Hampshire Water Transfer and Water Recycling Project

Environmental Statement – Appendix 9.8 Ecology of fishery target species

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1 Ecology of fishery target species

1.1 Introduction

1.1.1 This technical report has been prepared in relation to the Hampshire Water Transfer and Water Recycling Project (hereafter referred to as the 'Proposed Development'). This technical report describes the ecology of each commercially targeted species with regard to habitat preference, sensitivity, foraging behaviours and reproductive patterns for each of the species identified. This studies any commercially important fisheries species that are sensitive to water quality changes during their life stages when considering potential modifications in water chemistry from Proposed Development.

1.1.2 In most cases a concurrent list of species can be found within both the economic value and landed catch columns for each rectangle, albeit in different orders due to differences in price per kilo attained for individual target species.

2 Baseline information

2.1 Bivalve mollusc production area species

2.1.1 European oyster (*Ostrea edulis*), Pacific oyster (*C. gigas*), Hard clam (*Mercenaria* Spp.), Manila clam (*R. philippinarum*) and Common cockle (*C. edule*) are cultivated within Langstone, Chichester and Portsmouth Harbours and the Solent, all of which are located within the boundaries of International Council for the Exploration of the Sea (ICES) rectangles 30E8 and 30E9.

2.1.2 Due to similarities in their life cycle stages, sessile nature and filter feeding mechanisms, these species have been described together in this section. Where differences exist, in relation to potential modifications to water quality from the Proposed Development, these have been specifically addressed for the relevant species.

2.1.3 Water quality, in terms of the bacteria and viruses, affects the incidence of microbial contamination in shellfish. As filter feeders, bivalves can also accumulate biotoxins if certain types of phytoplankton are present in the water column. Therefore, there are specific hygiene requirements in order to ensure the safety of bivalve molluscs. These ensure that the risks posed by microbiological contamination and biotoxins are reduced to an absolute minimum.

2.1.4 The most important viral hazards associated with the consumption of bivalve molluscs are acquired from human faecal pollution of bivalve production areas, resulting in the temporary closure of bivalve production areas. Due to the sessile nature of filter feeding species that are cultivated within the study area, they have the potential to be affected by any modifications to water quality as a result of the intended release from the Eastney Long Sea Outfall (LSO). This can be exacerbated by habitat modifications from increased nutrient loading, with changes to species assemblage within the cultivation areas competing for the availability of space and resources, with the potential for smothering by algal/floral species and eutrophication effects if the natural balance of the ecosystem changes. These species bio-accumulate; therefore, any impacts may not be immediately visible but can accumulate over time.

2.2 Common whelk (*B. Undatum*)

2.2.1 *Buccinum undatum*, known as common whelk, is a large marine gastropod with a wide distribution range across the North Atlantic Ocean. Common whelk inhabits the entire UK coastline, from intertidal areas to depths of more than 1,200m where it can be found in various benthic substrates including gravel, sand and mud [1]. Movement is limited once individuals reach maturity, with an upper limit of 155m of daily movement [2] resulting in discrete localised populations.

2.2.2 The timing of the reproductive cycle for whelk varies depending on geographical distribution and is temperature-dependent. In UK waters mating is triggered when temperatures fall below at least 12°C, in some cases 9°C as has been evidenced for populations found in the Solent.

2.2.3 In the Solent common whelk was found to lay eggs between December and February [1]. Recruitment is low within the species, despite the large numbers of

eggs in an egg mass. Studies on a Solent whelk population found approximately 1% of eggs developed to juveniles and the remaining eggs are used as nurse eggs for the developed embryos.

2.2.4 Size of Maturity (SOM) for whelk varies greatly between populations on a small geographical scale. A range of anthropogenic and environmental pressures have been attributed to variations in SOM for whelks including water temperature, depth, fishing pressure, food availability and predation.

2.2.5 Whelk populations can be susceptible to modifications in water quality, due to limited mobility of 155m daily, meaning they cannot readily flee from habitats that become temporarily unsuitable. They also have a high dependency on water temperature cues to induce mating and very low recruitment to the fishery.

2.3 Sole (*S. solea*)

2.3.1 *Solea solea*, commonly known as the common sole is widely distributed in UK waters and inhabits sandy and muddy sediments from 10-100m in depth. Juveniles can be found at depths of 1m in intertidal pools and on sandy shores.

2.3.2 The spawning season in the English Channel starts when temperatures rise above 7°C and takes place from late February until the end of June in depths between 40-50m, peaking in April and May and largely driven by changes in temperature. Several spawning sites have been identified along the south coast including between Beachy Head and the Isle of Wight, to the west of the Isle of Wight and further west of the Channel around Hurd Deep. Once hatched, larvae float at the surface, remaining pelagic for up to six weeks before moving towards inshore nurseries.

2.3.3 As juveniles, individuals inhabit estuaries, tidal inlets, and shallow, sandy shores. Smaller individuals are found in deeper areas of estuaries whereas larger juveniles of one year move with the tides onto mudflats. Juveniles remain in estuaries for approximately two years before moving to deeper water. Adults undertake short migrations between offshore areas and shallower spawning grounds, returning to the spawning ground that they were born at each year [3].

2.3.4 Adult sole are highly mobile and can flee from environments where water modifications have made the area temporarily unsuitable. However, pelagic larvae and juvenile sole are more dependent on estuaries, tidal inlets, and shallow, sandy shores, moving to mudflats after one year and into deeper water at two years. This time period is critical for the species and may be influenced by modifications to water quality in the study area.

2.4 Manilla clam (*R. philippinarum*)

2.4.1 *Ruditapes phillippinarum*, commonly known as the Manila clam, is native to the Indo-Pacific region, however through a mix of deliberate and accidental introductions the species is now widely distributed along the Atlantic coast of Europe. Following their introduction, they quickly became a self-sustaining population and were first recorded in the Solent in 2005.

2.4.2 Environmental conditions in Poole Harbour and the Solent are similar to those of the species native range, providing a relatively sheltered, nutrient rich, shallow

water habitat with extensive intertidal mud flats, and temperatures up to 27°C in the summer, providing optimum reproductive conditions.

2.4.3 Manila clam inhabits fine sand and mud sediments in the intertidal zone residing in the top 4cm of the substratum, but can bury as deep as 10cm, filtering phytoplankton and sedimentary organic matter from the water. The manila clam is a highly fecund species that becomes sexually mature at an early age and displays an extended spawning season. In the Solent, spawning takes place from May to September with a peak between June and August [4].

2.4.4 Due to the sessile nature of this filter feeding species within the study area, it has the potential to be affected by any modifications to water quality as a result of the intended release from the Eastney LSO. This can be exacerbated by habitat modifications from increased nutrient loading, with changes to species assemblage leading to increased competition for the availability of space and resources, with the potential for smothering by algal/floral species and eutrophication effects if the natural balance of the ecosystem changes. These species bio-accumulate; therefore, any impacts may not be immediately visible but can accumulate over time.

2.5 Lobster (*H. gammarus)*

2.5.1 *Homarus gammarus*, commonly known as the European lobster is widely distributed in the coastal waters of the north-east Atlantic and inhabits rocky habitats in intertidal areas up to 200m, where boulders and crevices provide shelter from predation and foraging opportunities [5].

2.5.2 Female lobsters display a two-year reproductive cycle. Copulation occurs in the summer months and fertilised eggs are secreted onto the pleopods setae underneath the abdomen of the female. Berried (egg-bearing) females appear from September to December. Eggs then develop over winter in response to water temperature, day length and photoperiodic experience and hatch from May to July. Upon release larvae enter the water column and remain planktonic for the first three larval stages. The fourth stage is referred to as the metamorphosis moult and become the first post larval stage [6]. At this stage they are active, contributing to dispersal before settling into benthic habitats.

2.5.3 Unlike brown crabs, lobsters do not undertake regular migrations instead they move randomly based on limiting environmental factors [5]. Tagging studies have highlighted the limited scale of movement displayed by lobsters with the majority moving less than 4km over several years. Lobster populations can be susceptible to modifications in water quality, due to limited mobility, meaning they cannot readily flee from habitats that become temporarily unsuitable, high dependency on water temperature cues to induce mating, very low recruitment to the fishery and specific habitat requirements as adult individuals.

2.6 Bass (*D. labrax*)

2.6.1 *Dicentrarchus labrax*, commonly known as European seabass inhabits shallow coastal and estuarine habitats, favouring rocky reefs and sand banks.

2.6.2 Bass begins spawning in the mid-western channel from February, gradually moving eastwards as water temperatures increase [7]. Bass spawns in the coastal

waters between the Isle of Wight and Beachy Head from May onwards. Once hatched, the pelagic larvae move inshore over a two to three month period. Once larvae reach 15mm, they actively swim into estuaries and brackish water and remain in these habitats for two years.

2.6.3 Adult bass demonstrate strong site fidelity, returning to the same spawning/foraging grounds year after year [8]. Bass is the second most expensive commercial species caught in the north-east Atlantic after the European Lobster. It is an important target species within the study area and is mainly caught by hook and lines using handlines and pole-lines.

2.6.4 Adult bass are highly mobile and can flee from environments where water modifications have made the area temporarily unsuitable. However, pelagic larvae drift with currents, and juveniles are more dependent on estuaries and tidal inlets inshore before maturing and heading to deeper water. This time period is critical for the species and may be influenced by modifications to water quality in the study area.

2.7 Brown or edible crab (*C. pagurus*)

2.7.1 *Cancer pagurus*, commonly known as the brown or edible crab, is broadly distributed along all British coasts. The species inhabits a broad range of habitats from intertidal areas to depths of 100m including rocky substrates, coarse sediments, boulders and sandy or muddy seabed habitats [9].

2.7.2 In the English Channel brown crab mates during late spring. Eggs are brooded for seven to nine months, during this period females are inactive and do not feed, remaining in sheltered habitat for protection. Hunter [10] attached tags to 128 mature female crabs across different locations in the English Channel. They found westerly offshore crabs commenced brooding in late October whilst eastern Channel crabs tended to start brooding slightly later in mid to late November. Larvae hatch from March onwards with peak sightings recorded in the plankton between May and July.

2.7.3 The larvae are planktonic for 60-90 days before settling on hard substrates in the intertidal zone. Juveniles remain in shallow, rocky habitat for three years until they reach a carapace width (CW) of 60-70mm, at which point they migrate to subtidal areas.

2.7.4 Brown crab populations can be susceptible to modifications in water quality, due to limited mobility, meaning they cannot readily flee from habitats that become temporarily unsuitable, high dependency on water temperature cues to induce mating, low recruitment to the fishery and specific habitat requirements as adult individuals.

2.8 Scallop (*Pectinidae* spp.)

2.8.1 Scallop is a filter-feeding bivalve species which inhabits fine sand and gravel habitats from the sublittoral zone up to depths of 100m. As sessile filter feeder, it sifts plankton and organic detritus from the water column [11].

2.8.2 Adults are hermaphroditic and begin to spawn into the water column from around three years old. The larvae stay in the water column until they have

metamorphosed into spat which then attach for a short period to material such as seaweeds, then detaching and moving to their preferred habitat.

2.8.3 Due to the sessile nature of this filter feeding species, it has the potential to be affected by any modifications to water quality as a result of the intended release from Eastney LSO. This can be exacerbated by habitat modifications from increased nutrient loading, with changes to species assemblage leading to increased competition for the availability of space and resources, with the potential for smothering by algal/floral species and eutrophication effects if the natural balance of the ecosystem changes. This species bio-accumulates; therefore, any impacts may not be immediately visible but can accumulate over time.

2.9 Cuttlefish (*S. officinalis*) and squid (*L. vulgaris*)

2.9.1 Both cuttlefish and squid (along with nautilus and octopus) make up the group known as cephalopods. All species in this group have tentacles attached to their head. Foraging and life cycle traits are broadly similar across the group due to alignments in their anatomy and reproductive capacity.

2.9.2 Cuttlefish and squid are demersal species, typically inhabiting moderately warm, shallow coastal waters with sand and mud substrates in the shallow sublittoral up to depths of 200m [12, 13].

2.9.3 Adults are highly mobile and can flee from environments where water modifications have made the area temporarily unsuitable. However, juveniles are dependent on shallow inshore nurseries before moving offshore once they have matured. This time period is critical for the species and may be influenced by modifications to water quality in the study area.

2.10 Plaice (*P. platessa*)

2.10.1 *Pleuronectes platessa*, commonly known as plaice, is a bottom dwelling species found most abundantly on sandy bottoms, but it can also occupy mud and gravel substrates to depths of up to 200m.

2.10.2 Plaice spawns offshore throughout the central English Channel at depths ranging from 38-67m between late November and March [14]. After spawning the eggs initially float on the surface before sinking and hatching in 10-12 days depending on temperature. The pelagic larvae drift on tidal currents until they are ready to undergo metamorphosis. After metamorphosis the post larvae resemble miniature plaice and settle on sandy, shallow, inshore nursery grounds.

2.10.3 Juveniles remain in shallow nurseries for the first few years of their life before moving to deeper water once they are around 25cm in length [14]. Adult plaice are highly mobile and can flee from environments where water modifications have made the area temporarily unsuitable, however pelagic larvae, and juveniles are dependent on shallow, sandy inshore nurseries. This time period is critical for the species and may be influenced by modifications to water quality in the study area.

2.11 Horse mackerel (*T. trachurus*)

2.11.1 Horse mackerel is a pelagic coastal species that inhabits continental shelves and over sandy substrates at depths of up to 200m and is widely distributed throughout

the English Channel [15]. It is a migratory species, moving northwards in the summer months and returning southwards when the sea temperature starts to fall.

2.11.2 In the north-east Atlantic two stocks are recognised, the western stock spawns in a wide area from Ireland to the Bay of Biscay in the early spring and moves northward to the southern coasts of Norway and the northern North Sea in the summer. The North Sea stock spawns in the southern part of the North Sea during the summer and then migrates northwards into the central North Sea.

2.11.3 Spawning occurs irregularly during the summer from June to August reaching its peak in July. Due to the preferred pelagic environment of Horse Mackerel, it is unlikely that modifications to water quality in the study area will affect the species at any of its life stages as there is limited dependency on inshore nursery areas at the larval/juvenile stage. Adults are highly mobile and can flee from environments where water modifications have made the area temporarily unsuitable.

2.12 Lesser spotted dogfish (*S. canicula*)

2.12.1 *Scyliorhinus canicular*, commonly known as the lesser spotted dogfish is widely distributed across the eastern North Atlantic and around the British Isles and is the dominant shark species within the English Channel.

2.12.2 Lesser spotted dogfish is a bottom-living shark that occurs in depths of up to 400m but is usually found no deeper than 100m on sandy, gravelly or muddy seabed habitats.

2.12.3 The lesser spotted dogfish is an oviparous (egg laying) species and fertilisation takes place internally. Reproduction occurs year-round. Egg cases are laid in pairs and attached to fixed structures on the seabed such as kelp holdfasts and sessile organisms. Females can lay eggs throughout the year, but peak activity occurs between May and July. Few eggs are laid between August and October. Juveniles remain in shallow water until they mature at which point, they move offshore to deeper water [16].

2.12.4 Adults are highly mobile and can flee from environments where water modifications have made the area temporarily unsuitable, however juveniles are dependent on shallow inshore nurseries before moving offshore once they have matured. This time period is critical for the species and may be influenced by modifications to water quality in the study area.

2.13 Herring (*C. harengus*)

2.13.1 *Clupea harengus*, commonly known as herring is a pelagic fish, inhabiting north-east Atlantic waters up to depths of 400m. Herring spawning areas are limited by the need for a gravel substrate to which the eggs attach [17].

2.13.2 Depending on water temperature, larvae hatch on the seabed from 8-40 days after spawning and drift passively as plankton for the following four to six months. Young herrings remain in nursery areas for two years, in shallow nutrient-rich water. The abundance of juveniles in the different nursery areas is dictated by annual variations in the strength and direction of the drift of the larvae and their variable mortality on route. After two years, they swim to deeper waters, spending daytime in deeper water and migrating to shallower waters at night.

2.13.3 Although a pelagic species as adults, Herring depends on shallow nutrient-rich nursery water until maturing and heading offshore after two years. This time period is critical for the species and may be influenced by modifications to water quality in the study area.

2.14 Red mullet (*M. surmuletus*)

2.14.1 *Mullus surmuletus*, commonly known as the red mullet is a demersal fish broadly distributed in the north-eastern and central eastern Atlantic, occurring at depths up to 330m over mud, sand or gravel habitats.

2.14.2 Breeding takes place in the spring and summer, with spawning occurring in April and May in the Adriatic Sea, at depths between 60 and 70m. The larvae soon move to shallower depths and are pelagic as are the juveniles at first. At a length of about 5cm the juveniles move to the coast and become demersal, often congregating in estuaries, and sometimes swimming a short distance upstream. Later they disperse to muddy, sandy or gravelly substrates becoming sexually mature at a length of 10-14cm during their first year of life [18].

2.14.3 Adults are highly mobile and can flee from environments where water modifications have made the area temporarily unsuitable. However, juveniles are dependent on shallow inshore nurseries before moving offshore once they have matured. This time period is critical for the species and may be influenced by modifications to water quality in the study area.

2.15 Mackerel (*S. scombrus*)

2.15.1 *Scrombus scrombus*, commonly known as Atlantic mackerel is a fast-swimming pelagic species that is widely distributed around the British Isles usually at depths of less than 200m [19]. The species makes extensive migrations, and there are a variety of hydrographical features such as temperatures as well as the abundance and composition of zooplankton and other prey is likely to affect its distribution.

2.15.2 By three years old, most mackerel are mature (at a length of approximately 28cm). Females shed their eggs in about twenty separate batches over the course of the spawning season. Mackerel are batch spawners; they spawn mainly in March to July; the eggs and larvae are pelagic.

2.15.3 Due to the preferred pelagic environment of mackerel, it is unlikely that modifications to water quality in the study area will affect the species at any of its life stages as there is no dependency on inshore nursery areas at the larval/juvenile stage. Adults are highly mobile and can flee from environments where water modifications have made the area temporarily unsuitable.

2.16 Pouting (Bib) (*T. luscus*)

2.16.1 *Trisopterus luscus*, commonly known as pouting (bib) is widely distributed in inshore and coastal waters around the south coast of the British Isles, inhabiting rocky and sandy habitats up to depths of 300m. Pouting is a scavenger which feeds on the seabed. It forages for any food source it can find with marine worms, shellfish and dead fish all making up its diet.

2.16.2 Due to its small size, pouting is a source of prey for large species such as cod, bass and conger eels. The species moves inshore to depths of 50m or less to spawn in March to April having matured at one to two years old at lengths of 21-25cm [20].

2.16.3 Adults are highly mobile and can flee from environments where water modifications have made the area temporarily unsuitable, however adults are dependent on inshore waters to spawn. This time period is critical for the species and may be influenced by modifications to water quality in the study area.

2.17 Tub gurnard (*C. lucerna*)

2.17.1 *Chelidonichthys lucerna*, commonly known as tub gurnard is a bottom-dwelling coastal species of fish and is widely distributed in the Atlantic Ocean at depths of up to 100m. Tub gurnard is found throughout the UK, particularly in the south of the British Isles, in the English Channel.

2.17.2 Gurnard moves out into deeper water in the winter and generally comes into shallower inshore waters in the warmer summer months. Spawning also takes place in the summer while the fish are in inshore waters. Gurnard will feed where there are offshore sandbanks or swim along sandy coastlines looking for gullies or features where sources of food have gathered. Gurnard will feed over mixed ground if food sources are present and can also be found in clean patches of ground among rocky ground.

2.17.3 Adults are highly mobile and can flee from environments where water modifications have made the area temporarily unsuitable. However, adults are dependent on inshore waters to spawn. This time period is critical for the species and may be influenced by modifications to water quality in the study area.

2.18 Whiting (*M. merlangus*)

2.18.1 *Merlangius merlangus*, commonly known as whiting is widely distributed throughout the north-east Atlantic, in particular in the south-east of England and in the English Channel. This fish lives primarily in demersal habitats, or habitats along the seafloor. It is a bentho-pelagic species usually found at depths of 30-100m over a variety of substrates including mud, gravel, sand and rock.

2.18.2 Whiting is a fast-growing species reaching around 30cm, and sexual maturity, by their second year. They have a high fecundity compared to other gadoids but with relatively small eggs. Females of 30cm in length can produce up to 400,000 eggs during the spawning season. Spawning takes place at a depth of 20-150m, the timing of which varies depending on location, and occurs from January-September around UK coasts.

2.18.3 Whiting spawn in batches, eggs are pelagic and larvae form part of the plankton until they reach around 10cm in length. Juveniles spend around one year in shallow waters up to 30m deep before migrating to adult feeding grounds after their first year [21].

2.18.4 Adults are highly mobile and can flee from environments where water modifications have made the area temporarily unsuitable. However, juveniles are dependent on shallow inshore nurseries before moving offshore once they have matured. This

time period is critical for the species and may be influenced by modifications to water quality in the study area.

2.19 Black sea bream (*S.cantharus*)

2.19.1 *Spondyliosoma cantharus*, commonly known as black sea bream is widely distributed throughout the north-east Atlantic, inhabiting rocky and sandy habitats and seagrass beds in depths of up to 300m and is most abundant along the south coast in UK waters.

2.19.2 In 2019, black sea bream was designated as a feature of three Marine Conservation Zones (MCZ) in the Southern Inshore Fisheries and Conservation Authority (IFCA) District: Poole Rocks, Southbourne Rough and Purbeck Coast [22]. Rising sea temperature as a result of climate change is thought to have had a positive effect on bream stocks in the English Channel as mean annual frequency of the species has increased in line with rising temperatures. In the English Channel adult black bream moves inshore to spawn between April and July once water temperatures are between 12-14°C.

2.19.3 Juveniles stay in the vicinity of their nest until they reach 7-8cm in length before dispersing slightly but still remaining in shallow inshore waters for two to three years until they reach sexual maturity. Seagrass beds have been identified as key nursery areas for juvenile black bream. Once juveniles recruit into the adult stock they overwinter in deeper water (50-100m) before migrating inshore in the spring to spawn [22].

2.19.4 As a designated species of three MCZs within close vicinity of the Proposed Development, and with consideration to the nature in which the species builds nests as opposed to egg laying in broad suitable substrate types, as seen with other species, black sea bream is considered as highly sensitive to modifications in water quality within the study area during the spawning period.

References

[1] P. Hollyman, *Age, growth and reproductive assessment of the whelk, Beccinum undatum, in coastal shelf seas,* Bangor: Bangor University, 2017.

[2] M. Robinson, "The abundance, movement and site fidelity of the adult whelk, Buccinum undatum, in the territorial waters of the Isle of Man," Bangor University, Bangor, 2015.

[3] J. Small, "Sole (Solea solea)," 17 May 2015. [Online]. Available: https://secure.toolkitfiles.co.uk/clients/25364/sitedata/Redesign/Key_Species/Sole-Species-Profile.pdf. [Accessed 12 May 2025].

[4] J. Small and S. Birchenough, "Manila clam (Ruditapes philippinarum)," 24 May 2021. [Online]. Available: https://secure.toolkitfiles.co.uk/clients/25364/sitedata/Redesign/Key_Species/Manila-clam-Species-Profile.pdf?c. [Accessed 12 May 2025].

[5] T. Bridges, "European lobster stock assessment," 14 March 2021. [Online]. Available: https://www.eastern-ifca.gov.uk/wp-content/uploads/2021/06/2021_06_18_European_lobster_stock_assessment.pdf. [Accessed 12 May 2025].

[6] J. Small and C. Smith, "European Lobster (Homarus gammarus)," 24 May 2015. [Online]. Available: https://secure.toolkitfiles.co.uk/clients/25364/sitedata/Redesign/Key_Species/Lobster-Species-Profile.pdf?c. [Accessed 12 May 2025].

[7] A. Reeve, "Bass (Dichentrarchus labrax)," 31 August 2007. [Online]. Available: https://www.marlin.ac.uk/species/detail/2127. [Accessed 12 May 2025].

[8] J. Small, "European Seabass (Dicentrarchus labrax)," 11 August 2021. [Online]. Available: https://secure.toolkitfiles.co.uk/clients/25364/sitedata/Redesign/Key_Species/Bass-Species-Profile-1.3.pdf. [Accessed 12 May 2025].

[9] T. Bridges, "Brown crab stock assessment," 27 July 2020. [Online]. Available: https://www.eastern-ifca.gov.uk/wp-content/uploads/2021/02/2021_01_26_Brown_Crab_Stock_Assessment_2019.pdf. [Accessed 12 May 2025].

[10] E. Hunter, D. Eaton , C. Stewart, A. Lawler and M. T. Smith, "Edible Crabs "Go West": Migrations and Incubation Cycle of Cancer pagurus," 2013. [Online]. Available: https://doi.org/10.1371/journal.pone.0063991. [Accessed 12 May 2025].

[11] C. E. Marshall and E. Wilson, "Pecten maximus Great scallop," Plymouth: Marine Biological Association of the United Kingdom, 2008. [Online]. Available: https://www.marlin.ac.uk/species/detail/1398. [Accessed 12 May 2025].

[12] E. Gibson-Hall and E. Wilson, "Sepia officinalis Common cuttlefish," Plymouth: Marine Biological Association of the United Kingdom, 2018. [Online]. Available: https://www.marlin.ac.uk/species/detail/1098. [Accessed 12 May 2025].

[13] E. Wilson, "Loligo vulgaris Common squid," 2008. [Online]. Available: https://www.marlin.ac.uk/species/detail/1111. [Accessed 12 May 2025].

[14] J. Small , "Plaice (Pleuronectes platessa)," 22 February 2021. [Online]. Available: https://secure.toolkitfiles.co.uk/clients/25364/sitedata/Redesign/Key_Species/Plaice-Species-Profile.pdf. [Accessed 12 May 2025].

[15] M. K. S. Barnes, "Trachurus trachurus Horse mackerel (or scad)," Plymouth: Marine Biological Association of the United Kingdom, 2008. [Online]. Available: https://www.marlin.ac.uk/species/detail/97. [Accessed 12 May 2025].

[16] J. Small, "Lesser Spotted Dogfish," 16 March 2021. [Online]. Available: https://secure.toolkitfiles.co.uk/clients/25364/sitedata/Redesign/Key_Species/Lesser-spotted-dogfish-Species-Profile.pdf. [Accessed 12 May 2025].

[17] M. K. S. Barnes, "Clupea harengus Atlantic herring," Plymouth: Marine Biological Association of the United Kingdom, 2008. [Online]. Available: https://www.marlin.ac.uk/species/detail/45. [Accessed 12 May 2025].

[18] M. K. S. Barnes, "Mullus surmuletus Striped red mullet," 2008. [Online]. Available: https://www.marlin.ac.uk/species/detail/81. [Accessed 12 May 2025].

[19] M. K. S. Barnes, “Scomber scombrus Atlantic mackerel,” Plymouth: Marine Biological Association of the United Kingdom, 2008. [Online]. Available: https://www.marlin.ac.uk/species/detail/44. [Accessed 12 May 2025].

[20] S. Ballerstedt, “Trisopterus luscus Bib or Pouting,” Plymouth: Marine Biological Association of the United Kingdom, 2008. [Online]. Available: https://www.marlin.ac.uk/species/detail/1876. [Accessed 12 May 2025].

[21] North Western Inshore Fisheries and Conservation Authority, “Whiting,” 2022. [Online]. Available: https://www.nw-ifca.gov.uk/managing-sustainable-fisheries/whiting/. [Accessed 12 May 2025].

[22] J. Small, “Black sea bream (Spondyliosoma cantharus),” 15 July 2021. [Online]. Available: https://secure.toolkitfiles.co.uk/clients/25364/sitedata/Redesign/Key_Species/Black-Sea-Bream-Species-Profile-1.4.pdf. [Accessed 12 May 2025].


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