



Living Seas: Future Fisheries

The Welsh Fishing Industry



Report by The Wildlife Trust of South & West Wales

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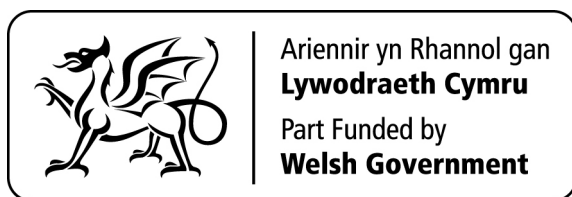
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The views and recommendations presented in this report are not necessarily those of the Welsh Government and should, therefore, not be attributed to the Welsh Government.

Executive Summary

To be able to promote low impact fishing practises and be able to make informed decisions on “which fish to eat” we require more detailed information on and an improved understanding of the current structure of the Welsh Sea Fisheries, information on fishing practises as well as current and historic trends associated with the Welsh fishing industry. To fully understand the fishing industry we require information on the management of the fishing industry, the issues and trends that guide the fishing industry.

This report draws together information currently available on the fishing industry in Wales. Landings data from 2012 has been analysed in order to identify information on the trends in the fishing industry in Wales and provide information for future discussions and partnership working with the industry.

Anecdotal accounts state that the sea fishing industry in Wales has historically been important to the Welsh economy. Many fishing boats could be found in a number of harbours along the coast and the fishing industry in south Wales saw real changes following the opening of a new dock in Milford Haven in 1888. This revolutionised the industry in south Wales, providing opportunities for large steam-powered trawlers, 100feet in length to land there and within weeks of the dock opening around 55 steam trawlers and 200 sailing smacks were based in the docks.

Despite it being of significant importance to the nation in providing jobs at a time of high unemployment, information dating back to 1985 suggests that the Welsh fishing industry is the smallest national industry in the UK. Figures suggest that in 1982 only 1.7% of the total value of fish landed by British vessels at ports within the UK came from the Welsh fishing fleet (Wood, 1987).

Vessels involved in the commercial sea fishing sector are found all around the Welsh coast, with different vessel types used; these include larger, greater than 10m, offshore vessels targeting fish species such as bass, turbot, brill, sole and scallops. Smaller, less than 10m, inshore vessels operate in the coastal waters up to six nautical miles offshore and target a range of fish, in particular a wide range of shellfish species which are of commercial value such as lobsters, prawns, spider and brown crabs.

This document outlines the various pieces of primary legislation applicable to sea fishing in Welsh waters including The Sea Fish (Conservation) Act 1967, The Sea Fisheries (Shellfish) Act 1967 (as amended), The Fisheries Act 1981, The Fishery Limits Act 1976 and the Marine and Coastal Access Act 2009. In addition there are pieces of secondary legislation that are applicable to sea fishing in Welsh waters outlined in this document.

All fishing vessels registered in the UK must have a licence to fish for sea fish that will be sold commercially. The licensing system is in place to restrict the size of the UK fishing industry and to control UK fishing opportunities so that European Union regulations for sustainable fisheries management can be met. The Common Fisheries Policy (CFP) is a set of rules designed for managing European fishing fleets and for conserving fish stocks, the CFP is outlined in more detail in this report. The UK Fisheries Concordat provides the Welsh Government with responsibility for the implementation and enforcement of the CFP within Welsh territorial waters.

There are various tools that are used to manage and regulate fisheries at a European and UK level. These include regulation of fishing effort and implementation of technical measures which govern how, when and where fishermen may fish. The capture of some species of fish are managed through Total Allowable Catches (TACs) and Quotas. TACs, also known as fishing opportunities are set on an annual basis for most stocks and every two years for deep sea species. They are the total amount of fish allowed to be caught from a particular stock over a specified period of time. The European Commission prepares the proposals based on scientific advice on stock status from advisory bodies, the Scientific, Technical and Economic Committee for Fisheries (STECF) and International Council for the exploration of the Sea (ICES). The Council of Fisheries Ministers make the final decision on the TAC. These TAC are then shared between EU countries in the form of national quotas.

In the UK, under current quota management arrangements, the UKs quotas are allocated to and divided between three groups known as The sector, The non-sector group and the under tens. In 2012, sector vessels (over 10m vessels) comprised of 37% of the Welsh fishing fleet (vessels administered in Milford Haven with a Welsh port listed as its home port). These sector vessels belonged to five different Producer Organisations (POs). None of the inshore fishing fleet belonged to any POs, largely because they fish for non-quota species, targeting shellfish.

All commercial fishing activities and vessels require a licence to operate. Fishing vessels are divided into two groups for licensing purposes, split depending on the length of the vessel, there are then three licensing categories depending on the different fishing activities and again the size of the vessel being used.

Fishing activities in Welsh waters are managed by the Welsh Assembly Government through a partnership involving a national Wales Marine Fisheries Advisory Group

(WMFAG) supported by three regional Inshore Fisheries Groups (IFGs), comprised of relevant stakeholders. In offshore waters (12 nautical miles out to the median line), fisheries management falls under the EU Common Fisheries Policy (CFP) and the Welsh Government is responsible for enforcing management within these offshore areas.

In Wales, fishing effort and landings statistics are calculated using data collected and processed by the Welsh Government. The data for Welsh vessels must be submitted to the Welsh Government within 48 hours of landing, including landings into foreign ports. A landings declaration must also be submitted within 48 hours of landing and must include information on the weight and presentation of the fish landed, by species. The fishing logbook is the primary method of data collection and is legally required for all vessels 10 metres and over. There is no statutory requirement for fishermen using vessels 10 metres and under to declare their catches, data from vessels in this sector is collected with the co-operation of the industry.

Commercial fishing vessels in Wales are known to target a wide range of species (fish, crustaceans and molluscs) using a range of mobile (dredges and trawls) and static (nets, lines and pots) fishing gears. There are four main categories of fishing gear used by fishermen in Welsh waters including dredging, trawling, static gear and hand-gathering (including aquaculture). The main fishing gear types used in Welsh waters, how and where they are used and their target species are outlined in this report.

The main fishing gears used by Welsh fishing vessels are pots, mechanised dredges, hooks and lines, gill nets otter or beam trawls. The use of dredges in Wales are mainly to harvest scallops, dredging occurs primarily in Cardigan Bay where king scallops are the target species and around the coasts of Anglesey where queen scallops are targeted.

The use of traps such as pots occurs in much of Welsh waters and are primarily used to capture shellfish such as lobster, crabs (edible, spider, velvet and green), prawns and whelks. Prawns are targeted during the winter months in inshore waters in Cardigan Bay whilst lobster and whelk potting takes place throughout Wales. Hand-gathering for cockles, mussels, periwinkles and razor clams occurs around Wales with the largest concentration of gatherers located in the Burry Inlet in South Wales.

Since 1990 there have been 33 different categories of gear recorded as having been used to catch fish species landed in Wales. In the 1990s there was a much greater amount of fish landed having been caught using otter trawls compared to the 2000's. As the total number of landings increased there was a change in the number of fish landings by different gear types. The number and value of landings from pots increased along with the use of gill nets and more recently an increase in the use of whelk pots.

In 2012 of the 481 fishing vessels in Wales that list Milford Haven as the Administration port, four of these vessels have home ports outside of Wales. The vessels within the under 10m fleet range in length from 3.6m to 10m, 20% of these were under 5m in overall length. The over 10m vessels range from 10.4m to 69.2m in length, 77% of these were over 15m in length. In 2012 the fishing vessels in Wales made up 7.4% of the UK fishing industry in terms of vessel numbers; 93% from the under 10m sector and 7% from the over 10m sector.

The Welsh fishing fleet is primarily comprised of vessels in the under 10m size sector and these account for 90% of the fleet. In 2005 there were 410 under 10m fishing vessels and in 2012 there were 444 under 10m fishing vessels, registered in Wales with home ports in Wales forming approximately 93% of the Welsh fishing fleet. The number of over 10m fishing vessels has risen slightly in recent years from 26 in 2009 to 33 in 2012.

Since 1994 until 2004 records show that employment in the fishing industry throughout the UK was declining. Since 2001 the total number of full-time employees in the industry in the UK has remained around 12,000. In Wales in 2012 there were approximately 1,020 employed in fishing, 673 regular (full-time) and 347 part-time fishermen.

A measure of the importance of the Welsh fishing industry can be provided by fish landings information. The greatest number of landings by Welsh vessels into Wales is by the under 10m fleet however, when considering the weight of landings into Welsh ports in 2012 the over 15m sector landed the greatest weight of 17.9 thousand tonnes of fish, 67.5% of the total weight of landings into Welsh ports. A total of 4.6 thousand tonnes of fish was landed into Welsh ports by the under 10m sector, making up 17.4% of the total weight of landings into Welsh ports. Welsh vessels landed 85% of the landings by vessels under 10m in size.

Analysis of fish species landed into Wales by Welsh fishing vessels showed that the landings diversity has changed over time with 51 different species recorded as landed in 1990 up to 77 different species recorded in 2010. An in-depth analysis of the species landed in 2012 suggests that the Welsh fishing fleet relies on a small number of species such as whelks, scallops and lobsters which contribute 70% of the landings value. There is a variation in the importance of species landed in to ports in north and south Wales. Queen scallops contributed 12% to the total value of landings and 9% to the total weight landed into ports in north Wales whilst in South Wales king scallops were more important and contributed 25% to the total landings value and 20% to the total weight landed into ports in south Wales. The price per kg received for fish landed into Wales varies greatly depending on species. In 2012 crawfish (£21), English prawns (£20) and lobsters (£9.7) received the greatest value per kg. In terms of total value of species landed, whelks were the species of which the greatest total value (£) were landed, followed by

scallops and lobsters and out of the top three species lobsters received the highest price per kg at almost £10/kg landed. Scallops received just under £2/kg landed and although whelks comprised of the greatest weight of landings and the greatest total value landed the price per kg was less than £1/kg.

The data from 2012 showed that 76.5% of the total value of fish landed by the Welsh fishing fleet was landed into ports in south Wales. However, this equated to only 35.2% of the total weight of fish landed in Wales. This discrepancy was almost certainly due to the weight of mussel seed landed into the port of Penrhyn (5670 tonnes) in north Wales which although was a large weight, it received a low monetary value. In north Wales in 2012 the ports of Holyhead (1,273 tonnes) and Penrhyn (5,670 tonnes) received the greatest in terms of weight of landings. The main species landed in Holyhead were Queen scallops caught using dredges and whelks caught using whelk pots. Holyhead and Amlwch received the greatest value of landings. In Holyhead Queen scallops (£267,740) and whelks (£257,428) contributed the greatest to the total value of landings. In Amlwch whelks contributed the greatest (£395,753) to the total value of landings.

In south Wales in 2012 the greatest weight of fish were landed into the ports of Milford Haven, Fishguard, Saundersfoot and Aberystwyth. In Milford Haven lobsters caught mainly in pots contributed the greatest (£729,491), to the total value of landings, in Fishguard King scallops caught in dredges contributed the greatest value (£790,240), in Saundersfoot whelks contributed the greatest value (£1.3 million) and in Aberystwyth King scallops (£319,971) contributed the greatest amount to the total value landed into Aberystwyth by Welsh fishing vessels.

It is impossible to ascertain from the data available what the driving force behind the landings of different species is. We cannot say whether the landings are representative

of the actual species available to catch but we can say that these are the species with a commercial value at the time that are being caught and landed by the Welsh commercial sea fishing industry.

Over the last 20 years the importance of species such as plaice have declined in importance; in 1992 plaice contributed 14.7% of the total landings value compared to just 0.15% in 2012. Similarly the importance of other species have increased. For example, in 1992 whelks contributed just 0.72% to the total landings value whilst in 2012 the contribution from whelks had increased to 24.75%.

Common sole (*Solea solea*) is the only species subject to quotas that is found in the top ten species in terms of landings value and contributed only 1.9% to the overall value of landings by the Welsh fishing fleet in 2012. This is an indication that the Welsh fishing fleet relies almost entirely on non-quota species and is less sensitive to changes in quota availability than other parts of the UK. Trends show that quota species make a much smaller contribution to the total catch value than they did over twenty years ago.

The value of the price of one tonne of fish landed in Wales has fluctuated since the early 1990s, but shows an overall gradual increase in price per tonne from 1990 to 2012. Since 1990 there has been an overall increase in the total weight of fish landed in Wales with a decline in the amount of quota species landed.

The Welsh fishing fleet comprises mainly of fishing vessels in the under 10m sector; this suggests that the majority of fishing in Wales is small-scale and coastal. In 2012 three key fisheries were identified this included cockle fisheries such as those found in the Burry Inlet, crustacean fisheries which are the mainstay of the Welsh fishing fleet and bass fishery which is important to the south and west Wales fishing fleets.

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Chapter 1

Introduction

The interests of marine life and of fisheries are inextricably intertwined. The fishing industry throughout the UK relies upon healthy and productive marine ecosystems and studies show that wildlife, both on the seabed and in the water column is in decline and those ecosystems upon which marine life relies upon are degrading. Modern unsustainable fishing practises are one of the biggest single causes of this decline and there is no doubt that marine wildlife, including fish, can only thrive where fishing methods are sympathetic.

Unsustainable fisheries is an issue that can be solved within our generation and that could help mitigate the impacts of climate change as well as providing a more economically sustainable future for thousands of fishermen. Overfishing has been described as;

“the most immediately solvable environmental challenge facing the EU” by Aniol Esteban (head of environment at the New Economics Foundation and steering group member of OCEAN 2012, a coalition of 176 organisations

dedicated to end overfishing).

In order to make informed decisions on “which fish to eat”; to be able to promote low impact fishing practises we require more detailed information on and an understanding of the current structure of the Welsh Sea Fisheries, information on fishing practises as well as current and historic trends associated with the Welsh fishing industry.

1.1 The purpose and scope of this report

In order to understand the industry we require information on the management of the fishing industry and the trends that guide the fishing industry.

Based on a similar report by Devon Wildlife Trust (DWT) on the fishing industry in Devon this document draws together, the information currently available, on the fishing industry in Wales. Landings data on the fishing industry in Wales has been analysed in order to highlight baseline information on the trends in the fishing industry in Wales and provide information for future discussions and partnership working with the industry.

This report aims to draw together, explore and provide a summary of the currently available information on the commercial fishing industry in Wales. In 2003, the fish catching sector in Wales was reported to be responsible directly and indirectly, for gross revenue of £101 million and 1220 full-time jobs (Richardson, 2006).

Chapter 2

The Welsh fishing industry

2.1 History of the Welsh Fishing Industry

Anecdotal accounts suggest that the sea fishing industry in Wales has historically been important to the Welsh economy. Herring (*Clupea harengus*) formed an important part of the diet of people living in Wales up until the early part of the 20th Century. They were regularly caught by fishermen from all around the Welsh coast; once out of the water fresh fish deteriorates rapidly and needed to be taken to market quickly. Unlike modern day practices and prior to more efficient transport links the fish were either sold by local hawkers within the immediate area surrounding the harbour or the fish were salted to preserve them.

There are reports dating back to 1206 which notes an abundance of fish in the Ystwyth estuary, Aberystwyth (Coates, 2006). However, fishermen did note that the fish did not appear in the same places every year and there are records dating back to 1550 of the Bishop of St David's complaining that the scarcity of herring was due to the

greed of fishermen who took too many herring at times of plenty, thus having an impact on the breeding population (S4C, 2014). The fishermen had the greatest chance of catching herring during the spawning season as huge shoals of fish, up to two miles wide and four miles long could be found. Most herring fishing occurred at night time when they were feeding close to the surface or early in the morning when the herring came inshore.

Although the basic techniques for catching herring didn't change over the centuries, the boats and equipment used for catching herring developed enabling the fishermen to catch and carry a greater number. Herring boats around during the 1800s were between 25-30 feet long and able to carry a load of 8-20 tons with a crew of 6-8. Historically fishing for herring was seasonal and quite often the farmers in the local area would spend time at sea fishing in order to supplement their agricultural incomes (S4C, 2014).

In the late 16th Century, Tenby exported barrels of herring to nearby ports such as Carmarthen and Bristol and to destinations much further away such as Ireland, Chester and Liverpool as well as places in Europe such as France. In the late 18th Century, it was noted that all the South Wales ports from Milford Haven to Chepstow were catching and curing herring and exporting them to the Mediterranean (S4C, 2014).

The west coast of Wales was also busy with the export of salted herring with Cardigan exporting barrels to Dublin and London. In 1811 the harbour was built in Aberaeron and this became an important fishing centre and by the 1830s over 30 herring fishing vessels were based there. There were fish traps, known as "*coredau*" or "*goredi*" in Welsh that would fill with sea water at high tide and as the tide ebbed the fish would become trapped there (S4C, 2014).

Aberystwyth was a busy fishing harbour, 24 herring boats were based there in 1730

with this number increasing to 49 in 1748. The herring fishing season usually began in September and lasted for three to four months. It was recorded that after one nights fishing on the 5th October 1745, 47 boats landed over 1,300,000 fish (S4C, 2014).

At Port Eynon, on the Gower peninsula, the remains of a salt house can be seen; it is thought that this was a busy port for landing and curing herring until pollution from the copper-smelting works on the river Tawe prevented fishing in Swansea Bay to take place (S4C, 2014).

In 1888 the fishing industry in South Wales changed following the opening of a new dock in Milford Haven. The new dock allowed large steam-powered trawlers, 100 feet in length to land there. Within a few years of the dock opening approximately 55 steam trawlers and 200 sailing smacks (traditional fishing boat used in the 19th century such as that shown in Figure 2.1) were based in the new docks. By 1925 Milford Haven was landing more herring than any other port in Wales and England, reaching its peak in 1946 at 59,000 tons (S4C, 2014).



Figure 2.1: SYBIL LO37 - the first vessel to enter the newly opened Dock on 27th September 1888 (From Warburton J (1984): *Milford Haven in Old Postcards*). Source: Milford Trawlers website

A distinct sub-species of herring that spawned in the winter in the upper reaches of the Cleddau estuary was fished by people from Llangwm and Hook, using 16 foot open rowing boats (S4C, 2014).

Fishermen from Nefyn in North Wales were catching herring into the 20th century, there were 40 boats working from the port in 1910. The nearby village of Trefor had 20 fishing boats in 1900, which had shrunk to eight by 1950. In Conwy the fishing industry focused more on shellfish, in particular on gathering mussels (S4C, 2014).

Despite being of significant importance to the nation in providing jobs at a time of high unemployment, information dating back to 1985 suggests that the Welsh fishing industry is the smallest national industry in the UK. Figures suggest that in 1982 only 1.7% of the total value of fish landed by British vessels at ports within the UK came from the Welsh fishing fleet (Wood, 1987).

Vessels involved in the commercial sea fishing sector are found all around the Welsh coast, with different vessel types. These include larger, greater than 10m, offshore vessels targeting fish species such as bass, turbot, brill, sole and scallops. Whilst smaller, less than 10m, inshore vessels operate in the coastal waters up to six nautical miles offshore and target a range of fish, in particular a wide range of shellfish species which are of commercial value such as lobsters, prawns, spider and brown crabs.

2.2 UK Fisheries Legislation

Legislation in the UK that relates to the fishing industry in Wales are explored in the following section.

2.2.1 Principle Acts relating to sea fishing in the UK

The Sea Fish (Conservation) Act 1967

The Sea Fish (Conservation) Act 1967 contains provisions relating to:

- Restriction on commercial use of undersize fish
- Size limits for fish
- Regulation of nets and other fishing gear
- Power to restrict fishing for sea fish
- Penalties for offences

All UK fisheries statutory instruments are enacted through and in accordance with the provisions of this primary legislation.

Additional, more detailed information on the Sea Fish (Conservation) Act 1967 can be found on the UK Government website - [Sea Fish \(Conservation Act\) 1967](#)

The Sea Fisheries (Shellfish) Act 1967 (as amended)

The Sea Fisheries (Shellfish) Act 1967 (as amended) provides for the establishment of several and regulating orders to manage shellfish stocks including crustaceans and molluscs. Provisions include the following:

- Powers to make orders for shellfish
- Power to grant several and regulating orders
- Regulation of nets and other fishing gear
- Regulation on the taking and sale of certain crabs and lobsters including a prohibition on taking or selling egg bearing or soft shelled edible crab

Additional, more detailed information on the Sea Fisheries (Shellfish) Act 1967 can be found on the UK Government website - Sea Fisheries (Shellfish) Act 1967

The Sea Fisheries Act 1968

An Act to make further provision with respect to the subsidies payable to, and the levies which may be imposed on, the white fish and herring industries, to make further provision for the regulation of sea fishing, to amend the Sea Fisheries (Shell fish) Act 1967 and the Sea Fish (Conservation) Act 1967, to make provision with respect to fishing boats and gear lost or abandoned at sea, to remove anomalies in certain enactments relating to sea fisheries and the white fish and herring industries and to repeal other such enactments which are obsolete or unnecessary; and for connected purposes.

Additional, more detailed information on the Sea Fisheries Act 1968 can be found on the The Sea Fisheries Act 1968

The Fishery Limits Act 1976

The Fisheries Limits Act 1976 was an Act to extend British fishery limits and make further provision in connection with the regulation of sea fishing. It implements the extension of fishing waters under the European Community's Common Fisheries Policy into British law. The Act extended the fishing limits from 12 nautical miles to 200 nautical miles and was in force with the members of the EEC and nine other countries.

Additional, more detailed information on the Fishery Limits Act 1976 can be found on the The Fishery Limits Act 1976

The Fisheries Act 1981

The Fisheries Act 1981 provides for the regulation of sea fishing and the enforcement of European fisheries regulations in the UK. The Sea Fish Industry Authority (Seafish) is also constituted under its provisions and other sections relate to fish farming and the

regulation of whaling.

Additional, more detailed information on the Fisheries Act 1981 can be found on the UK Government website - Fisheries Act 1981

The Marine and Coastal Access Act 2009

The Marine and Coastal Access Act is the first holistic piece of legislation for the marine environment in the UK. The vision for the Act is to deliver 'clean, healthy, safe, productive and biologically diverse oceans and seas'. The Act puts in place an improved system for delivering sustainable development of the marine and coastal environment.

The Act includes provisions for:

- Establishing a Marine Management Organisation
- A system of marine planning
- New marine licensing arrangements
- A new Marine Conservation Zone designation
- New arrangements for management of inshore fisheries
- Common, and amended, marine enforcement powers
- Coastal access

In Wales, responsibility for implementation of many of the provisions within the Act falls to the Welsh Government.

Additional, more detailed information on the Marine and Coastal Access Act 2009 can be found on the The Marine and Coastal Access Act 2009 or from the Welsh Government Website

2.2.2 Legislation applicable in Wales

The following are additional pieces of legislation that are applicable to sea fishing in Welsh waters (not exhaustive):

- The Prohibition of Fishing with Multiple Trawls (Wales) Order 2003
- The Prohibition of Fishing with Multiple Trawls (Wales) Order 2003
- The Tope (Prohibition of Fishing) (Wales) Order 2008
- The Welsh Zone (Boundaries and Transfer of Functions) Order 2010
- The Scallop Fishing (Wales) (No.2) Order 2010
- The Sea Fish (Specified Sea Areas) (Prohibition of Fishing Method) (Wales) Order 2012
- The Scallop Dredging Operations (Tracking Devices) (Wales) Order 2012

2.3 Fishing licensing and Quotas

All fishing vessels registered in the UK must have a licence to fish for sea fish that will be sold commercially. The licensing system is in place to restrict the size of the UK fishing industry and to control UK fishing opportunities so that European Union (EU) regulations for sustainable fisheries management can be met. The system is designed to ensure that the UK fishing industry stays within its annual quotas under the EU Common Fisheries Policy. This means that fishing for sea fish in the waters around Wales and other European union countries is managed under the Common Fisheries Policy (CFP).

The monitoring and control of all European Union and Third Country fishing vessels falls under various EU and EC directives and Regulations. These are delivered by the European Commission as part of the Common Fisheries Policy. The Welsh Government administers this policy in Wales and deals with:

1. Managing fish stocks
2. Reducing pressure on fish stocks by setting limits on catch sizes
3. Imposing technical conservation measures such as fishing net mesh size requirements & closed areas
4. Reducing discards

2.3.1 Common Fisheries Policy (CFP)

There are multiple sources of information detailing the Common Fisheries Policy (CFP) including the European Commission website and briefings and publications released by the Welsh Assembly.

In summary, the Common Fisheries Policy is a set of rules for managing European fishing fleets and for conserving fish stocks. The CFP is designed to manage a common resource as it gives all European fishing fleets equal access to EU waters and fishing grounds and allows fishermen to compete fairly. EU fisheries management relies on data collected and supplied by all EU countries. The CFP was first introduced in the 1970s and has been through successive updates, at the time of writing the most recent took effect on 1st January 2014. Not all fish stocks fall within the framework of the CFP, including shellfish and for many of these species, in general, there are currently no agreed exploitation rates due to limited availability of data on stocks. These species may

require national or local measures to be implemented in order to protect stocks and these measures would need to be delivered in Wales, through the Welsh Government.

Aims of the CFP

The CFP aims to ensure that fishing and aquaculture are environmentally, economically and socially sustainable and that they provide a source of healthy food for EU citizens. The goal is to foster a dynamic fishing industry and ensure a fair standard of living for fishing communities.

The CFP must ensure that fishing practices do not harm the ability of fish populations to reproduce. Therefore, the current policy stipulates that between 2015 and 2020 catch limits for commercial species should be set that are sustainable and maintain fish stocks in the long term. The impact of fishing on the marine environment is not fully understood and therefore the CFP adopts a cautious approach which recognises the impact of human activity on all components of the ecosystem. The CFP seeks to make fishing fleets more selective in what they catch and to phase out the practice of discarding unwanted fish.

The CFP reform includes commitments to decentralise decision making away from Brussels, giving EU countries greater control of fisheries management at national and regional levels, allowing member states to work together to agree the detailed measures that are appropriate to their shared fisheries and legally binding requirements to set fishing rates at sustainable levels. The reform also enables EU member states to determine how subsidies (the European Maritime and Fisheries Fund (EMFF)) are allocated. The EMFF will make available approximately 6.5 billion euros from 2014 to 2020 to support the EU's fisheries sector and its maritime policies.

The ‘new’ CFP and discards ban

The reform aims to implement measures to control and eliminate waste of fish through discards as well as implementing the EU regulation to prevent the import of illegal, unregulated and unreported fish and fish products into the EU.

Discarding is the practice of returning unwanted catches to the sea, either dead or alive. This is usually done because they are either too small, the fisherman has no quota or because of certain catch composition rules. To prevent the waste of fish through discards the ‘new’ CFP introduces landing obligations. This means that all catches have to be kept on board, landed and counted against quotas. Undersized fish cannot be used for human consumption. The introduction of the landing obligation serves as a driver for more selectivity and provides more reliable catch data.

The landing obligation (discard ban) is being introduced gradually on a fishery-by-fishery basis between 2015 and 2019, for all commercial fisheries (species under Total Allowable Catches (TACs) or under minimum sizes) in European waters.

- **January 2015:** Small pelagic fisheries (e.g. mackerel, herring, sardine), Large pelagic fisheries (e.g. tuna, swordfish, marlin), Fisheries for industry (e.g. sandeel, Norweigen pout), Baltic salmon fisheries
- **January 2015 - January 2017:** all other quota species in Baltic waters
- **January 2016 -** Norway lobster, sole, plaice and hake fisheries (North Sea, North Western and South Western waters) Cod, haddock, whiting, saithe (North Sea and North Western waters) and Northern prawn (North Sea).
- **January 2017-January 2019:** All other quota species in Mediterranean, Black Sea and other EU waters not covered by January 2015 restrictions.

- **January 2019:** All other quota species in North Sea/North Western/South Western waters

The 'new' CFP also introduces a minimum conservation size for species subject to the discard ban in order to protect juveniles. Catches of species below the minimum size will have to be retained on-board, and will count against quota allowances. However, they can only be used for purposes other than direct human consumption which are less profitable such as pet food, fish meal and cosmetics.

The UK Fisheries Concordat 2012 provides the Welsh Government with responsibility for the implementation and enforcement of the CFP within Welsh territorial waters, these extend out to the maritime border with Ireland. This enforcement of quotas and the discard ban will be conducted by Welsh Government Enforcement Officers in partnership with the Royal Navy Fishery Protection Fleet based in Milford Haven.

Access to waters

Fishing vessels registered in the EU fishing fleet register have equal access to all the EU waters and resources that are managed under the CFP (Figure 2.2). Access to these fisheries is managed under a fishing licence.

There are two exemptions to this rule of equal access that will expire by the end of 2022:

1. In the waters up to 12 nautical miles from the coasts of the EU countries, access can be limited by the EU country to vessels and fisheries that traditionally fish in those waters from adjacent ports, to vessels identified under existing neighbourhood relations, and to vessels related to fisheries as listed in the CFP, annex I. These restrictions generally give preference to vessels that traditionally fish in those waters from the adjacent ports.

2. In the waters up to 100 nautical miles from the coasts of Europe's most outer regions, access can be restricted to vessels registered in the ports of these territories and to vessels that traditionally fish in those waters.

Fishing areas in the EU

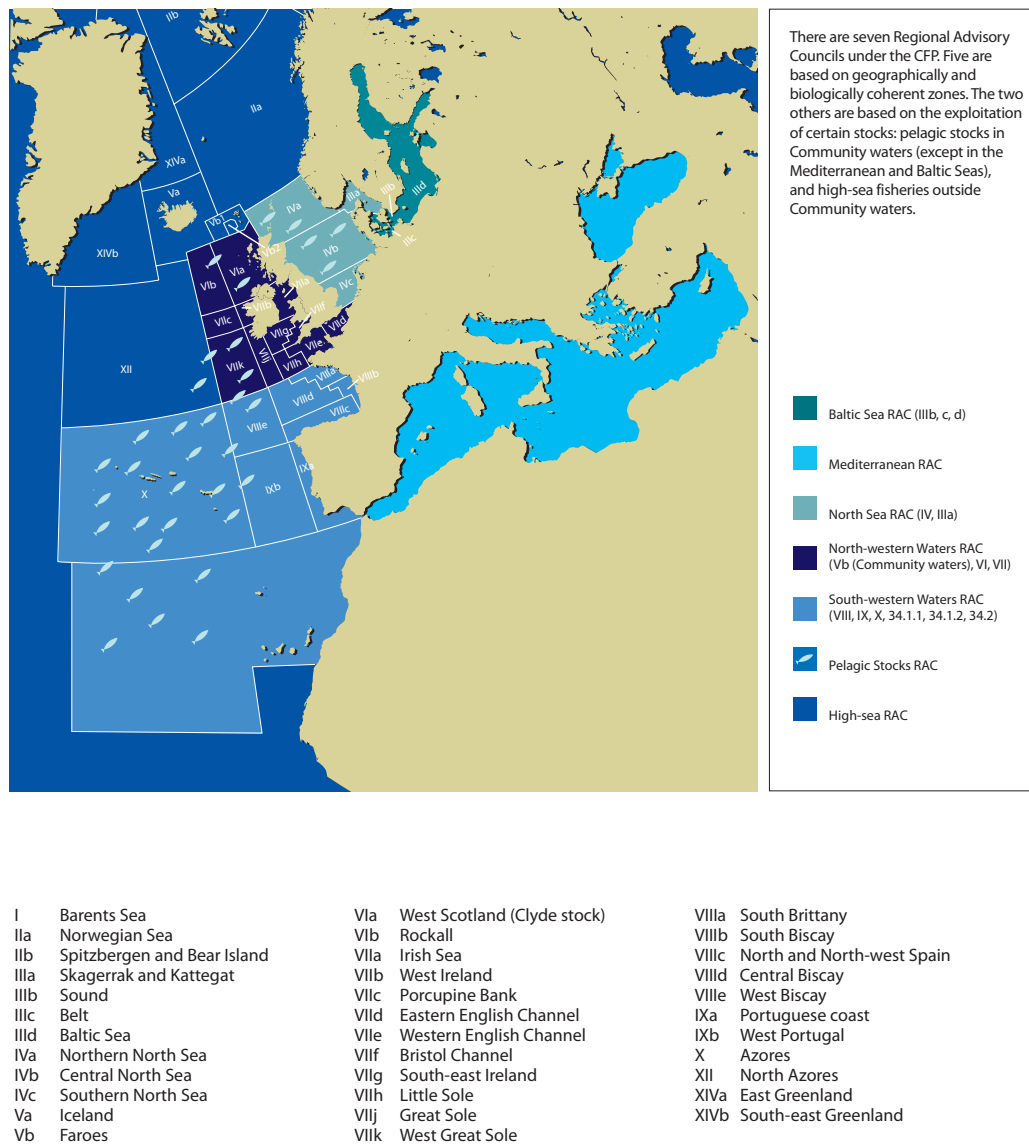


Figure 2.2: Fishing areas in the EU, Areas around Wales include Vlla, Vllg and Vllf.
Source: European Commission website

Welsh waters are encompassed by areas VIIa (Irish Sea), VIIf (Bristol Channel) and VIIg (South-east Ireland).

Fishing effort

Fishing effort includes management of the amount of time that the fleet can spend at sea and the limitations to the fleet capacity in terms of gross tonnage (GT). They are key tools used to manage and regulate fisheries at EU and UK level.

Fishing effort restrictions are in place for the management of a specific stock or group of stocks and are generally more area based. For example there are restrictions in the plan for management of the sole and plaice stocks in the North Sea and in the rules on fishing in western waters.

Technical measures

These measures are a broad set of rules which govern how, when and where fishermen may fish. They differ for all European basins in accordance with regional conditions. The technical measures may include:

1. minimum landing sizes
2. specification for design and use of gear
3. minimum mesh sizes for nets
4. requirement for the use of selective gears to reduce unwanted catches
5. closed areas and seasons
6. measures to minimise the impact of fishing on the marine ecosystem and environment

2.3.2 Total Allowable Catches (TACs) and Quotas

Total Allowable Catches (TACs)

Total allowable catches (TACs) or fishing opportunities are the total amount of fish allowed to be caught from a particular stock over a specified period of time. They are catch limits that are set for the 135 commercial species of fish and shellfish found in the North Atlantic, Mediterranean, North Sea and the Baltic Sea. The European Commission prepares the proposals based on scientific advice on stock status from advisory bodies, the Scientific, Technical and Economic Committee for Fisheries (STECF) and International Council for the Exploration of the Sea (ICES). The Council of Fisheries Ministers make the final decision on the TACs which are set on an annual basis for most stocks and every two years for deep sea species.

TACs are shared between EU countries in the form of national quotas. For each stock a different allocation percentage per EU country is applied for the sharing out of the quotas, this fixed percentage is known as relative stability. EU countries can exchange quotas with other EU countries.

Each country has to use transparent and objective criteria when they distribute the national quota among fishermen. They are responsible for ensuring that the quotas are not overfished. When the countries quota is reached the fishery is closed. The UK divides its quota across the UK fishing fleet using fixed quota allocations (FQAs). These are a form of rights-based management (RBM) which includes any system of allocating individual fishing rights to fishermen, vessels, enterprises, cooperatives or fishing communities. The RBM schemes define the right to use fisheries resources, assign a value and as such can be traded. FQAs were based on historical catch records as well as UK historic landings data (1994-1996) that were held by members of the sector (>10m

vessels who are members of producer organisations (POs)). Defra's FQA register gives an overview of who has access to fish quota within the UK and aims to help improve fisheries management.

UK Fishing quotas

Fishing quotas are set to help achieve the objectives of the Common Fisheries Policy (CFP) for the conservation and management of fish stocks. In December, each year the EU Council of Ministers sets the Total Allowable Catches (TACs) for various fish stocks. UK fisheries Administrations discuss quota management arrangements annually with fishing industry representatives, the results of these discussion formulate the UK's quota management rules.

Under current quota management arrangements the UK's quotas are allocated to and divided between the following three groups:

- 1 **The Sector** - comprised of vessels over 10m in length which are members of Producer Organisations. There are 23 separate Fish Producer Organisations (POs) which currently control over 90% of the quota in England and Wales, one of these operates in Wales and is administered by the Marine Management Organisation.
- 2 **The Non-sector group** - comprised of all vessels over 10m overall length which are not fishing against quota allocations managed by POs.
- 3 **The Under Tens** - inshore fleet, 10m and under non-PO group. Group of vessels that are 10m or less that are not fishing against quota allocations managed by POs.

Fish Producer Organisations

Fish Producer Organisations (FPOs or POs) are regional trade bodies established under the CFP. They are comprised of groups of fishermen or fish farmers and are given quota which they manage for the vessels in their membership, they also help market

their members' catch, manage fish quotas and lobby government (UK and EU) on behalf of their members (Williams, 2014). The vessels belonging to POs are collectively described as 'sector' vessels. POs are able to trade quotas with other POs. In practice the majority of members of POs are vessels greater than 10m in length.

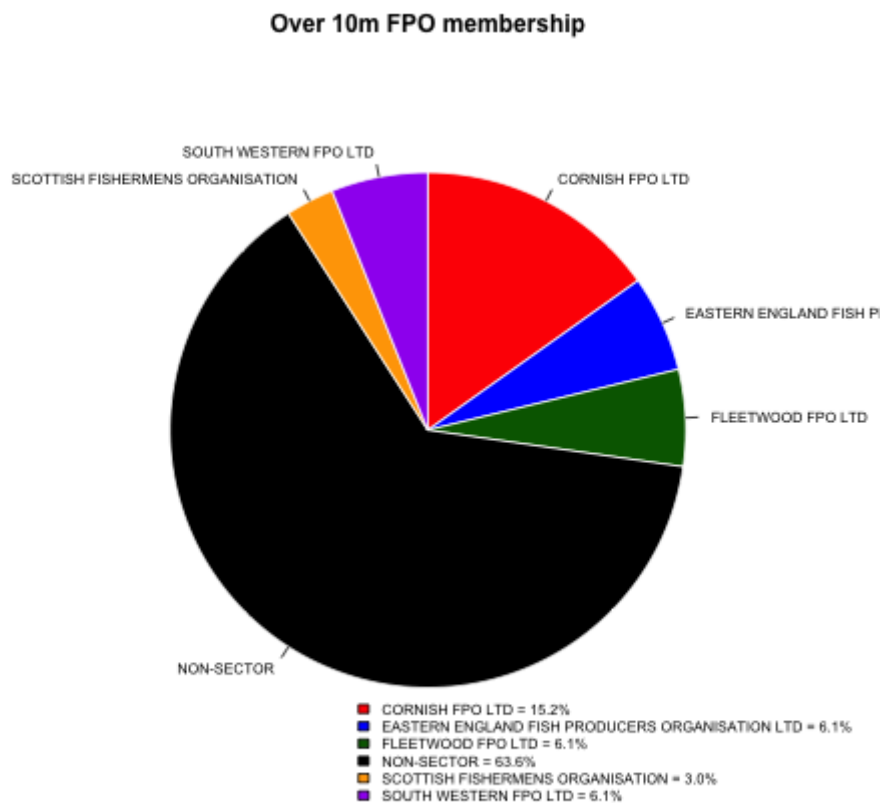


Figure 2.3: Fish Producer Organisation membership for the over 10m vessels administered by Milford Haven in 2012

According to data from 2012, approximately 37% of the (over 10m) Welsh fishing fleet (vessels administered in Milford Haven with a Welsh port listed as its home port) were classed as 'sector' vessels and were members of five different POs. The remaining 63%

of the fleet were 'non-sector' vessels and therefore not fishing against quota allocations managed by POs. None of the inshore fleet (under 10m), administered in Milford Haven belonged to any POs, this is largely because they fish for non-quota species, targeting shellfish and therefore have no need to be members of a PO.

2.3.3 Fishing vessel licence

The fishing vessel licence specifies the conditions that must be adhered to by the vessel owners when sea fishing activity is pursued. The licence authorises the sea areas in which the vessel can fish and the species of fish that can be targeted therefore, different vessel licences are required depending on vessel length, species fished and the waters the vessel will be operating in. Any vessels/individuals that fish for sea fish for a profit, without a licence may be prosecuted. Fines of up to £50,000 can be issued for each offence and any fishing gear and fish caught will be forfeit. All fishing vessels must be registered as a fishing vessel with the Register of Seamen and Shipping (RSS), part of the Maritime and Coastguard Agency based in Cardiff.

In the UK there are currently no new fishing licenses being issued; therefore, anyone wishing to fish commercially must obtain a licence entitlement before applying for a fishing license.

A licence entitlement is created when a licence is no longer attached to an active fishing vessel. This occurs when a vessel is either sold with or without its licence, if a vessel sinks, if a vessel is scrapped or if a vessel is otherwise de-registered.

Vessels that are purchased may or may not be purchased or sold with a licence attached to them. If a boat has a licence attached to it an entitlement will be created from the licence which can be used to licence the vessel in the new owners name.

Vessels that require a licence

If you intend to sell your catch then you require a fishing license. Even if intended sale is only fish caught for personal consumption that is not required and you are selling to friends or a fishmonger.

1. Domestic licence - required if you are going to fish in UK and EU waters
2. External licence - required if you are going to fish outside UK and EU waters

Vessels that do not require a licence

You do not need a fishing licence if:

1. You only fish for salmon and migratory trout contact Natural Resources Wales (NRW) for more information on this in Wales
2. Your vessel is 10 metres or less in length and you are only fishing for common eels
3. You only fish within the 12 nautical mile limits around Jersey, Guernsey or the Isle of Man
4. You only use your vessel for carrying anglers who are fishing for pleasure

Different types of fishing licence

The type of fishing licence required depends on the size of your vessel and the category your fishing activities fall into.

Fishing vessels are split into two groups for licensing purposes

1. Overall length is 10 metres and under
2. Overall length is over 10 metres

There are three licence categories for different fishing activities these are outlined be-

low.

Category A licence

1. **Category A (over 10 metres)** - authorises vessels to fish for all available quota stocks and up to a restricted tonnage for combined pelagic stocks
2. **Category A (10 metres and under)** - authorises vessels to fish for all available stocks
3. **Category A (Island vessels)** - allows vessels registered in Jersey and Guernsey to fish for all stocks in a certain area
4. **Category A (Pelagic)** - issued to pelagic trawlers, pelagic pursers and pelagic freezers and authorises them to fish for all available quota stocks and to fish without restriction for pelagic stocks

Category B licence

A Category B licence authorises vessels over 10 metres to fish for a restricted range of quota stocks and a restricted tonnage of combined pelagic stocks.

Category C licence

A Category C licence authorises vessels over 10 metres to fish for a range of miscellaneous stocks and a restricted tonnage of combined pelagic stocks

Additional special licences

There are also special licences for certain types of fishing and for some minor fisheries.

1. minor pelagic fisheries - Atlanto-Scandian herring, Firth of Clyde herring, Mourne herring and Thames and Blackwater herring

2. blue whiting
3. albacore tuna
4. handline mackerel
5. mussel seed
6. deep sea species

For fishing outside UK and EU waters, an external waters licence in addition to a domestic licence is required.

2.4 Fisheries Management

2.4.1 Management of the Welsh Fishing Industry

Historically the Welsh sea fisheries (inshore waters) were coordinated by two Sea Fisheries Committees (SFCs), the North Western and North Wales SFC and the South Wales SFC which were established under the Sea Fisheries Regulation Act 1966.

On the 1st April 2010, the Marine and Coastal Access Act 2009, repealed the 1966 Act in relation to Wales with the effect that the two SFCs, be abolished. Therefore North Western and North Wales SFC and the South Wales SFC and their functions in Wales were transferred to the Welsh Assembly Government.

The Welsh Assembly Government introduced a partnership approach to fisheries management in inshore waters (0-12 nautical miles). A national Wales Marine Fisheries Advisory Group (WMFAG) and three regional Inshore Fisheries Groups (IFGs), north, mid and south Wales, comprising of relevant stakeholders were set up in 2010.

The Welsh Government is responsible for ensuring that:

- Fish health and welfare is monitored
- Legislation, both for sea and inland fisheries is implemented correctly in Wales
- Welsh fishing interests are protected and promoted

In offshore waters (12 nautical miles out to the median line), fisheries management falls under the EU Common Fisheries Policy (CFP). The Welsh Government is responsible for enforcing management within these offshore areas and ensuring compatibility between domestic legislation and the CFP reforms.

All commercial fishing in the sea around Wales is subject to regulations in the UK and the European Union. Regulation of sea fisheries is achieved through secondary legislation (statutory instruments) made by Welsh Ministers under powers from primary legislation. This includes regulations on net sizes, vessel licenses and limits on the number of days at sea.

- Regulations require that all commercial fishing vessels are registered and licensed
- Vessels fishing in some areas with some types of gear are restricted in the days they may fish
- Fishing for many species of fish around Wales is limited by quota
- Fisheries statistics for the whole of the United Kingdom is managed by the Marine Management Organisation

Often when discussing management of a resource the term Ecosystem Approach is used. According to JNCC;

“The Ecosystem Approach is a concept that integrates the management of

land, water and living resources and aims to reach a balance between three objectives: conservation of biodiversity; its sustainable use; and equitable sharing of benefits arising from the utilisation of natural resource. It is the primary implementation framework of the Convention on Biological Diversity (CBD)”.

It is known as an adaptive management strategy that can be employed to deal with the complex and dynamic nature of ecosystems and counteract the lack of knowledge or comprehension of their functioning.

Wales Marine Fisheries Advisory Group (WMFAG)

According to the terms of reference that were written in October 2010 (received 19/01/2015) and which are currently available from the Welsh Government (WG) Marine and Fisheries Division, the WMFAG is made up of senior representatives from national organisations. At the time of writing representatives on the WMFAG are listed as:

- Ministerial Appointment (Chair)
- WG fisheries Unit (2 seats)
- WG Marine Policy
- Environment Agency Wales (EAW)
- Welsh Local Government Association (Local Authorities)
- Welsh Aquaculture Producers Association
- Welsh federation of Sea Anglers (WFSA)
- South and West Wales Sea Fishing Communities Ltd

- Llyn Pot Fishermens Association
- Wales Environment Link (environmental NGO)
- Countryside Council for Wales (CCW)
- Wales Coastal and Maritime Partnership (WCMP)
- Inshore Fisheries Group Chair (north)
- Inshore Fisheries Group Chair (mid)
- Inshore Fisheries Group Chair (south)

The terms of reference currently available refer to the Fisheries Unit (now the Marine and Fisheries Division) and the Minister for Rural Affairs who, as of 2011 no longer exists, the responsibilities in relation to fisheries now fall under the Minister for Natural Resources. Stakeholder organisations such as The Countryside Council for Wales (CCW), Environment Agency Wales (EAW) and Wales Coastal and Maritime Partnership (WCMP) no longer exist. Natural Resources Wales has taken over the functions previously carried out by Forestry Commission Wales, CCW and EAW.

In general the main roles of the WMFAG are for the group members to:

- Provide expert advice to the Fisheries Unit (now the Marine and Fisheries Division) and Minister for Rural Affairs (this now falls under the Minister for Natural Resources) relating to fisheries management;
- Assist the Fisheries Unit to engage with those with interests in fisheries and the marine environment
- Feedback to the inshore Fisheries Groups on national policy implications
- Represent the views of the IFG's at WMFAG meetings

- Interact closely with the existing Wales Fisheries Strategy Steering Group
- Monitor and evaluate the effectiveness of policies and strategies relating to fisheries management
- link to marine stakeholder structures and other Ministers through relevant organisations.

The WMFAG meets quarterly, following the meetings the chair of the WMFAG feeds comments and advice to the Marine and Fisheries Division which considers the advice when making decisions about fisheries policies.

Regional Inshore Fisheries Groups (IFGs)

There are three regional Inshore Fisheries Groups (north, mid and south) in Wales whose role is to provide local stakeholder opinion to the WMFAG, to assist the WMFAG to engage with those with interests in fisheries and the marine environment and to feedback to wider stakeholders on local policy implications. The IFGs meet on a quarterly basis.

At the time of writing representatives on the IFGs, according to the terms of reference, are listed as:

- No organisation listed (Chair)
- WG fisheries Unit (faciliator)
- WG Official (IFG officer)
- WG Fisheries Enforcement officer (IFG officer)
- Representative for Shellfish (cultivated)

- Representative for Shellfish (hand gathered)
- Welsh federation of Sea Anglers (WFSA)/South West Wales Association of Sea Angling Clubs (SWWASAC) (recreational anglers)
- Llyn Pot Fishermens Association
- Llyn Fishermens Association
- North Wales Fish Coop
- Cardigan Bay Fishermens Association (CBFA)
- Welsh Inshore Scallopers Association (WISA)
- South and West Wales Fishing Communities (SWWFC)
- West Wales Shell fishermens Association (WWSFA)
- Wales Environment Link (environmental NGO)
- Natural Resources Wales (NRW)
- Seafish (Seafish industry)

The terms of reference state that members of the IFG should represent a broad range of fisheries interests.

2.4.2 Permits and Authorisations

Certain fishing activities in Welsh waters require authorisation through a permit, activities included vary between north and south Wales and further, more detailed information on permits and authorisations in Welsh waters can be found on the Welsh Government website.

2.4.3 Byelaws

Fisheries management issues in inshore areas are regulated through the use of Byelaws these cover fisheries management such as:

- Minimum sizes - a range of these measures are established for various fish and shellfish below which they may not be taken or removed. E.G. Byelaw 19: Details the minimum landings sizes for fish and shellfish
- Burry Inlet Cockle Fishery - Managed by Natural Resources Wales but certain byelaws comprise tools by which this fishery is managed. E.G. Byelaw 5: Cockles and mussels (specified area) (Wales) Order 2011 permit - A permit is required to fish commercially for cockles and mussels and it is an offence to fish without a permit. A daily quota of 5kgs of cockles and mussels is allowed for personal consumption.
- Spatial and Temporary Fishery Restrictions - Closed areas and seasons for certain fisheries are established under these byelaws. E.G. Byelaw 47: Permit to take cockles within the Three Rivers estuary
- Authorisation of Fixed Engines - These byelaws set out the details as to where and how fixed engines may be used. E.G. Byelaw 24: This prohibits the use of fixed engines (fixed nets) in Welsh waters at certain times of year.
- Permits and Authorisations - Required by the byelaws for various fisheries may be applied for in relation to a departure from the main provisions. E.G. Byelaw 30: Permit to allow recreational fishing for lobster, crab, prawn and whelk - allows you to fish up to a maximum of 5 pots, and you must not lift any other persons pots. There is also a daily bag limit, and minimum landing sizes.

- Technical - A variety of restrictions are placed upon the construction and use of some fishing gears and vehicles. E.G. Byelaw 21: Prohibition of bottom towed fishing gear.

Information on the particular byelaws covering Welsh waters can be found on the Welsh Government website, this includes; Byelaw information for the South and west Wales coastline and Byelaw information for the North and west Wales coastline.

2.4.4 Netting

Netting is prohibited in certain areas during the spring and late autumn to coincide with the times of year to protect salmonids migrating from the sea into rivers and back to the sea, they are covered by certain byelaws.

- Netting areas - North
- Netting areas - South.

A Gov.UK email alert service is available and can be subscribed to for updates and alerts regarding commercial fishing and fisheries notices for both the 10m and under and the over 10m pool.

2.4.5 Fishing effort and landings records

Fishing effort and landings statistics are calculated using data collected and processed by fisheries administrations in the UK. In Wales this is carried out by the Welsh Government. European fisheries regulations require skippers to keep and submit logbooks and to provide landing declarations and sales notes (Council Regulation (EC) No. 1224/2009

(the Control Regulation)). The master, owner or charterer of a licensed fishing vessel may be required to provide statistical information and other information according to the Sea Fisheries (Conservation) Act 1967 and the Sea Fish (Conservation) Act 1992. The method of data collection depends on the length of the vessel.

Vessels over 10 metres

The fishing logbook is the primary method of data collection and is legally required for all vessels 10 metres and over and must include information for catches of all species. The fishing activity data that must be recorded in the logbook for each fishing trip and for each day of activity within the trip (if at sea for multiple days), includes the following:

- Details of the catch, by species, including quantity of fish retained on board. This includes catch per species (over 50kgs).
- Information on fishing gear used to catch the fish, methods of fishing
- Areas fished - International Council for the Exploration of the Sea (ICES) division, rectangle and zone of where activity took place.

The data for UK vessels must be submitted to the UK authority, in Wales this is the Welsh Government, within 48 hours of landing, this includes landings into foreign ports.

A landings declaration must also be submitted within 48 hours of landing and must include information on the weight and presentation of the fish landed, by species.

Sales notes are required in respect of first sales of fish and fishery products and must be submitted within 48 hours of sale (24 hours if submitting electronically) by the registered buyer of the fish. At designated auction centres the registered seller has responsi-

bility to submit the sales notes.

All UK fishing vessels 12 metres and over are expected to report their data electronically. This can be done using an electronic logbook (eLogbook). This software can be installed on fishing vessels and allows fishermen to electronically record and submit the fishing activity of their vessel.

Since 1 January 2009, buyers and sellers with an annual turnover of first sale fish of more than €400,000 have been required to submit sales notes electronically and from 1 January 2011, this was required for all buyers and sellers with an annual turnover of first sales fish of more than €200,000.

Vessels 10 metres and under

There is no statutory requirement for fishermen using vessels 10 metres and under to declare their catches. The statutory requirement lies with the buyers of the fish landed. Historically, information for this sector has been collected with the co-operation of the industry. Information collected included:

- Log sheets and landings declarations which were voluntarily supplied by the fishermen
- Sales notes and assessments of landings collected from market sources and by officials located in ports

Following the introduction of the Registration of Buyers and Sellers of First-Sale Fish Scheme in September 2005 sales notes as well as the voluntary information from fishermen were used to collect information.

In 2005 and 2006, UK fisheries administrations introduced a system of restrictive licensing for activity targeted at shellfish. As part of this system, new reporting requirements

were introduced requiring fishermen fishing with 10 metre and under vessels to complete diaries of their daily activity which had to be submitted each month. Summary information from these diaries is now in use in Northern Ireland but was discontinued in the rest of the UK at the end of February 2009.

For the 10 metres and under sector, landings are only reported where the fish are sold or data has been provided voluntarily and therefore catch information and thus landings from this sector may be grossly under reported.

The reliability of the data collected is dependent on the information provided by fishermen. Inspectors at port offices carry out a mix of manual and automatic checks on the information provided by vessel operators. These include a check between logbook information and that given in the sales notes or observed as landed as well as checks against other sources of information such as satellite position reports, information from aerial and at-sea surveillance and inspection activity carried out by UK enforcement officers.

Despite legal obligations for fishermen to declare their catches, a proportion of fishing activity remains unreported. This mostly affects landings data and the effects on statistics on fishing effort are considered to be small.

Source of information: UK Government website.

The data submitted is collated onto the Fisheries Administrations databases where it is used for quota management and enforcement purposes. The Fisheries Statistic Unit in the Marine Management Organisation (MMO) hold the data on behalf of the Welsh Government.

2.5 Fisheries Monitoring and Enforcement

The Welsh Government and the Marine Management Organisation (MMO) are responsible for the monitoring and enforcement of sea fisheries activity. Welsh Government Marine Enforcement Officers investigate and take appropriate action (including prosecution) when breaches of fisheries regulations are identified. The fisheries enforcement programme includes:

- Inspection of fishing vessels at sea and in port. At sea inspections are carried out by the Royal Navy's Fishery Protection vessel as well as Patrol vessels from the Welsh Government's Inshore Fisheries Team. A programme of aerial surveillance patrols is also carried out (Direct flight Ltd) as well as in ports.
- Inspections of fishing industry premises
- Inspections of fish markets
- Inspections of other locations around the coast and further inland by Marine Enforcement Officers

2.5.1 Vessel Monitoring Systems

There are a range of statutory requirements for vessels to report their positions and fishing activity, mainly driven by the EU and the Control Regulation (1224/2009). Article 9 of this regulation makes it compulsory for all EU vessels over 12 metres to carry fully functioning satellite based monitoring systems which send a position report every 2 hours. Article 15 of the regulation also makes it a statutory requirement for all EU vessels over 12 metres to submit electronic logbooks giving information relating to

fishing activity.

The UK operates a satellite-based vessel monitoring system (VMS) from the MMO's fisheries monitoring centre. The Vessel Monitoring System (VMS) is an automated method of recording the location of fishing vessels at sea.

These systems are installed on board fishing vessels registered in the UK and were originally introduced under European Commission legislation (EC 686/97) (Witt and Godley, 2007; MMO, 2013b). Each fishing vessel VMS unit consists of a global positioning satellite (GPS) receiver; a satellite transmitter and a power backup that must be able to transmit for at least 72 hours (MMO, 2013b).

VMS units have been mandatory for fishing vessels greater than 24 metres in overall length since 2000, from 2004 they were mandatory for vessels greater than 18 metres in overall length and from 2005 for vessels greater than 15 metres in overall length (Witt and Godley, 2007) and since 2012 this has been mandatory for fishing vessels of 12 metres length overall.

VMS units are required to be able to support hourly reporting, must be capable of providing notification to the fisheries monitoring centre of switch-off prior to arrival in port (Witt and Godley, 2007; MMO, 2013b). The units are also required to report 99% of all locations accurate to within 500 metres (Witt and Godley, 2007).

VMS units operating in UK waters report location and ancillary data such as speed and course, via satellite communication, on a 2-hour duty cycle to the UK Fisheries Monitoring Centre (FMC) (Witt and Godley, 2007; MMO, 2013b). The FMC may request the location of a fishing vessel at any time from the VMS unit. VMS units can also be tasked to increase the reporting frequency within certain regions or within the waters of other EU Member States.

A central database has been set up in the UK for all the data collected from the monitoring systems. The data "hub" receives the data which each Fisheries Administration has access to, the data is then used for several other applications including monitoring, quota management, and enforcement purposes.

Within Wales the Welsh Government have also introduced a separate legislation requiring all vessels, regardless of size, engaged in scallop fishing to carry a tracking device. Trackers available for this include satellite and mobile based systems.

Fisheries measures that are enforced include:

- Access rules for foreign fishing vessels in British fishery limits
- Total allowable catches and quotas for fish stocks
- Technical conservation measures for juvenile and spawning fish. For example minimum fish sizes, mesh sizes for nets and closed areas
- Special stock recovery measures, for at risk fish stocks
- Control measures for monitoring and inspecting fishing vessels and catches. This includes logbooks and landing declarations
- Effort limitation measures limiting the number of days vessels can actively fish

2.6 Fishing Associations and Organisations in Wales

The majority of commercial fishermen in Wales belong to one of seven regional fishing associations or organisations in Wales. Representatives from six of these associations form part of the management board of the Welsh Fisherman's Association (WFA) which

is commonly recognised as the national representative body of the Welsh fishing industry, although not all associations in Wales are represented by this group.

The Welsh regional fishing associations include:

- Cardigan Bay Fishermen's Association (CBFA)
- Llyn Pot Fishermen's Association (LPFA)
- Llyn Fishermen's Association (LFA)
- North Wales Fishermen's Co-operative (NWFC)
- Welsh Inshore Scallopers Association (WISA)
- South and West Wales Fishing Communities Ltd (SWWFC)
- West Wales Shell fishermen's Association (WWSFA) (not part of the WFA)

Chapter 3

Sea Fishing in Wales

This section explores the commercial fishing industry in Wales, exploring:

- Fishing methods occurring in Welsh waters
- Commercial fishing vessel administration
- The range and type of fishing vessels working out of Welsh harbours/ports
- Employment in the fishing industry in Wales



Figure 3.1: Fishing vessel Celtic Spirit, New Quay, Ceredigion

3.1 Methods of fishing occurring in Welsh waters

Commercial fishing vessels in Wales are known to target a wide range of species (fish, crustaceans, molluscs) using a range of mobile (dredges and trawls) and static (nets, lines and pots) fishing gears.

This section provides information on the types of fishing activity currently occurring in Welsh waters and where possible maps of the known locations of these activities are provided. Please note much of the information provided in this section has been taken from CCW (2010), Seafish (2005) and Gabriel et al. (2005) and Walmsley and Pawson (2007).

Additional information on fishing gear can be found on the (<http://www.seafish.org/geardb/>),

in their Fishing gear database. The Seafish Gear Database contains information on a wide range of fishing gears used in commercial fisheries in the UK and EU including the selectivity and discard reduction options that can be used with them. It also gives access to a vast range of the scientific and technical reports on trials that have been undertaken involving fishing gears, selective devices and discard reduction practices. This section is designed to provide basic information on different fishing methods occurring in Welsh waters, the gear used, the target species and identifies any potential impacts.

| Gear Type Category | Gear description | |
|----------------------------|-------------------------|---------------------------|
| Dredging | Scallop dredges | Mussel dredges |
| | Razorfish dredges | Hydraulic suction dredges |
| Trawling | Demersal trawl | Pelagic trawl |
| | Beam trawl | Otter trawl |
| | Rock-hopper trawl | Seine netting |
| Static or non-fixed | Drift nets | Gill nets |
| | Tangle nets | Trammel nets |
| | Whelk pots | Crab pots |
| | Lobster pots | Prawn pots |
| Hand-gathering | Cockles | Mussels |
| | Rod & line fishing | |
| Aquaculture | Cages | Intertidal traps |
| | Rope cultivation | |

Table 3.1: Fishing gear types occurring in Welsh waters. Adapted from CCW (2010)

Sea fish species can be caught in a variety of ways using different fishing gear types. These fishing gears are categorised as either mobile or static depending on whether the gear is towed or is fixed in place.

There are four main types of fishing gear used by fishermen in Welsh waters. These

include dredging, trawling, the use of static gear and hand-gathering (including aquaculture). The types of fishing gears are summarised in Table 3.1 and shown in Figure 3.2.

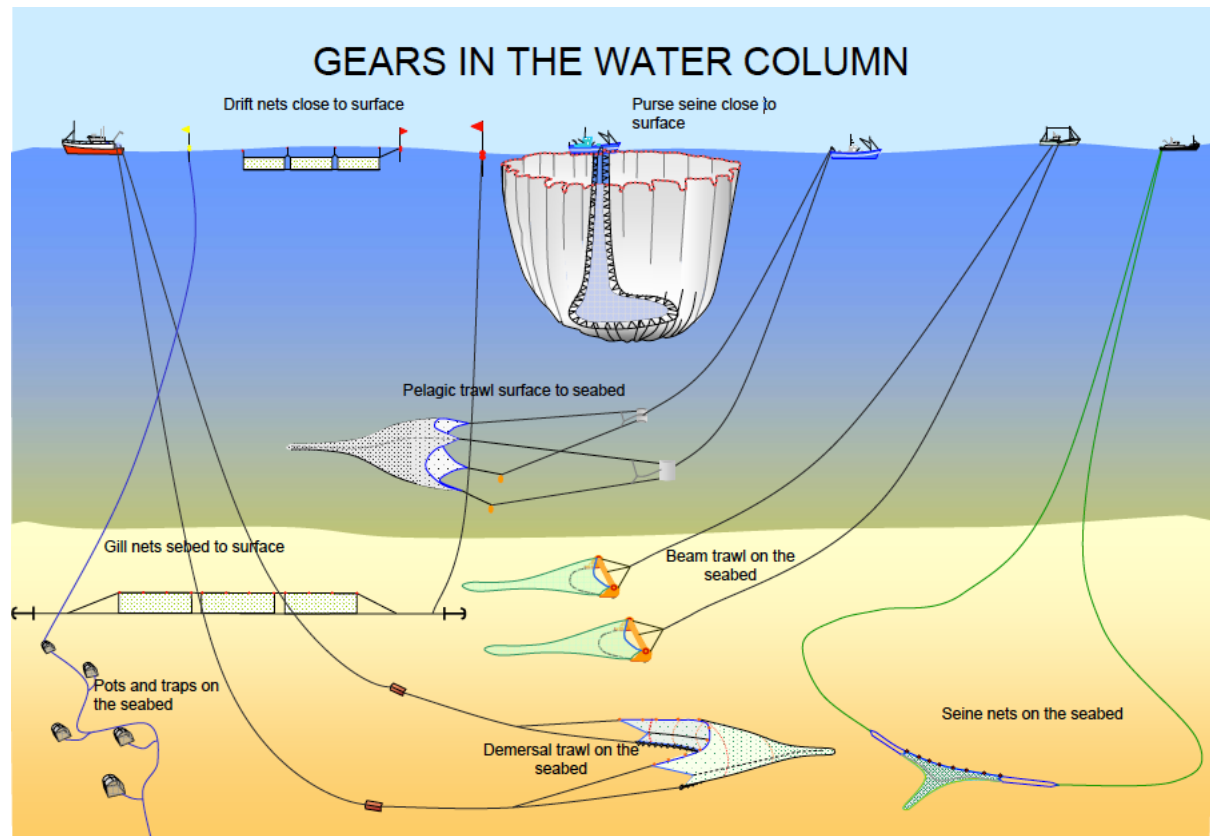


Figure 3.2: Different gears and their position in the water column. (Source: Seafish (2005))

Figure 3.3 gives an indication of where in the water column the different fish species found and Table 3.2 provides information on the main species caught in inshore waters around England and Wales and the gear types used to capture these species.

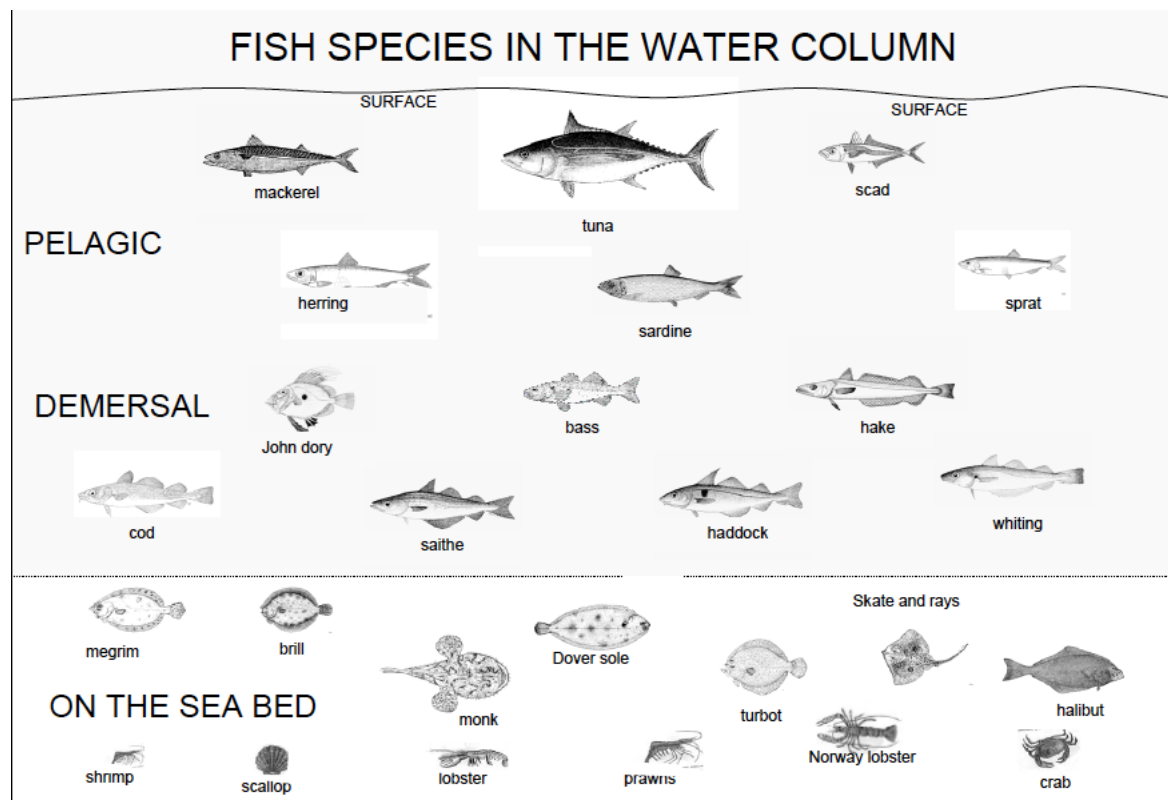


Figure 3.3: Where different fish species are found in the water column. (Source: Seafish (2005))

| Category | Sub-category | Species | Fishing gear for capture |
|---------------------|-----------------|--|---|
| White fish | Roundfish | Cod, whiting, haddock, saithe, pollack and dogfish. | Demersal otter trawl, pair trawl, seine net, gill net, trammel net, longline and handline. |
| | Flatfish | Dover sole, plaice, flounder, turbot, monkfish and rays. | Bean trawl, demersal otter trawl, seine net, tangle net, trammel net and longline (turbot, monkfish and rays). |
| Pelagic fish | Small pelagic | Mackerel, herring and sprat. | Gill net, pelagic trawl and handline (mackerel). |
| | Large pelagic | Bass and mullet. | Gill net, pelagic and demersal trawl, beach seine, trolling (bass) and handline (bass). |
| | Diadromous fish | Salmon, sea trout and eels. | Gill net and beach seine (salmonids), trap, hand-held nets and fyke nets (eels). |
| Shellfish | Crustacea | Lobsters, crabs, crawfish, <i>Nephrops</i> and shrimp. | Pot, tangle net, beam trawl (shrimp) and demersal otter trawl (<i>Nephrops</i>). |
| | Molluscs | Cockles, mussels, scallops, oysters, clams, whelks, periwinkles, cuttlefish and squid. | Dredge (bivalves), trawl (cuttlefish and squid), pot (whelks), hand-gathering (bivalves and gastropods), pots and traps (cuttlefish). |

Table 3.2: Summary of the main species caught in inshore waters around England and Wales and the types of fishing gear used to capture (Walmsley and Pawson, 2007).

The following subsection describes the different fishing gear types, how they are used and their target species. Information contained in these subsections is adapted from Sea Fishing Atlas of Wales (CCW, 2010), obtained from the Food and Agriculture Organization of the United Nations (FAO), the Seafish publication; Basic Fishing Methods (Seafish, 2005) and Fish catching methods of the World (Gabriel et al., 2005) and additional sources including (Kaiser et al., 1996; H. R. Craven and Stewart, 2013; Howarth and Stewart, 2014).

3.1.1 Dredging

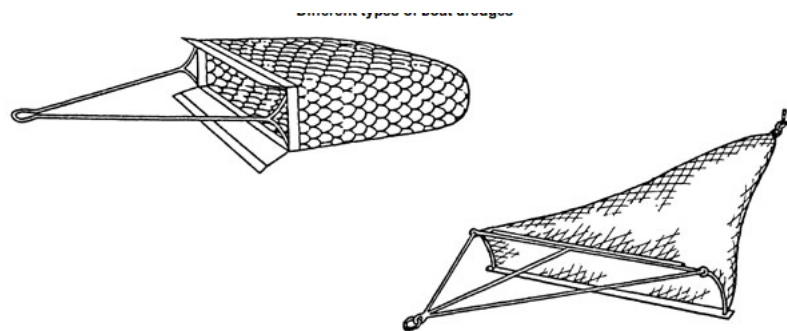
Dredging can be used to capture sedentary (inactive) and bottom dwelling animals such as mussels, snails, sea cucumbers and sponges as well as crustaceans (e.g. crabs, lobsters, shrimp) and flatfish. Dredging is mainly used to harvest shellfish (scallop, mussels, oysters) from the seabed, in the UK they are mainly used for harvesting scallops.

Dredges are hard rigid structures which consist of a mouth frame with a holding bag attached that is constructed of metal rings or mesh. The shape of dredges vary considerably depending on where in the world they are used and manufactured. The size, shape and construction of the dredge varies according to preference, size of operation and seabed surface (Figure 3.4). Dredges are generally towed along by a vessel and either work in one of two ways:

1. Dredges that scrape the surface of the seabed
2. Dredges that penetrate the sea bottom to a depth of 30cm, targeting macro-infauna (small invertebrates that live on or in sediment, or animals attached to hard substrates). These can be either:

- Mechanical dredges (toothed dredge (oyster or scallops) or bladed dredge (mussels))
- Hydraulic dredges (limited use in certain areas due to fishery controls in place. Legislation to stop hydraulic dredging for bivalves was passed in Wales in 2003)
- Hand dredges

Some surface dredges include rakes or teeth that are designed specifically to penetrate the top layer of the seabed. Dredges targeting in-fauna use either long teeth (mechanical dredges) or water jets or pumps to mobilise the sediment (hydraulic dredge) and the target species. For example they can be used to dig and flush out mussels which are buried within the seabed sediment.



Source: Fish Catching Methods of the World, III ed. p.235.

Figure 3.4: Example dredges used on dredging vessels. Source: Gabriel et al. (2005)

Most dredges used on fishing vessels are heavy and require winches and sometimes cranes for handling. They can be mechanised for transporting the catch via pumps or conveyor belts to the deck of the boat where it is sorted. The dredges are usually pulled over the seabed at a speed of 3-5 knots (3.5-6 mph). They are then intermittently hauled in and emptied. The spoil brought to the surface in the dredge is discharged back to

sea. Dredging usually occurs in coastal areas or shallow offshore waters. Dredging vessels usually work three or more dredges on each side, depending on the size of the vessel.

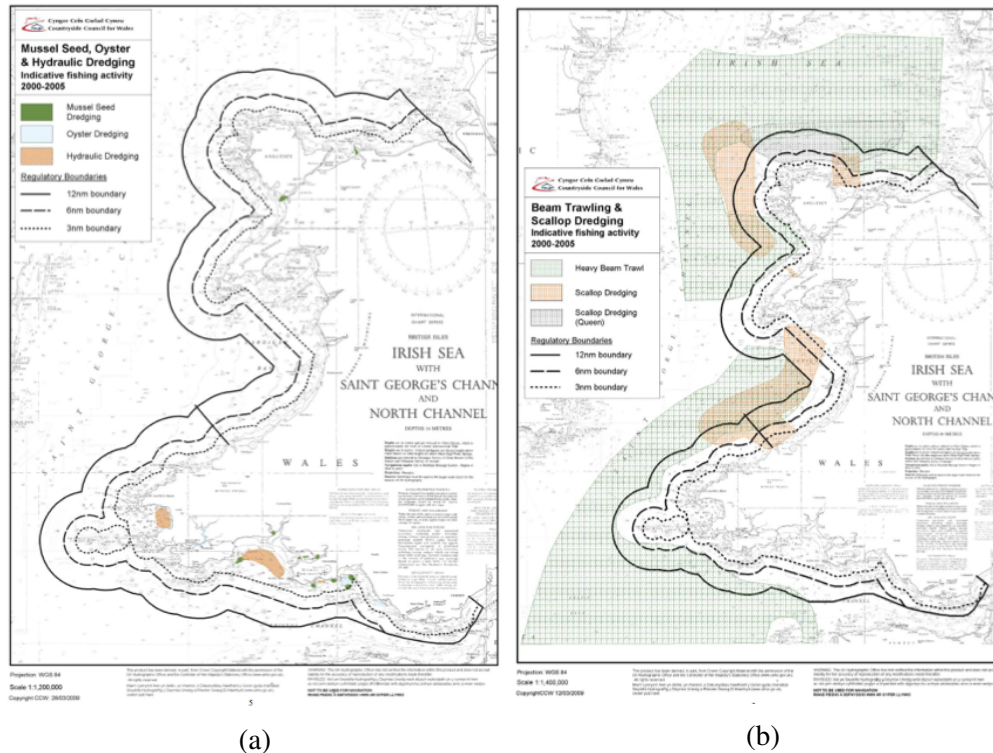


Figure 3.5: Map to show areas around Wales where; a) mussel seed, oyster and hydraulic dredging and b) beam trawling and scallop dredging occurred from 2000-2005. Source: Sea Fishing Atlas of Wales, CCW (2010)

Newhaven dredges Newhaven spring loaded scallop dredges are used by the scallop fishing fleet in Wales to target king scallops (*Pecten maximus*). Fishing for scallops with the toothed Newhaven dredges commonly used around the UK has been considered one of the most damaging of all fishing gears to non-target benthic communities and habitats (Kaiser et al., 2006; H. R. Craven and Stewart, 2013). Newhaven dredges are towed either side of the fishing vessel, along the seabed. King scallops, the main target species, are usually found buried within the sediment, therefore the opening of the dredge is

fitted with a spring loaded bar of 8-9 teeth, each up to 11cm long and spaced 8cm apart, designed to rake scallops out from the sediment and into a dredge net (Howarth and Stewart, 2014). The teeth on Newhaven dredges can penetrate between 3-10cm into the seabed depending on substrate type (Kaiser et al., 1996). The spring loaded toothed bar allows the teeth of the dredge to flex backwards, preventing it from snagging on harder ground and improving catch efficiency (Kaiser et al., 1996). Each dredge is usually 75cm in width and the mesh size of the underside of the "belly" and top nets are usually 80-100mm (Howarth and Stewart, 2014). The "belly" of the dredge is constructed of steel rings in order to reduce damage from rough ground (Kaiser et al., 1996).



Figure 3.6: Images showing Newhaven dredges (a) Four spring toothed Newhaven dredges showing tooth bars, dredge frame and nets and the rubber wheeled towing bar. (b) Close up of the dredge teeth. Images taken from Howarth and Stewart (2014)

Target species

Shellfish including bivalves such as mussels, oysters, scallops and clams.

Impacts

The process of dredging can alter the seabed habitat through the movement and disturbance of the seabed sediment (Kaiser et al., 1996). Larger sediment, such as cobbles can be picked up and brought to the surface in the dredge itself. Other impacts include sediment compaction and chemical changes caused by the disturbance of the seabed (Howarth and Stewart, 2014). Dredges can damage reef structures and other vulnerable seabed structures as well as catching non-target species, the impacts depend largely on the seabed habitat type and other organisms found there (Howarth and Stewart, 2014). For example, deposit and suspension feeders are particularly vulnerable to scallop dredging on gravel, sand and mud habitats (Kaiser et al., 2006). The physical effect of prolonged dredging can be influenced by the level of natural disturbance. Natural disturbance of the seabed is influenced by exposure to prevailing weather conditions, tidal strength, water depth and sediment types (<http://www.fao.org/fishery/geartype/212/en>).

Sources of information on dredging included in this report are non-exhaustive, other sources are widely available.

3.1.2 Trawling and Seine netting

There are various forms of trawling during which one or two vessels (pair-trawling) may be used to tow a net along to catch fish. The trawl net used is funnel shaped and can be towed along the seabed, in mid-water or close to the surface of the water. Demersal trawls are designed to catch species such as cod, haddock and herring above the seabed

whilst beam trawls target species such as brill, sole and turbot, that stay on the seabed or are found within the seabed (infauna), much like dredging. During trawling activities the method of capture and gear used is dependent on the target species. The most common types of trawling are listed below.

- | | |
|-----------------------------------|----------------------|
| 1. Beam trawl | 4. Pelagic trawls |
| 2. Otter trawl | 5. Rock-hopper trawl |
| 3. Light demersal (bottom) trawls | 6. Seine netting |

Beam trawling is one of the earliest forms of towed fishing gear. The beam trawl nets are held open by a heavy steel beam which is towed along the sea bed on a line about three times the depth of the water. Beam trawls are similar to dredges in some ways but the rectangular frame is generally much larger and the bag is longer. Beam trawls usually have the bottom beam removed as it hampers movement along the seabed and the teeth or digging blades are removed. Some beam trawls include tickler chains (sweep chains) which drag along the seabed in front of the net disturbing the fish in the path of the trawl, encouraging them to rise from the sea bed and into the mouth of the net.

Modern beam trawls range in size from 4m to 14m in length and each trawler tows two beam trawls (twin-trawling or twin-rig trawling) at a time from derricks, one trawl either side of the vessel. Light beam trawling (<4m in length) occurs in Welsh waters. These trawls have three or four tickler chains but are not usually rigged with a chain matrix for use on hard or rocky ground. This type of fishing activity occurs mainly in South and Southwest Wales.

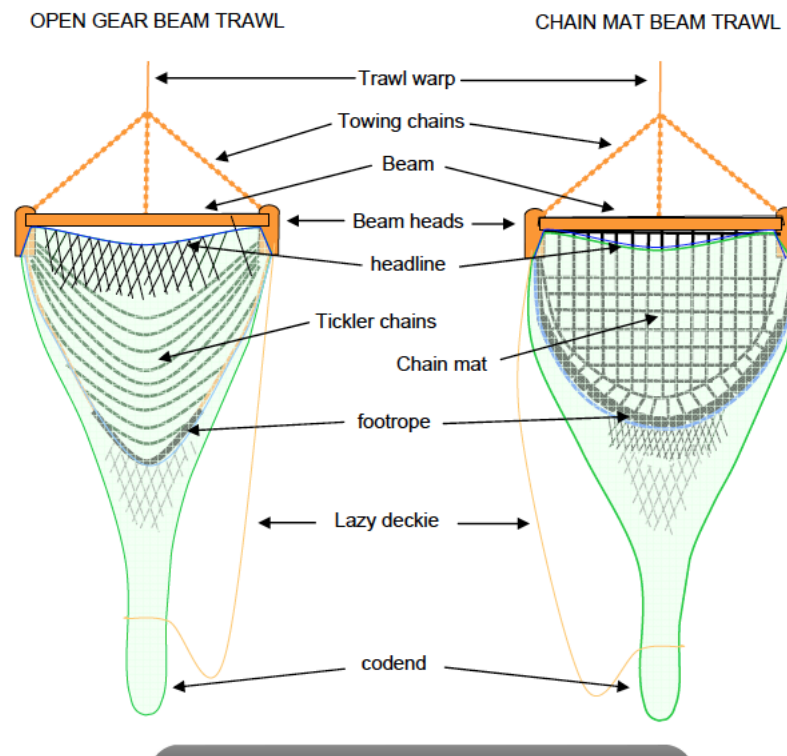


Figure 3.7: Example beam trawl. Source: Gabriel et al. (2005); Seafish (2005)

Otter trawling uses a cone shaped net which is held open by water pressure on two otter boards. The net is towed either across the seabed or within the water column. Fish are herded between the boards into the mouth of the trawl and the fish captured are then forced along a funnel into the end of the net known as the cod-end. Net mesh sizes can be altered to target different sized fish. The use of larger mesh sizes enables juvenile, smaller fish to escape. The use of square mesh helps prevent the mesh from closing during towing allowing smaller fish to escape. Light otter trawling occurs throughout Welsh waters, conducted by small boats using small doors and short sweeps that cover less ground than larger, heavier gear.

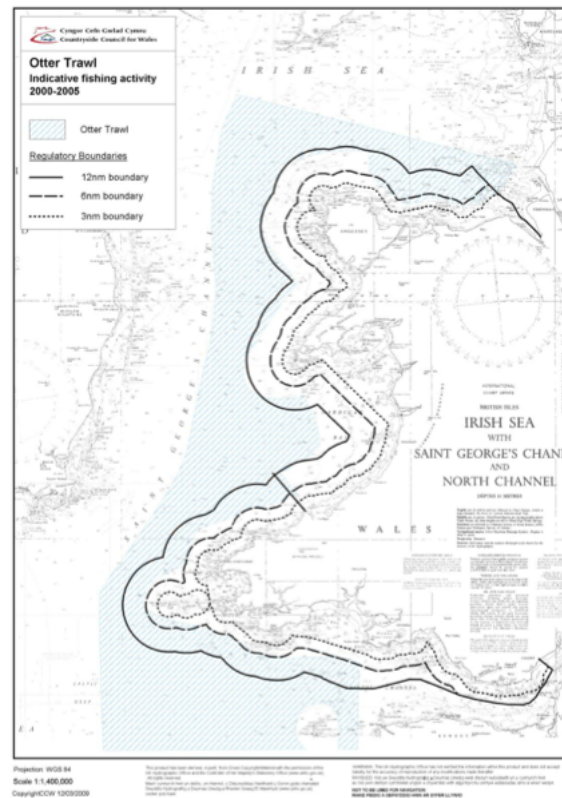


Figure 3.8: Map to show indicative/historical areas where otter trawling occurred in Welsh waters from 2000-2005. Source: Sea Fishing Atlas of Wales, CCW (2010)

Bottom trawling involves the use of a basic trawl net shaped like a funnel bag, which is towed along the seabed. Ropes are attached to the mouth of the net with floats on top to keep it off the seabed and help hold the net open. Each net has side ropes called winglines which attach to the wings (sides) of the net. Each wing has heavy trawl doors (otterboards) attached to either side which are made of wood or steel, which keep the net close to the seabed. The doors are designed to flow through the water at an angle causing them to spread out horizontally, maintaining the net opening.

Pair trawlers use a similar set up but without the doors as the distance between the two vessels towing maintains the net opening.

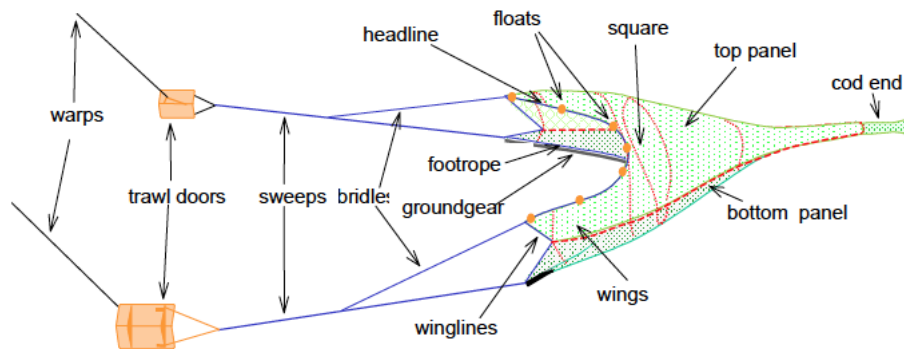


Figure 3.9: Example bottom trawl. Source: Gabriel et al. (2005); Seafish (2005)

Pelagic trawls can be either single or pair trawls (two vessels). They use a similar gear set up to bottom trawls but use much larger nets with larger mesh sizes. Pelagic trawls target fish species within the water column generally targeting schooling fish species.

Pelagic trawls can be as big as 160 metres deep and 240 metres wide. The position of the net within the water column is controlled by the speed of the vessel and the amount of weight attached to it. Seine netting usually takes place over one particular area, it is a labour intensive method of fishing but is generally fuel efficient. Pelagic trawling does not currently occur in Welsh waters.

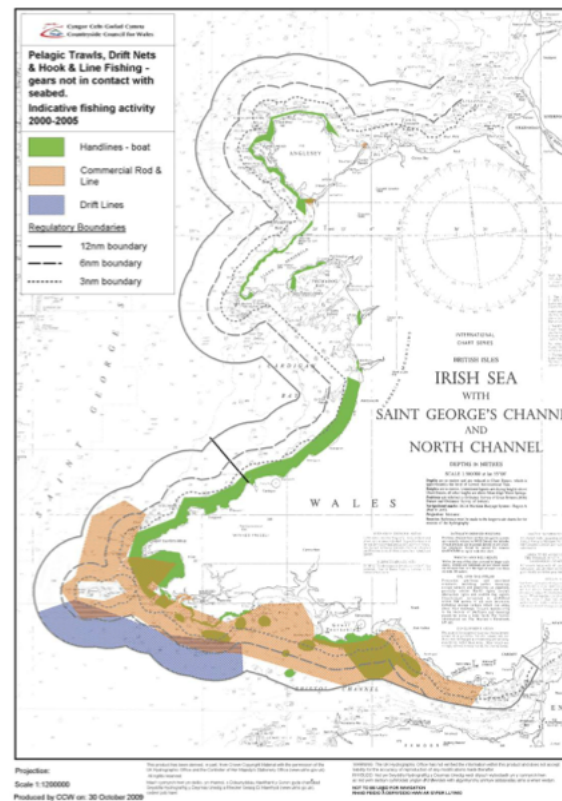


Figure 3.10: Map to show indicative/historical areas where handlines, commercial rod and line fishing and the use of drift lines occurred from 2000-2005 in Welsh waters. Source: Sea Fishing Atlas of Wales, CCW (2010)

Seine netting, including purse seine netting can be carried out by a single vessel or pair of vessels. It is similar to trawling but is an encircling or herding fishing method, with the idea of surrounding a large shoal of fish in order to capture the entire shoal.

A simple seine net is composed of a net wall consisting of two wings with or without a section (bunt or bag) to hold the catch in the middle. The wings are long and are lengthened by a long towing line or warp. Seine nets cannot be closed from the bottom as with purse seine netting.

Beach seine netting is commonly used to collect sandeels for angling. A beach seine is

made of a small, single panel net which has a floated headline and a weighted footrope. The net is usually deployed with one person holding one end on the shore and the other end is taken out to sea, passed around in a loop and then brought back ashore. The net is then pulled in, trapping any fish within it.

In Wales the use of trawl and seine nets is mainly carried out by small inshore vessels targeting species such as rays, plaice and shrimps at different times of year.

Purse seines are designed to catch fish near the waters surface. They are composed of a wall of netting with a mesh size to suit the target species with a head-rope with floats attached to keep the net on the surface. The lower edge of the net has rings attached with a cable that passes through to enable the fishermen to close off the space surrounded by the purse seine from below to prevent the fish from escaping out the bottom of the net.

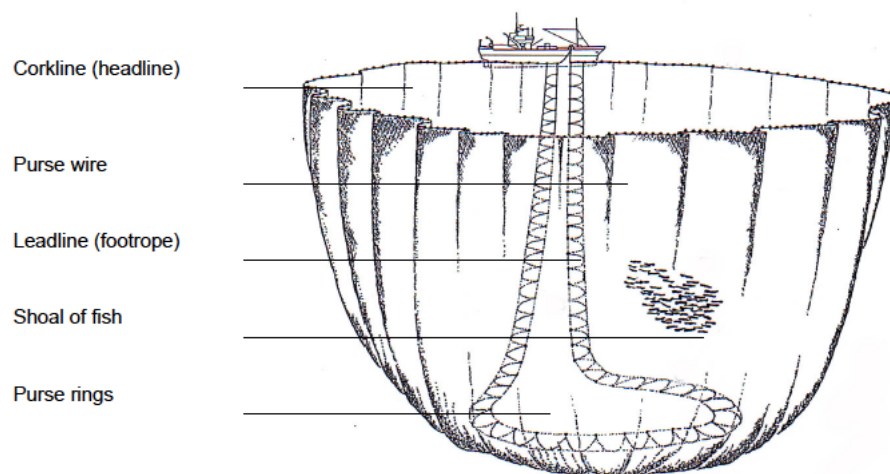


Figure 3.11: Example purse seine netting. Source: Gabriel et al. (2005); Seafish (2005)

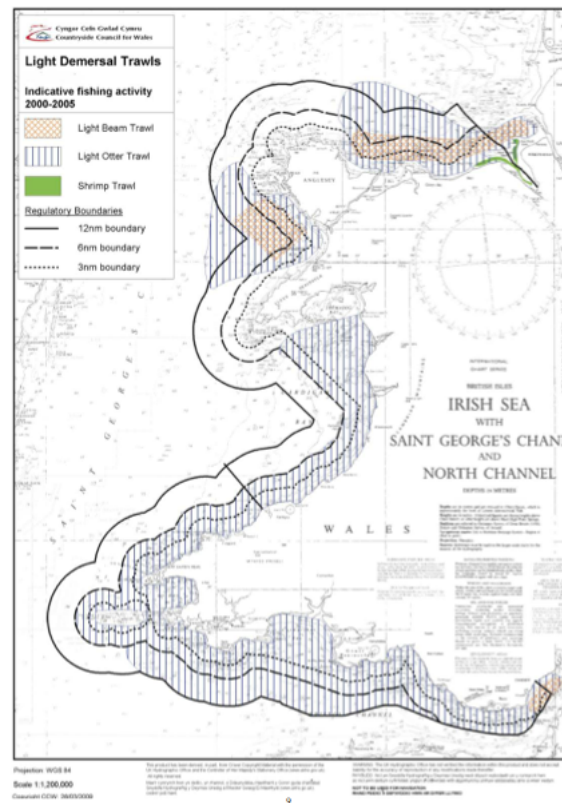


Figure 3.12: Map to show indicative/historical areas where light demersal trawling occurred in Welsh waters from 2000-2005. Source: Sea Fishing Atlas of Wales, CCW (2010)

Target species

The target species depends on the type of trawling taking place and where in the water column the fishing is conducted. Fish species caught include hake, cod, dover sole, plaice, lemon sole, skate, monkfish as well as mackerel, herring and sprats within the water column. Seine netting targets large shoals of schooling fish such as mackerel and herring.

Impacts

Seine netting is a non selective fishing method that can capture non-target species and small juvenile fish. In some cases incidental capture of marine mammals can occur with

trawling and netting. In the UK in 2004 a ban on fishing for bass with pelagic pair trawls within 12 miles of the coast of England and the Western English Channel was introduced in order to help prevent the incidental capture of marine mammals in the nets.

3.1.3 Static gear and Drift nets

Static fishing gear is any gear that is fixed in one place whilst it is fished. The gear is usually set in position to allow the target species to either swim into the gear and be captured or fish are attracted to the gear by bait. This type of fishing is usually seasonal and small scale in Welsh waters.

Static gear includes the following:

- | | |
|-----------------|-----------------|
| 1. Gill nets | 5. Crab pots |
| 2. Tangle nets | 6. Lobster pots |
| 3. Trammel nets | 7. Prawn pots |
| 4. Drift nets | 8. Whelk pots |

Set nets include gill, tangle and trammel nets and are commonly used around the coasts of Wales. They are generally used by small inshore fishing boats which target bass and mullet. Set nets are often used in areas of average to strong tidal flows and are not usually left unattended for more than 24-48 hours.

Gill nets are used to trap fish that are too large to pass through the mesh. The fish swim into the net and are caught in the mesh by the operculum (the hard bony part of the fish covering the gills) and is unable to escape. Gill netting is used to capture a wide variety

of fish and can be set to fish at the surface, mid water or on the seabed. Each panel of netting is usually rectangular in shape and about 100m long. A series of nets can be joined together to make very large nets miles long. Recreational netters usually only set one panel. Gill nets are made of nylon, mono or multi-filament and have a float line at the top and a leaded foot-rope at the bottom to keep the net vertical in the water column. Gillnets are usually placed across the direction of the migrating/moving fish.

Gillnets are a selective form of fishing regulated by the mesh size. They are an efficient method of fishing especially when of low visibility when the correct material, thickness, colour and knot sizes are used.

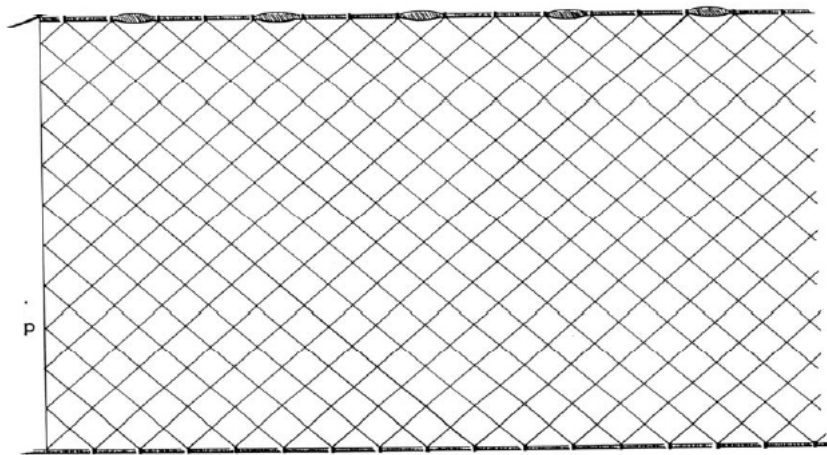


Figure 3.13: Example Gill net. Source: (Gabriel et al., 2005; Seafish, 2005)

Tangle nets are similar to gill nets but have large mesh sizes and are loosely set. They target species such as spider crabs and rays and are usually set to fish at the seabed.

Trammel nets are made up of three panels (walls). The outer walls are made of stretched wide-mesh with a smaller mesh inner sheet of loose fitting netting which forms a pocket from which fish cannot escape. They are usually set on the seabed.

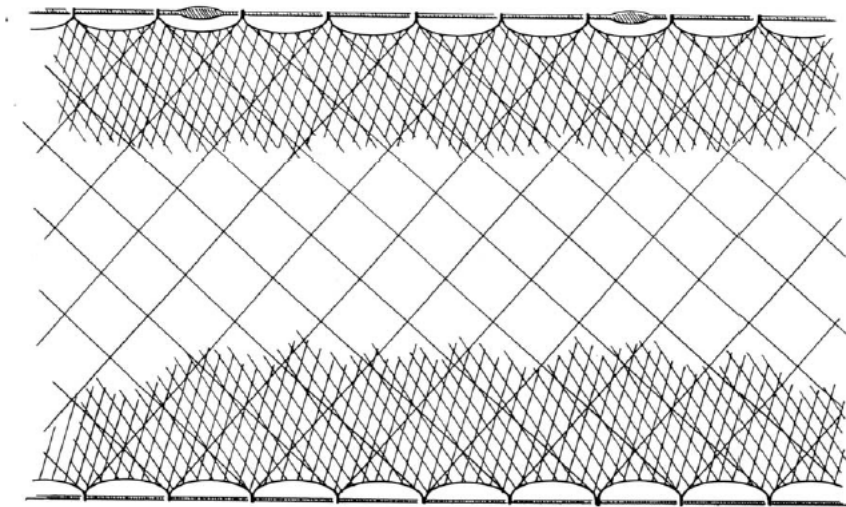


Figure 3.14: Example Trammel net. Source: (Gabriel et al., 2005; Seafish, 2005)

Drift nets are gillnets that are not fixed in place but drift with the tide and currents. They are designed to catch surface or mid-water fish species and are usually made of a lightweight curtain of net hanging from floats at the surface. The fish become entangled within the mesh as they do with gillnets.

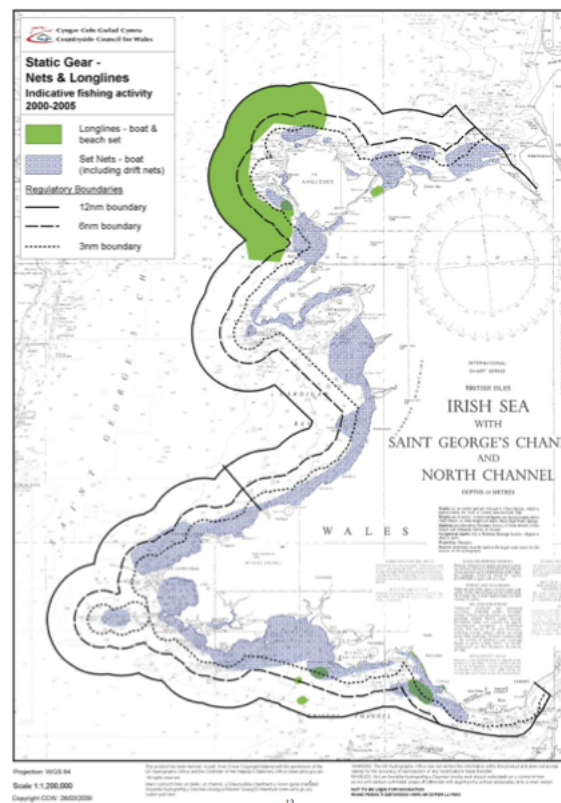


Figure 3.15: Map to show indicative/historical areas where static nets and longline fishing methods occurred in Welsh waters from 2000-2005. Source: Sea Fishing Atlas of Wales, CCW (2010)

Long-lining no longer occurs on a commercial basis within the Welsh fishing industry as it is labour and bait intensive with each hook requiring baiting before heading out to sea. Where this fishing methods occurs they are mainly set by recreational fishermen in the intertidal area, usually on sandy beaches.

Traps such as pots, creels and fish traps all vary in size and shape depending on the target species. They can be made from wood, metal or plastic and are usually covered with netting. Pots are primarily used to capture shellfish such as lobster, crabs (edible, spider, velvet or green), prawns and whelks. They are usually set in strings of between 10 and 60 pots which are marked at either end with buoys.

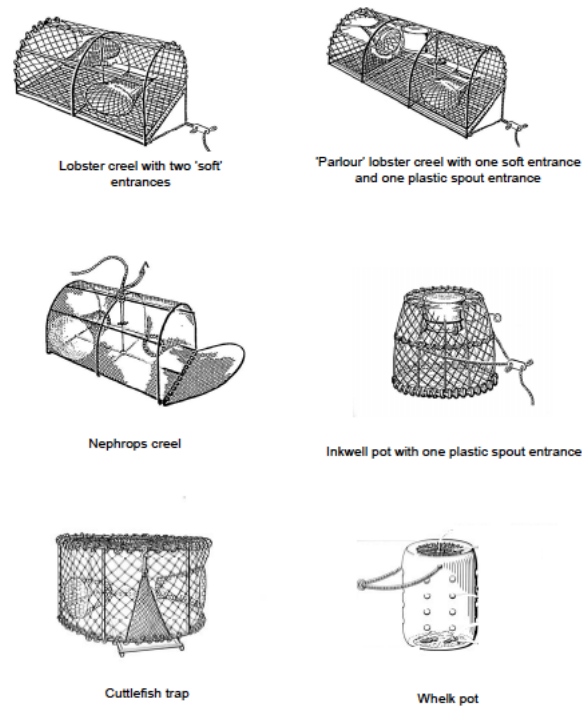


Figure 3.16: Figure showing the different types of traps. Source: (Gabriel et al., 2005; Seafish, 2005)

Traps are usually found near rocky ground in inshore waters but can be set offshore. They work by entrapping the fish inside by encouraging them in through a tunnel which is difficult to escape from. Traps are usually set with bait to encourage the target species inside. The pots are then recovered back to the fishing vessel with the catch still alive enabling unwanted catches to be returned to the sea. Potting vessels require a large amount of open deck space to enable them to carry large numbers of pots. The pots are usually hauled each day or every couple of days with the catches sometimes being stored in vivier tanks (circulating sea water tanks) or in boxes covered in material to keep the catch alive until they are landed and processed.

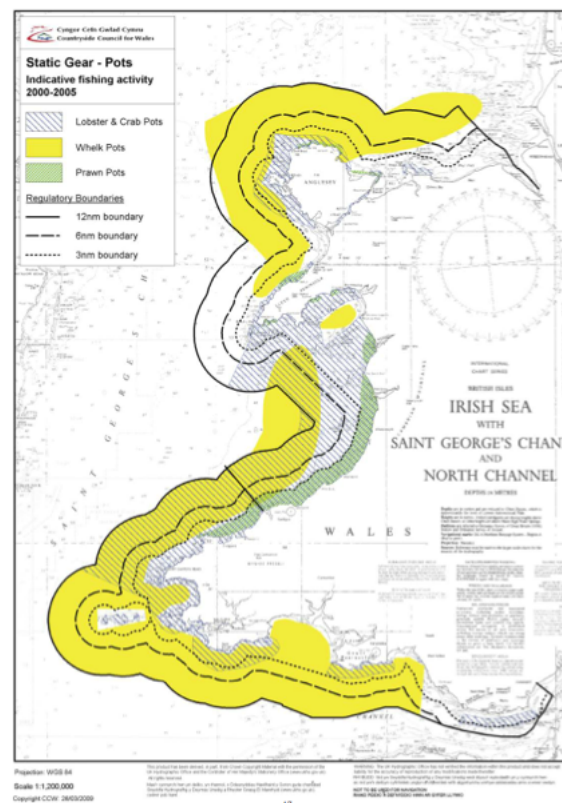


Figure 3.17: Map to show indicative/historical areas where static fishing gear such as pots were used in Welsh waters from 2000-2005. Source: Sea Fishing Atlas of Wales, CCW (2010)

Target species

Set nets target species such as bass, mullet, herring, mackerel, other schooling fish as well as spider crabs and rays. The main target species of traps such as pots include lobsters, crabs such as edible crab, prawns, shrimps and whelks.

Impacts

Non target species can be caught as bycatch in tangle nets, this includes the capture of turtles and marine mammals including seals, porpoises and dolphins who eventually drown in the nets. Gear that is lost will continue to capture fish, with fish captured

becoming bait for other fish. This is known as ghost fishing. The use of non-rotting synthetic net materials causes problems for the marine environment and the crustacean fishery. Pots and other fishing gear can be lost in stormy weather, such as the conditions experienced during the 2013 winter and by entanglement of lines in rocky grounds. The crustaceans caught in lost pots have no means of escape and eventually die. In this situation the pots become self baiting and attract other marine creatures into the pot to begin the cycle again. This process can last for years.

3.1.4 Hand-gathering

Hand-gathering for fish or shell-fish is very seasonal and usually involves either hand-picking or can be assisted by using equipment such as rakes and riddles or using spades, forks or suction pumps to dig for catches. The largest quantities are collected for sessile (fixed) and slow moving animals such as mussels, limpets and snails. Hand-gathering takes place along the coast where there are large areas of sand or mud are exposed by the tides twice a day

Hand-gathering includes:

1. Handpicking/digging
2. Rod & line fishing

Target species

The main species of shellfish collected for personal consumption includes cockles, winkles and mussels which are picked by hand and shrimps that are collected using a push-net. For example, hand-picking for cockles takes place in areas around Anglesey in North Wales (Figure 3.18) and in Estuarine areas in North as well as in South Wales

(Figure 3.19). Two main shore-based fisheries are the cockle fishery in South Wales and the mussel fishery in North Wales. The largest concentration of gatherers is located in the Burry Inlet in South Wales where a well established cockle fishery is located.

Other species are collected for use as bait; these include lugworm and ragworm which are dug up. Razor fish are collected by squirting a salt solution into the burrow and then hand-picked as the fish emerges. Limpets are generally knocked off rocks by hand and shrimps are caught using small nets in rockpools. Other species such as butterfish and sandeels are also collected for bait and seaweed is collected for lava bread. The majority of hand-gathering is not closely regulated although some fisheries operate under Regulating Orders such as the Burry Inlet cockle fishery, whilst the Three Rivers fishery in Carmarthen Bay is either open or closed by issue of a cockle fishery notice, for example, Byelaw 24 (closed from 00:01 on 31 March 2014 until 23:59 on 30 April 2014). There are four cockle processors based around the Burry inlet who buy from local gatherers however, in the past the local beds do not produce enough cockles to meet the processors demands so supplies are supplemented from cockles obtained outside of the area (Nautilus, 2000).

As of September 2013 there were 36 protected licence holders for the Burry inlet cockle fishery, each license is issued by Natural Resources Wales (NRW) and each licence holder is allowed to gather a personal daily quota of cockles which must not be exceeded and which changes depending on the month of the year. For example, in April total allowed catch could be 200kg/day and for May 300kg/day. These licence holders are invited to renew their licence each year by the 1st April. A number of temporary licences may also be issued by NRW depending on stock assessments and these are offered to people on the licence waiting list (NRW, 2013).

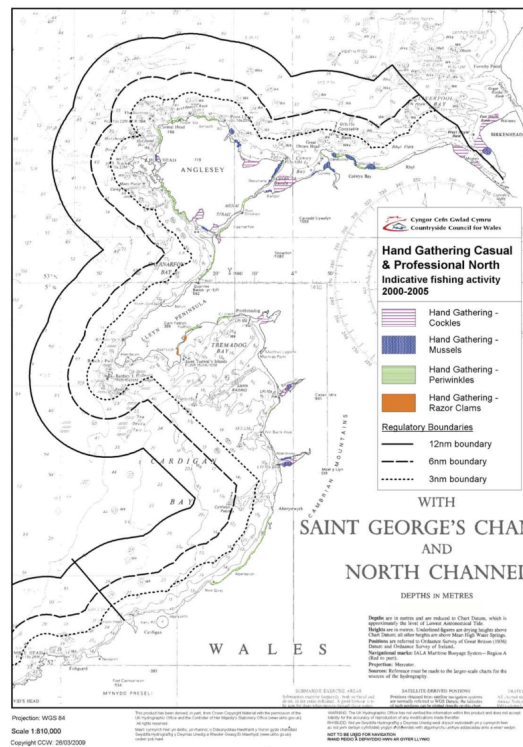


Figure 3.18: Map to show indicative/historical areas along the North Wales coast where hand gathering for different species occurred 2000-2005. Source: (CCW, 2010)

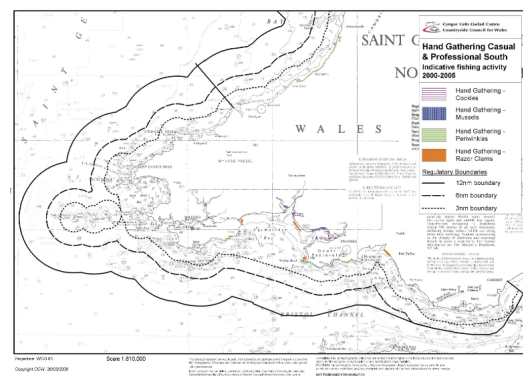


Figure 3.19: Map to show indicative/historical areas along the South Wales coast where hand gathering for different species occurred 2000-2005. Source: (CCW, 2010)

Hand-lining is a simple form of fishing composed of a line of a certain length, a weight and a hook. Other equipment such as scoop nets are often used to help land the catch.

They usually have a single hook but can have more than one attached to branch lines. They are simple to deploy with one end held by the fisherman, often on a reel, who waits to feel for a bite of the fish. The hook is the set to prevent the fish from escaping. The line can also be used with a pole or stick and is often used to catch species such as cod or mackerel. This method of fishing is carried out by both recreational and commercial fishermen targeting fish species such as mackerel.

Rod and line fishing is mainly used by sport and recreational anglers although some commercial rod and line fishing takes place, targeting bass. It is not a principal means of fishing but is used by some fishermen between setting and lifting nets.

Impacts

Some methods of hand-gathering have become mechanised and as such decrease the sustainability of this method of fishing.

3.1.5 Aquaculture

Marine aquaculture, also referred to as fish farming, is the farming of aquatic organisms such as fish, crustaceans, molluscs and aquatic plants. The term aquaculture has only been in use since the 1950's. The term culture implies human intervention that enhances production of the cultivated species. The process of cultivating marine species has been used by humans for thousands of years. Historically, aquaculture has provided a reliable and easily harvested source of protein that is independent of natural fluctuations in capture fisheries (Kaiser et al., 2011).

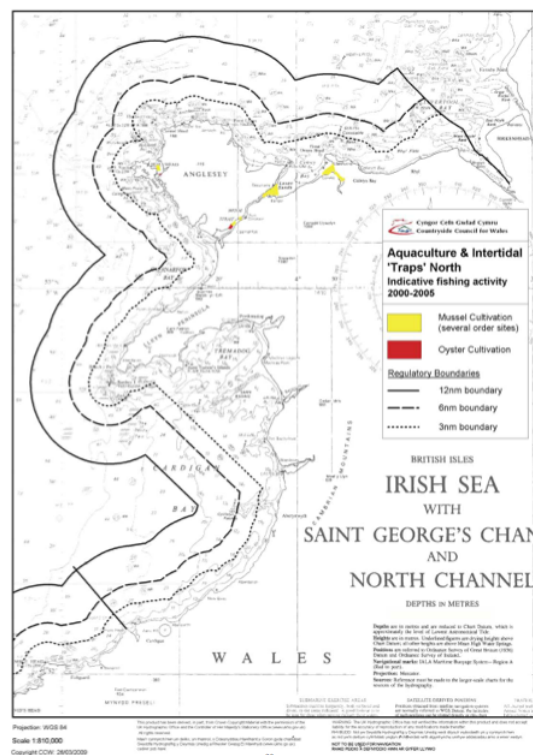


Figure 3.20: Map to show indicative/historical areas where aquaculture activities took place in north Wales from 2000-2005. Source: Sea Fishing Atlas of Wales, CCW (2010)

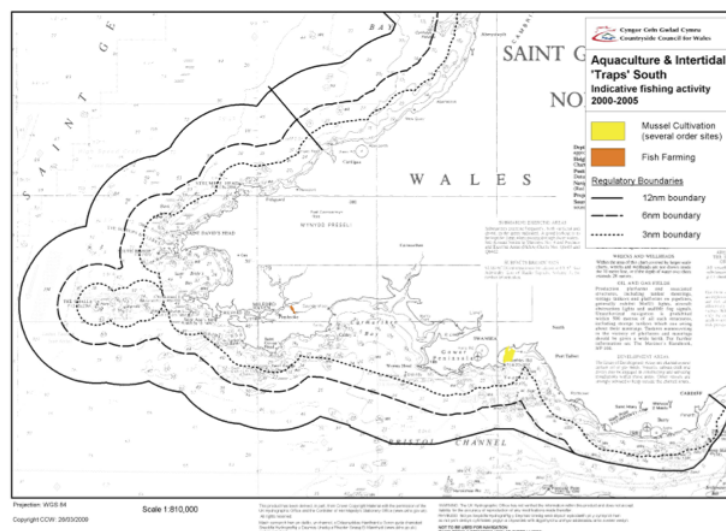


Figure 3.21: Map to show indicative/historical areas where aquaculture activities took place in south Wales from 2000-2005. Source: Sea Fishing Atlas of Wales, CCW (2010)

There are different forms of aquaculture

1. Extensive cultivation - Simple methods including the release of species into naturally enclosed systems where they derive their nutrition from natural sources. This also includes the relaying of seed bivalve molluscs harvested from the wild.
2. Intensive systems - Highly sophisticated and controlled cultivation and high density stocking of species in totally enclosed intensive recirculation systems. The use of artificial feed, antibiotics and vitamins to limit the effects of disease and stress are common in intensive systems

In Wales the main aquaculture activities take place around Anglesey and the Menai Straits (mussel and oyster cultivation), in north Wales (Figure 3.20) and in Swansea Bay (mussel cultivation), in south Wales (Figure 3.21). Fish farming using cages for *salmonids* has been tried in the upper reaches of Milford Haven with limited success.

Mussels are collected from the intertidal zone by hand or with a long handled rake, this removes the mussels from the mussel mud with little sediment disturbance and any by-catch is returned to the sea. Mussels are also farmed on subtidal areas called lays. Seed mussel is laid on the plots and then gathered when they reach a preferred size and collected by boats with dredges.

Pacific oysters are an introduced species which are gathered by hand, they are also found in the intertidal zone. A bag and trestle system is used which involves rearing of oysters in plastic bags secured to metal racks. The oysters are usually bought from hatcheries as juveniles (seed) and are placed into the bags and left to grow, they are thinned out repeatedly to allow them to grow to a preferred marketable size, this can take 2-3 years.

Peeler (any species of crab that is about to or has recently shed its hard outer shell) crab traps have recently been introduced in estuaries and sheltered shores around Welsh coast. They are used as bait for sea fishing and by anglers. The traps are usually set in muddy intertidal habitats and are made of either old car tyres or guttering protruding out of the seabed at an angle. The crabs use these traps as shelters to hide under, where they are picked up by hand.

Suspended rope aquaculture of mussels has been used by fishermen in Wales. This method uses a length of rope which is suspended about two metres below the surface by buoys. These buoys are anchored to the seabed. Mussel spat settles on the ropes from which the seed (juvenile) muscles can either be collected or grown to a marketable size.

Target species

Fish, crustaceans, molluscs and marine (aquatic) plants such as seaweed

Impacts

Aquaculture is dependent upon inputs of feed and good management of the cultivation system to avoid disease and environmental degradation. However, some aquaculture practices are dependent upon wild-capture fisheries to provide protein from lower down the food chain to make fishmeal. The cultivation of finfish species such as salmon is highly dependent upon the availability of fish oils that are included in the formulated diets that are fed to these species. Therefore, some aquaculture is a consumer of wild capture fisheries, in particular oil rich species such as anchovies. The protein material found in fishmeal can be replaced by plant derivatives but it is not as simple to replace the fish oils with alternative source plant based oils. The aquaculture that takes place in Welsh waters is not as intensive as in other parts of the UK primarily involving mussel

and oyster cultivation.

3.1.6 Impacts of marine fisheries

A report by (Thomas, 2003) states that in the early 1990's research undertaken by the Countryside Council for Wales and the Royal Society for the Protection of Birds (RSPB) attempted to address whether there was a conflict between marine fisheries activities and populations of seabirds, marine mammals, turtles and sharks, the results from this research indicated that there were few, if any significant bycatch problems around the Welsh coast.

A more recent report focusing on the impacts of marine fisheries on marine mammal species by Evans and Baines (2013) suggests that because different fisheries operate to target particular marine species, this may lead to depletion of local stocks of fish, cephalopod or crustacean which could ultimately impact upon marine mammals if they favour that species in their diet. Marine mammals largely forage opportunistically and in doing so take a range of prey species, although it is likely that they have preferences determined by the energy content, availability and ease of capture of the prey (Evans and Baines, 2013).

Indirect impacts of marine fisheries relate to the modification of the habitat in which the prey species of a marine mammal lives (Evans and Baines, 2013). This indirect impact is likely to be most relevant to fishing methods that modify or potentially damage the sea bed in some way, such as beam trawling, scallop dredging, or other forms of dredging (Evans and Baines, 2013). The risk of by-catch in marine fisheries in Wales is highest in relation to fishing activities such as pelagic trawls, nets and lines, static nets and longlines. For certain marine mammal species such as Atlantic grey seals, minke

whales, fin whales and humpback whales risk is also higher for static gear, pots and traps (Evans and Baines, 2013).

3.1.7 Gear types in Wales

According to the landings data for Welsh vessels, since 1990 there have been 33 different categories of gear listed as having been used to catch the fish species landed. The gear types that were used to catch the highest value of fish in 2012 were extracted and were used to explore the number of landings associated with those gear types since 1990 and are shown in Figure 3.22.

This shows that there were a greater amount of fish landed having been caught using otter trawls during the 1990's compared to the 2000's. As the total number of landings increased there was a change in the number of fish landings by different gear types. The number and value of landings from pots increased along with the use of gill nets and more recently an increase in the use of whelk pots.

The value of the landings associated with those gear types are shown in Figure 3.23. This shows that in the 1990's the greatest value of landings, from the gears explored, came from tangle nets and long lines. More recently this has changed to other or mixed pots, unspecified dredges and whelk pots.

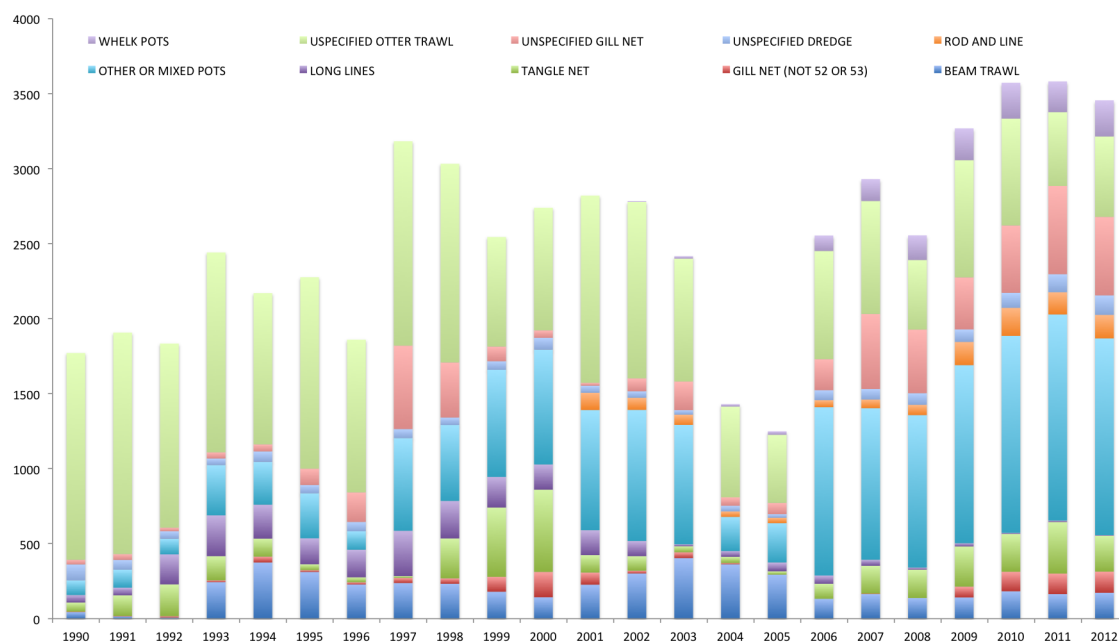


Figure 3.22: The number of fish landings by gear type

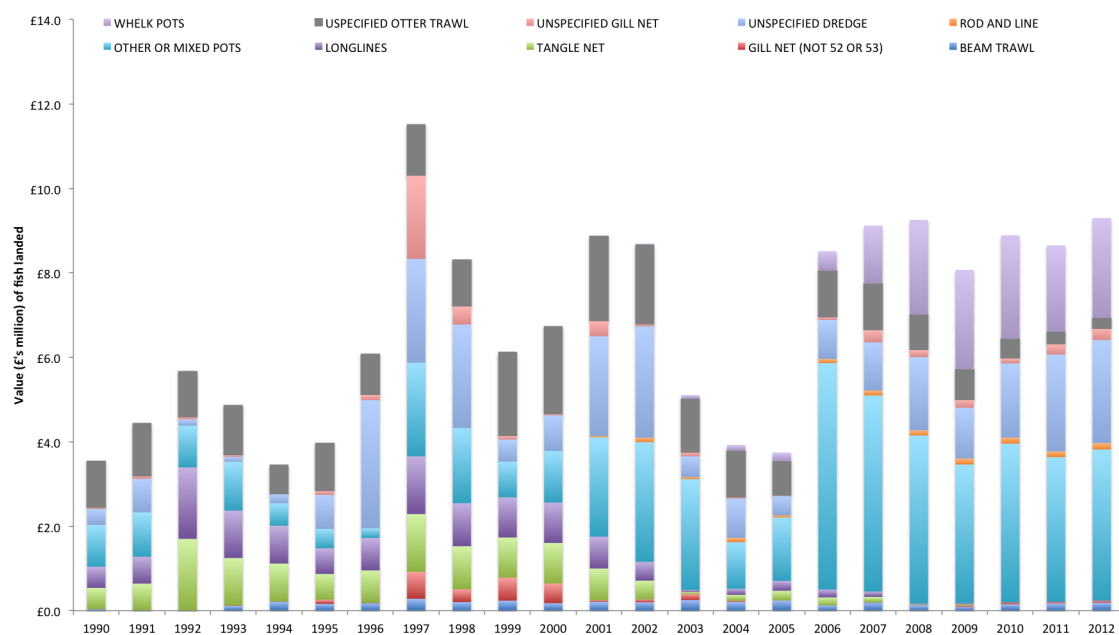


Figure 3.23: The value of fish landings by gear type

3.2 Fishing vessel administration

All fishing vessels are linked to an Administration Port which is responsible for issuing fishing vessel licences. The office designated as a vessel's Administration port is typically the office closest in proximity to a vessel's operational base. The Administration port for a vessel may differ from its registration port. Figure 3.24 shows the number of vessels with Milford Haven listed as their Administration Port, this is explored further in Section 4.1.

In 2012, of the 481 vessels that list Milford Haven as the Administration port there were 45 different home ports associated with these vessels and four of these vessels have home ports outside of Wales and therefore they are not truly representative of the Welsh fishing fleet. The vessels within the under 10m fleet range in length from 3.6m to 10m, approximately 20% of these were 5m or less in overall length. The over 10m vessels range from 10.4m to 69.2m in length, 77% of these were over 15m in length.

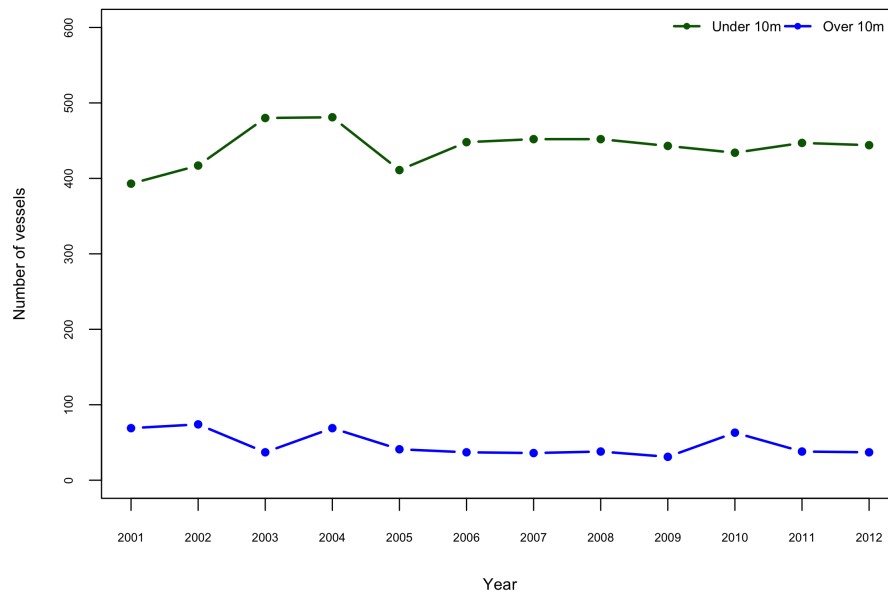
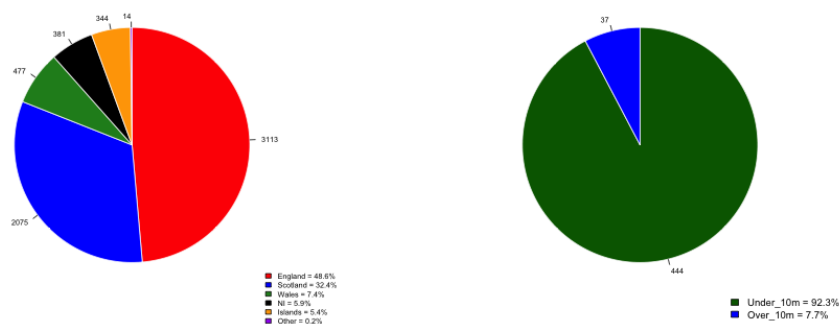


Figure 3.24: Number of fishing vessels administered by Milford Haven

In 2012, the 477 fishing vessels in Wales (not including those that have a home port outside of Wales) made up 7.4% of the UK fishing industry in terms of vessel numbers; 93% from the under 10m sector and 7% from the over 10m sector (Figure 3.25).



(a) UK vessel numbers

(b) Breakdown of Welsh fishing fleet

Figure 3.25: Breakdown of the UK and Welsh fishing fleet in 2012

Each fishing vessel has an Administration port, for all the fishing vessels in Wales in 2012 this was Milford Haven and a home port. All the under 10m fishing vessels administered by Milford Haven in 2012 had a Welsh port listed as the vessels home port. Not all the over 10m vessels administered by Milford Haven had a Welsh port listed as their home port. One vessel has the city of Corunna, a Spanish port on the north-west coast of Spain and three list Vigo, another Spanish port in north-west Spain as their home ports. This suggests that these vessels come into Welsh waters to fish at certain times and are not representative of the local Welsh fishing fleet.

3.3 Fishing vessels in Welsh waters

In 2012, the UK fishing industry had 6,406 fishing vessels compared with 6,716 in 2005, a reduction of 5%. In 2012 this comprised of 5,032 under 10m vessels and 1,374 over 10m vessels. Figure 3.26a shows the number of fishing vessels in the UK from 2005 to

2012.

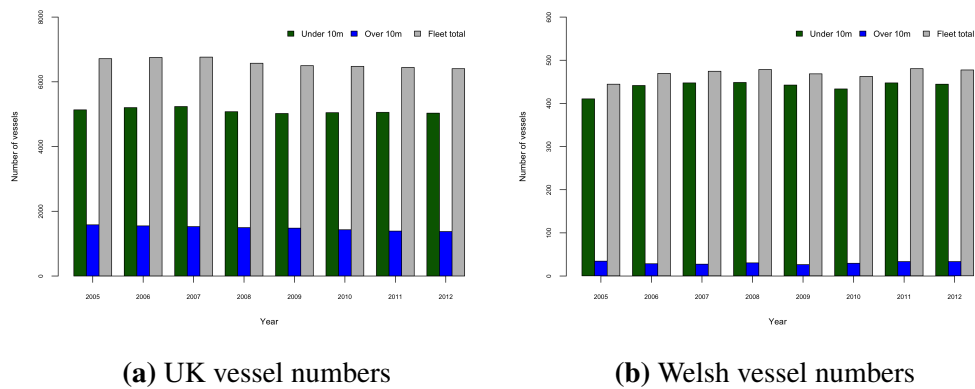


Figure 3.26: Fishing vessel numbers (2005-2012)

In order to understand the nature and character of the fishing industry in the UK and specifically in Wales it is important to have an idea of the number of fishing vessels operating in Welsh waters; the number of small (under 10m) and the number of large (over 10m) vessels, Figure 3.26b shows the total numbers of fishing vessels registered in Wales as well as the number of vessels in each size sector. The number of fishing vessels for each year has been determined using the total number of unique RSS numbers (Registry of Shipping and Seamen), only those vessels with a home port in Wales are included and classed as part of the Welsh fishing fleet.

The Welsh fishing fleet

The Welsh fishing fleet is primarily comprised of vessels in the under 10m size sector. These account for over 90% of the fleet (Figure 3.25b). In 2005 there were 410 under 10m fishing vessels, this number increased to 447 in 2007 and in 2012 there were 444 under 10m fishing vessels, registered in Wales, with home ports in Wales.

The numbers of over 10m fishing vessels fishing in Welsh waters and have home ports in Wales are much less than the under 10m sector. In 2005 there were 34 over 10m vessels,

nearly 8% of the Welsh fishing fleet; this number decreased to 26 (5.5%) in 2009. The number of over 10m fishing vessels has risen slightly in recent years to 29 (6.3%) of the 462 vessels in 2010, 33 (6.8%) of 480 in 2011 and 33 of 477 in 2012 (four of the over 10m vessels had a home port outside of Wales), thus the over 10m sector comprised of around 7% of the total number of vessels in the Welsh fishing fleet in 2012.

3.4 Employment in fishing in Wales

The level of current and past employment in the fishing industry in Wales provides an indication of the industries importance to the economy of the country. The fish catching sector in Wales was reported to be responsible directly and indirectly for 1,220 full-time jobs in 2003 (Richardson, 2006). Figure 3.27 provides information on the Welsh Sea Fishing and Aquaculture industry.

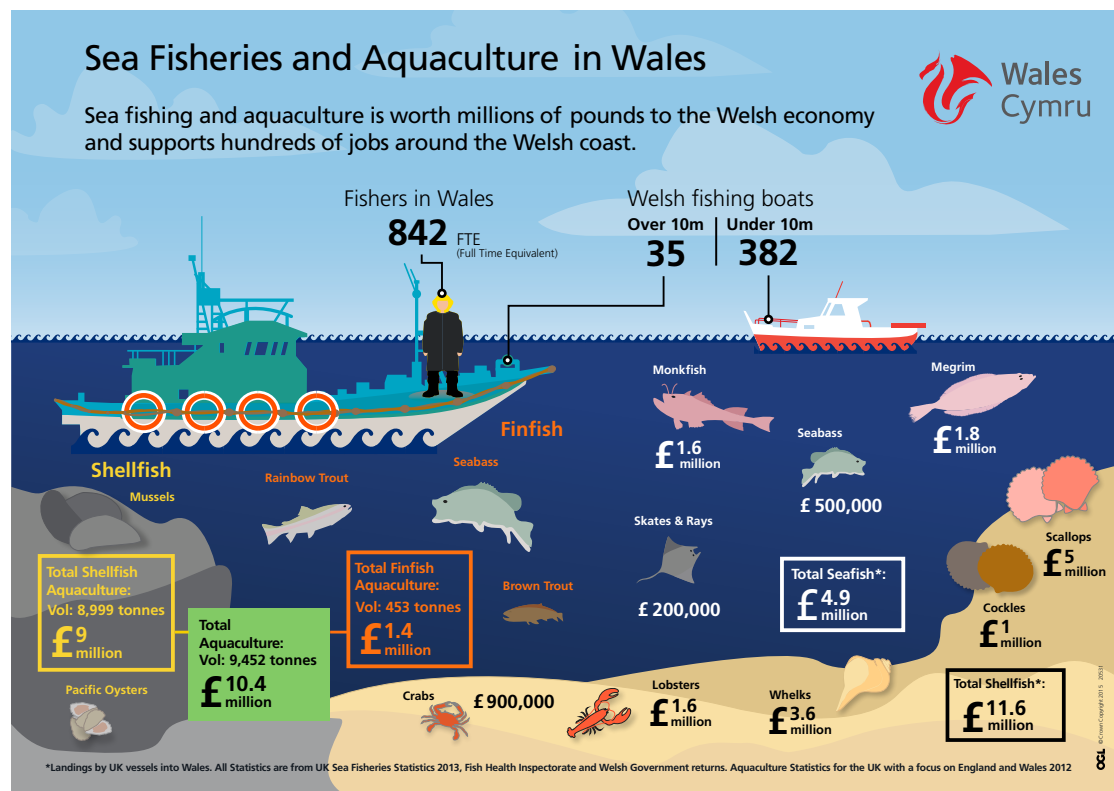


Figure 3.27: Sea fishing and aquaculture is worth millions of pounds to the Welsh economy and supports hundreds of jobs. Source: Welsh Government

The data on the number of fishermen in Wales are collected by the Welsh Assembly Government (WAG) whilst data for other parts of the UK are collected separately by other organisations, the Marine Management Organisation (MMO) (England), Marine Scotland (Scotland), the Department of Agriculture and Rural Affairs for Northern Ireland (DARD) (Northern Ireland). In England and Wales a census of fishing vessels over 10 metres in length is conducted. However, for fishing vessels 10 metres and under in length, a stratified sample of vessels is undertaken, with strata defined by administration port, vessel length and gross tonnage. A 20% sample is drawn from each stratum. A fisherman is defined as a person working at sea on a commercial fishing vessel, such as skipper or crew members. These fishermen are classed as either regular or part-time

according to whether fishing is their main occupation (MMO, 2013a). The following numbers and figures on employment in Wales is taken from data collated by the MMO. The employment figures for the fishing industry in Wales were derived from the MMO annual statistics archive and were available for 1994-2012.

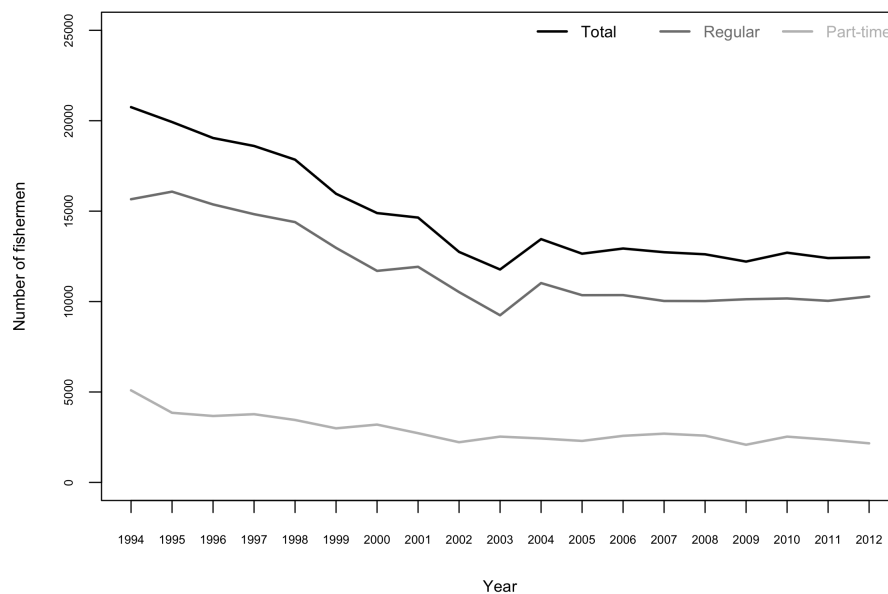


Figure 3.28: Trends in employment in the fishing industry in the UK since 1994. Figures derived from Annual UK Sea Fisheries Statistics Reports archive

Since 1994 records show that employment in the fishing industry throughout the UK has been declining, (Figure 3.28). Possible reasons for the decline in the number of people employed may be due to the following factors:

1. Changes in the fishing technology reducing the number of crew required to operate vessels
2. Mechanisation and improvements to gear technology, reducing the reliance on physical man power

3. Reductions in the numbers of boats and crews as a result of the increase in individual vessel fishing power
4. General decline in landings into UK ports
5. General decline in the demand for seafood

However, since 2004 the number of people employed has steadied, totalling approximately 13,000 people employed in the industry. There has been a dramatic decline in the number of full-time employees in the industry since 1994 when there were 15,659 people employed full-time to just 10,524 in 2002, a decline of 67%. Since 2001 the total number has remained around 12,000.

The number of people employed on a part-time basis has remained relatively stable since 2000, following a decline of 63% between 1994 and 2000, with part-time employees accounting for just 3,197 people. This number had remained around 2,500 people since 2001.

In 2012 there were approximately 12,450 fishermen employed in the UK, of these only 8.2% (1,020) were based in Wales.

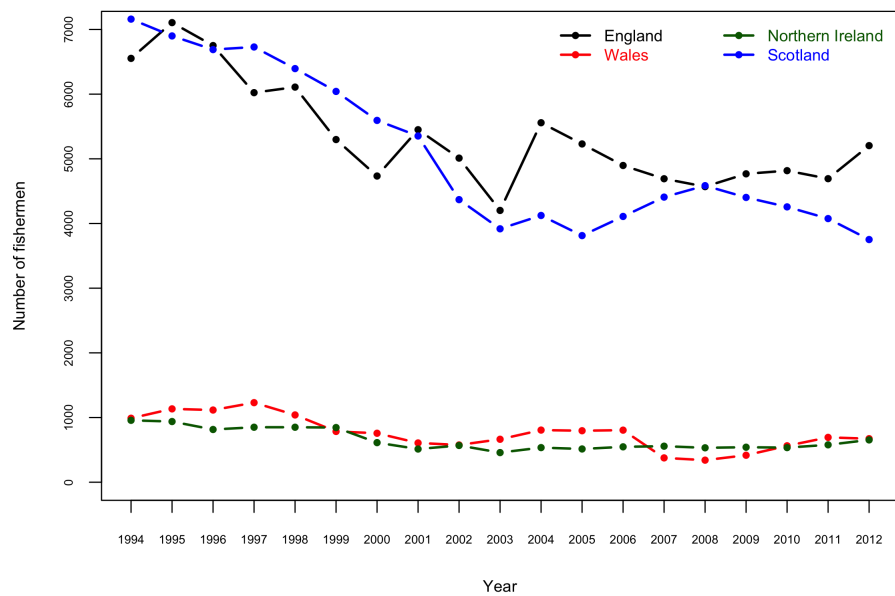


Figure 3.29: Trends in regular employment in the fishing industry in the UK since 1994 by country. Figures derived from Annual UK Sea Fisheries Statistics Reports archive

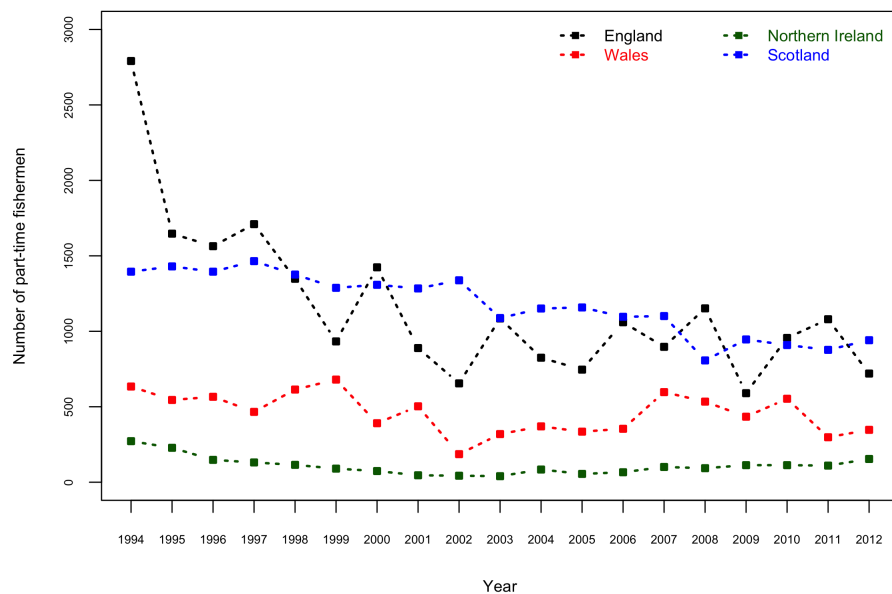


Figure 3.30: Trends in part-time employment in the fishing industry in the UK since 1994 by country. Figures derived from Annual UK Sea Fisheries Statistics Reports archive

In 2012 there were around 12,450 fishermen in the UK, down 12% since 2002. Of these, 5,900 were based in England (down 9% since 2002), 1,020 in Wales (down 25%), 4,700 in Scotland (down 18%) and 800 in Northern Ireland, up 32% (Figure 3.29). Part-time fishermen accounted for 17% of the total (Figure 3.30). The overall number of people employed in the fishing industry throughout the UK has declined since 1994 and there are a greater number employed in fishing in England and Scotland than there are in Wales and Northern Ireland. In 2012 the number of fishermen employed in the industry in England rose whilst the number in Scotland continued to decline.

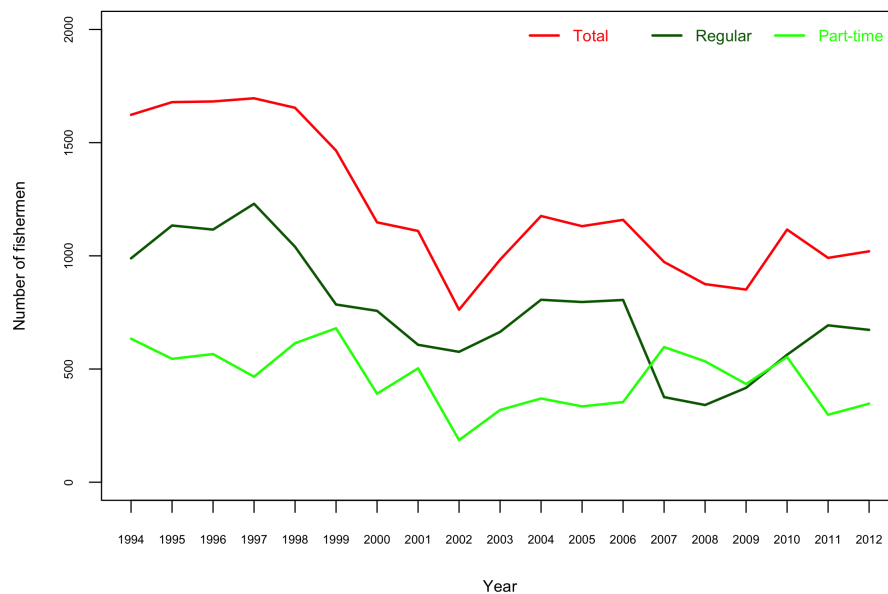


Figure 3.31: Trends in employment in the fishing industry in Wales since 1994. Figures derived from Annual UK Sea Fisheries Statistics Reports archive

Looking at Wales in more detail, (Figure 3.31) employment in the fishing industry declined to just 762 people in 2002. Since 2002 there have been peaks and troughs in the number of people employed in the industry; from 2007 to 2009 there were a higher number of fishermen employed on a part-time basis than full-time. This may indicate that fishing was not the main source of income for a number of fishermen in Wales during that period.

Despite the overall downward trend in employment in fishing in Wales since 1997 the data shows a more recent upward trend particularly in regular employment in the industry with figures for 2012 showing a total of 1,020 (673 regular and 347 part-time) fishermen.

Chapter 4

Welsh fishing ports

All commercial fishing vessels must be registered as a commercial fishing vessel with the Registry of Shipping and Seamen (RSS), under the Merchant Shipping Act (1995). Registration of ships Regulations (1993 as amended). Vessels are measured according to length by the Maritime and Coastguard Agency (MCA) and given a Port Letter Number (PLN) and mark unique to the vessel.

4.1 Administration Ports

There are two administration ports in Wales; **Milford Haven** in South Wales and **Holyhead** in North Wales. Figure 4.1 shows the locations of the administration and Registration Ports in Wales.

4.2 Registration Ports

Registration Ports in Wales are listed below:

| | | | |
|-----------|-------------|-----------|---------------|
| AB | Aberystwyth | M | Milford Haven |
| BS | Beaumaris | N | Newport |
| CO | Caernarvon | PT | Port Talbot |
| CF | Cardiff | SA | Swansea |
| CA | Cardigan | | |
| LA | Llanelli | | |

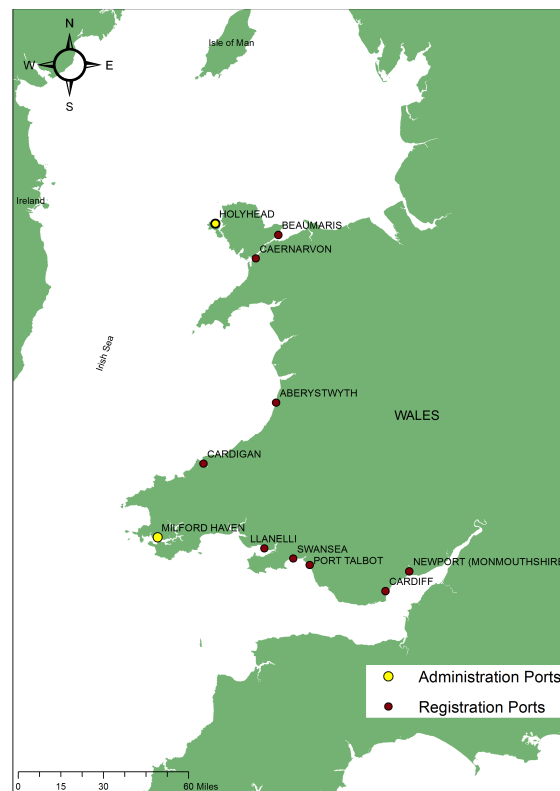


Figure 4.1: Administration and Registration ports in Wales

4.3 Home Ports

There were 42 ports along the Welsh coastline were considered home ports to the Welsh fishing fleet between 1990-2012. For the purpose of this project the Welsh coastline has been divided into north and south Wales, with Ynyslas and the Dyfi Estuary being the divide between north and south Wales (Figure 4.2 and Figure 4.3).

4.3.1 The North Wales Coast

The following ports are found along the north Wales coast:

- Aberdaran
- Aberdovey
- Aberffraw
- Abersoch
- Amlwch
- Anglesey
- Bagillt
- Bangor
- Barmouth
- Beaumaris
- Brynsiencyn
- Caernarvon
- Connahs Quay
- Conwy
- Criccieth
- Greenfield
- Holyhead
- Morfa Nefyn
- Mostyn
- Penrhyn
- Porth Colmon
- Portmadoc
- Pwllheli
- Rhos on Sea

- Rhoscolyn
- Rhosneigr
- Rhyl
- Trearddur Bay
- Trefor
- Ynyslas

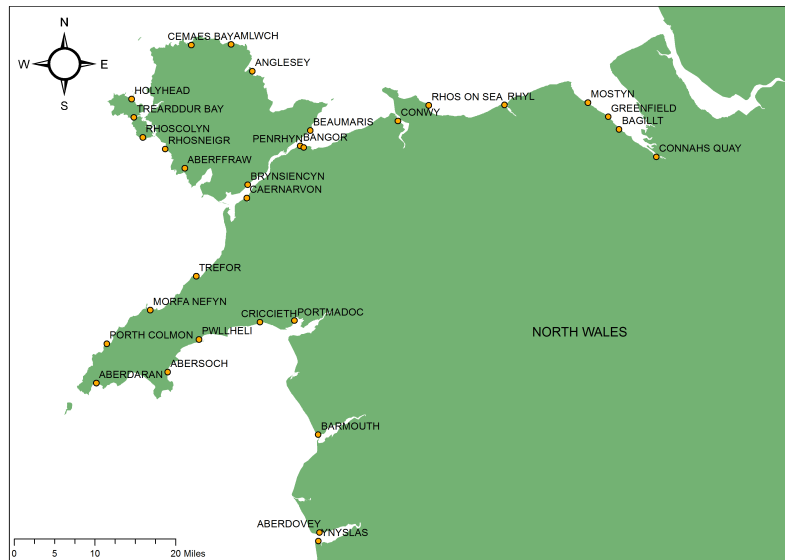


Figure 4.2: Location of ports in North Wales

4.3.2 The South and West Wales Coast

The following ports are found along the south Wales coast:

- Aberaeron
- Aberystwyth
- Burry Port
- Cardiff
- Cardigan
- Cemaes Bay
- Fishguard
- Llanelli
- Milford Haven
- New Quay

- Newport (Monmouthshire)
- Neyland
- Penclawdd
- Port Talbot
- Porthcawl
- Porthgain
- Saundersfoot
- Solva
- St Davids
- Stackpole Quay
- Swansea
- Tenby
- Three Rivers Area



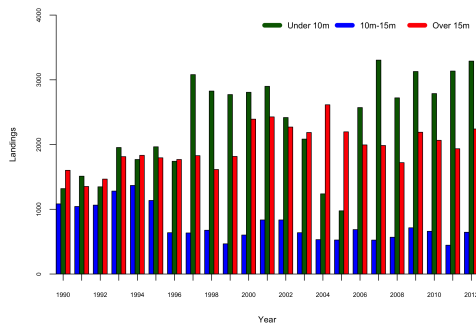
Figure 4.3: Location of ports in South Wales

Chapter 5

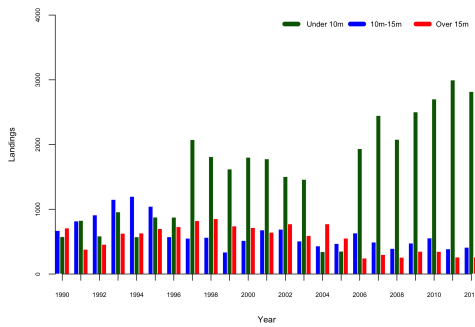
Wales's fish landings

5.1 Vessel landings

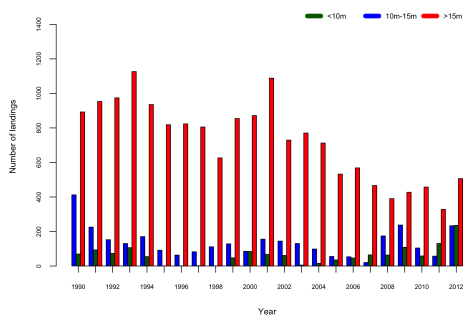
A measure of importance of the Welsh fishing industry can be provided by fish landings information. Figure 5.1 show the actual number of landings, into Welsh ports by different vessel nationalities during 2012. This shows the greatest number of landings by Welsh vessels into Wales is by the under 10m fleet and the smallest proportion of the landings by Welsh vessels is by vessels greater than 15m in length. For vessels registered outside of the UK the over 15m sector contribute the highest number of landings into Wales, this is also the case for other UK (non-Welsh) vessels.



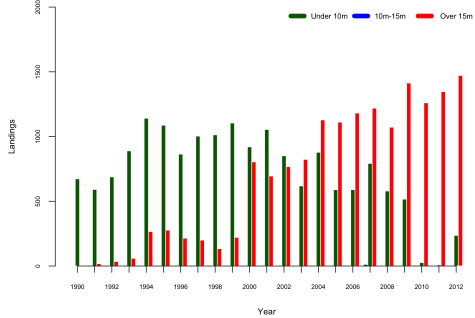
(a) All vessels



(b) Welsh vessels



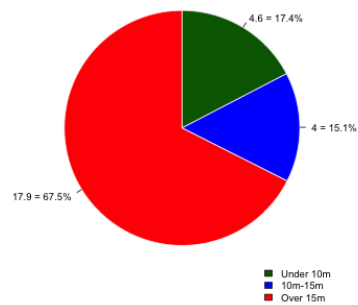
(c) Other UK vessels



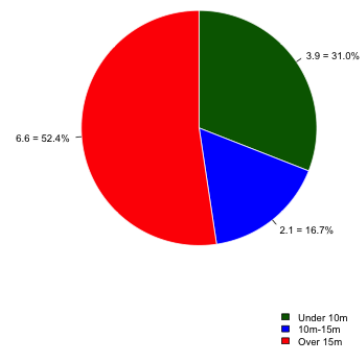
(d) Foreign vessels

Figure 5.1: Total number of landings into Welsh ports in 2012 by different vessel nationalities

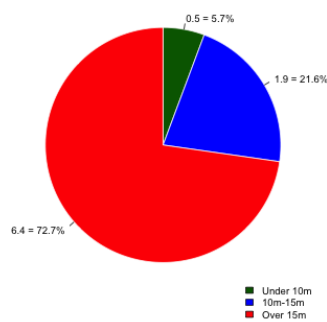
The weight (tonnes) of fish landed, by different vessel lengths, into Welsh ports in 2012 are shown in Figure 5.2 and the value (GBP) of these landings are shown in Figure 5.3 for different fishing vessel nationalities.



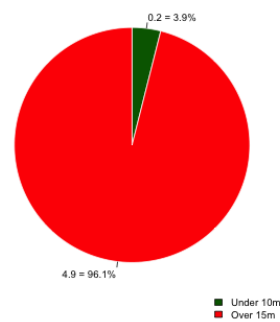
(a) All vessels



(b) Welsh vessels



(c) Other UK vessels



(d) Foreign vessels

Figure 5.2: Weight (1000's tonnes) of landings into Welsh ports in 2012

When considering weight of landings into Welsh ports in 2012 the over 15m sector landed the greatest weight of 17.9 thousand tonnes of fish, 67.5% of the total weight of landings into Welsh ports. The Welsh over 15m sector contributed 37% of the landings, other UK (non Welsh) vessels contributed 36% whilst foreign vessels contributed 27% of those landings into Welsh ports by the over 15m sector. A total of 4.6 thousand

tonnes of fish was landed into Welsh ports by the under 10m sector, 17.4% of the total weight of landings into Welsh ports. This was mainly landed by the Welsh fleet which contributed 85% of the landings by under 10m vessels.



Figure 5.3: The value (million GBP) of landings into Welsh ports in 2012

When considering the total value of the landings into Welsh ports in 2012 the over 15m sector landed the greatest value of £22.5 million of fish, 63.6% of the total value of

landings into Welsh ports. Foreign vessels contributed 63.1% of the landings, other UK (non Welsh) vessels contributed 30.2% and Welsh over 15m vessels contributed 6.7% of the value of landings into Welsh ports.

When analysing the information available for Welsh vessels only, almost 60% of the value of the landings (£5.6 million) is landed by the under 10m sector, this contributes approximately 77% of the total value of landings, this reflects the makeup of the number of vessels in different size categories. The majority of the value of landings by foreign vessels is landed by the over 15m sector, 95.3% (£14.2 million).

The value of all vessel landings by different vessel sizes and nationality are shown in Figure 5.4.

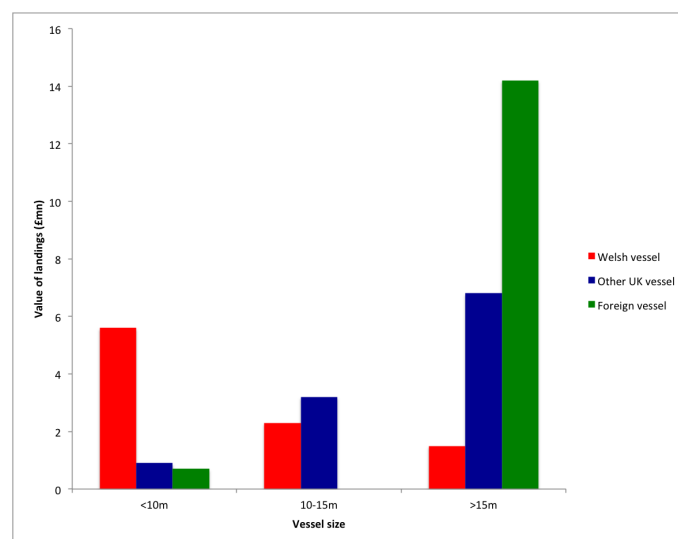


Figure 5.4: Value of landings into Welsh ports by different vessel sizes and vessel nationalities in 2012

5.2 Species analysis

This section explores the mix of fish species that have been landed in Wales and how this has changed over time.

An analysis of the fish species that are landed into Wales by Welsh fishing vessels has been conducted. The results show the importance of individual fish species landed in 2012 and provide information on the value (GBP) and weight of different species landed.

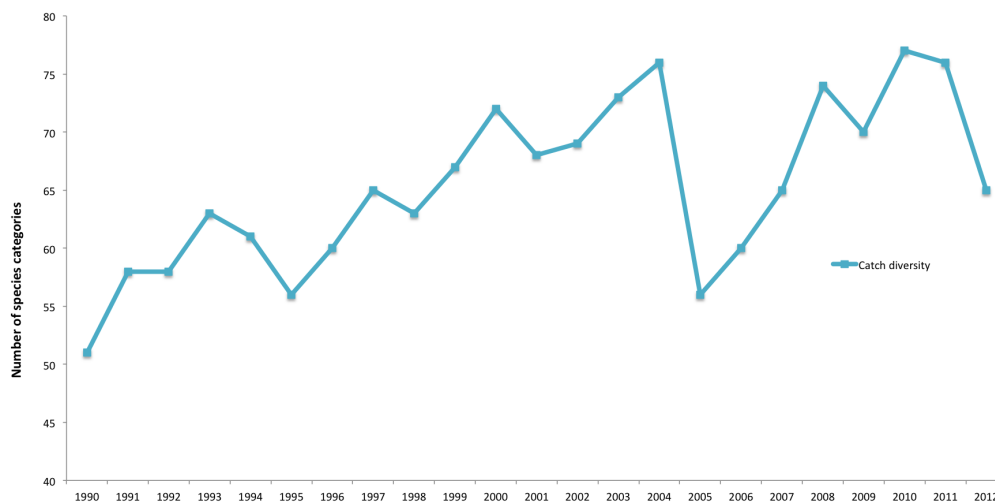


Figure 5.5: Number of different species landed by Welsh fishing vessels

Figure 5.5 shows the number of different fish species landed by Welsh fishing vessels into Welsh ports since 1990. The landings diversity has varied from 51 in 1990 reaching a peak in 2010 with 77 different species or categories recorded as landed.

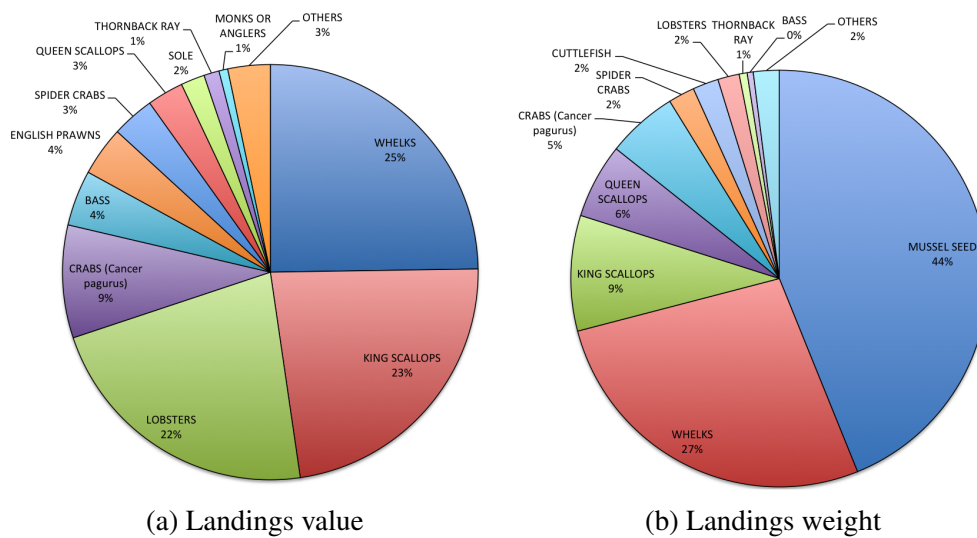


Figure 5.6: The importance of individual species landings by Welsh vessels into Wales in 2012

Figure 5.6 provides an overview of the results of the importance of fish species for the whole of Wales. This overview suggests that the Welsh fishing fleet relies on a small number of species, with whelks, scallops and lobsters providing 70% of the landings value. When considering the landings weight mussel seed contributes 44% of the landings weight alone but less than 1% of the landings value. Whelks, king scallops, queen scallops and crabs contribute almost 50% of the total landings weight in 2012.

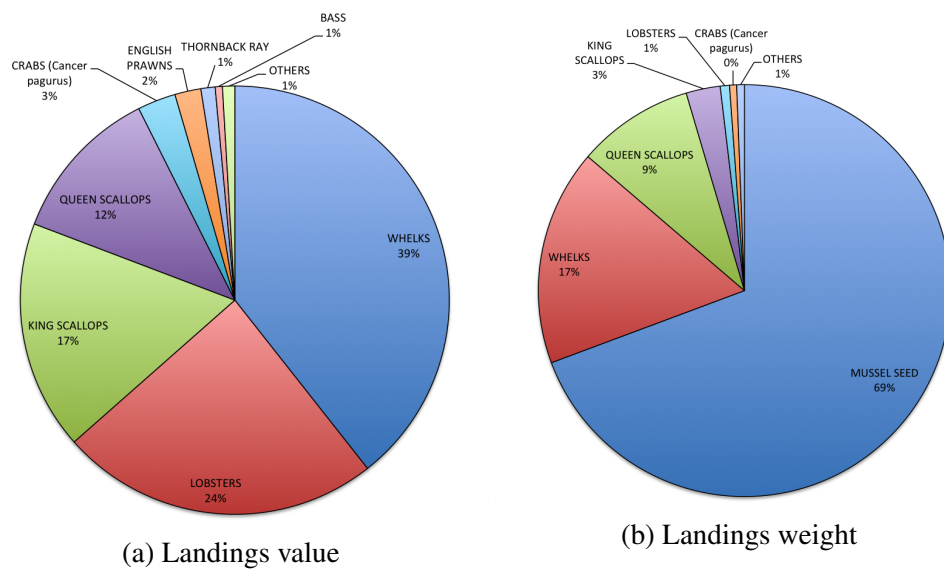


Figure 5.7: The importance of individual species landings into ports in North Wales in 2012

The analysis of fish species landed by Welsh vessels into ports in North Wales suggests that the fishermen landing into these ports have a high dependence on mainly shellfish including whelks, lobsters and scallops which contribute over 92% of the value of landings into ports in North Wales (Figure 5.7). When considering the weight of species landed again shellfish contribute the most with mussel seed contributing 69% of the landings weight. Whelks, Queen scallops, King scallops and lobsters contribute the remaining 30% of the total landings weight into ports in North Wales.

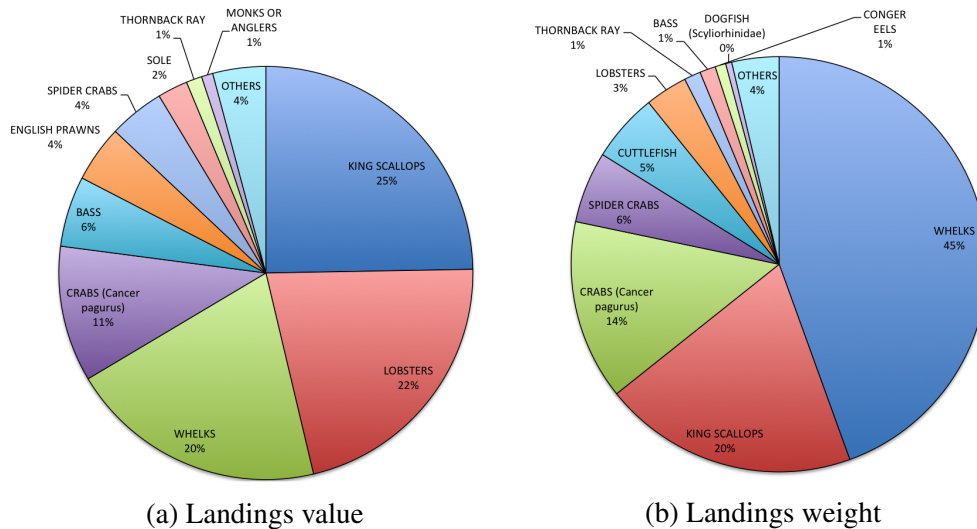


Figure 5.8: The importance of individual species landings into ports in South Wales in 2012

The analysis of the figures for South Wales show that there is also a dependence on shellfish with King scallops, lobsters, whelks and edible (brown) crabs contributing 78% of the value of landings into ports in South Wales (Figure 5.8). Whelks, King scallops, edible (brown) crabs and Spider crabs contribute 85% of the total weight of fish landed into South Wales ports by Welsh fishing vessels.

The relative value, weight and price per kilogram of different fish species landed into Wales by Welsh vessels in 2012 is shown in Figure 5.9, Figure 5.10 and Figure 5.11. The price per kg is based on the landed weight and the associated value of that weight of species landed in 2012.

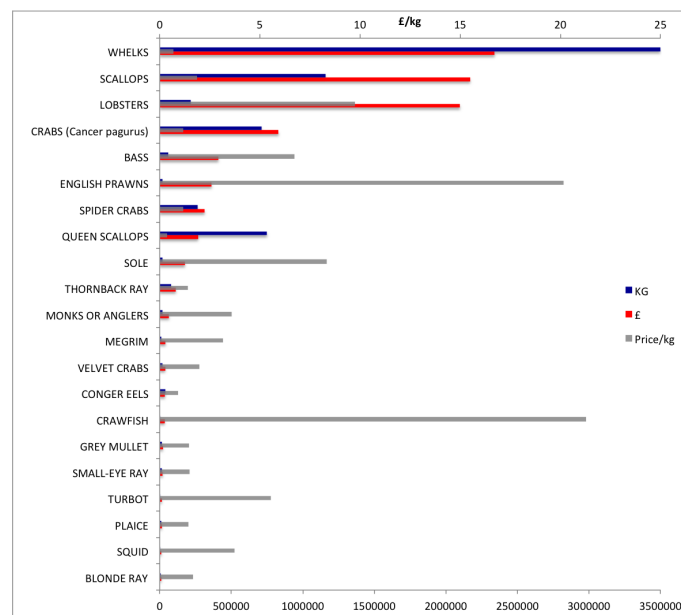


Figure 5.9: Species landings value (£), weight (kg) and price per kg for all Welsh vessel landings in 2012. Landings values greater than £10,000.

The species which received the greatest amount per kg landed in 2012 were Crawfish (£21/kg), English prawns (£20/kg) and lobsters (£9.7/kg). In terms of total value of species landed, whelks were the species of which the greatest value (£) were landed by Welsh fishing vessels into Welsh harbours, followed by scallops and lobsters and out of those top three lobsters received the highest price per kg at almost £10/kg landed. Scallops received just under £2/kg landed. Although whelks comprised of the greatest weight of landings the price per kg was less than £1/kg. When considering the value of the species landed by Welsh fishing vessels the majority (89.5%) of the value of landings are derived from landing shellfish.

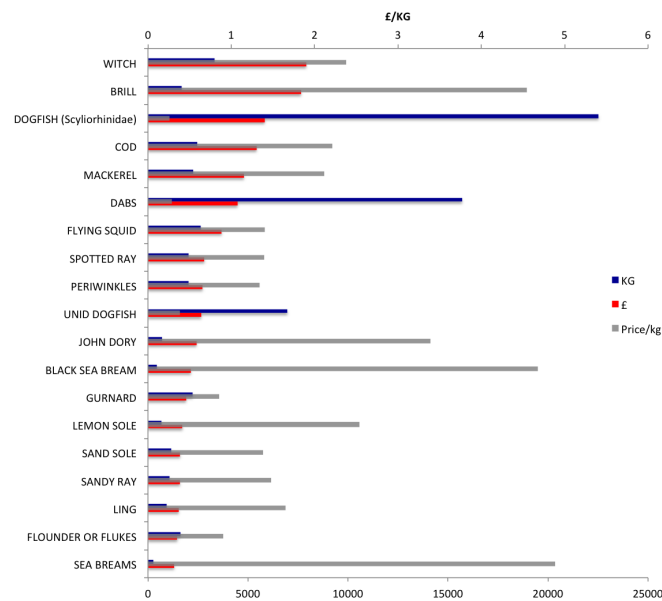


Figure 5.10: Species landings value (£), weight (kg) and price per kg for all Welsh vessel landings in 2012. Landings values from £1,000 to £10,000.

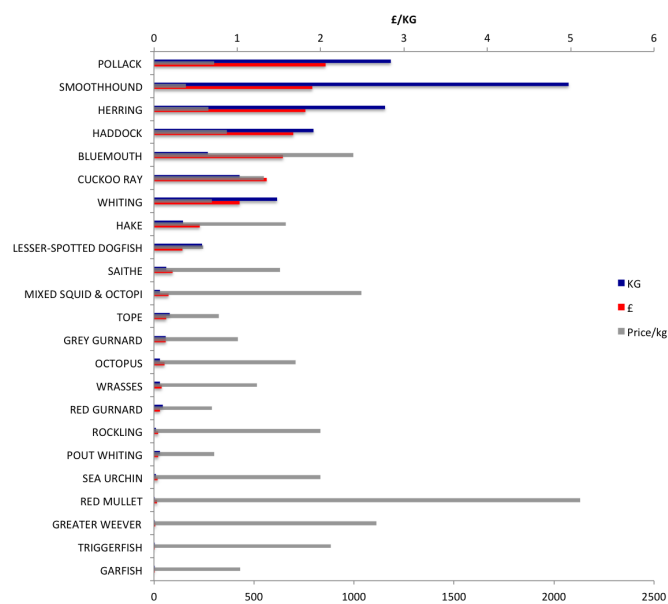


Figure 5.11: Species landings value (£), weight (kg) and price per kg for all Welsh vessel landings in 2012. Landings values of less than £1,000.

Although species such as red mullet, brill and black seabream were all worth over £4 per

kg landed only relatively small weights of these species were landed and this therefore may be reflected in the price per kg received for them.

5.3 Species landings into Welsh ports

This section explores the difference in fish species landings into ports around the Welsh coast; focusing on the length of vessels landing fish and the different species of fish that have been landed.

The total number of landings by Welsh vessels into Welsh ports during 2012 was 3,492. In both north and south Wales over 80% of the fish landed are landed by under 10m vessels (Figure 5.12).

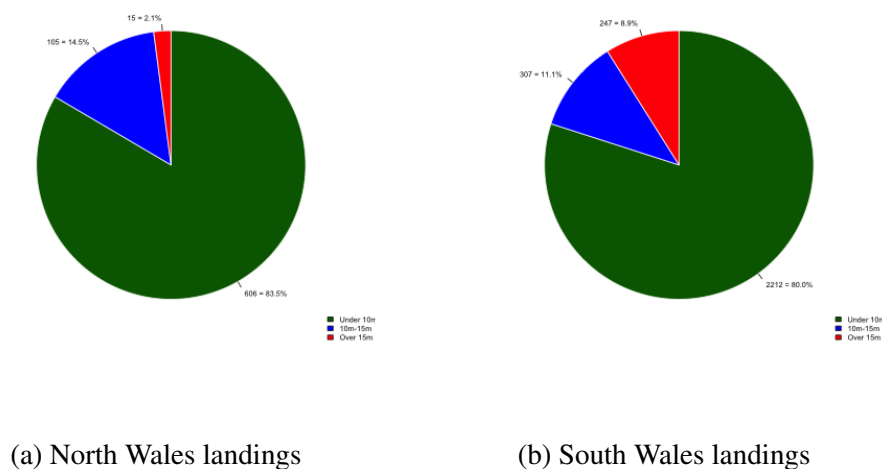
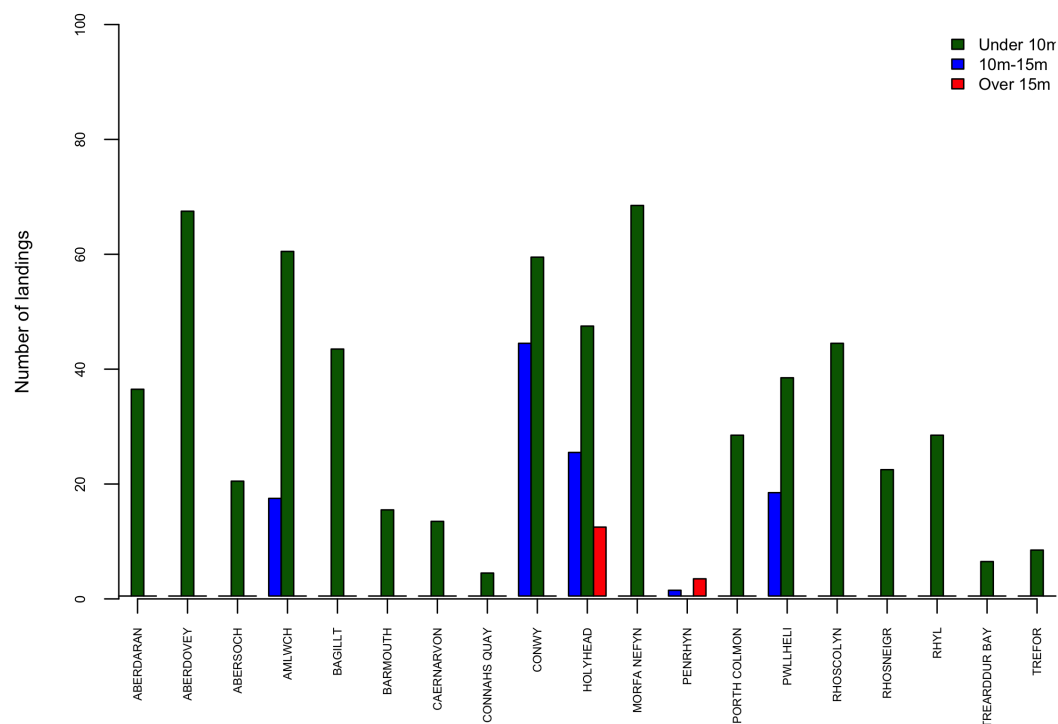


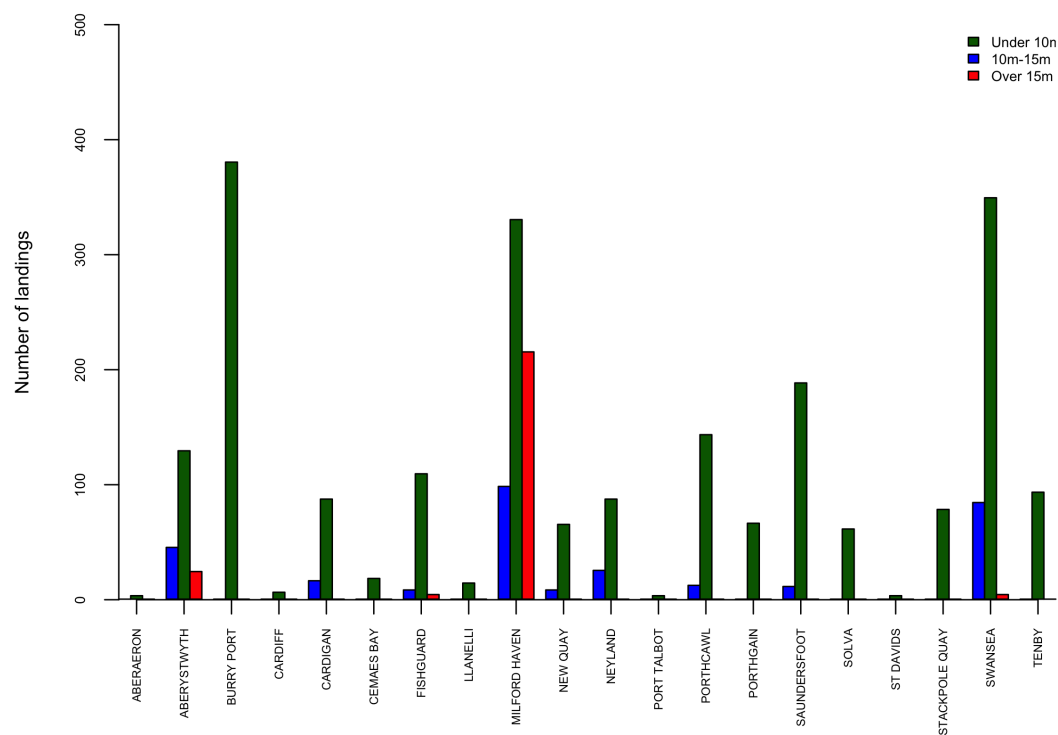
Figure 5.12: The total number of landings by different vessel sizes into ports in north and south Wales in 2012

The number of landings in 2012 into individual ports in north and south Wales are shown in Figure 5.13, ports with no landings in 2012 are not included. Milford Haven

receives the greatest number of landings of all ports by all vessel sizes with Burry Port and Swansea being busy ports for small fishing vessels. In north Wales, Aberdovey and Morfa Nefyn receive the highest number of landings by vessels in the under 10m fleet whilst Holyhead receives the highest number of landings by larger over 15m vessels.



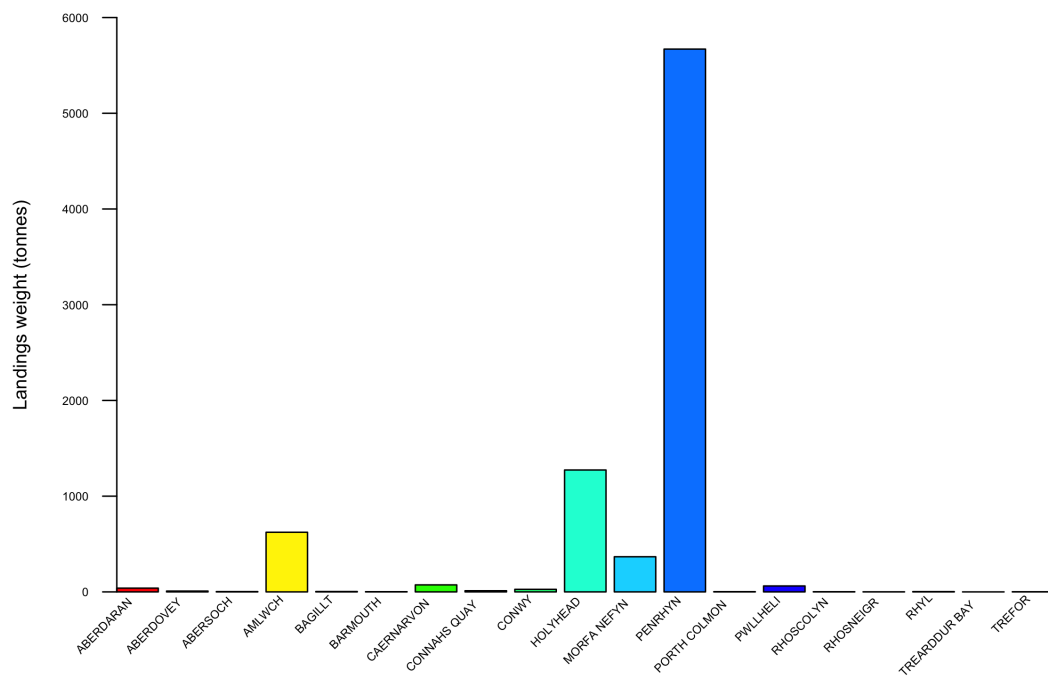
(a) North Wales Landings



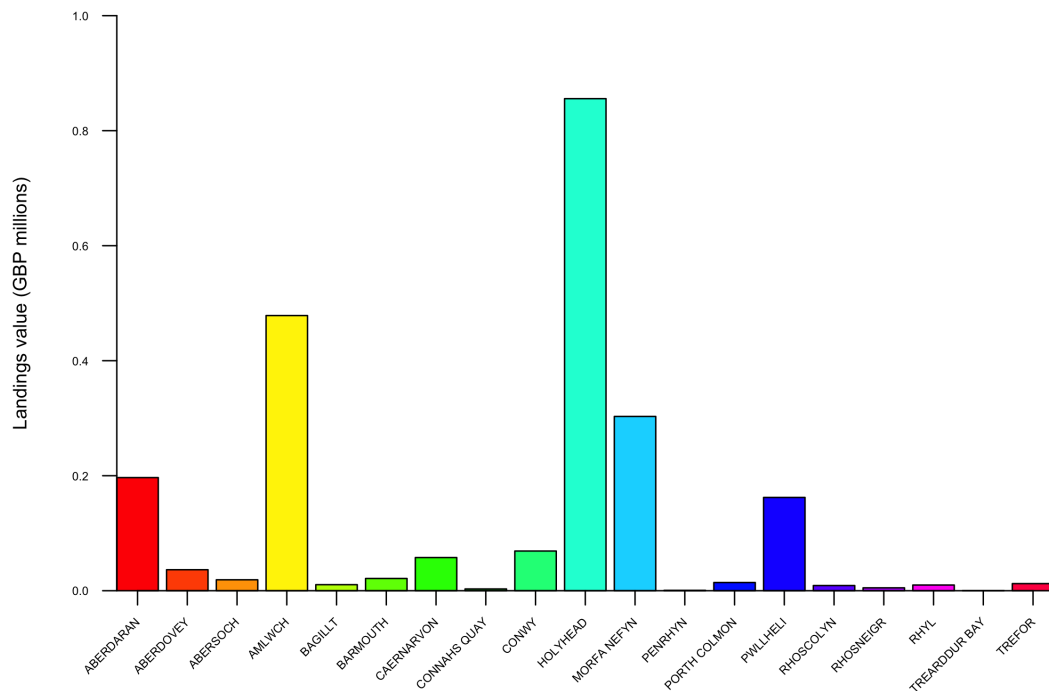
(b) South Wales Landings

Figure 5.13: The number of landings by different vessel sizes into individual ports in North and South Wales in 2012

In 2012 the value of the landings throughout Wales equated to almost £35.3 million, £9.4 million of this was landed by the Welsh fishing fleet, £2.3 million of fish was landed in North Wales and £7.2 million landed into South Wales. A total of 26,521.88 tonnes of fish were landed into ports in Wales, 12,626 tonnes by Welsh vessels, 8,175 tonnes into North Wales and 4,450.25 tonnes into South Wales.



(a) Weight of landings into ports in North Wales



(b) Value (GBP) of landings into ports in North Wales

Figure 5.14: Breakdown of the total landings into ports in North Wales by weight (tonnes) and values (GBP) for 2012

The landings into north Wales ports (Figure 5.14) are significantly smaller than those into ports in south Wales both by weight and value (Figure 5.15). In north Wales the ports of Penrhyn and Holyhead received the greatest weight of landings in 2012. In Penrhyn 5,670.38 tonnes of fish with a value of £701 were landed this mainly consisted of scallops (0.381 tonnes with a value of £701) caught using dredges and mussels, this is almost certainly seed mussels and this is reflected in the low value (5670 tonnes with a value of £0.05) of the landings. In Holyhead 1,273.42 tonnes of fish (12 different species) with a value of £0.86mn were landed by Welsh fishing vessels in 2012. The main species landed into Holyhead were Queen scallops (749.4 tonnes with a value of £267,740) caught using dredges, whelks (377.5 tonnes with a value of £257,429), caught using whelk pots and dredges, King scallops (137 tonnes with a value of £250,825), caught in dredges and lobsters (8.6 tonnes with a value of £78,359) caught mainly in pots as well as tangle nets and whelk pots.

Holyhead and Amlwch in north Wales received the greatest value of landings. In Holyhead 1,273 tonnes of fish, 12 different species, with a value of £0.86 million were landed by Welsh fishing vessels, a breakdown of the top five species landed is shown in Table 5.1.

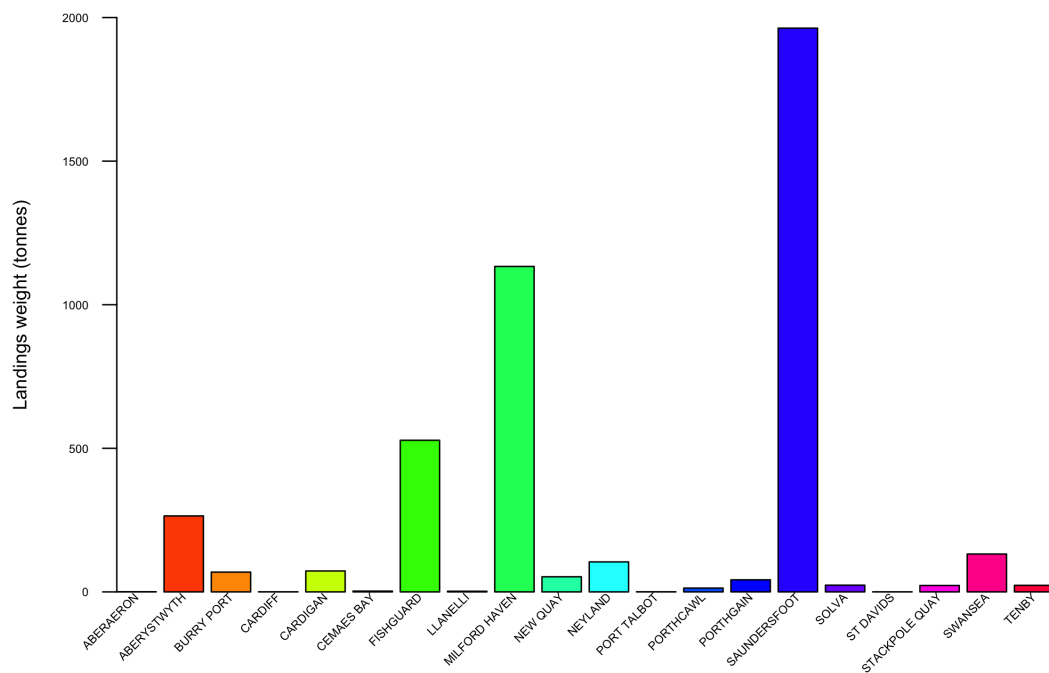
| Species landed | Weight (tonnes) | Value | Gear used |
|---|--------------------|----------|--------------------------------|
| Queen scallops (<i>Aequipecten opercularis</i>) | 749 | £267,740 | Dredges |
| Whelks (<i>Buccinum undatum</i>) | 376 | £257,428 | Whelk pots & dredges |
| King scallops (<i>Pecten maximus</i>) | 137 | £250,825 | Dredges |
| Lobsters (<i>Homarus gammarus</i>) | 8.6 | £78,359 | Pots, tangle nets & whelk pots |

Table 5.1: Top five (value) species of fish landed by Welsh fishing vessels into Holyhead

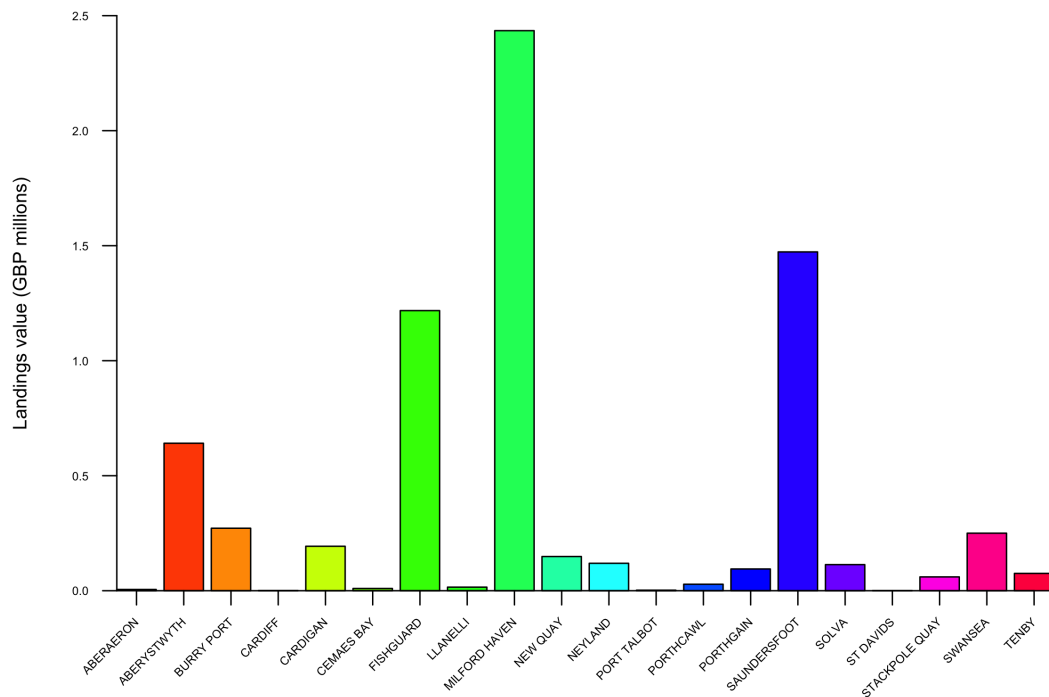
In Amlwch 623 tonnes of fish, six different species, were landed in 2012 with a value of £478,523, this was primarily made up of shellfish including whelks, scallops and lobsters, a breakdown of the top five species in terms of landed value is shown in Table 5.2.

| Species | Weight (tonnes) | Value | Gear used |
|---|--------------------|----------|-----------------------------------|
| Whelks (<i>Buccinum undatum</i>) | 598 | £395,753 | Whelk pots |
| Lobsters (<i>Homarus gammarus</i>) | 4.6 | £41,183 | Other or mixed pots |
| King scallops (<i>Pecten maximus</i>) | 15.9 | £26,273 | Unspecified dredge |
| English prawns (<i>Palaemon serratus</i>) | 0.6 | £11,494 | Other or mixed pots or whelk pots |

Table 5.2: Top five (value) species of fish landed by Welsh fishing vessels into Amlwch



(a) Weight of landings into ports in South Wales



(b) Value (GBP) of landings into ports in South Wales

Figure 5.15: Breakdown of the total landings into ports in south Wales by weights (tonnes) and values (GBP) for 2012

In south Wales in 2012 the greatest weight of fish were landed into the ports of Milford Haven, Fishguard, Saundersfoot and Aberystwyth. In Milford Haven 7,245 tonnes of fish with a value of £19,647,295 were landed, 1,133 tonnes were landed by Welsh fishing vessels with a value of £2.4 million this included 58 different species; the top ten, in terms of value, are listed in Table 5.3.

| Species | Weight (tonnes) | Value | Gear used |
|---|--------------------|----------|--|
| Lobsters (<i>Homarus gammarus</i>) | 74.3 | £729,491 | Other or mixed pots, beam trawl, Gill nets, trammel nets, rod & line or whelk pots |
| King scallops (<i>Pecten maximus</i>) | 347.8 | £663,962 | Unspecified dredge |
| Edible (brown) crabs (<i>Cancer pagurus</i>) | 452 | £519,096 | Other or mixed pots, whelk pots, unspecified dredge, beam trawl |
| Sole | 15 | £116,062 | Beam trawl, otter trawl, rod & line |
| Spider crabs (<i>Maja squinado</i>) | 71.7 | £74,401 | Other or mixed pots, whelk pots, beam trawl, tangle net, trammel net, unspecified gill net, unspecified dredge |
| Monkfish/Anglerfish (<i>Lophius piscatorius</i> & <i>Lophius budegassa</i>) | 17.4 | £63,341 | Beam trawl, unspecified otter trawl, unspecified dredge |
| Bass (<i>Dicentrarchus labrax</i>) | 6.7 | £43,524 | Gill nets, beam trawl, rod & line, hand lines, other or mixed pots |
| Megrim (<i>Lepidorhombus whiffiagonis</i>) | 12.9 | £40,693 | Beam trawl & unspecified otter trawl |
| Whelks (<i>Buccinum undatum</i>) | 48.7 | £33,656 | Whelk pots, other or mixed pots & unspecified dredge |
| Thornback ray (<i>Raja clavata</i>) | 18.2 | £23,535 | Gill nets, beam trawls, rod & line, trammel net |

Table 5.3: Top ten species of fish landed by Welsh fishing vessels into Milford Haven

In Fishguard 2,549 tonnes of fish with a value of £4,144,518 were landed, 528 tonnes were landed by Welsh fishing vessels with a value of £1.2 million this included 12 different species and mainly consisted of shellfish including; King scallops, lobsters, prawns, edible crabs and spider crabs. The top five, in terms of value, are listed in Table 5.4.

| Species | Weight (tonnes) | Value | Gear used |
|---|--------------------|----------|---|
| King scallops (<i>Pecten maximus</i>) | 419 | £790,240 | Unspecified dredge |
| Lobsters (<i>Homarus gammarus</i>) | 16.9 | £178,628 | Other or mixed pots, tangle net |
| English (common) prawns (<i>Palaemon serratus</i>) | 6.4 | £129,545 | Other or mixed pots, whelk pots, parlour pots |
| Edible (brown) crabs (<i>Cancer pagurus</i>) | 41.7 | £51,345 | Other or mixed pots, tangle net |
| Spider crabs (<i>Maja squinado</i>) | 37 | £46,596 | Other or mixed pots, gill net |

Table 5.4: Top five species of fish landed by Welsh fishing vessels into Fishguard

In Saundersfoot 1,963 tonnes with a value of £1.5 million were landed in 2012; this included 29 different species and mainly consisted of whelks, lobsters, bass and crabs of various species including brown crabs and spider crabs. The top five, in terms of value, are listed in Table 5.5.

| Species | Weight (tonnes) | Value | Gear used |
|--|--------------------|-----------------|---|
| Whelks (<i>Buccinum undatum</i>) | 1908 | £1.3 million | Whelk pots, other or mixed pots |
| Lobsters (<i>Homarus gammarus</i>) | 5.9 | £61,867 | Other or mixed pots, whelk pots, unspecified gill net, rod & line |
| Bass (<i>Dicentrarchus labrax</i>) | 6.2 | £42,516 | Rod & line, gill nets, other or mixed pots |
| Edible (brown) crabs (<i>Cancer pagurus</i>) | 19.5 | £22,709 | Other or mixed pots, whelk pots, gill nets |
| Spider crabs (<i>Maja squinado</i>) | 19.1 | £19,403 | Other or mixed pots, whelk pots |

Table 5.5: Top five ranking species of fish landed by Welsh fishing vessels into Saunders-foot

The Welsh fishing fleet also landed a large amount of fish, 19 different species, into Aberystwyth; 265 tonnes of fish were landed in 2012 with a value of £0.6 million. The top ranking species in terms of value are listed in Table 5.6.

| Species | Weight (tonnes) | Value | Gear used |
|---|--------------------|----------|--|
| King scallops (<i>Pecten maximus</i>) | 162 | £319,971 | Unspecified dredge, other or mixed pots |
| Lobsters (<i>Homarus gammarus</i>) | 17.5 | £150,702 | Other or mixed pots, tangle net, other gill nets, parlour pots |
| English (common) prawns (<i>Palaemon serratus</i>) | 5.4 | £107,845 | Other or mixed pots, tangle net, parlour pots |
| Spider crabs (<i>Maja squinado</i>) | 54 | £70,180 | Other or mixed pots, tangle net, unspecified gill net |
| Edible (brown) crabs (<i>Cancer pagurus</i>) | 55 | £57,070 | Other or mixed pots, tangle net, unspecified gill net |

Table 5.6: Top five ranking species of fish landed by Welsh fishing vessels into Aberystwyth

5.4 Changes in the importance of individual species

Understanding the importance of individual species over a period of time can be complex. There are changes in importance and landings value of species between years and this may be due to changes in demand for different species or this may be due to the availability of species to catch and therefore land.

It is impossible to ascertain from the data available what the driving force behind the

landings of different species is. Is it that the local fishermen are catching the species that are available to catch and therefore land or are they catching the species that are more in demand and therefore have more of a commercial value? We cannot say with certainty whether the landings are representative of the actual species available to catch; but we can say that these are the species, with a commercial value at that time, that are being caught and landed by the Welsh fishing industry.

| 1992 | | | 2012 | |
|------|------------------------|-----------------------------|------------------------|-----------------------------|
| RANK | Species or Group | % of landings value in 1992 | Species or Group | % of landings value in 2012 |
| 1 | PLAICE | 14.73 | WHELKS | 24.75 |
| 2 | SPURDOG | 13.90 | SCALLOPS | 22.94 |
| 3 | SKATES AND RAYS | 9.98 | LOBSTERS | 22.19 |
| 4 | LOBSTERS | 7.81 | CRABS (Cancer pagurus) | 8.78 |
| 5 | HAKE | 7.05 | BASS | 4.33 |
| 6 | LIVERS - RAW | 5.91 | ENGLISH PRAWNS | 3.84 |
| 7 | CRABS (Cancer pagurus) | 5.83 | SPIDER CRABS | 3.32 |
| 8 | SHARKS | 5.35 | QUEEN SCALLOPS | 2.83 |
| 9 | COCKLES | 4.68 | SOLE | 1.86 |
| 10 | SOLE | 2.83 | MONKS OR ANGLERS | 0.68 |
| 11 | CRAWFISH | 2.71 | MEGRIM | 0.43 |
| 12 | COD | 2.05 | CRAWFISH | 0.36 |
| 13 | MUSSELS | 1.66 | TURBOT | 0.15 |
| 14 | SPIDER CRABS | 1.51 | PLAICE | 0.15 |
| 15 | MONKS OR ANGLERS | 1.43 | COD | 0.06 |
| 16 | MEGRIM | 1.27 | MACKEREL | 0.05 |
| 17 | BASS | 1.25 | WHITING | 0.00 |
| 18 | WHITING | 1.12 | HAKE | 0.00 |
| 19 | SCALLOPS | 1.08 | SPURDOG | NA |
| 20 | MIXED DEMERSAL | 0.88 | SKATES AND RAYS | NA |
| 21 | ENGLISH PRAWNS | 0.84 | LIVERS - RAW | NA |
| 22 | WHELKS | 0.72 | SHARKS | NA |
| 23 | MACKEREL | 0.58 | COCKLES | NA |
| 24 | QUEEN SCALLOPS | 0.57 | MUSSELS | NA |
| 25 | TURBOT | 0.51 | MIXED DEMERSAL | NA |

Figure 5.16: Comparison of percentage of landings value for the top 25 species of importance in 1992 and 2012

Table 5.16 shows how there has been a change in the percentage of landings value of different species between 1992 and 2012, a 20 year period. Species such as plaice, spur-dog and skates and rays declining in importance and shellfish such as scallops, whelks, lobsters, English prawns and crabs increasing with regard to percentage landings value

and therefore importance to the Welsh fishing industry in 2012.

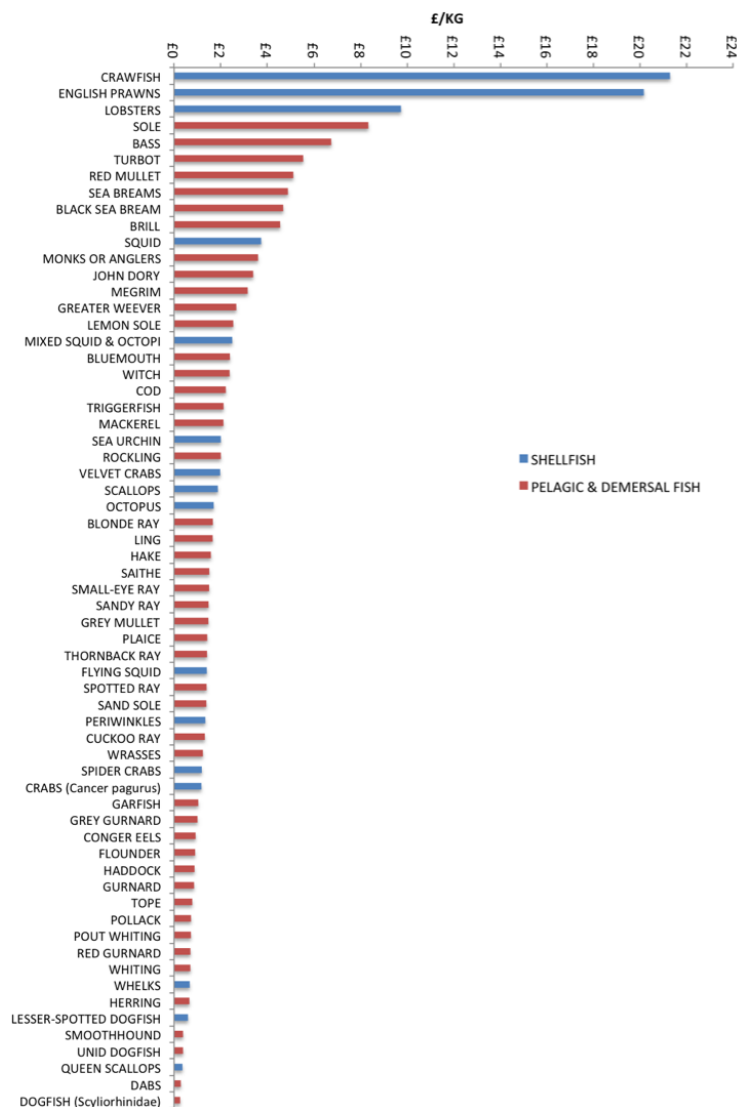


Figure 5.17: Price per kg for species landed by Welsh vessels in 2012.

The price per kg for all species caught by Welsh vessels in 2012 are shown in Figure 5.17. Crawfish and English prawns received the greatest price per kg landed in 2012 at around £21/kg and £20/kg respectively.

5.5 Trends in landings and values over 20 years

It is both interesting and important to know and understand the past trends in the landings weight and value of fish for the Welsh fishing vessels landing into Welsh ports. This information provides us with an indication of the nature of the industry and how it has changed in the past and how it may change in the future.

Figure 5.18 shows the trends in the Welsh fishing fleet landings from 1992 to 2012. Since 2006 the Registration of Buyers and Sellers (RBS) scheme (The Registration of Fish Buyers and Sellers and Designation of Fish Auction Sites (Wales) Regulations 2006) has been operational in Wales, this means that all buyers and sellers of all first sale fish and shellfish landed into the UK must register with Fisheries Departments. It also requires the designation of auction centres and fish markets at which this fish is sold. The scheme requires all first fish sale records to include the following:

- Date and location of sale
- Quantities of each species sold
- Price paid for each species sold
- Name and PLN (vessel port number) of vessel which landed the fish
- Name and address, and where available registration number of buyer
- Reference number of invoice or contract of sale

This means therefore that the values and trends recorded prior to the introduction of this scheme may not be comparable to those recorded since the scheme was operational due to variations in the way that information was recorded.

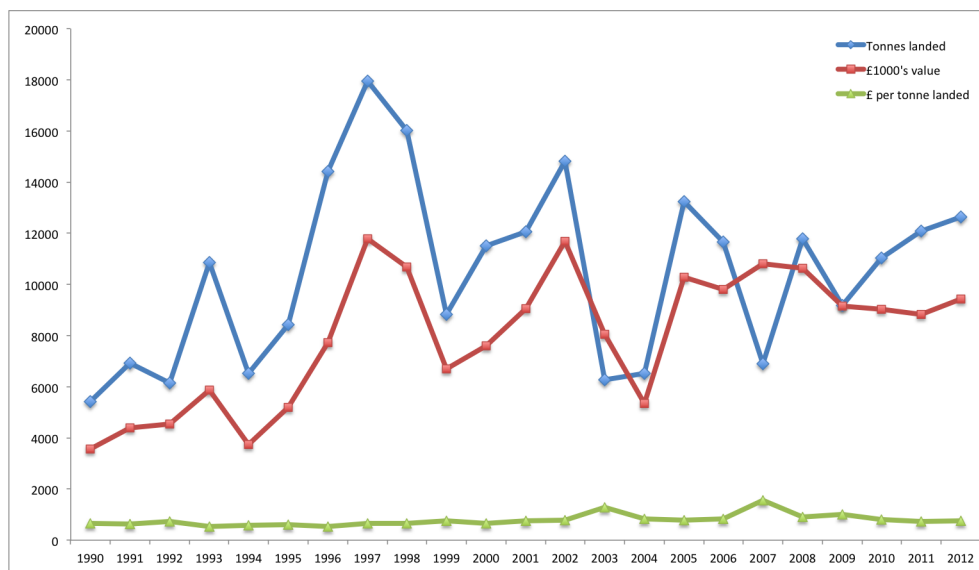


Figure 5.18: Trends in the landings of the Welsh fishing fleet from 1992 to 2012

Figure 5.19 enables us to easily visualise the trends from one year to the next. For example from 1991 to 1992 there was a 3% increase in the value of the fish landed, an 11% decrease in weight of fish landed and a 16% increase in the £/tonne of fish landed. From 2004 to 2005 the weight of tonne increased by 103%, the value increased by 91% however the £/tonne decreased from 2004 to 2005 by 5%. This could be a reflection of a change in the species of fish landed or the value of different species at market.

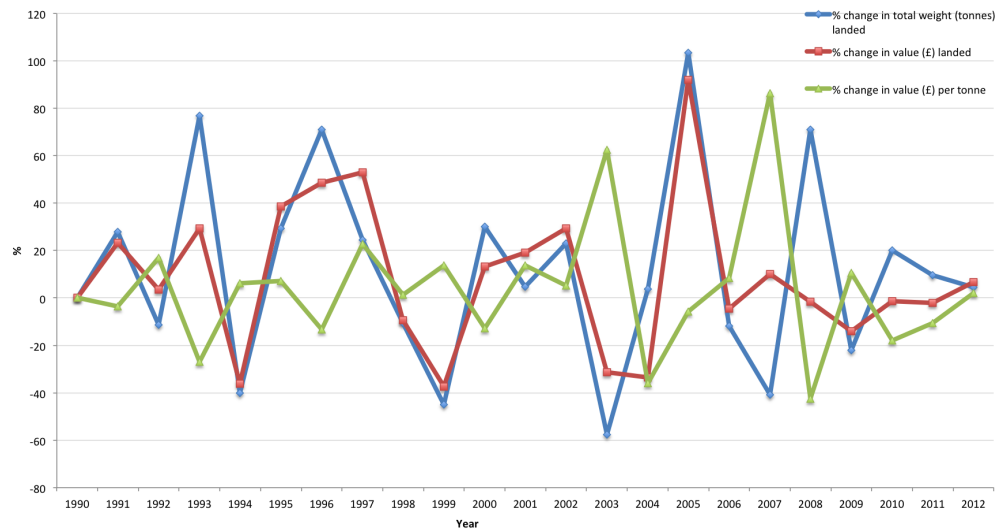


Figure 5.19: Percentage change in weight (tonnes) of total fish landed, value of total fish landed and value per tonne of fish landed from 1990-2012

5.6 Quota species importance to total landings

A number of species caught by the Welsh fishing fleet are controlled by quotas, these species are listed in Table 5.7 and are ranked by their financial importance to the Welsh fishing fleet landings in 2012. Interestingly only one of the quota species, Sole is in the top ten in terms of landings value contributing only 1.9% to the overall value of landings by the Welsh fishing fleet in 2012. This indicates that the Welsh fishing fleet does not rely on quota species and is therefore less sensitive to changes in quota availability than other parts of the UK. Showing however, that the Welsh fishing fleet relies almost entirely on non-quota species.

| Quota rank by value | Species | Landings rank |
|------------------------|---|------------------|
| 1 | Sole (<i>Solea solea</i> / <i>Solea spp.</i>) | 9 |
| 2 | Anglerfish (Monks or Anglers) (<i>Lophiidae sp</i>) | 11 |
| 3 | Megrim (<i>Lepidorhombus spp.</i>) | 12 |
| 4 | Plaice (<i>Pleuronectes platessa</i>) | 19 |
| 5 | Cod (<i>Gadus morhua</i>) | 25 |
| 6 | Mackerel (<i>Scomber scombrus</i>) | 26 |
| 7 | Ling (<i>Molva molva</i>) | 38 |
| 8 | Pollack (<i>Pollachius pollachius</i>) | 41 |
| 9 | Herring (<i>Clupea harengus</i>) | 43 |
| 10 | Haddock (<i>Melanogrammus aeglefinus</i>) | 44 |
| 11 | Whiting (<i>Merlangius merlangus</i>) | 47 |
| 12 | Hake (<i>Merluccius merluccius</i>) | 48 |
| 13 | Saithe (<i>Pollachius virens</i>) | 51 |
| Not reported as landed | Skates and Rays (<i>Rajiformes</i>) | NA |
| Not reported as landed | Norway lobster (<i>Nephrops norvegicus</i>) | NA |
| Not reported as landed | Boarfish (<i>Caproidae</i>) | NA |
| Not reported as landed | Blue ling (<i>Molva dypterygia</i>) | NA |
| Not reported as landed | Blue ling (<i>Molva dypterygia</i>) | NA |
| Not reported as landed | Tusk (<i>Brosme brosme</i>) | NA |
| Not reported as landed | Bluefin tuna (<i>Thunnus thynnus</i>) | NA |
| Not reported as landed | Horse mackerel (<i>Trachurus spp.</i>) | NA |
| Not reported as landed | Blue whiting (<i>Micromesistius poutassou</i>) | NA |
| Not reported as landed | Porbeagle (<i>Lamna nasus</i>) | NA |
| Not reported as landed | Roundnose grenadier (<i>Coryphaenoides rupestris</i>) | NA |
| Not reported as landed | Spiny Dogfish (Spurdog) (<i>Squalus acanthias</i>) | NA |

Table 5.7: List of 2012 quota regulated species in Welsh waters (ICES VIIa, f, g) and their landings rank by value

5.6.1 Quota species trends: 1990-2012

The weight of quota species landed by the Welsh fishing fleet has always been relatively small compared to the total weight of fish landed (Figure 5.20). Since 1990 there has been an overall increase in the total weight of fish landed in Wales. However, Figure 5.20 shows how the weight of quota species landed has been in decline since 1990. Quota species contributed 14% to the total weight of fish landed in 1990, there was a slight rise in the weight of quota species landed in 1997, this rise echo's a rise in the total weight of fish landed in 1997 however, the contribution to the total landings weight of quota species in 1997 was only 7%.

There were peaks in the percentage contribution of quota species to total landings weight in 1999 and 2003 when the contribution increased slightly to 11% before declining and remaining at 5% or below from 2005 onwards. By 2012 the percentage contribution of quota species to the total landings weight had declined to just 1%.

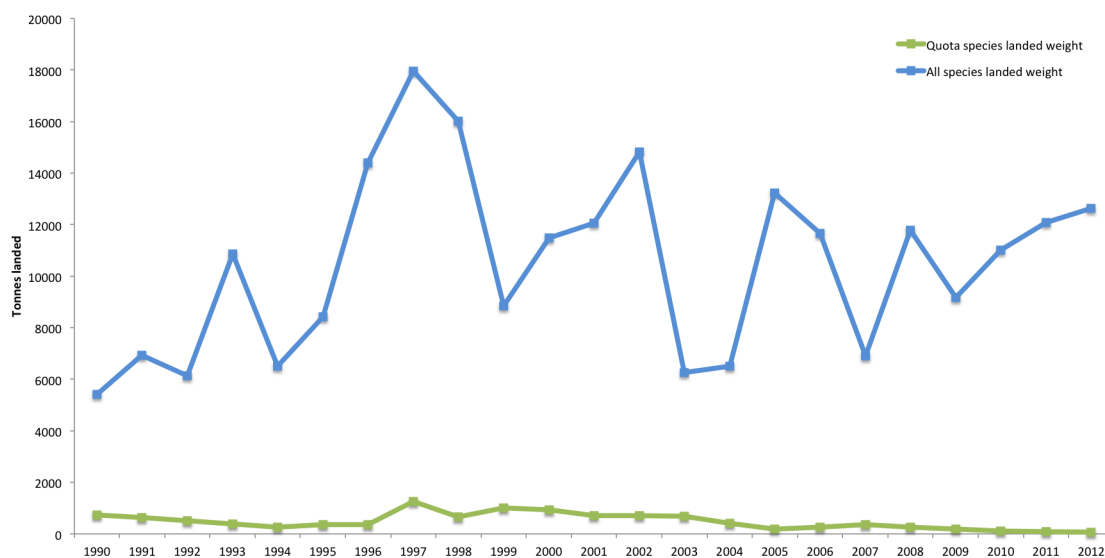


Figure 5.20: Trend in quota species landings weight compared to total landings weight

Figure 5.21 shows how the percentage contribution quota species provides to the overall value of fish landed by the Welsh fishing fleet. The percentage contribution has experienced rises and falls however, in general the overall contribution has fallen from 25% of the value of fish landings in 1990 to under 5% of the value of fish landings by the Welsh fishing fleet in 2012 with peaks in contribution experienced in 1999 (33%). In general the trends show that quota species make a much smaller contribution to the total catch value than they did over twenty years ago.

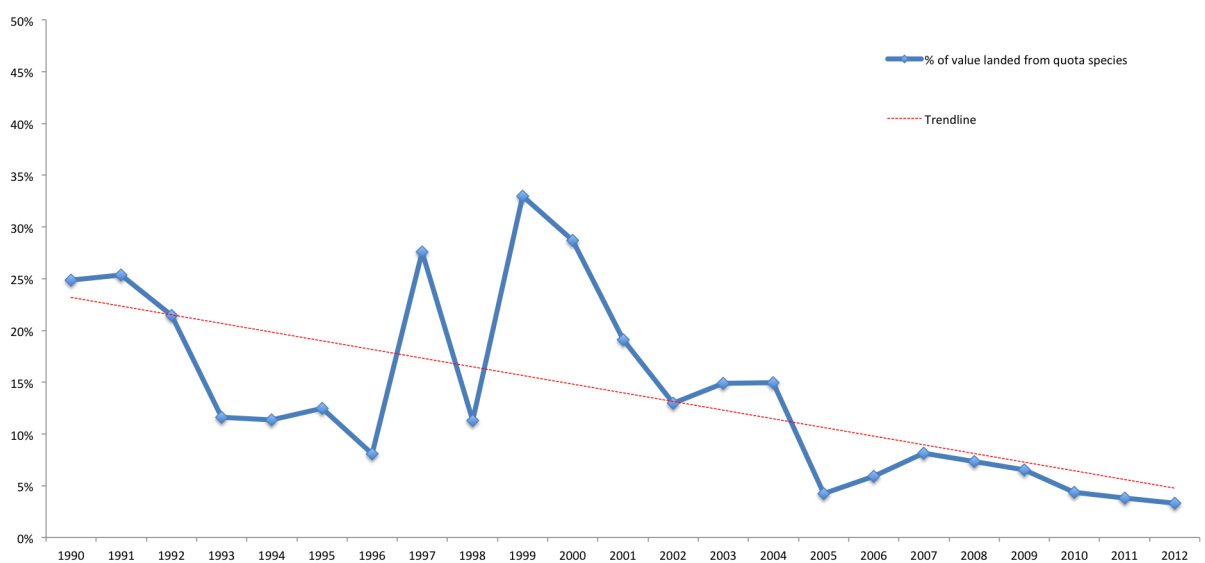


Figure 5.21: Trend in the percentage contribution of quota species to total landings value from 1990 to 2012.

5.7 Trends in landings price of fish and shellfish

The trend in the price of one tonne of landed fish has fluctuated since the early 1990's, but shows an overall gradual increase in price per tonne from 1990 to 2012 (Figure 5.22, trendline). According to the landings data there was a decline in the value per tonne of fish in 1996 and obvious peaks in the value were experienced in both 2003 and 2007.

This may have been due to the species being caught during these years commanding a higher value. The total value and weight of fish landed for the peak years (2003 and 2007) were £8,043,580 for 6273 tonnes and £10,807,076 for 6901 tonnes respectively.

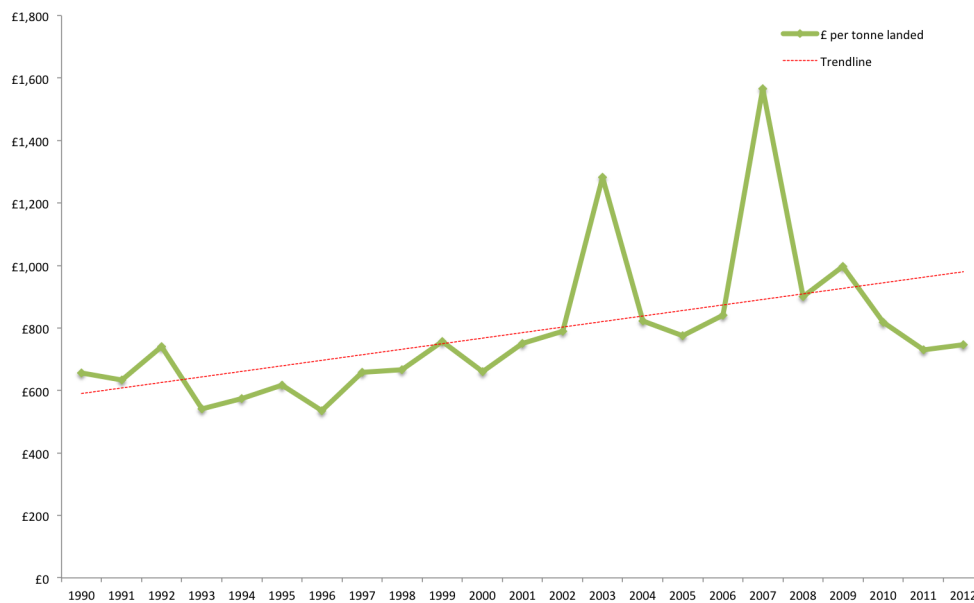


Figure 5.22: Trend in the price per tonne of fish landed by the Welsh fishing vessels from 1990 to 2012.

Analysis of the landings data for 2003 shows that 73 different species of fish were landed by the Welsh fishing fleet. A mixture of demersal fish and shellfish were landed with cockles contributing the greatest value at £2.9 million for 2383.5 tonnes, approximately £1,200 per tonne. Other shellfish included £1.2 million of lobsters (106.5 tonnes) equating to approximately £11,300 per tonne, £793,077 of whelks (1492 tonnes) at £532 per tonne, £400,164 of Scallops (238.5 tonnes) at approximately £1,678 per tonne, £342,408.7 of brown crab (274 tonnes) at approximately £1,250 per tonne and £219,569 of spider crabs (312.5 tonnes) at approximately £703 per tonne. Demersal fish contributing the greatest amount to the landings value included £354,957 of Anglerfish (172

tonnes) at approximately £2,064 per tonne, £392,549 of hake (241 tonnes) at approximately £1,629 per tonne and £215,146 of skates (198 tonnes) £1,087 per tonne.

In 2007 67 different species of fish were landed by the Welsh fishing fleet. Analysis of the data shows that landings primarily consisted of shellfish contributing almost £8.2 million to the total landings value. £3.6 million of lobsters (206.6 tonnes) landed worth approximately £17,183 per tonne, £1.5 million of whelks (2345) worth approximately £626 per tonne, £1.02 million of scallops (566.6 tonnes) worth approximately £1,800 per tonne, £170,570 of queen scallops (407 tonnes) worth approximately £420 per tonne, £564,909 of spider crabs (480 tonnes) worth approximately £1,177 per tonne and £574,266.7 of English prawns (33.97) worth approximately £16,905 per tonne. Again this demonstrates the Welsh fishing industries reliance on shellfish and suggests that the value of shellfish has increased over time.

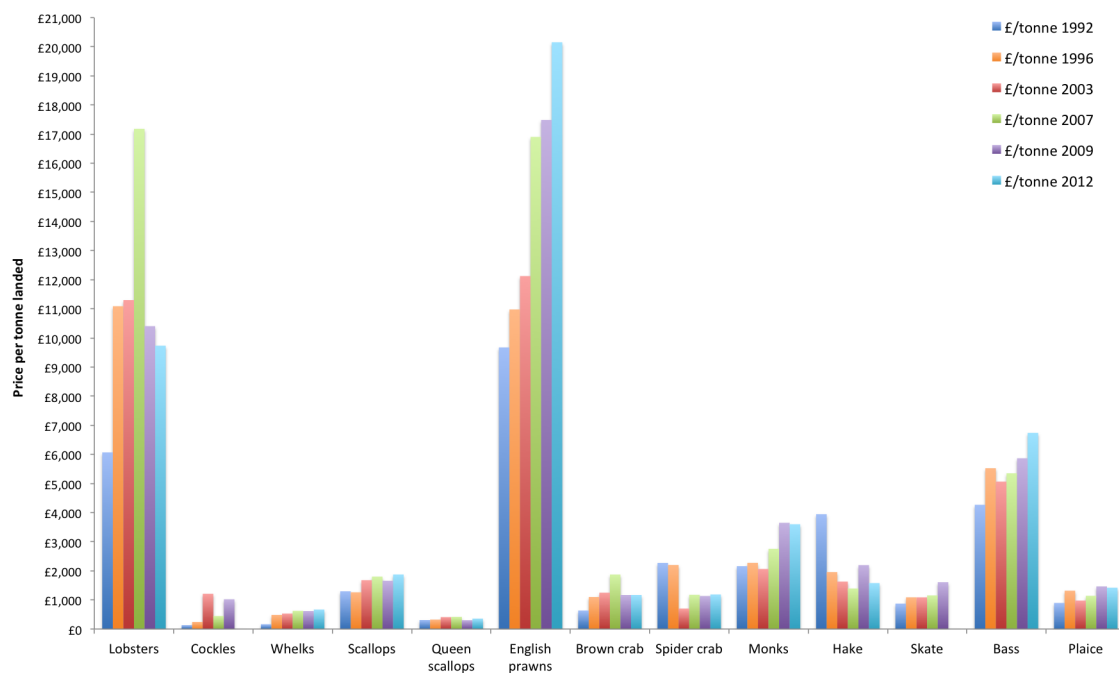


Figure 5.23: Trend in the price per tonne of fish landed by the Welsh fishing vessels from 1990 to 2012.

Figure 5.23 shows the price per tonne for a selection of species which are of importance to the Welsh fishing industry or have been important in the past (also shown in price per kg in Figure 5.24). This shows how the value of these species has fluctuated over the past 20 years. For example in 1992 plaice was the species of fish which ranked at the top of the list for species of importance in terms of percentage of landings value however since then the value per tonne of plaice has increased from £896 to £1,420 per tonne landed. However, as Figure 5.16 shows the percentage contribution to the total landings value from plaice has declined considerably.

The landings value per tonne of English prawns has more than doubled from £9,673 in 1992 to £20,156 per tonne in 2012, an increase in price of over 208%.

Figure 5.23 shows that the landings value of lobsters rose to £17,183 per tonne in 2007 but has declined in value since, falling to £10,404 per tonne in 2009 and in 2012 the landings value was £9,733.

The landings value of some of the species has increased over the last twenty years. The value of whelks has increased by 405% from £165 per tonne in 1992 to £669 per tonne in 2012 and the landings value of scallops has gradually increased by 144% from £1,296 per tonne in 1992 to £1,873 in 2012. The landings value of Anglerfish and bass has increased by over £150% from 1992 to 2012.

The landings value of spider crabs and hake has declined by over 40% over a twenty year period. Spider crabs have declined from £2,271 in 1992 to £1,187 in 2012 and hake has declined from £3,945 in 1992 to £1,579 in 2012.

The landings value of cockles has fluctuated greatly over the last twenty years. In 1992 the landings value of cockles was £132 per tonne, this increased to £1,211 in 2003 and then declined to £447 in 2007 and increased again to £1,022 in 2009. There were no

records for cockles landed since 2009 and in 2008 strict regulations on Cockle fisheries were introduced. There are two major cockle fisheries in Wales which are subject to regulating orders, this is the Burry Inlet in South Wales and the Dee Estuary in North Wales, these are both managed by Natural Resources Wales who issue annual permits to fish for cockles commercially in these areas. Further information on the Cockle fisheries in Wales is available on the Welsh Government Website.

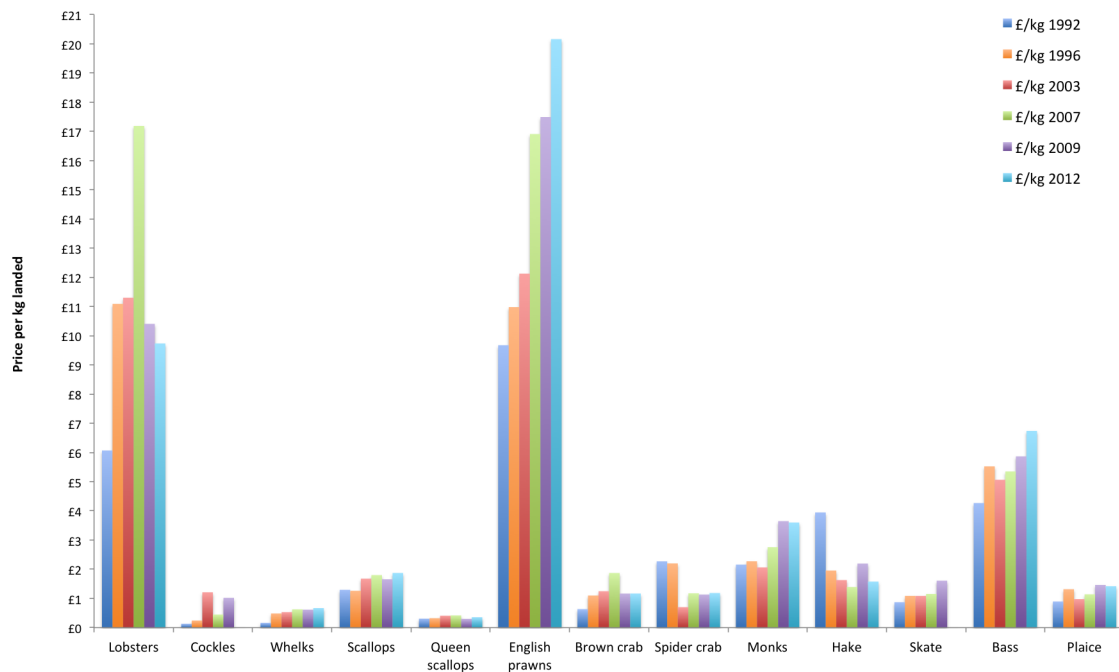


Figure 5.24: Trend in the price per kg of fish landed by the Welsh fishing vessels from 1990 to 2012.

Chapter 6

Summary

6.1 Future of Welsh Fishing

The Welsh fishing fleet comprises mainly of under 10m fishing boats which effectively means that given the size and therefore range of these vessels the majority of fishing in Wales is small-scale and coastal. In November 2013 the Welsh Government published a Marine and Fisheries Strategic Action Plan which identified three key fisheries in Wales:

- **Cockle fisheries:** A non-quota stock but historically an important fishery in Wales.
- **Crustacean fisheries:** The mainstay of the Welsh fishing fleet, including pot fishing for lobster and crab. These species are not subject to TACs but are subject to minimum landing sizes under EU and UK laws as well as Welsh legislation.
- **Bass fisheries:** Important for south and west Welsh fishing fleets. Not currently quota stock under the Common Fisheries Policy (CFP) (at the time of writing)

and therefore there are currently no limitations under the discard ban.

An important note regarding sea bass stocks

In September 2012 the International Council for Exploration of the Sea (ICES) recommended a significant decrease in the level of bass catch in Europe as it is a species thought to be particularly vulnerable to over-fishing. Measures have been introduced to prevent over-fishing of the species and a possible increase in the minimum landing size (MLS) to ensure more females are able to breed before being caught has been considered. Negotiations on the introduction of technical measures to preserve bass fish stocks have been ongoing in the European Commission since 2012. George Eustice, Fisheries Minister, stated (October 2014) that he anticipates that an agreement on a suite of EU-wide conservation measures can be reached by the end of the year. Further information is available on the UK Parliament website and in January 2015 the European Commission announced the proposal to introduce measures to prevent the collapse of sea bass stocks.

Initially, in January 2015 emergency measures to ban pelagic trawling of sea bass during the spawning season which runs to the end of April 2015 were introduced. Recognising that all those who fish sea bass should make a balanced and fair contribution to saving the stock it is also proposed a number of other measures including managing recreational fishing and limit catches of all other commercial fisheries. Further information on this is available on the European Commission website. In addition in April 2015 the European Commission introduced a three fish per day per person bag limit on recreational fishing activity (Council Regulation (EU) 2015/523). This applies to individuals fishing from a boat or from the shore.

This report has shown that in recent years (2012), based on available fisheries landings data, crustaceans comprised of the majority of the catches and landings by the Welsh fishing fleet. This has included species such as edible crab (*Cancer pagurus*), spider crab (*Maja squinado*), lobsters (*Homarus gammarus*), scallops (*Pecten maximus*) and the gastropod species the common whelk (*Buccinum undatum*).

6.2 Accreditations

Marine Stewardship Council (MSC) Accreditation

The MSC mission is to use an ecolabel and fishery certification programme to contribute to the health of the world's oceans by recognising and rewarding sustainable fishing practices, influencing the choices people make when buying seafood and working with partners to transform the seafood market to a sustainable basis.

Environmentally responsible fisheries management and practices are rewarded with the use of a blue MSC ecolabel.

The fisheries standard measures the sustainability of wild-capture fisheries and is designed to assess if a fishery is well managed and sustainable. It has been developed in consultation with the fishing industry, scientists and conservation groups. The standard is open to all fisheries, including fish and shellfish of any size, type or location. The MSC standard comprises of three principles:

- **Principle 1: Sustainable fish stocks** - The fishing activity must be at a level which ensures it can continue indefinitely.
- **Principle 2: Minimising environmental impact** - Fishing operations must be managed to maintain the structure, productivity, function and diversity of the

ecosystem

- **Principle 3: Effective management** - The fishery must comply with relevant laws and have a management system that is responsive to changing circumstances

It is expensive to attain an MSC accreditation, particularly for complex mixed fisheries and it is not practically viable for small fisheries



Figure 6.1: Example label identifying products certified by the Marine Stewardship Council (MSC)

There are currently three certified fisheries in Wales:

- Dee Estuary Cackle fishery - certified in July 2012. The gear used within this fishery is limited to hand-gathering (raking, riddling, bagging, carrying, clearing dead cockles)
- The Burry Inlet Cackle fishery - first certified as sustainable in April 2001, recertified in February 2007 and August 2013. Cockles are collected by hand-raking and sieving of cockles.
- North Menai Strait mussel - certified as sustainable in November 2010. This is an enhanced fishery: Seed mussels are harvested by dredge for relaying and on

growing in the Menai Strait before re-harvesting for sale

Further information can be found on the Marine Stewardship Council website.

Seafish Responsible Fishing Scheme

The Responsible Fishing Scheme was originally developed in 2006 to raise standards in the catching sector and was created in response to the needs of the seafood supply chain to demonstrate their commitment to the responsible sourcing of seafood. The aim of the scheme is that over time it will become a condition of supply.



Figure 6.2: Example of the Seafish Responsible Fishing Scheme logo

In 2014 the scheme underwent a complete review and is due to be relaunched in mid-2015. The scheme is an independent audited assessment of the application of good practice by a vessel skipper and crew in their fishing operations and covers five core areas namely:

- Safety, health and welfare
- Training and professional development
- The vessel and its mission
- Care of the catch
- Care for the environment

Membership to the scheme demonstrates that a vessel operates to industry good practice guidelines. Independent auditors ‘test’ vessels every three years and in between tests vessels undergo mid-term checks to make sure they are following recommendations and operating under the guidelines.

The scheme gives an assurance to the supply chain that fish from the vessel has been caught responsibly and provides the vessel with a tool to allow them to positively position themselves in a global marketplace.

Further information can be found on the Seafish website.

Seafish Risk Assessment for Sourcing Seafood (RASS)

The Seafish Risk assessment for Sourcing Seafood (RASS) tool provides information on the biological status of fish stocks from which fish are either landed or imported into the UK and the environmental impacts of fisheries catching these stocks. It scores risk according to stock status, stock management, habitat impact and bycatch impact. RASS presents risk scores based around four themes:

- Stock status
- Stock management
- Habitat impact, and
- Bycatch impact

Further information on the RASS tool can be found on the Seafish website.

6.3 Sources of information

Additional information can be obtain from the organisations or websites listed below as well as reports listed in the bibliography.

1. Centre for Environment, Fisheries & Aquaculture Science (CEFAS)

- Information on species of commercial importance
- Under-utilised species
- Species of conservation importance
- Non-native species
- Unusual fish species
- Recreational sea angling
- Information on salmonids
- Ecologically important fish habitats
 - Distribution of fish spawning and nursery grounds
- Tagging programmes

2. International Council for the Exploration of the Sea (ICES)

- Marine data - including fisheries
- Catch statistics

3. Welsh Government Marine & Fisheries section

- Buying Seafood in Wales

- Welsh Government Marine and Fisheries Strategy
- European Fisheries Fund
- Information on commercial fishing in Wales including permits and authorisations
- Recreational fishing
- Intertidal fishing for shellfish
- Aquaculture
- UK Fisheries Concordat

4. Seafish

5. Marine Management Organisation

- UK Sea fisheries annual statistics
- UK Fisheries Statistics Archive

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