SOAS Environmental Law & Policy Clinic: River Ouse Report

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Table of Contents

EXECUTIVE SUMMARY

This report is provided in response to the Environmental Law Foundation (ELF)'s Policy Clinic Brief for 2023-2024 concerning an exploratory initiative into granting the River Ouse rights via a declaration of a charter that would protect the river from pollution. The purpose of this report is to assist with developing this charter by answering the following questions from ELF:

- What species in and along the River Ouse between Barcombe Mills and Slaugham are protected under law such as the Conservation of Habitats and Species Regulations 2017 SI No 1012 and the Wildlife and Countryside Act 1981?
  (Answered in Section 1 and Annex 1)
- What are these protections and where are the protected species located?
  (This first half of this question is answered in Section 1, Annex 1 and in the detail under conservation status of protected flagship and bioindicator species. The second half of this question is answered in Section 2 and the interactive map)
- What condition are these protected species in?
  (Answered in Section 3)

In addition to responding to these points, a key output of this report is the map (details on how to access this are found in Section 2 below) which plots the specific points along the River Ouse where the various protected species have been identified. This report, in answering the above questions, also sets out the process undertaken to create this map. Due to the high number of protected species present in the area, this report has also selected protected flagship and bioindicator species, in order to provide a detailed analysis of the condition of these select protected species.

Context and Background:

The River Ouse in Sussex is on course to be the first river in England to be granted legal rights, as part of a mounting global movement to recognise the Rights of Nature[1].

Rights of Nature is a framework for rethinking our relationship with the natural world. It emphasises the importance of shifting away from an understanding of nature based on the value that it provides to humans. Instead, advocates argue that the intrinsic value of nature should be recognised, and that nature should be granted the same kind of legal rights that human rights give to people[2].

In February 2023, Lewes District Council passed a motion acknowledging the importance of Rights of Nature as a framework for improving our relationship with rivers[3]. A charter outlining the rights of the River Ouse is currently being developed, which aims to redefine human-river interaction, give rivers a voice and promote sustainable river systems[4]. The development of the charter is being spearheaded by the Love Our Ouse campaign and Environmental Law Foundation, among other stakeholders. The Love Our Ouse campaign is a community based initiative to 'link people to celebrate, raise the profile of and upscale positive action' for the river Ouse from its source to the sea[5]. The campaign group argues that the Ouse has the right to support 'a rich biodiversity of life and a thriving riverside community'[6]. The new river charter will be sent to Lewes District Council for their endorsement within the next year.

Part of this work involves mapping out the various legal protections that currently exist for the species that inhabit the River Ouse ecosystem, alongside an assessment of the condition of six protected flagship and bioindicator species.

The River Ouse in is on course to be the first river in England to be granted legal rights, as part of a mounting global movement to recognise the Rights of Nature. New Zealand was the first country to recognise rights of rivers by granting the Whanganui River as a legal

[1] Isabella Kaminski, 'River Ouse may become first in England to gain legal rights' (*The Guardian*, 1 March 2023) < https://www.theguardian.com/environment/2023/mar/01/sussex-river-ouse-first-in-england-legal-rights-aoe > accessed 1 May 2024

[2] Love Our Ouse, 'Rights of Rivers' < https://loveourouse.org/rights-of-rivers/#:~:text=THE%20RIGHT%20TO%20BE%20FREE,RIGHT%20TO%20REGENERATION%20AND%20RESTORATION > accessed 1 May 2024

[3] Love Our Ouse, 'Rights of Rivers Summit Report' (24 November 2023) < https://loveourouse.org/wp-content/uploads/2024/02/Love-our-Ouse_Rights-of-River-Summit_REPORT.pdf> accessed 1 May 2024

[4] Environmental Law Foundation, 'The Rights of Rivers Motion: Protecting Rivers for Present and Future Generations' (24 February 2023) < https://elflaw.org/past-cases/rights-of-rivers-charter-protecting-rivers-present-future/> accessed 1 May 2024

[5] Love Our Ouse, 'Celebrate learn act!' <https://loveourouse.org/> accessed 1 May 2024

[6] Love Our Ouse, 'Celebrate learn act!' <https://loveourouse.org/> accessed 1 May 2024

person in 2017[7]. Since then, courts and lawmakers across the world have recognised rights of rivers including in Bangladesh, India, Ecuador, Colombia, and Uganda. The legal representation of rivers is often entrusted to local indigenous communities, as due to their intimate and sustainable relationships with nature these communities are often viewed as the 'most suitable stewards'[8].

In addition to the students' report being valuable for the Environmental Law Foundation and Love Our Ouse Campaign, it can also provide insights for other environmental NGOs working in the conservation and Rights of Nature field. Specifically, NGOs operating in Sussex will be able to see the legal protections mapped out along the River Ouse. The methods used in this report to generate such insights will also be helpful to other projects in the UK aiming to grant rivers rights, such as the River Dôn Project in South Yorkshire[9]. Overall, this report can help advance the objectives of NGOs committed to safeguarding nature's rights and fostering environmental well-being in Sussex and beyond.

SECTION 1: PROTECTED SPECIES ALONG THE RIVER OUSE

I) What species in and along the River Ouse are protected under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2017?

In order to identify a workable list of protected species for this project, the schedules to the Wildlife and Countryside Act, 1981 (WCA 1981) and the Conservation of Habitats and Species Regulation, 2017 (CHSR 2017) were reviewed.

The WCA 1981 contains multiple schedules listing protected species, both generally and in specific circumstances. For this project, Schedules 1 (Birds which are Protected by Special Penalties), 5 (Animals which are Protected) and 8 (Plants which are Protected) were focused on.[10] Section 1 makes it an offence to intentionally kill, injure or take any wild bird or damage/destroy their eggs or nests of the species listed in Schedule 1.[11] Section 9 makes it an offence to intentionally kill, injure, or take, possess, or trade in any wild animals listed in Schedule 5 [12] and Section 13 makes it an offence to pick, uproot, trade in, or possess (for the purpose of trade) any wild plants listed in Schedule 8.[13] Schedules 5 and 8 are reviewed every five years.

[7] Matthias Kramm, 'When a river becomes a person' (2020), 12 Journal of Human Development and Capabilities 307, 307.
[8] Philipp Wesche, 'Rights of Nature in Practice: A Case Study on the Impacts of the Colombian Atrato River Decision', (2021), 33 Journal of Environmental Law 531, 533
[9] The River Dôn Project, 'The River Dôn Project', <https://www.theriverdon.org/>
[10] Wildlife and Countryside Act 1981, sch 1, 5, 8 <https://www.legislation.gov.uk/ukpga/1981/69/contents>
[11] Wildlife and Countryside Act 1981, s 1 <https://www.legislation.gov.uk/ukpga/1981/69/section/1>
[12] Wildlife and Countryside Act 1981, s 9 <https://www.legislation.gov.uk/ukpga/1981/69/section/9>
[13] Wildlife and Countryside Act 1981, s 13 <https://www.legislation.gov.uk/ukpga/1981/69/section/13>

The CHSR 2017 has two key schedules that list the European protected species of animals (Schedule 2, CHSR 2017) and European protected species of plants (Schedule 5, CSHR 2017).[14] Regulation 43 makes it an offence to deliberately: (i) capture, injure or kill; (ii) disturb; (iii) take or destroy the eggs, or (iv) destroy a breeding site of any wild animal or animal listed in Schedule 2.[15] Regulation 47 makes it an offence to be in possession of, control, transport, sell or exchange, or offer to sell or exchange any species listed in Schedule 5.[16]

There was a small amount of overlap between the schedules and a combined list of all were used to search for protected species on the River Ouse.

Annex 1 is a table which divides the protected River Ouse species into their taxonomic groups and details the protections the species are afforded under the WCA 1981 and the CHSR 2017. The data on protected animals was collected by the SOAS team. A sample from the table is shown in Annex 1 at the end of this report. To view the full table please see the accompanying Excel Workbook under the 'Annex 1' sheet.

The data for the plants, fungi and lichens was provided by Sussex Biodiversity Record Centre (SxBRC)[17] and due to their extensive database SxBRC was also able to provide details of other protections afforded to plant species in the area. These are as follows:

- RedList GB Post 2001 – This refers to IUCN Red List species for Great Britain. The IUCN Red List classifies species at high risk of global extinction. The species are classified on the following scale: Extinct, Extinct in the Wild, Critically Endangered, Endangered, Vulnerable, Near Threatened, Least Concern and Data Deficient.

- RedList ENG Post 2001 – This refers to IUCN Red List species for England.

- Nationally Rare – This refers to species occurring in 15 or fewer hectads in Great Britain. It excludes rare species qualifying under the main IUCN criteria.

- Nationally Scarce – This refers to species occurring in 16-100 hectads in Great Britain. It excludes rare species qualifying under the main IUCN criteria.

- UK BAP Priority Species – This refers to the UK List of Priority Species, which contains 1150 species that have been listed as priorities for conservation action under the UK Biodiversity Action Plan (UK BAP).

[14] The Conservation of Habitats and Species Regulation 2017, sch 2, 5 <https://www.legislation.gov.uk/uksi/2017/1012/contents>
[15] The Conservation of Habitats and Species Regulation 2017, pt 3 regulation 43 <https://www.legislation.gov.uk/uksi/2017/1012/regulation/43>
[16] The Conservation of Habitats and Species Regulation 2017, pt 3 regulation 47 <https://www.legislation.gov.uk/uksi/2017/1012/regulation/47>
[17] Sussex Biodiversity Record Centre <https://sxbrc.org.uk/home/>

- Sussex Rare – This refers to the Sussex Rare Species Inventory, which contains over 3,400 species. These species are selected according to strict criteria of rarity associated with their occurrence in Sussex. It includes species which fall into the above categories of rarity as well as county rarities.

SECTION 2: LOCATIONS OF PROTECTED SPECIES

I) Where are these protected species located?

To locate the protected animal species, the scientific name of the species was searched for under the National Biodiversity Network (NBN) Atlas.[18] After finding the correct species, a map of the data records of the species in the UK was generated, and the field 'accepted - considered correct' was selected. Zooming into the Sussex area, the River Ouse could be traced from Barcombe Mills north to Slaugham. Between these two points, the SOAS team collected up to a maximum of three records per protected animal species that had been recorded on or near to the river. From each data record, the latitude, longitude and record year was collected. Only records from 1970 onwards were included.

The Sussex Biodiversity Record Centre provided the data records for protected plant, fungi and lichen species, between Barcombe Mills and Slaugham that were on or near to the River Ouse. Due to their exclusive database access and ease of data collation there was no limit on the number of records collected. The oldest record included from this database was 1980. The abundance count was also included. Please read the important information as to the use of this data in Annex 2, which can be found at the bottom of this report and the accompanying Excel workbook.

II) The Mapping Process

After collecting the data records, the cleaned data sheets – one for animals and a separate one for plants, fungi and lichens – was uploaded to Oracle Spatial Studio. All the data records were then mapped. The legend shows the colour coded taxon groups. When individual dots are clicked the taxon group, taxon name, common name, record year and recorder can be read. In addition, the abundance count for plants can also be read. There is one 'star' on the map and this is where different data records held the same latitude of 51 and the same longitude of 0. A map of the upper River Ouse basin has been overlaid. This river basin map was taken from the Environment Agency and can be found below:

https://environment.data.gov.uk/catchment-planning/OperationalCatchment/3498

[18] National Biodiversity Network (NBN) Atlas <https://nbnatlas.org/>

The link to the interactive species map created in Oracle Spatial Studio is currently for the use of the Environmental Law Foundation. Please contact SOAS Law Department for information on how to access the map.

Image 1 below is a picture of the map. The river basin is in blue and the coloured dots indicate the different taxon groups, with the legend to the left providing detail.

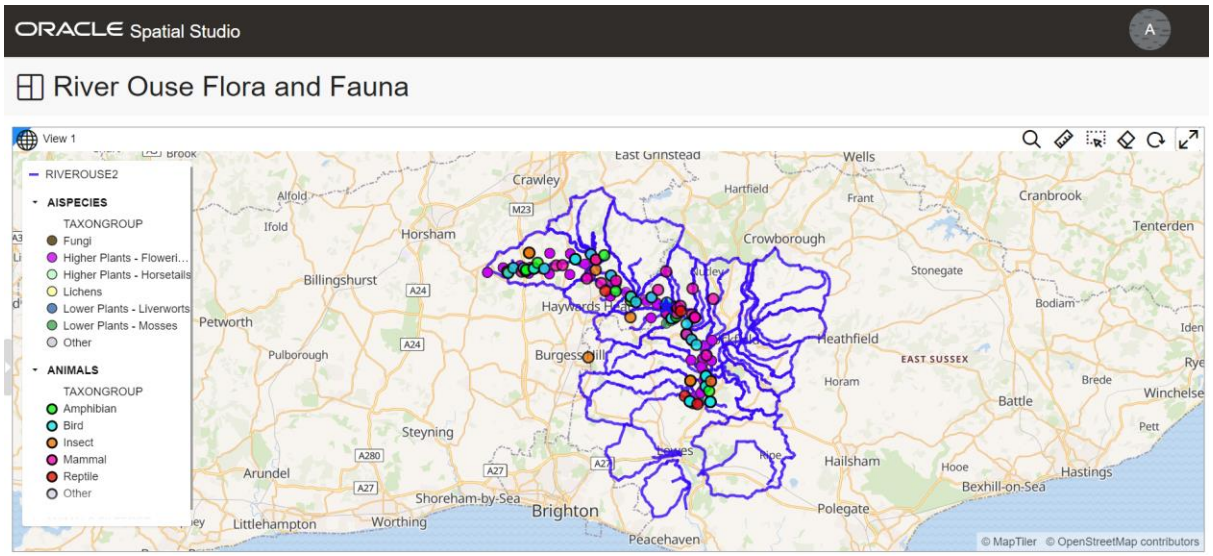
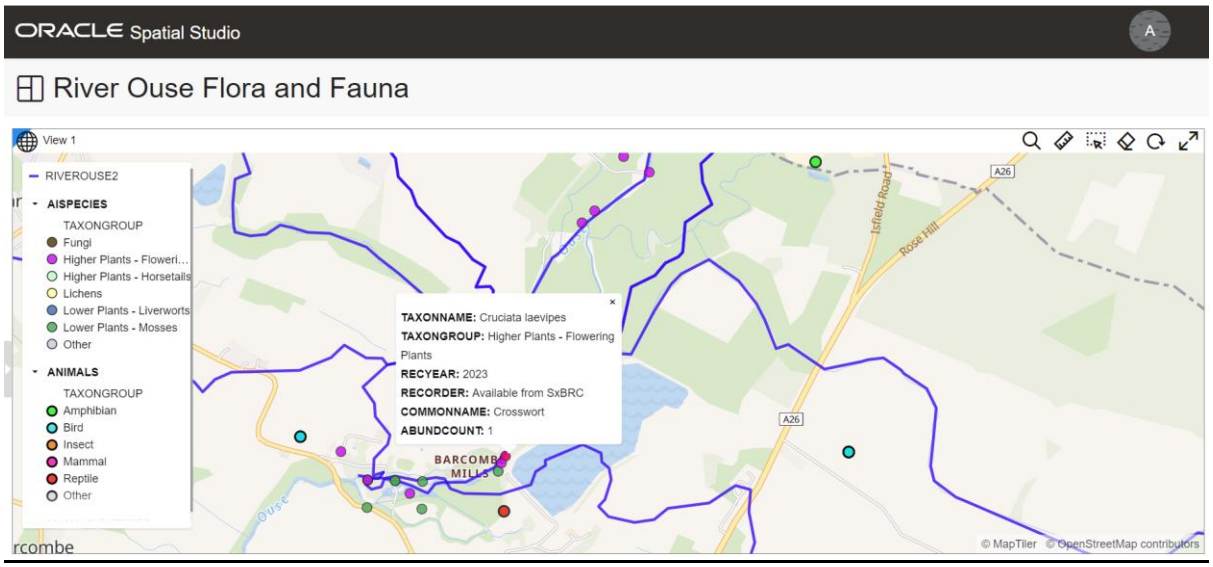


Image 2 below shows an example of the information that can be read after clicking on a dot.



SECTION 3: FLAGSHIP SPECIES

I) Why did we choose to analyse protected flagship and bioindicator species?

Flagship species are defined as 'high profile, charismatic, or ambassadorial species' and they accede to this flagship status because humans have a preference for their protection. The promotion of flagship species has become a common method to galvanise donations to the conservation sector.[19] Bioindicator species are defined as those that reflect the 'abiotic or biotic state of an environment, [represent] the impact of environmental change on a habitat, community or ecosystem or [are] indicative of the diversity of a subset of taxa or the whole diversity within an area'.[20] In the context of rivers, species that can indicate a change in riverine ecosystem health are useful for those seeking to strengthen protections for this ecosystem and the species it supports.

Protected flagship and bioindicator species are a useful way to draw attention to current conservation challenges in the River Ouse. In this report six species that are either flagship or bioindicator species have been identified for the River Ouse: the bittern, sea trout, otter, kingfisher, Daubenton's bat and barred grass snake. These species were chosen because they represent diverse taxonomic groups that interact with the River Ouse and they are species that can capture the attention of policymakers and the public.

The section below highlights the combination of threats that exist for each species (e.g. habitat loss, water pollution, plummeting decline in insect numbers) and shows that, taken together, the six species demonstrate the full panoply of threats facing rivers and wetlands. River management strategies that take into account the needs of these species are likely to improve conditions for species in the River Ouse more generally.

II) What condition are these species in?

To determine the condition of the protected flagship and bioindicator species, certain key factors were focused on. These factors included the current population size of the species in the UK and whether the population has increased or decreased in recent years and how this has affected their conservation status. The typical features relating to these species were also assessed, such diet, size, and the habitats they use. The main drivers affecting their survival were also evaluated. In some cases specific conservation initiatives for these species were able to be presented. The assessment of each flagship and bioindicator species is split into the following sub-sections: Background, Conservation Status and Status in Ouse.

[19] Paul Jepson and Maan Barua, 'A Theory of Flagship Species Action' (2015) Vol.13(1) Conservation & Society p95, p98.

[20] A Gerhardt, 'Bioindicator species and their use in biomonitoring' (2011) Vol.I UNESCO-EOLSS p3 < https://www.eolss.net/Sample-Chapters/C09/E6-38A-01-07.pdf> accessed 12 February 2024

III) Flagship And Bioindicator Species:

a. Bittern (Botaurus stellaris)

Background

The bittern is an iconic wetland bird with a booming call, and as a result it has been used as a flagship species to encourage the generation of conservation funds for the restoration of wetlands. For example, the RSPB used the plight of the bittern to help establish support for the creation of its Minsmere reserve in the 1960s.[21] Although rejuvenation of the UK bittern population has been slow, it is gathering pace due to increased conservation efforts.

Bittern, by Francesco Veronesi
CC BY-SA 2.0 (Wikipedia)

Conservation Status

The bittern is protected under Schedule 1, under section 1 and section 6 of the Wildlife and Countryside Act 1981, and as such, it is a criminal offence to kill, injure or take a bittern. It is also a criminal offence to take damage or destroy the nest of a bittern, and take damage or destroy the nest that is being used or built by a bittern, and it is an offence to take or destroy an egg of a bittern. It is illegal to possess a bittern or its eggs. It is also a criminal offence to sell bitterns or advertise to buy or sell bitterns.[22] [23] [24]

First recorded in Anglo-Saxon times, the bittern was once a common breeding bird in the UK, but in the late 1800s became extinct in the UK [25] as a result of hunting and the draining of wetlands. The species did manage to return, but its low population continued due to further habitat degradation from the 1950s-1990s, including the draining of wetlands for agriculture. By 1997, only 11 males were estimated to be present in the UK.[26]

Due to conservation efforts to restore and connect wetland habitats, the UK population has dramatically increased, with 228 males recorded in 2021.[27] The species was first moved

[21] Paul Jepson and Maan Barua, 'A Theory of Flagship Species Action' (2015) Vol.13(1) Conservation & Society p101.
[22] Wildlife and Countryside Act 1981, s 1 <https://www.legislation.gov.uk/ukpga/1981/69/section/1>
[23] Wildlife and Countryside Act 1981, s 6 <https://www.legislation.gov.uk/ukpga/1981/69/section/6>
[24] RSPB, 'Bittern' <https://www.rspb.org.uk/birds-and-wildlife/bittern> accessed 15 January 2024.
[25] British Trust for Ornithology, 'Bittern BirdFacts' <https://www.bto.org/understanding-birds/birdfacts/bittern> accessed 15 January 2014.
[26] Victoria Gill, 'RSPB: Bitterns Make Booming Recovery In UK' (BBC News, 25 March 2022) <https://www.bbc.co.uk/news/science-environment-60863563> accessed 15 January 2024.
[27] ibid.

from the 'UK Birds of Conservation Concern' Red List to the Amber List in 2015 [28] and has maintained its Amber list status in the most recent 'The State Of The UK's Birds' report in 2020.[29]

Status in Ouse

Bitterns have been recorded along the River Ouse, near Barcombe Mills Reservoir in 2010 and near Sheffield Park in 2011. Populations of bitterns are expected to increase across the UK over the long-term and considering that bitterns are regularly seen at other locations in Sussex, including overwintering at Sussex Wildlife Trust's Filsham Nature Reserve[30], and breeding at the Trust's nature reserve at Rye Harbour[31], it is possible that the number of sightings of bitterns along the River Ouse could increase as the population continues to spread out. There are a number of floating reedbeds that have been created at Barcombe reservoir[32], if more natural reedbeds were created at this reservoir (without wire cages), this could contribute to creating more suitable bittern habitat.

The reedbed habitat is particularly important to the breeding success of bitterns, because the birds are camouflaged among the reeds promoting their predation success of fish and amphibians[33] as the bittern does not need to break cover.[34] The European eel (*Anguilla anguilla*) is one of the bittern's most important prey species, however sluices and weirs along rivers can prevent the species migrating, therefore bypasses should be put in place to enable eels to enter and exit different stretches of the river.[35] Reedbeds are an excellent habitat for controlling pollution because they can trap sediments, as well as filter and clean water naturally.[36] This is important because the bitterns and their prey require healthy unpolluted waterways in order to thrive. However, considering that not a single river in

[28] Andrew Stanbury et al, 'The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain' (2015) 114 British Birds p734 <BB 2021 DECEMBER (Med-res) (britishbirds.co.uk)> accessed 15 January 2024.
[29] RSRB, 'The State of the UK's Birds' (2020) <https://www.bto.org/sites/default/files/publications/state-of-uk-birds-2020-report.pdf> accessed 15 January 2024.
[30] Sussex Wildlife Trust, 'Filsham Reedbed Nature Reserve' <https://sussexwildlifetrust.org.uk/visit/filsham-reedbed?s=what-you-might-see> accessed 15 January 2024.
[31] Sussex Wildlife Trust, 'Reedbed' <https://sussexwildlifetrust.org.uk/discover/around-sussex/wetland-habitats/reedbed> accessed 15 January 2024.
[32] Sussex World, 'Fish Seek Refuge In Floating Reedbeds' (2018) <https://www.sussexexpress.co.uk/news/fish-seek-refuge-in-floating-reedbeds-1295750> accessed 15 January 2024.
[33] RSPB, 'Bittern' <https://www.rspb.org.uk/birds-and-wildlife/bittern> accessed 15 January 2024.
[34] Simon Wotton, Gillian Gilbert and Andy Brown, 'Bitterns and Bittern Conservation in the UK' (2012) 105 British Birds p67.
[35] Matt Self, 'A review of management for fish and bitterns, *Botaurus stellaris*, in wetland areas' (2005) 12 Fisheries Management and Marine Ecology p393.
[36] Sussex Wildlife Trust, 'Reedbed' <https://sussexwildlifetrust.org.uk/discover/around-sussex/wetland-habitats/reedbed> accessed 15 January 2024.

England is classed as having good health, conservation efforts must also ensure that the pollution is controlled from source.[37]

b. Sea trout (Salmo trutta morpha trutta)

Background

The sea trout is the common name for anadromous forms of brown trout.[38] Sea trout from the River Ouse migrate between fresh and saltwater.[39] In a House of Commons Committee Report on 'Water Quality in Rivers' in 2022, the Sea Trout was acknowledged as an indicator species for healthy rivers.[40] Research has shown that sea trout in the River Ouse possibly have the highest average weight compared to other populations across England and Wales. Furthermore, a fishing season in the River Ouse is unusual if it does not yield sea trout weighing in the double figures or exceeding 13 pounds.[41] General threats to sea trout include, barriers to migration, poor water quality, predation, marine exploitation, climate change.[42]

Sea Trout, by Micha Baum – CC BY-SA (iNaturalist)

Conservation Status

The sea trout is not protected under the Wildlife and Countryside Act or the Conservation of Habitats and Species Regulations 2017. However, it is listed as a UK BAP Priority Fish Species.[43]

Status in Ouse

[37] Wildlife and Countryside Link, 'Official figures reveal not one river or lake in England is in good health' (2020) <https://www.wcl.org.uk/not-one-river-in-england-in-good-health.asp> accessed 15 January 2024.
[38] Wikipedia, 'Sea trout' (Wikipedia, 13 December 2023) <https://en.wikipedia.org/wiki/Sea_trout> accessed 15 January 2024.
[39] Alexi, 'The Sea Trout of Sussex' (riverOcean, 6 December 2019) <https://www.riverocean.org/the-sea-trout-of-sussex/> accessed 15 January 2024.
[40] House of Commons Committee Report, 'Water Quality in Rivers' <https://publications.parliament.uk/pa/cm5802/cmselect/cmenvaud/74/report.html#heading-0> accessed 12 February 2024
[41] Ouse Angling Preservation Society Ltd, 'Sea Trout Fishing' (Ouse APS) <https://www.ouseaps.co.uk/sea-trout-fishing> accessed 15 January 2024.
[42] Daniel Nixon, 'Sea Trout: what we know and the challenges to conservation' (WildFish, 13 November 2023) <https://wildfish.org/latest-news/sea-trout-what-we-know-and-the-challenges-to-conservation/#:~:text=%E2%80%9CThe%20evidence%20is%20clear%3A%20over,identified%20as%20the%20main%20causes.%E2%80%9D> accessed 15 January 2024.
[43] JNCC, UK Biodiversity Action Plan: List of UK BAP Priority Fish Species (excluding purely marine species) (2007) <https://data.jncc.gov.uk/data/98fb6dab-13ae-470d-884b-7816afce42d4/UKBAP-priority-fish.pdf> accessed 15 January 2024.

A study was begun in 1985 to discover whether the sea trout were young fish that had experienced rapid growth or older fish with slower growth. Scale readings from 1985 to 1987 showed rapid growth and presence of large fish with multi sea winters or multiple spawning marks. In early 1997, the Ouse Angling Preservation Society (OAPS) and newly-formed Sussex Ouse Conservation Society (SOCS) were approached by the Environment Agency with a view to contributing to a scale-reading study of sea trout in a number of rivers in England and Wales by Environment Agency contractor Graeme Harris of Fish Skills. However, the scales collected from River Ouse were not enough for a proper statistical study.[44]

There was a report published in 2002 with surveys of sea trout in 16 rivers in 4 regions (Northeast, Southwest, Northwest England and Wales). Since 1998, scales continued to be collected and by 2004 over 500 sets had been read. This data was designed to produce a report which would at least provide a qualitative stock description of a Southern river. Most sea trout in the study were captured by anglers from the OAPS waters downstream of Barcombe Mills (the tidal limit). A small number of these were captured upstream of Barcombe Mills and a few captured in tidal waters downstream of Lewes.[45]

Table 1 below shows the annual sea trout rod catches in the River Ouse from 1995 to 2009. There is a general increase in the yearly catch between 1996-2002 but this is followed by a general decrease in yearly catches.

Table 1 Sea trout rod catches (4) in R. Ouse (1995–2009)

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Yearly Catch	41	9	33	38	133	78	146	161	101	76	27	41	51	44

Table 2A and 2B below show the scale sample catches from 1985 to 2009. From 1985 there is a decline in samples until 1990, this is then followed by a period of general increase in scale samples collected. The numbers appear to peak from 1997 to 2003 before reaching very low levels. Returned fish usually yielded far fewer scales.

Table 2A Numbers of scale samples collected, 1985–99

Year	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	Total
No	24	20	23	11	3	5	14	10	24	16	8	19	32	28	47	284

Table 2B Numbers of scale samples collected, 2000–09

Year	00	01	02	03	04	05	06	07	08	09	Total
No	52	67	103	47	20	3	4	4	8	11	319

Table 3 shows the monthly capture of sea trout in the River Ouse from 1985 to 1999 and 2000 to 2009. May starts off with the lowest percentage capture, followed by the peak of

[44] Clive L Fetter, The Sea Trout of R. Ouse (Sussex): A Stock Description (2010) <SROuse_Other (oart.org.uk)> accessed 15 January 2024.
[45] ibid.

monthly capture in June and July. In the following months, there seems to be a steady pattern of monthly capture below 20%. The cumulative proportions of fish caught each month for each sample, is then represented in the graph in Figure 1.

Table 3 Month of capture of sea trout in River Ouse for each sample (1985–1999 and 2000–09)

Sample	Month of Capture												Total No. Fish
	May		June		July		August		September		October		
	No	%	No	%	No	%	No	%	No	%	No	%	
Ouse 85–99	7	2.3	75	24.9	82	27.2	42	14.0	44	14.6	51	16.9	301
Ouse 00–09	5	1.5	98	29.6	94	28.4	36	10.9	59	17.8	39	11.8	331

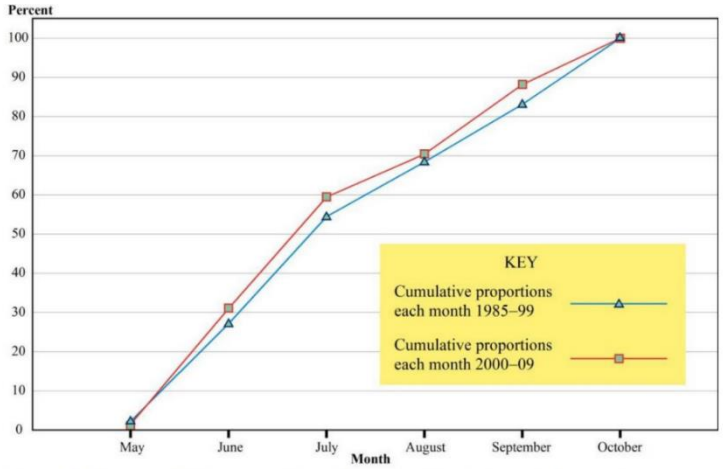


Figure 1 The cumulative proportions of fish caught each month for each sample

Fishing for sea trout in the River Ouse is provided by the Ouse Angling Preservation Society. Fishing for this species is available downstream of the Anchor Inn (north of Barcombe Mills) as far as the bottom end of the Hamsey Cut about a mile and a half north of Lewes, a distance of approximately six miles. Fishing is mostly single bank with the river being tidal as far upstream as Barcombe Mills. Furthermore, there is a special period put into place by the Anglers Society for sea trout fishing. This occurs only from 1st May to 31st October. In this period, fishing can be done in an area inside the circle of roads comprising the main Barcombe Mills road where the road bridge is and the Old Toll road, which overlooks the mill pool. In addition, a 'pool' permit is required to fish during this period and is only available for those who hold such permits.[46]

Furthermore, there is a "Sea Trout Watch" group coordinated by the Ouse and Adur Rivers Trust. This consists of volunteers, who are allocated a section of the River Ouse and River Adur to survey. Reports are then collected based on where "redds" are located. This term is used for where sea trout has spawned and therefore disturbed the gravel. These data sets are helpful in examining sea trout populations or any notable decreases. In addition, these

[46] Ouse Angling Preservation Society Ltd, 'Sea Trout Fishing' (Ouse APS) <https://www.ouseaps.co.uk/sea-trout-fishing> accessed 15 January 2024.

spawning areas are more easily identified with this project in order to call for further management or maintenance regarding the sea trout.[47]

c. Eurasian Otter, (Lutra lutra)

Background

Otters are suited to life on the water by virtue of their webbed feet, fur, and ability to close their ears and eyes when underwater.[48] Generally, the otter is nocturnal and found in freshwater environments.[49] In addition to this, it is often solitary but is sometimes seen in family groups.[50] To thrive, the otter needs clean rivers with a rich source of food and an abundance of vegetation to conceal their holts.[51] The otter has been used as a flagship species in the European context, specifically in the Netherlands, to encourage the improvement of habitat quality.[52]

Eurasian Otter, by Landgraf – Own work, CC BY-SA 3.0 (Wikipedia)

Conservation Status

The otter is protected under Schedule 5 (in respect of section 9(4)(b) and (c) and (5) only) of the Wildlife and Country Act 1981. Therefore, it is a criminal offence to disturb otters or obstruct them from accessing their holts, and it is an offence to sell otters and a criminal offence to advertise the buying or selling of otters.[53] It is also protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2017, which under Regulation 43 makes it an offence to deliberately capture, injure or kill an otter.[54] [55] The otter is also an original UK Biodiversity Action Plan priority species.[56]

[47] Ouse and Adur Rivers Trust, 'Sea Trout Watch' (OART) <https://oart.org.uk/project/sea-trout-watch/> accessed 7 February 2024.
[48] The Wildlife Trusts, 'European Otter' <European otter | The Wildlife Trusts> accessed 7 February 2024.
[49] Otter Specialist Group, 'Eurasian Otter, Lutra lutra' <Eurasian Otter (Lutra lutra) | IUCN SSC Otter Specialist Group> accessed 7 February 2024.
[50] ibid.
[51] ibid (n48).
[52] Bas van Spronsen, 'Using habitat preferences of the Eurasian Otter (Lutra lutra) to predict future potential habitat after reintroduction in the Netherlands' (17 July 2020) <Bas van Spronsen – Using habitat preferences of the Eurasian Otter (Lutra lutra) to predict future potential habitat after reintroduction in the Netherlands.pdf (gbra.eu)> accessed 7 February 2024.
[53] Wildlife and Countryside Act 1981, s 9(4)(b)(c)(5) <https://www.legislation.gov.uk/ukpga/1981/69/section/9>
[54] The Conservation of Habitats and Species Regulation 2017, pt 3 regulation 43 <https://www.legislation.gov.uk/uksi/2017/1012/regulation/43>
[55] RSPCA, 'Otters' <https://www.rspca.org.uk/adviceandwelfare/wildlife/otters> accessed 15 January 2024.
[56] ibid (n48).

The Eurasian Otter is listed as 'largely depleted' under the IUCN Red List (October 2021), a slight improvement from its previous status as 'near threatened' (January 2020).[57] Hence, in general populations of otters are increasing, albeit at a slow rate. In terms of Great Britain, Scotland has the largest otter population,[58] followed by Wales, and then England which has the lowest numbers. According to the Otter Survey of Wales (2015-18), Welsh otter populations are decreasing. However, following the 11th Spring Otter Survey in England (The Northeast Otter Network), there appears to be even greater decreases in certain English populations.[59]

As UK otter populations have increasingly moved into urban habitats this has led to an increase in roadkill. In 2007, approximately four otters a year were collected from Essex roads, but in 2020 the figure rose to 15 otters.[60] In terms of mitigation, road signs have been erected in some areas to warn drivers to watch out for the animals.[61] However, these efforts are insufficient since road deaths continue to produce the greatest source of otter mortality.[62] In Scotland, organisations like NatureScot have worked with developers and road engineers to prevent otter casualties on new roads. However, such measures ought to also be implemented vis a vis existing roads where blind spots are known.[63]

Another threat to the otter is insufficient prey, specifically the eel. Reduction in prey availability results from poor water quality and poor habitat quality.[64] A House of Commons Committee Report on 'Water Quality in Rivers' in 2022 found that in England, not a single river had a 'clean bill of health' with regards to chemical contamination. Within the chemical cocktail found in rivers there is sewage, plastics, agricultural waste and persistent chemicals (such as polyfluoroalkyl and perfluoroalkyl substances (PFAS).[65] In terms of mitigation, some organisations, such as The Rivers Trust, have committed to clean up rivers in the UK.[66] Some

[57] International Union for Conservation of Nature and Natural Resources, Red List, 'Eurasian Otter' <https://www.iucnredlist.org/species/12419/218069689> accessed 14 January 2024.
[58] Joint Nature Conservation Committee, '1355 Otter Lutra lutra' <https://sac.jncc.gov.uk/species/S1355/> accessed 14 January 2024.
[59] The Otter Network, 'Spring Otter Survey' (30 July 2023) <https://www.theotternetwork.co.uk/_files/ugd/bc9257_67705f37cae0495592afb1e725fbc2ee.pdf?index=true> accessed 14 January 2024.
[60] Paul Teasdale and Lisa Hendry, 'Otters are making themselves at home in UK cities' (Natural History Museum, 30 October 2020) <https://www.nhm.ac.uk/discover/otters-are-making-themselves-at-home-in-uk-cities.html> accessed 14 January 2024.
[61] ibid.
[62] Nature Scot, Scotland's Nature Agency, 'Otter' <https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/otter> accessed 14 January 2024.
[63] ibid.
[64] A Biodiversity Action Plan for Hertfordshire, 'Otter Species Action Plan' <https://www.dacorum.gov.uk/docs/default-source/planning-development/spar-12.08.01-biodiversityactionplan-chapter_14_otter.pdf?Status=Master&sfvrsn=0> accessed 14 January 2024.
[65] House of Commons Committee Report, 'Water Quality in Rivers' <https://publications.parliament.uk/pa/cm5802/cmselect/cmenvaud/74/report.html#heading-0> accessed 12 February 2024
[66] The Rivers Trust, 'Cleaning Up Rivers' <https://theriverstrust.org/our-work/cleaning-up-rivers> accessed 14 January 2024.

local councils have also taken action to increase eel populations,[67] however the work remains on an ad hoc basis and more actors ought to be involved.

Similarly, the otter is also under threat from loss of habitat and careless development. The general degradation of wetland habitats has meant that otters lack sufficient spaces to breed and rest.[68] In terms of mitigation, there have been conservation measures to avoid the loss of habitat, such as the creation of log piles and artificial holts.[69] Additionally, the government has also issued guidance to be considered by local planning authorities when making planning decisions.[70]

Status in Ouse

Otters have been recorded in the NBN Atlas along the River Ouse near Barcombe Mills in 2013 and near Slaugham in 2019. However, according to Sussex Wildlife Trust the first time an Otter was recorded in the county following a 50 year absence was in 2016.[71] The Trust then reported the sighting of another otter in central Sussex in 2018. In neither of the two Trust recordings were the locations disclosed, but the Trust did confirm that the sightings were in two different river catchments in Sussex.[72] According to the Trust there are currently no known resident otters living in Sussex.[73]

d. Kingfisher (Alcedo atthis)

Background

The Kingfisher is a small bird (average weight of 34-45g) with a distinctive brightly coloured plumage.[74] Kingfishers are residents in the UK all year round, although their numbers are at their highest in the post-breeding season in autumn.[75] They have an extremely long breeding period,

Kingfisher, by Shantanu Kuveskar – Own work, CC BY-SA 4.0 (Wikipedia)

[67] Lorraine Hemmings, 'Eel recovery project spawns in Chard Reservoir Endangered eels are getting a helping hand from Somerset Council's countryside team at Chard Reservoir Local Nature Reserve (LNR)' (Somerset Council, June 28 2023) <https://www.somerset.gov.uk/news/eel-recovery-project-spawns-in-chard-reservoir/> accessed 14 January 2024.
[68] ibid (n52).
[69] ibid (n48).
[70] Natural England, 'Guidance: Otters: advice for making planning decisions' (HM Government, 14 January 2022) <https://www.gov.uk/guidance/otters-advice-for-making-planning-decisions> accessed 14 January 2024.
[71] Sussex Wildlife Trust, 'It's a real otter - in Sussex!' <https://sussexwildlifetrust.org.uk/news/its-a-real-otter-in-sussex> accessed 15 January 2024.
[72] Sussex Wildlife Trust, 'Otter spotted in central Sussex' <https://sussexwildlifetrust.org.uk/news/otter-spotted-in-central-sussex> accessed 15 January 2024.
[73] Sussex Wildlife Trust, 'Otters' <https://sussexwildlifetrust.org.uk/discover/around-sussex/wetlands/wetland-species/otter> accessed 15 January 2024.
[74] BTO, 'Bird Facts - Kingfisher' British Trust for Ornithology <https://www.bto.org/understanding-birds/birdfacts/kingfisher> accessed 17 January 2024.
[75] ibid.

beginning at the end of March and finishing anytime between July through to the end of September.[76] It has a lifespan of up to 2 years and typically breeds at 1 year.[77] They are generally found across most of England, parts of Wales, Northern Ireland and small areas of southern Scotland.[78] They live close to water sources in lowland rivers as their diet consists of fish and aquatic insects.[79] The kingfisher is the emblem for the Ouse and Adur Rivers Trust highlighting its use as a flagship species.

Conservation Status

The kingfisher is protected under Schedule 1, under section 1 and section 6 of the Wildlife and Countryside Act 1981, and as such, it is a criminal offence to kill, injure or take a kingfisher. It is also a criminal offence to take damage or destroy the nest of a kingfisher, and take damage or destroy the nest that is being used or built by a kingfisher and it is an offence to take or destroy an egg of a kingfisher. It is illegal to possess a kingfisher or its eggs. It is also a criminal offence to sell kingfishers or advertise to buy or sell kingfishers.[80] [81] In 2021 the kingfisher was moved from the Amber List to the Green List for 'UK Birds of Conservation Concern' edition 5.[82]

The kingfisher population suffered a few declines during the 1980s and early 1990s.[83] However, since 1995, the breeding population has remained relatively stable in the UK and across Europe.[84] In the UK there are estimated to be between 3,800-6,400 breeding pairs[85].

The breeding population has fluctuated over the last 25 years in the UK as follows[86]:

- 1995-2020 (-22%)
- 2010-2020 (0%)
- 2015-2020 (-12%)

Overall, the BTO notes the winter population of the kingfisher has seen an increase of 44% from 1995/1996 levels to 2020/2021 levels.[87] The main factors that affect the condition of

[76] Lucia Rubáčová and Mária Melišková, 'Extreme breeding effort of Common Kingfisher (Alcdeo aathis)' (2020) 32 Tichodroma <https://doi.org/10.31577/tichodroma.2020.32.1> accessed 17 January 2024.
[77] ibid.
[78] RSPB, 'Kingfisher' Royal Society for the Protection of Birds <https://www.rspb.org.uk/birds-and-wildlife/kingfisher> accessed 17 January 2024.
[79] ibid.
[80] Wildlife and Countryside Act 1981, s 1 <https://www.legislation.gov.uk/ukpga/1981/69/section/1>
[81] Wildlife and Countryside Act 1981, s 6 <https://www.legislation.gov.uk/ukpga/1981/69/section/6>
[82] BTO, 'Birds of Conservation Concern 5' <https://www.bto.org/our-science/publications/birds-conservation-concern> accessed 17 January 2024.

[83] ibid (n74).
[84] ibid.
[85] ibid (n82).
[86] ibid (n74).
[87] ibid.

the species is the winter weather.[88] They are susceptible to harsh winter conditions which can cause widespread depletion of their numbers.[89] However, with up to three broods in a season and up to six chicks in a brood, there is the potential for high population growth. It is thought that other factors can also affect the population including water quality (i.e. pollution of waterways or unsympathetic management of watercourses), as well as a decrease in the availability of prey. However, these conditions have not been fully investigated.[90]

Status in Ouse

There are a significant number of records of the kingfisher along all parts of the River Ouse from Slaugham to Barcombe Mills.[91] Kingfishers have been frequently spotted on the banks of the Ardingly Reservoir, Haywards Heath, which connects to the River Ouse. Reports note them perching on branches near the water's edge with the main sightings first thing in the morning when they are feeding and guarding their territory.[92]

Continued improvement in water quality and provision of new wetland habitat is the best way to ensure the protection of this species.[93] Although none of the Ouse and Adur Rivers Trust's projects specifically target kingfisher conservation, a number of their projects involve improving water quality and habitat restoration, which will benefit the kingfisher.[94]

Artificial nesting sites could also assist in keeping the numbers stable, particularly if these are focused in areas where there are limited natural good-quality nesting sites. The BTO cites previous examples of artificial sand, earth banks or artificial burrows in limestone cliffs.[95]

e. Daubenton's Bat (Myotis daubentonii)

Background

[88] ibid (n82).
[89] ibid.
[90] ibid (n74).
[91] NBNAtlas, 'Occurance Records Kingfisher' (*NBN Atlas)* <https://records.nbnatlas.org/occurrences/search?q=taxa%3A%22kingfisher%22&fq=-occurrence_status%3A%22absent%22&fq=year%3A%222019%22&nbn_loading=true#tab_mapView> accessed 17 January 2024.
[92] South East Water, 'Kingfisher Trail' (*South East Water*) <https://cdn.southeastwater.co.uk/SewHousehold/Documents/sew_kingfisher_trail_leaflet-website-version.pdf> accessed 17 January 2024.
[93] ibid (n74).
[94] Ouse and Adur Rivers Trust, 'Projects' <https://oart.org.uk/our-work-and-projects/projects-new/> accessed 15 January.
[95] ibid.

Sometimes referred to as the 'water bat', the Daubenton's bat forages almost exclusively over water, feeding on chironomid midges, caddisflies, and mayflies.[96] From March until October, they roost near water, often in holes in trees, in tunnels or under bridges. During the winter months, they hibernate underground in caves, tunnels, and mines.[97] Bat calls are usually pitched at too high a frequency for humans to hear naturally. Individual species of bats emit different calls based on their size, environment, prey types, and flight behaviour. Thus, they can be identified using a bat detector.[98]

The Department for the Environment, Food and Rural Affairs (DEFRA) has included the Daubenton's bat in its set of 'indicator species' to help measure the Government's progress towards targets for halting biodiversity loss. As an indicator species, bats are used to show changes in various biodiversity measurements, such as the population size of important species and the changes in areas managed for wildlife.[99]

Daubenton's bat, by Gilles San Martin – Own work, CC BY-SA 2.0 (Wikipedia)

Conservation Status

The Daubenton's bat is protected under Schedule 5 - under Bats, Typical (all species) - (in respect of section 9(4)(b) and (c) and (5) only) of the Wildlife and Country Act 1981. Therefore, it is a criminal offence to disturb the Daubenton's bat or obstruct it from accessing structures or places used by the species for shelter or protection. It is also an offence to sell Daubenton's bats and a criminal offence to advertise the buying or selling of this species.[100] It is also protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2017, which under Section 43 makes it an offence to deliberately capture, injure or kill a Daubenton's bat.[101]

While populations of Daubenton's bats are relatively stable in the UK,[102] there is a concern that their limited habitat preference makes them vulnerable to habitat change.[103] Key

[96] Ruth D Warren, Dean A Waters, John D Altringham and David J Bullok, 'The distribution of Daubenton's bats (Myotis daubentonii) and pipistrelle bats (Pipistrellus pipistrellus) (Vespertilionidae) in relation to small-scale variation in riverine habitat' (2000) Biological Conservation 85.
[97] The Wildlife Trusts, 'Daubenton's Bat' <https://www.wildlifetrusts.org/wildlife-explorer/mammals/daubentons-bat> accessed 17 January 2024.
[98] Bat Conservation Trust, 'Introduction to Bat Detectors' <https://www.bats.org.uk/about-bats/bat-detectors-1/bat-detectors> accessed 25 January 2024.
[99] Bat Conservation Trust, 'Bats as Indicators of Biodiversity' <https://www.bats.org.uk/about-bats/why-bats-matter/bats-as-indicators-of-biodiversity/uk-biodiversity-indicator-species> accessed 12 February 2024
[100] Wildlife and Countryside Act 1981, s 9(4)(b)(c)(5) <https://www.legislation.gov.uk/ukpga/1981/69/section/9>
[101] The Conservation of Habitats and Species Regulation 2017, pt 3 regulation 43 <https://www.legislation.gov.uk/uksi/2017/1012/regulation/43>
[102] Bat Conservation Trust, 'Daubenton's Bat' (2008) <https://cdn.bats.org.uk/uploads/pdf/About%20Bats/daubentons_11.02.13.pdf?v=1541085178> accessed 17 January 2024.
[103] ibid (n96).

threats include changes to water chemistry, a reduction in the diversity of aquatic insects, the removal of waterside trees, and disturbance to hibernation sites.[104] [105]

Bats are effective bioindicators of ecosystem health. Moreover, they provide important natural and agricultural ecosystem services such as seed dispersal and pest suppression.[106] Thus, a detailed understanding of bat habitat requirements is crucial to the implementation of successful river management schemes.[107] Important river-bank management techniques include retaining natural features (such as shallows) to promote insect diversity, maintaining shelving banks and aquatic plants at the water's edge, limiting access to water margins by livestock through fencing, and retaining bankside trees. Pesticides should also be strictly avoided near water, although Daubenton's bats may make use of the increased number of midges associated with slightly eutrophic water. However, this is not the case for most bat species.[108]

Status in Ouse

The Daubenton's bat has been recorded in various locations along the River Ouse, and most recently in 2020.

Evidence of bat hibernation has been found in Mid and East Sussex. The following data in Table 4 is taken from an article, published in spring 2014, by Tony Hutson in the Sussex Bat Groups' The Belfry newsletter. Table 4 shows the results for 14 hibernacula sites that were surveyed over one weekend in January and another in February. Both the Mid and East Sussex sites recorded an increase in the number of Daubenton's bats from the January to February. [109] This could be due to the weather becoming more severe, because some Daubenton's bats only enter the Winter roost very late in the season.[110]

Table 4:

[104] The Heart of England Forest, 'Daubenton's Bat' <https://heartofenglandforest.org/daubentons-bat> accessed 17 January 2024.
[105] Victoria L.G Todd and Laura D Williamson, 'Habitat usage of Daubenton's bat (Myotis daubentonii), common pipistrelle (Pipistrellus pipistrellus), and soprano pipistrelle (Pipistrellus pygmaeus) in a North Wales upland river catchment' (2019) Ecology and Evolution 4853.
[106] L Ancillotto, A Ariano, V Nardone, I Budinski, J Rydell & D Russo, 'Effects of free-ranging cattle and landscape complexity on bat foraging: Implications for bat conservation and livestock management' (2017) Agriculture, Ecosystems and Environment 54.
[107] ibid (n105).
[108] Joint Nature Conservation Committee, 'Habitat Management for Bats' (2001) <https://data.jncc.gov.uk/data/23745574-3756-40ef-81cd-e6fea30decc0/habitat-management-for-bats.pdf> accessed 25 January 2024.
[109] The Sussex Biodiversity Record Centre, An annual review of wildlife recording in Sussex 2014 (2015) <https://sxbrc.org.uk/downloads/Adastra/Adastra_2014.pdf> accessed 7 February 2024.
[110] Warwickshire Bat Group, 'Daubenton's' <https://warksbats.co.uk/aboutbats/species/daubentons.aspx> accessed 11 February 2024

Location Species	Mid-Sussex January	February	East Sussex January	February
Natterer's	17	11	9	7
Daubenton's	5	7	4	9

Hibernation counts were also carried out in West Sussex over the 2013-2014 Winter. These consisted of searches in disused railway tunnels and a sand mine, during a wet winter. The temperatures across the sites varied and this could have been a contributing factor to the variation in the numbers bats recorded. Table 5 was derived from an article published in the Sussex Bat Group's The Belfry newsletter in spring 2014 by Sue Harris. In general, the table shows an increase in the number of Daubenton's bats hibernating from December to February. The low number of bats recorded in the sandmine may have been as a result of significant human disturbance, which had been detected between the December and January count.[111]

Table 5:

SUSSEX BAT GROUP				BAT HIBERNACULA COUNTS													2013/2014
Location	Tunnel 5			Tunnel 3			Tunnel 2			Sandmine			Tunnel 4			Tunnel 1		
Species	Dec	Jan	Feb	Dec	Jan	Feb	Dec	Jan	Feb	Dec	Jan	Feb	Dec	Jan	Feb	Dec	Jan	Feb
Daubenton's	3	4	7	15	11	13	26	48	88	1	1	1		2	1	14	19	41

A conservation measure that encouraged bats to roost in these tunnels was the maintenance of wooden boards placed on the tunnel walls. Bats were found to be hibernating under the boards.[112]

f. Barred Grass Snake (Natrix helvetica)

Background

A highly accomplished swimmer, the barred grass snake is semi-aquatic and the largest of the UK's three snake species.[113] It particularly likes wetland habitats and feeds mostly on amphibian prey, including frogs, newts and toads. Outside of the 'amphibian season', (which typically lasts from March

Barred grass snake, by Benny Trapp – Own work, CC BY-SA 4.0 (Wikipedia)

[111] The Sussex Biodiversity Record Centre, An annual review of wildlife recording in Sussex 2014 (2015) <https://sxbrc.org.uk/downloads/Adastra/Adastra_2014.pdf> accessed 7 February 2024.
[112] ibid.
[113] James Duncan, 'Species of the Day: Grass Snake' (2020) Sussex Wildlife Trust <https://sussexwildlifetrust.org.uk/news/species-of-the-day-grass-snake> accessed 17 January 2024.

until May)[114] its prey includes fish, small mammals, and eggs. The barred grass snake uses its lateral undulations to create forward momentum in the water and can dive, staying submerged for up to half an hour while hunting.

The barred grass snake typically measures 90–150 centimetres and 240 grams, with an average lifespan of 15–25 years. It is greenish in colour, with dark markings down the sides, a pale belly and a yellow and black collar. Females are typically larger than males.

Grass snakes are Britain's only egg-laying snakes. Females lay between 10–40 eggs in rotting vegetation, such as compost heaps, and incubate them until they hatch in early autumn. Like all cold-blooded reptiles, barred grass snakes hibernate during the colder months, usually from October until April. They use a variety of hibernation sites, so long as they are warm and humid, including rabbit warrens, tree root systems, fallen trees and compost heaps.[115] Predators of the barred grass snake include herons, birds of prey, foxes, badgers, hedgehogs and domestic cats.[116]

In a House of Commons Committee Report on 'Water Quality in Rivers' in 2022, Professor Peter Hammond (formerly of UCL), noted how the loss of the grass snakes from his riverside garden was an indication of the poor water quality of the River Windrush, following discharges of effluent into the catchment.[117]

Conservation Status

The barred grass snake is protected under Schedule 5 (in respect of section 9(1) and (5)) of the Wildlife and Country Act 1981. Therefore, it is a criminal offence to intentionally kill or injure a barred grass snake. It is also a criminal offence to sell barred grass snakes and a criminal offence to advertise the buying or selling of barred grass snakes.[118]

The barred grass snake has been identified as a Priority Species under the UK Post-2010 Biodiversity Framework. Thus, it is illegal to deliberately kill or harm barred grass snakes. However, the mitigation of any potential negative effects on the species is not subject to the

[114] Natural History Museum, 'Amphibian Survey Methods and ID guides' <https://www.nhm.ac.uk/take-part/monitor-and-encourage-nature/getting-started-with-wildlife-monitoring/amphibian-survey-methods-and-id-guides.html#:~:text=Surveying%20for%20Amphibians&text=survey%20for%20amphibians.-,Includes%20a%20species%20ID%20guide.,(generally%20March%20to%20May)> accessed 25 January 2024.
[115] The Woodland Trust, 'Grass Snake' <https://www.woodlandtrust.org.uk/trees-woods-and-wildlife/animals/reptiles-and-amphibians/grass-snake/#:~:text=As%20cold%2Dblooded%20reptiles%2C%20grass,places%20that%20may%20be%20utilised> accessed 25 January 2024.
[116] ibid.
[117] House of Commons Committee Report, 'Water Quality in Rivers' <https://publications.parliament.uk/pa/cm5802/cmselect/cmenvaud/74/report.html#heading-0> accessed 12 February 2024
[118] Wildlife and Countryside Act 1981, s 9(1)(5) <https://www.legislation.gov.uk/ukpga/1981/69/section/9>

European Protected Species Licensing Process, as this only applies to smooth snakes and sand lizards.[119]

The barred grass snake is widespread across England and Wales, but absent from Northern Ireland, Scotland, the Isles of Scilly and most of the Channel Islands.[120] There is a lack of reliable information concerning the barred grass snake's population trend in the UK[121].

Status in Ouse

The barred grass snake has been recorded along the River Ouse between Barcombe Mills and Slaugham, most recently in 2022, as shown in Annex 1. The is a lack of information as to the status of the barred grass snake along the Ouse. In order to promote the species presence in the area, the main threats to its survival including, high intensity agriculture, habitat loss and population isolation must be combatted. [122]

Concluding Remarks

In meeting the Environmental Law Foundation's Brief for 2023-2024, SOAS Environmental Law Policy Clinic has produced an interactive map using Oracle Spatial Studio that shows where protected species inhabit the riverine habitat along the River Ouse, between Barcombe Mills and Slaugham in Sussex. Through the accompanying annex, this report has also assessed the different protections placed upon these species. Finally, through analysing the condition of six protected flagship and bioindicator species, this report has demonstrated the need for increased conservation measures along the River Ouse to not only bolster the populations of these species, but to bolster the wider community of species that could and should be supported by the River Ouse. A recurring theme was the need for improved water quality and habitat restoration along the River Ouse. The research provided in this report will assist the Environmental Law Foundation with their development of a charter that will protect the River Ouse from pollution and could in the future support the realisation of the rights of the River Ouse.

[119]Thompson Environmental Consultants, 'Consssidering snakes in your development planning' (2019) https://www.thomsonec.com/news/world-snake-day-july-16th/ accessed on 25 January 2024.
[120] Surrey Wildlife Trust, 'Grass Snake' <https://www.surreywildlifetrust.org/wildlife-explorer/reptiles/grass-snake> accessed 17 January 2024.
[121] ibid (n115).
[122] Robert John Ward, 'Status and Conservation of the Grass Snake in Jersey' (2017) PhD thesis, University of Kent <https://www.proquest.com/openview/ffe5e9bac5e04c448e3da4da2d394e6d/1?cbl=51922&diss=y&pq-origsite=gscholar> accessed on 25 January 2024.

ANNEX 1: SAMPLE FROM THE RIVER OUSE SPECIES AND PROTECTIONS TABLE

	A	B	C	D	E	F	G	H	I	J	K	L
1				Wildlife and Countryside Act 1981			The Conservation of Habitats and Species					
2	Taxon Group	Taxon Name	Common Name	Schedule 1: Bird which are Proteced by Special Penalties (Y/N)	Schedule 5: Animals which are Protected (Y/N)	Schedule 8: Plants which are Protected (Y/N)	Schedule 2: European Protected Species of animals (Y/N)	Schedule 5: European Protected Species of plants (Y/N)	Source	Date of Record (Year)	Abundance (plants only)	Status (plants only and for protections other than WCA1981 and CHSR 2017)
3	ANIMALS											
4	Amphibians											
5	Amphibian	Triturus	Newt, great crested or warty		Yes (in respect of section 9(4)(b) and (c) and (5)		Yes		NBN Atlas	2007		
6	Amphibian	Triturus	Newt, great crested or warty		Yes (in respect of section 9(4)(b) and (c) and (5)		Yes		NBN Atlas	2015		
7	Amphibian	Triturus	Newt, great crested or warty		Yes (in respect of section 9(4)(b) and (c) and (5)		Yes		NBN Atlas	2015		
8	Amphibian	Lissotriton	Newt, Palmate		Yes (in respect of section 9(5) only)				NBN Atlas	2017		
9	Amphibian	Lissotriton	Newt, Palmate		Yes (in respect of section 9(5) only)				NBN Atlas	2017		
10	Amphibian	Lissotriton	Newt, Smooth		Yes (in respect of section 9(5) only)				NBN Atlas	2007		
11	Amphibian	Lissotriton	Newt, Smooth		Yes (in respect of section 9(5) only)				NBN Atlas	2017		
12	Amphibian	Rana	Frog, Common		Yes (in respect of section 9(5) only)				NBN Atlas	1996		
13	Amphibian	Rana	Frog, Common		Yes (in respect of section 9(5) only)				NBN Atlas	2022		
14	Amphibian	Rana	Frog, Common		Yes (in respect of section 9(5) only)				NBN Atlas	2007		
15	Amphibian	Bufo Bufo	Toad, Common		Yes (in respect of section 9(5) only)				NBN Atlas	2007		
16	Amphibian	Bufo Bufo	Toad, Common		Yes (in respect of section 9(5) only)				NBN Atlas	1975		
17	Amphibian	Bufo Bufo	Toad, Common		Yes (in respect of section 9(5) only)				NBN Atlas	2019		
18	Insects											
19	Insect	Lucanus	Beetle, Stag		Yes (in respect of section 9(5) only)				NBN Atlas	2018		
20	Insect	Gryllotalpa	Cricket, Mole		Yes				NBN Atlas	1976		
21	Insect	Polyommatus	Butterfly, Chalk Hill Blue		Yes				NBN Atlas	1990		
22	Insect	Plebejus argus	Butterfly, Silver-studded blue		Yes				NBN Atlas	2013		

Annex 2: Important information for the use of Sussex Biodiversity Record Centre Data

Important information regarding this data:

It must not be assumed that this report contains the definitive species information for the site concerned.

The species data held by the Sussex Biodiversity Record Centre (SxBRC) is collated from the biological recording community in Sussex. However, there are many areas of Sussex where the records held are limited, either spatially or taxonomically.

A data search from SxBRC will give the user a clear indication of what biological recording has taken place within the area of their enquiry. The information provided is a useful tool for making an assessment of the site, but should be used in conjunction with site visits and appropriate surveys before further judgements on the presence or absence of key species or habitats can be made. It may be that the content of this search/report guides the reader as to which surveys should be carried out on the site.

This data search was compiled using data held at SxBRC at the time of production. SxBRC takes data validation very seriously, but cannot be held responsible for the accuracy of data included in this report.

Sussex Biodiversity Record Centre

Designated species data from 1980 onwards (Fungi, plants, lichens)
Land at River Ouse between Barcombe Mills and Slaugham + 50m buffer
Prepared for Seren Irwin (School of Oriental and African Studies (SOAS) - University of London)
01/02/2024
Report ref: SxBRC/23/757

Copyright

The Sussex Biodiversity Record Centre must be acknowledged in all documents containing any information from this data search.

The SxBRC operates as agent to the individuals and groups who provide their records free of charge. The data suppliers retain copyright on their data, while SxBRC retains copyright on its data searches.

Data usage

The data contained within this data search is for use in the project for which the data was requested. It is not to be shared with third parties for use in other projects, unless permission is granted from SxBRC.

The data may be used for 12 months, after which a replacement SxBRC data search must be requested. This ensures the most up-to-date information is being used.

Impartiality

SxBRC functions as custodian of biological data. Our role is to collect, manage and disseminate wildlife and habitat data. As such, we have to remain impartial and cannot offer opinions on the biodiversity value of a given site. Similarly, we cannot put forward objections to planning applications or be involved in campaigns.

Supplying records

The results of our data searches are only as good as the data we hold. We rely on the continuous submission of records to keep our database up-to-date. We are always grateful to receive records from ecological consultants and members of the public alike. We accept records in various formats but are encouraging people to use iRecord - a free online recording system:

http://www.brc.ac.uk/irecord/