



White-Clawed Crayfish

Austropotamobius pallipes

Species Action Plan

1. Introduction

The white-clawed crayfish is the only species of crayfish native to the British Isles, where it occurs in the greatest concentrations found anywhere in the world. It was listed as a priority UK BAP species and subsequently included in Section 41 of the Natural Environment and Rural Communities Act (NERC) 2006.

The white-clawed crayfish has suffered serious population decline both in the British Isles and throughout its global range as a result of crayfish plague, the introduction of non-native crayfish species, pollution and habitat destruction.

2. Current Status

2.1 Ecology and habitat requirements

White-clawed crayfish are found in a range of freshwater habitats including canals, lakes, rivers, streams, quarries and reservoirs. They tend to be found in mineral rich waters with calcareous substrate and in watercourses which are 1.5m deep or less, although they can be found in deeper water. They occupy cryptic habitats under rocks and within woody debris and tree roots but also burrow into riverbanks and can be found under overhanging banks. Crayfish emerge from these refuges to forage for food, principally at night. They are omnivorous, feeding on detritus, invertebrates, carrion, macrophytes and algae (Holdich, 2003).

Studies carried out throughout Britain show that there is little genetic variability between populations and the British sub-species (*Austropotamobius p. pallipes*) is closely related to the French populations (Holdich 2003).

2.2 Population and distribution

Its natural range is restricted to Europe, occurring east to west from Slovenia, Italy, Switzerland and Austria, to Spain, France and the British Isles. Isolated populations also occur in Germany and Portugal (Holdich, 2003).

White-clawed crayfish were once widespread throughout much of Britain and Ireland. Since the 1980's many of Britain's crayfish populations have been eliminated as a result of crayfish plague, a disease carried by American signal crayfish (*Pacifastacus leniusculus*), as well as through the continued destruction and deterioration of the quality of their habitat, mainly as a result of land drainage works and agricultural diffuse pollution. Populations are now largely confined to isolated pockets in North and Central England, including parts of Worcestershire.

White-clawed crayfish occur in several sub-catchments in Worcestershire, including in the headwaters of one Malvern brook, the River Arrow and its tributaries and the Dowles Brook catchment in the Wyre Forest. There is one Ark¹ site at Kemerton Lake nature reserve. These isolated populations make up a significant proportion of the national population.

¹ Refuge sites that are ecologically isolated offering protection from predators or disease

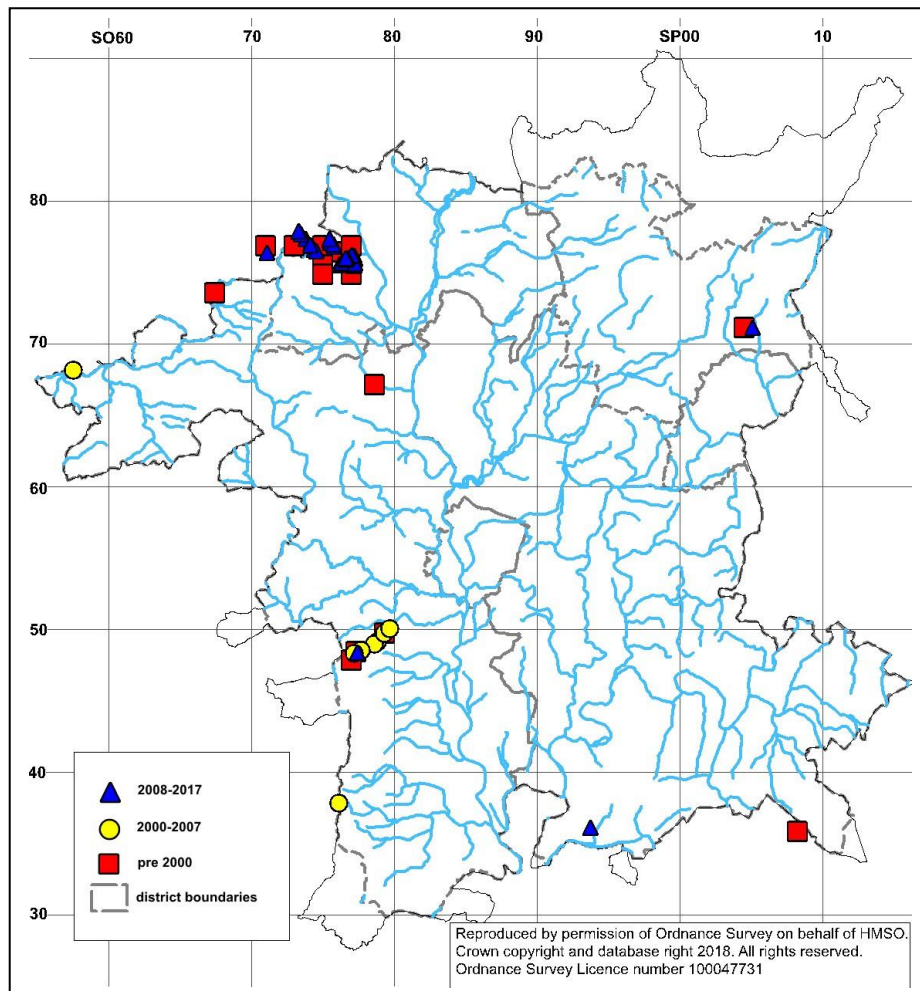


Figure 1. Records of white-clawed crayfish in Worcestershire. Data supplied and map prepared by Worcestershire Biological Records Centre.

2.3 Legislation and site designation

This species is listed in Appendix III of the Bern Convention and Annexes II and V of the EC Habitats Directive. It is classed as *Endangered* on the IUCN Red List. It is protected under Schedule 5 of the Wildlife and Countryside Act 1981 and Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Natural England enforces this legislation by requiring a Crayfish Conservation Licence to be sought for any activity that has the potential to detrimentally impact crayfish. Under the Habitats Directive sites should be designated as Special Areas of Conservation (SACs) for their protection. There are several rivers that have been designated as SACs for the presence of crayfish, although none of these occur in Worcestershire. There are several watercourses in the county which are designated Local Wildlife Sites, in part due to the presence of native crayfish.

It is an offence to use any species of crayfish for angling bait as well as being an offence to fish for any species of crayfish without a licence under Environment Agency bylaws.

2.4 Summary of important sites

Given the fragile status of white-clawed crayfish in Britain and throughout Europe, all known populations listed within section 2.2 are considered important for the long term survival of the species.

The Dowles Brook catchment is characterised by deep, steep sided valleys that give the Wyre Forest its distinctive topography. The stony channels are subject to considerable seasonal changes in flow rate and level. The ecology of the catchment has been impacted by nutrient enrichment and increased sediment load resulting from intensive agricultural practices at the headwaters of the tributaries, although several smaller streams that flow entirely within the forest have escaped these impacts.

A short stretch of the headwaters of the Whippets Brook north of Malvern has been listed as a Local Wildlife Site due to the presence of white-clawed crayfish. The brook is small and fast-flowing with a stony substrate and in this location demonstrates near-natural fluvial features.

The River Arrow catchment in Redditch has only recently been discovered to hold a population of white-clawed crayfish. Beds of in-stream and marginal vegetation in combination with a full range of natural features, including fast-flowing riffle sequences, help to support a good aquatic fauna.

Kemerton Lake is the flagship nature reserve of Kemerton Conservation Trust. It is an 18 hectare wetland complex created from a former gravel working, comprising a 6.5 hectare lake, pools, wet scrapes, reed bed and grassland.

3. Current Factors Affecting the Species

- American signal crayfish (and other introduced species) are more aggressive, faster growing and predate white-clawed crayfish. As a result they will ultimately displace the native species.
- The water-borne plague carried by non-native crayfish (primarily the American signal crayfish but also red swamped crayfish and spiny-cheeked crayfish) is a fungal disease that the non-natives carry without any harm to themselves. White-clawed crayfish have no immunity to the disease and it can rapidly wipe out native populations.
- The apparent ease with which crayfish plague can be transmitted between watercourses despite best biosecurity measures being followed is a serious concern. There is the potential even for surveyors following best practice to accidentally infect new locations. People, dogs and horses entering watercourses are also possible vectors.
- White clawed crayfish populations have suffered through a prolonged period of habitat degradation, as a result of dredging, straightening and bankside reinforcement.
- Many of the county's rivers and streams are heavily modified including with structures such as weirs. Ironically it can be the presence of these structures isolating a white clawed crayfish population within the headwaters of a stream that offers some protection against non-native crayfish and crayfish plague, which may occur further down the catchment. This needs to be weighed up when considering the removal of such structures.

- A reduction in water quality in the past through discharges to watercourses and as a result of diffuse pollution from agriculture have also lead to a reduction in the quality of habitat for crayfish. However in recent years water quality in our rivers and streams has improved significantly as a result of better regulation and tighter controls over discharges to watercourses.
- There are also various natural predators of crayfish including several fish species, otter (*Lutra lutra*), mink (*Mustela vison*) and even water vole (*Arvicola amphibious*). In healthy river systems where crayfish exist at normal levels predation will not have a significant impact upon populations. However where populations are already in decline predation may be enough to have a significant impact.
- Water quantity is also a crucial criterion affecting the viability of the crayfish, with over abstraction or prolonged drought having the potential to decimate populations. Over siltation of watercourses also has a negative impact.

4. Current Action

4.1 Local Protection

The majority of rivers and streams known to contain white-clawed crayfish are designated as Local Wildlife Sites (LWS).

4.2 Site management and programmes of action

- The Kemerton Lake ARK site was established in 2010 through a project led by Buglife, in partnership with landowners Kemerton Conservation Trust. The former gravel pit was chosen as it is entirely isolated from surrounding watercourses. Two translocations took place from a donor site in Warwickshire.
- In 2016 the Severn Rivers Trust and the Environment Agency collaborated on an experimental project in the Suckley Brook catchment to trial the extermination of signal crayfish through sterilization. The results fed into a PhD research project and led to the formation of a volunteer group, the Suckley Hills Improvement Group, who are continuing to monitor local crayfish populations and control non-natives.
- The Environment Agency takes the requirements of white-clawed crayfish into account in its capital and maintenance works and when carrying out its regulatory function of issuing consents. For example any works on watercourses that may affect white-clawed crayfish will only be consented if it can be demonstrated that the work will result in an improvement to crayfish habitat.
- Many types of work to watercourses affecting white-clawed crayfish require a Crayfish Conservation Licence from Natural England. Licences will only be granted for work resulting in habitat enhancement.
- Through the Asset Management Process (AMP) the Environment Agency has been working with Water Treatment Providers to ensure that the quality of discharge to watercourses is sufficient to safeguard the

associated flora and fauna. Where white-clawed crayfish are known to be present their requirements are taken account of in determining the appropriate discharge rate.

- The Environment Agency will not permit trapping for Signal crayfish where there is a potential that white-clawed crayfish will be affected.
- The Worcestershire Wildlife Trust and the Environment Agency work with local planning authorities to ensure that planning applications which have the potential to impact upon crayfish are modified such that they do not harm crayfish populations.

4.3 Survey, research and monitoring

- The crayfish in the Dowles Brook catchment are the most widely studied within the county. Surveys began in 2010 following the discovery of white clawed crayfish and have taken place every year since. Four streams are now monitored. Numbers of white clawed crayfish found during the annual survey have declined and unfortunately in 2016 it was confirmed that both the signal crayfish and the crayfish plague had entered the survey tributaries. Some native crayfish populations within the Dowles tributaries are separated from signal crayfish populations by physical barriers (weirs) and this may confer some protection.
- In 2015 eDNA survey for white-clawed crayfish and signal crayfish was trialled within two streams in the Dowles catchment. The technique proved capable of detecting the DNA of both species.

5. Associated plans

Rivers and Streams, Ponds and Lakes, Canals.

6. Conservation Aim

The locations, demographics and health of existing remaining populations are understood and safeguarded.

7. Conservation Objectives

- Best practice survey methodology developed in the Wyre Forest to be written up and distributed to practitioners
- Publicising of the dangers of transference of plague between sites, including the likelihood of transference by surveyors
- Identify further Ark sites for white-clawed crayfish within the county
- Develop and publish protocols for the movement of crayfish populations from their natural habitat to an Ark site
- Monitor crayfish populations following relocation to Ark sites; continue to monitor the population at Kemerton Lakes Nature Reserve
- Expand and promote the use of eDNA and torch survey sampling techniques

- Increase the contribution of citizen science surveys through the delivery of training workshops and engagement with local wildlife and natural history groups

References and further information

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Buglife Species Management Sheet for White Clawed Crayfish

<https://www.buglife.org.uk/sites/default/files/White-clawed%20crayfish%20species%20management.pdf>

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Articles on crayfish surveying and conservation published by the Wyre Forest Study Group <https://wyreforest.net/crayfish-articles-2/>