

Fairy Shrimp

Chirocephalus diaphanus

Species Profile

Ancient upside-down swimming specialist species of temporary ponds

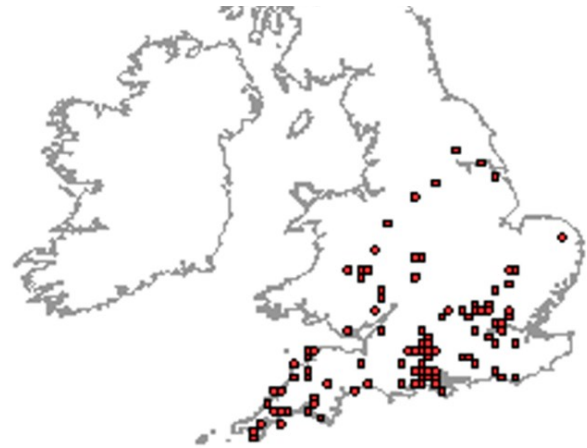
Fairy Shrimp is the common name given to a group of species known in Latin as *Anostraca*. The only species known to be natively found in Britain is the *Chirocephalus diaphanus*. The Fairy Shrimp is a specialist species which are surprisingly tolerant to a number of habitat factors and have the potential for a stronger population in the UK than is recorded, but unfortunately are principally threatened by habitat loss and degradation.

The Fairy Shrimp are a special and elusive species occupying ponds which are ephemeral (dry for part of the year) and grazed by livestock. They have interesting characteristics including upside-down movement through the water and have a translucent body.

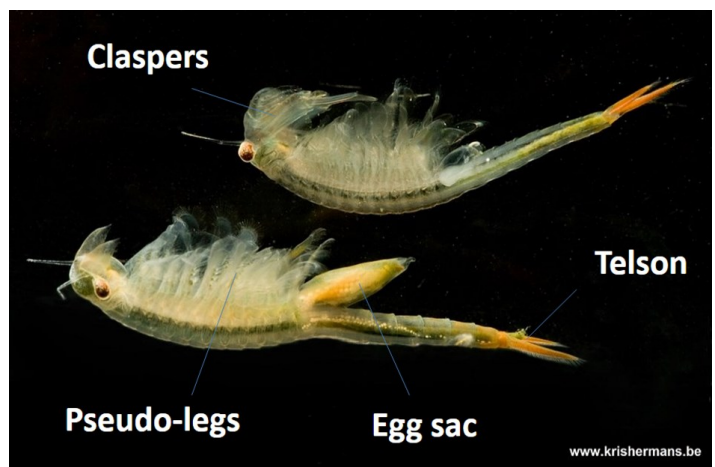
There are fossils dating back to the early Cretaceous period, over 140 million years ago, with similar forms to Fairy Shrimp. It is fantastic to know that they are still surviving and with relatively little changes in the way they look today. The landscape of Britain has undergone great change since the prehistoric times and the recorded populations of Fairy Shrimp are currently concentrated in Devon, Cornwall and the New Forest. The New Forest is a relatively unchanged landscape and supports many other ancient species like Marsh Clubmoss and the Tadpole Shrimp, mainly owing to the historic practice of grazing livestock and low nutrient freshwater habitats.

The limited size and distribution of the species means that it is currently listed as Vulnerable in the Red Data Book and they are fully protected under schedule 5 of the Wildlife and Countryside Act. Fairy Shrimp are currently thought to be present in 28 New Forest ponds.

Fairy Shrimp do have two key habitat requirements (a) that the pond dries out each year and (b) that there is sufficient food supply when the pond fills. Drying out and re-wetting triggers the hatching of a proportion of the partially developed 'eggs' on the pond substrate. In natural conditions this results in only one generation per pond per year due to other limiting factors. However it is possible for there to be two generations within a year, but only under very specific conditions. The condition for potential presences is predominately based on the pond being temporary and in a range of circum-neutral pHs (~5.5 to 7.5). Pond depths, shade levels and even turbidity are also important factors. The New Forest has naturally low nutrient, clean unpolluted pond systems made suitable with the low intensity traditional grazing management. The grazing livestock poaching the pond margin and adding a nutrient supply through their organic dung leads to a sufficient food supply when the pond is filled with water.



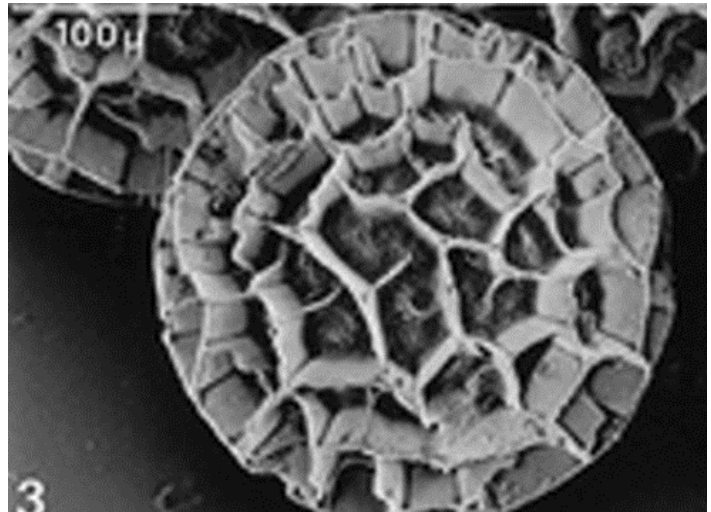
A map of the current records of fairy shrimp across England, a dense collection of records in the New Forest.



A labelled diagram of a male and female fairy shrimp at maturity. The male at the top of the image and the female below.

The lifecycle of the Fairy Shrimp is specially adapted to survive the dynamic nature of temporary ponds, which is their only known adaptation against predators. The eggs can hatch within 48 hours of the pond filling with water and it has been observed that not all of the eggs laid at the same time will hatch at the same time. This ensures that the population is not lost if the pond then dries out before new eggs are laid. Some eggs can be triggered to hatch after 50 wettings and have been shown to be viable even after three years without the pond filling with water. For the population to continue, at least two from each set of eggs laid must reach a level of maturity to lay or fertilise eggs.

A fairy shrimp can reach maturity within as little as three weeks and can start laying eggs before they are fully mature. Females can produce eggs from when they have grown to as little as 1 cm and produce more as they grow. The optimum number of eggs are produced when they have reached around 2-3 cm producing roughly 300 eggs. In situations with abundant food available, exceptional numbers of eggs (600+ eggs) can be laid by large individuals (+3 cm). The eggs have a honeycomb structure that protects the egg and provides a structure that aids dispersal by wind or with the movement of mud. Overall however the species has poor powers of successful dispersal and is under threat from the lack of suitable habitat within range.



A magnified image of a fairy shrimp egg, with the outer honeycomb structure that protects and aids the dispersal of the eggs. The eggs are adapted to hatch only after rain has filled a temporary pond.



Five fairy shrimp, the bottom two turned green through the consumption of algae.