

# **The coastal fisheries of England and Wales, Part III: A review of their status 1992-1994**

**M. J. Gray**



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Part III: A review of their status 1992-1994**

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LOWESTOFT  
1995

The author: Mark J. Gray (MSc. Fisheries biology and management, University College of North Wales, Bangor) was commissioned by the World-Wide Fund for Nature (WWF-UK) to undertake a review of the inshore fisheries of Great Britain from 1992 to 1993. The MAFF Directorate of Fisheries Research (DFR) agreed to assist with this venture by providing Mr Gray with office accommodation from which he could work and by facilitating contacts within the fishing industry during the field (information gathering) survey. Following completion of the WWF funded survey, MAFF-DFR commissioned Mr Gray to write-up the information gathered in the style of two earlier MAFF-DFR publications (Pawson and Benford, 1981; Pawson and Rogers 1988). This Report carries some technical information and the appendices over from these earlier publications but the survey information and the review of fishing methods is new.

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*M J Gray*

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# 1. INTRODUCTION

The inshore fisheries around England and Wales have been increasing steadily in relative importance for the past two decades. Throughout the first half of the century and into the 1960s, the greatest investment in British fishing effort and development was in the distant water, Arctic fisheries. This changed in the 1970s with the progressive international adoption of 200 mile fishery limits and the loss of access to traditional fishing grounds by the British distant water fleet. From 1977 onwards, when the European Economic Community (EEC) declared a 200 mile exclusive economic zone (EEZ) around its coastal member states, there has been an increasing tendency for British registered fishing vessels to concentrate their effort within this boundary. More particularly, in England and Wales the fishing fleet has evolved from one which comprised predominantly of large, distant and middle water trawlers working from relatively few, large ports (North Shields, Hull, Grimsby, Lowestoft, Milford Haven, Fleetwood), to a fleet of smaller vessels able to operate a wider range of fishing gears in shallower water closer to their home ports.

At the same time that the fishing fleets of England and Wales have undergone these fundamental changes in character, there has been an increasing public awareness of, and interest in environmental affairs, including the marine environment. More particularly, and most recently, there has been an increased appreciation of the extent to which commercial fishing activity can modify the marine environment, either directly through the physical effects of fishing gear, or indirectly through altering the structure of fish populations and the species with which they interact. If any group, either fisheries scientists or nature conservationists, is to understand these interactions between fisheries, fish stocks, and the marine environment, they must have a knowledge of what fishing activity is taking place; where, when and how.

This review is a first step towards providing this information. It follows the style of two earlier reviews of the inshore fisheries of England and Wales (Pawson and Benford, 1983; Pawson and Rogers, 1988) but certain sections have been expanded (e.g. management framework - given below, and descriptions of fishing gear - Section 2) for the benefit of those who have an interest in the fisheries, but are less familiar with their management or methods of operation. The bulk of the report summarises the coastal fisheries of England and Wales by eleven regions. There is a general overview of each fishery sector (demersal, pelagic, shellfish, migratory species) within each region and then a résumé of the activity undertaken from each port or landing place within the region. The distribution of the major commercial finfish and shellfish species around England and Wales, shown in Appendices 3 to 5, are the same as those featuring in the 1988 report, as the distribution of these species remains unchanged.

Initially, information was culled from the quarterly reports of the fishery officers serving with each of the twelve local sea fisheries committees (SFC): Northumbria, North Eastern, Eastern, Essex-Kent, Sussex, Southern, Devon, Cornwall, Isles of Scilly, South Wales, North Western and North Wales, and Cumbria. Subsequently, this information was augmented by personal interview with both SFC and MAFF fishery officers and also representatives of the local fishing industry - typically fishermen who were prepared to assist while mending their nets or servicing their boats in harbour. Once this information had been collated and the review drafted, appropriate sections were returned to each of the SFC and MAFF fishery officers with the invitation to correct or amend as necessary. The author wishes to take this opportunity to thank all of these individuals, not only for their assistance but also their patience in answering what may often have appeared naïve questions.

## 1.1 Fisheries management in England and Wales

The overall structure within which all European fisheries are managed is the Common Fisheries Policy (CFP) agreed between member states in 1983. This was reviewed in the early-1990s and ratified by the Council of Ministers in 1992 (EC 3760/92). Generally speaking, the ratified CFP did not differ from the original agreement but one notable addition was the requirement that fisheries managers should pay due regard to the environment. The principle features which were retained are the management of exploited fish stocks by limiting total allowable catches (TAC) from which each member state is allocated a fixed proportion - the national quota. The distribution of this quota to the national fishing fleet is left to member states except that in common with all other fisheries management measures, the method of distribution must be seen to be non-discriminatory, i.e. no management measures may favour or disadvantage one sector of the fleet with respect to another. Additional, technical management measures which are set through the CFP can include the minimum permitted landing size for fish (MLS) of each species, and the minimum mesh size (MMS) which is allowed in any part of a fishing net. Both measures are intended to optimise stock productivity and permit juvenile fish to reach sexual maturity. Enforcement of the regulations of the CFP on British registered fishing vessels throughout the European EEZ is the responsibility of British Sea Fisheries Officers (BSFO - MAFF and SOAFD Fisheries Inspectors and officers of the Royal Navy Fisheries Protection Squadron).

The CFP recognises that coastal states have exclusive access to, and authority to manage fisheries within the Territorial Sea (12 nautical miles from base lines), subject to the basic regulations on TAC, quotas, discrimination etc. Within the outer half of the UK Territorial Sea

(i.e. 6 - 12 nautical miles from base lines) some other EU member states have historic rights which give them limited access to certain fisheries in specified areas and seasons (for details see: Admiralty Chart Q6385). Enforcement of regulations on all vessels fishing in this band is the responsibility of BSFO. From the foreshore to 6 miles from baselines around England and Wales, enforcement of all fisheries management measures is the responsibility of MAFF Sea Fisheries Officers and the fisheries officers of the local sea fisheries committees.

The coastal waters of England and Wales are divided into 12 local sea fisheries districts, each of which has a sea fisheries committee (SFC) comprising equal numbers of county council (or equivalent) appointees and representatives of the fishing industry appointed by MAFF. The original and primary function of the SFC is to safeguard the interests of the local (inshore) fishing industry through the conservation of coastal fish stocks and the management of the vessels which exploit those stocks. In addition to the EU and national fisheries management measures, each SFC is permitted to draft byelaws specific to their district; these byelaws must be ratified by the MAFF Fisheries Minister. In common with all fisheries legislation, the byelaws can only be used to manage the fishery, they cannot be used to limit non-fishing activity, even if such activity is considered detrimental to fisheries interests. This important caveat will continue to apply even as the SFC powers expand to meet environmental responsibilities such as those required by the Sea Fisheries (Wildlife Conservation) Act 1992, and those attached to the management of special areas for conservation (SAC - Directive for the conservation of natural habitats and of wild fauna and flora: 92/43/EEC) and special protection areas (SPA - Directive for the conservation of wild birds: 79/409/EEC). These expanding powers and responsibilities are accompanied by changes to the composition of the SFC

as the Minister's appointees will include someone with expertise in marine nature conservation.

In addition to the formally constituted SFC, the National Rivers Authority (NRA) exercises the responsibilities of an SFC in some river estuaries, e.g. the Severn, the Taw-Torridge, the Welsh Dee. The main fisheries responsibilities, however, relate to the conservation and management of migratory species (salmon - *Salmo salar*, sea trout - *Salmo trutta* and the European eel - *Anguilla anguilla*) in coastal waters to a distance of 6 nautical miles from base lines. The NRA has the powers to limit the use of drifting or fixed nets or traps deployed for any species if any of the migratory species are considered vulnerable to capture by such gear. Clearly, such powers can affect coastal sea fisheries and the NRA occupy one of the MAFF appointee seats on each of the SFC to facilitate communication between NRA fishery managers and the local SFC.

## 2. FISHING GEAR USED INSHORE

### 2.1 Background

The main types of fishing gear used around the coast of England and Wales are described in this section in terms of; design, method of use, species targeted and general fishing restrictions applying inshore (a comprehensive list of SFC byelaws can be obtained from each SFC). Fishing gear can be categorised into 'towed' and 'static' gear; nets and dredges are towed, whilst static gear refers to gear operated passively, e.g. fixed and drift nets, pots and lines. A summary of fishing methods used to target individual or combinations of species is given in Table 1.

**Table 1. A summary of the main types of fishing gear used inshore around England and Wales to catch specific species or combination of species**

Category	Sub-category	Species	Fishing gear
Whitefish	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.	Beam 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 trawl, beach seine, trolling (bass) and handline (bass).
Diadromous fish		Salmon, sea trout and eel.	Gill net and beach seine (salmonids), trap, hand held nets, otter trawl (eels) 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) and hand-gather (bivalves and gastropods).



## 2.2 Trawl net

Trawl nets are funnel-shaped nets either towed across the seabed or through the water column; the fish are eventually trapped in the tail-end of the net known as the 'cod-end'. Trawling inshore is either conducted by small boats working light trawl gear or larger boats that normally work further offshore, venturing inshore for brief periods when good catches can be made (e.g. when Dover sole congregate inshore during spring and summer). Three main types of trawl nets can be distinguished by the way the nets are kept open.

### 2.2.1 Otter trawl

The mouth of the net is held open by the weighted ground rope, floats on the headline, and the lateral paravanning effect of the otter boards or 'doors' (Figure 1). The bridles, warps and otter boards help to drive the fish towards the net. Trawl gear is either dragged along the seabed when targeting demersal fish or through the water column to catch pelagic fish. 'Tickler' chains attached along the front of demersal nets dig into the seabed disturbing flatfish into the path of the net. The use of large rubber discs or steel bobbins on the ground rope enables the trawl to be towed over rocky ground, this is known as 'rock hopper gear'.

Otter trawls are used to catch demersal roundfish (e.g. cod, whiting and haddock), flatfish (e.g. Dover sole, plaice and turbot), pelagic fish (e.g. herring, sprat and bass), crustacea (primarily *Nephrops*) and molluscs (e.g. cuttlefish and squid). More than one otter trawl net can be towed by a single boat (multi-rig trawl gear): for example, 2 or 3 otter trawls are used by a small number of boats off the south coast of England when targeting Dover sole and plaice.

Otter trawls designed to catch crustacea, such as *Nephrops*, usually have a smaller mesh size than those used for white fish. However, since 1992, there has been a statutory requirement to include a section of square-mesh panelling above the cod-end to aid the escape of undersize roundfish as they can be taken in large quantities as a by-catch.

### 2.2.2 Pair trawl

A pair trawl is towed by two boats each attached to the trawl by a single warp. The degree to which it is held open varies with the distance between the two boats and there is no need for otter boards. This method is used for both demersal and pelagic fish. There has been an increasing trend in many areas for inshore trawlers to pair up; the advantages are that fuel costs are reduced, a larger net can be towed at a faster speed and 2 small boats - under the SFC limit - can use a net a bigger boat would not be allowed to use.

### 2.2.3 Beam trawl

The beam trawl is one of the earliest forms of trawl gear designed to exploit demersal fish. It has been in use since at least the 14th century. The inshore fleet primarily use beam trawls to catch flatfish and shrimp. The net is attached to a beam that keeps the net open; the beam is supported by 2 triangular metal beam 'heads' which run over the seabed (Figure 2). Modern beam trawlers usually have two beams, one towed on either side to give stability. A chain matrix is often attached to the bottom of the net to prevent damage caused by boulders when used over rocky ground, and tickler chains are attached between the steel runners when targeting flatfish on sandy ground. Beam trawl gears

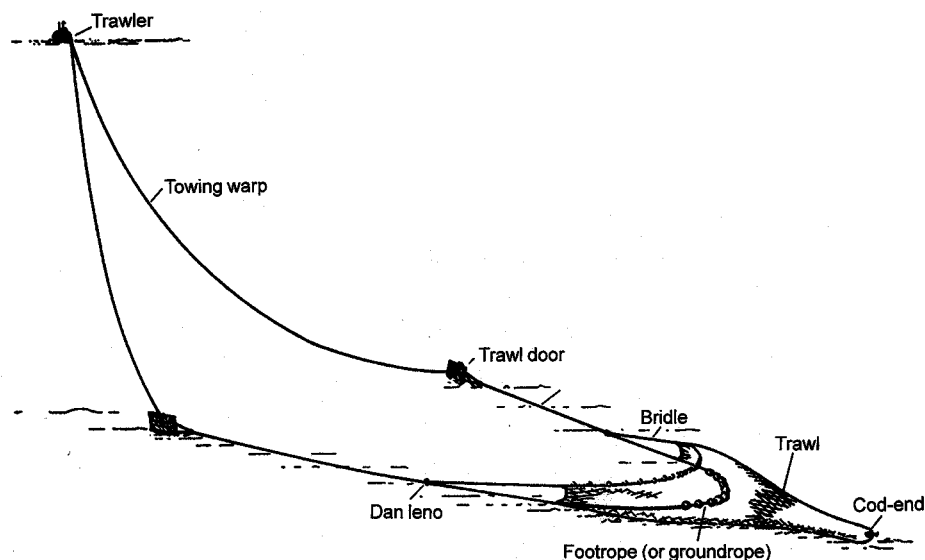


Figure 1. Demersal otter trawl gear (source: Strange, 1981)

designed to catch shrimps incorporate a small mesh sized net attached to beams which are towed by small boats or vehicles in shallow water. Some vehicles characteristic to the north-west coast of England actually float and possess propellers allowing them to work in slightly deeper waters.

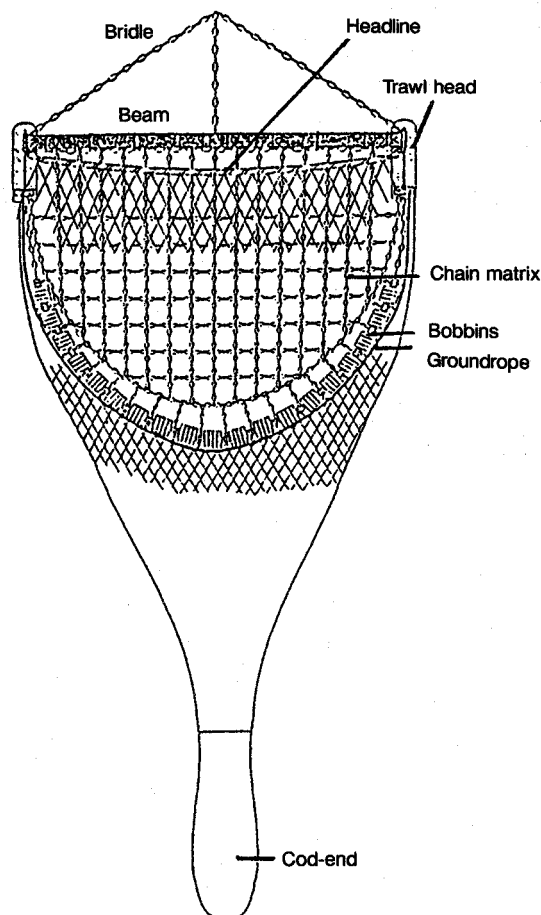


Figure 2. A beam trawl (source: Anon.)

## 2.2.4 Trawling restrictions

Various regional and national trawling restrictions apply within the limits of 3, 6 and 12 miles from baselines. The principal regulations imposed on the use of trawl gear inshore include; (i) vessel size and engine power restrictions, (ii) mesh size of nets, (iii) net design and (iv) closed areas. Examples of SFC trawling byelaws include; no trawling by boats over 12 m (Devon SFC) and no trawling in Filey Bay (North Eastern SFC).

## 2.3 Seine net

A seine net is used to surround a concentration of fish either on the seabed or in the water column. The net is usually paid out by a vessel and then hauled back either to the vessel (purse seine or fly/Danish seine) or to the shore by hand (beach seine). Demersal seine nets of various designs were used to target white fish in the

1960s and 1970s by both inshore and offshore fishing fleets; the wider use of rock hopper trawl gear has out-competed the seine net in marginal areas, as the seine net cannot be used over rocky areas of seabed. Beach seine nets are much smaller in size and exclusively used inshore, often around estuaries.

### 2.3.1 Demersal seine

There are several variations to this method known by different names, e.g. Danish seine or fly seine, all taking demersal fish. Basically, a vessel pays out a long rope, with a trawl-shaped net (with extended wings) attached at mid-length, to encircle an area of seabed. The two free ends are then hauled back towards the boat, herding the fish into the path of the net and finally into the cod-end. The more popular methods of seining are (i) 'Fly-seining', which originated in Scotland and involves the seine net being slowly towed whilst being hauled in and (ii) 'Anchor-seining', when the net is hauled towards a stationary vessel.

### 2.3.2 Beach seine

One end of the net is held on the shore and the rest of the net is piled in a boat, which proceeds to set the net out in a circle, the net is then hauled in towards the shore (Figure 3). Beach seining is used to catch salmon, sea trout, bass, mackerel, mullet, and sandeels.

### 2.3.3 Seining restrictions

Most of the fishing restrictions applying to trawlers also apply to seining vessels, although in some areas of England and Wales, for example the North Western and North Wales Sea Fisheries District, seining of any type is prohibited.

## 2.4 Dredge

Dredges are dragged along the seabed digging or scraping up molluscs such as scallops, oysters, mussels, clams and cockles. Scallops are dredged from inshore and offshore grounds, whereas commercial cockle and mussel beds are only found inshore, frequently in intertidal areas, where dredges can sometimes be towed by a vehicle (e.g. tractor). Commercial oyster beds are more commonly situated close inshore, the majority of which are privately owned.

### 2.4.1 Scallop dredge

Scallop dredges are attached to a beam and 2 beams are usually towed either side of the boat; the number of dredges depends on engine power. A dredge consists of a bar bearing metal teeth that rake up the molluscs and

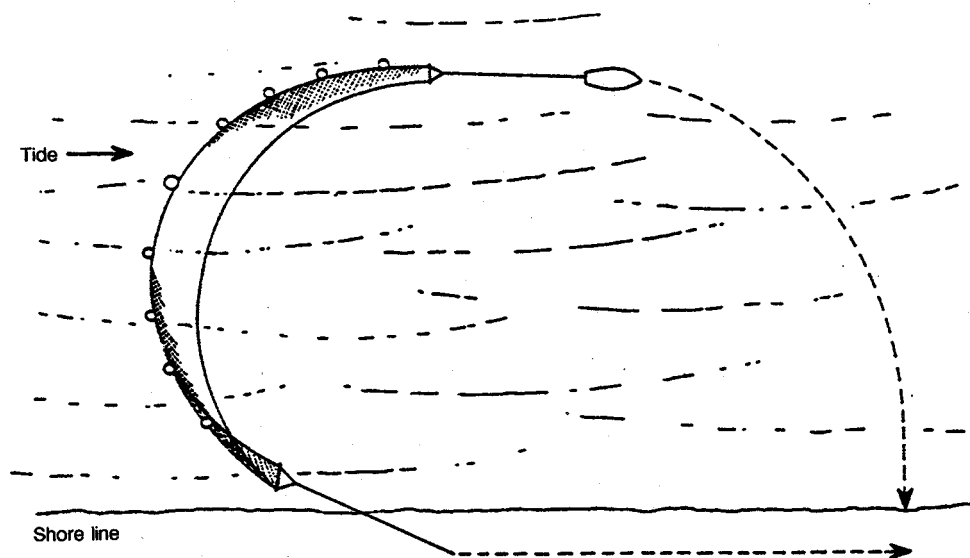


Figure 3. Fishing a beach seine (source: Strange, 1981)

collects them in a reinforced net or bag. Heavy dredges with longer teeth dig deeper into the seabed and are required to extract scallops (recessed in the seabed), whereas lighter dredge gear and even otter trawls take queens from the surface of the seabed. There are various types of scallop dredges, the most common design being the 'Newhaven' dredge (Figure 4), which is between 0.5 and 1 m wide with a spring loaded tooth bar which helps prevent the dredge becoming snagged on rocky and stony areas. The 'French' dredge, up to 2 m in width, is heavier than the Newhaven dredge and utilises a diving plate to force the dredge into the seabed. This dredge is restricted to finer sediments and is capable of catching flatfish.

#### 2.4.2 Mussel and oyster dredge

Dredges used to harvest mussels and oysters are usually of a simple design (e.g. the 'Baird' dredge), incorporat-

ing either a metal toothed bar or blade, which digs into the seabed and scoops the molluscs into a net.

#### 2.4.3 Cockle dredge

Cockle dredges are used in areas where the low density of cockles makes hand gathering non-viable. They range from hydraulic suction dredges to mechanical dredges towed by a vehicle. Hydraulic suction dredges use metal blades to dig up the sediments and a powerful jet of water exposes the cockles which are 'blown' up a suction pipe onto the deck of the boat. A tractor dredge uses a plough-like blade, to remove the sediment, which is then sent through a revolving drum or riddle constructed with metal bars to separate the cockles (the distance between the bars often corresponding to the MLS of cockles). Hydraulic suction dredge devices are sometimes used to exploit other molluscs, such as razor shells and clams.

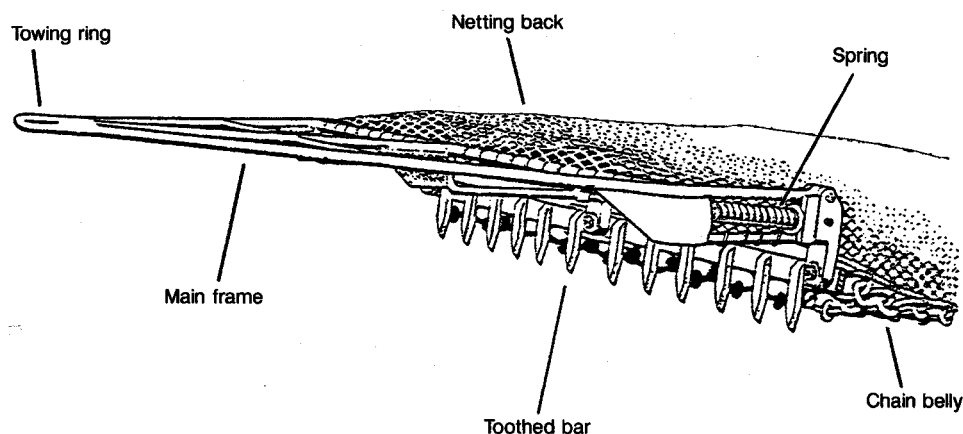


Figure 4. A Newhaven scallop dredge (source: Chapman et al., 1977)

#### 2.4.4 Dredging restrictions

Most mollusc fisheries (with the exception of scallops) are found close inshore and are managed by SFCs, all of which have the power to close a fishery on conservation grounds. General dredging restrictions applying to most mollusc fisheries include: authorisation of specific fishing methods; dredge size; closed areas and permitted fishing times on a seasonal, weekly and daily basis.

### 2.5 Fixed and Drift net

During the last 2 decades, the development of man-made fibres used to construct mono- and multi-filament nets has had a profound effect on the inshore fishing industry of England and Wales. Monofilament nets have proved to be more effective than previously used nets (made out of nylon, cotton or hemp), as they are far less conspicuous in the water, more durable, less bulky and cheaper. Consequently the fishing capacity of an inshore boat has increased together with the number of species exploited.

Nets are often fixed in areas inaccessible to trawlers such as rocky and shallow areas, and around wrecks. Nets set along the shore are sometimes attached to stakes. The type of net, mesh size and the method in which it is used depends on the species targeted. There is an optimum mesh size for the capture of every species (allowing the escape of immature fish), although the multi-species nature of most demersal fisheries often results in the chosen mesh size being a compromise. The length of netting set depends on a variety of factors including; the type of net, size of boat, number of crew, hauling capability, competition for space, nature of seabed and presence of other fisheries (e.g. trawling). Individual nets are usually between 50-150 m in length and 2-4 m in depth and several are usually joined together to form a fleet.

#### 2.5.1 Gill net

Single sheets of netting, (either fixed or drift) are set vertically taut to enmesh demersal or pelagic roundfish, often by the gill covers (gilled). Gill nets set for demersal roundfish are fixed to the seabed by a weighted ground rope and anchors or other weights at intervals, and kept taut by a series of floats attached to the head rope (Figure 5). In some areas they can only be used on neap tides or weak spring tides, as strong tides will force the nets horizontally onto the seabed and render them incapable of catching roundfish. Cod nets usually have a mesh size of between 120-150 mm and an inshore boat is capable of fishing between 5-10,000 m of monofilament net, often in fleets of up to 1,000 m in length. Demersal nets can entangle a significant quantity of crustacea, particularly crabs and lobsters.

Gill nets drifted for pelagic fish are floated from the surface, one end of the net maybe attached to a boat, a weighted ground rope keeping the net hanging vertically. In shallow waters, nets targeting pelagic fish can be fixed from the seabed. Drift nets targeting bass and grey mullet have a mesh size of between 80-110 mm, whereas herring nets have a mesh size of around 50 mm. The length of a drift net ranges from 100-300 m, the shorter nets being associated with small species forming dense shoals.

#### 2.5.2 Tangle net

These are single sheets of netting that are fixed loosely from the seabed, either vertically or horizontally and often without headline floats, entangling fish by gill covers, jaws and appendages such as spines (e.g. rays) and legs (e.g. spider crabs and crawfish). Small mesh sized nets of between 100-120 mm are used to catch Dover sole and plaice, nets of 200-300 mm take turbot, brill and rays, nets set for crawfish can have a mesh size over 300 mm.

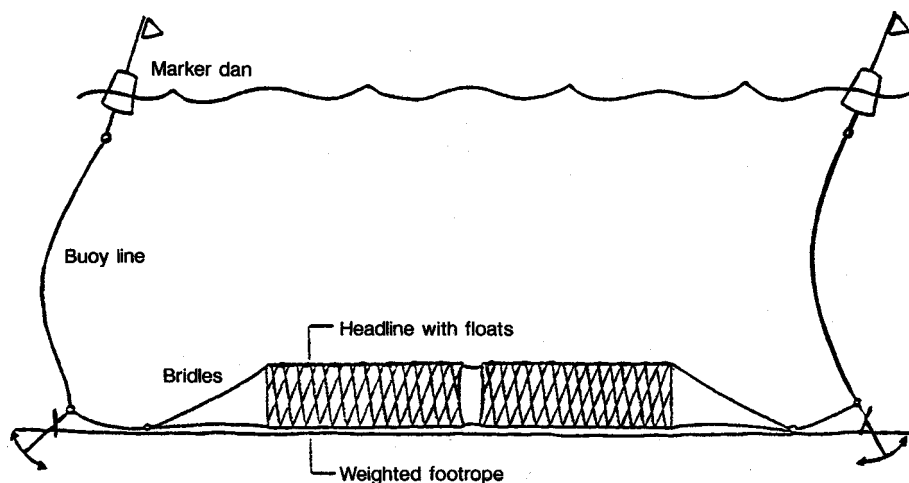


Figure 5. A fixed gill net (source: Millner, 1985)

### 2.5.3 Trammel net

These nets consist of 3 layers or walls of netting that are fixed vertically, with the outer 2 layers having a greater mesh size (Figure 6). Fish are caught when they swim through one outer layer and either become gilled or proceed to push the inner wall of netting, through the second outer wall, trapping themselves in a pocket of the smaller mesh sized net. The mesh size of the inner wall chosen for Dover sole, plaice or cod is usually around 100 mm.

### 2.5.4 Netting restrictions

In England and Wales, regulation of fixed and drift netting for sea fish is principally undertaken by SFCs. The more common regulations (many of which only apply in specific areas) relate to mesh size, fishing methods and closed areas. Legislation emanating from the Salmon and Freshwater Fisheries Act 1975 and the Salmon Act 1986, has restricted the use of fixed and drift nets in and around estuaries of some rivers in England and Wales, which have runs of migratory salmon and sea trout.

In 1990, MAFF adopted a strategy for the long-term conservation and management of the bass fishery. As part of that policy the use of gill nets and similar enmeshing nets with a mesh size of between 65-89 mm is prohibited in fisheries south of Haverigg Point in Cumbria on the west coast and south of Donna Nook in Lincolnshire on the east coast (with the exception of beach seines, drift and ring nets within the 3 mile zone between Beachy Head and Rame Head). MAFF have also designated appropriate estuaries, power station outfalls and harbours as 'Bass - nursery areas' and some SFCs have imposed further netting restrictions in such areas (details are summarised in: 'Bass - nursery areas and other conservation measures' MAFF - Welsh Office).

## 2.6 Salmon net and trap

A variety of traditional and modern fishing nets and traps are used to catch salmon and sea trout along their spawning migration routes, close inshore and up estuaries as they head towards their natal streams.

Commercial salmon fishing gear used around England and Wales include; drift net, seine net, hand-held net and trap. The drift net is the more commonly used, accounting for approximately 40% of all licensed nets (NRA, 1994) and generally have a mesh size of between 120-130 mm, which is believed to be the optimal size to enmesh grilse - fish that have spent only one winter in the sea. Drift netting comes in a variety of forms, for example drift nets used off the Northumberland coast are up to 550 m in length and hang 3-4 m from the surface, whereas in some of the river estuaries in Wales, a trammel net is drifted between two coracles (a coracle being a small one-man boat). Sea trout are often caught in drift nets set for bass and mullet off the Norfolk coast, these nets have a small mesh size often down to 90 mm. Seine nets are used in the same manner as beach seines in rivers and estuaries. Hand-held nets (e.g. haaf and lave nets) are used in rivers or estuaries, fishermen standing against the tide in shallow turbid waters (e.g. the Solway Firth).

Salmonid traps are fixed within rivers, estuaries or along the coast. Northumbria T-nets and Yorkshire 'T or J' nets are set along the north-east coast of England; Northumbria T-nets comprise a 'leader', usually about 200 m in length, stretching out from the beach to a 'headpiece', which contains two traps with funnel entrances (Figure 7), whereas Yorkshire 'T or J' nets are much simpler, made from a length of netting which extends from the beach and is then turned back on itself to form a partly open box or compound.

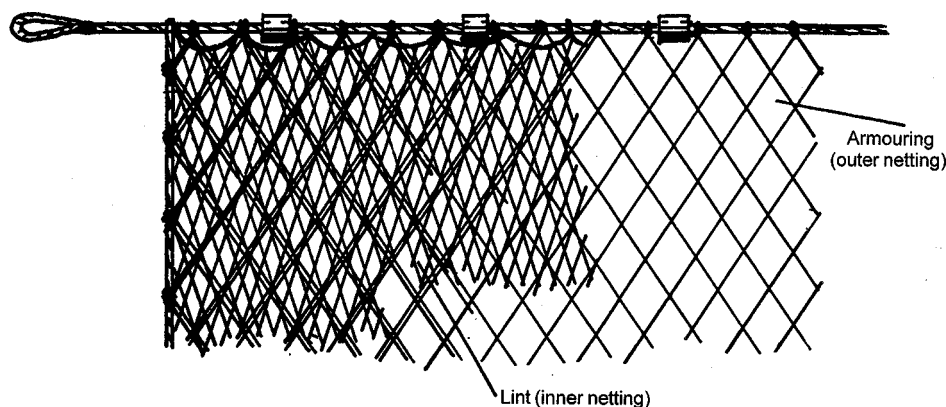


Figure 6. Part of a trammel net (source: Strange, 1981)

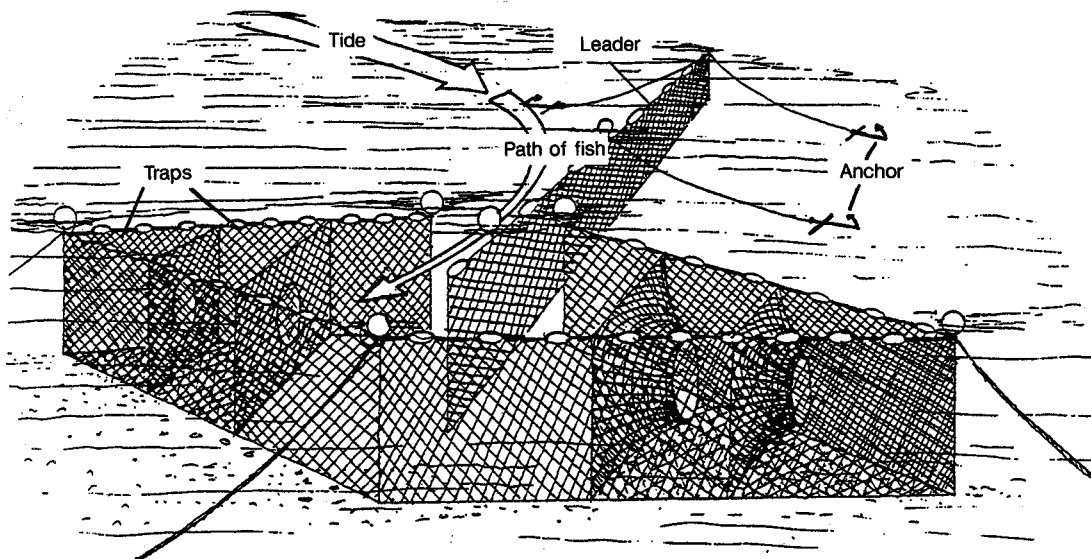


Figure 7. A Northumbria T-net (source: Shearer, 1992)

Both these traps are constructed of a visible material, relying on the behaviour of salmon and sea trout to swim away from the shore when confronted with a net known as a 'leader' (Potter and Pawson, 1991); the fish are led into a netted chamber, although some may become enmeshed in the leader or the chamber walls. Another trap characteristic to the shores of the Bristol Channel and the banks of the Rivers Severn and Usk, are 'putcher ranks', which are a series of conical-shaped wicker baskets, fixed to a wooden frame. Fish swimming with the current enter the basket, becoming jammed and are then collected when the tide recedes. A range of other methods, generally of ancient design, are used to fish for salmon and sea trout in estuaries (Figures 8 and 9).

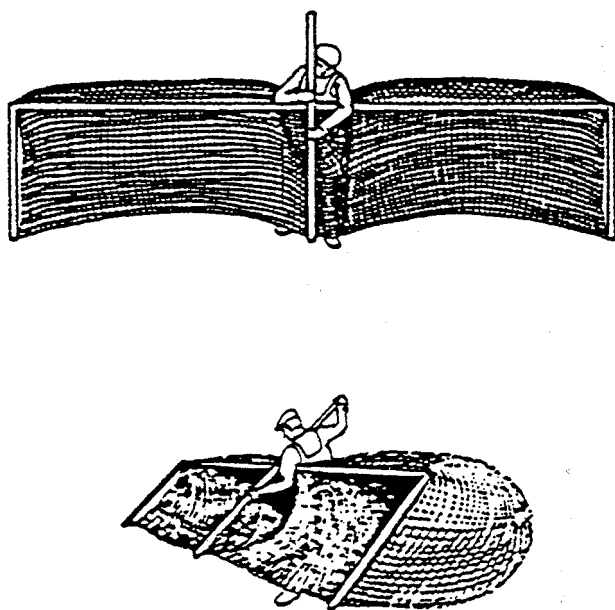


Figure 8. A haaf net (source: Shearer, 1992)

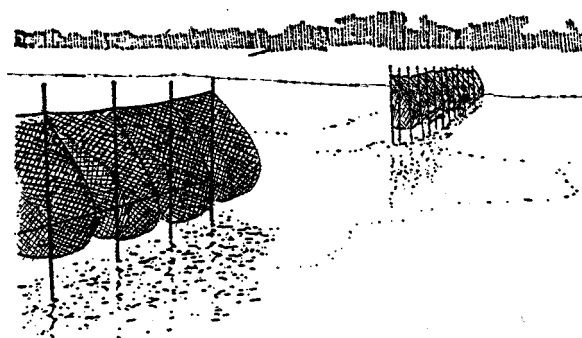


Figure 9. A poke net (source: Shearer, 1992)

### 2.6.1 Salmon fishing restrictions

In England and Wales, there is a public right of fishing for salmon and sea trout in estuaries and in the sea except at a few places, including some in Northumberland where a private right was granted by the Crown before Magna Carta - 1215 (MAFF, 1991). Exercise of the public right has, however, been limited by regulations on; fishing methods, period of fishing (annual and weekly fishing times), fishing intensity (net limitation orders) etc. For example, only drift nets and Northumbria T-nets are permitted off the Northumbria coast (between Holy Island and Souter Point) and fishing may only take place between 0600h Monday and 1800h Friday from 26 March to 31 August.

Since February 1973, there has been an absolute prohibition on fishing for salmon in waters off England and Wales beyond the six-mile limit. Inside this limit, it is an offence for anyone to fish for salmon without a fishing licence issued by the NRA or its predecessors. The NRA are currently phasing out the salmon drift net fishery by withdrawing licences once they have been relinquished by their owners following retirement.

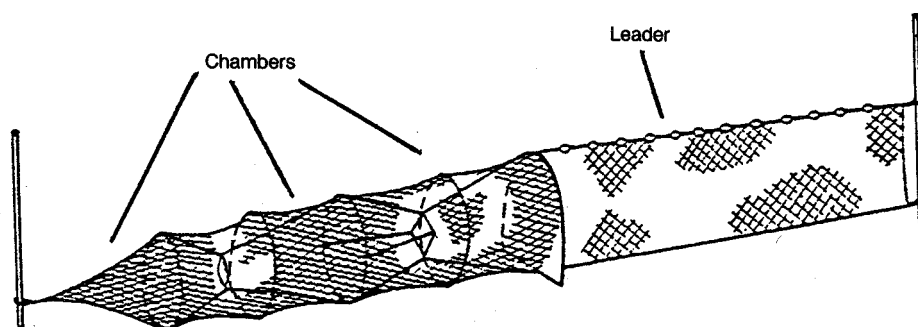


Figure 10. A single fyke net entrance (source: FAO, 1975)

## 2.7 Eel net and trap

There are several types of traps used to catch the catadromous common eel (*Anguilla* spp.) in many rivers and estuaries in England and Wales, according to season and life stage, e.g. strings of crigg nets, pots and elver dip nets. The most popular trap is the fyke net which is a conical-shaped net with 4 metal rings and a series of 3 chambers each with a one-way funnel (Figure 10).

Fyke nets are used to catch adult eels embarking on their spawning migration down rivers (silver eels) from the end of summer through winter as they head for spawning grounds at sea; the nets are often set in a line across a river. Paired fykes are set along rivers to catch eels moving 'around' (yellow/brown eels) throughout the year. Otter exclusion bars are attached to the fyke nets to prevent otters becoming trapped in the chambers. Elvers (juvenile or glass eels) are caught when migrating up rivers in spring, from sea-spawning grounds in various types of nets, the more common are hand-held and known as (elver) dip-nets.

### 2.7.1 Eel fishing restrictions

As stipulated under the Salmon and Freshwater Fisheries Act 1975, eel fisheries are managed by the NRA who are obliged to licence nets, except where excused from this obligation by MAFF (or Minister of State in Wales).

## 2.8 Pot

A pot used to catch crustacea, is generally comprised of a steel frame (sometimes plastic coated) covered in netting forming the trap, which is then anchored by a weighted base. The two main types are the 'inkwell' and 'parlour' pot (Figure 11), although there are regional differences. The inkwell pot is dome-shaped, commonly used for brown crabs and crawfish, which enter from the top of the pot. The parlour pot, used for lobsters, crabs and sometimes prawns are rectangular-shaped, comprising 2 chambers; crustacea enter a baited chamber and when trying to escape enter the second

chamber where they remain trapped. The mesh size of the netting covering the pot is obviously smaller when targeting prawns. Inshore fishermen usually attach between 10-50 pots to one line, at the end of which is a marker buoy (dan). The continual development of more powerful hydraulic capstans has given the inshore fleet the ability to haul more pots. A single fishermen fishing from a beach boat may use between 100-300 pots, whereas a two-man crew may work up to 600-700 pots. Boats nearing 10 m in length and crewed by 3 fishermen can work in excess of 1,000 pots and are capable of hauling around 500 pots in one day.

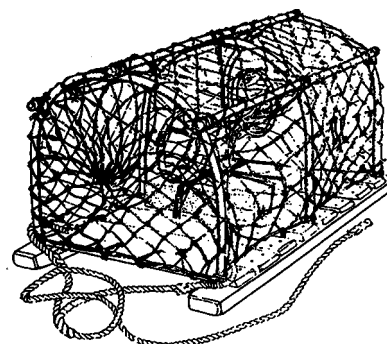


Figure 11. A parlour pot (source: Strange, 1981)

Since the 1980s, large pot boats (some over 20 m in length and capable of working in excess of 2,000 pots) have been constructed with live storage facilities on board (vivier-equipped), to exploit offshore stocks of brown crab, sometimes within 12 miles of the coast. Fresh bait is used to entice crabs into pots, whereas partly decomposed food is more successful for attracting lobsters. Fish offal (fish heads and back bones), non-commercial and low value species, for example, dogfish, conger eel, gurnard, sprat, herring and mackerel, are favoured bait; the choice depends on the species targeted, region and availability.

Whelk pots are commonly made from plastic drums, approximately 40-70 cm high and 30-50 cm in diameter. The pot is weighted with concrete and netting surrounds the entrance hole, around 10-20 cm in diameter, preventing whelks escaping having been enticed into the pot using bait, similar to that used to attract crabs and lobsters.

### 2.8.1 Potting restrictions

There are few potting regulations, although in some areas permit schemes exist (e.g. Cornwall, Devon and South Wales SFC Districts) which require the submission of catch and effort data.

## 2.9 Line

### 2.9.1 Longline

Longlines carry baited hooks, attached to a main line by branch lines or 'snoods' and anchored to the seabed when targeting demersal fish such as cod, rays, ling and dogfish (Figure 12). Longlining was more viable in the past, when it was the only form of fishing able to be used over rocky ground. However, since the advent of synthetic nets and rock-hopper trawl gear, longlines have become less popular, as overheads are high due to the cost of bait and the labour intensity involved.

Longlines are still used in areas that are inaccessible to trawlers, either because of the nature of the seabed or due to mobile gear being prohibited, and where fixed nets cannot be set because of tidal currents, weather conditions or high densities of sea weed. Longlines used by the inshore fleet usually have between 50 and 400 hooks attached per line, each line being up to half a mile in length. Mussel, squid and whelk are commonly used as bait. Mechanised longline haulers have reduced the labour intensity and fish caught by hook are in prime condition and fetch high prices.

### 2.9.2 Handline

Commercial handlines (or rod and line) consist of a single line with a series of baited hooks or artificial

lures attached, the lines are sometimes hauled using a mechanical reel or "gurdy". Handlines are often used in areas where other methods are prohibited or where other forms of fishing are difficult, e.g. close inshore or in turbulent waters. It is the only permitted method for exploiting mackerel within the 'Mackerel Box' (an inshore area around the coast of Cornwall and Devon, designated by the EC, the intention of which is to protect the juvenile mackerel stock from the large pelagic trawlers and purse seiners). In addition to mackerel, other species taken on handlines include bass, cod, pollack and squid. The bass rod and line fishery in the south of England and Wales has become very popular and apparently very successful when live sandeels are used as bait.

### 2.9.3 Lining restrictions

In general there are few restrictions that apply to line fishing, the main ones being MLS and closed areas. Handlining for bass is prohibited from a boat in designated bass nursery areas (as mentioned above) for specified periods.

## 2.10 Hand-gathering techniques

Shellfish, principally molluscs such as cockles, mussels, scallops, oysters and periwinkles, are hand-gathered usually with the aid of a spade, rake or similar device. A sieve, with an appropriate sized mesh, is often used to separate marketable sized cockles and in some areas hand-gathering is the only permitted method of harvesting molluscs.

### 2.10.1 Hand-gathering restrictions

Some wild mollusc fisheries are managed through fishery orders, usually issued by a SFC and access is often limited to licence holders and fishing may be further restricted through closed seasons and TACs.

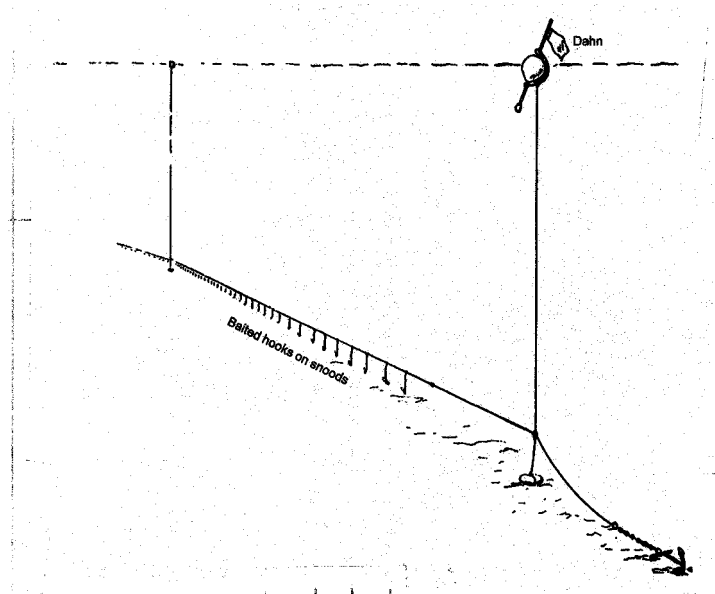


Figure 12. A longline (source: Strange, 1981)

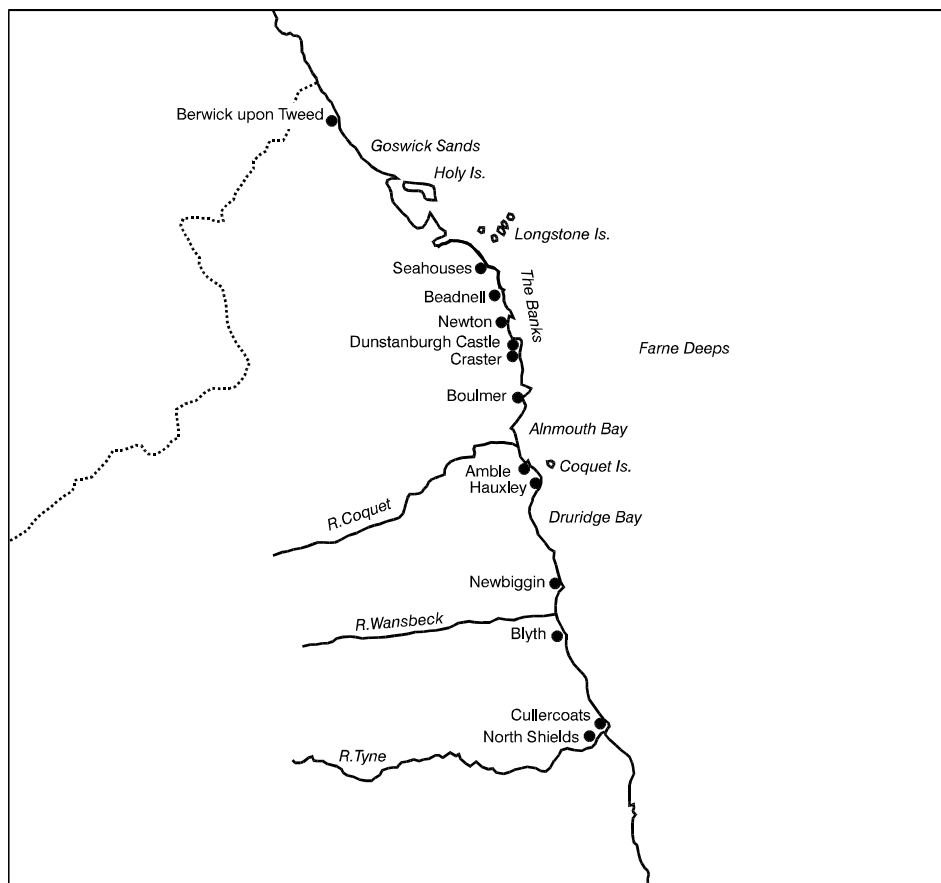


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## REGIONAL SECTION – SEA FISHERIES COMMITTEE DISTRICTS

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### 3. NORTHUMBERLAND: Berwick to North Shields (*Northumberland SFC*)



#### 3.1 Synopsis of current inshore fisheries

Fishing vessels operating from the 12 recognised ports and landing places along this coast traditionally fish inshore, which is partly due to the richness of resources found within daily steaming distance of most ports, such as *Nephrops*, white fish, salmon, crustaceans and, locally, molluscs and pelagic fish. The trawler fleet fish out to 20 miles offshore, targeting *Nephrops* and white fish, often in an area of deep water known as the 'Farne Deeps'. Since the 1970s, *Nephrops* have assumed greater importance as demand has steadily increased and white fish landings have fallen, partly due to severe quota restrictions. Static gear fishermen undertake a

variety of seasonal fishing methods throughout the year, for example gill and trammel nets are used for cod in winter, pots are mainly set during the warmer period of the year for lobsters and brown crabs, and salmon and sea trout are taken from spring through to the end of the summer in drift nets and Northumbria T-nets. Northumbrian fishermen, especially those operating from fishing villages (e.g. Newton, Craster, Boulmer and Newbiggin) still use 'cobles' a traditional beach boat characteristic of this coast. They are high-bowed, flat-bottomed, clinker-built boats usually around 10 m in length. Landing quota restrictions have disrupted traditional fishing patterns and the NRA are currently phasing out the salmon drift net fishery.

### **3.2 Information on species targeted, fishing methods and fishing restrictions inshore**

#### **3.2.1 Demersal fish (e.g. cod, whiting, haddock, saithe, pollack, ling, plaice, lemon sole, turbot and dab)**

White fish are caught both as a by-catch in the prawn fishery and in a directed fishery. A deep-water trench some 10-20 miles offshore, known as the Farne Deep, has traditionally provided good catches of haddock, cod and whiting for most of the year, though they are also caught closer inshore, particularly in winter. Northumbrian SFC byelaws prohibit trawlers over 11.6 m in length and the use of purse seines, rings or similar encircling nets within 3 miles of the coast. Since the late-1980s, pair trawling for roundfish has become increasingly popular as it is more efficient; unfortunately a greater proportion of the catch tends to be made up of smaller fish. Flatfish, such as lemon sole and turbot form an important part of the mixed demersal trawl fishery as they command a high market price. Plaice and turbot are landed in greater quantities during the warmer months of the year.

Fixed nets are principally set by boats under 10 m, many of which are cobs. Gill nets and, to a lesser extent, trammel nets are set for cod from autumn through to spring, when shoals appear inshore; these nets also take whiting, pollack, saithe and crustacea. Each net measures 75-100 m in length and 1.5-2 m in depth; up to 6 nets are joined together to form a 'fleet'. Northumbrian SFC have authorised the use of nets (other than authorised salmon T-nets) in areas where the depth of water exceeds 7 metres, and have restricted netting around the mouths of the Rivers Tyne, Wansbeck and Coquet, to prevent the illegal capture of salmon and sea trout. Tangle and trammel nets are used to catch flatfish, principally plaice and turbot. Nets used to catch plaice generally have a mesh size of between 100 and 120 mm, whereas the mesh size of nets used for larger flatfish (e.g. turbot and monkfish) can be up to 300 mm. Boats under 10 m are capable of setting over 5,000 m of netting, though, most set between 1-2,500 m.

#### **3.2.2 Pelagic fish (e.g. herring and mackerel)**

Following the re-opening of the herring fishery in 1983, fishing effort has been minimal as local stocks have failed to recover and demand is low. In the past, trawlers and seiners targeted herring in well known spawning grounds off the Farne Islands, now herring are occasionally caught in drift nets close inshore and they are sometimes exploited for pot bait. Mackerel are caught on handlines, but rarely sold commercially.

#### **3.2.3 Diadromous fish (e.g. salmon, sea trout and eel)**

Salmon migrating back to spawn in home rivers on the east coast of Scotland and the north-east coast of England are believed to enter the North Sea from the north. Many are thought to overshoot their home rivers, migrating south either along the coast or further out before turning back. Sea trout originating from rivers in the north-east of England and east coast of Scotland, are thought to migrate southwards to feed in the southern North Sea and are exploited as they migrate back north to spawn. Drift nets, up to 550 m in length, take a greater proportion of salmon than Northumbria T-nets, and the mesh varies between 120 and 135 mm, depending on the area and time of year. For example a smaller mesh size is chosen to catch salmon during the summer, when grilse make up a large part of the catch and when sea trout are also caught, whereas a greater mesh may be chosen at the beginning of the season when large salmon (multi-sea winter fish) are taken. Northumbria T-nets are designed to intercept and trap salmon and sea trout moving along the coast close to the shore. They are worked primarily around the mouths of the Rivers Coquet and Tyne, with the majority being found within 5 miles of the Coquet.

A total of 62 salmon licences were issued for fishing for salmon and sea trout from Holy Island down to Souter Point (3 miles south of the River Tyne) in 1994, 31 of which were for drift or T-net, 30 for drift net only and 1 for T-net only. Fishing for these species between Holy Island and the Scottish border comes under the Scottish jurisdiction and regulations. The fishing season commencing 26 March is subject to a weekly closure from 1800h Friday to 0600h Monday (drift netting also prohibited between 2000-0400h during the week) ending 31 August. Closed areas (known in the Byelaws as 'playgrounds') have been established around the mouths of the Rivers Coquet, Wansbeck and Tyne, although T-nets are permitted in some of these areas. T-nets used between Boulmer and Hauxley (within private 'stell' fisheries) and close to the River Tyne, are set at fixed berths and fishermen operate under a rota system. In the Druridge Bay, Beadnell and Holy Island areas, T-netting is not governed by formal rotas or rigidly fixed netting stations.

Several licensed fishermen regularly set fyke nets to catch yellow/brown eels in spring and silver eels (migrating towards the sea) in summer and autumn, in the Rivers Tyne and Coquet.

#### **3.2.4 Shellfish (e.g. Nephrops, lobster, brown crab, velvet crab, shrimp, scallop, mussel, oyster and periwinkle)**

For reasons outlined above, *Nephrops* provide the mainstay for the majority of inshore trawlers working

from Seahouses, Amble, Blyth and North Shields. *Nephrops* are abundant in deep-water areas where the seabed is of a muddy nature. Traditionally a winter/spring fishery, it is now also prosecuted in the summer after the *Nephrops* have cast their shells. During the winter the fishery is concentrated 8-20 miles offshore, around the Farne Deep, whereas in the summer a viable fishery may occasionally take place 3 miles offshore. *Nephrops* is a cryptic species and seeks refuge in burrows in response to diurnal changes in light levels. Catch rates decrease when there is increased sea movement (e.g. strong tides and stormy weather) and this may also be due to the animals' behaviour. *Pandalus* shrimp are often landed in association with *Nephrops* mainly by trawlers operating from North Shields. In order to reduce the by-catch of juvenile white fish using *Nephrops* nets with a mesh size of 70 mm, MAFF made it compulsory to incorporate a section of 80 mm square mesh panelling into the net, near to the cod-end, from June 1992.

The pot fishery is particularly important to the smaller coastal communities whose fleet may comprise entirely of cobbles. The main brown crab season begins in late spring and lasts through to autumn. Lobster pots are set close inshore and peak season occurs during the summer when part-time fishermen participate. Lobsters are targeted until the end of the year, although rough weather may curtail fishing due to the risk of damage to pots. Since the mid-1980s, velvet crabs have attracted more interest as markets have opened up and they provide an important resource during the winter. They are caught in pots set in the shelter of the coast, sometimes as a by-catch to lobsters, and have a higher survival rate in winter when caught and stored before they are taken in vivier lorries to Europe, where they are sold live. A small scallop fishery occurs a few miles off Holy Island and provides an alternative to white fish trawling. Native and Pacific oysters and mussels are cultivated around Holy Island, and mussels and periwinkles are gathered by hand throughout the district.

### 3.3 Description of coastal fisheries by port

#### 3.3.1 Berwick

The lobster and crab fisheries support 4 full-time and 3 part-time boats, all under 10 m. The full-time fishermen set up to 400 pots per boat out to 5 miles offshore for lobsters and brown crabs. The lobster fishery peaks during the end of the summer, whereas brown crabs normally provide a steady income from spring through to autumn, although since the late-1980s inshore landings have been poor and fishermen have been forced to set their pots further offshore, where greater quantities of brown crab have been caught. During the winter, pots are generally set closer inshore yielding meagre quantities of brown crabs, velvet crabs and lobsters which do, however, command a high price.

Several boats use gill and trammel nets for cod between autumn and spring, when shoals of codling appear inshore. Whiting, saithe, pollack, plaice and lobster can form an important by-catch. Nets are sometimes set for demersal fish during the summer often when landings of lobster and crab are at a seasonal low. Species of little commercial value may be retained for pot bait. Some of the part-time boats use handlines for cod, mackerel and pollack in season. The 'Mouth of the River Tweed' as defined by the Tweed Fisheries Acts 1857-1969 extends into England as far south as Holy Island. Within this area fishing for salmon and sea trout is subject to Scottish regulations. Some of the private rights to fish for salmon on Goswick Sands have been bought by the Tweed Commissioners and the Atlantic Salmon Conservation Trust and these nets are not currently operated.

#### 3.3.2 Holy Island

Out of 6 regular fishing vessels based on the island, 4 are under 8 m and use static gear and 2, of 9-11 m, use otter trawl. An additional 3 or 4 boats set pots during the warmer months. The brown crab fishery is most productive in spring, though since the late-1980s, catch levels have been higher at the end of the season and fishermen have attributed this phenomenon to the mild spate of winters experienced during the late-1980s and early-1990s. Fishermen have also reported an increase in the number of octopus being caught in pots, which are sold if a substantial quantity are landed. Gill and trammel nets are set for cod, plus by-catches of other white fish, and tangle and trammel nets are set for flatfish, notably turbot during the summer. Each boat may use up to half a dozen fleets. The two trawlers target *Nephrops*, white fish and scallops, either locally or further north off the Scottish coast. Cod, haddock, whiting, lemon sole, plaice and *Nephrops* are landed virtually all year, white fish often forming an important by-catch in the *Nephrops* fishery.

Three licensed fishermen operate salmon drift nets from April until the end of August. Poor landings of salmon and sea trout in recent years together with increased licence fees, has forced some fishermen to relinquish their licences. Mussels and periwinkles are gathered to the north of the Island, around Coves Haven, and to the south, opposite the harbour and in Budle Bay. These areas are on the margins of the Lindisfarne National Nature Reserve and shellfish gathering there is authorised by English Nature, who work in close liaison with the Holy Island Fishermen Society, members of which harvest the shellfish. Pacific and native oysters are cultivated by one person on intertidal flats, south of the island.

#### 3.3.3 Seahouses

This small port supports 7 otter trawlers of 10-16 m and a dozen or so smaller static gear boats including some

cobles. The trawling fleet land *Nephrops*, haddock, cod and whiting for most of the year from grounds 10-20 miles offshore within the Farne Deep. The *Nephrops* fishery was formerly a winter/spring fishery concentrated around the Farne Deep, however, a summer fishery has developed and trawling can occur close inshore; occasional years have seen a viable fishery within 3 miles of the coast. White fish are landed as a by-catch to *Nephrops* and in a directed fishery, shoals of codling, haddock and whiting appear inshore, especially during the winter and a summer cod fishery exists to the south of the Farne Islands. An increasing number of trawlers are using Newhaven-type dredges for scallops within a couple of miles of the coast; 4-6 Newhaven dredges are towed from either side of a boat.

Brown crabs and lobsters are caught in pots set up to 10 miles from the shore, whereas part-time lobster fishermen set pots closer to the coast. Three licensed fishermen use drift nets and T-nets for salmon and sea trout from April to the end of the season. Nets are set for cod during the winter, some boats setting up to 6 fleets with each fleet comprising of up to 5 nets (350-500 m in length), and for flatfish in summer. Some boats divide their time between commercial fishing and chartering angling trips, especially during the summer, as this port attracts a lot of tourists.

### **3.3.4 Beadnell/Newton**

The 2 full-time cobles based at Beadnell and 1 full-time coble at Newton are involved in the pot and salmon fisheries, occasionally taking out angling parties. They are joined by up to 10 part-time fishermen who set pots during the height of the lobster season. Each of the full-time fishermen from Beadnell possesses a salmon licence and works salmon drift nets (1 also uses a T-net) from April until the end of August. Following the end of the salmon season, the full-time fishermen turn to the lobster fishery. Both these small landing places attract a lot of recreational divers, some of whom take lobsters.

### **3.3.5 Craster**

Fishing activities undertaken by 3 full-time cobles peak between spring and autumn when crabs, lobsters and salmon are exploited. One coble drifts nets for salmon and sea trout from April until the end of August. Pots are set throughout the year, although only a small number during the colder months. Lobsters and velvet crabs are targeted close to the shore. One coble sets nets for cod and makes regular landings of whiting, ling, pollack and catfish.

### **3.3.6 Boulmer**

Eight full-time cobles participate in the pot, salmon and, to a lesser extent, cod fisheries. All the cobles hold salmon licences, the majority begin to drift salmon nets

from the beginning of the season, whereas T-nets are usually set from late April or early May. T-nets are set in fixed berths in Alnmouth Bay (Boulmer 'stell' fishery) and are fished according to an agreed rota organised by the Boulmer fishermen. Pots are set virtually the entire year round for crabs and lobsters. Low returns during the start of the year plus poor weather usually prompt fishermen to haul their cobles for an annual refit. A few cobles set gill nets for cod during the winter although the weather and tides can be very restrictive.

### **3.3.7 Amble**

Fifteen otter trawlers of 10-16 m target *Nephrops* and white fish, the larger boats fishing offshore spending 2-3 days at sea, whereas the smaller trawlers fish out to 20 miles landing on a daily basis. Up until the late-1980s the majority of trawlers used to alternate between *Nephrops* and white fish in winter, concentrating on white fish in the summer. The trawling fleet are now more dependent on *Nephrops* exploiting this species all year as it has become more profitable due to the construction of a *Nephrops* processing plant in Amble; scarcity of white fish on local grounds; white fish landing quota restrictions and, the cost of transporting white fish to the North Shields fish market. Several trawlers periodically dredge for scallops within a few miles of the shore.

Twenty or so boats under 10 m (the majority being cobles) use static gear, around a dozen of which fish on a full-time basis. Most set pots during the summer (some set up to 500 pots each), particularly for lobsters after the salmon season has closed. In winter more emphasis is placed on the brown crab fishery with pots being set 3-9 miles north-east of Coquet Island. Conflicts can occur with trawlers that fish the same grounds. Gill nets (and to a lesser extent trammel nets) are used to catch cod in Druridge and Alnmouth Bay from autumn to spring; a single boat may set between 2-3,000 m of net (6-10 fleets) out to 4 miles offshore. During the summer, tangle nets are set up to 10 miles offshore for turbot and monkfish, and closer inshore for plaice. Sole are often taken in plaice nets for a short spell during the summer (about 6 weeks).

Sixteen cobles use drift nets and set T-nets for salmon and sea trout; the method chosen depends on the weather and the time of the year, although a few use T-nets almost exclusively. Drift netting is not permitted in the 'Coquet playground' and T-netting is also prohibited within about half a mile of the river mouth. Five T-netting stations form part of the Amble and Hauxley 'stell' fishery and netsmen are elected by a committee. T-netting also takes place in Druridge Bay where fishermen change fishing stations on a rota basis. Licensed eel nets are used in the Coquet with consent from riparian owners.

### 3.3.8 *Newbiggin*

Seven full-time cobbles rely heavily on potting and salmon drift netting, and fishing activity is greatest during the summer when returns from both these fisheries peak (there are no salmon drift nets or T-nets operating around the mouth of the River Wansbeck). Some of the cobbles set pots throughout the year and nets for cod between autumn and spring. Mackerel are sometimes caught at the beginning of summer. One or 2 cobbles still longline for cod, taking by-catches of pollack, whiting, ling and dogfish. Lines are only used if there is a good showing of cod inshore, which is becoming increasingly rare.

### 3.3.9 *Blyth*

Six otter trawlers of 10-18 m alternate between *Nephrops* and white fish, generally fishing out to 20 miles, although some of the larger vessels venture even further offshore. Eighteen smaller boats (including cobbles) use static gear, a dozen of which operate on a full-time basis. Trawlers target *Nephrops* for most of the year fishing the Farne Deep area with cod, haddock, whiting, plaice and lemon sole providing an important by-catch. White fish are targeted when prawn catch levels are low, for example during stormy weather or strong tides. A few of the smaller trawlers use gill nets, often setting them over wrecks for cod, saithe, pollock and ling on the way out to trawling grounds. Scottish pair trawlers and seiners frequently base themselves in Blyth. The static gear fleet uses pots, fixed and drift nets. Some of the boats work pots virtually the entire year for brown crabs and lobsters, whilst others switch to cod netting from autumn and use tangle nets for flatfish from spring onwards. Lobsters and crabs often provide an important by-catch in the fixed net fisheries. All of the fourteen salmon licensees working from this port drift nets for salmon and sea trout.

### 3.3.10 *Cullercoats*

Five cobbles use nets and pots, and a couple of part-time boats set pots during the summer. Nets are set for codling from around October to March and then potting gets underway with brown crabs and lobsters providing

the mainstay and velvet crabs being targeted towards the end of the year. The lobster fishery attracts the greatest interest from August to October.

### 3.3.11 *North Shields*

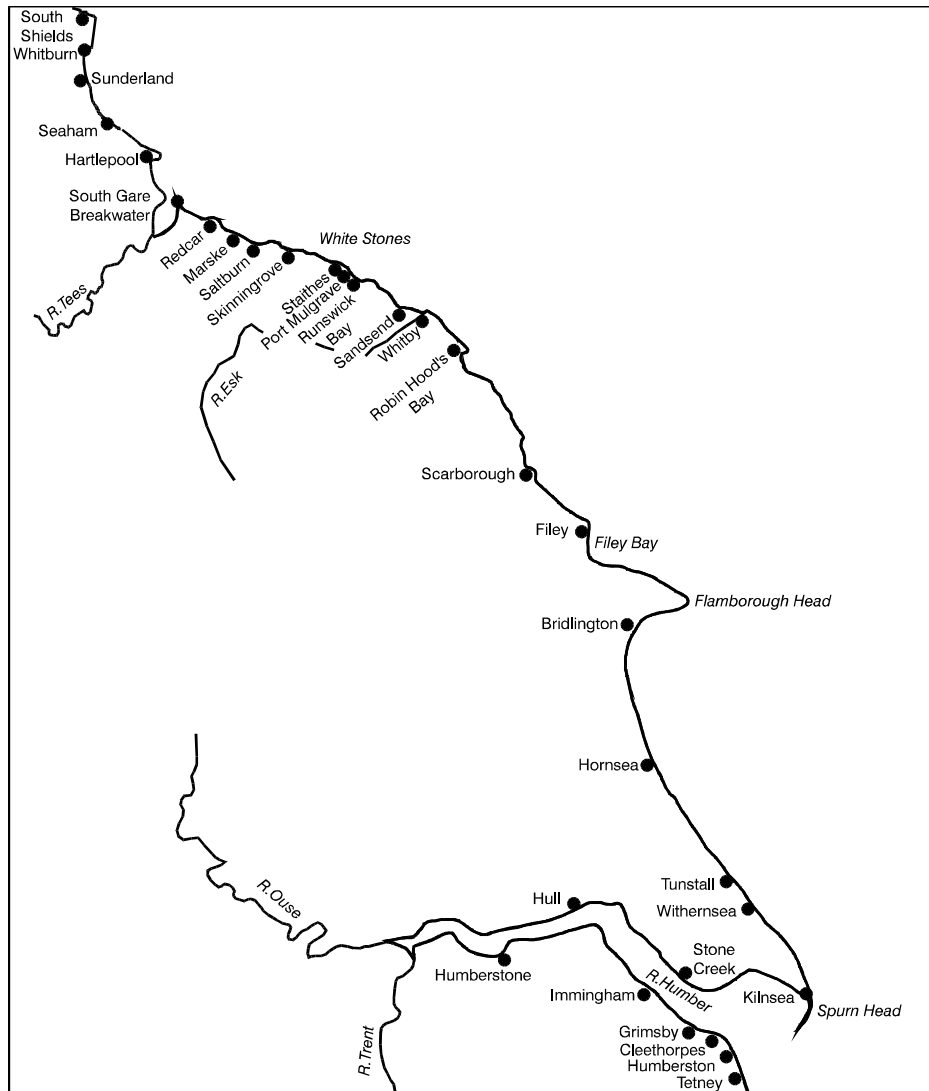
North Shields is the only port on the Northumbrian coast that holds a daily fish market. It accommodates up to 40 otter trawlers, the majority between 10-20 m in length, and approximately 20 static gear boats, most under 12 m and maybe half fishing on a part-time basis. Thirty trawlers regularly fish within 12 miles of the coast, particularly in winter and are therefore classed as inshore vessels (some of these boats fish out to 30 miles offshore in calm weather). Scottish boats, particularly those from the Firth of Forth, frequently land their catches here. The inshore trawler fleet targets *Nephrops* for most of the year, landing cod, haddock, whiting, plaice and *Pandulus* shrimp as a by-catch. White fish are sometimes targeted and pair-trawling for roundfish has become increasingly popular since the late-1980s. However, a greater proportion of the fish tend to be small and can sometimes prove difficult to sell on the market. Some smaller trawlers set nets, often over wrecks and on the way to trawling grounds.

The static gear fleet set nets for cod and pot for brown crabs and lobsters. Cod nets are used from autumn and in addition to cod, smaller amounts of whiting, pollack, saithe, ling and catfish are also landed. Most boats set 1-2,000 m of netting, although a few may set up to 5,000 m, which equates to around 12 fleets. Several cobbles set pots throughout the year and brown crabs provide the mainstay at the beginning of the season, followed by lobsters and velvet crabs.

Out of a total of 8 salmon licence holders based at North and South Shields, 6 operate T-nets at 2 fixed berths just south of the River Tyne and most use drift nets. Permits are issued to these fishermen allowing access to the berths, and fishing is according to an agreed rota determined by the fishermen involved. Salmon drift netting begins at the start of the season (late March) whereas T-nets are usually used slightly later in the season and catch a greater proportion of sea trout. Drift netting is not permitted around the mouth of the River Tyne, known as the 'Tyne playground'. Fyke nets are set in the Tyne from spring to autumn for eels.



#### 4. DURHAM, CLEVELAND AND YORKSHIRE: South Shields to Cleethorpes (North Eastern SFC)



##### 4.1 Synopsis of current inshore fisheries

Fishing activity along the Durham coast tends to be concentrated inshore, whereas the Cleveland and Yorkshire fleets can be more easily designated as inshore and offshore. In the north, otter trawlers concentrate more on *Nephrops* than white fish and, since the mid-1980s, an increasing number of trawlers (especially those under 12 m) also set nets. Potting for crabs and lobsters from March onwards is very important to the static gear fleet, many of which also set nets for cod, flatfish, salmon and sea trout. During the 1980s, fishing intensity off parts of the coast has escalated where heavy industry once prevailed,

e.g. Hartlepool, as redundant workers with fishing interests have concentrated more on fishing. Boats up to 18.4 m are permitted to fish right up to the shore in most areas (North-Eastern SFC byelaw) and losses and disturbance of set gear sometimes occurs during bad weather when trawlers may have to work closer inshore.

In the south, white fish provide the mainstay for the trawler fleet, and a small number also dredge for queen scallops, and shrimp are beam trawled in the Humber. In addition to pots and nets, longlines are still widely used off the Yorkshire coast, mainly for cod from ports with strong fishing-family concerns, despite this method being more labour intensive than netting. A large part-time fleet operates trawls, nets and pots throughout the

district and many could be categorised as seasonal full-timers, with peak activity occurring at weekends between March and October. Charter hire by angling parties is very popular in many areas and quite large quantities of cod, saithe and whiting can be taken by this sector.

## **4.2 Information on species targeted, fishing methods deployed and fishing restrictions inshore**

### **4.2.1 Demersal fish (e.g. cod, whiting, haddock, saithe, lemon sole, plaice, dab, sole, turbot, brill, ray and dogfish)**

The winter cod fishery is important to both trawlers and static gear boats. In addition to cod, trawlers land whiting, saithe, haddock, lemon sole, plaice and rays. Whiting are caught virtually all year round, haddock are normally caught in deeper waters, appearing closer inshore in spring, and flatfish and rays are caught in the greatest quantities from spring. Pair trawling has become increasingly popular since the early 1980s as it is more efficient in terms of catch rates and running costs, though, a high proportion of catches often consists of small fish which can prove difficult to sell. The development of rock-hopper gear has given trawlers access to rough ground and left few safe havens for fish. Species associated with rough ground, e.g. lemon sole and crustacea, have become important by-catches. Cod, haddock and whiting are commonly taken as a by-catch in the *Nephrops* fishery off the Durham and Cleveland coast. Trawling is prohibited in 3 areas off the North Yorkshire coast; (i) between Staithes and Sandsend, (ii) in Filey Bay, and (iii) off Hornsea, to avoid conflict with static gear fishermen and to protect juvenile fish.

Gill nets with a mesh of 110-150 mm and trammel nets are used for cod and each boat may set up to 10 fleets of netting, each fleet comprising 100-600 m of netting (1-6 nets). However, the average 5-8 m boat or coble probably has between 1,500 -3,000 m of net fishing at any one time. Together with cod, these nets frequently take whiting, saithe and pollack. The same species are caught on longlines (baited with mussel, squid or lugworm), which are more effective than nets during strong tides and fish are landed in prime condition thus fetching high prices. From spring, flatfish appear in greater numbers inshore and trawling often takes place from dusk to dawn during the summer when most species are more active. Plaice, turbot, brill and rays are landed throughout the district whereas sole are principally caught in the south. Tangle nets with a mesh size of 100-120 mm are used for sole and plaice; 120-150 mm for plaice and brill; and 250-300 mm for turbot,

brill and rays. These nets also take an often important by-catch of crustacea, particularly lobsters.

### **4.2.2 Pelagic fish (e.g. herring, sprat and mackerel)**

Inshore trawlers occasionally target herring and sprat although effort is restricted through low market demand. Drift nets, with a mesh of 50-65 mm are used to catch herring, sometimes to bait pots and lines. Mackerel are caught on handlines for personal consumption.

### **4.2.3 Diadromous fish (e.g. salmon, sea trout and eel)**

Out of 76 salmon licences issued for fishing for salmon and sea trout between Souter Point and the Yorkshire/Lincolnshire border in 1994, 38 were for drift nets along the Durham and Cleveland coast, 15 for drift nets and 23 for Yorkshire 'T and J' nets along the Yorkshire coast. Also, 2 fixed Northumbria T-net berths, just south of the River Tyne are fished by 6 licensed fishermen from the Tyne area (see section 4.3.11). Drift nets, set out to 6 miles, generally take a greater proportion of salmon and a smaller proportion of sea trout than 'T and J' nets set along the shore. In Yorkshire, the salmon season begins 1 February and sea trout season 1 March. In Durham and Cleveland, the salmon and sea trout season both commence 26 March. The fishing season for both salmon and sea trout ending in all 3 regions on 31 August. A weekly closure time from 1800h Friday to 0600h Monday applies to drift netting, and for 'T and J' netting from 2000h Friday to 0600h Monday. A nightly close time between 2000h and 0400h also applies to drift netting. Closed areas, known as 'playgrounds' in the Byelaws, have been established around the mouths of the Rivers Wear and Esk.

Eels are commercially fished in the Rivers Humber, Tees and Wear. The main fishery is in the Humber and rivers feeding into it using fyke nets, eel criggs and pots, set from spring through to autumn. Over-fishing, pollution and harbour developments in the estuary and up the river have been blamed for the decline of this fishery.

### **4.2.4 Shellfish (e.g. *Nephrops*, lobster, brown crab, velvet crab, pink shrimp, brown shrimp, queen scallop, cockle, mussel and whelk)**

The majority of inshore otter trawlers based in the north of the district target *Nephrops* virtually the entire year;



larger trawlers fish the Farne Deep, whereas the smaller ones trawl off the Durham and Cleveland coast. Fishing effort has increased since the late-1980s as landings of white fish have fallen and demand for *Nephrops* has improved.

A small scale shrimp beam trawl fishery exists in the south of the district (Humber estuary and along the Lincolnshire coast). Brown and pink shrimps are caught using nets with a mesh of between 20-25 mm; brown shrimps are caught in shallower waters and in greater quantities than pink shrimps. Juvenile flatfish caught in shrimp trawls are separated using a metal drum on board the boats and then released back into the sea.

Potting for lobsters and brown crabs provides the mainstay for many small boats fishing rocky shores and has become increasingly important in areas where landings of white fish have fallen. Effort has steadily increased over the years in response to competition and in some places (e.g. Whitby and Bridlington) boats of 8-12 m set up to 1,000 pots. The highest quantity of lobsters is landed between July and September when part-timers constitute a high proportion of fishermen. Brown crabs are targeted for much of the year, the weather being the most restrictive factor. The smaller boats usually bring pots ashore in winter to avoid them being damaged although pots are left fishing for lobsters and velvet crabs all year in sheltered areas.

Whelks are exploited in the south of the district, e.g. Bridlington, where they are taken in pots virtually all year.

A queen scallop fishery exists off the Yorkshire coast, although only a few local boats specifically target this species during the colder months. Queen scallops are also taken as a by-catch in the demersal trawl fishery. During the spring of 1992, this fishery attracted up to 40 visiting scallopers and the high level of fishing effort resulted in the fishery lasting only a couple of months before becoming uneconomic. The queen scallop beds have now been left to regenerate. Cockles and mussels are gathered by hand and local interest towards cockle stocks has increased, as elsewhere in the UK.

## **4.3 Description of coastal fisheries by port**

### **4.3.1 South Shields**

Out of 7 full-time fishing boats, 3 or 4 trawl and the rest set nets and pots. Several part-time vessels are active during the warmer months. The 2 trawlers, both under 11 m, target *Nephrops* for most of the year regularly fishing out to 12 miles and up to 20 miles offshore in calm conditions with white fish, mainly cod and whiting taken as a by-catch. Cod and whiting are occasionally targeted during the winter, and flatfish in summer.

Several boats under 10 m (including 2 cobbles) set gill and trammel nets for cod from autumn to spring and then tangle and trammel nets for plaice and turbot during the warmer months. All the full-time static gear boats pot for brown crabs and lobsters, plus 4-5 part-timers during the summer lobster fishery working up to 30 pots each. Lobsters are also taken as a by-catch in the net fishery. Three licensed fishermen operate drift nets and T-nets for salmon and sea trout between April and August. Fishing is according to an agreed rota which includes 3 fishermen from North Shields.

### **4.3.2 Whitburn**

A few beach boats of 4-5 m set around 30 pots each and nets all year round, although the weather and tides can severely restrict fishing activity, especially in winter. Several part-time boats operate during the summer. During the colder months cod and whiting predominate in net landings, whilst turbot and plaice are taken from spring. Around 40 beach boats are launched by sport anglers, principally during the weekends from April to the end of the year and account for substantial quantities of cod, saithe and whiting landed along this beach.

### **4.3.3 Sunderland (North and South)**

Up to 12 boats otter trawl for *Nephrops* and white fish and a further 50 or so small boats and cobbles work fixed gear, the majority on a part-time basis. Several full-time cobbles are based on the north side of the river (Wear) mouth and about a dozen or so small boats and cobbles fish full-time from the south side. Fishermen run fish stalls on the fish quay on the south side of the river, with unsold fish being sent to the North Shields fish market. The trawler fleet exploit *Nephrops* virtually the entire year and effort has increased towards this species following the development of a summer fishery during the late-1980s. White fish are often targeted during spring when *Nephrops* catch rates are at a seasonal low and landings usually comprise cod, whiting, plaice, dabs, sole, lemon sole, turbot and rays.

Fishing activity is greatest from spring when part-time fishermen participate in the pot and net fisheries. Nets are set for plaice and turbot during the warmer months, taking by-catches of dabs, rays and the odd lobster. Gill and trammel nets are set virtually all year for cod, whiting, saithe and pollack. Several boats work up to 4,500 m of netting. Pots are set for brown crabs from spring and lobsters during summer and autumn. Sixteen boats carry salmon licences and use drift nets usually from May, taking salmon and sea trout. The greatest catches of salmon are expected at the end of the season, whereas sea trout are usually caught in their highest numbers in July. Drift netting is not permitted around the mouth of River Wear. Out of 6 eel licences issued for the Wear only 1 regularly fishes 15 fyke nets.

#### **4.3.4 Seaham**

Eleven inshore otter trawlers concentrate on *Nephrops* for most of the year, occasionally targeting white fish. *Nephrops* landings have fallen since the late-1980s as has the size of the *Nephrops* themselves. A few trawlers possess salmon licences and an increasing number have started to use nets for demersal fish sometimes setting them on the way out to trawling grounds. Fifteen or so small boats and cobbles, some fishing on a part-time basis, use gill and trammel nets from autumn to spring for cod. For the rest of the year a variety of fisheries are undertaken, including drift netting for salmon, gill and trammel netting for flatfish and potting for brown crabs and lobsters. Turbot, plaice and sole are caught along the sandy stretches of coastline from spring, with the occasional landing of lobsters. The amount of netting set by local fishermen increased through the 1980s and rising competition for space inshore has resulted in nets being set further offshore, where inevitable conflicts occur with trawlers. Nine boats hold salmon licences and catch both salmon and sea trout. The larger boats drift nets 1-6 miles offshore taking a greater proportion of salmon than sea trout.

#### **4.3.5 Hartlepool**

Hartlepool supports a large inshore fishing fleet and a small fish market. The fleet comprises 30-35 otter trawlers, nearly all under 12 m, concentrating on *Nephrops* for most of the year and landing a by-catch of white fish which are sold on the fish market. Cod, whiting and haddock predominate in landings during the winter, with plaice, sole, dabs, turbot and rays caught in greater quantities close inshore from spring. Many trawlers have become increasingly versatile since the 1980s and now use static gear for white fish, probably as a result of falling catch rates, rising fuel costs and low market prices. Nets are sometimes set over wrecks for species such as cod, pollack and ling on the way out to trawling grounds.

Between 40 and 50 small boats and cobbles are involved in netting and potting, with over half doing so on a part-time basis. Fishing effort inshore has increased dramatically since the late-1980s; the North Eastern SFC claims fishing intensity off this coast increased four fold between 1989-1991. This has been attributed partly to the demise of heavy industry around Hartlepool which led redundant workers with fishing interests to concentrate more on fishing whilst others obtained new boats, using redundancy payments. Up to 20 boats set gill and trammel nets for codling and tangle and trammel nets for flatfish. Some of the larger boats work in excess of 50 nets, consequently many areas are considered to be saturated with netting out to 3 miles offshore. The pot fishery begins around March involving over 20 boats. The lobster fishery first peaks in April/May, followed by a quiet period and then a resurgence in August until the end of the year. Around a dozen boats set pots

through the winter, hauling 2/3 times per week. Five crews are in possession of salmon licences authorising the use of drift nets. A greater proportion of sea trout are caught close inshore and landings usually peak between June and August.

#### **4.3.6 South Gare and River Tees**

Up to 20 mainly part-time boats work this section of coast using gill and trammel nets for codling and flatfish such as plaice, sole and turbot in season. In winter, only around 6 boats continue to fish targeting mainly codling. From spring, a dozen or so boats set pots for lobsters and crabs and 1 or 2 use otter trawls. In addition to the commercial fishing fleet, there are around 80 or so angling boats moored in this area, a small proportion of which set nets and pots. One licence holder regularly fishes for eels using fyke nets mainly in the tidal section of the River Tees.

#### **4.3.7 Redcar**

Fourteen full-time cobbles and boats under 8 m work fixed nets and pots and are joined by half a dozen part-timers. Around 80 small angling boats target mainly cod, saithe and pollack, and a few set the occasional net or pot. Most of the full-time fleet set cod nets and several use longlines for cod. In spring, nets are set for cod, whiting, plaice, sole and turbot, pots for brown crabs and lobsters, and 3 boats drift net for sea trout and salmon. One or two of the larger cobbles occasionally use otter trawls, particularly during the summer for flatfish. Lobster pots are set close to the shore over the rocky scars during the summer, the full-timers working up to 400 pots each.

#### **4.3.8 Marske**

Up to 6 part-time boats work from this beach landing setting crab and lobster pots and short fleets of trammel and gill nets. There is very little activity during the winter months.

#### **4.3.9 Saltburn**

Over 40 small boats of varying size operate from the beach landing, although less than 10 work pots and nets. Gill and trammel nets are set for cod and flatfish in season, and lobsters and crabs are taken in pots and to a lesser extent nets during the warmer months. Lobster-holding tanks exist on shop premises in the town. Angling is very popular from the pier.

#### **4.3.10 Skinningrove**

Around a dozen beach boats are active in the summer, the majority setting pots for lobsters and brown crabs.

Some also set nets for a mixed catch of white fish plus the occasional lobster and several crews continue to operate during the winter with short-lines and gill nets. One salmon licensee uses a drift net for both salmon and sea trout in season.

#### **4.3.11 Staithes**

The full-time fleet comprises 2 cobs and 1 small boat. From autumn through winter, gill nets and longlines (baited with mussel or squid) are set for cod close inshore, and by March pots are set for brown crabs and lobsters, each boat setting up to 400 pots, and they are joined by 6 or so boats working fewer pots. Lobster storage tanks are located on the sea front. Trammel and tangle nets are used from spring through summer mainly for sole, plaice, codling and the occasional lobster. Two of the full-time crews possess salmon licences and drift nets for salmon and sea trout, and an additional 20 or so boats are used for angling.

#### **4.3.12 Port Mulgrave**

Around 8 boats of 4-6 m are moored in the derelict harbour at Port Mulgrave, situated at the bottom of a steep cliff. Three or four set up to 100 pots and one up to 250 pots during the warmer months for brown crabs and lobsters. Two or three boats use gill and trammel nets for cod in autumn, when landings of lobster decline. Fishing effort during the winter is minimal due to the weather and lack of protection.

#### **4.3.13 Runswick Bay**

Over 30 beach-launched boats are operated for pleasure activities by holiday cottage owners over the summer, and a few may work a small number of pots, gill and trammel nets. Three local boats fish on a regular basis potting during the warmer months and netting for cod and flatfish in season.

#### **4.3.14 Sandsend**

A couple of beach boats set pots for brown crabs and lobsters from spring to autumn. Half a dozen pleasure boats use handlines for a variety of species including cod and mackerel. Both Runswick and Sandsend boats are launched by tractor from the beach.

#### **4.3.15 Whitby**

One of the main ports in this district, Whitby supports a fish market supplied by otter trawlers and static gear boats. The size of the trawler fleet has not changed significantly since the mid-1980s and stands at 23 vessels of 12-18 m, 18 of which either regularly or sometimes fish within 12 miles of the coast. White fish

provide the mainstay and landings from otter and pair trawls consist of a variety of species such as cod, haddock, whiting, plaice, lemon sole, sole, rays and dogfish (the proportions of which vary according to season). Trawlers have been discouraged from fishing too close to the shore by the large number of fixed nets, which would otherwise foul their gear and significantly reduce fishing time. Local SFC byelaws prohibit trawling in the 3 mile zone between Staithes and Sandsend to reduce such conflicts and safeguard nursery grounds. Some trawlers also use *Nephrops* trawls, scallop dredges and static nets. Queen scallops are taken in dredges and trawls, 3-10 miles offshore by half a dozen local boats from autumn to spring. This fishery rapidly expanded during the spring of 1992 when up to 40 vessels began working local grounds. The majority of these vessels were based elsewhere, e.g. west of Scotland and the English Channel. The visiting boats were far more efficient than their local counterparts and the fishery began to decline by late spring.

Up to 50 boats principally use static gear including pots, nets, lines and salmon nets; around half operate part-time. The lobster fishery is very popular during the summer, attracting over 30 boats. Brown crabs are exploited inshore and also further offshore, by larger boats setting up to 1,000 pots each. Velvet crabs are caught in shallow waters and sometimes taken as a by-catch with lobsters. Between 20 and 25 boats set nets for white fish. Cod provide the mainstay during the winter months, with other species such as saithe, whiting, pollack and the occasional flatfish being taken as a by-catch. From spring a variety of flatfish are landed including sole, plaice, turbot, brill and rays. Nets set around wrecks yield cod, pollock, ling and conger eel. Despite longlining being regarded as an antiquated fishing method, over a dozen boats still use this method, principally for cod and often as an alternative to nets. Most boats use 4-6 lines with 250 or so hooks, baited with mussel or squid, attached to each line. A small scale herring drift net fishery takes place in spring, although poor demand limits this fishery.

Around 20 licences are issued to local fishermen to use drift and 'T and J' nets for salmon and sea trout. Fishing is not permitted around the mouth of the Esk where a closed area has been established, known as the 'Esk playground'. Most of the 15 drift net licences issued in Yorkshire are taken up by Whitby fishermen, and these nets take a greater proportion of salmon than sea trout, whereas 'T and J' nets take a greater quantity of sea trout.

#### **4.3.16 Robin Hood's Bay**

Five beach boats of 4-6 m work up to 100 pots each for crabs and lobsters during the warmer months and during the winter 2-3 boats operate a small number of trammel and gill nets mainly for cod. Since the late-1980s the fleet has virtually halved and the longline fishery has petered out in favour of nets.

### **4.3.17 Scarborough**

Scarborough is a well facilitated port providing a market supplied by 25 otter trawlers and up to 30 small static gear boats. The trawling fleet concentrates on white fish throughout the year and several are classed as offshore vessels, up to 24 m in length and regularly make week-long trips. The remainder are 12-18 m working 12-36 hour trips and fishing within 50 miles of the coast. Over a dozen vessels work in pair teams, a method which has proved increasingly popular since the early-1980s. However, these boats do seem to land a high proportion of small fish, especially haddock and whiting, which often prove difficult to sell on the market. During the colder months the inshore trawler fleet land cod, haddock, whiting and, to a lesser extent, flatfish such as lemon sole, plaice and rays. By spring, a greater proportion of flatfish such as sole, plaice, turbot, brill and rays are taken inshore. Trawlers frequently operate from dusk to dawn during the summer and in autumn a good plaice fishery is expected, before cod appear once again. In the past some of the trawlers targeted herring sometimes in pairs, although lack of demand has deterred effort in recent years. Several local vessels specifically dredge or trawl for queen scallops between autumn and spring. Queen scallops are also taken as a by-catch in demersal fish trawls.

From autumn, around 15 cobbles and small boats fish gill and trammel nets for codling and other roundfish, often close to the coast in areas such as Filey Bay. Twenty or so boats set pots between March and October out to 6 miles, some in addition to netting, and the lobster fishery attracts a lot of interest during the summer. A few of the larger boats set pots further offshore for brown crab all year. The influence of part-time fishing and angling activity is much less here than further north. Four fishermen possess salmon licences for the use of 'T and J' nets and predominantly catch sea trout from May until the end of August. There are several vessels under 10 m with powerful engines that use handlines well offshore (out to 50 miles) during calm conditions, taking good quality fish such as cod, pollack and ling off wrecks.

### **4.3.18 Filey**

Around a dozen full-time cobbles, launched from the beach, use a variety of fishing methods including potting, gill and trammel netting, longlining and salmon 'T and J' nets. Trawling is prohibited within Filey Bay in order to protect juvenile fish and avoid conflict with static gear fishermen. Longlines and nets are used to catch mainly cod from autumn to spring in and around Filey Bay. A fall in white fish landings during the 1980s and poor market prices since the late-1980s have had a serious impact on the longline fishery with many boats turning to netting as it is a cheaper form of fishing. From April most boats turn their attention to the pot

fishery and some cobbles set up to 400 pots for lobsters. Some boats continue to net for demersal fish and good catches of sole can be expected from April to June. Five salmon licensees regularly set 'T and J' nets during the summer taking mainly sea trout.

### **4.3.19 Flamborough (North and South Landing)**

Two cobbles fish full-time from the north of the Head and half a dozen beach boats fish to the south during the summer. Longlines and nets are used by the cobbles for cod, plus by-catches of ling, rays, pollack and whiting from autumn until spring. Each boat uses up to 12 lines and each line carries around 250 hooks, which are usually baited with either mussel, lugworm or squid. A couple of beach boats from the South Landing set gill nets for cod and other roundfish. From spring boats from both landing places set pots for brown crabs and lobsters. Nets are set for flatfish, particular sole from spring into summer, and sea trout are taken in licensed 'T and J' nets operated by the South Landing fleet. The 2 cobbles also take out angling parties.

### **4.3.20 Bridlington**

The majority of the 25 otter trawlers operating from this port concentrate on white fish the entire year, a few periodically dredge for scallops, whilst 3-4 also use static gear. Several trawlers operate exclusively offshore while around 10 vessels over 12 m spend most of their time trawling offshore (within 50-100 miles of Bridlington) usually fishing within 12 miles of Flamborough Head at the start of the year. The remainder concentrate their efforts inshore targeting cod, haddock and whiting in winter and from spring through summer landing a mixed catch of whiting, cod, sole, plaice, lemon sole, turbot and rays. A few boats dredge for queen scallops during the colder months. Since the mid-1980s some local skippers have opted for smaller boats to avoid fishing regulations that applied to vessels over 10 m. These boats are generally equipped to enter a number of fisheries.

The static gear fleet accounts for over 30 boats. The lobster and crab fisheries have gained popularity since the 1990s as catch levels of white fish have fallen inshore. Boats over 10 m operate all year setting up to 1,000 pots out to 12 miles for brown crabs and lobsters, whereas the smaller pot boats, including cobbles, set between 100-500 pots from spring. There has been a resurgence in the whelk fishery since the early-1990s which now involves 4-5 boats, most working up to 500 whelk pots, although 1 or 2 set up to 1,000 pots each out to 40 miles offshore in the vicinity of the Rough Gas Field. During the colder period of the year, 12-14 boats set cod nets and a few boats set longlines. By spring, flatfish nets are set along the Holderness coast for sole, plaice, turbot and rays, plus a by-catch of

crustacea. There are few conflicts between trawler and static gear fishermen as agreements exist as to where static gear can be set safely. Six licensed fishermen use mainly 'T and J' nets to catch sea trout and to a lesser extent salmon.

#### **4.3.21 *Hornsea***

Up to a dozen beach boats of 5-7 m are active from spring, setting nets within a few miles of the shore for sole and potting for brown crabs and lobsters. Several boats use nets for cod and whiting during the colder months, although stormy weather and strong tides significantly reduce effort. During the late-1980s a lobster re-stocking experiment was undertaken by MAFF along the coast between Hornsea and Tunstall.

#### **4.3.22 *Tunstall and Withernsea***

Up to 10 beach boats regularly fish from this exposed coastline and are joined by many more during the summer, most working up to 50 lobster pots each. As with Hornsea, fishing is restricted by the weather. The main fishing activities are potting for brown crabs and lobsters and netting for flatfish. Some of the regular boats also use cod nets.

#### **4.3.23 *Spurn Point, Kilnsea and Stone Creek***

Five beach-launched boats fish on a full-time basis from spring through to winter, weather and tides permitting. Nets are set for cod and flatfish, and pots set out to few miles offshore for brown crabs and lobsters. Three part-time boats set pots and the odd net in the summer. A lot of angling boats are active during the weekends.

#### **4.3.24 *Kingston upon Hull***

A distant-water Arctic fleet was once based here until the mid-1970s following the declaration of 200 mile territorial limits (Exclusive Economic Zones). Less than a dozen offshore trawlers remain and the large processing sector based here depends on fish supplied from other parts of the UK, together with imports. Hull's inshore fleet comprises around 10 boats, all under 10 m, only a couple of which fish full-time. During the winter the full-time boats target cod using nets and from spring turn their efforts towards potting for brown crabs and lobsters. Some boats use otter and beam trawls for shrimp, sole, dabs, plaice and flounders. Most of the fishing activity is concentrated in the River Humber itself. Eel fishing takes place in the upper reaches of the River Humber and some of the rivers leading into it, such as the Ouse, Hull and Trent, between April and October using Fyke nets, eel criggs and pots. In 1993, 12 licences were issued by the Yorkshire region of the NRA, along the north bank to use 66 fyke nets and 32

strings of crigg nets. The Anglian region of the NRA on the south bank does not licence eel fishermen downstream of the tidal limits.

A licensed eel fishery takes place in the upper reaches of the River Humber from spring through to autumn. Fyke nets are set for yellow/brown eels, the entire season, whilst silver eels are taken in autumn.

#### **4.3.25 *South Ferriby to Immingham***

Fishing activity on the south side of the River Humber has declined considerably since the early-1980s with the demise of the shrimp and eel fisheries in particular. From autumn through winter a few vessels under 10 m use light beam trawl gear for shrimps, whilst several other boats use gill nets and handlines for cod. From spring, trawlers focus on sole and other flatfish.

#### **4.3.26 *Grimsby***

Up until the mid-1970s this port supported around 200 offshore fishing vessels plus an additional 30 or so inshore boats. Today the port's processing industry has become increasingly dependant on fish transported by land from other UK ports and imported from countries such as Iceland and Norway as the local fleet has been more than halved and now consists of approximately 30 beam and otter trawlers, 50 seiners, 12 gill netters, 3 longliners and 8 potting. The Grimsby fishing fleet is principally an offshore one and over 50% of the vessels are ex-Danish anchor seiners of 17-24 m, some having been adapted to trawl or use static gear. In addition to the local fleet, up to 20 Dutch and several Belgian boats operate from Grimsby - known as 'flagships' as they are registered as British owned and fish against the UK quotas, but are crewed by foreigners and land in other EU countries.

Approximately 10 boats are confined to fishing inshore, several of which are only active in the estuary. From autumn, the smaller trawlers exploit shrimps and are sometimes joined by larger vessels from the Wash. When catch rates are low the shrimpers fish down the Lincolnshire coast or revert to alternative fisheries such as gill netting for cod. The static gear fleet sets nets and lines for cod within the Humber estuary during the colder months and, from spring, nets are used for flatfish and pots are set for crabs, lobsters and whelks. An offshore brown crab fishery involves visiting boats, e.g. from Devon and Cornwall. The estuary is recognised as an important nursery area for many commercially important species such as sole, plaice and cod. A revolving drum is used to separate the flatfish from the shrimps once the catch is hauled aboard. The survival rate of juvenile flatfish being returned to the sea having been sieved and revolved around a metal drum, is probably not very high.

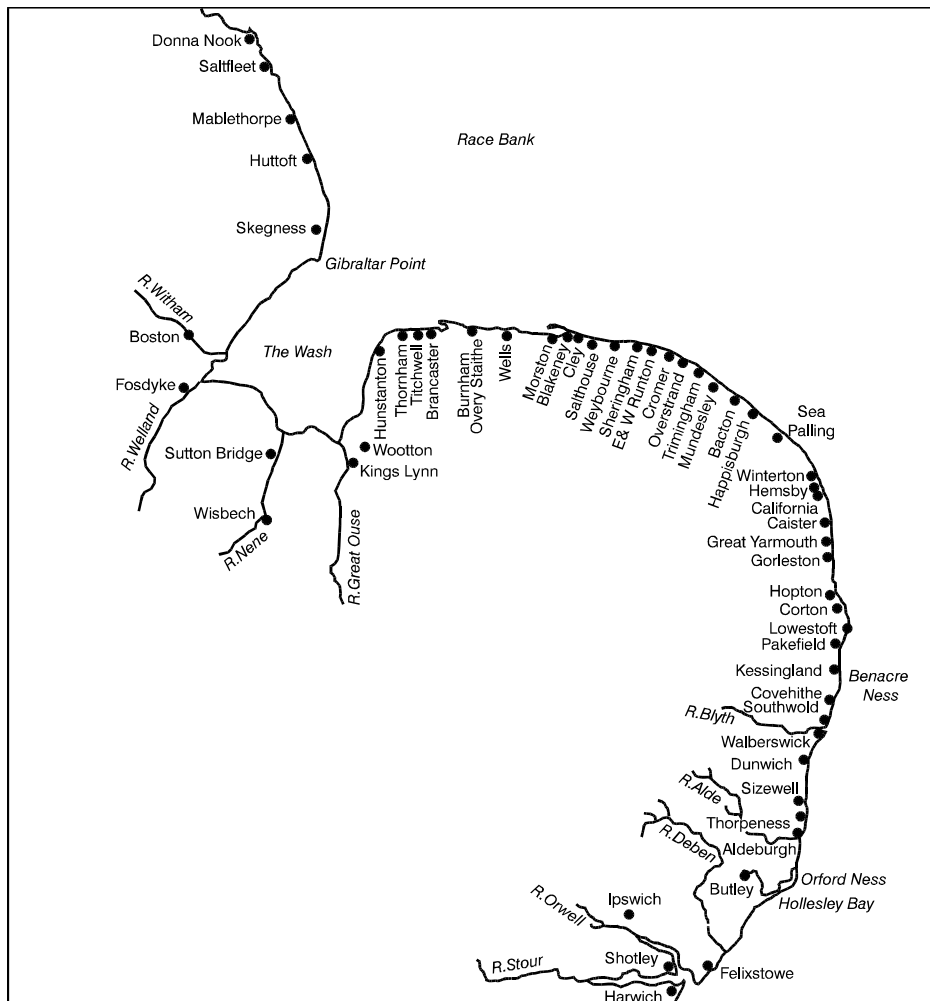
#### **4.3.27 *Cleethorpes, Humberston and Tetney***

Ten to twelve boats regularly fish from this coast, sometimes venturing north to fish the Humber estuary. Lines and nets are used to catch mainly cod from the end of summer and from spring nets are set for flatfish and rays and lines used for rays. Nets are also attached to

stakes on the beaches for a mixed catch of cod, whiting and flatfish. A cockle fishery attracts up to a dozen men who harvest the cockles using hand rakes. Mussel beds are situated off the Cleethorpes coast, although commercial exploitation has been prevented by the local Health Department. Oysters are occasionally taken off this coast although effort has fallen considerably following the over-exploitation of beds during the 1970s.

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## 5. LINCOLNSHIRE, NORFOLK AND SUFFOLK: Donna Nook to Shotley (*Eastern SFC*)



### 5.1 Synopsis of current inshore fisheries

This exposed, low-lying, fine sediment type coast has led to the development of most ports in river estuaries that provide the only permanent, safe anchorages. Beach boats (known locally as longshore boats) operate throughout the district, although their activity can be severely restricted by the wind and tides, consequently a high proportion fish on a part-time basis. Apart from the Lowestoft fishing fleet, most of which is North Sea offshore orientated, fishing is undertaken by day-boats (or people working on foot).

The principal inshore fisheries off the south Lincolnshire and north Norfolk coast are for shellfish. Wild and

cultivated stocks of molluscs are important throughout the district; mussels and cockles in The Wash, and mussels and oysters which are grown-on in harbours along the north Norfolk coast. Brown and pink shrimp provide the mainstay for vessels at Boston and King's Lynn which fish throughout the Wash. Chalk reefs off the north Norfolk coastal waters support crab, lobster and whelk fisheries, many fishermen processing their catches themselves. Sprats are trawled in the Wash, herring are taken in drift nets in April and May, with sea trout, bass, mullet, sprats and mackerel taken in summer and autumn south of Sheringham. Bait diggers and shellfish gatherers operate in the extensive intertidal zones between Donna Nook and Sheringham.

Finfish provide the mainstay along the north Lincolnshire and Suffolk coasts, both offering very little in the

way of safe berths or anchorages other than at Lowestoft, Southwold, Felixstowe, Felixstowe Ferry and Ipswich. Consequently, many small beach boats (of around 6 m) are used to trawl, longline up to 12 miles offshore and use drift nets within a mile or two of the shore. These longshore boats exploit very seasonal fisheries - sole and sea trout in summer, shrimp, herring and whiting in autumn, cod and sprats in winter and rays in spring - and catches are usually sold on the beach or locally to fish retailers. Even the larger boats in the harbours are allowed to trawl up to the beach between Mundesley and Covehithe. Anglers fishing from the shore or in boat parties can catch a substantial quantity of cod, whiting, rays and bass, especially on weekends.

## **5.2 Information on species targeted, fishing methods deployed and fishing restrictions inshore**

### **5.2.1 *Demersal fish (e.g. cod, whiting, sole, plaice, brill, flounder, dab, ray, dogfish)***

Gill and trammel nets are set for cod and whiting during the colder months and then in spring tangle and trammel nets are set for flatfish, such as sole, plaice, turbot and rays. Sole are more important in the south, where other traditional fisheries such as those for eel and cod have declined. Longlines are used for cod, rays, dogfish, ling, pollack and turbot. Shoals of spurdog are exploited during spring and early summer when they appear nearshore. Fish caught on lines are landed in good condition and therefore fetch a better price than fish caught in nets or trawls.

Inshore trawlers land a mixed catch of demersal fish throughout the year. Beam and otter trawlers target flatfish during the warmer months, tickler chains attached to the front of the trawls, dig into the sediments and disturb the fish into the nets. MAFF and Eastern SFC have prohibited trawling in areas off the north Norfolk coast to protect traditional potting grounds, exceptions being made for mid-water trawling during the winter. Also vessels over 15.2 m are prohibited from trawling within 3 miles of the Suffolk coast (south of Covehithe to the southern extremity of the district).

### **5.2.2 *Pelagic fish (e.g. bass, mullet, herring, sprat and mackerel)***

Bass are caught in fixed and drift nets during the summer, especially off the Suffolk coast, together with sea trout and mullet. Handlines baited with live sandeels are used by commercial and recreational fishermen, the

latter land a substantial number of bass on summer weekends.

The local herring stock seems to have increased since 1981 following the revocation of the herring fishing ban, and drift nets with a mesh of 50-65 mm are used between April and May, mainly to the south of Sheringham. During the end of the summer, sprats and mackerel are caught in smaller quantities until autumn. Sprats and herring are exploited by trawlers in the Wash during the winter, and catches are often sent to Grimsby for fishmeal. Sprat and herring are sometimes taken for pot or line bait.

### **5.2.3 *Diadromous fish (e.g. sea trout and eel)***

Although salmon and sea trout do not enter the district's rivers in any number, in 1994, 74 licences were issued for netting them off the Suffolk and Norfolk coast from 1 April to 30 September. Fishing is prohibited during the season between 0600h Sunday and 2400h Monday each week. The number of licences are not restricted by the Anglian NRA, although a net limitation order is likely to be introduced in the near future. Licensed drift nets of 200-500 m in length and with 80-90 mm meshes take sea trout as they migrate back to more northerly rivers (e.g. those in Yorkshire, Northumberland and the River Tweed), plus bass and mullet (sea trout are also taken in unlicensed nets set for bass and mullet).

Eels are trapped in fyke nets set in numerous rivers and estuaries. Falling catches since the 1970s have been attributed to over fishing, pollution and the increasing incidence of red spot virus, a fatal disease that can claim up to 50% of landings. The eel fishery is particularly important in the Broads rivers and the Rivers Stour and Orwell.

### **5.2.4 *Shellfish (e.g. cockle, shrimp, mussel, brown crab, velvet crab, lobster, whelk and oyster)***

Wild and cultivated mollusc fisheries occur throughout the district, but mainly in The Wash and off the north Norfolk coast. In The Wash the principal fisheries are for cockles and mussels, which are regulated by the Eastern SFC under the 'Wash Fishery Order (1992)' through licensing, fishing gear design, closure of shellfish beds and landing quotas. The SFC leases areas of seabed for the cultivation of molluscs under several orders which are also granted along the north Norfolk coast where oysters and mussels are farmed.

Cockles are harvested from The Wash from spring through until the end of the year, primarily by hydraulic suction dredging. This has superseded the traditional



method of ‘blowing-out’ cockles (a vessel’s propeller is used to concentrate the cockles into a pile, the cockles are then gathered by hand when the tide recedes) as dredging is more efficient, especially in areas where cockles are found in low densities. Though ‘blowing-out’ is still practised in The Wash it is prohibited elsewhere in the district by byelaw. Fishing effort has risen since the mid-1980s as other fisheries have declined in the Wash and demand for cockles has increased. Greater fishing pressure and a fall in spawning stock biomass led the Eastern SFC to impose seasonal closures to conserve cockle stocks, which have been supported by local cockle processors. In 1993 and 1994 the cockle fishery was closed between January and May.

Mussels are harvested in The Wash and around the north Norfolk coast during the winter when meat quality is best, using either simple dredges (‘Baird’ dredges) or by hand. Eastern SFC byelaws prohibit the use of hydraulic suction dredges and stipulate a minimum landing size of 50 mm in length, except in The Wash where the minimum length is 45 mm. The size of wild stocks has fallen since the mid-1980s due to a high level of fishing intensity and recruitment failure, consequently fishermen have re-laid mussel seed onto private and public beds; the number of privately owned beds has increased as stock levels on public beds have fallen. Many of the remaining mussel beds are situated on high ground and the mussels are stunted, a condition prevalent in littoral areas.

The shrimp beam trawl fishery takes place in the Wash from autumn through to spring, using nets with a 20 mm mesh. The fishery is restricted during the winter as storms and low temperatures force shrimps further into deeper waters. Brown shrimp are caught in shallower waters and in greater quantities than pink shrimp.

The brown crab fishery centres around the Lincolnshire and north Norfolk coast from spring to autumn. It has expanded offshore onto the traditional but now depleted whelk grounds. Many beach boats still use traditional wooden creels although parlour pots made out of metal or plastic have become more popular. Some of the smaller fishing communities are highly dependant on this resource and prepare the crabs for sale themselves. Lobster potting off the north Norfolk coast peaks during the summer when part-timers join the fishery. A thriving whelk fishery once existed between Brancaster and Wells with boats fishing out to 30 miles. However, catch rates have fallen since the mid-1980s and few vessels remain in the fishery.

Pacific oysters are cultivated in private beds principally along the north Norfolk coast in harbours and inlets. They are farmed in preference to the native oyster as they grow faster, are immune to the effects of *Bonamia* and can be grown intertidally as they are resistant to frost.

## 5.3 Description of coastal fisheries by port

### 5.3.1 *Donna Nook, Saltfleet and Mablethorpe*

One full-time, plus the occasional part-time boat of 4-6 m fish along this sandy stretch of coast potting for crabs, tangle and trammel netting for sole and plaice, and netting and longlining for cod in winter. A small amount of drift netting takes place for bass, sea trout and mullet from spring through summer. One local boat uses a twin beam trawl for shrimp during autumn and winter and shrimp beam trawlers from Boston, Kings Lynn and Grimsby periodically fish off this coast and often stand accused of towing fixed nets away. Large vivier-equipped potting boats working from Grimsby exploit brown crab stocks found offshore, although they sometimes set pots as close as 6 miles from the coast.

### 5.3.2 *Huttoft to Gibraltar Point*

Around 8 Grimsby vessels and 8 local boats of 5-7 m fish along this stretch of coast. The Grimsby boats use otter trawls, longlines and fixed nets to catch cod from autumn through winter, plus by-catches of whiting, dogfish, pollack and ling. By spring, rays (mainly the thornback ray) and spurdog are targeted. Visiting otter trawlers and beam trawlers (some from the south-west coast of England) fish within a few miles of this coast during the spring sole fishery. The local fleet use longlines for cod in winter and rays in spring, each boat setting up to 12 lines with 250 hooks baited with squid, mussel or lugworm attached to each line. If cod are scarce, then nets are favoured as overheads are lower and each boat sets up to 1,000 m of net. Nets are also set for flatfish from spring through to autumn. The impoverished state of inshore white fish stocks has forced fishermen to increase fishing effort and set more nets further offshore. Most boats set pots for brown crabs from spring and 1 local boat trawls for white fish all year.

### 5.3.3 *Boston*

The Wash, characterised by its shallow waters, intertidal areas and sand banks, sustains commercially important mollusc and crustacea stocks, as well as providing a nursery ground for a number of finfish, e.g. plaice, sole, cod and herring. Following the improvement of shellfish markets during the 1980s, the shellfisheries have expanded, though subject to strict management, through the ‘Wash Fishery Order (1992)’ (see Section 6.2.4.) in order to safeguard stocks.

Up to 14 Boston boats use ‘Baird’ dredges to harvest mussels from November when the meat is of the best quality and the cockle fishery has finished. Twenty

local boats gear up with hydraulic suction dredges to harvest cockles in The Wash from spring until autumn. However, as the size of mussel stocks has declined in The Wash, it has been more profitable to exploit cockles until the end of the year. The quality of cockle meat is poor at the start of the season after the rigours of spawning, therefore the main thrust of effort doesn't begin until June and usually lasts until August. Several vessels dredge for cockles elsewhere, for example in the Thames and Solway fisheries, often at the end of the summer, whilst nearly all of them switch to shrimping or white fish trawling at some stage of the year. Some of the fishermen who gather cockles by hand travel further north to work the sands between Donna Nook and Cleethorpes.

Half a dozen boats of 10-14 m regularly beam trawl for both brown and pink shrimp from the end of summer to the following spring, depending on availability, weather and market prices. Brown shrimp are caught in the channels between the inner banks of the Wash and are of greater commercial importance than pink shrimp, which are caught in the deeper regions (usually >10 m). Sprat and herring are taken in mid-water trawls (32 mm mesh trawls used for herring) during autumn and winter. Landings of sprat are often sold to a fish meal factory in Grimsby.

### **5.3.4 *Fosdyke***

One part-time boat beam trawls in the river channels for brown and pink shrimp and sometimes takes mussels and cockles. One or two mullet netters operate here during the summer.

### **5.3.5 *Sutton Bridge and Wisbech***

Out of 6 boats that fish from the River Nene, 1 trawls for shrimp and dredges for cockles whilst the rest (all longshore boats) use nets to catch mullet and flatfish, such as flounder, and may occasionally trawl for shrimp. Some of these fishermen and others dig for bait (lugworm and ragworm) and collect samphire (a marsh plant eaten as an hors d'oeuvre). Eel fishing is undertaken in the River Nene with a variety of licensed traps but principally fyke nets, from spring to late autumn.

### **5.3.6 *King's Lynn***

Principally a shrimp port accommodating up to 70 vessels, around 30 of which are between 10-15 m and use twin beam trawls to catch shrimp and 10 are fitted with hydraulic suction dredges for exploiting cockles. The remainder of the fleet are smaller boats that undertake a variety of fishing methods including shrimp and white fish trawling, mussel dredging and cockling.

Brown shrimp and smaller quantities of pink shrimp are landed from late summer through to spring. Marketing

improvements during the 1980s led to a rapid modernisation of the fleet and now the majority of shrimp trawlers use twin beam trawls. However, rising competition within The Wash has forced many shrimp trawlers to fish in the Thames and Humber estuaries, as well as further offshore. The small mesh nets (20 mm) used in the shrimp fishery result in a by-catch of juvenile fish, particularly flatfish, which are returned to the sea once separated from the catch using a riddle. Veil nets are sometimes attached to shrimp nets to separate flatfish from the shrimp, and are apparently reasonably successful compared to other regions such as the Humber and Thames, where a heavy presence of weed tends to clog the nets thus rendering them ineffective. Appropriately licensed vessels may retain flatfish as a by-catch provided they comply with EC conservation regulations.

Sprats are caught by some of the larger trawlers, although fishing effort is usually limited as demand is low. Trawling for sole, plaice and rays occurs on a very small scale and usually takes place during spring and early summer, when shrimp are thought to begin their annual spawning and moulting period. The cockle fishery has attracted more interest from the local fleet in recent years as the mussel fishery has dwindled. Some of the smaller boats not equipped with suction dredges use the traditional blowing method to harvest cockles. In recent years high demand has ensured good prices and cockles are processed locally.

### **5.3.7 *Wootton to Hunstanton***

Most of this coastline is covered by the private Le Strange shellfishery, there being 2 or 3 natural mussel beds between Wootton and Hunstanton. There are around a dozen longshore boats using nets for sea trout, bass, mullet, flounder, sole, plaice and rays from spring to autumn. Sea trout landings peak in May/June and September/October (few salmon are taken off this coast). Cockles are taken by a few suction dredges and several people rake for them from the beach. Grimsby trawlers take sole and rays off this coast in June.

### **5.3.8 *Thornham and Titchwell***

Pacific oysters are farmed in numerous creeks along this coast. Vast beds of native oysters existed earlier on this century, but now few remain. Around a dozen boats under 10 m trawl for shrimp and pot for crabs on a part-time basis.

### **5.3.9 *Brancaster and Burnham Overy Staithe***

Pacific oysters, Manila clams and mussels are cultivated in areas covered by several orders. Eleven full and part-time fishermen harvest mussels from late autumn to early spring, which are sent to market after purification.

Seed mussel obtained from The Wash are relayed onto private beds, although in recent years there has been a shortage of seed mussel in The Wash. Oysters cultivated by 7 full and part-time growers from Titchwell to Burnham Norton are harvested all year round. Two boats under 10 m trawl for shrimp and set pots for brown crabs and whelks. A highly productive whelk fishery used to take place inshore, but landings have fallen in recent years, for reasons which are not entirely clear and subject to much conjecture. Apparently, brown crabs have become more abundant on old whelk fishing grounds.

### **5.3.10 Wells**

Twenty boats of 8-11 m set pots for brown crabs and whelks from this tidal drying harbour out to 30 miles offshore (e.g. Race Bank) for most of the year, with fishing effort peaking during the summer. Between 100-400 crab pots and a similar number of whelk pots are used per boat, with more effort being directed towards crustacea since the mid-1980s due to a fall in whelk landings inshore. Brown crabs provide the mainstay with lobsters also taken. Four boats trawl for brown shrimp and occasionally white fish. Some of the smaller boats use drift nets for sea trout, bass and mullet, and set fixed nets for flatfish and roundfish. Cockles are gathered by hand.

### **5.3.11 Morston and Blakeney**

Eight longshore boats set pots for crabs and lobsters from spring through to autumn. A few fishermen cultivate mussels and oysters within a several fishery in the harbour. A further dozen or so longshore boats fish on a part-time basis using pots and some netting. Many fishermen supplement their earnings from reed cutting, bait digging (for lugworm) and chartering angling trips. From Sutton Bridge to Blakeney, between 200-300 people dig lugworms which for some is a full-time occupation. There maybe 300-400 gill nets set between Thornham and Blakeney for flatfish. To the east and south from Blakeney there is a considerable amount of shore angling, especially for cod in winter.

### **5.3.12 Cley, Salthouse and Weybourne**

These villages support around a dozen longshore boats, though few rely on fishing as the only source of income. Chalk reefs between Cley and Bacton provide good crab and lobster potting grounds, with local factories processing much of the catch and exporting their products all over Europe. In 1976, the north Norfolk creel fishery supported 45 full-time boats whereas now 40 boats are involved. The full-time boats use up to 250 pots, stringing around 25 pots to a line and setting them out to 5 miles offshore. Peak landings of crab are

expected between May and June. Some boats also set nets and lines for cod and whiting in winter, targeting rays and dogfish in spring.

### **5.3.13 Sheringham**

Nine full-time boats of 5-7 m rely almost entirely on the pot fishery, virtually all using inkwell pots single-handedly for brown crabs and lobsters from March to October. Fishermen have blamed trench construction work (for gas and sewage pipes) for the release of chalk into the water which they claim has discouraged crustacea from either moving into the area or feeding. Winter fishing consists of longlining, gill and trammel netting for cod and whiting.

### **5.3.14 East and West Runton**

Ten longshore boats base themselves at these 2 landing points and concentrate on the potting fishery targeting brown crabs and lobsters for most of the year. During the winter around 6 boats continue to use longlines, gill and trammel nets to catch cod. Fishermen have put more effort into netting since the 1980s as the quantity of cod caught inshore has fallen and some boats now use up to 30 nets. Herring are caught in nets drifted within 2 miles of the coast in autumn.

### **5.3.15 Cromer, Overstrand and Trimingham**

A fleet of around 20 boats between 5-10 m set pots principally for brown crab from March to November, and for lobsters during the summer. Much of the catch is processed by the fishermen themselves. A few boats set whelk pots, use lines and nets for cod in winter and drift nets for herring in autumn. The brown crab fishery peaks between April and June, each boat setting between 150 and 300 pots out to 5 miles from the coast. Pot bait includes cod and plaice frames acquired from the Lowestoft market or dab, flounder, gurnard, herring or sprat. Despite lobsters being targeted for a short period during the summer it provides an essential resource at a time when brown crab moult.

### **5.3.16 Mundesley, Bacton, Happisburgh and Sea Palling**

Up to a dozen beach boats fish along this section of coast using mainly nets and pots, though a couple trawl for shrimp and flatfish. Various nets are set for an array of species including cod, whiting, dogfish, rays, sea trout, bass, mullet, herring, mackerel and sole in season. Large mesh sized tangle nets are set for rays, catching the occasional turbot or brill, whereas tangle and trammel nets with a smaller mesh size are used to catch

sole, plaice and dabs. The coastal waters off Sea Palling form the southerly limit of the north Norfolk potting grounds. A prosperous whelk fishery existed off Sea Palling in the past and up until the late 1980s it supported 10 full-time Cromer boats during the winter. The fishery began to decline during 1988 and by 1992 only two boats were involved in the whelk fishery.

### **5.3.17 *Winterton, Hemsby and California***

Twelve beach boats from Winterton and the surrounding small landing points fish mainly pots on a small scale from spring to autumn for crabs and lobsters.

### **5.3.18 *Caister***

Four full-time and several part-time longshore boats use longlines and nets, although fishing is hampered by marine traffic navigating along this part of the coast, using ports further south. Longlines are set in winter for cod, and in spring for rays and dogfish. Gill nets are set for the same species and drift nets are used for herring in autumn. Flatfish such as sole, plaice and dabs are taken in tangle nets from spring and sea trout and bass are taken in drift nets. Some of the full-time boats are capable of trawling and occasionally do so for shrimp and flatfish. Shrimpers from King's Lynn sometimes trawl off this coast.

### **5.3.19 *Great Yarmouth and Gorleston***

An offshore fleet of longliners and an inshore fleet that participates in numerous fisheries base themselves in the harbour at Great Yarmouth, which is also used by many private angling boats. Four boats over 10 m use longlines for cod in winter and rays and dogfish in spring and summer, with ling, whiting and turbot also caught. A few boats use baited lines attached to jigging machines. Up to 10 vessels under 10 m use drift and fixed nets, longlines and trawls. Nets are drifted for herring and sprats in autumn and winter, and sea trout, bass and mullet in summer. Fixed nets and longlines are used to catch a variety of white fish during the course of the year, for example cod are targeted in winter, rays and dogfish in spring and flatfish in spring and summer. Since the late-1980s, rays have become increasingly important to the inshore fleet, while dogfish landings have fallen. Up until the late-1980s, 7 boats beam trawled for pink and brown shrimp from autumn through to spring. Now only a few local vessels target brown shrimp between Corton and Winterton.

### **5.3.20 *Hopton and Corton***

Fishing activities carried out by the 5-7 longshore boats operating from both of these villages is very much at the

mercy of the weather and water currents, where onshore winds and large swells can prevent launching for long periods of time. Nets are drifted for herring in autumn and spring and sea trout and bass during the summer. Gill and trammel nets are set for cod and whiting in winter, and sole, plaice, rays and dabs from spring onwards. Small beam trawls are used for brown shrimp in season. There is a strong presence of rod anglers along the beaches taking cod from autumn through to spring.

### **5.3.21 *Lowestoft***

There is a full-time fleet of around 50 vessels plus 20 or so part-time boats that support a daily fish market. The majority of the 20-strong offshore beam trawler fleet are over 30 m and fish throughout the southern and central North Sea and Norwegian waters south of 62°N. A dozen vessels of less than 24 m using either beam or otter trawls periodically fish within 12 miles of the coast, landing mainly plaice, sole, turbot, rays, dabs, cod and whiting. Herring, sprat and mackerel are occasionally taken in pelagic trawls. Ten to twelve vessels of 10-20 m set longlines and sometimes trawl. The larger longliners are fully automated and concentrate offshore, whilst the smaller longliners often set nets for white fish on the way out to longlining grounds, despite intense trawling activity which restricts netting in many areas.

The under 10 m fleet uses a variety of fishing methods such as fixed and drift nets, pots, longlines, handlines and trawls. Nets are set for plaice, sole, turbot, rays and cod, and drift nets for herring, mackerel, bass, mullet and sea trout. Shrimp and white fish are taken in light otter trawl or beam trawl gear and pots are set for lobsters and crabs. Inshore fishermen have to contend with marine aggregate dredging activities occurring on traditional fishing grounds and the high level of fishing intensity exerted by beam trawlers of up to 15 m fishing right up to the shore.

### **5.3.22 *Pakefield and Kessingland***

The majority of the 25 or so longshore boats that fish along this stretch of coast do so on a part-time basis and landings are sold from beach stalls. Various types of fixed nets (e.g. gill, tangle and trammel nets) are used to catch cod, whiting, sole and plaice in season. Several boats also set longlines for cod, whiting, rays and dogfish. During the summer, the high incidence of weed often forces fishermen to concentrate on the pot fishery or else set nets around wrecks which are in abundance within 6 miles of the coast. Pots are set for brown crabs and lobsters. Drift nets are used off Kessingland and Benacre Ness in summer for sea trout and bass. Herring can be caught virtually all year round using drift nets and mid-water trawl gear, although they are of best quality in autumn. Sprats are exploited towards the end

of the year. Some of the larger boats trawl for shrimp and white fish. Beam trawlers from King's Lynn fish for shrimp along this coast.

### **5.3.23 Southwold and Walberswick**

These 2 landing places are based on either side of the River Blyth and support around a dozen full-time boats of 6-11 m plus an additional 20 or so part-time boats. Fishermen sell their catches along the harbour from stalls. The majority of the full-time fleet trawl and set nets for white fish; netting has become increasingly popular since the 1980s as catch rates have fallen and overheads compared to trawling are far less. Some of the larger boats set gear out to 40 miles in calm weather. Sole provides the mainstay from spring with plaice, rays, dabs and flounder also taken in substantial quantities and, in late autumn, cod and whiting are targeted using nets and longlines. Longlines are also used for rays and dogfish, with herring and sprat sometimes being used as bait. Nets are drifted in summer for sea trout, bass and mullet, and in autumn through winter for herring and sprats. A few fishermen fyke net for eels in the estuary and up the river although far fewer fishermen are involved compared to the past. Brown shrimp are taken in the estuary and along the coast by several boats using beam trawls. Both Pacific and native oysters are cultivated further up the river. Marine aggregate dredging activities in connection with the construction of Sizewell B nuclear power station is alleged to have affected good trawling grounds. Local fishermen also complain about the presence of large Lowestoft trawlers fishing local grounds.

### **5.3.24 Dunwich, Sizewell and Thorpeness**

Around a dozen of the 30 or so longshore boats that fish along this stretch of coast do so on a full-time basis. Nets are drifted for herring and sprats, and longlines and gill nets set for cod and whiting from autumn through winter. Longlines are set in spring for rays (predominantly thornback) and dogfish, with trawls and fixed nets used from spring through to autumn for sole, plaice, turbot, brill, flounders and rays, and small beam trawls are used for brown shrimp. Both drift and set nets are used during the warmer months to catch bass, mullet and sea trout, and bass handlining has become increasingly popular. Many full-time and a significant number of part-time fishermen set pots for both brown crabs and lobsters from spring through to autumn, particularly off Sizewell and Thorpeness.

### **5.3.25 Aldeburgh**

A fleet of 25-30 longshore boats fish mainly from spring through to autumn, and sell part of their catch from stalls. Only the larger boats can be launched

during the winter owing to the weather and tides and, from the start of the year, 10 boats longline and net (gill and trammel) for cod, whiting, ray and dogfish. A few boats net for herring and sprat in the Rivers Alde and Ore during the same period. From March through to November, pots are set for brown crabs and lobsters, and some of the larger boats trawl (otter and beam) for mainly sole, plaice, rays, whiting and shrimp, whilst flatfish and rays are taken in fixed nets. During the summer, nets are drifted for bass, sea trout and mullet, bass are caught on hand- and longlines and eel fyke nets are set in the Rivers Alde and Ore.

### **5.3.26 Orford and Hollesley Bay**

Between 15 and 20 boats, nearly all of which are under 10 m, fish along this stretch of coast and within the River Ore. Hollesley Bay is renowned for its variety of demersal and pelagic fish. The larger boats are capable of trawling and sometimes pair-up when targeting sprat and herring in the bay and the River Ore between autumn and spring; the smaller boats use drift nets to catch these 2 species. Longlines are used during the same period for cod, rays and dogfish. Come spring, sole, plaice, turbot, brill and dabs are taken in trawls, tangle and trammel nets, and nets and handlines are used to catch cod, pollack, ling and bass often around wrecks with some boats fishing up to 40 miles offshore. Sole, bass, mullet, crab and lobster are also caught in the river. Nets are drifted along the coast for sea trout, bass and mullet, and bass also caught on longlines. Several boats each use up to 200 pots for lobsters and crabs in season. During the summer, 1 or 2 modern GRP boats (known as 'fastworkers') jig lines on wrecks up to 30 miles offshore for mainly cod plus smaller amounts of pollack, ling and bass.

Fyke netting for eels occurs in the River Ore usually at night, although the eel fishery has attracted less interest over the years as catch rates have fallen. Pacific and native oysters, and to a lesser extent mussels are cultivated in the River Ore and Butley Creek, where holding pits have been constructed for storing molluscs prior to first sale.

### **5.3.27 Felixstowe Ferry**

Felixstowe harbour and the small villages situated along the River Deben support around 40 boats of 5-10 m, the majority of which fish on a part-time basis. Longlines, various types of nets, trawls and pots are used to catch cod, whiting, rays, dogfish, sole, plaice, turbot, brill, flounders, dabs, bass, mullet, herring, sprat, brown crabs, velvet crabs and lobsters. Sole and lobsters provide the mainstay for the local fleet. A limited amount of trawling and netting for sole, flounders, bass, mullet and lobsters occurs within the River Deben itself. In the past, a significant amount of effort was directed towards shrimp and eels, though landings of both

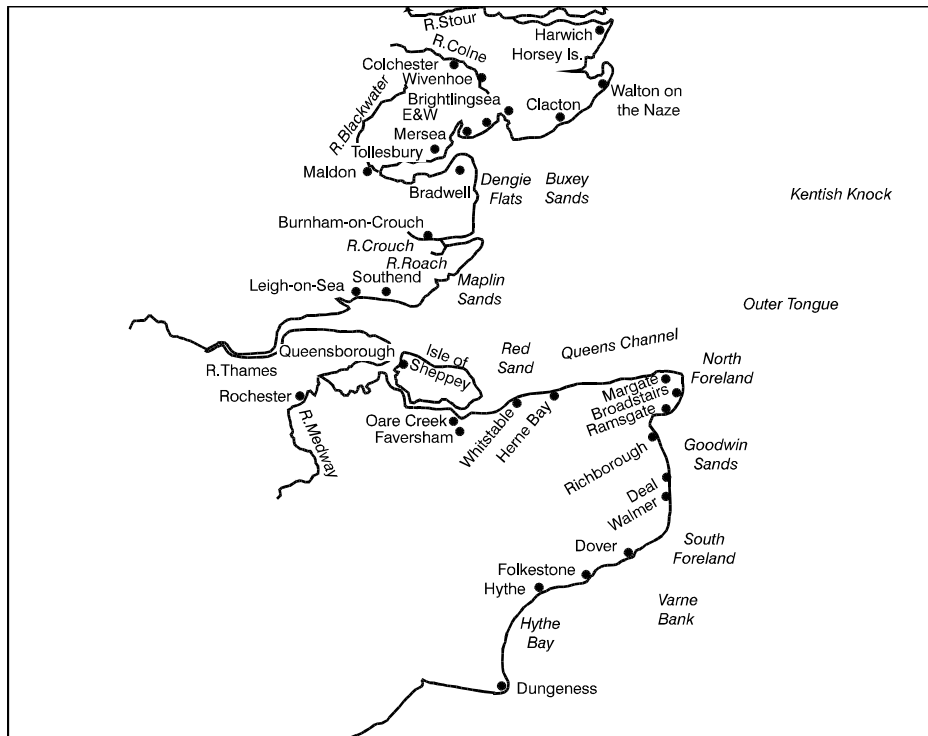
species has steadily fallen over the years and these fisheries only involve a few fishermen. The River Deben also supports a several fishery where oysters and mussels are cultivated.

### **5.3.28 *River Stour and Orwell estuaries and Ipswich***

At Shotley, there are 4 full-time boats less than 10 m longlining and trammel netting for cod and whiting in winter, dogfish, rays and bass in spring, and sole netting and potting for lobsters in summer. A few part-time

boats fish the Stour, eel fyke netting, shrimp trawling, lobster potting and setting stake nets along the shore for flounder, sole, bass and mullet. Several boats of less than 10 m work on a part-time basis netting and trawling for eels, bass and flatfish during the summer and drift netting for herring in the Orwell during the winter. The bass fishery attracts many pleasure anglers into the 2 estuaries. In the past, more fishermen were involved in the eel fishery, however, catches have fallen over the years and there has been a widespread incidence of the crippling red spot virus (*Vibrio anguillarum*) which can claim up to 50% of the landings.

## 6. ESSEX AND KENT: Harwich to Dungeness (Kent and Essex SFC)



### 6.1 Synopsis of current inshore fisheries

Sandy bays, estuaries and extensive mudflats prevail along the Essex and Kent coastline bordering the southern part of the North Sea and the eastern English Channel. The numerous estuaries along the Essex coast, together with the Thames estuary, provide rich fishing grounds for both finfish and shellfish, and shelter allowing small boats to fish most of the year. Here, the larger boats trawl for sole, cod, sprats, eels and shrimp, and dredge for whiteweed (a colonial whiteweed) and cockles. The smaller boats work oyster lays, fixed and drift nets for sole, cod, bass and mullet, handlines for bass, eel fyke nets and whelk and lobster pots. One fishery which is common to all boats but under strict management, exploits the 'Blackwater' and 'Thames' herring from October to February, although the larger boats probably find the quota system too restrictive. There is considerable angling activity in this region, both from the shore and by private and chartered boats, and it is possible that these catches constitute a significant part of the total landings of some species, particularly cod and bass, from within the 12-mile zone.

From North Foreland southwards along the English Channel coast most boats over 9 m use otter trawls for

sole and plaice during the warmer months, and cod and whiting in winter. The static gear fleet set gill, tangle and trammel nets for the same species plus drift nets for bass and herring in season. A dramatic rise in netting came about during the 1980s and 1990s, with some boats setting in excess of 50 nets each from low water mark out to 4 miles offshore, saturating grounds and causing problems for trawlers. Pots are set for lobsters on rocky grounds close inshore, with brown crab becoming more important on cleaner grounds further offshore. Whelks are also taken in pots at scattered localities.

### 6.2 Information on species targeted, fishing methods and fishing restrictions inshore

#### 6.2.1 Demersal fish (e.g. sole, plaice, lemon sole, ray, flounder, dab, cod and whiting)

The majority of inshore trawlers and static gear boats are highly dependent on the sole fishery, which begins in spring and lasts through to autumn. Tangle and trammel nets with a mesh of around 100 mm (inner

mesh of a trammel net) are set close to the shore during spring, taking by-catches of other flatfish such as plaice, flounders and dabs. Nets with a mesh of over 200 mm are used for rays; the thornback ray being the most commonly caught, and other flatfish such as turbot, brill and lemon sole provide important by-catches. Inshore trawlers tow single, twin and even triple otter trawls as well as beam trawls for flatfish often at night. The MMS of demersal nets used in the English Channel and in a directed sole fishery in the southern part of the North Sea is 80 mm. Since the late-1980s the high level of fishing effort towards sole in these areas has resulted in the annual quota for sole being reached and the fishery being closed before the season has finished. As a result, some of the larger trawlers concentrate on other demersal fish such as plaice, lemon sole and rays, whilst smaller boats switch to alternative fisheries.

The cod fishery begins in autumn and involves otter and pair trawls, gill and trammel nets, and longlines. Important by-catches of whiting, lemon sole and plaice are taken in trawls and nets set over wrecks yield cod, pollack and ling. Longlines, often favoured to nets during strong tides, are set for cod, rays and spurdogs.

### **6.2.2 *Pelagic fish* (e.g. bass, mullet, herring and sprat)**

Gill nets, either fixed or drifted, trammel nets and lines are all used to catch bass from spring through to autumn (the commercial bass fishery is nearing its northerly limit in the North Sea off the Essex coast). The availability of live sandeels has made handlining more popular amongst commercial and recreational fishermen. Fishing for bass is either restricted or prohibited in 3 areas in this district identified by MAFF as important bass nursery grounds, all of which are adjacent to power station outfalls; Bradwell, Isle of Grain and Kingsworth. Grey and, to a lesser extent, golden-grey mullet are caught in beach seines, fixed and drifted nets, often intended for bass. Mullet can tolerate a wide range of salinity levels and can be caught far up river estuaries. Kent and Essex SFC have specified a MLS of 30 cm for grey mullet.

Herring and sprats are targeted during the colder period of the year. Two herring stocks are found off this coast; one in the southern half of the Thames estuary considered to be part of the North Sea herring, and one in the northern part, including Blackwater estuary, which is thought to be a discrete stock that spawns in spring. Fishermen exploiting the spring-spawning stock require a licence from MAFF and are restricted to drift net only, whereas trawls and drift nets are used to take North Sea herring. MAFF survey the spring-spawning stock each year and a TAC (usually around 200 tonnes) is set, and when this is taken the fishery is closed. Kent and Essex SFC have introduced various fishing regulations (e.g.

prohibitions on certain types of fishing gear, closed seasons and minimum mesh sizes) through byelaws to safeguard this herring stock. Sprats are caught in pair trawls from November to February when they appear inshore. Demand for both herring and sprats is generally quite low, herring are usually sold through small local outlets whereas sprats are often sold as fishmeal.

### **6.2.3 *Diadromous fish* (e.g. eel)**

Fyke nets and trawls are used to catch eels in many of the Essex rivers and estuaries, including the Thames, from spring when brown/yellow eels are landed and during summer and autumn when eels embark on their annual spawning migration from freshwater to the sea. Small mesh-sized eel trawls (15-20 mm) are towed by boats operating singly or in pairs, and catches are kept in vivier tanks on board boats and then transported to live storage tanks on land before being taken to market (usually Billingsgate).

### **6.2.4 *Shellfish (e.g. cockle, mussel, oyster, lobster, brown crab, shrimp, whelk and periwinkle)***

The Thames cockle fishery supports 12 local and around 18 visiting vessels. The local fleet use a “new solids handling pump” system which has superseded suction dredging as it is more efficient. It involves a sieve-like mechanism which sifts through the sand, separating the cockles which are pumped onto the boat. Prior to the late-1980s, fluctuations in demand limited the Thames cockle fishery, but after the collapse of the Dutch cockle fisheries (particularly the Waddensea fishery) in the late-1980s and the subsequent decline of other UK cockle fisheries (e.g. in the Welsh Dee and Wash) the Thames cockle fishery rapidly expanded and is now the most productive in the UK. Kent and Essex SFC monitor stocks and regulate the fishery through seasonal closures, maximum vessel and dredge size. In 1993, all cockle beds within the district were closed under byelaws from 1 January to 31 May, a section of Buxey Sands was closed all year and, from 1 June until the end of the year, fishing for cockles was restricted to two 24-hour periods per week (cockle fishermen, MAFF scientists and industry are usually consulted before seasonal restrictions are implemented).

Wild and cultivated native oyster and Pacific oyster fisheries occur along the Essex and north Kent coast. Hatchery-reared native and Pacific juvenile oysters are re-laid onto on-growing beds during spring; oyster fishermen also prepare natural beds and encourage the settlement of native oyster spat by laying down ‘culch’ (a mixture of dead shells) which provides attachment for the oyster spat. The oyster harvesting season usually



begins in late summer and can last through until spring. Compared to the native species, Pacific oysters grow faster and are resistant to frost, allowing them to be harvested earlier in the year and cultivated intertidally. Kent and Essex SFC byelaws limit the length of oyster dredges to an aggregate of 4 m per boat, and prohibit the taking of native oysters with a diameter of less than 6.5 cm. Several orders cover many natural and Pacific oyster beds along the Essex coast.

Lobster, brown crab and whelk pot fisheries are scattered along the entire coast, the most popular fishing areas being found off Harwich and the north Kent coast. Lobsters and brown crabs are targeted from around March to November, whereas whelks are taken virtually the entire year round. The lobster fishery is particularly popular with part-time fishermen operating during the summer. Small trawlers either tow single or twin light beam trawls for brown shrimp from November to May in many estuaries along the Essex coast, the main fishery occurring in the Thames estuary. Shrimp vessels from The Wash periodically fish local grounds. Periwinkles are gathered from many estuaries (e.g. Colne, Blackwater and Thames) by hand.

### **6.2.5 Other (e.g. whiteweed)**

Whiteweed is a fern-like hydroid (a colonial animal related to coral) which has been exploited by boats towing simple rakes in the Thames estuary for around 90 years and is sold for decorative purposes. Many inshore trawlers switch to whiteweed dredging when, for example, sole or cod are scarce or fishing restrictions prevent their exploitation. Construction of local whiteweed processing plants during the 1980s has provided a small but steady demand.

## **6.3. Description of coastal fisheries by port**

### **6.3.1 Harwich**

Up to 30 vessels fish from Harwich and landing places along the southern bank of the Stour estuary. Most boats are under 10 m and spend a lot of time fishing within the estuary on a part-time basis. Otter and pair trawls are used by 2 boats of 14 m for sprats from the start of the year until February, when sole appear inshore. The sole fishery involves all full-time fishing boats and lasts until autumn, with plaice and rays forming an important by-catch. Effort then switches to cod and whiting until the end of the year, with some boats opting to use nets and lines rather than trawls. Several under-10 m boats use otter and beam trawls for sole, eels and shrimp within the estuary during the summer. The majority of under-10 m boats join the lobster and crab fisheries from the beginning of summer and several boats set pots virtually the entire year out to 12 miles offshore

and sometimes beyond; low catch levels during the colder months are compensated by high market prices. A few boats set whelk pots throughout the year and in autumn whelks are used to bait longlines. From spring through to autumn a dozen or so boats set nets for sole, rays, bass, mullet and eels, turning to cod using nets and lines in autumn and winter. Sprats and herring are targeted by 4-5 boats using drift nets from autumn through winter.

### **6.3.2 Walton-on-the-Naze and Clacton**

Five boats set up to 300 pots for lobsters and crabs in summer, and 10 part-time beach boats of 4-6 m use trammel nets and longlines for bass, sole, plaice and cod. Two 11 m boats, a trawler and a liner, and 4 smaller part-time liners and netters work out of Walton backwaters. One full-time and 4 part-time boats moored off Clacton use nets and longlines. Some boats supplement their summer earnings by chartering angling trips. There is an oyster farm at Horsey Island. Several Fishery; the beds are stocked with Pacific oysters in spring and harvesting usually begins in September.

### **6.3.3 Brightlingsea and Wivenhoe**

The bulk of the Colne estuary fleet fish from Brightlingsea and Wivenhoe, comprising 11 full-time trawlers of 8-15 m, 14 full-time static gear boats, nearly all under 10 m, plus 20 or so part-time boats towing and setting gear. The majority of trawlers use beam and otter trawls for sole, plaice and rays during the warmer months and otter or pair trawls for cod, whiting and sprats in winter. Sprats are taken in the estuaries of the Rivers Blackwater and Colne, and nearby creeks in January and February; vessels from surrounding ports often join the local fleet. The sole fishery begins in March with plaice and rays forming an important by-catch. Within the Colne estuary, half a dozen or so boats use twin beam trawls for brown shrimp from November to May. Pair trawls are used by several boats for eels during summer and autumn and whiteweed is harvested using dredges between autumn and spring.

During the warmer months, nets are set for sole, rays, bass, mullet and eels, and by autumn, cod and whiting begin to predominate in landings from gill and trammel nets. The licensed herring drift net fishery commences around October and lasts until February or March, depending on demand or whether the herring quota has been reached. Longlines are set for bass and rays during spring and summer with cod being taken from autumn onwards. A few boats set pots for whelks virtually the entire year. The native oyster fishery in the Colne has been ruined by *Bonamia*, although a slow recovery has been reported since the beginning of the 1990s. Several boats dredge for native oysters further offshore. Cockle-dredging boats from local and distant ports frequently

base themselves in Brightlingsea and Wivenhoe to fish local cockle beds during the latter half of the year.

#### **6.3.4 *West Mersea (including Tollesbury)***

Twenty eight full-time and 22 part-time vessels fish from the north side of Blackwater estuary, the majority being based in West Mersea. A variety of fisheries take place within the estuary itself for demersal and pelagic fish, eels, molluscs and occasionally crustacea. Several boats of up to 17 m trawl for sole, plaice and rays (some with twin or triple otter trawls) from spring through to autumn, and either trawl singly or in pairs for cod, whiting or sprats in winter. A further 9 boats of 8-12 m work the trawl fisheries mentioned as well as using nets for sole, rays, bass and mullet during the summer, and 4-6 boats use drift nets for herring and gill and trammel nets for cod and whiting in winter. Eels are caught in fyke nets set in the estuary and trawls often towed by 2 boats (pair trawls) used both within and outside the estuary.

Mollusc fisheries, both wild and cultivated, occur in the estuary, where 2 several orders have been granted (Blackwater and Old Hall Creek Oyster Fishery Orders) covering areas in the main channel and some of the creeks. In addition to the cultivation of Pacific and native oysters there has been a gradual regeneration of natural stocks of native oysters since the outbreak of *Bonamia*; they are harvested from the end of summer through winter. Mussels and Manila clams are cultivated, mussels are dredged and gathered from natural lays throughout the estuary, and periwinkles also gathered by hand. A local shellfish purification plant was constructed in 1993 to comply with new EC Hygiene Directives. The part-time fleet partake in the above-mentioned fisheries, particularly during the warmer months.

#### **6.3.5 *Maldon and Bradwell***

Out of a total of 20 boats fishing from Maldon and Bradwell, only 3 fish on a full-time basis and all principally use static gear. Several boats use drift nets for herring both within and a short distance out of the estuary from October to February, though market demand is generally low and only small quantities are usually landed. Gill and trammel nets and longlines are used for cod and whiting during autumn and winter. Sole and rays are targeted in March and bass and mullet from early summer through to autumn. Good bass fishing grounds are found off Bradwell; the warm effluent discharged from Bradwell Power Station provides a nursery area for bass which is closed to bass fishing from 1 May to 31 October. Fyke nets are set for eels during the summer and autumn. Around 10 boats charter angling trips from Bradwell catching mainly

cod, tope, bass, rays and whiting. Several part-time boats cultivate oysters, including Pacific oysters, which are harvested from mid-summer through to early spring. Small quantities of hand-gathered periwinkles are landed from autumn through to spring.

#### **6.3.6 *Burnham-on-Crouch***

There are numerous landing places along the Rivers Crouch and Roach, the main one being Burnham-on-Crouch. Collectively they support 12 full-time and 16 part-time vessels. Five full-time trawlers over 10 m take sole, rays and other flatfish in summer and may use otter or pair trawls for cod, whiting and sprats or dredge for whiteweed in autumn and winter. Sprats and whiteweed are taken from within the estuary and in nearshore waters, whereas demersal fish are mainly taken further offshore. Half a dozen or so boats of 6-11 m use trawls and set nets and also dredge for whiteweed. Drift nets are used for herring during autumn and winter, with fixed nets for mullet (mostly golden-grey), bass, rays and sole during the warmer months. Maplin Sands provides a popular fishing ground for both trawlers and netters. Trawling occurs in the estuaries of the Rivers Crouch and Roach during the summer for eels, shrimp and crabs, with smelts sometimes taken as a by-catch. Green shore crabs are exploited during their annual moulting period ('peeler' crabs) and sold as angling bait. The bass fishery attracts commercial handline fishermen and a far greater number of sport anglers. Several boats dredge for both Pacific and native oysters from private beds within both estuaries. Native oysters are also harvested from offshore beds. A cockle suction dredge fishery takes place around the mouth of the River Crouch and on Dengie Flat. In 1992, 20 cockle boats from The Wash fished the Dengie and Buxey Sands and reduced stocks to such a low level that the Kent and Essex SFC closed the fishery in 1993.

#### **6.3.7 *Southend-on-Sea***

The fishing fleet based along the north side of the Thames estuary is dominated by trawlers and cockle dredgers. Only a limited amount of netting takes place owing to strong water currents and debris, e.g. domestic waste and detached sea weed, though a few vessels use set nets for mullet, bass and eels. Two boats of 10-12 m use beam and otter trawls for sole, rays and plaice during the warmer months and otter and pair trawls for cod, whiting, herring and sprats from autumn through winter. Five otter trawlers of less than 10 m target sole during the summer and otter/pair trawl for cod and sprats during winter. These vessels also harvest whiteweed using dredges and set gill nets for mullet and bass. During the spring and summer, eels and whitebait are often caught together in pair trawls with by-catches of smelts, mullet and bass. Seven part-time boats trawl and set nets.

### **6.3.8 Leigh-on-Sea**

A short distance from Southend, fishing activity from this port involves trawling and cockle dredging. The fleet comprises 8 full-time 11-15 m cockle-harvesting boats, 21 full-time 7-22 m trawlers (a few of which also set nets), and 16 part-time boats that mainly work trawl gear. The cockle fleet concentrate their efforts on Maplin Sands, where they are joined by visiting cockle boats. Following the rapid expansion of the cockle fishery during the late-1980s and early-1990s, Kent and Essex SFC introduced byelaws to regulate the fishery, e.g. seasonal and weekly closure times. When the fishery was closed for the first 5 months of 1993 some cockle boats switched to dredging for whiteweed and trawling for sole.

Half a dozen or so beam and otter trawlers over 12 m target sole from spring through summer, whiteweed from September to February and sprats in winter. Some of the larger boats use twin and triple otter trawls for sole. An additional 8 trawlers of 10-14 m trawl for cod, herring and sprats in autumn and winter often in pairs, switching to sole in spring when they trawl singly. The traditional summer whitebait fishery has lost its impetus due to poor demand. Six single-man trawlers of less than 10 m fish for sole and brown shrimp with otter trawls during the summer, and for cod and whiting in winter. Many of the smaller vessels also dredge for whiteweed between autumn and spring, and some set gill and trammel nets for bass, mullet, sole, rays and cod. Quota restrictions can prevent sole being landed during the summer before the season has ended. The part-time fleet trawl for sole and brown shrimp, and set eel fyke nets and gill nets for bass and mullet.

### **6.3.9 Queenborough**

This small harbour situated on the Isle of Sheppey in the Medway estuary supports 9 full-time (8-13 m) and five part-time fishing boats. Four of the full-time fleet usually pair trawl for cod and whiting in autumn and then for sprats until March. However, the poor state of the cod and sprat fisheries during the early-1990s has diverted effort towards whiteweed and oysters. Demand for whiteweed has increased following the construction of 2 local processing plants. The smaller boats frequently dredge for native oysters when the weather confines them to coastal waters. After March, otter and beam trawls are used for sole, plaice and rays, and eels are occasionally taken in pair trawls. A few full-time and part-time fishermen use gill, tangle and trammel nets for cod, bass, mullet, rays and sole in season, setting lobster pots during the summer. Fishing for bass is prohibited within 2 areas in the Medway, both adjacent to power stations, identified as a 'bass - nursery area' by MAFF. Beach seining for grey mullet takes place in summer with 90 mm mesh nets, 200-350 m long and 3-4 m deep. Eel fyke nets are set in the

Medway estuary from early spring, then in April they are set in the sea and left there until October. Fishing within most of the Medway estuary is the prerogative of the Freeman of Rochester.

### **6.3.10 Faversham**

Three full-time boats fish from Oare Creek using mainly trawl gear. From autumn until spring they may land cod, whiting, herring and sprats using pair and otter trawls, and native oysters using dredges. In spring and summer, sole, plaice and rays are taken in otter trawls, and eels are caught in pair trawls and fyke nets. Shrimp are caught all year round in the Swale using small beam trawls. A limited amount of netting occurs for sole, rays, bass and mullet, and 1 boat does a small amount of whelk potting.

### **6.3.11 Whitstable**

Out of 17 full-time fishing vessels, 11 of 11-14 m trawl (4 regularly dredge for oysters), 2 over 10 m dredge for cockles and the remainder rely on static fishing gear as do an additional 4-5 part-time boats. Shellfish processors situated around the harbour deal with cockles, lobsters, oysters and whelks. All the trawlers land demersal fish for most of the year and the trend here since the mid-1980s has been towards using larger boats which can work further offshore because catch rates in the south side of the Thames estuary can be insufficient to make a living, especially during the colder months. Six trawlers over 12 m catch sole and plaice, plus a mixed by-catch, using single, twin and triple otter trawls on Red Sand, Queen's Channel and Outer Tongue from spring through to late autumn. Some of the smaller trawlers periodically pair trawl for eels. Cod and whiting are caught in otter and pair trawls and native oysters are dredged from autumn. The oyster fishery has received more attention during the 1990s as natural stocks are beginning to recover from *Bonamia* and landings of cod and whiting have been poor during this period. Some boats have even resorted to moving to other ports, e.g. Rye where fishing opportunities are better.

The 2 cockle dredgers fish mainly off the Essex coast and only fish local grounds during periods of bad weather. During 1993 the cockle fishery didn't begin until June lasting through to the end of the year. The static gear fleet work whelk pots throughout the year along with nets for sole, bass and mullet, and pots for lobsters and brown crabs.

### **6.3.12 Herne Bay**

Only three full-time and over a dozen part-time beach boats use static gear along this exposed coast, where fishing activity is limited during the winter. The majority

of boats set pots to within a few miles of the coast around Reculver for lobsters and brown crabs from spring through to autumn, and a few boats set whelk pots most of the year. Tangle and trammel nets are set for sole, plaice and rays, and gill nets for bass and mullet during the warmer months. Cod and herring are caught in gill and drift nets at the beginning and end of the year.

### **6.3.13 Margate**

Five full-time and around half a dozen part-time boats predominantly set nets. A few of the larger full-time boats (10-12 m) occasionally trawl. Gill nets are used for cod and whiting, drift nets for herring in autumn and winter and trawls and drift nets for sprats during January and February. Herring are probably taken from the North Sea stock rather than the Thames' one. Trammel and gill nets are set for rays, bass and flatfish from spring, handlining for bass is often preferred when there is a lot of weed in the water. Nets are set from low water mark out to 3-4 miles offshore, beyond which fishermen run the risk of nets being trawled away. Some of the full-time boats work in excess of 50 nets, a considerable increase since the early-1980s. Wreck netting yields cod, pollack, bass and conger eel for most of the year and a small amount of eel fyke netting and potting for lobsters goes on in the summer, with whelk pots being set for longer. A combination of weather and tides can curtail netting operations for long periods during the winter.

### **6.3.14 Broadstairs**

Four full-time and 4 part-time boats under 10 m use nets and pots, and a few boats sometimes fish from neighbouring ports. Gill and trammel nets are set for cod from autumn through to spring taking important by-catches of whiting and bass, the latter at the beginning and end of the season. Herring drift nets are also worked during this period. From spring, drift and anchored nets take sole, rays and bass, and pots take lobsters and brown crabs. Soles are the single most important species for the local fleet, targeted until December, although the fishery is often closed earlier as quotas are reached. The lobster season usually ends around November.

### **6.3.15 Ramsgate**

A busy port with merchant and ferry interests, together with the largest fleet on the Thanet coast, comprising 12 full-time and around 20 part-time vessels. Six boats of 12-17 m use otter trawls, whilst the remainder of the fleet, all under 12 m, rely on static gear. The trawler fleet has halved since 1988 and in 1993 a further 2 trawlers were removed from the fishing vessel register under the Government's decommissioning scheme. The

trawlers land roundfish during the winter, mainly cod, whiting, and occasionally, sprats. The sole fishery begins in spring with single, twin and triple otter trawls often used at night, with plaice and rays providing an important by-catch. The trawlers work trips of 12-24 hours between the Kentish Knock and Goodwin Sands, and sometimes in Rye Bay, where they have to compete with foreign boats. As the season progresses, trawlers fish further offshore sometimes out to 20 miles to land a mixed catch of flatfish and roundfish, until autumn. A few boats drift nets for North Sea herring from September to April (sometimes taking mackerel in May) and, part of the catch is often sold directly to the public after local outlets have been filled. Gill and trammel nets are set for cod and whiting during the winter by several boats and then in spring most of the full-time static gear boats and many part-time boats turn to sole landing plaice and rays as a by-catch until late autumn. During the summer, bass are caught in drift nets, cod nets used over wrecks and pots are set off this rocky coast for lobsters, crabs and whelks. The majority of static gear boats are involved in angling charters.

### **6.3.16 Deal and Walmer (including Richborough)**

Two full-time and several part-time boats use nets and pots from spring through to autumn - fishing during the winter is severely restricted by the weather. Cod and whiting are caught in gill and trammel nets during autumn and winter and local markets support a small herring and sprat drift net fishery, with mackerel landed in spring. From spring through to autumn, sole, plaice, rays, dogfish and to a lesser extent turbot and brill are caught in tangle and trammel nets and bass in drift nets, all fisheries often taking place on Goodwin Sands. Pots are set for brown crabs, lobsters and whelks between Walmer and Dover and fishing effort peaks in summer. Some fishermen move to other ports when fishing off this coast is poor whilst charter angling trips are becoming a popular alternative to commercial fisheries.

### **6.3.17 Dover**

Two full-time and half a dozen part-time boats work from the Western Dock setting pots and nets. Nearshore chalk reefs provide good potting grounds for both brown crabs and lobsters, with up to 300 pots being used per boat. Pots are set for brown crabs from the start of the year and then for both crabs and lobsters during the summer until the weather deteriorates at the end of the year. Bass and flatfish are caught in drift and fixed nets during the warmer months and roundfish such as cod, pollack and bass are caught off wrecks throughout the year. A few boats set gill nets and longlines from autumn for cod and whiting, and drift nets are occasionally used for herring to supply a small local market.

### **6.3.18 Folkestone**

Around 25 boats fish from this sheltered harbour where stalls sell a proportion of the daily landings to the public. The full-time fleet comprises 9 otter trawlers of 11-15 m and 9 netters most under 10 m, plus 7 part-time static gear boats. Otter trawlers target cod and whiting from late autumn through winter, with by-catches of flatfish such as lemon sole and plaice. Flatfish dominate landings from early spring; lemon sole and plaice at first, followed by sole, and several boats use multi-rigged trawls. The trawling fleet tends to fish further offshore during the summer for a mixed catch of flatfish and roundfish.

Gill nets and longlines are set for cod and whiting in Hythe Bay during the winter, although fewer fishermen are using longlines, especially when fish are scarce. From spring, tangle and trammel nets are set in Hythe Bay for flatfish, particularly sole, plaice and rays. Nets set around wrecks produce good catches of roundfish including bass which are also caught in drift nets and on handlines during the warmer months. Some of the larger boats use between 50 and 70 nets which can total over 5,000 m resulting in local grounds becoming saturated with netting. The smaller boats focus more effort on potting between Dover and Hythe Bay from spring through to autumn. Brown crabs are landed from the beginning of spring, effort then switching towards lobster by the middle of the summer, with crabs and lobsters caught through autumn. Whelks are caught in pots set in the bay all year round. Some of the full-time fishermen charter angling trips during the summer to supplement their earnings.

### **6.3.19 Hythe**

Four full-time and 5 part-time boats, all under 10 m, are launched from the beach and fish mainly within Hythe Bay. All the full-time boats and some part-time ones work sole nets within the bay (sometimes as close as 100 m off the coast) from March through to November with by-catches of plaice, rays and crabs. Drift nets and handlines are used for bass and mackerel during the summer. Several boats set whelk pots from spring either as a main occupation or to augment earnings made from the sole fishery. A couple of boats occasionally otter trawl for sole and plaice. Several boats switch to cod netting from autumn through winter, a couple of which may also set whelk pots.

### **6.3.20 Dungeness**

Of the 20 or so beach boats, all under 10 m, launched from this small peninsula, 6 otter trawl whilst the rest use static gear. Fishing activity tends to be concentrated in Rye and Hythe Bays in the sheltered east side of Dungeness. Cod and whiting are taken in otter and pair trawls in winter, together with important by-catches of plaice and lemon sole. Some boats opt to trawl when conditions are not ideal for netting, e.g. during strong tides and stormy weather. By spring, double and triple otter trawls are used for sole often at night, and during the summer the larger boats trawl further offshore for a mixed catch of roundfish and flatfish. Nets and longlines are used in winter for cod and whiting, often on Bullock Bank, and herring and sprats are caught in drift nets set by 5 open boats of 7 m. By March, several of the larger boats set nets out to the middle of the Channel for sole, rays and lemon sole, with nets set over wrecks yielding cod, bass, pollack, plus the odd lobster. The smaller boats concentrate on the sole fishery closer inshore until autumn, taking by-catches of plaice and rays.



## 7. SUSSEX: Rye to Selsey (Sussex SFC)



### 7.1 Synopsis of current inshore fisheries

Fishing activity along this predominantly sand and shingle coastline is mainly undertaken by beach boats setting nets out to 6 miles offshore, with larger boats of over 10 m working from a few harbours, e.g. Rye, Newhaven and Shoreham. The most obvious trend in local fishing activity is the upsurge in the number of trammel nets since the early-1970s, being used to take mainly sole and plaice, with some rays, cod and bass. These nets are very amenable to small boat work and are set out from the low water mark to such a distance in spring and summer that either otter trawling has been curtailed in many areas, or agreement has had to be reached restricting trammel netting to within 3 or 4 miles of the shore. This method has been used in the Brighton-Bognor Regis area for many decades and it is now spreading all over Britain. Lobsters are taken on sporadic rocky grounds close inshore along this coast, with brown crabs becoming more important on cleaner grounds further offshore. Whelks are also taken in pots at scattered localities. Cuttlefish, squid, black bream and red mullet have received greater interest since the late-1980s due to improved marketing and quota restrictions imposed on some traditional species. Some of the larger vessels, e.g. from Rye and Newhaven use beam trawls and scallop dredges. Native oysters are dredged in the west of the district. Most local boats land daily and catches are sold where landed often via fish stalls or taken to Rye, Hastings or Brighton markets.

### 7.2 Information on species targeted, fishing methods deployed and fishing restrictions inshore

#### 7.2.1 *Demersal fish (e.g. plaice, sole, turbot, ray, cod, whiting, dogfish, red mullet and black bream)*

During the early-1990s the Sussex SFC estimated at least 60% of the District's fishing fleet were setting nets for most of the year and, within 3 miles of the coast, 600,000 m and 200,000 m of nets were being used by full-time and part-time fishermen, respectively. Sole and plaice provide the mainstay from early spring through to late autumn, with other species such as rays, turbot, brill and even crustacea also landed. During the winter fewer boats set gill nets for cod and whiting.

Less than 20% of the district's inshore fishing fleet rely on trawling, fishing out to 20 miles offshore using nets with a MMS of 80 mm for flatfish, rays and cod in season. Sussex SFC byelaws prohibit boats over 14 m from fishing within 3 miles of the coast and with beam trawls with an aggregate beam length exceeding 9 m. The sole fishery attracts visiting beam trawlers that compete for local resources but the exclusion (June 1982) of beam trawlers of more than 70 gross registered tonnes or 300 bhp from the 12-mile zone has helped to

reduce this source of friction. Otter and pair trawls are used for black bream and red mullet which appear off this coast during the summer, and there is a 'gentlemen's agreement' for a cod-end MMS of 90 mm for pair trawlers (introduced to protect shoals of juvenile black bream and bass).

### **7.2.2 Pelagic fish (e.g. bass, grey and golden-grey mullet, herring, sprat, and sandeel)**

A variety of gear types are used for bass including drift nets, trammel nets, longlines, handlines, otter and pair trawls. Bass are caught close to the shore from spring through to autumn. There are many inlets along this coastline where juvenile bass may spend their first few years, one of which is Chichester Harbour, which has been designated a 'bass - nursery area' by MAFF with seasonal fishing restrictions to protect the juveniles. Mullet are taken as a by-catch and in a directed fishery using seine, fixed and drifted nets. The popularity of the bass line fishery, particularly amongst sport anglers, has resulted in the development of a small-scale sandeel fishery for bait, using light otter trawls and beach seines.

Both herring and sprat generate little interest as market demand is generally low. The herring drift net fishery starts in early October in Rye and progressively later towards the west (Sussex SFC byelaw prescribes the mesh size of a net used for herring between 32 and 65 mm). Sprats appearing off Beachy Head and Shoreham are exploited by trawlers from Newhaven, Brighton and Shoreham; landings are often sold as fish meal. Other pelagic species such as mackerel, horse mackerel and garfish are occasionally landed.

### **7.2.3 Shellfish (e.g. lobster, crab, whelk, prawn, scallop, oyster, cuttlefish, squid and periwinkles)**

The principal lobsters and crab fisheries occur off Selsey and Eastbourne, and lobsters provide the mainstay for the majority of potters during the summer. Fishing for lobsters requires a permit issued by the Sussex SFC which restricts the number of lobster pots set per boat within 3 miles of the coast to 100 per crew member and up to a maximum of 300 per boat. As a consequence most boats set pots both within and outside 3 miles. A small number of boats are dependent on brown crabs taken in pots set further than 3 miles offshore and some of the larger boats use in excess of 1,000 pots. The vivier trade to the continent has provided a market for spider, velvet and green crabs. A small number of boats set pots for whelks and prawns.

Scallops are harvested using Newhaven dredges, although most beds have been subject to intense fishing pressure and, during the 1990s, fishing effort has been minimal whilst they regenerate. Pacific and native oysters are cultivated within Chichester Harbour and native oysters are also dredged from natural beds. The outbreak of *Bonamia* during the 1980s and heavy exploitation have reduced the size of the native stock and a closed season from the start of May to the end of October has been imposed by the Sussex SFC together with a MLS - oysters that can be passed through a circular ring with an internal diameter of 70 mm cannot be retained. Periwinkles are gathered by hand between 15 May and 15 September (Sussex SFC byelaw) in the west.

Shoals of cuttlefish and squid appear close inshore in summer and are caught in trawls, fixed and drift nets and pots. Both species are of particular importance to the trawler fleet, especially during periods when quota regulations severely limit the quantity of white fish landed.

## **7.3 Description of coastal fisheries by port**

### **7.3.1 Rye**

Rye has a strong fishing tradition and is one of 2 major ports in this district whose fleet is dominated by trawlers. Rye harbour is tidal and this restricts the number and duration of trips made by the 50 strong fleet, around half of which fish on a full-time basis. The full-time fleet comprises 14 otter trawlers of 8-14 m, a few beam trawlers and half a dozen or so static gear boats. Most of the trawlers are under 12 m and confine their efforts to Rye Bay, where they target sole, plaice, rays and other flatfish from spring through to late autumn, and cod and whiting in winter. The larger trawlers fish out to 20 miles offshore, sometimes in pairs, landing a variety of demersal fish throughout the year. Several vessels occasionally otter or pair trawl for herring or sprats in winter, depending on demand. The Rye Bay sole population attracts trawlers from abroad (e.g. Belgium) and other UK ports (e.g. Portsmouth and Brixham). The large beamers have been blamed for unearthing a number of mines which are picked up in otter trawls as far east as South Foreland.

The netting fleet, the majority fishing part-time, use gill, tangle and trammel nets for sole, plaice and cod, and drift nets for herring, sprats and bass, and an eel fishery exists in Rye Harbour involving fyke nets. The smaller boats fish within Rye Bay whilst the larger ones set nets out to the middle of the English Channel, e.g. Bullock Bank (14 miles offshore) where fishermen risk having their gear towed away by trawlers. Most of these boats also charter angling trips.



### **7.3.2 Hastings**

Fixed netting is the main activity of 38 full-time boats with, on average, 2-man crews, mainly open 'punts' of 6-8 m but including 10 boats of 9-11 m which may also use otter trawls. Apart from 20-30 angling boats, other part-timers are not much in evidence, being forbidden by byelaw to use the 'stade'. Landings are sold either directly to a local fish merchant or through a new fish market constructed in 1993. Trammel and gill nets are set for cod and whiting during winter, a few boats drift nets for herring and sprat; the herring fishery usually begins around October and the sprat fishery takes place in January and February. By spring, trammel and tangle nets are set for flatfish, specifically sole, plaice and rays, taking important by-catches of other species such as turbot, monkfish, brill, dabs, dogfish, cuttlefish and crustacea. Spider crab are considered a major pest during the warmer months when they can appear in high densities inshore and curtail fixed netting operations for long periods. Bass and mullet are caught in drift nets, and bass on handlines especially when sea weed becomes a problem. Nets are set over wrecks for a variety of species including cod, pollack, whiting, bass and ling.

Fishing grounds out to 6 miles offshore are saturated with nets as fishermen try to maintain catch levels. Some boats set up to 70 nets in fleets of between 5-10 nets, depending on the length of each net, which can amount to over 8,000 m of netting per boat. Conflicts between fixed net and beam trawling crews has intensified as static gear fishermen set nets further offshore in search of improved catches. Aggregate dredging activities on Shingle Bank, a traditional fishing ground, have disrupted fishing patterns during the 1990s.

### **7.3.3 Bulverhythe, Bexhill and Pevensey**

Up to 25 boats regularly fish along this shoreline, the majority of which are open beach boats of 5-8 m using nets, handlines and pots, although many occasionally use small otter trawls during the summer. Some two hundred beach boats are launched from this coast by pleasure anglers, a small proportion of which set nets and pots. Trammel and tangle nets are set within 6 miles of the coast for sole, plaice, rays, turbot and brill, and drift nets are used for bass and mullet from early spring through to late autumn. Nets and handlines are used over wrecks and yield cod, pollack, ling and bass. Cod and whiting are targeted in winter using gill nets (a reef 6 miles offshore provides good fishing) and 3-4 boats drift net for herring and sprats during the same period. Pots are set specifically for lobsters in summer and brown crabs and lobsters in spring and autumn.

### **7.3.4 Eastbourne**

Between 25 and 30 vessels are hauled up on to the beach between Langney and Eastbourne, around a

dozen of which fish on a full-time basis. The majority of boats are 6-8 m and set nets and pots, and a dozen also otter trawl. Fishermen sell their catches directly to the public from small market stalls; the greater profits compared to selling through markets (which incurs transport and handling costs) are crucial to the survival of many. Rocky reefs off Eastbourne make it the second most important crab and lobster port in the district involving nearly all of the local full-time fishermen. Some boats set over 500 pots each for brown crabs and lobsters out to 6 miles offshore, with velvet and green shore crabs often taken as a by-catch. Brown crabs are targeted from spring through to the end of the year, whilst the lobster fishery first peaks in June and July, for hen lobsters predominantly, and then, following a quiet period usually in August, the fishery picks up again in September when cock lobsters prevail. Inshore fishermen have become increasingly dependent on potting as opposed to netting as white fish landings have fallen through a scarcity of fish inshore and quotas restrictions.

From autumn through winter, gill and trammel nets are set for cod and whiting, and drift nets used for herring and sprats. By spring, sole and plaice are targeted within 6 miles of the coast using both trammel and tangle nets, and larger mesh tangle nets are set for rays, turbot, monkfish, brill and crustacea. A fishing technique characteristic to this coastline is 'plaice beating', involving the use of chains dragged around the perimeter of the nets, disturbing fish into the nets. Gill nets are also set around wrecks and drifted for bass during the warmer months and lines are used to catch bass around Beachy Head. Otter trawls are often used in summer for flatfish and other non-quota species such as cuttlefish, squid, black bream and red mullet.

### **7.3.5 Birling Gap and Seaford**

Up to 6 part-time boats fish from this rocky coastline, 1 or 2 setting pots from spring initially for brown crabs out to 5 miles offshore and then the rest of the fleet uses pots for lobsters closer inshore during summer. A few boats use nets for cod, whiting and herring from autumn through winter and, from the beginning of spring, tangle and trammel nets are set for sole, plaice, turbot and rays. Many commercial and recreational fishermen exploit bass shoals off Beachy Head from May to November using handlines; artificial lures or sandeels used as bait. High market prices have made the bass fishery a very lucrative one and fishing often takes place at night. The coastline between Beachy Head and Brighton provides a seasonal income for many commercial winkle pickers.

### **7.3.6 Newhaven**

Thirty full-time vessels are moored on jetties along the narrow Ouse estuary the majority of which trawl and set nets, and up to 25 part-time boats of 4-7 m use nets, pots and handlines; some also take out angling parties.

Twelve boats combine trawling and netting and during the winter target cod, whiting, lemon sole and plaice. Herring and sprats are occasionally caught in otter and pair trawls during the same period although marketing opportunities are limited. A few of the larger vessels dredge for scallops from December to March, usually offshore between Beachy Head and Selsey, although since the mid-1980s dredging activity has fallen as catches have declined. From spring, twin and triple otter trawl rigs, tangle and trammel nets are used for flatfish, especially plaice and sole. As the water begins to warm up shoals of black bream, red mullet, bass, mullet and cuttlefish appear inshore; pair trawlers can land up to 8 tonnes of black bream in 1 day, which can cause marketing problems. John Dory are also landed and a good market exists in France.

Over 20 potting permits have been issued to both full- and part-time fishermen, 2 boats of 12-15 m use up to 1,000 pots each to take lobsters and brown and spider crabs south of the Royal Sovereign, from mid-June onwards. Many of the part-time boats use trammel and gill nets for sole and bass, and gill nets around wrecks for cod, pollack and ling. Bass are caught on handlines in the turbulent waters off Beachy Head and many of the part-timers take out angling parties at weekends.

### **7.3.7 Brighton Marina**

Eighteen boats of 7-12 m are based in the marina and use nets and pots, a few also otter trawl and an additional 10 or so beach boats of 4.5 to 7 m set nets, pots and handlines. Approximately 100 pleasure angling boats are launched along the beach, a small proportion of which set nets and pots. Sole and plaice provide the mainstay in trammel and tangle nets and trawls from early spring through to late autumn, with by-catches of other species such as turbot and rays. Fishing effort has increased since the mid-1980s with some boats now setting 30-50 nets. Spider crabs have become a serious problem in the summer, preventing demersal netting for long periods, when effort may switch to drift netting or handlining for bass, mullet or mackerel. Around a dozen boats issued with permits set between 50 and 300 pots from spring through to autumn for brown crabs and lobsters, with effort peaking during the summer. Half a dozen or so boats use drift nets during the winter for herring and a few may set gill or trammel nets for cod and whiting.

### **7.3.8 Shoreham**

Twenty six boats work from Shoreham harbour (13 full-time), where lobster/crab ponds and mussel purification facilities are located and a nearby market sells mainly to France and Spain. Four beam trawlers over 12 m spend most of their time fishing offshore, whilst the remainder of the fleet are between 4-12 m and use trammels,

trawls and, seasonally, drift nets. Cod and whiting are taken in trammels and trawls during the winter, nets are set in rocky areas inaccessible to trawlers with each boat using on average 5-20 fleets and each fleet comprising 3-5 nets. Plaice are caught in tangle and trammel nets and trawls from February/March followed by sole and then turbot, rays and brill. All these species are caught through summer until autumn. From the beginning of spring, fishermen set their nets to the south and west of Shoreham, moving them progressively eastwards by early summer. Cuttlefish are caught in fixed nets during May and June, bass and mullet are taken in drift nets, bass on handlines and several vessels pair trawl for black bream, red mullet, cuttlefish, squid and bass during the warmer months. Around half a dozen boats set pots for brown crabs and lobsters, taking by-catches of velvet and green crabs, and 2 or 3 set over 1,000 pots offshore. This fishery has become increasingly popular since the 1980s as landings of white fish have fallen.

### **7.3.9 Worthing**

Approximately 80 beach boats work along this stretch of coast, the majority are 4.5-6 m and owned by part-time fishermen and anglers. There are around a dozen full-time static gear boats with 2- or 3-man crews, some of whom sell their catches from stalls along the shore. Fishing activity is minimal in winter, with cod, whiting, herring and sprat occasionally landed. Plaice, sole and a variety of other flatfish and crustacea are caught from early spring in trammel and tangle nets set from low water mark out to 7 miles offshore, and some boats set in excess of 6,000 m of net. During the summer, drift nets are used for bass, mullet (both grey and golden-grey) and black bream. The bass handline fishery has attracted a lot of interest from the commercial and recreational sectors during the 1990s.

### **7.3.10 Littlehampton**

Ten full-time and around a dozen part-time boats set lobster pots and fixed and drift nets on rough and, from May onwards, weedy ground to take bass, mullet and flatfish, with cod and some rays after September. Bass are also caught on handlines, a method which is used when weed becomes a problem for netting. Most boats take out angling parties to wrecks for cod and black bream or for mackerel or turbot. Over a dozen boats set pots for brown crabs and lobsters, taking by-catches of velvet and green crabs. The smaller boats set up to 400 pots each in the Hooe Bank area throughout the year, and a few larger boats of up to 14 m set up to 1,000 pots further offshore for brown crabs.

### **7.3.11 Bognor Regis (including Pagham and Felpham)**

Thirteen full-time and several part-time beach boats set nets and pots within a few miles of the coast, part of the

landings are sold through beach stalls, especially during the summer when tourists provide good business. To the east, fishermen concentrate more on netting, using tangle and trammel nets for sole, plaice, rays and turbot from spring. By summer, effort switches to potting for brown crabs and lobsters, netting for bass, grey mullet and black bream and handlining for bass. Netting operations during the summer are often hampered by sea weed and spider crabs, forcing fishermen to concentrate more on potting. Nets are set by several boats for cod and whiting in autumn and the odd boat may use a beach seine net to catch herring or mackerel. Shellfish, especially lobsters, provide the greatest revenue for fishermen to the west, a high proportion of which are sold directly to local restaurants and hotels, thus ensuring high prices. Lobsters and brown crabs are caught along the rocky reefs found close inshore. Pots are also set for whelks and prawns, especially during the end of the lobster season.

### **7.3.12 Selsey**

A small beach landing renowned for its lobster fishery, which involves nearly all of the 23 full-time pot boats, the majority of 6-8 m crewed by 2 or 3 fishermen and setting up to 600 pots per boat out to 8 miles offshore, as singles or in strings of 25. Four 10-12 m potters venture out to grounds 25 miles offshore for brown crabs. An inshore boat can expect to land between 20-30 kg of lobster per day during the summer, and up to 200 kg of brown crabs per day in spring and autumn. Velvet and green crabs are taken as a by-catch, especially during the colder months as they stand a better

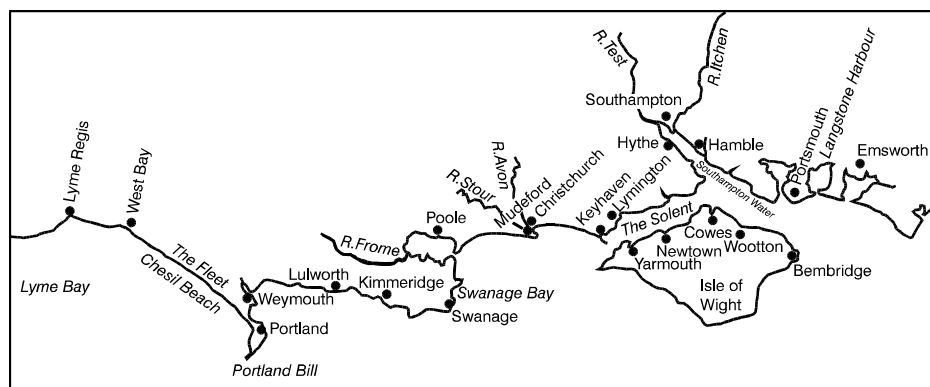
chance of surviving; live crabs are a prerequisite for French and Spanish markets. Spider crabs are sometimes targeted if found in high densities and pots are also set for whelks and prawns. Bass are taken on whelk-baited longlines, 6 boats use trammel nets for flatfish and 4 dredge for oysters in Chichester Harbour. Most boats are laid up in winter. An additional 20 or so part-time boats occasionally use pots, trammels (for plaice and sole) and beach seines for mackerel.

### **7.3.13 Chichester Harbour and Emsworth**

Most of the 6 full-time and 18 part-time fishermen based in this harbour dredge for oysters in Chichester Harbour and the Solent, between November and April. Chichester Harbour supports both public and private oyster fisheries; the former is regulated by the Sussex SFC and a closed season applies. Pacific and native oysters are cultivated in an area covered by a several order (Emsworth Channel Fishery Order, 1975). The local fleet also exploits oysters further west under the jurisdiction of the Southern SFC. After the oyster fishery, some fishermen switch to trawling or netting for white fish and potting for brown crabs and lobsters, some fishermen moving to Selsey to set pots. Bass are caught in Chichester Harbour using gill nets, trawls and handlines, and mullet are also taken in gill nets and seine nets, often as a by-catch to bass. Small-mesh seine nets are used to catch sandeels. Chichester Harbour has been designated a 'Bass - nursery area' and fishing for bass within Chichester Harbour is prohibited between 1 May and 31 October from a boat.



## 8. HAMPSHIRE, ISLE OF WIGHT AND DORSET: Emsworth to Lyme Regis (Southern SFC)



### 8.1 Synopsis of current inshore fisheries

The area between Selsey Bill and Swanage contains a large proportion of sheltered water, in the various harbours and the Solent, which enables many smaller boats to work in comfort on high-value resources, e.g. sole, oysters, bass and lobsters. As a consequence, the stocks here are heavily exploited and very seasonal fisheries, such as that for oysters, often produce good catch rates for only a few days following the opening of each fishery. Demand has increased for previously under-exploited species such as velvet crab, cuttlefish and mussels as marketing opportunities have improved, and the inshore fleet is generally very versatile, using a number of fishing methods corresponding to seasonal fisheries throughout the year. Apart from the Portsmouth beamers and dredgers, there are few vessels along this coast which are not day-boats. 'Punts', 4 m boats worked single-handedly, are characteristic of this coast and typically used in the 'harbours'. Many catches are sold locally, although markets for bass, oysters, scallops and spider crabs are being found abroad, where better prices are often offered for smaller sized specimens than in Britain. Landings of white fish, other than sole, are not particularly important and the welfare of the shellfish stocks is obviously of major concern for the future of the industry. The bass fishery attracts a high degree of effort involving both lines and nets throughout the region, and in most localities this fishery provides income for many part-timers and casual anglers between May and October. It is the attraction of quick, easy money from fisheries such as this (plus oysters and lobsters) which probably causes an increase in part-time and even full-time effort which, when the stock is depleted or out of season, is then diverted to other resources, that may already be fully exploited.

### 8.2 Information on species targeted, fishing methods and fishing restrictions inshore

#### 8.2.1 *Demersal fish (e.g. sole, plaice, dab, flounder, turbot, brill, cod, whiting, pollack, ray, red mullet and black bream)*

Tangle and trammel nets are used for sole and plaice from spring through to autumn; landings of plaice are often greatest during the autumn on spring tides when plaice tend to be more active. Netting can be severely restricted by high densities of weed in the water. Greater mesh-sized tangle nets are set for rays, turbot and brill during the warmer months and, in addition to the thornback ray, other rays such as cuckoo, starry and blonde are also landed. Gill nets are used for cod and whiting during the colder period of the year, when shoals appear close inshore, though, this coast is not renowned for its cod fishery. Gill nets are set around wrecks for cod, ling and pollack, and longlines are used to catch cod, pollack, rays, dogfish and tope, often when strong water currents make conditions unsuitable for netting.

Larger boats use otter and beam trawls for flatfish during the warmer months and, in winter, some trawlers switch to oyster and scallop dredging, whilst others continue to trawl for demersal fish, landing cod, whiting, flatfish and rays. Shoals of red mullet and black bream appear in spring and summer, and are caught in otter and pair trawls. A Southern SFC Byelaw prohibits boats over 12 m from fishing within 3 miles of baselines.

### **8.2.2 Pelagic fish (e.g. bass, mullet, sandeel, herring and sprat)**

Bass are taken in gill and trammel nets, on hand- and longlines, and sometimes in trawls from early spring. The high value and prestige attached to this species has attracted a high number of part-time and hobby fishermen. Problems with weed and the success of using sandeels as bait has prompted many commercial fishermen to switch to handlining which usually occurs during dusk and dawn. A total of 6 harbours, bays and estuaries, have been designated 'bass - nursery areas' by MAFF and fishing for bass from a boat within these areas is restricted by season. Bass are taken further offshore by visiting pair trawlers which generally land into France. Sandeels are exploited in many of the harbours and bays using light trawls or beach seines to provide bait for the bass fishery. Grey and golden-grey mullet are taken in gill nets set in most harbours, sometimes in association with bass. The herring and sprat fisheries are not very popular due to low market demand. Gill nets are set for herring and mackerel, whereas sprat are taken in otter and pair trawls during the colder months.

### **8.2.3 Diadromous fish (e.g. salmon, sea trout and eel)**

Commercial salmon and sea trout seine net fisheries exist in Rivers Test and Itchen leading into Southampton Water; the common estuary of the Avon and Stour; in part of the Christchurch Harbour, and in the joint estuary of the Frome and Piddle (Poole Harbour).

Licensed fyke and elver traps are set for eels in many of the estuaries and harbours within this district; fyke nets are set for adult eels between spring and autumn, whilst elvers are trapped as they migrate up the rivers in winter and spring.

### **8.2.4 Shellfish (e.g. oyster, mussel, clams, scallops, cuttlefish, squid, lobster, crab, prawn and whelk)**

Wild and cultivated oyster fisheries are found mainly in the Solent and surrounding area (including many harbours) - the Solent being one of few regions in the UK supporting healthy native oyster stocks that have not been decimated by *Bonamia*. A faster growth rate and resistance to *Bonamia* and frost make Pacific oysters a more favourable choice than their native counterparts for cultivation in many areas, particularly in shallow waters. Public oyster fisheries are subject to

various fishing restrictions introduced by the Southern SFC, such as a closed season between 1 April and 31 October; maximum dredge length (1.5 m per dredge and 3.0 m aggregate length per vessel); minimum landing size (oysters that can pass through a circular ring of 70 mm internal diameter cannot be retained); and a ban on night fishing (between 0800h and 1600h). Regulating orders cover many oyster fishing grounds (e.g. the Solent), allowing the Southern SFC to restrict effort through licensing, and there is ban on the use of metal toothed dredges. Several orders have been granted for oyster beds in some bays and harbours (e.g. at Portland, Calshot, Stanswood Bay and Portchester); many are administered by fishermen's co-operatives and some are seeded from the wild stock.

Both natural and cultivated stocks of mussels are harvested in many areas; juvenile mussels are taken from a large unstable bed found off Portland and re-laid in some of the harbours, e.g. Poole Harbour. American hard-shelled clams are found in the Solent, particularly Southampton Water, and harvested using dredges throughout the year, although effort has declined since the late-1980s due to a fall in demand. Scallops are taken in the west of the district, e.g. Lulworth Bank, using dredges and by hand (diving).

Cuttlefish and squid are taken in otter trawls and provide a much welcomed addition to earnings, especially when quota restrictions apply to prime fish such as sole.

Some fishing fleets, particularly those to the west and around the Isle of Wight, are almost entirely dependent on lobsters. This fishery attracts the greatest amount of effort during the summer, when part-time fishermen participate. In some sheltered areas, lobsters are caught during the winter months, when the higher market prices make it viable as catch levels are low. Brown crabs are targeted for much of the year and since the 1980s effort has increased towards spider, velvet and green shore crabs. Pots are used to catch prawns in some of the harbours and bays, especially Poole Bay, where a closed season exists from 1 January to 31 July. The exploitation of periwinkles is only permitted by hand and between 16 September and 14 May.

## **8.3 Description of coastal fisheries by port**

### **8.3.1 Langstone Harbour**

Out of the 60 or so boats fishing from this harbour, only around 10 fish on a full-time basis, usually during the summer when bass, mullet, sole, plaice, lobster and crabs are targeted. A small public oyster fishery exists in the harbour which attracts vessels from nearby ports such as Portsmouth. Many of the remaining boats charter angling trips and set the odd net or pot. A

popular handline fishery exists both within the harbour and around its entrance for bass (this has been designated a 'bass - nursery area' by MAFF and a closed season exists). The demand for sandeels as bait has led to the development of a sandeel fishery within the harbour, using either trawls or seines. Several boats set nets and trawl for a variety of demersal fish in season; quota restrictions are often imposed on sole, sometimes culminating in a total ban which can cause short-term hardship as many fishermen rely heavily on this species. Pots are set for both lobsters and crabs during the warmer months.

### **8.3.2 *Portsmouth***

A small harbour supports an inshore fleet comprising 30 or so boats of 6-12 m using a variety of fishing methods outside the harbour; within which fishing is restricted because of Naval activities. An additional 20 or so vessels regularly use this port. Fishing activities from spring through to autumn include; trawling and netting for flatfish (particularly sole and plaice); gill netting, lining and occasionally trawling for bass; lobster and crab potting; longlining for rays, tope and monkfish; and fyke netting for eels. Fishing for bass from a boat in Portsmouth Harbour is prohibited between 1 May and 31 October, in order to protect juvenile bass. In winter, oysters and clams are dredged, demersal roundfish and flatfish are caught in trawls and fixed nets, and pelagic fish such as sprats are periodically trawled. Local boats operate throughout the district during the oyster season, the extent of which often depends upon annual fishing restrictions introduced by the Southern SFC, for example in regulated fisheries. Oysters are also taken from public beds (such as those in Langstone Harbour) and those covered by several orders during the remainder of the season (there is a several order in Portsmouth Harbour). The smaller oyster boats often fish more obscure oyster beds for meagre catches, which would be unprofitable for the larger boats given their higher overheads.

### **8.3.3 *Southampton Water (Hamble and Hythe)***

Hamble and Hythe are the 2 main fishing ports located in Southampton Water, the former supporting nearly 50 boats and the latter around a dozen. The constant stream of marine traffic restricts fishing activities within Southampton Water. Molluscs are harvested both within and outside of Southampton Water and finfish are caught mainly outside. From autumn, oysters and clams (American hard-shelled clam) are dredged by up to 16 and 6 vessels respectively. Native oysters are dredged from the Solent and both native and Pacific oysters are cultivated around the entrance to Southampton Water (e.g. Calshot and Stanswood Bay) where they are administered by fishermen's co-operatives. A mixture of dead shell (known as 'culch') is deposited in these

areas to encourage the settlement of native oyster spat which come from surrounding beds in the Solent. It is probable that the American hard-shelled clam was introduced accidentally into Southampton Water in the 1930s but dredging for this species did not begin until the mid-1970s. There is no official clamming season, but there has been a marked decline since the late-1980s to the point where most vessels only take clams when it is the last profitable option. Cod and whiting are taken by 2 or 3 boats using otter trawls and several smaller boats using gill nets. During the spring and summer months, around 6 vessels trawl for sole, plaice and bass, 14 use long- and handlines and nets for bass, nets for mullet and several boats set nets for flatfish. Between 1 May and 31 October bass fishing from a boat is prohibited in most of Southampton Water. There are salmon runs to the River Test and Itchen, where fishing is restricted to 2 licensed seine nets.

### **8.3.4 *Lymington***

A small harbour supports between 25-30 boats of 7-12 m, the majority fishing on a part-time basis. Fishing activity centres around trawling and netting for white fish, dredging for native and Pacific oysters, netting and lining for bass and potting for lobsters and crabs. Sport angling for bass is very popular and some commercial fishermen charter bass fishing trips during the summer. During the winter, up to a dozen visiting oyster dredgers periodically base themselves here. The level of fishing activity fluctuates from year to year according to the state of stocks and corresponding fishing restrictions imposed by the Southern SFC.

### **8.3.5 *Keyhaven***

Although the local fleet has slightly increased over recent years and now stands at 15 boats all under 10 m, fishing effort has not risen as the full-time boats are being replaced by part-timers. Four full-time boats set pots for brown, velvet and spider crabs, and lobsters. A market has been developed in France for velvet crabs, which provides a much welcomed addition to earnings. A few vessels may dredge oysters (native and Pacific) or trawl or net for cod and whiting from December to March. For the remainder of the year these and other boats trawl (otter and beam) and set tangle nets for sole, plaice and rays, gill nets for bass and mullet, and longlines for bass. Several boats charter angling trips.

### **8.3.6 *Mudford and Christchurch***

A narrow channel enters a large harbour accommodating mainly pleasure boats and around 20 commercial fishing boats; six boats of 6-8 m pot for lobsters, crabs and prawns within the harbour, 10 full-time and several seasonal boats take bass on lines along Christchurch Ledge, 2 full-time plus 2 or 3 part-timers may trawl or

net for sole and bass between the Needles and Poole, and several boats dredge for oysters. In 1994, 6 salmon licences were issued for beach seining in the common estuary of the Avon and Stour and in part of the Christchurch Harbour from 16 April to 31 July. Beach seines are operated from small rowing boats.

### **8.3.7 *Isle of Wight***

There are a total of 130-140 registered fishing boats on the island. All but a few use static gear and between 40-50% of the fishing fleet are thought to work on a part-time basis. The majority of boats are based in the three main ports (Bembridge, Cowes and Yarmouth), although a high proportion work from numerous coves, bays and landing places around the island. At Bembridge, around 35 boats of 6-12 m fish on a regular basis; the larger boats set up to 1,000 pots whilst the smaller boats set 50-250 pots. Local grounds are saturated with pots to the point that there is seldom space for new pots. Lobsters generally provide the mainstay, although brown, velvet and even green shore crabs are also landed. Six to 8 boats set gill, tangle and trammel nets for flatfish (e.g. sole and plaice), rays, cod and bass in season, eel fyke nets are set in the River Yar and 3 vessels fish the Solent regulated oyster fishery. During 1992 and 1993, oyster dredging within the Solent was only permitted for 3 weeks at both the beginning and end of the season, in order to conserve stocks. Local boats dredge elsewhere in the district for the remainder of the season. Between 10-12 boats fish from Cowes and Wootton using mainly pots and nets, and several join the regulated oyster fishery in winter. Eels, mullet, flounders, and bass are netted in the tidal reaches of the River Medina. Yarmouth, on the north-west coast, has 14 boats under 12 m potting (each using up to 800 pots), netting and lining. An additional dozen boats use static gear on a part-time basis and charter angling trips. Elsewhere on the Isle of Wight there are between 30-40 beach boats setting pots, nets and lines.

### **8.3.8 *Poole***

Out of 140 or so registered fishing boats operating out of Poole Harbour, around 80 fish on a full-time basis and 30 within the harbour itself. The Poole Fishery Order (1985) allows the Southern SFC to lease areas of seabed within the harbour for the cultivation of molluscs, and to regulate wild mollusc fisheries through licensing and closed seasons. Boats under 8 m operate within the harbour, many of which are punts, harvesting oysters, mussels and cockles, gill and trammel netting for flounder, bass and mullet, and potting for prawns, lobsters and brown and spider crabs. There is 1 licensed seine netsman operating in the joint estuary of the Frome and Piddle, catching salmon and sea trout from 2 June to 29 September. There is relatively little eel fishing on the Frome and Piddle. There are a small number of licensed fyke nets on the Frome in the Wool

area, and there is an eel rack at East Burton. On the Piddle the only licensed nets are eel racks at Trigon. Six to eight boats regularly drag for ragworms on a commercial basis. Since the late-1980s the mussel fishery in Poole harbour has expanded as demand for this species has increased. Juvenile mussels are taken off Portland Bill and re-laid into the harbour; landings during the summer can amount to 20 tonnes per day. The oyster fishery is severely limited by *Bonamia*.

Four full-time boats over 10 m land sole, rays, plaice and cuttlefish in Poole Bay during the warmer months. Mid-water trawls are sometimes used for sprats west of the Solent in winter. During the bass season, approximately 30 boats fish the Haven entrance and Christchurch ledge trolling or taking out angling parties, and catching sandeels off Hook Bank for bait. A ban on bass fishing from a boat exists in most of Poole Harbour, between 1 May and 31 October. These boats turn to oysters, crabs and trawling in the winter. As many as 10 full-time boats of 10-12 m set crab pots in spring and summer out to 10 miles offshore south-east of Swanage. Large (up to 16 m) visiting vivier-equipped crabbers sometimes work out of Poole (e.g. Jersey boats) and often land in France.

### **8.3.9 *Swanage***

There are 8 full-time lobster potters under 12 m working off St. Albans Head, plus a dozen or so part-time boats netting for flatfish and potting for lobsters, the smaller boats being confined to Swanage Bay. Up to 8 boats use long- or handlines for bass during the summer.

### **8.3.10 *Kimmeridge and Lulworth***

A few boats pot for crabs and lobsters in Swanage Bay during the summer, one of which fishes on a full-time basis. Scallops are gathered by commercial divers from rough ground on Lulworth Bank.

### **8.3.11 *Weymouth and Portland***

The pot fishery provides the principal source of revenue from these 2 ports, and has developed rapidly since the 1970s and now supports over 40 boats, of which 20-25 are over 8 m. These boats set between 400 and 1,000 pots each, in fleets of 20-100 pots out to 30 miles offshore, principally for brown and spider crabs, and many are equipped with vivier tanks to keep the crabs alive thus enabling them to sell directly to buyers. Up to 5 tonnes of crab can be stored on board some of these boats and landings are sometimes made into France if first sale prices make it more profitable. A small number of potters also set nets for marketable fish and pot bait, although netting is generally restricted by strong tides. The smaller boats, of less than 8 m, are confined inshore and each set 100-500 pots between Ringstead and Chickwell for lobsters and brown and velvet crabs.



Around 20 boats of 8-12 m tow otter trawls and, in addition to traditional white fish such as cod, whiting, sole and plaice, other species such as cuttlefish and squid have become increasingly important since the late-1980s. A few local boats switch to mid-water trawling for sprat and herring during the colder months, although the bulk of catches are landed by visiting Scottish boats and often sold to one or two Russian klondykers which sometimes anchor in Weymouth Bay. Some boats occasionally dredge for scallops, although most inshore scallop beds have been cleared of marketable-sized scallops and are being left to regenerate. Scallops are harvested by divers in areas considered too rough for dredging. One boat dredges mussels off Portland Bill and juvenile mussels are sometimes retained with permission from Southern SFC and re-layed elsewhere, e.g. Poole Harbour. Between 20-25 GRP boats of 6-10 m use handlines primarily for bass, fishing in the Portland Race/Shambles Bank area between June and August, and 30 small open boats of 4-6 m use handlines and set the odd net or pot. MAFF have identified The Fleet - a lagoon separated by Chesil Beach from the sea - as an important bass nursery area and prohibited bass fishing there from a boat all year. Chartering angling trips is a popular business here and involves up to 30 boats of various sizes (including some trawlers and potters) during the summer, though trips are organised all year.

### **8.3.12 *West Bay***

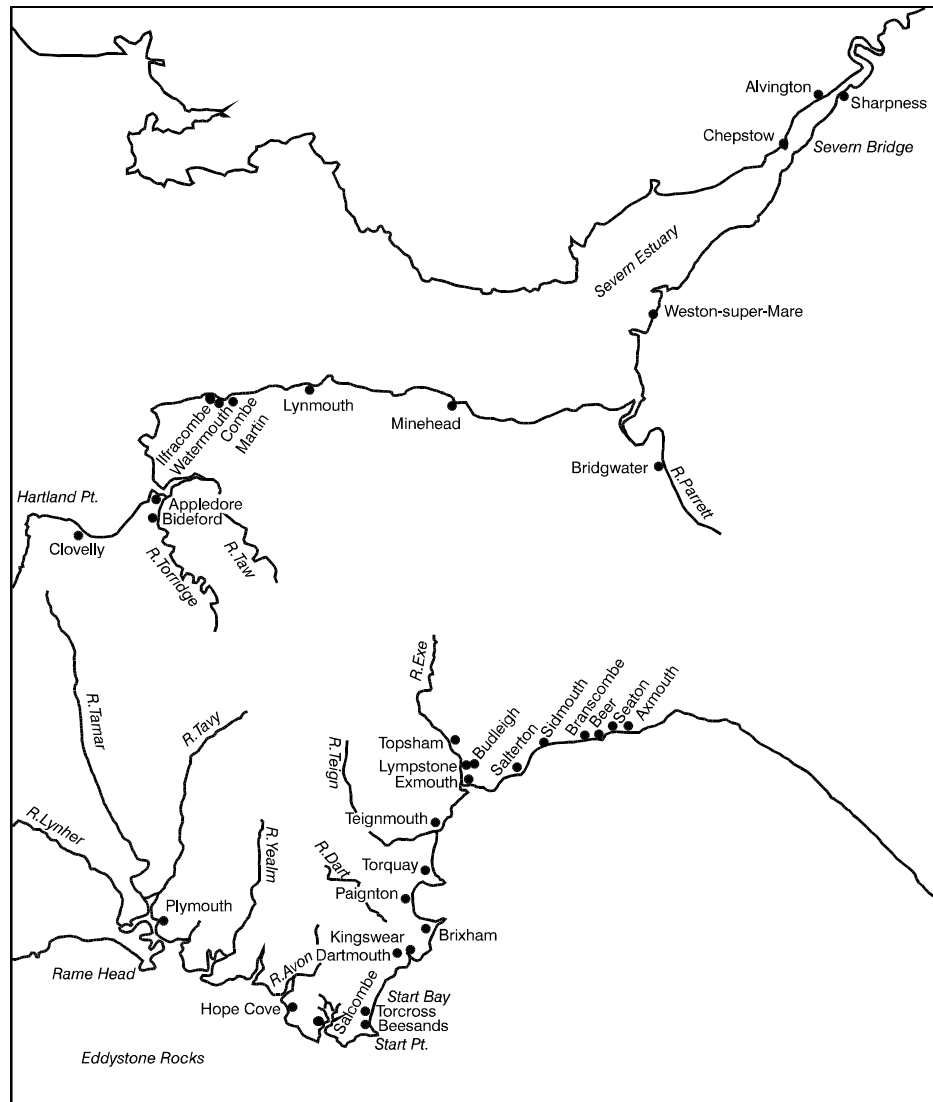
A small sheltered harbour supports a few otter trawlers of 9-11 m that take demersal fish within Lyme Bay all year. During the summer, landings comprise mainly sole, plaice, rays, brill and whiting, and in winter rays, cod, whiting and some flatfish. They sometimes target queen scallops after Christmas when, if the weather is bad, they may work from Brixham. Activity increased here during the 1980s and there are now 10 boats of 6-8 m using pots seasonally for crabs and lobsters or taking out angling parties to wrecks or rough ground. There are 15-20 small (4 m) boats setting nets or 2-10 pots during the summer with about 6 working throughout the year.

### **8.3.13 *Lyme Regis***

Three boats otter trawl for white fish and take by-catches of queen scallops and scallops, and occasionally sprats are taken in pair trawls, although low demand restricts effort. Between 6 and 8 boats set pots for brown crabs and lobsters out to 6 miles offshore and as far east as Portland Bill, with velvet crabs taken as a by-catch. A few of these boats also set nets around wrecks for cod, pollack and ling. A further 10 or so small boats are used casually for potting from many of the neighbouring coves in season, and catches are sold locally or to Portland. Angling charter boats operate during the summer.



## 9. DEVON, SOMERSET AND AVON: Axmouth to Plymouth along the south coast and Clovelly to the Severn Estuary along the north coast (Devon SFC)



### 9.1 Synopsis of current inshore fisheries

This district is characterised by a rocky coast, often with deep water over a sandy bottom close inshore, and by many inlets, and estuaries along the south coast. The local fishing fleet can be split into 3 groups:

1. Offshore vessels the majority of which are based in Brixham and Plymouth.
2. Inshore boats, known as day haulers, as they fish inshore and land every day.
3. A more specialised group of scallop dredgers and beam trawlers that fish inshore for sole and scallops.

The greatest amount of fishing effort from the inshore fishing fleet occurs on the south coast, as it is more sheltered. Most fisheries are very seasonal and the main fishing gear used inshore are pots, nets, longlines and handlines. The brown crab fishery attracts a lot of effort, with landings from Salcombe and Kingswear alone accounting for around 25% of total landings into England and Wales. As well as a large crab fishery, Devon also has a large fishing effort with nets. Most of the estuaries have licensed beach seines fishing for salmon and sea trout. Drift netting is popular for mullet, and (when and where permitted) bass are also taken. Many of the estuaries are bass nursery areas and in order for this to be successful strict measures governing netting and other methods have been introduced to

preserve bass and migratory salmonid stocks: these are generally respected by the fishermen who work the areas concerned.

## **9.2 Information on species targeted, fishing methods deployed and fishing restrictions inshore**

### **9.2.1 Demersal fish (e.g. sole, plaice, turbot, brill, lemon sole, cod, whiting, pollack, ling, conger eel, dory, flounder, ray, monkfish, red mullet, sea bream, gurnard and dogfish)**

Inshore otter and beam trawlers land an array of demersal fish throughout the year, with sole, plaice, rays, turbot and monkfish more commonly landed from September to March. Red mullet and black bream have attracted more interest since the late 1980s following increasing quota restrictions on prime fish. Beam trawlers operating inshore switch between white fish and scallops, although some (without a pressure stock licence) fish exclusively for scallops, landing white fish only as a by-catch, which is restricted to less than 10% of the total catch. Some otter trawlers switch between demersal and pelagic fish during the course of the year depending on markets and abundance of species. A few boats operate in pairs but most in this region choose to operate alone. The byelaws of Devon Sea Fisheries District Committee prohibit boats over 15.24 m fishing for sea fish within 3 miles of the coast (although boats of up to 18.29 m are exempt providing they were fishing before 1991 and continue to be registered in the same ownership). The use of trawl gear has also been prohibited in specified areas to help protect juvenile fish stocks. These protected areas include Start Bay, around Lundy Island and within estuaries.

Nets and longlines are set by the small boats, often in areas inaccessible to the trawlers. Gill and tangle nets are set for sole, plaice, rays, turbot, brill, pollack, cod and spurdogs. Cod nets are more prevalent off the north coast. Nets set around wrecks specifically yield pollack, ling, cod and monkfish. Similar species, and turbot and spurdogs are caught on longlines used in areas where strong tidal currents prevent netting. Fixed nets may be set only where authorised by the Devon SFC so they do not impede the passage of salmon or sea trout. Also, within certain areas nets must be set at least 3 m below the water surface at any state of the tide, unless permission has been granted from the Devon SFC to do otherwise.

### **9.2.2 Pelagic fish (e.g. mackerel, herring, sprat, bass, grey mullet and sandeel)**

A traditional mackerel fishery exists on the south coast of Devon. Following the development of purse seining and pair trawling, an area around the south-west coast was designated for use of handlines only (known as the 'Mackerel Box') under European legislation. This area prohibits all types of netting for mackerel and helps to conserve mackerel stocks (particularly juveniles) and safeguards the handline fishery, which forms an integral part of the inshore fishing industry within the district. The lines are equipped with some 20-30 feathers or similar lures and the fish are landed in prime condition.

Herring and sprats are taken in pair and otter trawls, especially in the south. Bass are caught in gill and seine nets and on handlines, close inshore and, when permitted, in estuaries. Grey mullet are often landed in nets intended for bass. MAFF have identified many areas, principally around estuaries, as 'bass - nursery areas', where bass fishing is subject to seasonal closures. Sandeels are caught in beach seines and light trawl gear and are often sold as bait for bass handlining.

### **9.2.3 Diadromous fish (e.g. salmon, sea trout, eel)**

Seine nets are licensed to take salmon and sea trout from major rivers along the south coast, i.e. the Exe, Teign, Dart, Tavy and Tamar. The salmon fishery in the Severn Estuary involves seine nets, lave nets and putcher ranks, with putcher ranks also used in the River Parrett. In the Rivers Taw and Torridge, licensees have received compensation not to fish as part of a NRA salmon rehabilitation scheme. All salmon fisheries are subject to annual and weekly closure times, which tend to vary according to river and fishing method.

Many rivers, throughout the district, support eel fyke net fisheries usually between spring and autumn. Elver dip nets are used in fewer rivers, the season beginning at the end of the year and lasting until spring.

### **9.2.4 Shellfish (e.g. lobster, brown crab, velvet crab, spider crab, crawfish, shrimp, prawn, scallop, oyster, mussel, whelk, cockle, periwinkle, cuttlefish and squid)**

This coastline supports the largest brown crab fishing fleet in the UK. The potting fleet comprises either vivier-equipped offshore boats, each setting up to 2,000

pots out to the middle of the Channel and often landing their catches into France; or smaller inshore boats that set up to 600 pots, usually within a few miles of the coast. The MLS for brown crabs taken off this coast as defined by Devon SFC byelaws is 140 mm for female crabs and 160 mm for male crabs. Lobsters are targeted virtually around the whole of the coast. The fishery peaks during the warmer months, although pots are still set during the winter in sheltered areas, especially in the south. Velvet, green shore and spider crabs are also landed. Tangle nets are used for crawfish and spider crabs. Prawns are taken in some areas using pots and so are whelks, which are more important in the south.

Scallops are exploited inshore by boats primarily using Newhaven dredges. Scallop dredging increased during the 1980s as new markets were established abroad, high densities of scallops were being found, and some white fish were becoming more scarce inshore and subject to quota controls. Scallops are found on loose shingle and dead shell, and dredges have to be worked repeatedly over these areas in order for the scallops to be collected in the chain bags, which lie behind the tooth bars. Scallops can be harvested all year, although they spawn in the spring and are then of poor quality. Some boats switch to beam trawling for flatfish, especially in spring, when sole, plaice, rays, turbot and brill appear inshore and scallops are in a poor 'spent' condition. Scallop dredging within 3 miles of the coast is restricted to boats under 15.24 m. Queen scallops are primarily taken as by-catch in trawl fisheries.

Pacific and native oysters, mussels, cockles and periwinkles are either cultivated or harvested from natural beds. Oysters are cultivated in many of the larger estuaries, Pacific oysters are preferred as they grow at a faster rate and are not affected by *Bonamia*. Periwinkles and cockles, and to a lesser extent mussels, are gathered by hand.

Cuttlefish and squid have become an important resource to the inshore otter trawling fleet as scallops are becoming less profitable. Many of the merchants and processors based in the larger ports now deal with these species during the summer period when the large beam trawling fleets work further offshore and land their catches elsewhere.

### **9.3 Description of coastal fisheries by port**

#### **9.3.1 *Axmouth (Seaton) and Branscombe***

A small harbour at Axmouth shelters both small yachts and fishing vessels, whereas at Branscombe only a few boats operate from the beach. The majority of the 10 or so fishing boats, all under 10 m, are involved in the crustacean pot fishery and land brown crabs and

lobsters from spring to autumn. Spider and velvet crabs are mainly taken as a by-catch. There is a vivier tank at the port of Axmouth and this is used by the local fishermen. A few boats use otter trawls and fixed nets for demersal fish such as sole, plaice, rays, turbot, dogfish and whiting, occasionally mid-water trawling for sprats in autumn. Nets are sometimes used to supply bait for pots. The bass fishery attracts a lot of hobby fishermen and commercial boats charter angling trips.

#### **9.3.2 *Beer***

Ten boats are winched up on to a beach within a small cove. Most boats (all under 10 m) set up to 100 pots each for brown crabs, lobsters and take by-catches of velvet and spider crabs. Some set nets for both demersal and pelagic fish; cod and whiting are targeted in the winter, flatfish in the spring and herring in the autumn. Nets are also set over wrecks for a variety of fish including cod, pollack, bass, ling and conger. The one otter trawler that operates from here primarily lands flatfish, rays and dogfish from spring and cod, whiting and sprats from autumn. The fleet is becoming more dependant on chartered angling trips for tourists and angling clubs. The fishermen will often haul their gear early in the morning before they depart for their day charter trips which they will operate throughout the summer period.

#### **9.3.3 *Sidmouth***

Two full-time boats of 6-8 m operate a whelk fishery setting over 400 pots each. Landings peak during the summer when they can expect to land between 5-6 tons per week, most of which is exported. These boats and a few part-time ones also set pots for crustacea from spring through to autumn.

#### **9.3.4 *Budleigh Salterton***

The predominantly part-time beach fleet consists of 4-5 m boats that set pots and to a lesser extent nets.

#### **9.3.5 *Exmouth***

This large, well sheltered harbour situated in the estuary of the River Exe, accommodates all the larger fishing vessels and most of the under 10 m boats, working from this estuary. Eight boats of up to 15 m use otter and beam trawls, set pots and dredge for scallops. In addition to white fish, other non-quota species such as squid and cuttlefish are landed especially during the summer. The sprat fishery begins in autumn and involves most of the local fleet, with each boat landing up to 10 tons per trip to a local processor - who often has to limit the amount he takes so as not to exceed demand. The sprats are pickled in brine and exported in barrels. Eighteen licences are issued from Lymington to

Topsham for the use of beach seines to catch salmon and sea trout in the Exe estuary. The fishery begins 14 February in the lower reaches of the estuary and 16 April in the upper reaches, ending 18 August in the whole of the estuary. Salmon provide the mainstay with very few sea trout taken. Some licensees turn to bass and mullet or herring netting at the end of the summer. Bass are also caught on handlines baited with sandeels that are also caught in the estuary. The Exe estuary has been designated a 'bass - nursery area' by MAFF and fishing for this species by boat is prohibited between 1 May and 31 October.

Mussels and Pacific oysters are cultivated within the Exe estuary, occupying several people. Unfortunately, high water temperatures during the end of the summer, can trigger a second spawning among mussels, rendering the quality of the meat poor until the following year. Juvenile Pacific oysters are re-laid into the estuary. A few boats set pots for crustacea and whelks.

### **9.3.6 Teignmouth**

The estuary contains a large bay which supports numerous industries including dredging and merchant shipping companies, as well as being of recreational importance containing many yacht moorings. The 11 trawlers that are registered here spend most of their time fishing from Brixham using beam and otter trawls for demersal fish, pair trawls for sprats and scallop dredges. There are 12 open boats of 4-6 m that use a variety of fishing methods such as netting for bass, mullet, sandeels, salmon and sea trout, potting for crustacea and whelks, handlining for bass and gathering periwinkles by hand. This estuary has been classified a 'bass - nursery area' by MAFF and fishing for bass from a boat has been prohibited from 1 May to 31 October. Ten salmon licensees seine net for salmon and sea trout from 15 March to 31 August.

Mussels and oysters are cultivated in the bay; juvenile mussels being obtained from the River Exe and juvenile oysters from hatcheries. Mussels farmed in the Teign rely on mussel seed from elsewhere, and these beds are covered by the Teign mussel fishery order which encompasses 385 acres of the seabed. Pacific oysters began to be cultivated here in the late-1970s and this is now one of the most important Pacific oyster growing areas in England and Wales. Hatchery-bred seed are grown in bags laid on trestles, near low water. One of the main problems facing mollusc cultivation in this bay was the poor water quality caused by sewage effluents and agricultural run-off. MAFF included the Teign Estuary in a priority list for improving water quality. The river has undergone an extensive cleaning operation and a new sewage outfall pipe-line has been laid and extends out to sea. As part of a UK monitoring programme the Devon SFC fishery officers sample the shellfish during the summer for paralytic shellfish poisoning (PSP).

### **9.3.7 Torquay**

This large harbour is mainly used by pleasure craft with only 3 local trawlers based here. In autumn, 2 Scottish boats use the harbour, from where they pair-trawl for sprats, mackerel and horse mackerel. There are several small open boats under 10 m that are involved in netting and potting on a seasonal basis. A few charter angling boats work from this popular tourist resort, the larger boats offering pleasure cruises along the coastline.

### **9.3.8 Paignton**

A small tidal harbour accommodates up to 15 boats, all under 10 m and most fishing on a part-time basis. The majority set pots for brown crabs and lobsters, from spring through to autumn. A few set nets for demersal and pelagic fish and some charter angling trips; a side line that has become increasingly important for commercial fishermen since the 1980s.

### **9.3.9 Brixham**

One of the largest ports in the south-west supporting an offshore fleet of beamers and otter trawlers, and hosting a large daily fish market. The Devon Sea Fisheries Office and a MAFF office are both situated here. This port has a traditional trawling background and during the early-1980s, many of the fishermen bought new boats and engaged in beam trawling, which is a more effective gear type for targeting flatfish and can be worked on much rougher ground compared to otter trawls. Perhaps a dozen of the 30 or so beam trawlers of between 15-29 m operating out of this port periodically fish inshore, several of which have no 'Pressure Stock Licences' and are virtually confined to scallop dredging which they can carry out up to the 3 mile limit. Some of the inshore beam trawlers switch to scallop dredging, usually in the periods of quota restrictions or when flatfish are scarce inshore during winter. There are around 40 otter trawlers over 10 m registered in Brixham, Teignmouth and Exmouth, most being based at Brixham at one time or another. They work within Lyme Bay and west towards Eddystone Rocks, the majority on a daily basis, often within 12 miles of the shore. In addition to white fish, other non-quota species are landed, including cuttlefish, squid, red mullet and sea bream. Several of the Brixham boats mid-water trawl for sprats in winter, when they are joined by Scottish pair trawlers that base themselves for this period in Torquay. Several of the smaller trawlers set nets for species such as cod, pollack and ling, often around wrecks. A few boats concentrate on the pot fishery, setting up to 1,000 pots in the area, mainly for brown crabs out to 12 miles offshore. Another 10 or so boats under 10 m use pots, in addition to gill nets, tangle nets, handlines and, in some cases, trawls.

### **9.3.10 Kingswear and Dartmouth**

Kingswear is mainly a brown crab port with around 30 boats setting pots. Together with the potting fleet in Salcombe, this area provides the main brown crab fishery in the UK. These fishermen are represented by South Devon Shellfishermen's Association and the Shellfish Association. Around 20 boats are over 10 m and set between 800 and 1,500 pots out to 40 miles offshore, often hauling on alternate days in order to save fuel. Some of these boats are equipped with live storage facilities and often land directly to the continent. The smaller boats fish less than 600 pots out to Start Point and a handful of open boats set 50-100 pots near the mouth of the River Dart. In addition to brown crabs, spider and velvet crabs are also retained and the smaller boats set pots for lobsters. Competition for ground (off Start Point) between pot and trawler men has led to the introduction of agreed designated potting zones. These areas are either for pots only or are shared on a seasonal basis.

Pacific oysters are cultivated within the estuary and nets are used both in the estuary and outside it for bass, mullet and sandeels. The estuary has been designated a 'bass - nursery area' by MAFF and bass fishing from a boat is only permitted between 1 January and 30 April. Eighteen licensed seine nets take salmon and sea trout in the Dart river and estuary. The salmon fishery begins 15 March and ends 18 August, and is closed during the week between 0600h Saturday and 0600h Monday. Total annual landings of salmon exceed that of sea trout, although sea trout often predominate in landings during the early part of the season, i.e. April and May.

### **9.3.11 Torcross and Beesands**

There are a few beach boats, all under 8 m, which work from the shore. They set pots for crabs and lobsters and nets for demersal and pelagic fish, and handline for mackerel. Nets set around wrecks yield cod, pollack, ling, and conger.

### **9.3.12 Salcombe**

Situated at the mouth of Kingsbridge estuary, Salcombe supports a fleet of around 15 potting boats, half of which are over 10 m. Some of the larger boats land in France, whilst the rest of the fleet lands to store pots in the port. Numbers of pots fished vary greatly depending on the size and capability of each vessel, but generally the larger boats set over 1,200 pots, and the inshore fleet set between 200-650 pots each. Brown crabs provide the mainstay, although lobsters, spider and velvet crabs are also important to the inshore boats. The traditional inkwell pot is the most common of the traps used, although there are parlour pots being used inshore. Like the potters of Kingswear the Salcombe fleet also has

problems with trawlermen, despite areas designated for potting, especially when visiting trawlers dredge the areas for scallops. A line of pots may comprise of up to 100, each valued at £50, therefore a trawl cutting through a string of pots can prove very costly. Several inshore boats set tangle nets for flatfish, fyke nets for eels, gill nets for cod, whiting and pelagic fish. The harbour has been designated a 'bass - nursery area' by MAFF and fishing for bass from a boat is prohibited from 1 May to 31 October. The estuary is also used for the cultivation of Pacific oysters, native oysters and mussels. Natural stocks of native oysters, mussels, cockles and periwinkles are harvested by hand.

### **9.3.13 Hope Cove and the River Avon**

A small cove at Hope gives shelter for a few fishing boats. Effort has decreased over the years, with only 2 boats of 6-7 m now operating a full-time pot and net fishery. The River Avon occupies a few people growing mussels and oysters, and supports 1 salmon fishery, although the licence has been purchased by NRA South Western region and is not currently used. The Rivers Avon and Yealm have been identified as important bass nursery areas and MAFF have prohibited boat fishing for bass, in both, between 1 May and 31 December.

### **9.3.14 Plymouth**

This busy port is used by commercial, recreational and naval boats. The resident fishing fleet (also comprising of boats registered elsewhere) regularly amounts to over 50 boats and fishing activity can be split into offshore and inshore. The offshore fleet is made up of boats using otter trawls, beam trawls and scallop dredges. The inshore fleet uses a variety of methods including trawls, dredges, gill nets, tangle nets, handlines, longlines and pots. Around 10 inshore boats of 9-14 m use trawls and dredges from a few miles to 20 miles offshore. The majority of boats land their catches into the daily fish market. The inshore otter trawling fleet targets white fish for most of the year; in addition to traditional species such as plaice, whiting, lemon sole, turbot, and monkfish, other non-quota species have become more important, e.g. red mullet and cuttlefish. Pilchards are occasionally targeted in winter and several trawlers also use other fishing gear such as nets and lines during the course of the year. Around a dozen boats dredge for scallops within 14 miles of the coast, and some switch to beam trawling for flatfish during the spring. Scallop dredging has become more popular since the 1980s as quota restrictions have reduced the amount of white fish that can be landed. Some boats have sold their pressure stock licences and are totally depend on scallops, landing white fish as a by-catch. The inshore fleet concentrate their efforts on grounds within 14 miles of the coast, the Eddystone Rocks area being very productive.

Over 20 boats set pots for crabs and lobsters inshore of the Eddystone Rocks, most in association with other static fishing gear, such as nets and longlines. Plymouth has a handline fishery for mackerel involving around 10-20 boats which peaks in autumn when mackerel appear off the coast and remain for a few months. The 'Mackerel Box' helps to protect the commercial handline fishermen. Without this restricted area the small scale handline fishermen would find it very difficult to compete against the large pelagic boats. In addition to mackerel, handlines are also used for bass, although bass fishing in the Plymouth river estuaries is prohibited as the area has been designated a 'bass - nursery area' by MAFF. In 1994, 25 licences were issued for seine netting for salmon and sea trout in 3 estuaries leading into Plymouth Sound; Tavy (5), Tamar (14), Tavy/Tamar (1) and Lynher (5). The fishery begins 2 March ending 31 August in all 3 rivers, and fishing is prohibited between 0600h Friday and 0600h Monday during the season.

### **9.3.15 Clovelly**

Four full-time and several part-time boats of 4-6 m set pots and nets within a few miles of the coast. Fishing activity outside this sheltered bay on the north coast is restricted during the winter. The natural difficulties imposed by the weather and big tides result in many boats being hauled ashore during this period for an annual refit. Each boat fishes between 100 and 200 pots from May to October, and lobsters provide the mainstay of the catch, although brown and velvet crabs are also important resources. Pot bait is usually obtained from trawler fleets elsewhere and consist of species such as gurnard, mackerel or dogfish. Conger eels are sometimes caught in the pots and are subsequently sold. A high proportion of the crustacea landed is sold to local hotels and restaurants. Drift nets with a mesh of around 50 mm are used to catch herring, usually from October through to the end of the year.

### **9.3.16 Appledore and Bideford**

Appledore is situated at the joint mouth of the Torridge and Taw estuaries and Bideford a few miles up the Torridge estuary. The number of fishing vessels using both quays has increased over the last 20 years, to 7 otter trawlers and around a dozen boats of 4-7 m that use gill nets, lines and pots (the state of the tide often dictates where the boats berth). Two of the trawlers are 10-12 m whilst the remainder are all under 10 m. They all fish on a daily basis in the Bristol Channel (the 2 larger boats occasionally fish for up to 36h in fine weather) landing a mixed demersal catch throughout the year. Cod and whiting feature in the greatest quantities in winter, whilst flatfish become important from spring through to summer, particularly sole, lemon sole, plaice, rays, turbot and brill. In addition to trawling some boats set nets over wrecks or hard ground, often in areas

inaccessible to trawls, and are checked when steaming out to the trawling grounds.

The smaller boats set nets, lines and pots. Nets and longlines take demersal fish including cod, whiting, plaice, sole, turbot, rays, pollack, and conger eel with crustacea sometimes providing an important by-catch in net fisheries. A small amount of drift netting for herring occurs during autumn and for bass during spring and autumn. Pots are set for lobsters and crabs, and handlines are used for catching bass and mackerel during the summer months. Some of these boats charter angling trips during the summer. Parts of the Torridge and Taw estuaries have been designated a 'bass - nursery area', and fishing for bass from a boat is prohibited between 1 May and 31 October. A total of 14 salmon licences are usually granted annually for the use of seine nets in the Taw and Torridge, though, since the late-1980s licensees have been compensated not to fish as part of a NRA salmon rehabilitation scheme. Natural stocks of mussels, oysters and cockles are exploited in the common estuary on a small scale and mussels and Pacific oysters are cultivated.

### **9.3.19 Ilfracombe**

A sheltered harbour subject to large tides supports 5-7 boats of 6-12 m, 3 or 4 of which either set pots or otter trawl, 2 boats do both. Most of the pots are brought ashore in October/November. Four boats set pots principally for brown crabs and lobsters. Two or 3 are over 10 m and set up to 800 pots to over 20 miles offshore, often around Lundy Island. Other methods undertaken at this port include longlining and netting. Longlines are used in areas where the tidal currents are too strong for nets and the seabed too rough for trawling, taking conger, dogfish, rays, pollack and cod. Netting is responsible for most catches of herring and bass. Six boats are involved in chartering angling trips in summer for mackerel and shark. Bass and mackerel are caught by hobby and commercial anglers.

### **9.3.20 Combe Martin and Watermouth**

Up to half a dozen seasonal boats fish small numbers of pots for lobsters when the weather is favourable.

### **9.3.21 Lynmouth**

This sheltered tidal harbour accommodates 2 boats of 6-8 m that set pots, principally for lobsters close to the shore, the odd net for herring or pot bait, and handline for bass and mackerel. There is one licensed fixed engine for salmon and sea trout on the River Lyn, which operates between 1 April and 31 August. Catches are sometimes sold to local hotels and restaurants.



### **9.3.22 Minehead and Bridgwater**

Two small part-time boats work out of Minehead setting pots and taking out angling parties. At Bridgwater, within the estuary of the River Parrett, there are two short ranks (ca. 100 each) of salmon putchers operating from 17 April to 29 August and there is an elver fishing station just below Bridgwater. Dip nets are used to catch elvers when they begin their immigration during the winter and early spring. On Stert Flats, to the east of Hinkley Point, 2 fishermen maintain ranks of about 100 fixed stowe or stake nets. These are intended to catch shrimps, but also catch a small quantity of other species such as mullet, rays and sole. From July to October one, occasionally both, of the stakenetsmen also erect a hang net which is a 800 m long curtain of netting around 3 m high that traps a variety of fish on the falling tide. An eel farm is located alongside Hinkley Point power station, utilising their warm water effluent to raise eels from wild-caught elvers. Several part-time boats set pots and nets close inshore, between Highbridge and Burnham-on-Sea, and molluscs are gathered by hand.

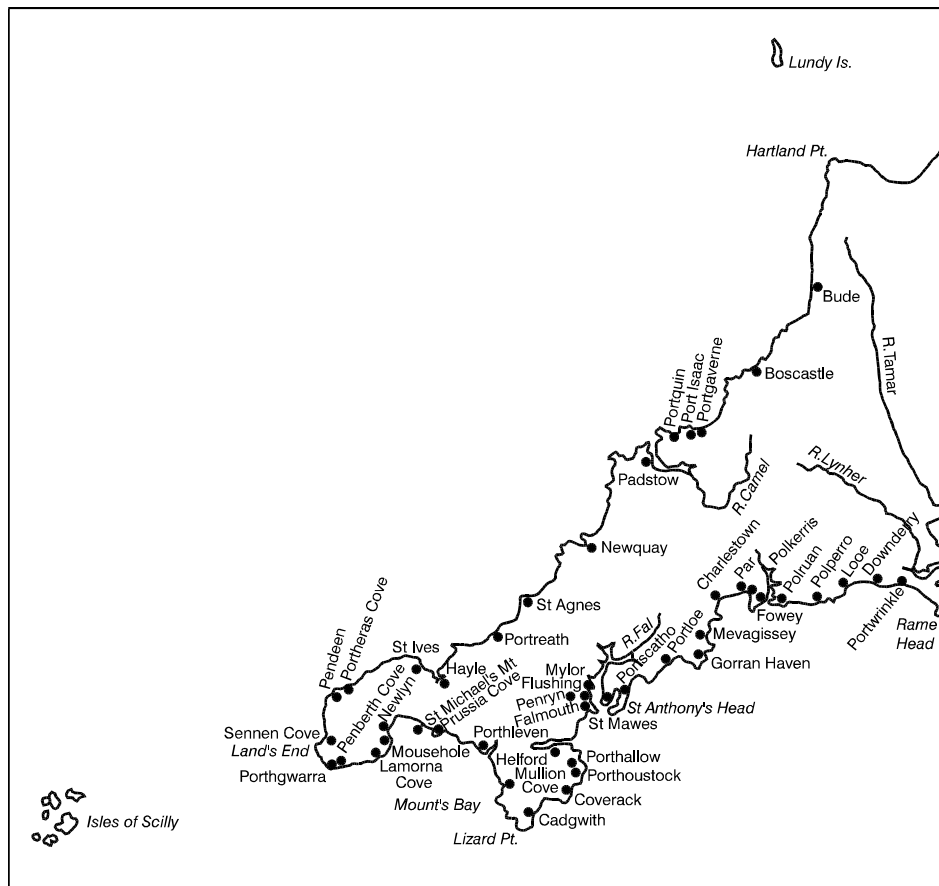
### **9.3.23 Severn Estuary (Weston-super-Mare to Sharpness, Sharpness to Chepstow)**

Salmon, and to lesser extent sea trout, are taken in the Severn Estuary. The licensed fishery comprises 5 seine nets, 40 (full and half season) lave nets and 14 fixed engines (e.g. putchers). Seine and lave nets are used between 1 February and 31 August whereas fixed engines are fished between 16 April and 15 August. Salmon putchers are found at the south-west and north-east ends of the Severn Bridge at Aust and Beachley, also at Alvington below Lydney Lock (opposite Berkeley). Dip nets are used to catch elvers from around November to March. The principal fisheries are in the upper Severn Estuary, above Sharpness. There is a lot of angling activity off Weston-super-Mare, particularly for cod in winter and bass in summer. Ragworms used for angling bait, are taken along the low water marks off Weston-super-Mare.



## 10. CORNWALL: Rame Head to Bude

*(Cornwall SFC and Isles of Scilly SFC)*



### 10.1 Synopsis of current inshore fisheries

Subject to varying degrees of exposure, water currents and temperature from the Atlantic Ocean in the west to the more sheltered English Channel in the south, this coast provides a wide range of resources and most fisheries are very seasonal; for example, this area is the northerly limit for species such as red mullet and John Dory and the southerly limit for species such as cod. Small day-boats proliferate along the south coast, the majority setting pots for crabs and lobsters, using longlines for ling, conger eels, monkfish, dogfish, pollack and turbot, handlines for mackerel and bass, and use a variety of gill and tangle nets for pollack, rays, turbot and brill, with bass and mullet taken in estuaries. Oysters and mussels are hand-gathered or dredged from natural and

cultivated beds. Most of the inshore trawlers are based in Newlyn and target demersal fish and scallops, although since the late-1980s dwindling catches of traditional species such as plaice, cod, mackerel and sole has resulted in more effort being directed towards non-quota species such as red mullet, sea bream, lemon sole, cuttlefish and squid. Fish merchants and processors are also becoming more dependent on these new species as the local beam trawlers are tending to fish further afield and land their catches elsewhere. Anchorages on the north coast are limited by exposure and shallow estuaries and the fleet there consists mainly of boats under 12 m. Since the introduction of synthetic gill and tangle nets, local resources are more heavily exploited than in the past as fish are taken on wrecks and rough ground. Potting activity is highest during the warmer months with pots set out to 30 miles from the shore for crabs, lobsters and crawfish.

## **10.2 Information on species targeted, fishing methods deployed and fishing restrictions inshore**

### **10.2.1 *Demersal fish* (e.g. sole, plaice, turbot, brill, lemon sole, ray, cod, whiting, pollack, ling, dogfish, conger eel and red mullet)**

Gill nets, with a mesh size of between 120 and 160 mm are set over rough ground and wrecks for cod, pollack, ling, conger eels, rays and dogfish (e.g. spurdogs). Small-meshed (<120 mm) tangle nets are set for sole and plaice on smooth grounds, whereas larger ones (>200 mm) are set for rays, turbot and brill. Trammel nets are also used but not to the extent of gill or tangle nets. Boats of 6-8 m can set over 5,000 m of net although the average is probably in the region of 1,500 to 3,000 m. Netting restrictions introduced by the NRA and Cornwall SFC to protect salmon and sea trout mean that in many areas (usually around estuaries) nets can only be used providing they are set 3 m below the surface of the water at any state of the tide. Despite the apparent decline in the use of longlines this method is still important in areas which are inaccessible to trawlers and where strong tidal currents prevent the use of nets. Longlines with between 1,000 and 10,000 hooks are used to catch cod, pollack, ling, rays, conger eels and dogfish.

Otter trawlers target more seasonal species with cod and whiting landed from autumn through winter and in spring flatfish feature in greater quantities. As mentioned above, non-quota species such as red mullet, sea bream and lemon sole are becoming increasingly important. Inshore beam trawlers target flatfish for most of the year, some may switch to scallop dredging during the summer and in winter. Trawling is intense in some inshore areas, for example between Looe and Lizard Point. Trawling by boats over 18.3 m is prohibited within 3 miles of the coast under a Cornwall SFC byelaw.

### **10.2.2 *Pelagic species* (e.g. mackerel, bass, herring, sprat, mullet and sandeel)**

Handlining is undertaken by the majority of small open fishing boats operating along the south coast from autumn through to spring when shoals of mackerel appear nearshore. During the summer, mackerel shoals appear off the north coast where they are also taken on handlines. Daily landings can amount to 200 stones per man when using between 20-40 hooks on each line.

Under European legislation, netting for mackerel has been prohibited in an area around the south-west tip of Cornwall (known as the 'Mackerel Box') which was introduced to conserve mackerel stocks.

Herring and sprats are taken in relatively small quantities by trawlers and small boats using drift nets, although poor demand has limited effort. Pilchards and horse mackerel are taken within the Mackerel Box by industrial trawlers, most of which are foreign. Bass and mullet are caught in fixed and drifted gill nets often in estuaries, although netting restrictions issued to protect salmonids and the designation of several 'bass - nursery areas' by MAFF have prevented this fishery from taking place in many estuaries. Bass are also caught on handlines and longlines set by the smaller boats using sandeels as bait, and the increased popularity of this fishery, amongst both commercial and recreational fishermen since the 1980s has led to the development of a sandeel fishery involving the use of beach seines and light trawl gear close to the shore. A SFC byelaw stipulates a MLS for bass as 37.5 cm, which only applies out to 3 miles offshore at present.

### **10.2.3 *Diadromous fish* (e.g. salmon, sea trout and eel)**

Along the south coast, the Rivers Tamar, Lynher and Fowey support licensed salmon seine net fisheries and on the north coast licensed drift nets are used in the River Camel. Both salmon and sea trout are taken in all rivers during the season which begins 2 March ending 31 August.

Fyke nets are set for eels in most of the larger rivers and estuaries, from spring through to autumn.

### **10.2.4 *Shellfish* (e.g. lobster, brown crab, velvet crab, spider crab, crawfish, cuttlefish, squid, scallop, oyster, mussel, whelk, mussel, cockle and periwinkle)**

Pots are set along virtually the entire coast for lobsters close to the shore and brown crabs generally further offshore. Local tourism provides a good market for lobsters and brown crabs during the summer months which attracts many part-timers into the fishery. The lobster fishery continues through winter when pots set in sheltered areas also yield an important by-catch of velvet crabs which are exported. Spider crabs are also caught for the export market using pots and tangle nets, with peak landings made during spring when spider crabs apparently form dense spawning aggregations

nearshore. Tangle nets are also used for lobsters and the much sought after crawfish. Boats fishing for lobsters, crawfish and crabs require a permit issued by Cornwall SFC which are not limited by number although fishermen have to submit catch and effort data. Cornwall SFC prohibit boats over 15.24 m (50 ft) fishing for shellfish within their district.

Scallops are harvested from inshore grounds using Newhaven dredges. A small proportion of vessels are under 15 m and are therefore allowed to dredge up to the shore. Most of the boats which use dredges are involved in other fisheries during the course of the year and periodically switch to scalloping when white fish are either scarce or quota limits restrict landings or in winter when the weather prevents them from trawling for white fish further offshore. Larger, more efficient vessels dredge scallop beds further offshore, sometimes within 12 miles of the coast. Increasing quota restrictions on white fish and the expansion of markets abroad have helped the development of the scallop fishery since the mid-1970s. Queen scallops are sometimes taken as a by-catch in demersal trawls.

Cuttlefish and squid are landed mainly by otter trawlers during the warmer months and as they are not restricted by quotas their importance to the inshore fleet and local merchants and processors has increased.

Oysters and mussels are cultivated in a few estuaries. Native oyster fisheries were decimated by *Bonamia* during the 1980s and no commercial fisheries remain. Pots are set locally for whelks and cockles and periwinkles are hand-gathered sporadically along the coast.

## **10.3 Description of coastal fisheries by port**

### **10.3.1. Portwrinkle and Downderry**

Six boats of 4-5 m set nets for sole, plaice, rays, turbot and brill within Whitsand Bay from spring through to summer. Pots are also set for lobsters and crabs during this period and fishing activity in winter is minimal. A licensed salmon fishery takes place in the Rivers Lynher and Tamar, involving 5 and 15 seine nets respectively. Salmon and sea trout are taken from 2 March to 31 August, the fishery being closed between 0600h Friday and 0600h Monday during the season. Both rivers have been designated 'bass - nursery areas' by MAFF and bass fishing from a boat is prohibited all year.

### **10.3.2 Looe**

Twenty-eight otter trawlers of 9-15 m operate mainly on a daily basis, the larger boats fishing out to 40 miles offshore, but the majority fish within 12 miles of the coast between Eddystone Rocks and Lizard Point. Cod,

whiting and lemon sole make up the bulk of catches during the colder months and flatfish, cuttlefish and squid become more important from spring through summer. Eight or ten vessels sometimes pair-trawl in the area, taking good catches of mackerel, herring and whiting, with a few prime fish (e.g. lemon sole, bass or monkfish). Five or six trawlers dredge for scallops in summer and use handlines for mackerel from September until the arrival of visiting trawlers and purse seiners, when prices invariably fall and fish become more scattered.

Eleven smaller boats use nets and handlines, a few of which pot, and an additional 18 or so use handlines for mackerel and may charter angling trips. The mackerel handline fishery begins in autumn when shoals of mackerel appear inshore and catches can be as high as 200 stones per man per day. Handlines are also used for squid during the summer. Gill nets are set close inshore for cod in the winter and flatfish such as sole, turbot and brill as well as rays from spring through summer. Netting for sandeels and eels takes place in the Looe estuary. Tourism is important to this port, in terms of demand for fish and chartered angling trips, which centre on mackerel, blue shark and wreck fishing.

### **10.3.3 Polperro**

Eleven boats of 6-11 m set gill and tangle nets for roundfish and flatfish in season and 5 of these boats also set longlines for pollack, ling, rays and conger eels, often when conditions such as tidal currents prove too unfavourable for netting. Two boats of 10-12 m trawl for whiting, plaice, lemon sole, sole, rays and cod within 12 miles of the coast virtually all year, one of which periodically dredges for scallops. A few small open boats use handlines.

### **10.3.4 Fowey/Polruan**

These 2 ports are on either side of the Fowey Estuary and most vessels are based in Polruan, where 2 boats under 12 m and 3 over 12 m dredge for scallops and beam trawl. Some of these boats have no pressure stock licences and depend entirely on scallop dredging which has become increasingly popular since the 1980s as white fish landings have fallen inshore (as a result of a scarcity of fish and quota restrictions), and high densities of scallops discovered off this coast and new markets found abroad. In addition to scallops, they also land white fish as a by-catch.

Fourteen smaller boats from both ports use nets and longlines for cod, conger eels and ling, and pots for lobsters and brown crabs, some on a part-time basis. Visiting scallop-dredging boats are sometimes blamed for towing away static gear. Four salmon licensees use seine nets to catch salmon and sea trout in the Fowey estuary, from 2 March to 31 August. MAFF has desig-

nated the Fowey Estuary a 'bass - nursery area' and forbidden bass fishing from a boat between 1 May and 31 December. Part-time fishermen often find it difficult to sell their catch as some of the markets are owned by fishing co-operatives who only deal with fish caught by their members.

### **10.3.5 Polkerris**

One part-time boat uses nets and longlines for cod, conger eels, ling and pollack, often setting gear around wrecks, and occasionally set nets for herring in season.

### **10.3.6 Charlestown and Par**

One full-time 6 m vessel works 150 pots, and 2 part-time potters fish for crabs and lobsters and seasonally use nets for monkfish and rays. Two small full-time potting/netting boats work out of Par setting their pots locally for lobsters and crabs. The port has a small smoking plant dealing mainly with mackerel.

### **10.3.7 Mevagissey**

Six otter trawlers of 9-14 m, 2 of which pair-trawl, land demersal fish virtually all year. Cod, whiting, squid and lemon sole make the bulk of landings in winter and, in spring, lemon sole, squid, whiting, plaice, turbot, brill and rays are targeted. During the summer, those boats which carry on trawling are more dependant on non-quota species such as red mullet, cuttlefish, lemon sole and squid. One boat of 11 m goes scallop dredging in spring and summer. Around 14 boats of 5-17 m use nets, lines and pots on a full-time basis. Four or five of the larger netting boats work out as far as 70 miles offshore, the rest of the fleet work within 30 miles of the coast. Gill and tangle nets are set for an array of white fish in season, one larger boat fishes further afield on the hake fishery to the south of Ireland, and also on the tuna fishery off the shelf edge south-west of the Celtic Sea. Nets set inshore also take an often important by-catch of crustacea. Pots are set for brown crabs and lobsters, with some of the larger boats using over 500 pots each. Apart from the trawlers, the majority of boats fish handlines for mackerel during the autumn and through winter in an area south-east of the Eddystone Rocks to Lizard Point. An additional 20 or so mainly part-time boats, all under 10 m, use a variety of methods during the year, although most use handlines for mackerel. Many boats charter angling trips, especially during the summer when the harbour is popular with tourists.

### **10.3.8 Gorran Haven**

Four part-time boats of 4 m use nets and pots from spring through to autumn.

### **10.3.9 Portloe**

Nine boats fish from this small cove, 4 on a regular basis. Four boats set between 100 and 300 pots each out to a few miles offshore for brown crabs and lobsters, with by-catches of velvet and spider crabs. Gill and tangle nets and occasional longlines are set for turbot, rays, monkfish, pollack, ling, cod and spurdogs, and handlines are used for bass and mackerel in season.

### **10.3.10 Portscatho**

Two part-time boats of less than 7 m work pots and nets.

### **10.3.11 St Mawes**

A total of 5 boats under 15 m dredge for scallops within 12 miles of the coast, between Looe and Lizard Point. A few of these boats use trawls for demersal fish between autumn and spring, and occasionally pair trawl for sprats in autumn. Two smaller boats set nets and pots on a seasonal basis and work lines for bass off St Anthony's Head. The Percuil River has been designated a 'bass - nursery area' by MAFF and fishing for bass from a boat is prohibited from 1 May to 31 December. Native oysters are cultivated in the river, but stocks are low since the outbreak of *Bonamia* during the 1980s.

### **10.3.12 Mylor**

Eight boats use nets and several set pots, the largest of which (over 12 m) rarely operates inside 12 miles fishing the deep water grounds to the south-west for hake. The rest of the fleet is under 10 m and land cod, pollack and spurdogs in gill nets, and rays, turbot and monkfish in tangle nets. One boat sets up to 800 pots for lobsters and brown crabs, whilst 3-4 use between 100-300 each for lobsters and brown and velvet crabs.

### **10.3.13 Flushing**

Two boats of 12-15 m trawl for demersal fish and dredge for scallops. They are joined by 6 boats under 10 m using nets and pots on a part-time basis.

### **10.3.14 Penryn**

A small quay is used by 6 boats, 2 of which have sold their pressure stock licences and fish within 20 miles of the coast for scallops plus an important by-catch of white fish. The remaining 4 boats set nets and longlines for demersal fish and handline for mackerel during the winter.

### **10.3.15 Falmouth**

Out of the 20 or so boats working from this port, 7 of 10-20 m either trawl for white fish or dredge for

scallops (a few boats do both) and the remaining boats under 10 m use nets, longlines, pots and handlines. The trawlers principally land whiting, cod, lemon sole and plaice in winter and plaice, sole, turbot and brill, from spring through to autumn, plus cuttlefish and squid in summer. A couple of boats also pair up to trawl for sprats during autumn. Three or four boats set longlines, one of which works 3 lines (each comprising 1,000 hooks) out to 20 miles offshore taking mainly conger eels, ling, pollack and cod. The majority of static gear boats set pots for lobsters and brown crabs, nets for flatfish and handlines for bass and mackerel. Some also charter angling trips. The upper reaches of the Fal Estuary have been designated a 'bass - nursery area' by MAFF and bass fishing is prohibited from a boat between 1 May and 31 December. There is a native oyster fishery situated in the River Fal, which employs up to 70 men who harvest the oysters by hand or using a sail-powered boat. The fishery is managed through the Truro Port Fishery Order (1936).

### ***10.3.16 Helford***

Out of 10 boats landing into this fishing village, 2 full-time vessels over 10 m set gill nets and 8 under 10 m boats use pots, nets and handlines from spring through to autumn, 4 on a part-time basis. The 2 larger gill netters may work trips of up to 4 days in summer targeting hake and monkfish well offshore and spend the rest of the year setting nets for a variety of demersal fish within 30 miles of the coast. The smaller operators fish within 8 miles of the coast using a combination of nets and pots during the summer and nets and lines during the winter. The potting boats catch mainly brown crabs, spider crabs and some lobsters, although one boat targets velvet and shore crabs. Handlines are used for bass from spring and for mackerel in the autumn. Bass fishing from a boat in the Helford River is prohibited between 1 May and 31 December as this area has been designated a 'bass - nursery area' by MAFF. Native oysters were cultivated in the Helford Estuary until the outbreak of *Bonamia* during the 1980s, however, mussels are now being cultivated.

### ***10.3.17 Porthallow and Porthoustock***

Twelve boats under 10 m from Porthallow and up to 15 from Porthoustock, all of 4.5-7 m, predominantly use handlines for bass and mackerel. Bass are caught around the Manacles, a rocky outcrop less than a mile offshore, from spring through to autumn. Several boats set longlines for conger eels, ling, pollack and rays, tangle nets for turbot, rays and brill, and pots for brown crabs, lobsters and velvet crabs from spring through to summer.

### ***10.3.18 Coverack***

Five boats of 5-7 m fish pots and nets on a full-time basis from spring through to autumn. Fishing activity is minimal during the winter as fishing gear is brought ashore to avoid damage. They are joined by around 6 part-timers that work similar gear, plus handlines.

### ***10.3.19 Cadgwith***

Seven static gear fishing boats of 5-7 m fish along this rocky coastline out to a few miles offshore. The pot fishery provides the mainstay with each boat setting up to 300 pots and landing lobsters, brown and velvet crabs. The lobster fishery peaks during May and August, and brown crabs are targeted from spring through autumn. Nets are set in winter for cod, pollack and whiting and then for flatfish in spring. Nets are sometimes used to catch crustacea, especially crawfish and lobster. A few boats handline for mackerel.

### ***10.3.20 Lizard Point***

Four part-time boats of 4-5 m set a few pots and nets.

### ***10.3.21 Mullion Cove***

Three full-time and 2 part-time beach boats principally pot for lobsters and crabs. One full-time boat sets 300 pots whilst the others set between 100 and 150 pots, and the part-timers less than 50 pots each. This coast lies exposed to the Atlantic weather fronts, consequently pots can only be safely set between May and October. Brown crabs and lobsters make the bulk of landings, although crawfish and velvet crabs are also important.

### ***10.3.22 Porthleven***

Five full-time and 2 part-time boats all under 10 m use pots, nets and handlines. A local trawler of around 10 m often works out of Newlyn. From spring through to autumn, gill and tangle nets are set for demersal fish and pots mainly for lobsters. A few boats set longlines for cod, pollack and ling and use handlines for mackerel during the winter.

### ***10.3.23 Prussia Cove and St Michael's Mount***

Two part-time boats of 4-5 m work pots, nets and handlines on a seasonal basis.

### **10.3.24 Newlyn**

This is one of the largest fishing ports in England and Wales, where the majority of offshore boats within Cornwall are based, although some of the offshore beam trawlers are based elsewhere. A regular fleet of 63 trawlers and 52 static gear boats land their catches into the daily fish market, which includes visiting boats from Brixham and the Channel Islands. A further 20 part-time vessels work mainly nets and handlines. The majority of the 25 or so local beam trawlers are 25-29 m in length and operate exclusively offshore for monkfish, megrim, lemon sole and sole until quotas are reached. Beam trawling became popular during the early-1980s and is responsible for the increase in landings of flatfish during this period. Around 35 otter trawlers of 9-25 m land a variety of species into this port, the boats under 16 m regularly trawl within 12 miles of the coast. Cod, whiting, plaice and lemon sole make up the bulk of landings during winter, with sole, plaice, turbot, brill, rays, whiting and dogfish predominating during the warmer months. Since the late-1980s, non-quota species such as cuttlefish, squid, red mullet and lemon sole have become increasingly important to both the inshore fishing fleet and local merchants and processors as white fish landings have fallen. A small number of trawlers periodically switch to dredging for scallops during the course of the year.

Up to 40 boats, between 5 and 20 m, set enmeshing nets from this port, the larger boats fishing out to 100 miles offshore. The inshore fleet set gill nets for demersal fish, sometimes around wrecks and for pelagic fish such as herring, bass and grey mullet. Tangle nets are set for monkfish, turbot and rays and often take an important by-catch of lobsters and crawfish. Boats of between 8-12 m are capable of setting up to 8,000 m of net. In addition to netting some boats also set longlines and several boats exclusively use this method. A total of 18 boats set pots, 6 of which are over 12 m and fish for brown crabs offshore. The remaining boats fish inshore and often use other methods such as handlining for bass and mackerel. Mackerel are exploited in Mount's Bay from autumn. One boat sets drift lines for blue shark.

### **10.3.25 Mousehole**

Due to the weather, this small harbour on the edge of Mount's Bay is closed from the first week in November to the third week in March, resulting in some boats working out of Newlyn during this period. Six full-time boats of 5-7 m use nets for demersal fish, pots for lobsters and crabs and handlines for bass, mackerel and pollack, and 1 boat trawls for pilchards. During the summer a dozen or so part-time boats join the fleet.

### **10.3.26 Lamorna Cove**

Two part-time beach boats use demersal nets and handlines for bass, pollack and mackerel, during the warmer months of the year.

### **10.3.27 Penberth Cove**

Fifteen boats of 4-5 m set pots for lobsters, crawfish and crabs (brown, spider and velvet), gill and tangle nets for cod, rays, pollack, turbot and dogfish, and use handlines for mackerel and bass.

### **10.3.28 Isles of Scilly**

There are around 50 vessels working from the Isles of Scilly, the majority of which fish part-time and all but 4 are under 10 m. The 4 larger vessels work trawl gear throughout the year, landing predominantly flatfish during the warmer months and cod and whiting during winter. Around 15 full-time boats use nets, pots and lines and the remainder of the fleet uses static gear on a part-time basis. Pacific oysters are cultivated off St Mary's and Bryher Islands. The Isles of Scilly have their own SFC, who have issued byelaws that prohibit boats over 11 m from fishing within 3 miles of base-lines, except boats using longlines or handlines.

### **10.3.29 Porthgarra**

Two small beach boats use pots and handlines.

### **10.3.30 Sennen Cove**

A small quay supports 7 full-time boats of 4-7 m using nets, pots and handlines from spring through to autumn. There is little fishing activity in winter due to the severity of the weather, consequently some boats work out of Newlyn during this period. Gill nets are set over rough ground and wrecks for cod, pollack, ling and conger eels. Tangle nets are used to catch turbot, rays and crustacea. Pots are set for lobsters, crabs and crawfish.

### **10.3.31 Portherras Cove and Pendeen**

Several small beach boats work pots, nets and handlines on a part-time basis.

### **10.3.32 St Ives**

A fleet of eight boats, all under 10 m, use a variety of nets within the bay and out to 10 miles offshore and a few boats also set pots. Forty part-time vessels work a few nets and the handline fisheries. Tangle nets are used to catch demersal fish and crustacea, such as lobster, crawfish and spider crabs, with each boat setting up to 3,000 m of net. Drift nets are used in St Ives Bay between October and the end of December for herring. Gill netting for bass has been prohibited in the bay in order to protect salmon and sea trout that were caught as a by-catch. However, bass are still caught on handlines from spring. A summer mackerel handline fishery



involves some of the netting boats and others operating from this port. Mackerel appear in early spring, when each boat can catch in excess of 1 tonne of mackerel per day. The charter angling sector are heavily dependent on the mackerel. A voluntary code of conduct has been formulated in consultation with RSPB for the use of gill nets (usually herring nets) within the bay. It is advocated that their use is limited to 1 hour before sunset and 2 hours after, in order to minimise sea bird entanglement.

### **10.3.33 Hayle**

Around 20 boats tie up on both sides of the River Hayle, a dozen of which set pots and the rest use nets, handlines and a couple trawl. There are shellfish storage facilities on the quayside and vivier-equipped lorries transport shellfish to the continent. The larger boats set pots out to 20 miles offshore, principally for brown crab, whereas the smaller boats working closer inshore take lobsters, crabs (brown, spider and velvet) and crawfish. In addition to pots, tangle nets are also used to catch crawfish and spider crabs. Pots are brought ashore during spring following the start of the sole beam trawl fishery in order to prevent them being trawled away. Half a dozen or so boats, all under 10 m, are involved in netting, 3 of which work between 6-8,000 m of nets each. The nets are set on rough ground where trawl gear cannot be used, for a variety of demersal fish such as pollack, ling, turbot, monkfish, rays and cod, together with an often valuable by-catch of crustacea. Some of the nets are fished virtually the entire year.

### **10.3.34 Portreath**

Eight boats of 5-8 m, work static gear principally during the warmer months, as the weather prevents fishing during the winter. Nets are set on rough ground for the usual demersal species and some effort goes towards catching pelagic fish such as herring, bass and mackerel. Pots are set for lobsters and crabs, and handlines are used for mackerel during the summer, with small fish often retained for pot bait.

### **10.3.35 St Agnes**

A few part-time fishermen work pots during the summer from 3 boats less than 6 m.

### **10.3.36 Newquay**

Nineteen boats work from this port which, though partially sheltered by the headland, is subject to strong tides which restrict fishing activity. In the winter, some boats base themselves elsewhere, such as Padstow. One 10 m boat trawls all year round while 13 between 7-11 m set gill nets for cod, pollack, turbot and hake, and

most also set pots for lobsters and crabs. Fishing effort inshore is quite intense and boats are continually setting gear further offshore thereby increasing the risk of gear being towed away by trawlers. Fish go to Newlyn and Looe markets whilst shellfish are collected by lorry for export to France and Spain.

### **10.3.37 Padstow**

Situated in the Camel Estuary this port is the most important on the north coasts of Cornwall and Devon, with 29 full-time boats including 11 vessels over 10 m, 8 of which set nets, 2 are beam trawlers and 1 is a potter. Of the remaining 18 boats, 15 are potters and 3 are netters. The netters target turbot, monkfish, cod and pollack, the larger boats fish offshore for hake. Some of these boats were originally built for trawling, but dwindling catches of sole, cod, hake and mackerel has resulted in fishermen switching to netting in areas of rough ground which are not fished by trawlers. Between Christmas and the end of March, up to 20 visiting beam trawlers are present, engaged on the sole fishery. Of the 15 boats involved with the pot fishery, the smaller ones will work perhaps 250 pots on the inshore grounds and the larger and faster vessels work anything up to 500 as far away as Lundy Island, during the summer months. Nearly all the boats bring their pots ashore between Christmas and March to avoid the worst of the weather and also to avoid damage from the visiting beamer fleet. Nearly all the shellfish are exported by vivier truck to Europe on a weekly basis direct from the quayside. Some of the smaller boats handline for mackerel and bass. The River Camel has been designated a 'bass - nursery area' by MAFF and fishing for bass from a boat within the estuary is prohibited between 1 May and 30 November. There is a small sandeel seine-net fishery on the river and 7 drift net licences are issued for salmon fishing. The salmon fishery begins 2 March ending 31 August and during the season it is closed between 0600h Saturday and 0600h Monday.

### **10.3.38 Portquin**

Only one beach boat employing two fishermen sets pots on a part-time basis.

### **10.3.39 Port Isaac**

Nine boats, two of which are over 10 m, work mainly pots between Port Isaac and Lundy. The smaller vessels set between 250 to 400 pots each, while the two larger vessels work 1,200 pots each, hauling approximately 400 pots per day. The main species targeted is lobster, with by-catches of brown and spider crabs. A small amount of netting occurs for rays, plaice, cod and herring in season, as well as crawfish. The bay is an important nursery area for flatfish, especially plaice.

### ***10.3.40 Portgaverne***

One small beach boat works pots on a part-time basis.

### ***10.3.41 Boscastle***

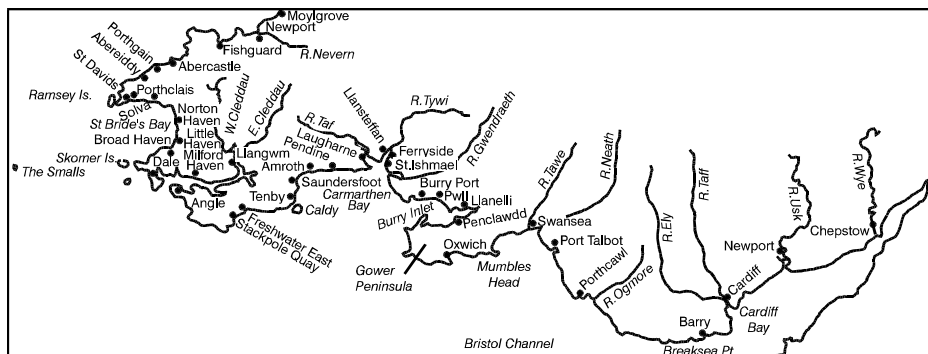
One full-time and two part-time boats of 4.5-7 m use mainly pots and to a lesser extent nets within a few miles of the coast. One boat of nearly 10 m is involved in chartering angling trips during the summer as well as working a few pots.

### ***10.3.42 Bude***

Two full-time boats of less than 9 m set pots primarily for lobster, nets for cod, turbot, rays, bass and herring, and use handlines to catch mackerel, pollack and bass. An additional half a dozen boats use handlines and set the odd pot during the warmer months. Due to the exposed nature of the harbour entrance, fishing effort and opportunity are extremely limited by poor weather conditions. This makes it very difficult to sustain any viable employment solely from fishing out of this port.

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## 11. SOUTH WALES: Chepstow to Moylgrove (South Wales SFC)



### 11.1 Synopsis of current inshore fisheries

Strong tides within the Severn Estuary limit fishing opportunities, but valuable potting grounds are found around the rugged Gower Peninsula and Pembrokeshire coast, and mollusc fisheries take place in some estuaries and bays. In general, most fishing takes place close inshore with very few boats fishing outside 6 miles, except at Milford Haven, and inshore fishing activity is often curtailed during the winter due to the prevailing westerly weather. Part-time effort is particularly high in areas suffering from high unemployment and where fisheries cannot support full-time involvement. An increase in demand from Continental markets (particularly France and Spain) and the demise of Milford Haven's distant-water fleet have contributed to the expansion of the shellfish industry in South Wales, which is now considered to be of greatest economic importance locally. Various types of nets are used throughout the district to take bass, rays, cod, flatfish and even crustacea in rocky areas. However, netting restrictions have been introduced along much of the coast, particularly within and around estuaries, to protect salmonids and juvenile bass. Since the late-1980s, the bass line fishery has proved extremely popular amongst commercial and recreational fishermen, and a sandeel fishery has been developed to supply bait. Mollusc fisheries have been widely affected by the EC Shellfish Hygiene Directive for which purifying tanks are having to be constructed and, in some instances, fisheries have been closed.

### 11.2 Information on species targeted, fishing methods deployed and fishing restrictions inshore

#### 11.2.1 *Demersal fish* (e.g. plaice, rays, turbot, sole, flounder, dab, cod, whiting, pollack and dogfish)

Flatfish and rays (principally thornback) are taken in fixed nets (e.g. tangle, trammel and stake nets) and otter and beam trawls from spring through to virtually the end of the year. Cod and whiting are targeted by fewer boats using gill nets and otter trawls during the colder months. Large-meshed tangle nets are used for rays and large flatfish such as turbot. The ray fishery has expanded since the mid-1980s and has become a popular inshore fishery. Stake nets are set along sandy shores being tended to at low tide and commonly take flatfish such as flounders, dabs and plaice, as well as the odd bass. South Wales SFC byelaws stipulate a MMS of 100 mm for all nets, except trawl and seine, in addition to numerous other netting restrictions specifying the type of net permitted in certain areas (especially around estuaries), length and distance between nets. The under 10 m fleet uses longlines with less than 400 hooks per line for spurdogs, rays, conger eel, pollack and cod, especially when the weather or tide prevent the use of nets.

The trawler fleet concentrates its efforts in the Bristol Channel, Carmarthen Bay and Cardigan Bay and lands a mixed catch of white fish throughout the year. Competition outside 6 miles from the coast can be intense, especially during the spring sole fishery which attracts visiting beam trawlers (e.g. from Newlyn). South Wales SFC prohibit boats over 14 m in length and beam trawls with an aggregate length of over 4 m within 3 miles of the coast.

### **11.2.2 Pelagic fish (e.g. bass, grey mullet, herring, sprat, mackerel and sandeel)**

Bass are caught in fixed and drift nets, on lines and occasionally in trawls, between early spring and late autumn. Mullet are sometimes taken as a by-catch in nets. The bass handline fishery has expanded since the late-1980s due to netting restrictions, low cost of fishing gear and high demand for this species thereby providing a quick and easy profit. Restrictions have been imposed in Burry Inlet and Three Rivers by South Wales SFC to protect juvenile bass. The popularity of bass handlining has increased demand for sandeels and within South Wales SFC district a permit is required to exploit this species. In 1993, 120 permit holders used beach seines and light trawl gear for sandeels.

Herring attract a small amount of effort, usually in the form of drift netting, as demand is low, and mackerel are caught in drift nets and on handlines. The chartered angling sector are highly dependent on mackerel during the summer. A byelaw states that nets used for herring or mackerel must not have a mesh size of less than 50 mm or greater than 65 mm. Sprats are occasionally taken in mid-water trawls.

### **11.2.3 Diadromous fish (e.g. salmon, sea trout and eel)**

A wide variety of licensed salmon fishing methods are employed in South Wales, such as coracles, hand-held nets (e.g. lave nets) and fixed traps (e.g. putcher ranks), reflecting local culture. Commercial salmon fisheries take place on the Rivers Wye, Usk, Tywi, Taf, Cleddau and Nevers, as well as along the coast.

Fyke nets are set in some rivers for brown/yellow eels from spring through to summer, and for silver eels from late summer through to autumn. Elvers are caught in dip nets used especially in estuaries and tidal reaches of rivers from the end of the year until the following spring.

### **11.2.4 Shellfish (e.g. lobster, crab, prawn, cockle, mussel, oyster, scallop and squid)**

Most fishermen working from the Gower Peninsula and Pembrokeshire coast rely heavily on potting for crabs and lobsters, with activity peaking during the warmer months when part-time fishermen join the fishery. Lobsters and velvet crabs tend to be caught inshore, whereas brown crabs are caught both inshore and offshore. Pots and nets are used for crawfish around rocky inshore areas and spider crabs both inshore and offshore, and pots are also set for prawns. South Wales SFC operate a mandatory shellfish permit scheme, whereby the commercial exploitation of shellfish requires a permit and fishermen submit catch and effort data. They also stipulate a MLS of 140 mm for brown crab (as measured across the broadest part of the back) and for lobster 87 mm as measured along the carapace.

A cockle fishery in the Burry Inlet has supported generations of local fishing families who still gather cockles by hand. In fact, South Wales SFC only permit cockle harvesting by hand throughout the district and cockling is prohibited on Sundays. As market opportunities have improved since the 1980s, cockles have attracted more interest and, during 1993, cockle beds at Ferryside and Llansteffan were also exploited. Under the EC Shellfish Hygiene Directive, cockles taken from areas of poor water quality have to undergo a purification process, e.g. heat treatment ('Torry Process'), or have to be re-laid into areas of better water quality. Cultivated and wild stocks of mussels and oysters are harvested from a few estuaries, although poor water quality in one or two areas has resulted in the closure of beds. South Wales SFC byelaws set MLS for native oysters, mussels and cockles, and the committee can temporarily close a shellfish bed if they consider it to be severely depleted.

Several local boats dredge for scallops in Cardigan Bay particularly in winter, landing into Fishguard and Milford Haven. Dredging was far more extensive during the early- to mid-1980s when a large number of visiting vessels were involved. Byelaws prohibit the landing of scallops between 1 July and 31 October throughout the district, and the landings of scallops and queen scallops and the use of beam trawls and dredges are prohibited around Skomer Marine Nature Reserve.

## **11.3 Description of coastal fisheries by port**

### ***11.3.1 Chepstow to Newport***

Up to 8 part-time boats of less than 10 m use gill and trammel nets for demersal fish, e.g. cod, whiting, plaice, flounders and bass. The high tidal range near the mouth of the Severn can render anchored gill nets ineffective, consequently local fishermen carefully weight their nets so they drag along the seabed with the tide in order to remain vertical.

Salmon and sea trout are taken in 9 lare nets used in the Wye estuary between 1 February and 31 August. Eight salmon licences are issued for drift netting in the mouth of the Usk and in Newport Bay (each net measuring 200 m) from 2 March to 31 August, and 1 putcher rank, just upstream of Uskmouth, is worked for the same period. Elver fishing is very popular on the tidal reaches of the Wye between Bigsweir and Tintern during the months of March, April and May. Fyke nets are also fished on the Wye, taking yellow/brown eels in spring and summer, and silver eels from late summer through to autumn

### ***11.3.2 Cardiff, Barry, Porthcawl and Port Talbot***

This industrialised area supports around 30 boats, the majority of which are under 10 m and use static gear and otter trawls on a part-time basis. Nets are set for plaice, rays, dabs, flounders and bass in summer and cod and whiting in winter. Netting restrictions introduced to protect salmonids exist seaward of the Taff, Ely and Ogmore estuaries and along the coast between Port Talbot and Porthcawl. Also, MAFF have prohibited bass fishing within 1 nautical mile radius of Breaksea Point (where warm water effluent is discharged from Aberthaw power station) to conserve juvenile bass that congregate there. Several boats set longlines for cod, dogfish, rays and conger eels, especially in areas where nets are prohibited. Plaice, rays, cod and whiting are principally taken in otter trawls. One trawler occasionally switches to dredging for oysters off Porthcawl in Swansea Bay and a few may trawl for shrimp in Cardiff Bay during spring and autumn. Many boats derive a large part of their income from chartering angling parties.

### ***11.3.3 Swansea and Gower Peninsula***

Up until the late-1970s, Swansea supported a fish market supplied by 50-60 otter trawlers. Now the fleet comprises 6 otter trawlers of 8-12 m, 1 pot boat over 12 m and around 25 boats under 10 m that work a variety

of static gear. Competition, particularly from visiting beam trawlers (e.g. from Newlyn) is probably one of the main reasons for the demise of the local trawling fleet. The remaining trawlers are confined to fishing grounds within 20 miles of the coast and, from spring through to autumn, they target plaice, turbot, whiting and rays along the sandbanks, with monkfish and lemon sole taken over rougher ground. In winter, cod, whiting, plaice, rays and dogfish predominate in landings. A few trawlers periodically switch to herring and sprats during the colder months although demand for these species is low, and 1 or 2 occasionally dredge for scallops off Mumbles Head.

Gill nets are used for cod, bass and herring in season and tangle nets are set from spring onwards for turbot, rays and brill, although netting restrictions exist around the mouths of the Rivers Neath and Tawe. Stake nets of up to 200 m in length are set along the shore, usually within bays, taking flatfish, bass and mullet. Bass are also caught on lines used by commercial and recreational fishermen; this fishery has expanded since the late-1980s following the success and availability of live sandeels as bait. Commercial boats from Swansea, Oxwich and Burry Port handline for bass off Gower Peninsula between spring and autumn. During 1993, floating lines were also set for shark off Gower. Up to 20 boats set pots around Gower Peninsula, 6 of which base themselves at Oxwich throughout the potting season. Lobsters provide the mainstay for the smaller boats, although brown, velvet and green shore crabs are also taken. Since 1993, cockles and mussels have been harvested in small areas around the Gower and bait, particularly lugworms, are dug from the foreshore.

There are between 60 and 70 licensed cockle gatherers working mainly from Penclawdd in the Burry Inlet. Cockles are gathered by hand using rakes and processed by the fishermen themselves. Under the Burry Inlet Cockle Fishery Order (1965), the South Wales SFC regulates the fishery through licences which are issued on an annual basis. MAFF and South Wales SFC regularly assess the size of cockle stocks in order to recommend a TAC, though no annual quota is set as such, i.e. the fishery is not closed if the TAC is reached. In average years a TAC of around 2,500 tonnes is recommended, but if stocks appear to be holding out during the year, this is usually increased. Daily quotas are used to limit fishing effort and are adjusted during the season to make stocks last. Exploitation of some cockle beds has been prohibited under the EC Shellfish Hygiene Directive, implemented in 1993, but Welsh Water and the NRA propose to improve sewage discharge in order to upgrade water quality, which will allow these cockles to be harvested. Mussels were gathered off Pwll until 1993 when the water quality was found to be below EC standards. Bait digging within Burry Inlet has increased since the 1980s and the SFC have had to allocate areas for bait digging in order to minimise disturbance on cockle beds.

### ***11.3.4 Llanelli and Burry Port***

At Llanelli, 3 trawlers of 8-12 m are joined by up to 40 smaller static gear boats, and 10 boats fish from Burry Port, 2 of which trawl. Fishing activity is mainly part-time from spring through to autumn. Otter trawls used in Carmarthen Bay during the warmer months yield flatfish and rays, plus the occasional landing of bass. Cod and whiting are sometimes taken in winter. The under 10 m fleet sets pots for lobsters and crabs around the Gower Peninsula and uses nets (only stake nets are permitted in Burry Inlet under South Wales SFC byelaw) for flatfish, rays, bass and mullet. Burry Inlet has been designated a 'bass nursery-area' by MAFF and fishing for bass from a boat is prohibited between 1 May and 31 October. Sandeels are taken in licensed beach seines in Burry Inlet and sold for angling bait, especially to bass fishermen.

### ***11.3.5 Ferryside (Three Rivers including Laugharne), Pendine and Amroth Sands***

Up to 6 small boats are regularly launched from this coast and use nets from spring through to autumn. South Wales SFC permit only stake nets within the estuaries of the Rivers Taf, Tywi and Gwendraeth, and along Pendine Sands. These nets take flatfish, bass and mullet. MAFF have designated all 3 river estuaries a 'bass - nursery area' and prohibited bass fishing from a boat between 1 May and 31 October. Nets are set in Carmarthen Bay for plaice, turbot and rays, and drifted for bass.

A licensed salmon fishery exists in the Tywi and Taf, the former supporting 8 seine nets and 12 coracles, the latter 1 wade net and 1 coracle. Both salmon and sea trout are landed throughout the season which begins 1 March and ends 31 August, subject to a weekly closure between 0600h Saturday and 0600h Monday.

Mussels are gathered off St Ishmael and there is a small consistent cockle fishery based in the Taf and Gwendraeth estuaries. Stocks also appear less consistently at Ferryside and Lansteffan. In 1993, which was an exceptional year, an estimated 4724 tonnes of cockles were removed from this region.

### ***11.3.6 Saundersfoot***

Out of 6 full-time boats of 5-10 m, a couple use otter trawls, whilst all set nets and pots, and are joined by several part-timers which also use static gear during the summer. Otter trawls are used out to 12 miles offshore, taking plaice, turbot, rays, whiting and dogfish in summer, whilst cod and whiting are landed during

winter. Several small trawlers use this harbour rather than Milford Haven for its convenience when fishing in Carmarthen Bay or because of the weather. During the warmer months, tangle nets are set for plaice, turbot and rays, and gill nets for spurdog, bass and mullet. Herring are occasionally targeted during autumn. Bass are also taken on handlines around Drift Rock off Caldey. Sandeels are caught using beach seines authorised by the South Wales SFC. In summer most of the fleet takes out angling parties and visitors.

### ***11.3.7 Tenby, Freshwater East and Stackpole Quay***

A few full-time and around 6 part-time boats all under 10 m use static gear and a couple occasionally otter trawl. From spring through to autumn, nets are set in Carmarthen Bay for flatfish, rays and bass, pots for lobster and crabs and handlines for bass. This area is a popular tourist location providing demand for these species in restaurants and hotels, as well as for chartered angling and pleasure trips which most boats depend on during the summer months. In 1994, 16 salmon licences were issued within this area for seine (7) and wade (9) nets. These nets are fished from 1 April to 31 August, subject to a weekly closure between 0600h Saturday and 0600h Monday.

### ***11.3.8 Milford Haven (including Dale and Angle)***

A large offshore fleet of around 50 British registered vessels of Spanish ownership or origin are based in this port, either landing their catches here but more often in Spain. These boats fish in the Irish Sea, west of Scotland, in the Bristol Channel and south of Ireland, often entering the 12-mile zone in the last 2 areas. Three or four local inshore trawlers between 8-12 m fish within Carmarthen Bay, Swansea Bay and the Bristol Channel for a mixed catch of white fish. One or two dredge for scallops, during the winter and set longlines for spurdogs, rays, cod, conger eel and ling.

Forty boats are involved in the pot fishery, 29 of which are under 10 m and operate on a part-time basis. The brown crab fishery expanded rapidly during the late-1980s and the larger vessels now set up to 1,000 pots each out to 12 miles offshore around the Smalls area and are landing far greater quantities. The smaller boats set pots within a few miles of the coast for lobsters, brown, and more recently, velvet crabs. Tangle nets are set in rocky areas for crawfish. Most of the under-10 m fleet are involved in netting of one form or other. The Milford Haven herring fishery involves the use of gill nets and centres around Llangwm from February until April, although supply often exceeds demand. Gill netting for bass and mullet also takes place, and as this

may account for numbers of salmon and sea trout, set netting is not permitted upstream of the Cleddau Bridge. MAFF has designated Pembroke Bay a 'bass - nursery area' and fishing for sea fish from a boat is prohibited by SFC byelaw in this area between 1 May and 31 October. Eight compass nets are licensed to take salmon and sea trout in the upper regions of the Haven from 1 April to 31 August. Native oyster beds in the Haven support a small autumn fishery and Pacific oysters are cultivated in one of the estuaries.

### ***11.3.9 Little Haven, Broad Haven and Norton Haven***

These small coves support 3 or 4 full-time and up to a dozen part-time beach boats of 4-6 m that regularly use pots, nets and handlines. Various types of nets are set out in St Brides Bay and along the shore for cod and herring during the winter and bass and flatfish from spring through autumn. Bass and mackerel are taken on handlines, and lobsters and crabs in pots. Nets are set around Skomer Island for crawfish and lobster, and also bass and pollack.

### ***11.3.10 Solva, Porth Clais and St Davids***

Six full-time and up to 20 part-time boats of between 5-14 m pot for lobsters and brown crabs, but also land smaller quantities of spider and velvet crabs. Tangle nets are set for crawfish, spider crabs and lobsters, especially around Ramsey Island. The inshore grounds here are too rough to trawl, except in St Brides Bay, and set nets are occasionally used for flatfish, rays and bass. A few boats may use drift nets for herring in autumn.

### ***11.3.11 Abereiddy and Porthgain***

Four seasonal full-time and up to 10 part-time boats mainly set pots for lobsters and crabs, although a small number also use nets for rays, crawfish, pollack and bass, and the odd net is drifted for herring in autumn. Fishing virtually ceases in winter.

### ***11.3.12 Abercastle***

Three full-time potting boats set up to 200 pots each for lobsters, brown and velvet crabs. The cove is exposed to north and north-westerly winds and fishing is greatly reduced in winter. Handlines are used for bass, pollack and mackerel. A dozen or so small part-time boats may base themselves here during the summer.

### ***11.3.13 Fishguard***

There are 2 vessels of around 15 m that beam trawl for flatfish, mainly sole, plaice and rays from around March to November, switching to scallop dredging during the winter. Visiting vessels often base themselves in this port, particularly beam trawlers during the spring sole fishery and scalloping boats in winter. Three or 4 boats of up to 10 m use otter trawls as well as nets and longlines. Longlines are set for spurdogs and rays during the warmer months. Out of 21 pot boats, 6 are over 10 m and principally target brown crabs, setting up to 1,000 pots each out to 30 miles around the Smalls area. Of the remaining 15 smaller boats, more than half work on a full-time basis and potting continues through winter either in sheltered areas or further offshore. These boats set up to 400 pots each and, in addition to lobsters and brown crabs, velvet crabs are also taken. Pots are set for prawns in the autumn when they command a high price on European markets and are despatched in vivier lorries alongside crabs and lobsters. Tangle nets are used for spider crabs and crawfish, a method which has become increasingly popular since the late-1980s. A variety of nets are used for cod, flatfish, rays, bass and herring in season.

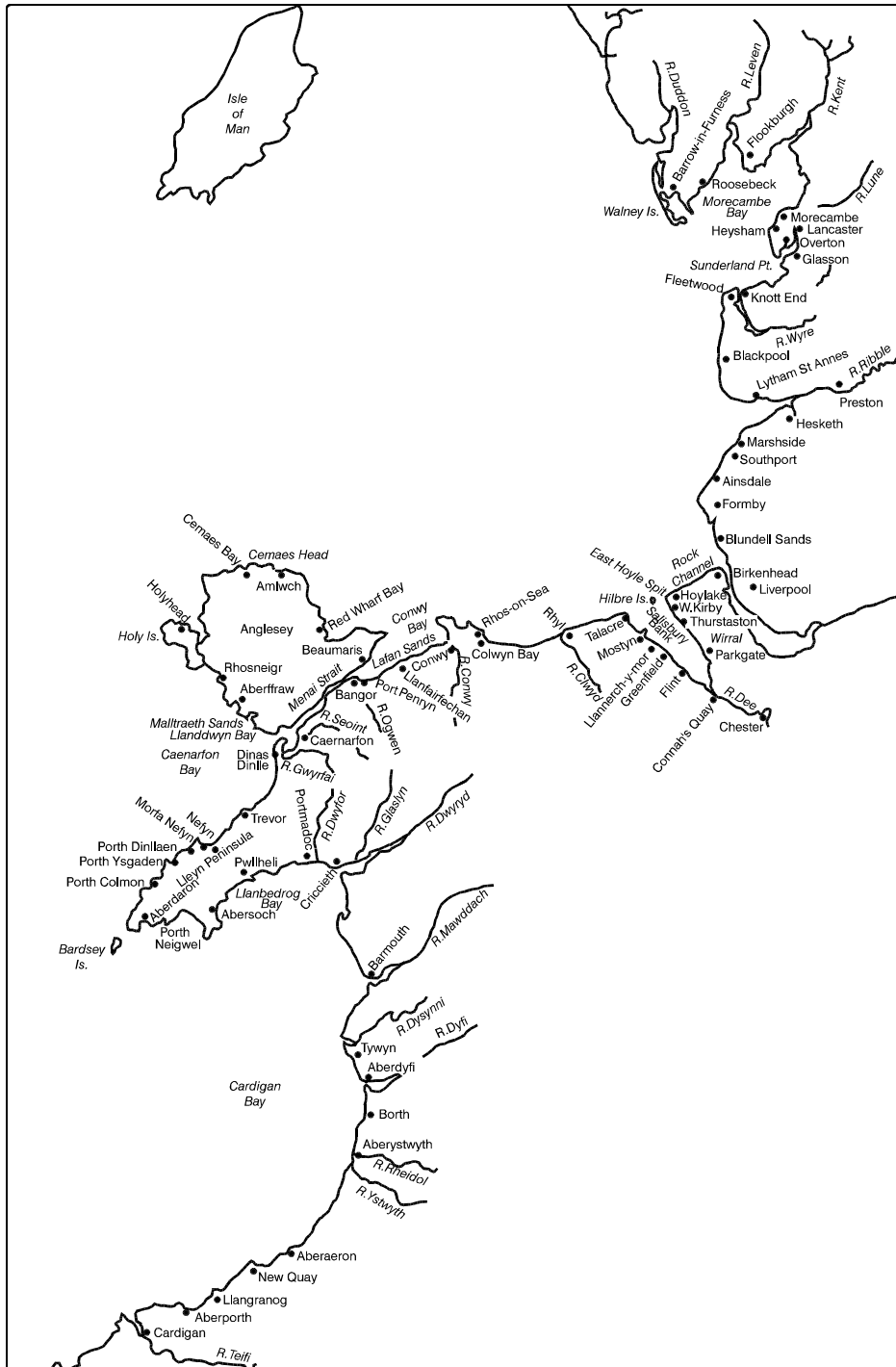
### ***11.3.14 Newport and Moylgrove***

One seasonal full-time lobster potting boat works out of Moylgrove and there are approximately 6 other full-time or part-time vessels which fish seasonally for crabs and lobsters. Other beach boats occasionally put to sea during the summer and use nets or handlines for bass, mackerel and pollack. One licensed seine net is used for salmon and sea trout in the River Nevern, from 1 April to 31 August.





**12. NORTH WALES, CHESHIRE AND LANCASHIRE:**  
**Cardigan to Barrow**  
*(North Western and North Wales SFC)*



## 12.1 Synopsis of current inshore fisheries

The coastline along Cardigan Bay and Caernarfon Bay is generally very rugged with extensive sandy beaches only near estuaries and in sheltered bays. Fishing

activity is restricted by prevailing westerly weather during the winter. The majority of boats fish within 6 miles of the coast potting for lobsters, crabs and whelks, and netting for flatfish, rays, cod, bass, mullet, herring, salmon and sea trout, whilst some boats over 10 m otter trawl for white fish. Cockles are gathered by hand from

many estuaries and mussels are taken from wild and cultivated beds, both species having received greater attention during the early-1990s as marketing opportunities have improved. A few local boats participate in the Cardigan Bay scallop fishery which generally takes place outside the 12 mile limit and involves vessels from other parts of the UK.

A shallow bay stretches from Anglesey to Cumbria, with estuarine sand and mudflats being a major feature supporting traditional mollusc (cockle and mussel) and crustacea (shrimp) fisheries. Inshore boats and vehicles beam trawl for shrimps, whilst cockles and mussels are principally gathered by hand and sometimes by dredge. Nets are used throughout the area for flatfish, rays, bass, mullet, salmon and sea trout. Fleetwood harbours the majority of the boats which use otter trawls and seine nets to take white fish and *Nephrops* throughout the eastern Irish Sea. They are joined by large visiting beam trawlers fishing the same grounds and often landing into Holyhead and Liverpool to their own transport. Smaller otter and beam trawlers take white fish on nearshore grounds, sometimes as an alternative to shrimp.

## **12.2 Information on species targeted, fishing methods deployed and fishing restrictions inshore**

### **12.2.1 Demersal fish (e.g. cod, whiting, sole, plaice, turbot, brill, flounder, dab, lemon sole, rays, pollack and dogfish)**

Otter trawlers land plaice, sole, rays from spring to autumn, and cod and whiting during winter, throughout the district, whilst some shrimp beamers periodically switch to flatfish when shrimp are out of season. Visiting beam and otter trawlers fish as close as 6 miles from the coast, for example during the spring sole and autumn plaice fisheries. These vessels will probably have a considerable affect on by-catch species such as cod, whiting and rays. North Western and North Wales SFC byelaws prevent vessels if they exceed 13.7 m, fishing within 3 miles of the coast between Rhyl and Haverigg Point (northern area) and 15.2 m between Cemaes Head and Rhyl (southern area).

Gill, tangle and trammel nets are used for a variety of demersal fish throughout the district and, since the late-1980s, an increasing number of trawlers have switched to netting. Tangle and trammel nets (inner section) with a mesh size of between 100-120 mm are used to catch flatfish such as sole, plaice and flounder, whereas larger mesh nets of 200-300 mm are set for rays, turbot and brill. Gill nets within a mesh of between 120-160 mm

are set for cod, pollack and dogfish and nets are set along the shore, sometimes attached to stakes. Longlines are used in a few areas for cod, rays and, especially spurdog, although this fishery has considerably declined since the late-1980s.

### **12.2.2 Pelagic fish (e.g. bass, mullet, herring, sprat and mackerel)**

Bass are taken in gill nets (anchored and drifted) and on handlines from spring through to autumn, with mullet taken as a by-catch in nets. Netting restrictions, introduced in the late-1980s and early-1990s, prevent the use of nets in many estuaries in order to protect salmonids and juvenile bass. The expansion of the bass handline fishery since the late-1980s can be attributed to netting restrictions, low operational costs and high demand.

Drift netting for herring occurs from autumn through winter, although effort is generally low as only small local markets are supplied. Juvenile herring and sprat (whitebait) provided a traditional fishery in the northern area (e.g. Morecambe Bay) up until the 1980s, since which it has gradually declined due to marketing difficulties. Mackerel caught on handlines provide an important resource for the chartered angling sector.

### **12.2.3 Diadromous fish (e.g. salmon, sea trout and eel)**

A variety of nets (e.g. seine, coracle, drift and lave) are licensed to take salmon and sea trout from rivers and estuaries throughout the district from March/April usually until the end of August. Byelaws have been introduced by North Western and North Wales SFC allowing people to use fixed nets for sea fish in areas where it would normally be precluded under the Salmon and Freshwater Fisheries Act. Fyke nets are used in some rivers and estuaries from spring to autumn to catch adult eels, and elvers are taken in dip nets in winter and spring.

### **12.2.4 Shellfish (e.g. lobster, brown crab, velvet crab, spider crab, crawfish, shrimp, prawn, Nephrops, cockle, mussel, scallop, oyster, whelk and clam)**

Lobsters provide the main resource for many fishermen operating in Cardigan Bay, around Lleyn Peninsula and Anglesey. Generally, lobster pots are set between April and November, although in winter pots are set in

sheltered areas where they often take an important by-catch of velvet crabs. The North Western and North Wales SFC released hatchery-reared juvenile lobsters in Cardigan Bay between 1984-1988, and are currently monitoring the success of the project. Brown crabs also provide an important resource off the Llyn Peninsula, where boats of 5-8 m set pots out to 6 miles from the coast and larger boats, some equipped with vivier tanks, target brown crabs further offshore. Crawfish and spider crabs are caught in tangle nets; the former in a few rocky areas (e.g. off Bardsey Island) and spider crabs in the south of Cardigan Bay. Whelks are taken in pots set off Llyn Peninsula, Anglesey and further south in Cardigan Bay. Since the late-1980s, potting for prawns in Cardigan Bay has become increasingly popular particularly between autumn and spring, when the lobster fishery is at a seasonal low.

The shrimp fishery is pursued mainly between the Dee and Duddon Estuaries, inclusive, from April through to December, being restricted in winter by onshore winds and surf and by an offshore migration of shrimp in frosty weather. Brown shrimps are taken in beam trawls (towed by boats and vehicles) and push nets (hand nets). Byelaws restrict the aggregate length of shrimp beam trawls to 9.14 m and prescribe the use of a riddle to separate undersized shrimps and flatfish (mainly dabs, plaice, sole and flounders) which are returned to the sea alive. The catch is then normally cooked on board the fishing conveyance.

Some of the Fleetwood otter trawlers target *Nephrops* in deep waters off Cumbria, between May and September, often landing into Whitehaven.

Cockles are harvested from estuaries along the coast of Cardigan Bay, Conwy Bay (Lafan Sands) and between the Dee and Duddon Estuaries, using a spade or rake, and by mechanical dredging methods. Dredging can only be authorised by North Western and North Wales SFC and since 1992, tractor dredging has not been permitted anywhere in the district whilst hydraulic suction dredging has been allowed on Lafan Sands. North Western and North Wales SFC byelaws prohibit the removal of cockles which can pass through a gauge having a square opening of 20 mm and allow the committee to temporarily close any shellfish bed they consider seriously depleted.

Wild and cultivated stocks of mussels are harvested in many estuaries and bays throughout the district by hand and dredge. Cultivated sites are stocked with juvenile mussels from beds that are considered unstable, overstocked, or are in areas of poor water quality. Since 1992, Morecambe Bay has emerged as one of the major sources of seed mussels within the UK. Pacific oysters, native oysters and Manila clams are cultivated in a few areas; within the Menai Straits, off the north Anglesey coast and in Morecambe Bay.

Scallops beds between Anglesey and the Isle of Man and in Cardigan Bay are predominantly exploited by visiting boats from the Isle of Man, Scotland and the south-west coast of England. A small number of local trawlers occasionally target scallops using dredges, particularly during the winter, whilst a greater number take scallops and queen scallops as a by-catch in white fish trawls. The scallop fishery is closed between 1 July and 31 December, and only scallops greater than 110 mm across the broadest part of the shell can be taken.

## **12.3 Description of coastal fisheries by port**

### **12.3.1 Cardigan**

A seasonal working fleet of up to 12 boats of 5-8 m, moored up the River Teifi and around the estuary, fishes pots and nets. Pots are set for lobsters and brown crabs from spring through to autumn, with lobsters and velvet crabs targeted during the end of the year in sheltered areas close to the shore. The number of pots set per boat continues to increase as catch rates fall and some boats now set up to 400 each. Pots are also set for whelks during the warmer months and for prawns from autumn. Several boats use tangle nets for rays, turbot, brill, monkfish and spider crabs, often all year round and out to 15 miles offshore, weather permitting. Five seine nets and 9 coracle nets are used for salmon and sea trout in the River Teifi; seine nets are permitted downstream of Cardigan Bridge and generally take a greater proportion of sea trout, whilst coracle nets are used above and take a greater proportion of salmon. The season begins 1 April and ends 31 August, with a weekly closure between 0600h Saturday and 0600h Monday. Netting for sea fish in this estuary is restricted to reduce the illegal capture of salmon and sea trout.

### **12.3.2 Aberporth and Llangranog**

Several beach boats set pots for crabs and lobsters from spring to autumn, use anchored and drift nets for rays, flatfish, bass and herring in season, and handline for bass and mackerel. The weather severely limits fishing during the winter months.

### **12.3.3 New Quay**

Two 10 m boats each use up to 700 pots for lobsters, crabs and prawns, nets for rays, flatfish, cod and bass, lines for mackerel and bass, and occasionally trawl for white fish and dredge for scallops. Rays, prawns and velvet crabs have received greater attention since the late-1980s as marketing opportunities have improved for these species. Crustacea are stored in holding tanks on the quay before being transported by vivier-lorries to Spain and France. Several part-time boats use pots and lines, and 10-15 boats charter angling trips during the summer.

### **12.3.4 Aberaeron**

Two full-time boats of 7-9 m pot for lobsters and crabs, drift net for herring, set nets for rays, cod and bass, and handline for mackerel and bass. Herring and mackerel are often targeted for pot bait. Up to half a dozen part-time fishermen work from this port during the summer, often selling their catches locally.

### **12.3.5 Aberystwyth**

Six full-time and 10-12 part-time boats, all under 11 m, use pots, many also set nets and trawl, and most of the part-time boats charter angling trips. Fishing is limited by poor communications with major markets and methods tend to be species selective. For example, landings from pots and larger-meshed tangle nets are predictable and a local market can be adequately supplied. Pots are set virtually all year for lobsters, with the larger boats each using up to 700 pots out to 16 miles offshore, whereas the smaller boats, often worked single handedly, set up to 300 pots out to 6 miles. Brown crabs, velvet crabs, prawns and whelks are also taken in pots. Interest towards prawns and velvet crabs has risen since the late-1980s and both provide important resources particularly during the colder months of the year. Tangle netting begins in spring for rays, taking by-catches of turbot, brill and crustacea. Drift nets are used for bass from spring through to autumn and then for herring until the end of the year. Gill nets are set for cod and whiting in winter and bass and mackerel are taken on handlines during summer. Commercial salmon fishing is prohibited in both the Rivers Ystwyth and Rheidol.

### **12.3.6 Borth**

One small beach boat works pots during the summer when netting is prohibited within the bay (to protect salmon and sea trout migrating up towards the River Dyfi). Herring nets are permitted from November through to April and are used by several boats.

### **12.3.7 Aberdyfi and Tywyn**

A small quay situated in the Dyfi Estuary supports 2 full-time and half a dozen part-time fishermen. Ten to 12 part-time boats are launched from Tywyn and the surrounding coastline. Pots are set by the majority of boats, virtually the entire year round, with lobsters providing the mainstay and brown and velvet crabs also landed. A few boats set pots for whelks and, since the early-1990s, an increasing number of fishermen have started to pot for prawns. A high proportion of the shellfish landed during the summer is sold to local restaurants and hotels. The ray net fishery begins in spring, followed by bass and salmon by early summer.

The Dyfi Estuary has been classified as a 'bass -nursery area' by MAFF and fishing for bass from a boat within the estuary has been prohibited between 1 May and 31 October. During this period fishermen use drift nets for bass outside the estuary.

Three licensed draft nets (seine nets) are used for salmon and sea trout in the Dyfi Estuary and another draft net is licensed in the Dysynni Estuary, all fished between 1 April and 31 August. Cockles are harvested by hand from the Dyfi Estuary and, since the beginning of the 1990s, there has been an increase in the number of fishermen operating (especially from South Wales and Merseyside), which can be attributed to an abundance of cockles, high demand and the poor state of cockle fisheries elsewhere in the UK. Mussels are also gathered from within the estuary by hand.

### **12.3.8 Barmouth**

The fleet which formerly concentrated on lobsters, has been run down and now comprises 6 boats plus several part-timers. A small ice plant supplies all local requirements, though marketing remains the limiting factor for the industry. The majority of boats still set pots for lobsters as well as for prawns, whelks and velvet crabs. Tangle nets are set for rays, turbot and other flatfish from spring and species of little, low or no commercial value, e.g. dogfish and gurnard are retained for pot bait. Bass are taken in nets and on handlines along the sand bar, though the Mawddach Estuary has been classified as a 'bass - nursery area' by MAFF and fishing for bass from a boat is prohibited between 1 May and 31 October. In 1994, 1 licence was issued for seine netting for salmon and sea trout in the Mawddach Estuary between 1 April and 31 August. Drift nets are used close inshore for herring and sometimes sprat from autumn through winter. Nets set along the shore from Barmouth up to Porthmadog take a variety of species including bass, mullet, turbot, rays and flounders. Two boats over 10 m otter trawl for white fish and dredge for queen scallops and scallops, usually outside the potting season. Mussels and cockles are taken from beds in the Mawddach Estuary by hand.

### **12.3.9 Porthmadog**

A few part-time fishermen base themselves here from spring through to autumn potting for lobsters and netting for bass, mullet, rays, pollack and flatfish. Bass fishing from a boat in Dwyryd and Glaslyn Estuaries is only allowed between 1 November and 30 April as the estuaries have been designated 'bass - nursery areas' by MAFF. Two licensed seine nets usually operate from May to August for salmon and sea trout in the Glaslyn and Dwyryd Estuaries, and cockles are gathered by hand in this area.

### **12.3.10 Criccieth**

Up to 10 beach boats pot for lobsters, net for bass, mullet, herring, rays and flatfish, and handline for bass, mackerel and pollack. Two licensed seine nets are used in the Dwyfawr Estuary to catch salmon and sea trout during the summer. There is little fishing activity during the colder months.

### **12.3.11 Pwllheli**

Three trawlers of 10-12 m and 8 smaller boats of less than 10 m use nets and pots, and are joined by several part-time boats in the summer. The recently constructed marina could attract more fishing boats in the future. The trawlers fish Cardigan Bay throughout the year for a mixed catch of white fish. Gill nets are used for cod, whiting and herring in winter and for bass, mullet and pollack in summer and tangle nets are set for rays and flatfish from spring to autumn. Nets set in rocky areas may take an often important by-catch of crustacea. The larger boats each set up to 6,000 m of netting out to 10 miles offshore, whereas the smaller boats of up to 6 m set between 1,000 and 1,500 m of netting within a few miles of the coast, often within Llanbedrog Bay.

Lobsters provide the mainstay for potters with brown, velvet and even spider crabs (sometimes taken in nets) also being taken; landings are held in storage tanks on the quay. Several fishermen set whelk pots and process their catches on the quay. Fishing effort increases during the summer when part-time fishermen join the fishery.

### **12.3.12 Abersoch**

Part-time fishing prevails from this small community and further round the tip of the Llyn Peninsula involving beach boats of 4-6 m. Some boats set up to 200 pots from spring through to the end of the year or until the weather turns rough, for lobsters, crabs and whelks. Fishermen process their own catches of lobsters and brown crabs for a local market which is highly dependent on tourists. Fixed nets are set from the beach out to a few miles offshore, from spring till the end of the year (weather permitting) for a variety of species including rays, plaice, turbot, sole, flounders, bass, mullet, pollack, cod and whiting. Dogfish are used for pot bait. Beach nets are set overnight being tended during the next low tide. Several boats charter angling trips.

### **12.3.13 Aberdaron**

Several beach boats of 4-6 m set pots and nets from spring through to late autumn. Lobsters, brown crabs and crawfish are taken in pots, and tangle nets are set specifically for crawfish on rocky ground particularly around Bardsey Island and for spider crab further

offshore. Commercial divers also take crawfish and lobsters in summer. Nets are set in Aberdaron Bay, Porth Neigwl and along nearby beaches for bass, rays and flatfish, and pollack in rocky areas close to the shore. Mackerel are caught on handlines for local sale during the summer.

### **12.3.14 Porth Colmon to Porth Ysgaden**

Small coves along this stretch of coast offer minimal shelter, and are used by a up to a dozen part-time beach boats setting pots for lobsters and crabs and nets for bass, pollack and flatfish during the warmer months.

### **12.3.15 Morfa Nefyn, Nefyn, Porth Dinllaen and Trevor**

Eight to 10 boats of 5-8 m regularly fish from these small bays from spring through until the end of the year and are joined by 20-30 beach boats during the summer. Most of the regular fishing boats pot for whelks, lobsters and crabs, each setting up to 400 pots out to 6 miles offshore and usually lifting and emptying them on alternate days. Pots are often baited with dogfish bought from Caernarfon trawlers. Anchored nets are used for bass, pollack, rays, turbot and plaice (some set along the beach) and nets are drifted for bass (off Dinas Dinlle), mackerel and herring. Handlines are used by commercial and recreational fishermen for bass and mackerel.

### **12.3.16 Caernarfon**

Two trawlers (only one of which fishes full-time) and several under-10 m static gear boats are moored in the tidal reaches of the River Seiont, which leads into the Menai Strait. The trawlers fish within Caernarfon Bay for most of the year landing a mixed catch of white fish, e.g. plaice, turbot, brill, rays, whiting and cod. The under-10 m fleet sets nets for cod, bass (fixed and drifted), rays and flatfish within Caernarfon Bay and close inshore, off Caernarfon Bar and in Llanddwyn Bay. Two licensed netsmen seine net for salmon and sea trout in the Menai Strait between the Rivers Seiont and Gwyrfrai between 1 April and 31 August. Mussels, Pacific oysters and Manila clams are cultivated in shellfish growing lays near Brynsiencyn under the Menai Strait (West) Oyster, Mussel and Clam Order 1978. Juvenile mussels are often obtained from Caernarfon Bar. The several order site also covers a natural mussel bed. Up to 50 people may gather cockles from Traeth Melynog with other shellfish including periwinkles and mussels providing short-term employment.

### **12.3.17 Rhosneigr and Aberffraw**

Up to a dozen beach boats use pots and nets off the west coast of Anglesey up to Holyhead principally during the

warmer months as this exposed coast is subject to strong westerly winds which severely restrict fishing activity during winter. Pots are set along the sheltered areas of rocky coast for lobsters, brown and velvet crabs, and further offshore for whelks. Gill and tangle nets are set for cod, whiting, pollack, bass, rays, flounder and herring in season, and bass and mackerel are caught on handlines by commercial and recreational fishermen. Cockles and mussels are gathered from Malltraeth Sands by hand.

### **12.3.18 Holyhead**

Holyhead, the largest port in North Wales, is principally used by visiting offshore vessels, e.g. Belgium beam trawlers landing sole and plaice to their own transport. During the late-1980s, Holyhead supported around 25 full-time vessels that fished with longlines for spurdogs, but, by the beginning of the 1990s, landings fell and in 1993 only around 6 local boats remained. Two of these are over 10 m and otter trawl for white fish, dredge for scallops north-east of Anglesey and set nets, whilst the remainder are under 10 m and tend to concentrate on potting and netting. Local merchants and processors deal with shellfish, such as lobsters, crabs, scallops, whelks, cockles and periwinkles. Most of the lobsters and crabs are obtained from the Lleyen Peninsula, Holyhead and the coast of Anglesey.

Pots are set around Holy Island for lobsters and crabs, and nets take bass, mullet and herring from Holyhead harbour and the 'Inland Sea', an area of water that splits the mainland and Holy Island, where they are only permitted between 1 December and 31 March. Pacific oysters are cultivated in the Inland Sea.

### **12.3.19 Cemaes Bay**

This reasonably sheltered bay has a small harbour which is used by 3-4 boats of 5-10 m that fish mainly from spring to autumn. Pots are set for lobsters and crabs (brown and velvet), nets for pollack, bass, rays, flatfish and sometimes cod, and handlines for mackerel and bass. Longlines were set for spurdogs until catch levels fell during the late-1980s.

### **12.3.20 Amlwch**

Up to 8 boats of 8-12 m use this partly tidal harbour that remains accessible at all states of the tide, 4 or 5 on a full-time basis. The larger boats set nets for flatfish, rays, cod and hake, sometimes as far offshore as the Isle of Man where hake are caught in deeper waters. Netting has become the main method of fishing here since the late-1980s following the demise of the spurdog longline fishery, particularly for rays; each boat setting 8-12 fleets of tangle nets (250-300 mm sized mesh), with each fleet up to 1,000 m in length. These nets also take

an important by-catch of turbot and brill. The under-10 m fleet pots for lobsters, brown and velvet crabs, gill net for bass, cod and herring and sets tangle nets for flatfish and rays. Two full-time 7-9 m boats use whelk pots in the deeper waters off Amlwch and supply merchants at Holyhead or Bangor. Several of these vessels will also take out the occasional angling party.

### **12.3.21 Red Wharf Bay**

Beach boats of up to 6 m are launched from this bay and set nets off the coast from Amlwch to Puffin Island, for bass, mullet and pollack during the warmer months, cod and whiting in winter and pot around Puffin Island for lobsters and crabs. Cockles are taken from Red Wharf Bay by hand. Commercial and recreational bass fishing from a boat is very popular around Puffin Island and off Beaumaris

### **12.3.22 Port Penryn (Bangor)**

Fishing activity from this port is dominated by the cultivation of mussels. There are extensive mussel growing grounds leased under the Menai Strait Oyster and Mussel Fishery Order 1962 and 1963. Juvenile mussels obtained from Morecambe Bay and occasionally Caernarfon Bay (when available) and even Dornoch Firth in Scotland are relaid here and left to grow for 2 to 4 seasons before being harvested by dredging. Small natural mussel beds are found just outside the several order site at Mountfield and Friars Bay, Beaumaris, and these stocks are sometimes worked by Conwy fishermen. One firm operates an ice plant, cold store facilities and lobster-holding tanks, processes shellfish, e.g. mussels and whelks, and purifies them in tanks to supply retail outlets countrywide. Mussels are also provided for on-growing to both domestic outlets and France and the Channel Islands. Cockles are regularly collected by hand further west along Lafan Sands in Conwy Bay and, since the early-1990s, harvested using hydraulic suction dredgers under the authorisation of the North Western and North Wales SFC.

Only 1 trawler of 11 m operates out of this port compared to between 6 and 8 during the late-1980s. The remaining trawler lands plaice, rays and other white fish in good weather, occasionally targeting herring in autumn. One or 2 part-time boats may use nets for bass and mullet, although netting in the north end of the Menai Strait is prohibited from 1 April to 30 November. There are 2 licensed salmon draft nets (seine nets) used between Menai Bridge and Llanfairfechan and across to Puffin Island, between 1 April and 31 August.

### **12.3.23 Conwy**

Two full-time otter trawlers under 10 m fish out to 20 miles north of Great Ormes Head taking plaice, sole,

rays plus the occasional turbot and brill and the odd bag of queen scallops and scallops. One trawler also uses ray and plaice/sole nets. Fishing during the winter is more sporadic and landings generally comprise rays, plaice, cod and whiting. North Western and North Wales SFC have prohibited trawling between Amlwch and Rhyl, other than for shrimps, prawns and sprats between 1 April and 31 December unless a net with a mesh exceeding 99 mm is used.

The Conwy Estuary supports an important mussel fishery involving 27 licensed fishermen, which is regulated by the North Western and North Wales SFC. Hand rakes are used to harvest mussels between September and the end of March and the Conwy Mussel Fishery Order requires that mussels taken in the area must be cleansed, for public health reasons, before being sold. In summer, 6-8 boats take out angling parties and employ 10-12 men, up to 20 people use hand rakes for mussels within the estuary in an area covered by a regulating order from September until the end of March. Three fishermen operate a purification plant and market their own catches, whilst the remainder supply merchants in Bangor and Holyhead. One full-time and a few part-time boats set pots for lobsters and crabs, one boat concentrating on velvet crabs for most of the year. Netting within the estuary and further along the coast is restricted to protect salmonids, and the bass fishery within the estuary is subject to a seasonal closure, having been designated a 'bass - nursery area' by MAFF. There are 3 licences for salmon and sea trout seines in the Conwy estuary, that operate between 1 April and 31 August. Fishing generally takes place during the latter part of the season. There are 2 fixed traps subject to ancient rights, only one of which, a basket trap, is currently used. A small commercial eel fishery operates in the estuary involving baited traps.

### ***12.3.24 Rhos-on-Sea***

One full-time boat, under 10 m, uses an otter trawl and handlines landing directly to a retail business, and several boats charter angling trips during the summer. Sole, plaice, rays, turbot, bass, flounder and mackerel are landed during the warmer months, with some effort towards cod and whiting, plus by-catches of plaice and rays in winter.

### ***12.3.25 Rhyl***

The main fishing activity comes from chartered angling trips involving up to a dozen boats, some of which also set nets for sole, plaice, flounders, rays, bass and mullet. Shrimps may be taken in trawls and push nets. Eight sling (drift) nets for salmon fishing are presently available for issue, though low catch levels and the increase in net licence charge have resulted in only 2 nets being taken up in the 1994 season. These nets are fished between 15 March and 31 August.

### ***12.3.26 Llannerch-y-mor to Connah's Quay***

Up until the late-1980s, an estimated 200 boats (most 4-6 m) on the Welsh side of the Dee Estuary were used for sea fishing. Following the introduction of netting restrictions in the early-1990s, to prevent the illicit capture of salmon and sea trout (within the Dee Estuary the NRA acts as a sea fisheries committee), less than 30 boats remain, the majority fishing out of the estuary. Most of the shrimp boats work from Connah's Quay, Flint and Greenfield and trawl the low water channels beyond a line from West Kirby to Mostyn, from March to May and from August to November. Shrimps are also caught in push nets in Hilbre Swash. During summer and winter most boats fish further offshore for plaice, sole, flounders, turbot and whiting. Drifted trammel nets either weighted or unweighted are used to catch flounders at the mouth of the estuary, with bass and mullet being taken in small numbers off Hilbre Island, during the summer. Four trammel nets are used throughout the tidal Dee and a maximum of 18 draft (seine) nets are licensed to fish for salmon and sea trout in the canalised section of the river between Connah's Quay and Chester, from 1 March to 31 August. Bass fishing is restricted in the estuary as it has been designated a 'bass - nursery area' by MAFF.

### ***12.3.27 Parkgate and Hoylake***

Approximately 6 full-time and up to 40 part-time men use the same number of 6-9 m boats for trawling for shrimps and white fish. Shrimps are caught in shallow waters mainly in the mouth of the Dee estuary (e.g. Rock Channel and Hilbre Swash), with landings principally made at Hoylake. Inshore trawlers take sole, plaice, rays, turbot, dabs and flounders, often fishing off the Sefton coast. Trammel, tangle and gill nets are used for flatfish, bass and mullet, and bass are caught on handlines. The shallow waters off the North Wirral coast provide an important nursery ground for a number of species including sole, plaice and rays.

There is an intensive hand-raking fishery for cockles in 4 main areas of the estuary: Talacre; Salisbury Bank; Thurstaston and West Kirby, although the position of beds tends to vary from year to year. The main landings are on the English side, since the intertidal banks are easily reached there by tractors towing trailers. In a good year up to 400, mainly casual workers, gather cockles during the season.

### ***12.3.28 Birkenhead and Merseyside***

One or 2 vessels over 10 m and several smaller boats are used in good weather for otter and beam trawling. Shrimps are taken in the River Mersey and Penfold Channel whilst grounds off Rock Channel and Leasowe

are worked over high water for plaice, sole, rays and whiting. The main white fish grounds are found north of Taylors Bank offshore from Ainsdale. Visiting beam trawlers (mainly from Brixham and Belgium) often land soles at Birkenhead to their own transport. There is an increasing number of part-timers in this area due, in part, to steelwork redundancies and short working hours; they usually use push nets for shrimp, gather cockles or set nets and lines.

### **12.3.29 Liverpool**

There are no full-time fishermen working but a number of part-time and casual boats trawling, shrimping and charter angling from within the Mersey estuary. Visiting vessels (e.g. Belgium beam trawlers and Scottish scallop dredgers) land their catches into Liverpool Docks to their own transport. The beam trawlers fish Liverpool Bay and the eastern Irish Sea, outside the 12 mile limit.

### **12.3.30 Blundellsands and Formby**

Ten vehicles tow beam trawls for shrimps and push nets are also used for shrimps in the Penfold Channel, off Southport and in Formby Pool from August to May. Nets and longlines are set within Penfold Channel, on Taylors Bank off Ainsdale, in Formby Pool and on East Hoyle Spit for flatfish, bass and mullet during the warmer months of the year, with less effort towards cod and whiting in winter. Longlines are sometimes chosen in preference to nets when weed is abundant or during strong tides. Cockles and mussels are gathered by hand, often when shrimps are out of season.

### **12.3.31 Southport**

Up to 10 vehicles working from either Southport or Marshside fish for shrimps mainly in the Penfold Channel, 4 or 5 on a full-time basis. Push nets are also used to catch shrimps, which are taken from August through to May, except during very cold spells in winter. Some of the vehicles float and possess propellers which allows them to work deeper waters and catches are processed on board (boiled). Nets are set intertidally for flatfish, bass and mullet, a couple of boats trawl for flatfish, shrimps and rays, and cockles are gathered by casual workers using hand-rakes.

### **12.3.32 Ribble Estuary, Hesketh, Preston and Lytham**

Up to 14 boats all under 8 m fish from several landing places within the Ribble Estuary, half on a full-time basis, and most trawl for shrimps from autumn through to spring, occasionally targeting white fish. One or 2 full-time and several part-time boats set nets for bass and mullet, with bass also taken on handlines. Six

licensed drift nets are used in the river estuary for salmon and sea trout between 1 April and 31 August. Cockles are gathered from beds within the estuary depending on availability and demand.

### **12.3.33 Lytham St Annes and Blackpool**

One full-time boat is used, mainly for shrimping, with the highest catches being taken in the autumn. This fishery also involves several vehicles and about 20 men push-netting at suitable times. One hundred or so pleasure angling beach boats are frequently launched from the Fylde coast on a weekend.

### **12.3.34 Fleetwood**

This is the most important fishing port on the west coast of England and supports a traditional trawling fleet comprising around 45 vessels supplying a daily fish market. Between 20 and 25 trawlers fish grounds mainly inside the 12 mile zone; outside of which there is a visiting fleet of Belgium and Brixham beam trawlers that heavily exploit the sole and plaice in spring and autumn and land principally at Fleetwood. Some foreign boats are eligible to fish in the 6-12 mile band, but UK boats over 13.7 m must fish at least 3 miles from the coast. During the 1990s, declining landings (attributed to the poor state of fish stocks on local grounds and fishing restrictions), together with the recession and its affect on the market, has resulted in many fishermen opting for the UK Government's 'decommissioning scheme', further reducing the already diminished fleet.

A high proportion of the local otter trawling fleet are over 15 m and 30-40 years old. They fish beyond 3 miles offshore for sole, plaice, cod and whiting, sometimes making trips of 2-3 days when fishing the northern areas of the Irish Sea. Many switch to the *Nephrops* fishery off the Cumbrian coast from May until September, landing into Whitehaven. Ten to 12 trawlers are under 12 m and include 6 purpose-built inshore beam trawlers that fish the Lune Deep area, right up to the shore along the Fylde coast and south to the North Wirral coast, landing sole, plaice, turbot, brill, rays, dabs, flounders and whiting. Two or 3 other boats periodically beam trawl for shrimp in the River Wyre during the colder months. Six to 8 part-time boats use static gear, mainly nets, and a further 8 or so charter angling trips. Four licences to fish lave nets for salmon can be issued for the River Wyre, but are presently suspended in view of low stock levels.

### **12.3.35 Glasson Docks**

Three or 4 part-time boats under 10 m use lines, trawls, shrimp and set nets. Visiting beam trawlers sometimes



land catches here to their own transport, particularly during the spring sole fishery. Large visiting mussel dredgers, some over 30 m, occasionally base themselves here when contracted to dredge mussels from Morecambe Bay, under the authorisation of the North Western and North Wales SFC. The Lune estuary supports a cultivated mussel fishery and cockles are taken from beds around the mouth of the estuary and further south, when available.

### **12.3.36 Lancaster**

A few boats, working on a seasonal basis, trawl for shrimps and flatfish.

### **12.3.37 Overton and Sunderland Point**

Two full-time boats, 1 from each village, plus several part-time boats trawl the Lune Estuary for shrimps. Whitebait are caught in filter nets, although few fishermen are now involved as demand has fallen since the 1980s. Thirty-seven licences are issued to use drift or whammel (10), haaf (26) and seine (1) nets for salmon and sea trout in the Lune Estuary, from 1 April to 31 August. The drift and seine nets involve boats, whereas haaf nets are hand-held. Sea trout landings peak around May and June, whereas salmon are caught in the greatest quantity at the end of the season, i.e. July and August. The estuary also supports a hand-raking cockle fishery.

### **12.3.38 Morecambe**

Four full-time and around 11 part-time boats concentrate mainly on shrimps for most of the year, with some taking rays, flounders, cod and whiting in otter trawls and set nets. Gill nets and lines are used for bass and mullet, although bass fishing is prohibited between 1 June and 30 September in an area off Heysham power station, designated a 'bass - nursery area' by MAFF. Whitebait nets are also fished within the bay. Local fishermen hand-rake for mussels from the end of the summer until spring using boats to take them to mussel beds inaccessible by foot and to transport the mussels ashore. The Morecambe Bay Mussel Fishery Order (1978), covers an area of mussel beds around the mouth of the Bay, where only licensed fishermen can remove mussels. Juvenile mussels are taken, with authorisation from North Western and North Wales SFC usually from outlying beds which are considered unstable, and relaid

into sheltered areas in Morecambe Bay or sold to other mussel fisheries, e.g. those in the Menai Strait and Conwy estuary.

### **12.3.39 Flookburgh and Roosebeck landing**

The main fishery here is for shrimps using tractors towing beam trawls along the channels at low tide. Up to 20 vehicles are in use, 10-12 full-time from Easter until November. When shrimp catch rates are low there are several alternatives: flounders (for which there is a local demand) taken in various fixed nets (e.g. drop, stream, bag and baulk); whitebait (mainly sprats with a small by-catch of 0-group herring) caught by stow and filter nets from November to May; cockles and mussels; and a variety of other species (e.g. rays and bass) taken in gill nets and on lines. Fourteen licensees use lave nets (hand held nets) for salmon and sea trout in the Leven (6) and Kent (8) Estuaries. In total there are around 60 men and boats or tractors working Morecambe Bay on a part-time basis and the cockle fishery can attract over 150 men from North Wales and Merseyside.

### **12.3.40 Barrow-in-Furness**

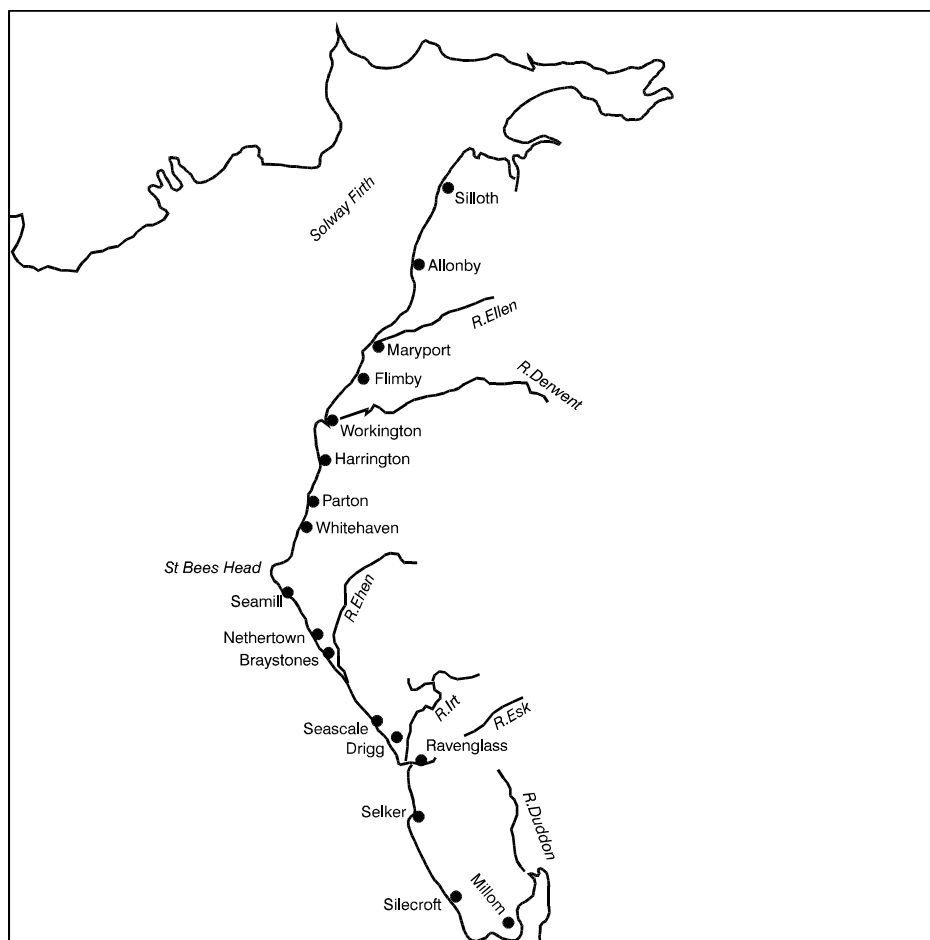
Two full-time otter trawlers over 12 m and 3 full-time beam trawlers of 10-12 m land white fish throughout the year, 1 or 2 vessels sometimes switching to scallops. Up to 15 part-time boats trawl for shrimps and set trammel nets for plaice in autumn, use gill nets and lines for cod in winter and nets and lines for plaice, rays and bass during the warmer months. Employment at the shipyards tends to govern the amount of fishing activity. Local fishermen gather mussels by hand from autumn, particularly around Walney Island, with boats used to ferry fishermen to outlying beds. In the winter of 1993, 80 fishermen were gathering mussels from the north side of Morecambe Bay. Bivalve molluscs are also cultivated in this region of the Bay within several order sites, including Pacific oysters, native oysters and clams.

### **12.3.41 Duddon Estuary**

Up to 20 boats and 5 tractors exploit mainly shrimps, with little activity in winter when set nets and lines are also used here for cod. Gill and tangle nets are used for cod and rays. Access to local mussel beds is difficult on foot due to liquefied sands. Three seine nets are licensed to take salmon and sea trout, though none were used in 1994.



### 13. CUMBRIA: Millom to Silloth (Cumbria SFC)



#### 13.1 Synopsis of current inshore fisheries

A variety of resources are taken from the sand, shingle and rocky shore, which culminates in the Solway Firth in the north. Vessels over 10 m operate otter trawls for *Nephrops* and white fish, use beam trawls and seine nets for white fish and dredges for scallops and queen scallops. The majority of these vessels are based in Whitehaven and Maryport and most fish within the 12 mile zone, beyond which they are in competition with a large visiting fleet. The *Nephrops* fishery occurs inside 12 miles off St Bees Head and attracts boats from all over the UK. Out to 3 miles offshore, boats under 10 m use nets for cod, rays and flatfish, lines for cod and rays, and pots for lobsters and crabs. Shrimps are taken in beam trawls in the Solway Firth and cockles, mussels and periwinkles are gathered intertidally.

#### 13.2 Information on species targeted, fishing methods deployed and fishing restrictions inshore

##### 13.2.1 Demersal fish (e.g. cod, whiting, plaice, sole, brill, dab, turbot, rays and dogfish)

Demersal fish are taken in otter and beam trawls and seine nets throughout the year. Cod and whiting predominate in otter trawl and seine net catches during the colder months; a traditional cod fishery exists 5-10 miles west of Whitehaven involving anchor seiners and pair-trawlers. The sole fishery begins in spring and attracts a visiting fleet of beam trawlers from Belgium,

France and Brixham, working off the Cumbrian coast, usually outside the 12 mile zone, with Fleetwood trawlers operating closer inshore. A Cumbria SFC byelaw prohibits boats over 13.7 m from fishing within 3 miles of the coast, other than by handlines. Flatfish (e.g. sole, plaice, turbot and brill) continue to provide the mainstay on inshore grounds, together with rays, during the warmer months with good catches expected within the Solway Firth. The larger vessels tend to fish further offshore during this period with otter trawlers engaging in the seasonal *Nephrops* fishery.

The static gear fleet take cod in gill and trammel nets and on long- and handlines, usually in rocky areas close to the shore which are inaccessible to trawlers. In spring, tangle and trammel nets are set for flatfish and rays usually within 6 miles of the coast, outside of which the risk of losing gear to trawlers increases. Nets set in intertidal areas are sometimes supported by stakes and take cod, rays and flatfish. Local SFC byelaws prohibit nets exceeding 240 m in length, stipulate a minimum distance of 300 m between 2 nets, require that all static gear is marked and restrict netting activity around rivers.

### **13.2.2 Pelagic fish (e.g. bass, mullet, mackerel and herring)**

There is no regular commercial bass and/or mullet fishery in Cumbria, as both species are towards their most northerly range here. Bass are taken on long- and handlines and in nets during the summer. A small quantity of mackerel and herring are taken in trawls and nets and mackerel on lines.

### **13.2.3 Diadromous fish (e.g. salmon and sea trout)**

The main salmon fisheries within this district occur in the Solway Firth, where a total of 165 haaf net licences were issued in 1994, the numbers of which vary between years, more than other methods. Salmon and sea trout are also taken in traditional fish traps used in some rivers, e.g. 2 cribs, and 4 drift nets are operated along the Cumbrian coast. All the salmon fisheries are subject to a closed season which lasts from around the start of September to the end of February, and sea fish netting restrictions apply around estuaries to protect salmonid stocks.

### **13.2.4 Shellfish (e.g. *Nephrops*, shrimp, lobster, brown crab, cockle, mussel, scallop and whelk)**

*Nephrops* are caught in otter trawls worked in deep water areas to the west of Whitehaven. The fishery

usually begins around May and lasts until August, with peak landings made on neap tides when *Nephrops* are more likely to be out of their burrows foraging for food and therefore more vulnerable to capture. *Nephrops* can be caught in winter but only when the tides are at their slackest and the weather settled, which is seldom the case. White fish, particularly cod, whiting, haddock and plaice, can provide an important by-catch and the inclusion of a 75 mm square mesh section in nets with a minimum mesh size of 70 mm has become statutory so juvenile gadoids have a better chance of escaping. Visiting trawlers, e.g. from Scotland, Northern Ireland and Eire, occasionally land their catches into Whitehaven, having fished the same grounds as the local fleet.

The Solway Firth shrimp fishery involves boats under 10 m towing beam trawls and attracts boats from other UK ports, and a Danish company operates shrimp boats within Solway Firth under UK fishing licence. Cumbria SFC byelaws limit the size of beams to an aggregate length of 6 m and state that catches must be sifted through a riddle and immature fish returned to the sea as soon as possible. Lobsters, brown and velvet crabs are caught in pots set by boats under 8 m in rocky areas from around March to November. Whelks are also taken in pots and shore crabs are gathered by hand and sold as bait.

Cockles are harvested from the Solway Firth using hydraulic suction dredges, tractor drawn dredges and by hand. Most of the effort occurs on the Scottish side of the Solway Firth, where 9 tractors and the majority of the 14 boats working hydraulic suction dredges are based. The Cumbria SFC undertake regular surveys of both cockle and mussel stocks to better aid the management of both species. The low level of stocks during the 1990s led to a seasonal closure from January to July. Mussels are taken from Ravenglass estuary by hand (only mussels over 51 mm in length may be removed) with boats used to ferry the fishermen to outlying beds inaccessible by foot. An increasing number of trawlers from Maryport and Silloth have started to dredge for mussels. Scallops and queen scallops are taken in trawls (as a by-catch to white fish) and dredges and some of the beam trawlers based in Maryport switch to scallop dredging when flatfish are scarce inshore, with some of the larger boats fishing out to the Isle of Man.

## **13.3 Description of coastal fisheries by port**

### **13.3.1 Silecroft to St Bees Head**

Six commercial boats under 10 m fish static gear from such places as Ravenglass estuary, Seascale, Braystone and Seamill beaches, 3 of which could be considered full-time, and an additional 4-6 fishermen set beach nets mainly along the Nethertown and Drigg beaches.

Lobster pots are set on the rocky outcrops from spring, taking a by-catch of brown and velvet crabs with some boats setting up to 150 pots each. Pots may be fished until the end of the year in sheltered areas. Nets are set from the beach out to 3 miles offshore for sole, plaice, rays, turbot and bass from around March to November, drifted during the same period for bass, and set for cod and whiting in winter. Trawling activity prevents the use of nets beyond 3 miles, except where the seabed is particularly rocky. In addition to nets, some boats also set longlines for cod, rays and dogfish. A licensed fish trap (crib) is used in Ravenglass estuary for salmon and sea trout, and the estuary also supports mussel and cockle beds which are exploited by hand. Over 50 pleasure angling boats are launched along this stretch of coast and can take considerable quantities of cod, pollack, bass, rays and flatfish, particularly from wrecks off St Bees Head. A small number may set the odd net or pot.

### **13.3.2 Whitehaven**

Whitehaven supports 16 full-time vessels, 8 of which are over 13.7 m and therefore not permitted to fish within the SFC district. The majority work otter trawls for *Nephrops* and white fish, 1 or 2 use seine nets and 5 are dual purpose. In addition there are 5 part-time trawlers under 10 m and 3 or 4 static gear boats working pots and nets. Since the late-1980s, *Nephrops* have made up the bulk of the value of Whitehaven landings. The main effort for *Nephrops* is concentrated west of St Bees Head south to Selker, with effort tailing off further south. Fishing offshore tends to be concentrated in a band between 5 and 12 miles offshore, with white fish such as cod, whiting, haddock and plaice providing an important by-catch. When the fishery is at its peak, between May and September, the local boats are joined by vessels from Scotland, Ireland, Wales, the Isle of Man and other UK ports such as Fleetwood. This fleet can total in excess of 80 boats.

Whitefish are usually targeted when *Nephrops* are scarce with plaice, rays, sole, turbot, brill, whiting and cod being landed in season, the seiners taking mainly flatfish. The smaller trawlers are particularly dependent on the plaice fishery during the summer, fishing right up to the coast, and also taking sole, turbot and rays. Queen scallops are landed at Whitehaven from the fishery at the approaches of the Solway Firth, though it is not the local boats that participate but the Scottish boats.

### **13.3.3 Parton and Harrington**

There are 6 part-time boats under 10 m based in Harrington harbour using nets and trawls all year round for cod, rays, plaice and sole, and a couple of boats set pots for lobsters and brown crabs, with velvet crabs also taken. Up to 10 boats are launched from Parton beach

and set nets for demersal fish, drift nets for bass, and handline for bass, cod and rays, mainly during the warmer months. Crustacea are often taken as a by-catch in nets and periwinkles are gathered by hand.

### **13.3.4 Workington**

Out of 11 trawlers only 3 are over 10 m and all are involved in the same fisheries and work the same grounds as the Whitehaven and Maryport vessels. A fleet of around 20 smaller boats uses gill and trammel nets for cod, rays, sole and plaice in season, some occasionally trawl for shrimps and flatfish and many pot for lobsters and crabs, which are also taken in nets. With the exception of 1 boat, these fishermen are mainly part-time.

### **13.3.5 Flimby**

Three or four beach boats are used to set trammel, gill and tangle nets principally for plaice, rays, sole and cod, with salmon, sea trout and bass often being taken. Four licences are issued for drift netting for salmon and sea trout off this coast, although closed areas exist around the mouths of the Rivers Ellen, Derwent and Ehen.

### **13.3.6 Maryport**

Most of the 16 full-time otter and beam trawlers are over 12 m and generally fish within the 12 mile zone, landing sole, plaice, rays, turbot and brill from the Solway Firth. The larger boats fish further offshore during the summer, and some otter trawlers participate in the *Nephrops* fishery off Whitehaven. In winter, 5 vessels dredge for scallops and queen scallops and 3 dredge for mussels, whilst the rest land whiting, cod, rays and flatfish. Scottish boats frequently land into Maryport between spring and autumn. Around 9 smaller boats set nets (and possibly longlines) mainly on a part-time basis for flatfish, rays, cod and bass, and 3 shrimping boats work the shallower grounds in the Solway Firth. Four or 5 boats set pots for lobsters and crabs, and 1 sets whelk pots.

### **13.3.7 Allonby**

Rays are taken by up to 6 boats using trammel and gill nets from spring through summer, some set nets along the beach, and boats from Maryport work tangle nets for rays off Allonby, which is considered a ray breeding ground.

### **13.3.8 Silloth**

The most northerly port in the district, Silloth has 5 shrimping boats (3 of which are owned by the same family) and 2 or 3 cockle dredging boats. Since the

early-1990s, some boats have also started to dredge for mussels. Shrimps are beam trawled from channels in the Solway Firth often at low tide and for most of the year, except during very cold spells and stormy weather in winter when shrimps migrate offshore. The Solway Firth provides an important flatfish nursery ground and juvenile flatfish taken as a by-catch have to be separated using a riddle before being returned to the sea together with under-size shrimps. The remaining shrimps are then boiled and chilled at sea. In 1993, a Dutch-owned company established a shrimp holding operation at Silloth thus encouraging additional boats to land there.

The cockle fleet harvests beds in the Solway Firth using hydraulic suction dredges and are sometimes joined by tractors towing dredges and fishermen gathering cockles by hand, although the latter method is not very popular as cockles tend to be found in low densities. A fall in cockle stocks during the early-1990s (attributed to poor recruitment) resulted in the Cumbrian SFC closing the fishery from the start of the year until the end of July.

The 2 rivers leading into the Solway Firth (Esk and Eden) support large stocks of salmon and sea trout and in 1994, 165 licences were issued for haaf netting and 2 licences for traps (cribs) in the Upper Solway from 25 February to 9 September.

## 14. CONCLUSIONS

Coastal fisheries are the backbone of many fishing communities, playing an important role in the local economy as well as contributing to our national heritage. The socio-economic importance of the inshore fishing industry to coastal communities is particularly apparent in areas where; (i) remoteness presents few economic alternatives, e.g. in parts of northern England, south-west England and parts of Wales, (ii) the nature of the coastline and coastal waters favours small inshore boats, e.g. fine sediment-type shores found in many bays and estuaries, and (iii) where there is a high rate of unemployment, particularly in areas hit by recession, e.g. Teesside and parts of south Wales where heavy industry once prevailed.

As mentioned by Pawson and Rogers (1988), the versatility of inshore fishermen is a response to the seasonal availability of individual resources, longer-term fluctuations in abundance of natural finfish and shellfish populations, marketing and management controls. The inshore fishing trends since the late-1980s have been of falling catches and profitability. Profits have fallen through rising operational costs against decreasing catches and low first sale prices. Fishermen have responded by increasing fishing effort, usually in terms of quantity and efficiency of fishing gear, and where possible re-directing effort towards non-quota species. New or previously under-exploited resources, such as cuttlefish, prawns, rays and red mullet, are becoming a valuable alternative to traditional fisheries as new markets are found for them. Opportunistic effort may be intense, reducing the length of time a fishery remains profitable. SFCs try to sustain local resources through local control, for example, many SFCs have introduced 'fishery orders' covering major mollusc fisheries, allowing them to regulate numbers of fishing boats exploiting a particular resource, time spent fishing and scale of landings.

The importance of part-time fishermen in many coastal fisheries should not be underestimated. Part-time fishermen are defined as those who do not derive their entire income from fishing - a definition which covers traditional farmer-fishermen in more remote coastal communities, as well as more recent participants in the industry. There are no accurate figures on the number of part-time fishermen, the best estimates coming from various licence and permit schemes operated by several SFCs, often in relation to particular fisheries (e.g. shellfish permit schemes operated by Cornwall and South Wales SFCs). Free access into fisheries up until 1993, and the ease with which many fishing gears can be used may well have attracted part-time fishermen into the industry, especially in areas of high unemployment.

The conservation of marine resources and more general environmental issues are attracting more interest as our knowledge of marine ecosystems and the interactions with man's activities improve. The formulation of integrated coastal zone management plans encompassing all marine activities is increasing amongst local coastal authorities and nature conservation bodies. Legislation has also been put in place to extend the powers of the SFCs to address environmental issues, not least to fulfil national obligations in support of the EC Habitats Directive.

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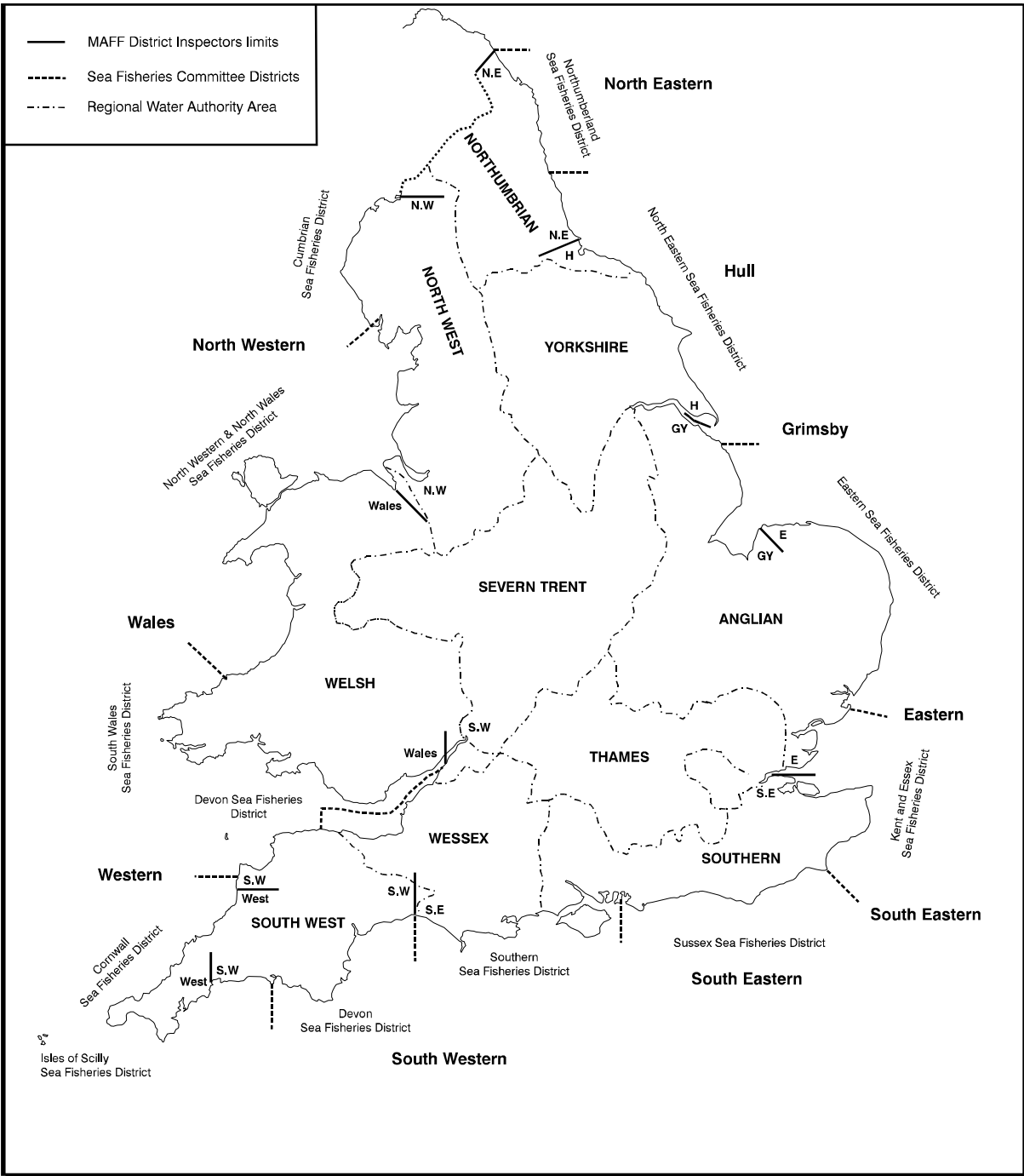




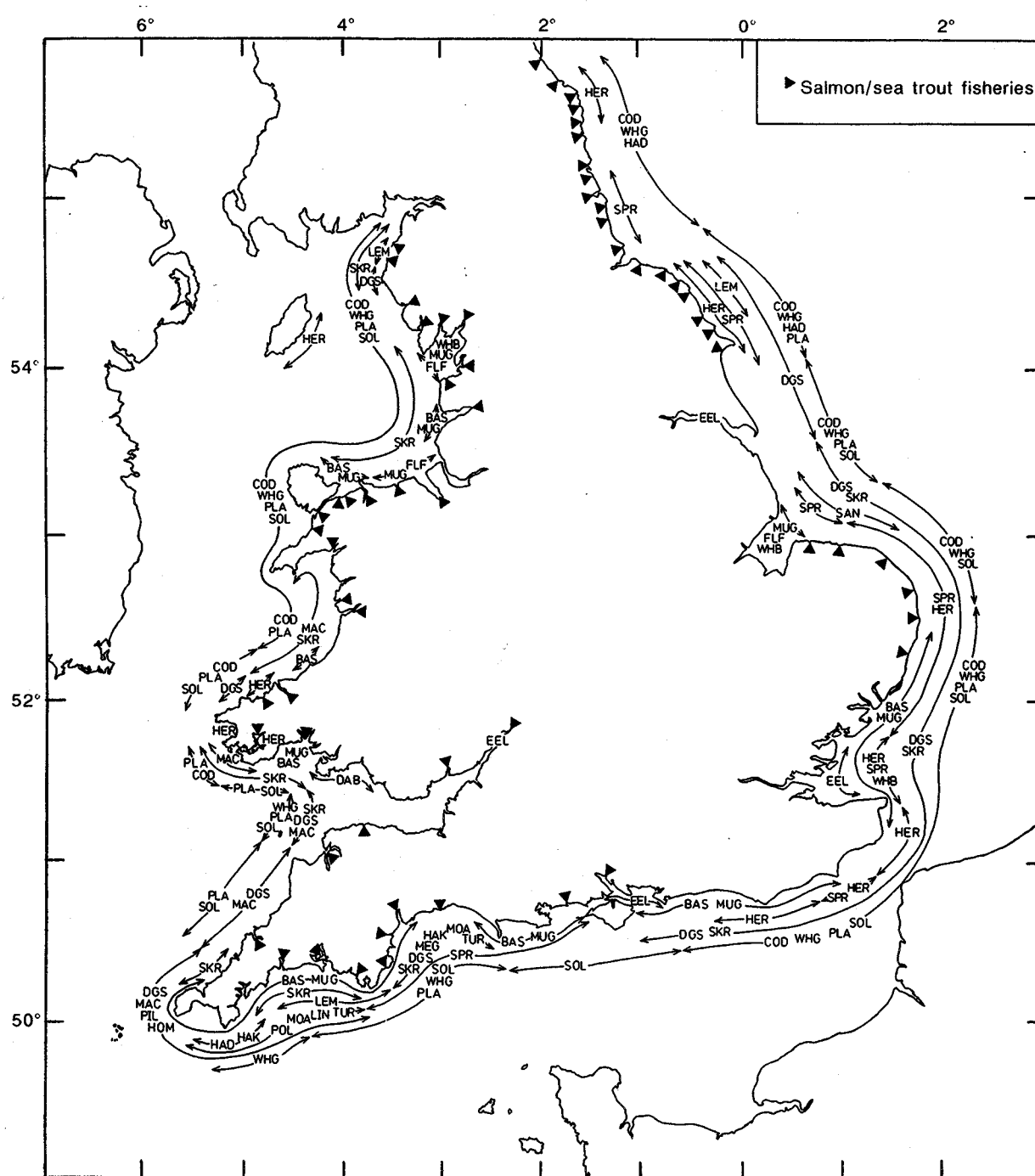
## Appendix 1. The common and scientific names of fish and shellfish species mentioned in this Report, with the corresponding abbreviations used in Appendix 3

Bass	BAS	( <i>Dicentrarchus labrax</i> )	Mullet, red	MUR	( <i>Mullus surmuletus</i> )
Bream	BRE	( <i>Pagellus</i> spp.)	Mussel	MUS	( <i>Mytilus edulis</i> )
Brill	BLL	( <i>Scophthalmus rhombus</i> )	<i>Nephrops</i> (Dublin Bay prawn or Norwegian lobster)	NEP	( <i>Nephrops norvegicus</i> )
Clam, American	CLM	( <i>Mercenaria mercenaria</i> )	Oysters, native	OYN	( <i>Ostrea edulis</i> )
Clam, Manila	CLV	( <i>Tapes philippinarum</i> )	Oysters, Pacific	OYP	( <i>Crassostrea gigas</i> )
Cockle	COC	( <i>Cardium edule</i> )	Periwinkle	PER	( <i>Littorina littorea</i> )
Cod	COD	( <i>Gadus morhua</i> )	Pilchard	PIL	( <i>Sardina pilchardus</i> )
Conger eel	COE	( <i>Conger conger</i> )	Plaice	PLA	( <i>Pleuronectes platessa</i> )
Crab, brown	CDB	( <i>Cancer pagurus</i> )	Pollack	POL	( <i>Pollachius pollachius</i> )
Crab, spider	CRS	( <i>Maia squinado</i> )	Prawns, deep sea	PRD	( <i>Pandulus borealis</i> )
Crab, velvet	CRV	( <i>Liocarcinus puber</i> )	Prawn, English	PRE	( <i>Palaemon (leander) serratus</i> )
Crab, shore	CRH	( <i>Carcinus maenas</i> )	Razorshell	RAZ	( <i>Ensis ensis</i> )
Crawfish	CRW	( <i>Palinurus elephas</i> )	Saithe/coalfish	STH	( <i>Pollachius virens</i> )
Cuttlefish	CUT	( <i>Sepia officinalis</i> )	Salmon	SAL	( <i>Salmo salar</i> )
Dab	DAB	( <i>Limanda limanda</i> )	Sandeel	SAN	( <i>Ammodytes</i> spp.)
Dogfish, nurse/huss	DGN	( <i>Scyliorhinus stellaris</i> )	Scallop	SCA	( <i>Pecten maximus</i> )
Dogfish, spurdog	DGS	( <i>Squalus acanthias</i> )	Scallop, queen	QUE	( <i>Chlamys opercularis</i> )
Dogfish, spotted	DSP	( <i>Scyliorhinus canicula</i> )	Sea trout	STR	( <i>Salmo trutta</i> )
Dogfish, unspecified	DGU	Dogfish unspecified	Shrimp, brown	SHB	( <i>Crangon vulgaris</i> )
Dory	DOR	( <i>Zeus faber</i> )	Shrimp, pink	SHP	( <i>Pandalus montagui</i> )
Eel	EEL	( <i>Anguilla anguilla</i> )	Shrimp, unspecified	SHR	Shrimps, unspecified
Flounders/fluke	FLF	( <i>Platichthys flesus</i> )	Silver smelt	SIL	( <i>Osmerus eperlanus</i> )
Gurnard	GUR	( <i>Triglidae</i> spp.)	Skate/ray	SKR	( <i>Raja</i> spp.)
Haddock	HAD	( <i>Melanogrammus aeglefinus</i> )	Sole, Dover	SOL	( <i>Solea solea</i> )
Hake	HAK	( <i>Merluccius merluccius</i> )	Sprat	SPR	( <i>Sprattus sprattus</i> )
Herring	HER	( <i>Clupea harengus</i> )	Squid	SQU	( <i>Loligo</i> spp.)
Horse mackerel	HOM	( <i>Trachurus trachurus</i> )	Tope	TOP	( <i>Galeorhinus galeus</i> )
Lemon sole	LEM	( <i>Microstomus kitt</i> )	Turbot	TUR	( <i>Scophthalmus maximus</i> )
Ling	LIN	( <i>Molva molva</i> )	Whelk	WHE	( <i>Buccinum undatum</i> )
Lobster	LOB	( <i>Homarus gammarus</i> )	Whitebait	WHB	( <i>Sprattus sprattus</i> and <i>Clupea harengus</i> )
Mackerel	MAC	( <i>Scomber scombrus</i> )	Whiting	WHG	( <i>Merlangius merlangus</i> )
Mixed demersal	MXD	Unspecified demersal fish			
Monkfish/angler	MOA	( <i>Lophius piscatorius</i> )			
Mullet, grey	MUG	( <i>Liza ramada</i> , <i>Liza aurata</i> and <i>Chelon labrosus</i> )			

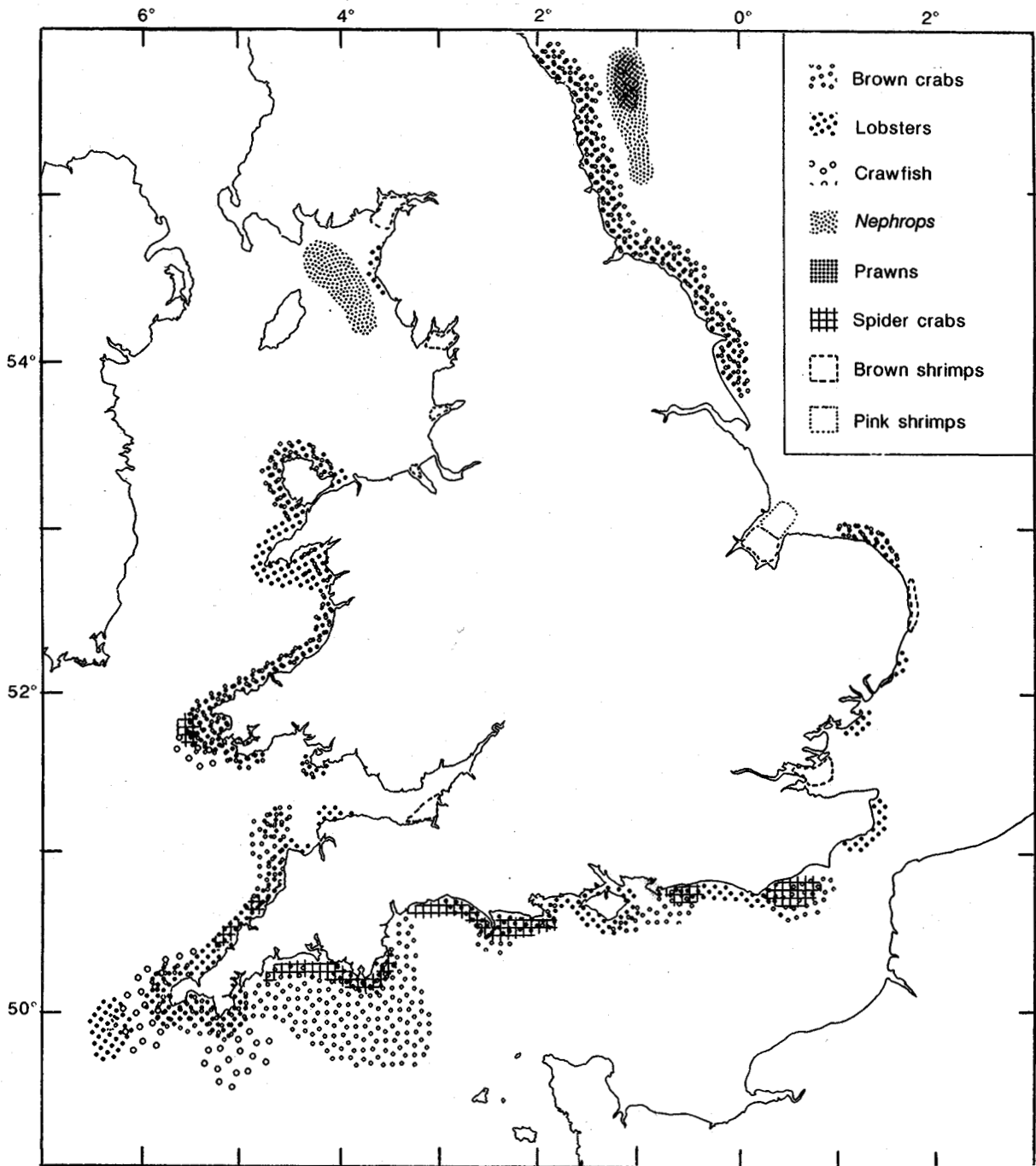
# **Appendix 2. MAFF, SFC, and NRA districts of England and Wales**



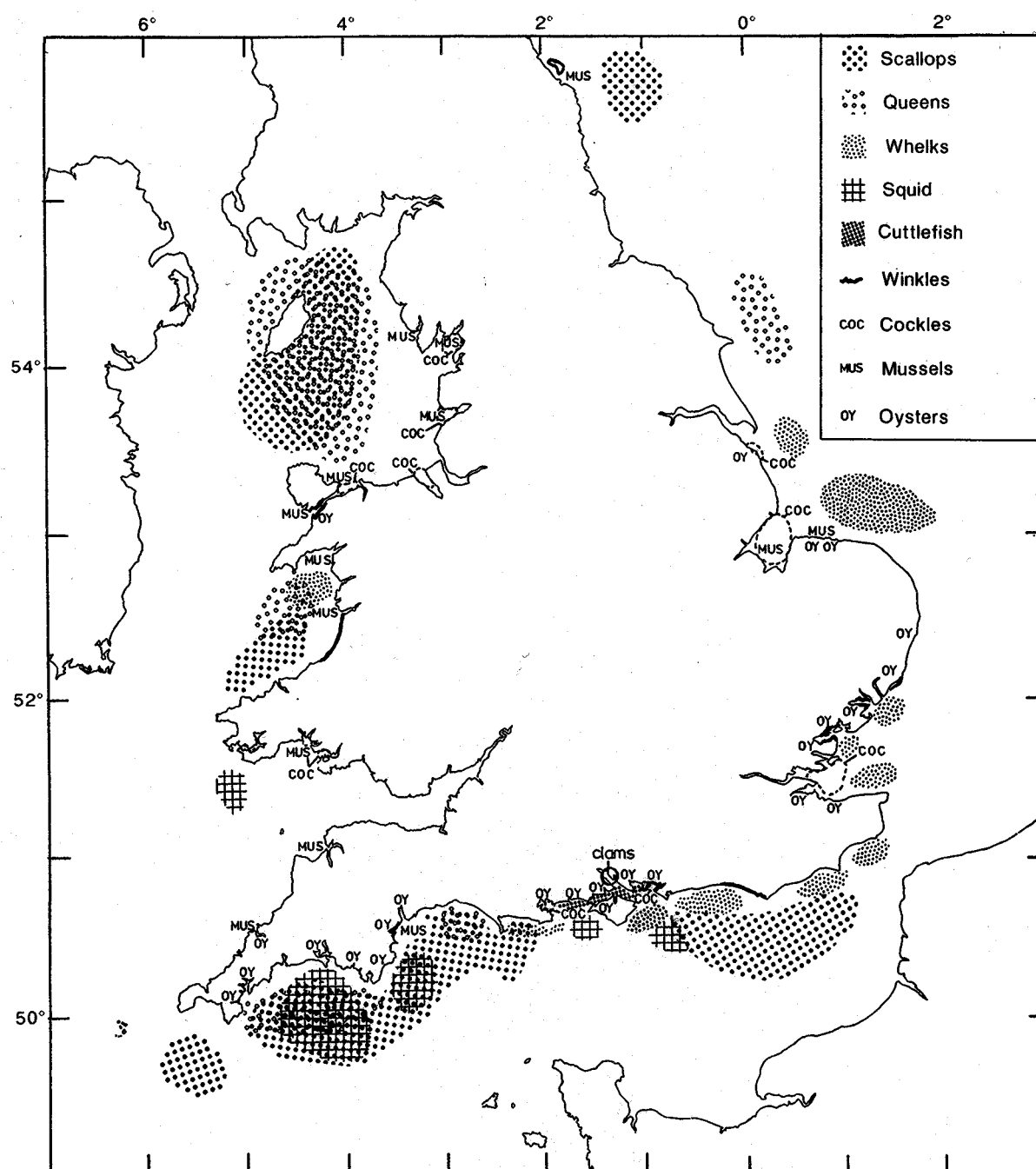
### Appendix 3. The distribution of the major commercial fish species and their fisheries around the English and Welsh coasts



**Appendix 4. The major crustacean fisheries of England and Wales**



## Appendix 5. The major molluscan fisheries of England and Wales





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