pond characteristics

C. scitulum selects permanent ponds for reproduction. With an optimum average size of 400 m², these are significantly larger than those visited by other Odonata species. Grazing and degree of shelter do not seem to make any difference.

4. Dispersal in the dune region

C. scitulum is not a typical long-distance flyer. With its mild climatic conditions, predominantly south-westerly winds and an average density of ... ponds/ha – many of favoured quality – the dune region provides an obvious migration pathway. Moreover, the adjoining sea 'concentrates' wandering damselflies from the hinterland, enticing them to follow this route.

