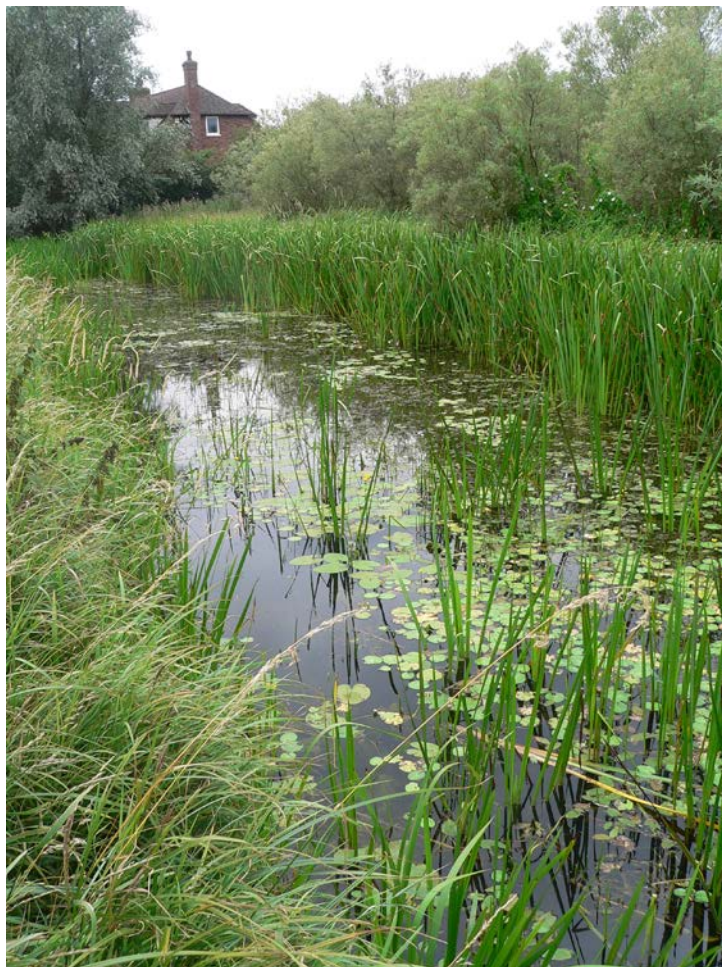




European Site Conservation Objectives: Supplementary advice on conserving and restoring site features

Ouse Washes Special Area of Conservation (SAC) (UK0013011)



Counter Drain at Ouse Washes SAC©Jonathan Graham/Natural England

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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Ouse Washes SAC.

This advice should therefore be read together with the SAC Conservation Objectives available [here](#).

Where this site overlaps with other European Site(s), you should also refer to the separate European Site Conservation Objectives and Supplementary Advice (where available) provided for those sites.

This supplementary advice to the Conservation Objectives describes in more detail the range of ecological attributes which are most likely to contribute to a site's overall integrity and the minimum targets each qualifying feature needs to achieve in order to meet the site's objectives.

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. Any proposals or operations which may affect the site or its qualifying features should be designed so they do not adversely affect any of the attributes listed in the objectives and supplementary advice.

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 HDIRConservationObjectives@naturalengland.org.uk

About this site

European Site information

Name of European Site	Ouse Washes Special Area of Conservation
Location	Cambridgeshire, Norfolk
Designation Date	January 1996
Qualifying Features	See below
Designation Area	311.35 hectares
Designation Changes	Not applicable
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)	Ouse Washes SSSI
Relationship with other European or International Site designations	The SAC coincides with the Ouse Washes SPA and Ouse Washes Wetland of International Importance ('Ramsar Site')

Site background and geography

Covering a total area of approximately 311 hectares within the Fens National Character Area (NCA), the Ouse Washes SAC lie between The Hundred Foot/New Bedford River to the south-east and the Old Bedford River/Counter Drain to the north-west. These rivers fall within the boundary of the Site of Special Scientific Interest.

The Old Bedford River in particular is of national nature conservation importance in its own right. The primary reason for the SAC designation on the Ouse Washes is for its representative populations of spined loach *Cobitis taenia*. This species is found within the Old Bedford River/Counter Drain areas; here clear water and abundant macrophytes are present which are important for healthy populations of spined loach.

The Ouse Washes play a major land drainage role by acting as a flood water storage area and the washland is thus subject to regular winter flooding. In the summer months the area provides grazing and hay. The regular winter flooding and the continuance of traditional management of cattle grazing and hay cutting maintains the nature conservation value of the area.

The site is one of the country's few remaining areas of extensive washland habitat. It is of particular note for the large numbers of wildlife and waders which supports: for the large area of unimproved neutral grassland communities which it holds and for the richness of the aquatic fauna and flora within the associated watercourse. The capacity of the site to hold wintering and breeding waterfowl and waders is of international significance.

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.

Species:

- **S1149 Spined Loach *Cobitis taenia***

The spined loach *Cobitis taenia* is one of the UK's smallest freshwater fish, usually reaching no more than 14 centimetres in length. Its name is derived from the two small spines present under each eye.

It is a bottom-living fish that has a restricted microhabitat associated with a specialised feeding mechanism. They use a complex branchial or gill apparatus to filter-feed in fine but well-oxygenated sediments. Optimal habitat is typically standing or slow-moving open water with a patchy cover of submerged (and possibly emergent) plants which are important for spawning during summer, and a sandy or silty substrate into which juvenile fish tend to bury themselves when inactive.

Whilst spined loach has a broad European range, in the UK it appears to be restricted to just five east-flowing river systems in eastern England – the Rivers Trent, Welland, Witham, Nene and Great Ouse, with their associated waterways. The fish has limited means of dispersal so UK populations are largely genetically isolated from each other.

The Ouse Washes SAC represents spined loach populations within the River Ouse catchment. The Counter Drain, with its clear water and abundant macrophytes, is a particularly important part of the site where a healthy population of spined loach is known to occur.



Spined loach

Table 1: Supplementary Advice for Qualifying Features: S1149 Spined Loach *Cobitis taenia*

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
Supporting processes (on which the feature and/or its supporting habitat relies)	Conservation measures	Maintain management or other measures (within and/or outside the site boundary as appropriate) necessary to maintain the structure, function and supporting processes associated with the feature and its supporting habitat	<p>Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site.</p> <p>Further details about the necessary conservation measures for this site can be provided by contacting Natural England. 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>The Ouse Washes Water Level Management Plan (available from the Environment Agency)</p> <p>Natural England's Views about the Management of the SSSI which underpin this SAC are available from http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm</p>
Supporting habitat: extent and distribution	Extent of supporting habitat	Maintain the overall extent of habitat(s) which supports the spined loach feature at approximately 311 hectares of standing open water and canals (ditch system)	<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. The information available on the extent and distribution of supporting habitat used by the feature may be approximate depending on the nature, age and accuracy of data collection, and may be subject to periodic review in light of improvements in data.</p> <p>The supporting habitat for the SAC feature comprises standing open water and canals (ditch system). Together with areas of low-lying grassland they form an extensive area of washland which provides a flood-risk management function. Both the Counter Drain/Old Bedford river (outer river) and the Old Bedford/River Delph (inner river), which collectively measures an estimated 311ha at time of notification.</p>	<p>Entry in the Register of European Sites, 14 June 2005 (available from NE on request)</p> <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p>
	Distribution of supporting habitat	Maintain the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the site	<p>A contraction in the range, or geographic spread, of the feature (and/or its supporting habitat) 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</p>	

Attributes		Targets	Supporting and/or 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 feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the site	<p>within the site.</p> <p>This recognises the increasing likelihood of supporting habitat features having 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.</p> <p>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. 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>The low-lying nature of the Ouse Washes SAC and its connection to the sea via tidal rivers means it is increasingly vulnerable to the effects of sea-level rise; in future the intrusion of increasingly saline water may have an impact on the spined loach feature.</p>	The Ouse Washes landscape partnership (e.g. http://www.cambsacre.org.uk/downloads/ow_ips_stage1bidsummary_130718102044.pdf)
	Air quality	Maintain or restore as necessary concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the SAC on the Air Pollution Information System (www.apis.ac.uk).	<p>The supporting habitat type is considered potentially sensitive to changes in air quality, in particular nitrogen and acidity.</p> <p>Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition (including food-plants) and reducing supporting habitat quality and population viability of this feature.</p> <p>Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of scientific understanding. There are critical levels for ammonia (NH₃), oxides of nitrogen (NO_x) and sulphur dioxide (SO₂), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under</p>	More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System at http://www.apis.ac.uk/

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			development. It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.	
Supporting habitat: structure/function	Biotope mosaic	Maintain the characteristic physical form of the river channels which provide supporting habitat for spined loach	<p>Habitat conditions for spined loach vary naturally in rivers and water courses. Some sections may provide optimal habitat whilst others may be largely unsuitable. More natural channel morphology provides the diversity of breeding/nursery habitat, cover from predators, refuge against high flows, and feeding opportunities that best meet the full life cycle requirements of the species.</p> <p>A mosaic of bare substrate and submerged beds of higher plants provides optimal conditions in relation to feeding, cover from predators and spawning (which occurs on submerged plants). Marginal emergent plants also provide important cover and feeding opportunities. A characteristically diverse habitat allows the spined loach and other species to move within the river channel to locate optimal habitat conditions in the face of a fluctuating flow regime.</p> <p>At this SAC the Counter Drain and Old Bedford/River Delph are not 'natural' river channels. They are primarily artificial drainage channels linked to the Middle Level and Ouse Washes respectively and more akin to Standing Open Water and Canals habitats. However for convenience they are referred to here as the 'river channels'.</p>	This attribute will be periodically monitored as part of Natural England's site condition assessments .
	Woody debris	Retain large woody debris generated naturally by native riparian trees; in smaller watercourses, temporary debris dams should be a feature of channel dynamics.	Woody debris is important in shaping natural biotope mosaics in rivers, on which the spined loach and other species depend. At this site, this will help to provide a more natural channel morphology to the artificial channels to benefit this feature	This attribute will be periodically monitored as part of Natural England's site condition assessments .
	Flow regime	Maintain a flow regime which is characteristic of the river channels.	The natural flow regime is critical to all aspects of the spined loach life cycle, maintaining the habitat that is optimal for the species.	The Ouse Washes Water Level Management Plan (from the Environment Agency) This attribute will be

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
				periodically monitored as part of Natural England's site condition assessments .
Supporting habitat: structure/function	Sediment regime	Maintain in-channel substrate character of at least 20% sand and no more than 40% silt	<p>Excessive delivery of very fine sediment, from the catchment or artificially enhanced bank erosion can produce sub-optimal feeding conditions for spined loach and can interfere with submerged plant communities on which the species relies for cover and spawning.</p> <p>For optimal conditions substrates should be at least 20% sand and no more than 40% silt. Whilst the species can tolerate silt and mud, it has a preference for sandy substrate. High sediment cohesiveness is likely to adversely affect the feeding process.</p>	
	Biological connectivity	Maintain river channels clear of artificial barriers which may significantly impair essential fish movement	<p>Even weirs with small vertical drops will prevent recolonisation of upper reaches affected by lethal pollution episodes or drought, and more generally will also lead to constraints on genetic interactions that may have adverse consequences.</p> <p>Free movement within the channels is necessary to ensure maintenance of genetic diversity (and therefore population viability). New artificial constraints to movement should be avoided and existing barriers should be removed wherever possible.</p>	The Ouse Washes Water Level Management Plan (from the Environment Agency)
	Water quality – nutrients	<p>Maintain the nutrient regime of the river channels at or below the following levels;</p> <p>an annual mean of 0.1mg^l⁻¹ total phosphorous.</p> <p>Biological Water Quality in ditches target equivalent to Class 'b' in the biological module of the General Quality Assessment scheme (GQA)</p> <p>Dissolved oxygen, ammonia, BOD equivalent quality to</p>	<p>Nutrient enrichment can lead to a decline in substrate condition for spined loach due to benthic algal growth and associated enhanced siltation. It also increases the risk of impacts on the cover of the submerged plant community, which the spined loach uses for cover.</p> <p>In ditches, spined loach can be abundant in enriched conditions with high levels of filamentous algal cover - however, this is not considered to be optimal habitat conditions for the species in the longer-term, and is not consistent with the conservation of supporting ditch habitat. Any anthropogenic enrichment above natural/background concentrations should be limited to levels at which adverse effects on the feature are unlikely.</p>	<p>The Ouse Washes Water Level Management Plan (from the Environment Agency)</p> <p>This attribute is periodically monitored using Environment Agency data by Natural England to inform condition assessment of the underpinning SSSI</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		Chemical GQA Class 'C' Mean cover of filamentous macro-algae and <i>Enteromorpha</i> not more than 10%		
Supporting habitat: structure/function	Water quality - organic pollution	Organic pollution levels should be controlled to levels that have minimal impact on spined loach populations	The spined loach is susceptible to both episodic and chronic organic pollution. Episodic pollution causes direct mortalities whilst chronic pollution affects substrate condition through the build-up of sediment oxygen demand and excessive microbial populations. If the organic content of the substrate becomes too high, reduced oxygen availability near the sediment/water interface may lead to enhanced egg and juvenile mortality.	
	Water quality - other pollutants	Achieve at least 'Good' chemical status (i.e. compliance with relevant Environmental Quality Standards).	Spined loach can be affected by a range of pollutants. A wide range of pollutants may impact on habitat integrity depending on local circumstances. Good chemical status includes a list of Environmental Quality Standards (EQS) for individual pollutants that are designed to protect aquatic biota with high levels of precaution. These values should be applied throughout the site.	
	Invasive non-native species	Maintain the mean cover of aggressive non-native plant at least than 1%. Maintain the mean total combined cover of all non-native species and introduced species at less than 30%.	Species such as signal crayfish may have a serious effect on spined loach habitat (by destabilising banks and enhancing very fine sediment input), and may predate heavily on spined loach if present at high densities. Chinese mitten crab has the potential to migrate long distances up rivers and may cause similar damage to spined loach habitat.	
	Fisheries - introduction of other fish species	Ensure fish stocking/introductions do not interfere with the ability of the river channels to support self-sustaining populations of spined loach	The presence of artificially high densities of fish can create unacceptably high levels of predatory pressure on spined loach. The management aim is to provide conditions in the river that support a healthy, natural and self-sustaining salmon population, achieved through habitat protection/restoration and the control of exploitation as necessary. Stocking represents a loss of naturalness and, if successful, obscures the underlying causes of poor performance (potentially allowing these risks to perpetuate). It carries various ecological risks, including the loss of natural spawning from brood-stock, competition between stocked and naturally produced individuals, disease introduction and genetic alterations to the population	
	Livestock grazing activity	Where present, grazing activity in the riparian zone and in the river	Over-grazing of riparian areas can have a dramatic effect on spined loach habitat, eliminating marginal habitat and generating excessive loads of very	

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		channel should be controlled at suitably low levels.	fine sediment.	
Supporting habitat: structure/ function	Cover of submerged and marginal vegetation	Retain sufficient submerged and marginal vegetation to maintain cover and spawning substrate unaffected by river channel management practices.	Submerged and marginal vegetation provides vital cover for spined loach. Submerged plants are used for egg-laying. Rotational cutting regimes to maintain channel habitat should be adequate for spined loach.	This attribute will be periodically monitored as part of Natural England's site condition assessments .
	Screening of intakes and outfalls	Ensure any intakes and outfalls likely to entrain a significant number of spined loach are adequately screened.	Spined loach can be caught or entrained in intakes and outfalls along with other fish species if appropriate protection is not provided, ideally using best practice guidelines such as those produced by the Environment Agency.	
	Integrity of off-site habitats	Maintain any supporting habitats beyond the SAC boundary upon which the SAC spined loach population may depend	Spined loach populations within the SAC may be dependent on the integrity of sections of river channel and riparian areas that lie outside of the site boundary. In some cases, upstream or headwater areas and tributaries may not fall within the designated site boundary, yet spined loach may use these areas for spawning and juvenile development and be critical for sustaining populations within the SAC itself.	The Ouse Washes Water Level Management Plan (from the Environment Agency)
Population (of the feature)	Population size	Maintain the abundance of the spined loach population at or above a minimum density of 0.52 individuals/m ² and 0.15 individuals/ m ² in the Outer and Inner rivers respectively, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	This will ensure there is a viable population of the feature which is being maintained at or increased to a level that contributes as appropriate to its Favourable Conservation Status across its natural range in the UK. Due to the dynamic nature of population change, the target-value given for the population size or presence of this feature is considered to be the minimum standard for conservation/restoration measures to achieve. This minimum-value may be revised where there is evidence to show that a population's size or presence has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period (generally at least 10 years). The values given here may also be updated in future to reflect any strategic objectives which may be set at a national level for this feature. Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's population, as derived from the latest known or estimated level established using the best available data. This advice accords with the obligation to avoid deterioration of the site or significant disturbance of the species for which the site is	PERROW M.R. AND TOMLINSON M.L., 2001. Spined Loach <i>Cobitis taenia</i> survey in the Ouse Washes report for English Nature (available from NE on request) This attribute will be periodically monitored as part of Natural England's site condition assessments .

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			<p>designated, and seeks to avoid plans or projects that may affect the site giving rise to the risk of deterioration.</p> <p>Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account in any assessment.</p> <p>Unless otherwise stated, the population size or presence will be that measured using standard methods, such as peak mean counts or breeding surveys. This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise that the figures stated are the best available.</p>	
Population (of the feature)	Juvenile densities	Maintain juvenile densities of spined loach at or above those expected under un-impacted conditions throughout the site, taking into account natural habitat conditions and allowing for natural fluctuations	Impacts on physical, chemical or hydrological integrity, or from non-native species, may suppress juvenile densities.	This attribute will be periodically monitored as part of Natural England's site condition assessments .
<p>Version Control Advice last updated: 19 May 2015</p> <p>Previous version incorporated into revised 2015 document template; minor edits made; generic population-abundance and juvenile densities text amended.</p>				
<p>Variations from national feature-framework of integrity-guidance: N/A</p>				

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