What is the minimum number of dragonflies necessary to sustain a viable local population in isolation?

Mike Averill

This a is a question almost impossible to answer with any certainty in a fluid system where there are inflows and exit points from an environment, but there has been a chance to look at one insect that we can be fairly sure has adopted a new location and managed to remain in small numbers for ten years.

The Scarce Chaser Dragonfly *Libellula fulva* (01 & 02) was confined to a few locations in Hampshire and Norfolk in the 1980s and because of its apparent lack of ability to move elsewhere was classified as Nationally Scarce. It was with some surprise that in 2004 this dragonfly was suddenly found to be very much at home in Worcestershire (Averill 2004). This is a river species and much like the Club-tailed Dragonfly *Gomphus vulgatissimus*, it likes rivers with silty beds and has an early synchronised emergence, flying from mid-May to early July.



01. Male Scarce Chaser. Mike Averill.



02. Female Scarce Chaser. Mike Averill.

After establishing itself along the River Avon it moved all the way upriver into Warwickshire. After that there has been the odd record further north into Worcestershire but nothing regular except for one location at Hillditch Pool on Hartlebury Common. This sounds like a still water location, but is in fact is a slow moving stream that runs through a pool. This habitat is very similar to the sort of small rivers in Hampshire where it had its original stronghold. The first time it was seen at Hartlebury was 2012 and proof of breeding has been attained every year since but only in small numbers, at the most perhaps ten individuals can be seen at any time and the pool is only approximately 100 metres long



03. Exuvia of Scarce Chaser with distinctive curved dorsal spines. Mike Averill.

We tend to think of numbers in the hundreds and even thousands when we think of insect population sizes, but this example must show that small numbers can exist in isolation. The life cycle of this dragonfly is two years, possibly only one year and there are no other known breeding sites within 25 kms of this location. There are three records from Hurcott Pool, a little further north near Kidderminster which may have been an attempted breeding location.



Map 01. Scarce Chaser records in Worcs to 2022. Taken from NBN.

When a species' habitat is small and isolated, fewer individuals breed to pass on their genes which leads to a loss of genetic diversity. Over time, individuals will become inter-related. This inbreeding is usually less healthy for a population because the offspring inherit two identical genes passed on from related parents.

Will the low numbers at Hillditch eventually lead to the demise of that population of Scarce Chasers? Only time will tell. Hopefully the population will be bolstered by new individuals moving into the area. The very presence of this species makes Hillditch Pool a site of National Interest and even if the species listing is demoted from Nationally Scarce, which seems likely, it is still a site of County Importance.

Reference

Averill, M. 2004. Scarce Chaser *Libellula fulva* makes surprise addition to county list. *Worcestershire Record* 17:17-18

Images

- 01. Male Scarce Chaser. Mike Averill.
- 02. Female Scarce Chaser. Mike Averill.
- 03. Exuvia of Scarce Chaser with distinctive curved dorsal spines. Mike Averill.
- Map 01. Scarce Chaser records in Worcs to 2022. Taken from NBN.