

Environmental Statement

Volume 7, Annex 3.15: Fish and eel survey technical report





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Glossary

Term	Meaning
Electric Fishing	The process of catching fish by passing an electrical field through water, temporarily stunning the fish
Species of Principal Importance (SPI)	Species recognised in Welsh policy and afforded due regard in the planning system by the Environment (Wales) Act 2016, Section 7. Public bodies have a legal duty to conserve such species through their work
Expert Working Group (EWG)	Expert working groups set up with relevant stakeholders as part of the Evidence Plan process

Acronyms

Acronym	Description
Defra	Department for the Environment, Food & Rural Affairs
EWG	Expert Working Group
IUCN	International Union for the Conservation of Nature
JNCC	Joint Nature Conservation Committee
MAGIC	Multi-Agency Geographic Information for the Countryside
MLWS	Mean Low Water Springs
SPI	Species of Principal Importance

Units

Unit	Description
cm	Centimetre
km	Kilometre
m	Metre



1 FISH AND EEL SURVEY TECHNICAL REPORT

1.1 Introduction

- 1.1.1.1 This document forms Volume 7, Annex 3.15: Fish and eel survey technical report of the Environmental Statement for the Mona Offshore Wind Project.
- 1.1.1.2 This technical report presents the results of the fish and eel desk study and field surveys undertaken between June and September 2023 to inform Volume 3, Chapter 3: Onshore ecology of the Environmental Statement.
- 1.1.1.3 The desk study and field surveys were designed to determine the presence or likely absence of freshwater fish and eel.
- 1.1.1.4 Two separate study areas have been defined for the purposes of this technical report. These include the 'study area', which describes the geographical extent subject to desk-based research, and the 'survey area', which describes the area of land subject to site-specific surveys. The extent of the study area was selected to ensure all available data was collected for the Mona Onshore Development Area and the surroundings that may support this species group and may reasonably be affected by the Project. The areas were discussed and agreed with the onshore ecology Expert Working Group (EWG).

1.2 Study area

- 1.2.1.1 The study area comprises the Mona Proposed Onshore Development Area, landward of Mean Low Water Springs (MLWS) and a 2 km buffer ('the fish and eel study area').
- 1.2.1.2 The location and geographic extent of the fish and eel study area is presented in Figure 1.1 of this technical report.

1.3 Survey area

- 1.3.1.1 Following the commencement of fish and eel surveys, the Mona Onshore Development Area has been refined and now occupies a smaller geographical area. As such, the area comprising the waterbodies subject to fish and eel surveys ('the fish and eel survey area') extends beyond the current iteration of the Mona Onshore Development Area. This includes an earlier iteration of the Mona Onshore Development Area and a 250 m buffer. The results from surveys undertaken beyond the Mona Onshore Development Area and a 250 m buffer. The results from surveys undertaken beyond the Mona Onshore Development Area (i.e. surveys undertaken based on an earlier design iterations) have been included in this technical report because they provide further context regarding the ecological sensitivity of the wider area and to inform Volume 3, Chapter 3: Onshore ecology of the Environmental Statement (where relevant). All the ecological data collected as part of the Environmental Statement for the Mona Offshore Wind Project has been made publicly available through the relevant data records centre.
- 1.3.1.2 Adopting a survey area that is greater in extent than the Mona Onshore Development Area is in accordance with the precautionary approach. It ensures that the Environmental Statement is accurately informed with data from within the Mona Onshore Development Area (i.e. that may be subject to direct impacts) and data from outside the Mona Onshore Development Area (i.e. that may be subject to indirect impacts).



1.3.1.3 The location and geographic extent of the fish and eel survey area is presented in Figure 1.1 of this technical report.





Figure 1.1: The fish and eel study area and survey area.



1.4 Relevant legislation

- 1.4.1.1 Five key pieces of legislation are relevant to fish and eel in the UK: the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations), which implements the Habitats Directive (92/43/EEC) in Wales, the Wildlife and Countryside Act 1981 (as amended), the Salmon and Freshwater Fisheries Act 1975, the Eels (England and Wales) Regulations 2009 and the Environment (Wales) Act 2016.
- 1.4.1.2 In Wales, 10 species of freshwater fish are listed as legally protected under the Habitats Regulations, the Wildlife and Countryside Act 1981, and the Salmon and Freshwater Fisheries Act 1975. The ten species are:
 - Burbot Lota lota
 - Giant goby Gobius cobitis
 - Grayling Thymallus thymallus
 - River lamprey Lampetra fluvialis
 - Allis shad *Alosa alosa*
 - Twaite shad *Alosa fallax*
 - European sea sturgeon *Acipenser sturio*
 - Vendance Coregonus albula
 - Lavaret Coregonus lavaretus
 - Freshwater populations of salmon Salmo salar.
- 1.4.1.3 Allis shad and twaite shad receive partial protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).
- 1.4.1.4 The European Sea sturgeon ('sturgeon') is listed under the Conservation of Habitats and Species Regulations 2017. This makes it an offense to:
 - Deliberately capture, injure, or kill a sturgeon in the wild
 - Deliberately disturb a sturgeon
 - Deliberately take or destroy its eggs
 - Damage or destroy a breeding site or resting place of a sturgeon
 - Impair a sturgeon's ability to survive, breed, reproduce, or rear or nurture its young
 - Significantly affect the local distribution or abundance of sturgeon
 - Possess, control, transport, sell, exchange, or offer for sale of exchange, any living or dead sturgeon or its parts, or anything derived from a sturgeon or its parts.
- 1.4.1.5 The sturgeon is also listed as an Annex II species under the Habitats Directive (92/43/EEC). It is considered a species of community interest and is subject to strict protection throughout its range.
- 1.4.1.6 Participating countries are required to establish Special Areas of Conservation (SACs) to conserve sturgeon and their habitats. Annex II status prohibits the following with respect to sturgeon:
 - All forms of deliberate capture or killing in the wild



- Deliberate disturbance during breeding, reading, hibernation, and migration
- Deterioration or destruction of breeding sites or resting places
- Deliberate destruction of nests or eggs.
- 1.4.1.7 Section 9 of the Wildlife and Countryside Act 1981 (as amended) prohibits unauthorised capture, killing, or disturbance of wild populations of salmon and trout. Fishing for these species is prohibited during their breeding and spawning seasons, typically occurring between October and February (dependent on location and conditions). Methods of fishing are also regulated under Section 9 of the Wildlife and Countryside Act 1981, limiting the use of engines and nets to those approved by the appropriate local authorities, and restricting methods that could harm or endanger fish populations.
- 1.4.1.8 The Salmon and Freshwater Fisheries Act 1975 (as amended) regulates fisheries in Wales and England and protects salmon and trout from commercial poaching, illegal fishing and protects their migration routes.
- 1.4.1.9 The European eel *Anguilla anguilla* receives protection through the Eels (England and Wales) Regulations 2009, which requires that, where relevant:
 - No new infrastructure is to be constructed or existing structures be modified without provision for eel to pass under or through
 - Appropriate physical exclusion or alternative measures are to be provided at all potentially harmful water abstraction or flow points.
- 1.4.1.10 Ten fish species are also afforded due regard in the planning system in Wales under Section 7 of the Environment (Wales) Act 2016. Fish listed in Section 7 are Species of Principal Importance (SPI), giving public bodies and local planning authorities a legal duty to have regard for conserving a SPI when exercising their duties. Section 7 species are:
 - Sea lamprey
 - River Lamprey Lampetra fluviatilis
 - European eel
 - Allis shad
 - Twaite shad
 - Atlantic salmon
 - Brown trout Salmo trutta
 - Arctic char Salvelinus alpinus
 - Smelt Osmerus eperlanus
 - Whitefish Coregonus lavaretus.

1.5 Consultation

1.5.1.1 The scope, methodology and findings of the terrestrial invertebrate surveys, including those undertaken beyond the current Mona Onshore Development Area, were discussed, and agreed with stakeholders via regular Onshore Ecology EWG Meetings. Further detail regarding consultation undertaken with respect to onshore ecology, including terrestrial invertebrate surveys can be found in Volume 3, Chapter 3:



Onshore ecology of the Environmental Statement and the Consultation Report (Document reference: E.3).

1.6 Methodology

- 1.6.1.1 A combination of a desktop study and site-specific surveys were undertaken to establish the presence or likely absence of protected and notable fish and eel in the watercourses within the fish and eel study area.
- 1.6.1.2 The results of the fish and eel desktop study are presented in Volume 7, Annex 3.1: Onshore ecology desk study technical report of the Environmental Statement and summarised below. The results of the site-specific surveys are presented in section 1.7.2.

1.6.1 Desk study

1.6.1.3 Information on fish and eel within the fish and eel study area was collected from existing studies and datasets, as summarised in Table 1.1.

Table 1.1: Summary of key desktop sources.

Title	Source	Year	Author
Historical biological records	Cofnod	2023	Cofnod
DataMapWales	Welsh Government	2023	Welsh Government
Multi-Agency Geographic Information for the Countryside (MAGIC)	Department for the Environment, Food & Rural Affairs (Defra)	2023	Defra
UK Protected Area Joint Nature Conservation Committee (JNCC)	JNCC website	2023	JNCC
Red List	International Union for the Conservation of Nature	2023	IUCN

1.6.2 Fish and eel surveys

- 1.6.2.1 Extended phase 1 habitat surveys were undertaken between May 2022 and September 2023, which identified flowing watercourses potentially suitable for fish and eel (see Volume 7, Annex 3.2: Phase 1 habitat surveys technical report of the Environmental Statement). The data obtained from these surveys informed the need and location for fish and eel surveys.
- 1.6.2.2 All watercourses that were within or partially within the fish and eel survey area and were accessible were assessed for their suitability for fish and eel, based on features within the watercourse, between June and September 2023. These features included water depth, clarity, substrate type, and speed and consistency of water flow. The watercourse's connectivity to the wider watercourse network was also assessed. Where watercourses were dry, ephemeral, heavily polluted or were not connected to the wider watercourse network they were not subjected to specific fish and eel surveys.

A single visit to each watercourse was undertaken by experienced and competent aquatic survey specialists. A minimum of 300 m of each watercourse were surveyed where possible.

- 1.6.2.3 Where a watercourse was considered suitable for fish and eel, electric fishing was undertaken to determine their presence or likely absence. Electric fishing was undertaken in accordance with British Standard (BS) EN 14011:2003 'Water Quality: Sampling of fish with electricity'.
- 1.6.2.4 Electric fishing involves passing an electric current into each watercourse causing the temporary incapacitation of fish, thus rendering the fish easier to catch, identify and analyse. At each suitable watercourse, the electric fishing methodology was used to survey a 100 m stretch of waterbody (where possible), utilising stop nets to prevent fish from moving away from the watercourse, where necessary. All field surveyors were suitably competent, certified and experienced in undertaking the survey methodology for fish and eel surveys. Approval from Natural Resources Wales to undertake electric fishing was received before any surveys commenced.
- 1.6.2.5 Surveys of each suitable watercourse were undertaken as per Giles *et al.* (2005) and Environment Agency's electric fishing operations: equipment and working practices (Environment Agency, 2019). All surveys were undertaken in the optimal survey period for fish and eel (between June and October).

1.6.3 Limitations

- 1.6.3.1 Access was not granted to all identified watercourses within the fish and eel survey area and as a result some watercourses could not be fully surveyed. Where access was granted to upstream or downstream sections of these watercourses they were surveyed accordingly.
- 1.6.3.2 If fish or eel presence was identified in these sections, then the precautionary approach was applied, and presence was assumed within the entire stretch of the watercourse. Two watercourses within the fish and eel survey area were not accessible and neither was surveyed. These were the Nant Luke watercourse and an unnamed watercourse, which were both tributaries of the River Elwy. The watercourses were located outside the Mona Onshore Development Area, south west of Groesffordd Marli.

1.7 Results

1.7.1 Desk study

- 1.7.1.1 There were no records of protected and notable fish species or European eel within the fish and eel study area within the last 10 years. The most recent record was of a European eel from 2009, located 440 m outside the Mona Onshore Development Area. No records were recorded within the Mona Onshore Development Area.
- 1.7.1.2 The desk study confirmed that the European eel is a Critically Endangered species in accordance with the International Union for Conservation of Nature's Red List. Critically Endangered species are facing an extremely high risk of extinction in the wild.

1.7.2 Site-specific surveys

1.7.2.1 For the purposes of the site-specific electric fishing surveys, each watercourse was numbered in alignment with Volume 7, Annex 3.2 Phase 1 habitat survey technical report (e.g. watercourse 1, watercourse 2 etc), and each survey location within each



watercourse was assigned a letter (e.g. survey location A). Six watercourses were identified within the fish and feel survey area but only three watercourses had the potential to support fish and eel, watercourse 2, watercourse 4 and watercourse 5. For the purposes of the detailed fish and eel surveys the three suitable watercourses were sub-divided into 14 survey locations. Five of the survey locations were in the Mona Onshore Development Area. All 14 survey locations were assessed for their suitability to support fish and eel. At least 300 m of each watercourse channel was assessed. Photographs of each watercourse location are presented in Appendix A of this technical report. Details of the 14 survey locations are presented in Table 1.2.

Table 1.2: Location of watercourse locations.

Watercourse number and survey location	Northing (X)	Easting (Y)	Associated Watercourse	Within Mona Onshore Development Area
Watercourse 2 – survey location D	301970	373742	Pengwern Drain	Yes
Watercourse 2 – survey location K	302071	373869	Pengwern Drain	Yes
Watercourse 2 – survey location L	301873	373526	Unnamed Tributary of Pengwern Drain - A	No
Watercourse 2 – survey location M	301582	372844	Unnamed Tributary of Pengwern Drain - B	Yes
Watercourse 2 – survey location N	301558	372883		Yes
Watercourse 4 – survey location A	292214	375733	Unnamed Tributary of Afon Dulas	No
Watercourse 4 – survey location B	292354	375846		Yes
Watercourse 4 – survey location C	292571	375829		No
Watercourse 5 – survey location E	294429	374273	Unnamed Tributary of River Gele - A	No
Watercourse 5 – survey location F	294446	374245		No
Watercourse 5 – survey location G	294467	374207		No
Watercourse 5 – survey location H	294426	374228		No

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Watercourse number and survey location	Northing (X)	Easting (Y)	Associated Watercourse	Within Mona Onshore Development Area
Watercourse 5 – survey location I	294257	373921	Unnamed Tributary of River Gele - B	No
Watercourse 5 – survey location J	294243	373910		No

- 1.7.2.2 Four of the 14 survey locations, A, B, C and D, were considered suitable for supporting fish and European eel and were subject to electric fishing. Four European eels were recorded during the surveys. Presence was confirmed at two of the four survey locations. The results included three adult European eels and one juvenile European eel. Two of the adult European eels were recorded at watercourse 4 survey location A along with a juvenile European eel, and the third adult European eel was recorded in watercourse 4 survey location B, within the Mona Onshore Development Area. Survey locations A, B and C form part of an upstream tributary of the Afon Dulas (watercourse 4) which intersects the Mona Onshore Development Area south west of Rhyd-Y-Foel. No other protected or notable fish species or European eel were recorded.
- 1.7.2.3 The remaining 10 survey locations were considered unsuitable for supporting fish and eel following an assessment of their habitat suitability. They were either dry, ephemeral, not connected to the wider watercourse network or heavily polluted and were not subject to electric fishing surveys. Watercourses not subject to presence or likely absence surveys are in Appendix A.
- 1.7.2.4 Two tributaries of the River Gele, which intersected the Mona Onshore Development Area, to the west of Moelfre (watercourse 5) could not be fully surveyed due to limited land access. Upstream sections of these tributaries were assessed at survey locations J and H. Both tributary sections were identified as ephemeral and considered unsuitable for fish and eel.
- 1.7.2.5 Results of the fish and eel surveys are presented in Table 1.3 and displayed Figure 1.2 to Figure 1.4.

Table 1.3: Fish and eel survey results

Watercourse number and survey location	Description	Electric fishing survey	Results	Within Mona Onshore Development Area
Watercourse 2 – survey location D	Upstream location of above unnamed stream.	Yes	No fish or European eel recorded.	Yes
Watercourse 2 – survey location K	Stream running along boundary between hedgerow and pasture field. Very low flow holding permanent water in pools only.	No	N/A	Yes



Watercourse number and survey location	Description	Electric fishing survey	Results	Within Mona Onshore Development Area
Watercourse 2 – survey location L	Dry modified channel.	No	N/A	No
Watercourse 2 – survey location M	Watercourse no longer exists at this location.	No	N/A	Yes
Watercourse 2 – survey location N	Watercourse no longer exists at this location.	No	N/A	Yes
Watercourse 4 – survey location A	Modified channel with culvert immediately upstream of the survey location and heavily poached downstream.	Yes	European eel - 3 eels, 2 mature (35 cm long) and a juvenile eel (12 cm long).	No
Watercourse 4 – survey location B	Heavily poached stream section.	Yes	European eel - 1 mature eel (25 cm long).	Yes
Watercourse 4 – survey location C	Heavily poached section of watercourse.	Yes	No fish or European eel recorded.	No
Watercourse 5 – survey location E	Stream is likely ephemeral with extremely low flow and only holding water in occasional pools.	No	N/A	No
Watercourse 5 – survey location F	Downstream section of watercourse E. At this location water is diverted into a small water treatment works with a filter bed. Watercourse is polluted and lacks suitable habitat.	No	N/A	No
Watercourse 5 – survey location G	Tributary stream of the watercourse at watercourse E. Stream at Sample Point G was ephemeral.	No	N/A	No
Watercourse 5 – survey location H	Tributary stream of the Watercourse at watercourse E. This tributary was ephemeral.	No	N/A	No
Watercourse 5 – survey location I	Watercourse was likely ephemeral in location with extremely low flow and only holding water in occasional pools.	No	N/A	No
Watercourse 5 – survey location J	Watercourse was likely ephemeral, with extremely	No	N/A	No



Watercourse number and survey location	Description	Electric fishing survey	Results	Within Mona Onshore Development Area
	low flow and only holding water in occasional pools.			





Figure 1.2: Fish and eel survey results (sheet 1).





Figure 1.3: Fish and eel survey results (sheet 2).





Figure 1.4: Fish and eel survey results (sheet 3).



1.8 Summary

- 1.8.1.1 This technical report presents the results of the fish and eel desk study and sitespecific surveys undertaken between June and September 2023 to inform Volume 3: Chapter 3: Onshore ecology of the Environmental Statement.
- 1.8.1.2 No historical records of protected and notable fish species or European eel were identified within the fish and eel study area in the last 10 years. The desk study did confirm that the European eel had been recorded outside the Mona Onshore Development Area but within the fish and eel survey area in 2009, approximately 15 years ago. The desk study also confirmed that European eel is Critically Endangered.
- 1.8.1.3 Three watercourses were assessed as being potentially suitable to support fish and eel. The three watercourses were sub-divided into 14 survey locations and each was assessed between June and September 2023 to determine the likelihood of it supporting protected fish and eel, and whether therefore it should be subject to electric fishing surveys. Five of the 14 survey locations were within the Mona Onshore Development Area, location B (which was a tributary of the Afon Dulas, watercourse 4), and survey locations D, K, M and N (which connected to Pengwern Drain, watercourse 2).
- 1.8.1.4 Four of the 14 survey locations were considered suitable for fish and European eel based on the presence of flowing water and connectivity to the wider watercourse network. These were survey locations A, B, C and D. Survey locations B and D were within the Mona Onshore Development Area. Survey location C was connected to survey location A and B (watercourse 4) but was located outside of the Mona Onshore Development Area. Two tributaries of the River Gele, which intersected the Mona Onshore Development Area, to the west of Moelfre (watercourse 5) could not be fully surveyed due to access restrictions. Assessments were undertaken at survey locations J and H to ensure sections of each tributary were surveyed. Both tributary sections were identified as ephemeral and considered unsuitable for fish and eel.
- 1.8.1.5 Tributaries of the River Elwy, outside of Mona Onshore Development Area to the south could not be surveyed. These were watercourses outside the Mona Onshore Development Area, south west of Groesffordd Marli. Both watercourses will be subject to surveys prior to construction to confirm the presence or likely absence of protected fish and European eel. In the absence of survey information and in line with the precautionary approach, the watercourses are assumed to be of ecological value to fish and European eel.
- 1.8.1.6 Electric fishing surveys were undertaken to assess the presence or likely absence of fish and European eel. Four European eel were recorded, one was recorded within the Mona Onshore Development Area at watercourse 4 survey location B. Three European eel were located at survey location A, outside of the Mona Onshore Development Area, to the south east of Rhyd-Y-Foel. Both watercourses are tributaries of the Afon Dulas.
- 1.8.1.7 The remaining 10 survey locations were considered unsuitable for fish and eel due to being dry, ephemeral, disconnected from the watercourse network or heavily polluted, and were not subject to presence or likely absence surveys.
- 1.8.1.8 Four European eel, a Critically Endangered species, were recorded within the fish and eel survey area of which 1 was recorded within the Mona Onshore Development Area, within the Afon Dulas.



1.9 References

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Appendix A: Photographs of watercourse locations



Apx Figure 1: Photograph of watercourse 4 survey location A.



Apx Figure 2: Photograph of watercourse 4 survey location B.





Apx Figure 3: Photograph of watercourse 4 survey location C.



Apx Figure 4: Photograph of watercourse 2 survey location D.





Apx Figure 5: Photograph of watercourse 5 survey location E.



Apx Figure 6: Photograph of watercourse 5 survey location F (which flows into the green covered treatment works).





Apx Figure 7: Photograph of watercourse 5 survey location G.



Apx Figure 8: Photograph of watercourse 5 survey location H.





Apx Figure 9: Photograph of watercourse 5 survey location I.



Apx Figure 10: Photograph of watercourse 5 survey location J.



Apx Figure 11: Photograph of watercourse 2 survey location K.



Apx Figure 12: Photograph of watercourse 2 survey location L.





Apx Figure 13: Photograph of watercourse 2 survey location M.



Apx Figure 14: Photograph of watercourse 2 survey location N.