



European Site Conservation Objectives: Supplementary Advice on Conserving and Restoring Site Features

**Ensor's Pit Special Area of Conservation (SAC)
UK0012646**



Date of Publication: 7 February 2018

About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Ensor's Pool SAC. This advice should therefore be read together with the SAC Conservation Objectives available [here](#).

You should use the Conservation Objectives, this Supplementary Advice and any case-specific advice given by Natural England when developing, proposing or assessing an activity, plan or project that may affect this site'

This Supplementary Advice to the Conservation Objectives presents attributes which are ecological characteristics of the designated species and habitats within a site. The listed attributes are considered to be those that best describe the site's ecological integrity and which, if safeguarded, will enable achievement of the Conservation Objectives. Each attribute has a target which is either quantified or qualitative depending on the available evidence. The target identifies as far as possible the desired state to be achieved for the attribute.

The tables provided below bring together the findings of the best available scientific evidence relating to the site's qualifying features, which may be updated or supplemented in further publications from Natural England and other sources. The local evidence used in preparing this supplementary advice has been cited. The references to the national evidence used are available on request. Where evidence and references have not been indicated, Natural England has applied ecological knowledge and expert judgement. You may decide to use other additional sources of information.

In many cases, the attribute targets shown in the tables indicate whether the current objective is to 'maintain' or 'restore' the attribute. This is based on the best available information, including that gathered during monitoring of the feature's current condition. As new information on feature condition becomes available, this will be added so that the advice remains up to date.

The targets given for each attribute do not represent thresholds to assess the significance of any given impact in Habitats Regulations Assessments. You will need to assess this on a case-by-case basis using the most current information available.

Some, but not all, of these attributes can also be used for regular monitoring of the actual condition of the designated features. The attributes selected for monitoring the features, and the standards used to assess their condition, are listed in separate monitoring documents, which will be available from Natural England.

These tables do not give advice about SSSI features or other legally protected species which may also be present within the European Site.

If you have any comments or queries about this Supplementary Advice document please contact your local Natural England adviser or email HDIRConservationObjectivesNE@naturalengland.org.uk

About this site

European Site information

Name of European Site	Ensor's Pool Special Area of Conservation (SAC)
Location	Warwickshire
Site maps	The designated boundary of this site can be viewed here on the MAGIC website
Designation Date	January 1996
Qualifying Features	See section below
Designation Area	3.86 hectares
Designation Changes	n/a
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's Designated Sites System
Names of component Sites of Special Scientific Interest (SSSIs)	Ensor's Pool SSSI
Relationship with other European or International Site designations	n/a

Site background and geography

Ensor's Pool lies on the western edge of Nuneaton in the north of Warwickshire and formed in an abandoned clay pit. It is about 220 metres long, 50 metres wide with an average depth of eight metres and is fed by groundwater. The pool overlies Etruria Marl which was extracted for brickmaking earlier this century.

Ensor's Pool is associated with an exceptionally large population of native white-clawed crayfish *Austropotamobius pallipes* estimated at 50,000 individuals.

The pool has some marginal vegetation of hard rush *Juncus inflexus*, common spike-rush *Eleocharis palustris*, water horsetail *Equisetum fluviatile* and lesser bulrush *Typha angustifolia*, which is rare in Warwickshire. Water plants include spiked water-milfoil *Myriophyllum spicatum* and broad-leaved pondweed *Potamogeton natans*.

Ensor's Pool also supports a number of dragonflies and damselflies including the emperor dragonfly *Anax imperator*, the azure damselfly *Coenagrion puella* and the large red damselfly *Pyrrosoma nymphula*. The pool is surrounded by areas of scrub and grassland.

About the qualifying features of the SAC

The following section gives you additional, site-specific information about this SAC's qualifying features. These are the natural habitats and/or species for which this SAC has been designated.

Qualifying habitats:

N/A

Qualifying Species:

S1092 White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*

The white-clawed crayfish lives in a diverse variety of clean aquatic habitats but especially favours hard-water streams and rivers. It is one of the UK's largest freshwater invertebrates and is our only native crayfish.

White-clawed crayfish can grow up to 12cms long and live in rivers, streams and standing waters about 1 metre deep where they hide in rocks and submerged wood. They can live up to 12 years and they usually have their first young when they are 3 years old. Females carry their eggs for 9 months until they hatch, once hatched the young hitch-hike on their mothers for a further 2 weeks.

The White-clawed crayfish was once a widespread and common species in English and Welsh rivers, but has suffered a decline of 50 – 80% across its European range in the last ten years. It is classified as 'endangered' on the IUCN red list of threatened species and is at risk of global extinction. A major threat to the native white-clawed crayfish is posed by the introduction of non-native species of crayfish, which have been farmed in Britain since the late 1970s. Crayfish plague can be introduced into a waterbody not only by entry of signal crayfish but also by water, fish or equipment that has been in contact with signals. This greatly increases the risk to remaining white-clawed crayfish populations.

Ensor's Pool SAC is a representative example of a white-clawed crayfish *Austropotamobius pallipes* site in standing water. This former marl pit has held a very large population estimated at 50,000 individuals.

The results of a 2015 survey show that the once abundant population of white-clawed crayfish has now disappeared from the SAC (Natural England, 2015. *White-clawed crayfish survey for Ensor's Pool SSSI/SAC, Warwickshire*. [Improvement Programme for England's Natura 2000 Sites \(IPENS\) Report No. IPENS065](#)). The pool still provides a suitable habitat for crayfish with abundant emergent and submerged vegetation, under-cut banks providing potential refuges and shelter from predator and there appears to be good crayfish habitat around all of the pool.

Table 1: Supplementary Advice for S1092. *Austropotamobius pallipes*; White-clawed (or Atlantic stream) crayfish

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting processes (on which the feature and/or its supporting habitat relies)	Conservation measures	Maintain those management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes of those habitats able to support white-clawed crayfish.	<p>Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England.</p> <p>This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, site management strategies or plans, the Views about Management Statement for the underpinning SSSI and/or management agreements.</p>	<p>NATURAL ENGLAND, 2014. Site Improvement Plan: Ensor's Pool (SIP075)</p> <p>ENGLISH NATURE, 2005. Views about the management of Ensor's Pools SSSI.</p>
Supporting habitat: extent and distribution	Extent of supporting habitat	<p>Maintain the current extent of the supporting habitat(s) associated with white-clawed crayfish;</p> <p>Standing open water with marginal vegetation</p>	<p>In order to contribute towards the objective of achieving an overall favourable conservation status of the feature at a UK level, it is important to maintain or if appropriate restore the extent of supporting habitats and their range within this SAC.</p> <p>The information available on the extent and distribution of supporting habitat used by the feature may be approximate depending on the nature, age and</p>	
Supporting habitat: extent and distribution	Distribution of supporting habitat	Maintain the current distribution and continuity of the feature's supporting habitat across the site	<p>A contraction in the range, or geographic spread, of the feature (and its component vegetation) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes.</p> <p>Contraction may also reduce and break up the continuity of a habitat within a site and how well the species feature is able to occupy and use habitat within the site. Such fragmentation may have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for this feature and this may affect its viability.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting processes (on which the feature and/or its supporting habitat relies)	Adaptation and resilience	Maintain the ability of the feature's supporting habitat to adapt or evolve to wider environmental change, either within or external to the site	<p>This recognises the increasing likelihood of supporting habitat features to absorb or adapt to wider environmental changes. Resilience may be described as the ability of an ecological system to cope with, and adapt to environmental stress and change whilst retaining the same basic structure and ways of functioning. Such environmental changes may include changes in sea levels, precipitation and temperature for example, which are likely to affect the extent, distribution, composition and functioning of a feature within a site. The vulnerability and response of features to such changes will vary.</p> <p>Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability.</p>	<p>NATURAL ENGLAND, 2015. Climate Change Theme Plan and National Biodiversity Climate Change Vulnerability Assessments (NBCCVAs)</p>
Population (of the feature)	Population health	Ensure human activities within or around the site do not pose a significant risk of plague transfer	<p>Non-native crayfish species (such as signal crayfish) carry a fungal infection called the crayfish plague (<i>Aphanomyces astaci</i>), which is lethal to European crayfish (including our native white-clawed crayfish). It results in eradication of native crayfish wherever contact is made and is known to be present in many waters and across most of the UK range.</p> <p>Human activities, such as angling and fish farming, is able to facilitate the spread of non-native species and the spread of this disease if legislative controls and best management practice are not followed.</p> <p>Crayfish plague has also been an on-going threat to the white-clawed crayfish at Ensor's as it can be transferred on fishing and other equipment. Although angling is prohibited on Ensor's Pool, unauthorised fishing does take place, despite signs at the entrances.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Population (of the feature)	Population health	Maintain an absence of non-native crayfish within the site	<p>Non-native crayfish species (such as signal crayfish) carry a fungal infection called the crayfish plague (<i>Aphanomyces astaci</i>), which is lethal to European crayfish (including our native white-clawed crayfish) and has resulted in their eradication from a number of waters in England.</p> <p>The presence of these non-native species within or close to the SAC may adversely affect the abundance, health and viability of the native crayfish feature.</p>	NATURAL ENGLAND, 2015. White-clawed crayfish survey for Ensor's Pool SSSI/SAC, Warwickshire. Improvement Programme for England's Natura 2000 Sites (IPENS) Report No IPENS065
Supporting habitat: structure/function	Shoreline refugia	Maintain the current extent and diversity of shoreline refuges associated with the water body, such as submerged tree roots, bank crevices and marginal vegetation	<p>White-clawed crayfish of all ages need refuges, or places to shelter or hide. Juvenile crayfish are especially vulnerable to predation by fish, ducks and other water birds, otter and mink, carnivorous dragonfly larvae and other predatory invertebrates, including adult crayfish.</p> <p>Crayfish are also vulnerable to high flows in watercourses, when they can be washed away from favourable habitats and stranded, crushed or eaten. Pools, exposed tree root systems and marginal shallows are important high-flow refugia</p>	
Supporting habitat: structure/function	Water quality:	Maintain supporting habitat at 'Good' biological status (i.e. compliance with relevant Environmental Quality Standards) in order to provide the necessary conditions to support a population of white-clawed crayfish	<p>Good water quality is important to this feature to ensure sufficient availability of prey which includes worms, insect larvae, snails, small fish, macrophytes and algae. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this supporting habitat type.</p> <p>Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.</p>	
Supporting habitat:	Water pH	Maintain pH levels at within the range 6.5 - 9	Higher pH levels as part of supporting water habitat chemistry maximise the survival and growth of crayfish.	
Supporting habitat: structure/	Un-ionised Ammonia	Maintain ammonia levels at or to less than 0.6mg NH ³ l-1 throughout the site	High level of ammonia in watercourses, derived from organic pollution, is likely to be toxic to white-clawed crayfish.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat: structure/function	Total Nitrogen	Maintain nitrogen levels typically at or below 0.2 mg/l-1	These need to be made bespoke the individual site, as they will vary both between fluvial and static water bodies, and within those class types. High levels of nitrogen are likely to be toxic to crayfish. There seems to be a tolerance of nitrates in this species, with food consumption being impacted before other physiological impacts are noted, though mortality climbs with increasing	
Supporting habitat: structure/function	Oxygen levels	Maintain the pool in a well-oxygenated state (typically with a dissolved oxygen standard of >70%)	Good water quality, reflected in high oxygen levels, is important to ensure availability of food which includes worms, insect larvae, snails, small fish, macrophytes and algae	
Supporting habitat: structure/function	Pollution	Ensure supporting habitat is not at risk of effluent discharges from within the site's wider catchment	Native crayfish are particularly susceptible to pollution incidents, and the transfer of diseases from other sources	
Supporting habitat: structure/function	Calcium levels	Maintain calcium levels at or above 5mg/l	Because of their thick exoskeletons and regular moult cycles, freshwater crustaceans such as crayfish have high calcium needs. When calcium levels drop, their exoskeletons become weaker, reducing the abundance, size, and weight of these crustaceans. A reduction in size can slow the onset of sexual maturity, making them more vulnerable to predators. This, in turn, may further affect the overall size of their population. Affected crustaceans may become less tolerant of other factors such as temperature, toxic metals, and Ultra Violet radiation.	
Supporting habitat: structure/function	Water temperature	Maintain the pool's water temperature at naturally-occurring levels	Good water quality is important to ensure availability of food which includes worms, insect larvae, snails, small fish, macrophytes and algae	
Supporting processes (on which the feature and/or its supporting habitat relies)	Fish density	Maintain fish populations at densities low enough to avoid significant predation of juvenile crayfish which may be present	Predatory fish species may include chub, eel, perch, pike and trout	
Version Control Advice last updated: N/A				
Variations from national feature-framework of integrity-guidance: Attributes for ' <i>population abundance</i> ' are not currently applicable to this SAC as the qualifying feature is currently absent from the site.				