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**THE COASTAL FISHERIES OF ENGLAND AND
WALES, PART IV:
A REVIEW OF THEIR STATUS 1999-2001**

M.G. Pawson, G.D. Pickett and P. Walker

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1. INTRODUCTION

This review updates the description of the inshore fisheries around England and Wales provided in Gray (1995), which in turn succeeded Pawson and Rogers (1989) and Pawson and Benford (1983). We have sought to retain the structure that started with Pawson and Benford (1983), by providing a general overview of each fishery sector (demersal, pelagic, shellfish, migratory species) within each of eleven regions, with a résumé of the fishing activity undertaken from each port or landing place within the region. Though we have not replicated the descriptions of fishing gear given in Gray (1995), we have retained a brief discussion of the management framework, and also show the distribution of the major commercial shellfish species around England and Wales in Appendices 3 and 4, as featured in Pawson and Benford (1983).

Whilst previous reviews noted the steady increase in the relative importance of English and Welsh inshore fisheries in the last quarter of the 20th Century, a comparison with Gray (1995) reveals a general downturn in activity in many of these fisheries. Some, such as the eel trawl fishery in the Thames Estuary have almost lapsed due to a lack of resource, whilst others, exemplified by the coastal net fisheries for salmon, are being deliberately phased out to protect resources. In contrast, the production from inshore shellfisheries has been maintained, and the fishing fleet in England and Wales still contains a large number of smaller vessels capable of operating a wide range of fishing gears in seasonal and opportunistic fisheries close to their home ports.

This review is not restricted to the activities of these 'inshore' vessels, but is aimed at those people who require wider scale information on who exploits what, where and when and with which gear, at the regional level. We have found this knowledge to be particularly important when considering the implications of proposed area closures under recovery plans for cod and hake, for example. It is also highly relevant to those interested in the marine environment, in particular the impact of commercial fishing activity on the habitat and species communities.

Acknowledgements

This review has been updated through contact with officials of 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, augmented by information provided by colleagues in CEFAS, the Environment Agency and DEFRA District fishery inspectors and officers. The authors wish to take this opportunity to thank all these individuals for their input, but we reserve any responsibility for inaccuracies to ourselves.

2. FISHERIES MANAGEMENT IN ENGLAND AND WALES

2.1 Legislature and institutes

All European marine fisheries are managed within the Common Fisheries Policy (CFP), which was agreed between member states in 1983. This was reviewed and ratified by the Council of Ministers in 1992 (EC 3760/92), and the European Commission is embarking on a further review in 2002. Through this policy, fishermen from all member states have access to marine fishing opportunities allocated as a fixed proportion - the national quota - of total allowable catches (TAC), based on historic performance by species and sea area. The distribution of this quota within the national fishing fleet is left to member states. Additionally, the amount of usable fishing power has been limited through structuring (essentially, balancing the funding of new vessels and decommissioning to achieve fleet capacity reduction), and the performance of the remaining fleets is controlled by technical measures mainly aimed at protecting juvenile fish and shellfish. Enforcement of the regulations of the CFP on British registered fishing vessels throughout the UK's Exclusive Economic Zone is the responsibility of British Sea Fisheries Officers (BSFOs) and officers of the Royal Navy Fisheries Protection Squadron and Scottish Office Fisheries Protection Agency.

Within the CFP, coastal states have preferential 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, non-discrimination etc. Enforcement of regulations on all vessels fishing in this band is the responsibility of BSFOs. From the foreshore to 6 miles from baselines around England and Wales, enforcement of fisheries management measures is also devolved to sea fisheries committee (SFC) officers. There are 12 local SFC districts around England and Wales, which have the primary function of safeguarding the interests of the local (inshore) fishing industry through the conservation of coastal fish stocks and the management of fishing activities that exploit those stocks. For this purpose, each SFC drafts byelaws specific to their district, which must be ratified by the Fisheries Minister. One notable addition to the CFP in 1992 was the requirement that fisheries managers pay due regard to the environment. To this end, SFC powers have now expanded 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). Henceforth, the composition of the SFC will include someone with expertise in marine nature conservation.

In some river estuaries, e.g. all those in Cornwall, the Taw and Torridge, the Severn, the Welsh Dee, the Environment Agency (hereafter, the EA) exercises the responsibilities of a SFC, though its main fisheries responsibilities in coastal waters relate to the conservation and management of fisheries for migratory species (salmon, sea trout and eel) to a distance of 6 miles from base lines.

2.2 Restrictions on the use of fishing gear

Throughout this review we mention the main restrictions applying to particular types of fishing gear used region by region around the coast of England and Wales. Most of these are covered by SFC or EA byelaws (a comprehensive list of which can be obtained from each SFC district or EA region), but there are a number of national measures that apply throughout, and these are briefly dealt with here to avoid unnecessary repetition.

2.2.1 Marine fish

Fishing gear can be categorised into ‘towed’ (e.g. trawl nets and dredges) and ‘static’ (e.g. fixed enmeshing nets, pots and lines) gear. A summary of fishing methods used to target individual or combinations of species is given in Table 1.

A new European Commission regulation (850/98), setting the minimum landing size (MLS) and minimum mesh size (MMS) permitted for each species in all northern European waters, came into effect on the 1 January 2000. This regulation clarifies mesh size controls for both towed and fixed nets by identifying a permitted mesh size range with which particular mixes of target species may be taken. Its major feature is that for each mesh size used, fishermen are only allowed to retain a limited (5 - 50%, depending on mesh size and target species) level of by-catch of (non-target) species which for conservation reasons require a larger mesh size. The intention is to encourage larger mesh sizes to be used for the larger bodied species.

The principal national regulations imposed on the use of trawl or seine gears within territorial limits are vessel size and engine power restrictions and a limit on the maximum length of beam used by vessels fishing beam trawls or dredges within 6 miles.

In England and Wales, regulation of fixed and drift netting for sea fish is principally undertaken by SFCs (and the EA where it has sea fisheries powers). Under the Salmon and Freshwater Fisheries Act 1975 and the Salmon Act 1986, the use of fixed nets or traps within the 6-mile zone is only lawful if authorised by byelaw made by the SFC. Such byelaws may include restrictions on the use of the gear to limit by-catches of migratory salmonids. Consequently, SFCs have introduced byelaws authorising the use of otherwise

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, Nephrops and shrimp.	Pot, tangle net, beam trawl (shrimp) and demersal otter trawl (Nephrops).
	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).

banned sea fishery gear in places and at times when the risk of catching salmon or sea trout is small. The SFCs also have powers to limit the use of other gears to protect migratory salmonids and prevent any interference with their migrations. These SFC byelaws must all be approved by the EA.

The national strategy for the long-term conservation and management of the bass fishery, implemented by MAFF (now DEFRA) since 1990, includes a prohibition on the use of gill nets and similar enmeshing nets with a mesh size of between 65-89 mm. This has now been supplemented by the banned range of 70 - 89 mm in the EC Regulation 850/98 (fixed nets). The bass package also included the designation of 37 estuaries, power station outfalls and harbours in England and Wales as 'Bass nursery areas', in which fishing for bass is prohibited for all or part of the year (details of the 1990 measures are summarised in: 'Bass - nursery areas and other conservation measures' MAFF - Welsh Office - Anon.).

2.2.2 Migratory fish

In England and Wales, the public right to fish for salmon and sea trout in estuaries and in the sea has been limited by regulations on fishing methods, period of fishing (annual and weekly fishing times) and fishing intensity. It is an offence for anyone to fish for migratory salmonids without a fishing licence issued by the EA, and the numbers of licenses issued in each area (e.g. estuary) is limited by Net Limitation Order (NLO). Since February 1973, there has been an absolute prohibition on fishing for salmon in waters off England and Wales beyond the six-mile limit. . Despite these controls, the numbers of salmon returning to rivers in England and Wales has fallen steadily, and a number of additional measures has been introduced to try to halt this decline. In many regions NLOs have been reduced, and there is a national policy to phase out mixed stock fisheries operating in coastal water. In April 1999, the EA introduced a national Byelaw that delays the start of

the salmon netting season to 1 June in order to protect early running multi-sea-winter salmon. A small number of fisheries that principally target sea trout have been exempted from this measure, but any salmon caught before 1 June must be released.

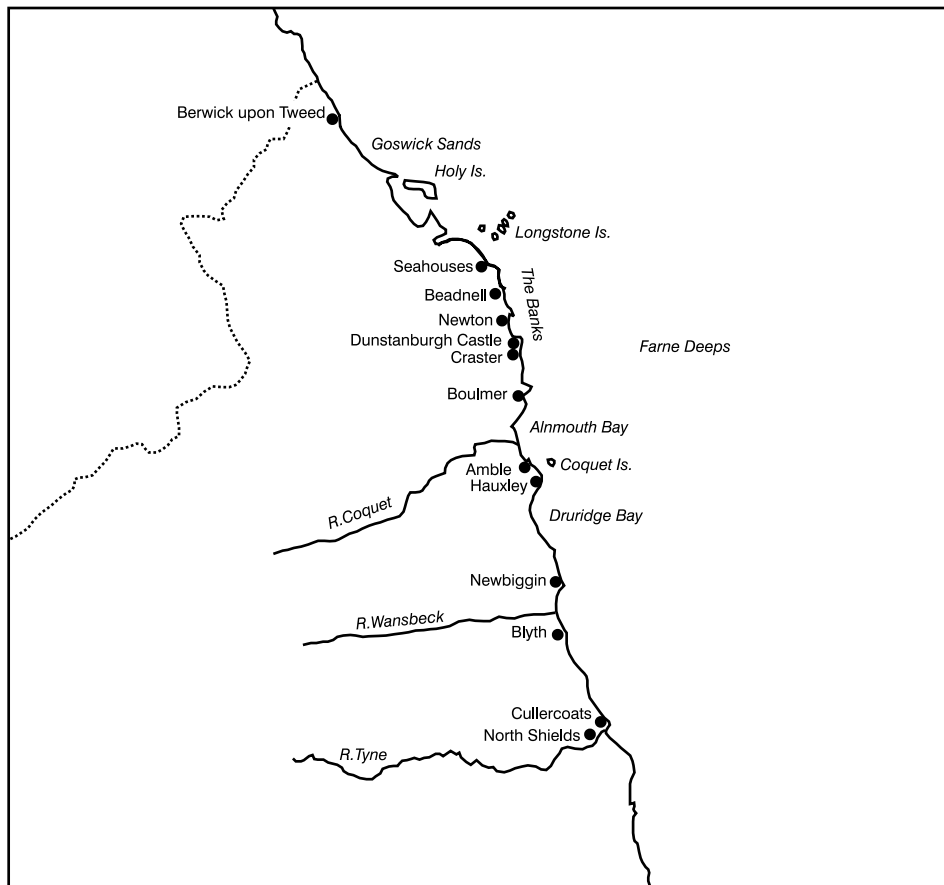
2.2.3 Shellfish

With the notable exception of scallops, most mollusc fisheries are found close inshore and are managed by SFCs or the EA, all of whom have the power to close a fishery on conservation grounds. Some wild and cultivated mollusc fisheries are managed through Several or Regulating fishery orders, which often limit access to licence holders. Fishing may be further restricted through closed seasons and TACs. In addition to EU and national MLS for brown crab, lobster and spider crab, there is a national requirement to return V-notched female lobsters and egg-bearing (berried) crabs to the sea. Otherwise, potting is currently regulated under a number of SFC byelaws, such permit schemes which require the submission of catch and effort data and seek to limit fishing effort on crabs and lobsters, or require egg-bearing female (berried) lobsters to be returned to the sea.

Increasing demand from the restaurant and hotel trade for supplies of locally-caught shellfish, resulting from a greater appreciation of seafood by a more sophisticated public, has been accompanied by increased vigilance of the health and safety aspect of its production. During the second half of 2001 and into 2002, cockle beds in the Wash, Thames Estuary and the Burry Inlet were closed by Temporary Prohibition Orders (TPO) issued by health departments as a result of Diuretic Shellfish Poisoning (DSP) toxins being detected in cockle samples. DSP, a gastrointestinal illness, is thought to be caused by algal blooms and, under EU regulations, harvesting areas positive for DSP must remain closed until 2 successive samples have proved negative.

REGIONAL SECTION – BY SEA FISHERIES COMMITTEE DISTRICTS

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, exploiting 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 the 'Farne Deeps'. Since the 1970s, *Nephrops* have assumed greater importance as demand has steadily increased and white fish landings have fallen in line with quota allocations. Static gear fishermen use 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 months for lobsters and brown crabs, and salmon and sea trout are taken in summer in drift nets and Northumbria T-nets. Many fishermen operating from fishing villages (e.g. Newton, Craster, Boulmer and Newbiggin) still use 'cobles', traditional high-bowed, flat-bottomed, clinker-built beach boats characteristic of this coast. They are usually around 10 m in length. Landing quota restrictions have disrupted traditional fishing patterns, and there are ongoing negotiations to buy out salmon drift net licences (the government has provided £750,000 of matching funds) as part of the current phase-out of this fishery, which takes a mix of salmon stocks from English and Scottish rivers.

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 *Nephrops* fishery and in a directed fishery. The Farne Deeps, a deep-water trench some 10-20 miles offshore, 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. Northumberland SFC byelaws prohibit trawlers over 11.6 m in length and the use of purse seines, ring nets or similar encircling nets within 3 miles of the coast. In the late-1980s, pair trawling for roundfish became increasingly popular, though with this gear a greater proportion of the catch tends to be made up of small fish. This fishery has now ceased. Flatfish, such as lemon sole (and until recently, turbot) command a high market price and form an important part of the mixed demersal trawl fishery. Plaice 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 which move inshore from autumn through to spring; these nets also take whiting, pollack, saithe and crustacea. Each net measures 75-100 m in length and 1.5-2 m in depth and up to 6 nets are joined together to form a 'fleet'. In order to prevent the illegal capture of salmon and sea trout, Northumberland SFC have authorised the use of nets (other than licensed salmon T-nets) in areas where the depth of water exceeds 7 m, and netting is prohibited around the mouths of the Rivers Tyne, Wansbeck and Coquet. 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 nets used for larger flatfish (e.g. turbot and monkfish) can have a mesh size of up to 300 mm. Boats under 10 m may set over 5,000 m of netting, though, most set between 1-2,500 m.

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

In the past, trawlers and seiners targeted herring in well known spawning grounds off the Farne Islands. 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. Herring are now 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 to spawn in rivers on the east coast of Scotland and the north-east coast of England are believed to enter the North Sea from the north, to move south and then inshore, before swimming north along the English coast to their home rivers. Sea trout originating from these same rivers are thought to migrate southwards to feed in the southern North Sea and are also exploited as they migrate 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 when sea trout are targeted before 1 June or when grilse make up a large part of the salmon catch. 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 46 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 2001, 25 of which were for drift or T-net, 20 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 drift nets are banned. Since 1999, the salmon fishing season starts on 1 June and any salmon caught in T net sea trout fisheries before that date (season starts 26 March) must be released alive. This fishery is subject to a weekly closure from 1800h Friday to 0600h Monday (drift netting is also prohibited between 2000-0400h during the week) and ends 31 August. Closed areas (known 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, there are no formal rotas or rigidly fixed stations for T-netting.

The licensed fyke net fishery in the Rivers Tyne and Coquet, that caught yellow/brown eels in spring and silver eels (migrating towards the sea) in summer and autumn, ceased to operate in the mid-1990s.

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

Nephrops are abundant in deep-water areas where the seabed is of a muddy nature and provide the

mainstay for the majority of inshore trawlers working from Seahouses, Amble, Blyth and North Shields. 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 Deeps, whereas in the summer a viable fishery may occasionally take place only 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 sometimes landed in association with *Nephrops* 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 top of the net just in front of 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 Northumberland SFC introduced a byelaw in August 2001 which prohibits most potting within the 6 mile zone without a written permit from the Committee (permit not required for fewer than 6 pots and trawl and seine by-catch). The main brown crab season begins in late spring and lasts through to autumn. Lobster pots are set both close inshore and around the Farne Islands and other offshore areas, and the 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. They are caught in pots set in the shelter of the coast, sometimes as a by-catch to lobsters, and provide an important resource during the winter when they have a higher survival rate when stored prior to being taken in vivier lorries to Europe, where they are sold live. A small scallop fishery a few miles off Holy Island provides an alternative to white fish trawling and, in some years, attracts visiting Scottish and west coast vessels. Despite reasonable catches in 1999, no vessels fished for scallops in 2000. 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 9 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. The lobster fishery peaks towards the end of the summer,

whereas brown crabs normally provide a steady income from spring through to autumn. 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 and yield meagre quantities of brown crabs, velvet crabs and lobsters which do, however, command a high price at that time.

Several boats use gill and trammel nets for cod between autumn and spring, when codling move inshore. Whiting, saithe, pollack, plaice and lobster can form an important by-catch. Nets are sometimes set for demersal fish during the summer, particularly when landings of lobster and crab are at a seasonal low. Species of little commercial value maybe retained for pot bait. Some of the part-time boats use handlines for cod, mackerel and pollack in season. Fishing for salmon and sea trout in the "Tweed Box" at the mouth of the River Tweed and which extends into England as far south as Holy Island (as defined by the Tweed Fisheries Acts 1857-1969), is subject to Scottish regulations. Some of the private rights to fish for salmon on Goswick Sands are currently not exercised, having been bought out by the Tweed Commissioners and the Atlantic Salmon Conservation Trust.

3.3.2 Holy Island

The 4 full-time fishing vessels based on the island are under 8 m and use static gear, and 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; a phenomenon fishermen attribute to a series of mild winters. Fishermen have also reported an increase in the number of octopus being caught in pots, which are sold if a substantial quantity is landed. Gill and trammel nets are set for cod, and take a by-catch 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. There are two trawlers targeting *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 round, white fish often forming an important by-catch in the *Nephrops* fishery.

Together with increased licence fees, poor landings of salmon and sea trout in recent years have forced some fishermen to relinquish their licences, and only two licensees now operate salmon drift nets. 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 where shellfish gathering is authorised by English Nature, who work in close liaison with the Holy Island Fishermen Society. Pacific and native oysters are cultivated by one person on intertidal flats, south of the island.

3.3.3 Seahouses

This small port supports 4 otter trawlers of 10-16 m and 8 boats potting and netting, including some cobles, and the Beadnell fleet operated from here in 2000 when its harbour was under repair. The trawling fleet land *Nephrops*, haddock, cod and whiting for most of the year from the Farne Deeps some 10-20 miles offshore. White fish are landed as a by-catch to *Nephrops* and in a directed fishery when codling, haddock and whiting appear inshore, especially during the winter, and a summer cod fishery exists to the south of the Farne Islands. In the past, a number of trawlers used 8-12 Newhaven-type dredges for scallops within a couple of miles of the coast, but only one vessel now occasionally turns to dredging.

Brown crabs and lobsters are caught in pots set up to 10 miles from the shore, though part-time lobster fishermen set pots closer to the coast. There are no longer any licensed fishermen using drift nets or T-nets for salmon and sea trout at Seahouses. Up to 6 fleets of nets, with each fleet comprising of up to 5 nets (350-500 m in length), are set per boat for cod during the winter 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 potting and salmon fisheries, and occasionally take 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). Following the end of the salmon season, they 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 2 full-time cobles peak between spring and autumn when crabs, lobsters and salmon are exploited. One coble uses drift nets for salmon and sea trout. Pots are set throughout the year, although only a small number are used 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

Three full-time cobles participate in the pot and salmon fisheries. All 3 cobles hold salmon licences, 2 using drift nets for salmon throughout the season, and set T-

nets in fixed berths in Alnmouth Bay (Boulmer 'stell' fishery) according to an agreed rota organised by the Boulmer fishermen. Pots are set virtually the entire year round for crabs and lobsters. Low returns and poor weather in winter usually prompt fishermen to haul ashore their cobles for an annual refit. The use of set gill nets for cod at this time has now been discontinued.

3.3.7 Amble

Sixteen 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 and land on a daily basis. Up until the late-1980s, the majority of trawlers alternated between *Nephrops* and white fish in winter, concentrating on white fish in the summer. The trawling fleet is now more dependent on *Nephrops*, and exploits 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. None of these trawlers now dredge for scallops.

Thirteen boats under 10 m (the majority being cobles) use static gear, all but one fishing full-time. Most set up to 500 pots each during the summer, 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. The summer tangle net fishery for turbot and monkfish no longer takes place, though sole are often taken in plaice nets for a short period (about 6 weeks) during the summer.

Ten 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 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 cobles 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 cobles set pots throughout the year and nets for cod between autumn and spring. Mackerel are sometimes caught at the beginning of summer. The traditional longline fishery for cod has been replaced by gillnets used throughout the winter months.

3.3.9 Blyth

Sixteen 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 further offshore. Trawlers target *Nephrops* in the Farne Deep area for most of the year, with cod, haddock, whiting, plaice and lemon sole providing an important by-catch, particularly when *Nephrops* 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, pollack and ling on the way out to trawling grounds. Eleven smaller boats (including cobles) use pots, fixed and drift nets on a full-time basis. Some of the boats work pots virtually the entire year round for brown crabs and lobsters, whilst others switch to cod netting in 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 thirteen salmon licensees working from this port use drift nets for salmon and sea trout.

3.3.10 Cullercoats

Four small boats 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.

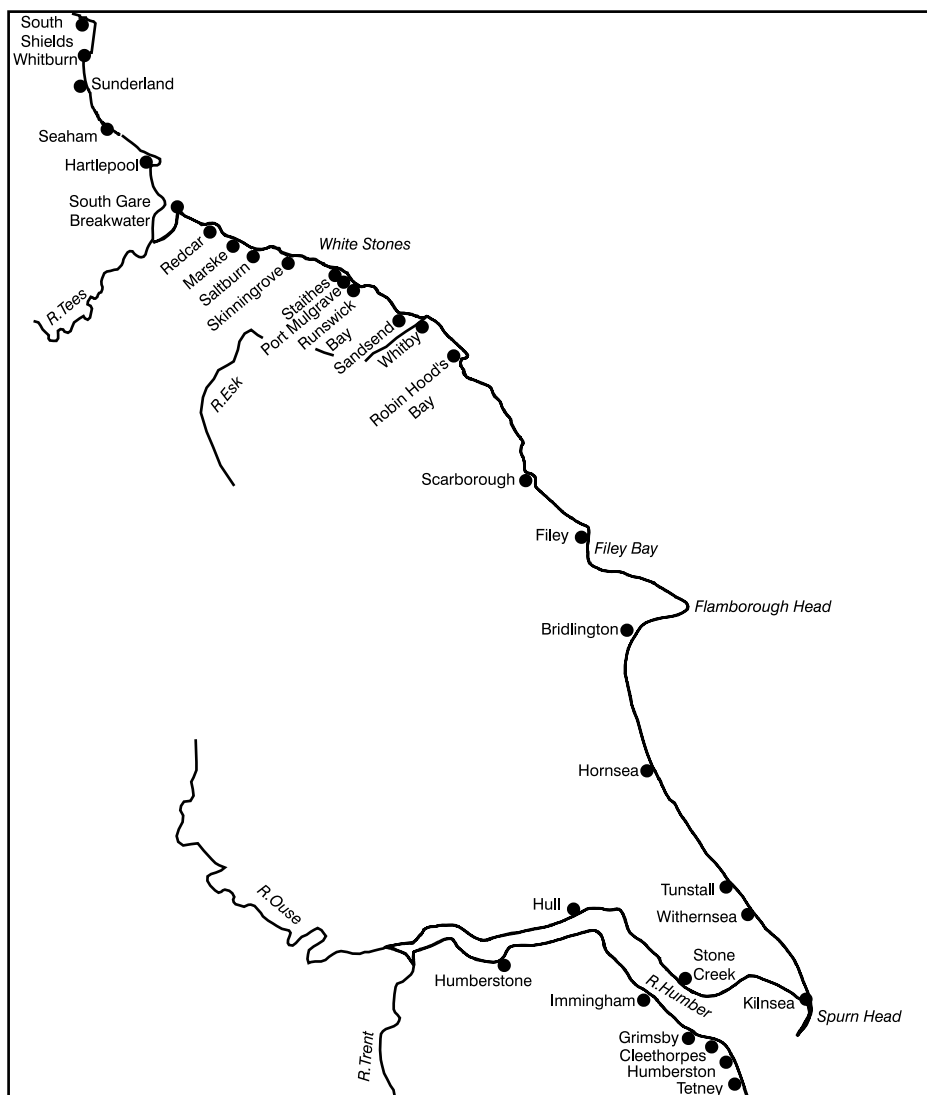
3.3.11 North Shields

North Shields is the only port on the Northumbrian coast that holds a daily fish market. It accommodates up to 24 otter trawlers, the majority between 10 and 20 m in length, and approximately 6 static gear boats, most under 12 m and half of which fish part time. The trawlers regularly fish within 12 miles of the coast, particularly in winter, though 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 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, but pair-trawling for roundfish, which increased in the early 1990s, has now ceased, possibly because the fish tend to be small and can sometimes prove difficult to sell. Some smaller trawlers set nets, often over wrecks and on the way to trawling grounds.

The static gear fleet set nets for cod from autumn onwards and 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 cobles 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 Shields, 2 operate T-nets just south of the River Tyne and the rest use drift nets. Permits are issued to these fishermen to allow access to the berths, fishing to an agreed rota determined by the fishermen involved. Salmon drift netting begins at the start of the season (June) 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'. There is no longer any fyke netting for eels in the Tyne.

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 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 escalated where heavy industry once prevailed, e.g. Hartlepool, as redundant workers concentrated more

on fishing. Trawlers up to 18.3 m are permitted to fish within the 6-mile zone (North Eastern SFC byelaw), and losses and disturbance of set gear sometimes occur during bad weather when trawlers may have to work close inshore.

In the south of the district, white fish provide the mainstay for the trawler fleet, a small number also dredge for queen scallops, and beam trawls are used for shrimp in the Humber. In addition to pots and nets, longlines are still occasionally 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 crab and lobster fishery is exploited from Whitby, Scarborough, Bridlington,

Grimsby and minor sites throughout the district. Considerable landings of whelks are made, particularly at Bridlington. During 1999, there were well over 300 boats licensed and using static gear (pots and nets) from these ports.

A significant 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 and inshore fishing restrictions

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 through summer. Pair trawlers no longer operate from Grimsby. 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, have become important, and crustacea often feature in 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 120-150 mm and trammel nets are used for cod and each boat may set up to 10 fleets of netting, each fleet comprising up to 6 nets of 100-600 m each. However, the average 5-8 m boat or coble probably has between 1,500 and 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, whelk or lugworm), which are more effective than nets during strong tides and fish are landed in prime condition and often fetch 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 for sole and plaice are those most commonly used, though nets of 120-150 mm for plaice and brill and 250-300 mm for turbot, brill and rays are also used. These nets also take a by-catch of crabs and lobsters.

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

Inshore trawlers rarely target herring and sprat, chiefly due to 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 and for pot bait if surplus is available.

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

Out of 38 salmon licences issued for fishing for salmon and sea trout between Souter Point and the Yorkshire/Lincolnshire border in 2001, 18 were for drift nets and 1 for a T net along the Durham and Cleveland coast, and 7 for drift nets and 12 for Yorkshire 'T and J' nets along the Yorkshire coast. Also, 6 licensed fishermen from the Tyne area fish 2 fixed Northumbria T-net berths just south of the River Tyne. Drift nets, used out to 6 miles, generally take a greater proportion of salmon than 'T and J' nets set along the shore. The fishing season starts for salmon on 1 June and for sea trout on 26 March in all 3 regions, and ends on 31 August. A weekly closure time from 1800h Friday to 0600h Monday applies to drift netting, and from 2000h Friday to 0600h Monday for 'T and J' netting. A nightly close time between 2000h and 0400h also applies to drift netting. Closed areas, known as 'playgrounds', 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 uses fyke nets, eel criggs and pots, set from spring through to autumn in the Humber and its tributaries. Over-fishing, pollution and harbour developments in the estuary and up the river have all 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 through; larger trawlers fish the Farne Deeps, whereas the smaller vessels 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 increased.

There is a small-scale beam trawl fishery for brown and pink shrimp in the south of the district (Humber Estuary and along the Lincolnshire coast), 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 discarded back into the sea.

Potting for lobsters and brown crabs provides the mainstay for many vessels in this region, and has become particularly important in areas where landings of white fish have fallen. Effort has steadily increased over the years as fishing effort has switched from trawling to potting, but with little increase in unit price of crustaceans, and in some places (e.g. Whitby and Bridlington) boats of 12 - 17 m set up to 2,000 pots each. The highest quantity of lobsters is landed between July and September, when fishing conditions are suitable and the lobsters are active. Brown crabs are targeted for much of the year, the weather being the most restrictive factor. The smaller boats usually bring the majority of pots ashore in winter to avoid them being damaged, although pots are left fishing for lobsters and velvet crabs all year round in sheltered areas. Since June 1998, potting for lobsters, crabs, velvet crabs and whelks within the North Eastern SFC District, is by written permit only (byelaw XXII).

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

There is a queen scallop fishery off the Yorkshire coast, although only a few local boats specifically target this species during the colder months. 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 once again yielded good catches following their regeneration over the past decade. Queen scallops are also taken as a by-catch in the demersal trawl fishery. Cockles and mussels are gathered by hand and there has been an increase in local interest towards cockle stocks.

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. Two trawlers 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), with cod and whiting being the main species 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 use tangle and trammel nets for plaice and turbot during the warmer months. All the full-time static gear boats use pots for brown crabs and lobsters, plus 4-5 part-timers who work up to 30 pots each during the summer lobster fishery. Lobsters are also taken as a by-catch in the net fishery. Two licensed fishermen operate drift nets and T-nets for sea trout and salmon between April and August, fishing to an agreed rota which includes 3 fishermen from North Shields.

4.3.2 Whitburn

Three beach boats of 4-5 m set nets and up to 100 pots each 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 onwards. Around 20 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.

4.3.3 Sunderland (North and South)

Up to 12 boats otter trawl for *Nephrops* and white fish and a further 30 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 20 small boats and cobbles fish full-time from the south side. In previous years, fishermen ran stalls on the fish quay on the south side of the river. Since 1998, fishermen have landed directly to a purpose-built processing and retailing facility on the quay. The trawler fleet exploit *Nephrops* virtually the entire year round and effort on this species has increased following the development of a summer fishery during the late-1980s. White fish are often targeted during spring when *Nephrops* catch rates are lowest, and landings usually comprise cod, whiting, plaice, dabs, sole, lemon sole, turbot and rays.

Fishing activity is greatest during the warmer months when part-time fishermen participate in the pot and net fisheries. Nets are set for plaice and turbot, and take a by-catch 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. Seven boats carry salmon licences and 6 use drift nets and one T net to take salmon and sea trout. The greatest catches of salmon are expected at the end of the season, in August,

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 licensees on the Wear, only 1 regularly fishes, with 15 fyke nets.

4.3.4 Seaham

Two 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. Nine 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 onwards, with the occasional landing of lobsters. The amount of nets and pots set by local fishermen increased through the 1980s and rising competition for space inshore has resulted in static gear being set further offshore, where inevitable conflicts occur with trawlers. Seven boats hold salmon licences and catch both salmon and sea trout. The larger boats use drift nets up to 6 miles offshore where they take 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 25 - 30 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 onwards. 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. According to the North Eastern SFC, fishing activity 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 used redundancy payments to obtain new boats. 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 15 nets, consequently many areas are considered to be saturated with netting out to 3 miles offshore. The pot fishery begins around March and involves 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 or 3 times per week. Four crews are in possession of licences authorising the use of salmon drift nets, though a greater proportion of sea trout are caught close inshore where landings usually peak between June and August.

4.3.6 South Gare and River Tees

Up to 20 mainly part-time boats have worked this section of coast using gill and trammel nets for codling and flatfish such as plaice, sole and turbot in season, although poor cod catches have recently resulted in reduced activity with these gears. In winter, only 3 boats continue to fish targeting mainly codling. From spring onwards, a dozen or so part-time boats set pots for lobsters and crabs, whilst five full-time crews regularly work pots during the summer months. 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 occasionally fishes for eels using fyke nets in the tidal section of the River Tees.

4.3.7 Redcar

Around eight full-time cobbles and boats under 8 m may work fixed nets throughout the year for cod, whiting, plaice, sole and turbot, and use pots for brown crabs and lobsters. They are joined by half a dozen part-timers during summer. The number of vessels using gill nets continues to decline, due mainly to the lack of cod. Up to 10 small angling boats target mainly cod, saithe and pollack, and a few set the occasional net or pot. One boat uses drift nets 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, and there are seven full-time crews working up to 400 pots each.

4.3.8 Marske

One full-time crew works from this beach landing, setting crab and lobster pots, and is joined by two part-time crews in summer. There is very little activity during the winter months.

4.3.9 Saltburn

Around 15 small boats of varying size operate from the beach landing. These set gill and trammel nets for cod and flatfish in season, and take lobsters and crabs in pots and also in nets during the warmer months, when 4 part-time crews are engaged in potting. There are no longer any lobster-holding tanks in the town. Angling is very popular from the pier.

4.3.10 Skinningrove

Eight 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 two crews continue to operate during the winter with short-lines and gill nets. Three crews have salmon licences and use drift nets for both salmon and sea trout in season.

4.3.11 Staithes

The full-time fleet comprises one mini-keel-boat, one coble and two double-enders. One of the latter concentrates on potting during the summer and turns to long-lining or netting in winter. The other three crews use nets throughout the year. In autumn and winter, gill nets and longlines (baited with mussel or squid) are set for cod close inshore. From March, one boat sets up to 400 pots for brown crabs and lobsters, and is joined by 4 boats working fewer pots. Lobster storage tanks are located at the back of the village. Trammel and tangle nets are used from spring through summer mainly for sole, plaice, codling and the occasional lobster. An additional 10 or so boats are used for angling.

4.3.12 Port Mulgrave

During the winter of 1995, a large landslip occurred to the north of Port Mulgrave, following which the already the derelict harbour became silted up. Two part-time crews use a beach launch to work a few pots during the summer months for brown crabs and lobsters.

4.3.13 Runswick Bay

Ten or more 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 hardly changed

since the mid-1980s and stands at 15 vessels of 12-23 m (20 over 10m) which range widely in the North Sea. White fish provide the mainstay and landings from otter and pair trawls consist 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 this substantially reduces their local fishing area. 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. When, from time to time, queen scallops are abundant, they are taken in dredges and trawls, 3-10 miles offshore by a few local boats from autumn to spring. This fishery expanded rapidly around 10 years ago, when more efficient boats from other districts visited the area, but the boom was followed by a rapid decline.

Up to 30 boats, mainly under 10 m, principally use static gear including pots, nets, lines and salmon nets. The lobster fishery is very popular during the summer, when it attracts 23 boats. Brown crabs are exploited both inshore and 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. Fifteen vessels 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 onwards, flatfish such as sole, plaice, turbot, brill and rays are landed. Nets set around wrecks yield cod, pollack, ling and conger eel. Over a dozen boats still use traditional longlines, 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, on each line. The herring drift net fishery is now a thing of the past. In the last 2 years, some Whitby fishermen have found a useful sideline in red mullet that have become more abundant in the North Sea.

All seven drift net licences issued in Yorkshire are taken up by Whitby fishermen. These nets take a greater proportion of salmon than sea trout, whereas 'T and J' nets take a greater quantity of sea trout. Fishing is not permitted in the 'Esk playground' around the mouth of the Esk.

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 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 16 otter trawlers and up to 20 small static gear boats. The trawling fleet concentrates on white fish throughout the year and several are classed as offshore vessels, being up to 24 m in length and regularly make week-long trips. The remainder are of 10-18 m and work 12-36 hour trips fishing within 50 miles of the coast. Up to four vessels may work as pair teams, a method which has become less popular since the early-1990s, possibly because catches contain 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. Some of the trawlers targeted herring in the past, sometimes in pairs, although lack of demand and poor prices have deterred effort in recent years. Several visiting Scottish vessels dredge locally for queen scallops between autumn and spring in some years. Queen scallops are also taken as a by-catch in demersal fish trawls.

In autumn and winter, around 15 cobles 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 out to 6 miles all year round, though half are brought ashore in winter to avoid storm damage. Effort aimed at crabs has recently increased, and a few of the larger boats set pots further offshore for brown crab all year working as far south as the Wash. The lobster fishery attracts a lot of interest during the summer. The influence of part-time fishing and angling activity is much less here than further north. One fisherman possesses a salmon licence for the use of a T net and predominantly catches sea trout from May until the end of August. There are several vessels under 10 m with powerful engines that take anglers well offshore (out to 50 miles) during calm conditions, taking good quality cod, pollack and ling off wrecks.

4.3.18 Filey

Five full-time cobles, launched from the beach, use a variety of fishing gears including pots, gill and trammel nets, longlines 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 (especially cod) during the 1980s had a serious impact on the longline fishery, with many boats turning to netting as it is a less costly method of fishing. From April onwards, most boats turn their

attention to the pot fishery and some cobles each set up to 650 pots for lobsters. Some boats continue to net for demersal fish and good catches of sole can be expected from April to June. Two salmon licensees regularly set 'T and J' nets during the summer to take mainly sea trout.

4.3.19 Flamborough (North and South Landing)

Two or three cobles fish full-time from the north of the Head and four beach boats fish from South Landing. Longlines and nets are used by the cobles for cod, taking by-catches of ling, rays, pollack and whiting from autumn until spring. One boat uses up to 12 lines each carrying around 250 hooks, which are usually baited with either mussel, whelk or squid. In spring and summer, a couple of beach boats from the South Landing set gill nets for cod and other roundfish, and boats from both landing places set pots for brown crabs and lobsters, though only one boat uses pots throughout the year. 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. Two cobles from North Landing also take out angling parties and sightseeing trips.

4.3.20 Bridlington

The majority of the 15 otter trawlers operating from this port concentrate on white fish throughout the year, two periodically dredge for scallops, whilst 5 or 6 also use static gear. Two trawlers operate exclusively offshore, while around 10 vessels over 12 m spend most of their time trawling offshore (within 50-100 miles of Bridlington) though they usually fish within 12 miles of Flamborough Head at the start of the year. The remainder fish inshore, targeting cod, haddock and whiting in winter and, from spring through summer, land 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 usually equipped to enter a number of fisheries.

The static gear fleet comprises 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 up to 75 miles from port, each setting up to 2,000 pots for brown crabs and lobsters, whereas the smaller pot boats, including cobles, mini-keel-boats and fast-workers, set between 100-500 pots each from spring onwards. There has been a resurgence in the whelk fishery since the early-1990s, and this now involves 4 or 5 boats working up to 1000 whelk pots each in the vicinity of the Rough Gas Field.

During the colder period of the year, 12-14 boats set cod nets and one boat sets longlines. From spring onwards, flatfish nets are set along the Holderness coast for sole, plaice, turbot and rays, plus a by-catch of crustacea. Six licensed fishermen use mainly 'T and J' nets to catch sea trout and a few salmon.

4.3.21 Hornsea

Up to a dozen beach boats of 5-7 m are active throughout the warmer months, 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 winter, although stormy weather and strong tides significantly reduce effort. During the 1980s, a lobster re-stocking experiment was undertaken by CEFAS along the coast between Skipsea and Withernsea. Between 1983 and 1988, some 50 thousand first-year lobsters were marked and released, of which 650 were recovered by 1994 with an age range of 3 to 9 years. The results indicated a high site fidelity for hatchery-reared juvenile lobsters.

4.3.22 Tunstall and Withernsea

Up to 15 beach boats regularly fish from this exposed coastline and are joined by many more during the summer, some working up to 400 lobster pots each for brown crabs and lobsters and also netting for flatfish. Some of these boats also use cod nets in winter and spring, when fishing is often restricted by the weather.

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. Several part-time boats set pots and the occasional net in the summer. Several angling boats are active during the weekends.

4.3.24 Kingston upon Hull

Following the declaration of 200 mile territorial limits in the mid-1970s, the large distant-water Arctic fleet at Hull dwindled to 9 or 10 offshore trawlers today. These vessels work mainly in mixed fisheries in the Norwegian sector and have also tried for redfish off Iceland and Atlantic deep-water species, but with little success. The large processing sector based here depends on fish supplied from other parts of the UK, together with imports. Most landings by UK vessels here are frozen fish that goes directly to cold store, and an increasing amount of fish goes direct to processors, by-passing the auction market. Hull has two under

10 m vessels, which fish inshore full-time. During the winter these boats target cod using nets and in spring turn their efforts towards potting for brown crabs and lobsters or use otter and beam trawls for shrimp, sole, dabs, plaice and flounders. Most of their fishing activity is concentrated on the Holderness Coast.

A licensed eel fishery takes place between April and October in the upper reaches of the River Humber and some of its tributaries, such as the Ouse, Hull and Trent. In 2000, 12 licences were issued by the EA North East Region to use 68 fyke nets and 15 strings of crigg nets along the north bank. The EA Anglian Region does not licence eel fishermen down-stream of the tidal limits on the south bank.

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. The area is, however, popular with anglers, who catch cod, whiting, eels and sole as far upstream as the Humber Bridge. A few vessels under 10 m use light beam trawls for shrimps in autumn and winter, whilst several other boats use gill nets and lines for cod. From spring onwards, 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 around 30 inshore boats. Like Hull, the port's processing industry has become increasingly dependant on fish transported overland from other UK ports and imported from countries such as Iceland and Norway. The local fleet has greatly declined and now consists of approximately 8 beam and otter trawlers, 4 seiners, 4 gill netters, 2 longliners and 1 potter. This fleet still principally works offshore 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 19 over 10m Dutch "flagship" boats are administered from Grimsby, where they are registered as British owned and fish against the UK quotas, but have mainly non-British crews and land in other EU countries. Several medium-sized Grimsby based vessels have worked on oil rig guardship duties when this was more profitable than fishing. This freed up quota for others, but these vessels will not lose their track records as they are subject to fixed quota allocations.

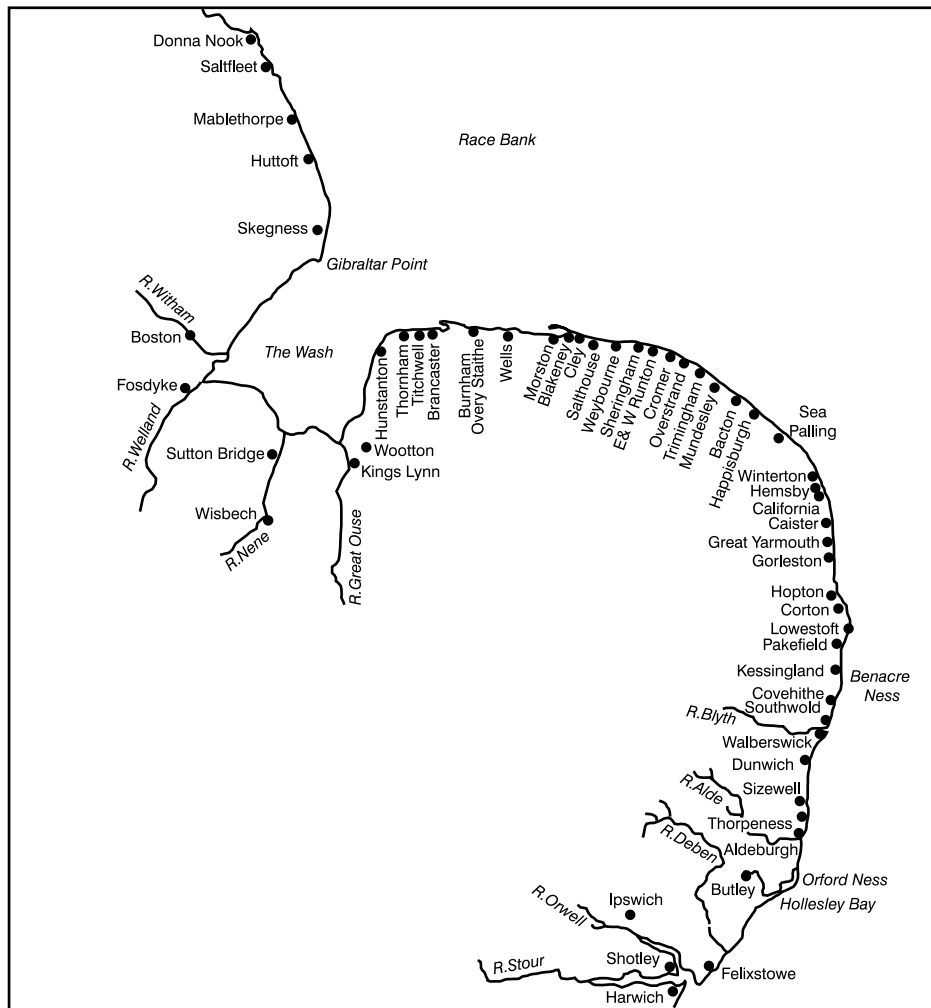
Approximately 10 boats are confined to fishing inshore, several of which are only active in the Humber Estuary. Inshore trawlers target sole during the summer and, from autumn, the smaller trawlers exploit shrimps and are sometimes joined by larger vessels from the Wash. The estuary is recognised as an important nursery area

for sole, plaice and cod, and all Grimsby registered vessels use a 'veil' separator in their nets and separate the flatfish from the shrimps through a revolving drum once the catch is hauled aboard. When catch rates are low, the shrimpers move down the Lincolnshire coast or take up alternative fisheries such as gill netting for cod. The static gear fleet sets nets and lines for cod within the Estuary during the colder months and, from spring onwards, nets are used for flatfish and pots are set for crabs, lobsters and whelks. Visiting boats, e.g. from Devon and Cornwall, occasionally prosecute an offshore brown crab fishery (depending on crab fishing activities elsewhere, and targeting whelks when crab catches are low). In 2000, this resulted in landings of around 1500 t, 12% of E&W total and the largest crab fishery in the North Sea.

4.3.27 Cleethorpes, Humberston and Tetney

Ten to twelve boats regularly fish from this coast, sometimes venturing north to fish in the Humber. Lines and nets are used to catch mainly cod in autumn and winter and, from spring onwards, nets are set for flatfish and rays and lines used for rays. In winter, stake nets are set on the beaches for a mixed catch of cod, whiting and flatfish. The fishery harvesting cockles using hand rakes ceased in 1994, but has since recommenced. Commercial exploitation of mussel beds situated off the Cleethorpes coast has been curtailed by the local Health Department. Oysters are occasionally taken off this coast, although there has been no directed effort in recent years.

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



5.1 Synopsis of current inshore fisheries

This exposed, low-lying and 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 fleet, most of which fishes offshore in the North Sea, fishing is undertaken by day-boats (or people working on foot).

The principal inshore fisheries off the south Lincolnshire and north Norfolk coasts 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 shrimp, mussels and cockles 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 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.

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, 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 better condition and therefore fetch a higher 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, using tickler chains attached to the front of the trawls to dig into the sediments and disturb the fish into the nets. Eastern SFC byelaws, which were amended on 13 December 2001, prohibit trawling within 3 miles of the north Norfolk coast between Blakeney and Mundesley to protect traditional potting grounds. 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). Elsewhere, any trawlers of more than 15.2 m that regularly fished inside 3 miles before advertisement of this byelaw may continue to do so until change of ownership of the vessel.

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 and in north Norfolk, together with sea trout and mullet. Long-lines, baited with whelk or squid, are sometimes used for bass by commercial fishermen. An increasing number of

charter angling boats may land a substantial number of bass in summer, with live sand-eels proving the most effective bait.

The local herring stocks seem to have increased since the early 1980s, although general lack of demand and poor prices have limited this fishery to times of local abundance and poor prospects in other fisheries. At such times, mainly in late autumn, drift nets with a mesh of 50-65 mm are used for herring and, in 2001, some good catches were made in the Caister/Winterton area and along Pakefield Beach, Lowestoft). During late summer, sprats and mackerel are caught in small quantities. A winter sprat fishery takes place in some years when these fish are locally abundant, mainly by Kings Lynn, Yarmouth and Lowestoft boats in 1999, but with smaller, beach-launched boats joining in. Sprat and herring are sometimes taken for pot or line bait.

5.2.3 Diadromous fish

(e.g. sea trout and eel)

Although sea trout are seasonally abundant off the Norfolk and Suffolk coasts, and do enter the district's rivers at times, they probably return to more northerly rivers (e.g. those in Yorkshire, Northumberland and the River Tweed) to spawn. The number of licences to net them off the Suffolk and Norfolk coast is not restricted by EA Anglian Region, although a net limitation order was introduced in 1996 as part of the fishery phase-out. The season extends from 1 April to 30 September, and fishing is prohibited between 0600h Sunday and 2400h Monday each week. In 2001, there were 34 licensed drift nets of 200-500 m in length and with 80-90 mm meshes, and 12 licences for "other" nets that take sea trout, bass and mullet (sea trout are also taken in unlicensed nets set for bass and mullet). Although few salmon are taken in this fishery, any caught before 1 July have to be released alive according to a national Byelaw introduced in 1999.

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, and 517 fyke nets were licensed by the EA in 2000.

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. The principal fisheries in the Wash, which

is characterised by its shallow waters, intertidal areas and sand banks, are for cockles and mussels. Following the improvement of shellfish markets during the 1980s, these shellfisheries have expanded, though they are subject to strict management by licensing, fishing gear design, closure of shellfish beds and landing quotas through the 'Wash Fishery Order (1992)' in order to safeguard stocks. 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 and cultivated.

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 (where a vessel's propeller is used to concentrate the cockles into a pile, the cockles then being gathered by hand when the tide recedes) as dredging is more efficient, especially in areas where cockles are found in low densities. Under Eastern SFC byelaw 3, however, molluscan shellfish can only be taken by hand gathering or individually approved fishing gears. Approval is not given to gears that cause more than 10% of the catch to be smashed or have been shown to cause environmental damage. Fishing effort has risen since the mid-1980s as other fisheries have declined in the Wash and demand for cockles has increased. Together with a decline in the spawning stock, this has led the Eastern SFC to impose seasonal closures to conserve cockle stocks, which have been supported by local cockle processors. During January 2002, cockle beds in the Wash were closed by a TPO that was issued by health departments as a result of DSP toxins being detected in cockle samples.

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 will probably preclude the use of hydraulic suction dredges for mussels due to damage rates. An MLS of 50 mm in length has been stipulated, except in the Wash where the MLS 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, and 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 in littoral areas, where and the mussels tend to grow less well.

The shrimp beam-trawl fishery in the Wash takes place all year round, though it 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, for which there are limited market opportunities. Although the EC legal MMS for shrimp has been 16 mm since 1 January 2000, most fishermen continue to use 22 mm

mesh. This is an important nursery ground for a number of finfish, e.g. plaice, sole, cod and herring and, from 1st July 2002, all boats trawling in the Wash will have to use a veil net or separator grid (EC Council Reg 850/98 Art 25) attached to shrimp trawls to separate flatfish from the shrimp.

A brown crab fishery takes place on the Race Bank off the Lincolnshire coast and along the north Norfolk coast from spring to autumn, though very few crabs are landed at Lincolnshire ports. There has also been a recent expansion of the fishery on inshore grounds in north Norfolk and also at Aldeburgh in Suffolk, and the fishery now starts in February. 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 dependent 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 actively pursue this 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 and 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, where they are often 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 6 Grimsby vessels use shrimp beam trawls, longlines and fixed nets to catch cod from autumn through winter, taking by-catches of whiting, dogfish, pollack and ling. In spring, rays (mainly the thornback

ray) and spurdog are targeted. Visiting otter trawlers and beam trawlers (some from SW England) fish within a few miles of this coast during the spring sole fishery. The local longline fishery for cod in winter and rays in spring is now very much reduced. The 8 local boats of 5-7 m that remain may set up to 12 lines with 250 hooks baited with squid, mussel or lugworm attached to each line. With the current scarcity of cod, however, nets have been favoured as overheads are lower and each boat sets up to 1,000 m of net, both for cod in winter and for rays and flatfish from spring through to autumn. Most boats set pots for brown crabs from spring onwards and one local boat trawls for white fish all year round.

5.3.3 Boston

Twenty local boats gear up with hydraulic suction dredges to harvest cockles in the Wash from spring until autumn, and up to 14 Boston boats use 'Baird' dredges to harvest mussels from November through winter, when the meat is of the best quality and the cockle fishery has finished. However, as the mussel stocks have declined in the Wash, it has become 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, and 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, 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 also 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) during autumn and winter.

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

Only 2 boats now fish from the River Nene: one trawls for shrimp and dredges for cockles whilst the

other uses nets to catch mullet and flatfish, such as flounder, and may occasionally trawl for shrimp. Some local fishermen 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, principally fyke nets, from spring to late autumn.

5.3.6 King's Lynn

This port accommodates up to 55 registered 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 all year round. 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 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 or separator grids have been tried here with reasonable success, compared to other regions such as the Humber and Thames where weed tends to clog the nets thus rendering them ineffective.

Sprats are caught by some of the larger trawlers, although fishing effort is usually limited as demand is low. A small amount of trawling for sole, plaice and rays takes place during spring and early summer when shrimp are less available. The cockle fishery has attracted more interest from the local fleet in recent years as stocks have recovered. 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, and there are 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 again in September. 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

Few native oysters now remain along this coast, where Pacific oysters are farmed in numerous creeks. Around a dozen part-time boats under 10 m trawl for shrimp and pot for crabs.

5.3.9 Brancaster and Burnham Overy Staithe

Pacific oysters, Manila clams and mussels are cultivated in areas covered by several orders. From late autumn to early spring, 11 full and part-time fishermen harvest mussels 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. Brown crabs appear to have become more abundant on old whelk fishing grounds.

5.3.10 Wells

Fourteen boats of 8-11 m from this tidal drying harbour each set between 100-400 pots for brown crab and a similar number of whelk pots out to 50 miles offshore (e.g. Triton Knoll, Race Bank) for most of the year. Though more effort was directed towards crabs since the mid-1980s due to a fall in whelk catches inshore, and crabs still provide the mainstay, whelk landings increased substantially in the late 1990s. Fishing effort peaks during the autumn and lobsters are 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, and two boats target crabs all year round, with the peak season in the autumn. A few fishermen cultivate mussels and oysters within a several fishery in the harbour. A further dozen or so longshore boats fish part-time using pots and nets. 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, and factories at Cromer and Sheringham (which is due to close) process much of the Norfolk catch and exporting their products all over Europe. In 1976, the north Norfolk creel fishery supported 45 full-time boats, and 40 boats are still 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, and target rays and dogfish in spring.

5.3.13 Sheringham

Nine full-time boats of 5-7 m rely almost entirely on the pot fishery, fishing 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. This 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. Much of the catch is processed by the fishermen themselves. Lobsters are targeted for a short period during the summer when they provides an essential resource at a time when brown crab moult. A few boats set whelk pots, use lines and nets for cod in winter and drift nets for herring in autumn. Three or four boats move between these ports and may also fish out of Mundesley. At Cromer there is a trend away from

traditional wooden boats to single-handed fibre-glass craft, though 2 catamarans are now potting there with up to 3 crew.

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 meshed 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 Norfolk potting grounds. The whelk fishery off Sea Palling supported 10 full-time Cromer boats during the winter until the late 1980s, when the fishery declined before recovering in the mid 1990s. The number of boats involved has fluctuated accordingly.

5.3.17 Winterton, Hemsby and California

Twelve beach boats from Winterton and the surrounding small landing points fish mainly pots for crabs and lobsters on a small scale during the warmer months.

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 from ports further south. Longlines and gill nets are set in winter for cod, and in spring for rays and dogfish. From spring onwards, flatfish such as sole, plaice and dabs are taken in tangle nets and sea trout and bass are taken in drift nets, which are also used for herring in autumn and spring. Some of the full-time boats occasionally trawl 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 Great Yarmouth harbour, which is also used by many private and a few charter 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 being 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

for sea trout, bass and mullet in summer. Fixed nets 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, but only a few local vessels now 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 these villages is very much at the mercy of the weather and water currents, and onshore winds and large swells can prevent launching for long periods of time. Nets are drifted for herring in autumn and for sea trout and bass during spring and 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 still a strong presence of rod anglers along the beaches, but the once excellent cod and whiting fishing from autumn to spring has greatly declined.

5.3.21 Lowestoft

There is a full-time fleet of around 45 vessels at Lowestoft, plus 25 or so part-time boats that support a daily fish market. There has been a steep decline in the offshore fleet, and the 7 remaining beam trawlers fish throughout the southern and central North Sea and Norwegian waters south of 62°N. Five or six vessels of less than 24 m use either beam or otter trawls to 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. Six vessels of 10-20 m set longlines and sometimes trawl. The larger longliners are fully automated and tend to work 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. Visiting vessels from a wide area land catches into Lowestoft, including 3 regular over-12 m beam-trawlers from Grimsby.

The under-10 m fleet numbers around 50 vessels and 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 fishing along this coast is sometimes disrupted by marine aggregate dredging activities on traditional fishing grounds and 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 set pots for brown crabs and lobsters or else set nets around the many wrecks within 6 miles of the coast. 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 two landing places are based on the River Blyth and support around 10 full-time boats of 6-11 m plus an additional 15 or so part-time boats. Fishermen sell their catches from stalls along the harbour. The majority of the full-time fleet trawl and set gill and trammel nets for white fish; netting has become increasingly popular since the 1980s as catch rates have fallen and overheads are lower than when trawling. Some of the larger boats set gear out to 40 miles in calm weather. Sole provides the mainstay from spring onwards, with plaice, rays, dabs and flounder also taken in substantial quantities. In late autumn, cod and whiting are targeted using nets and longlines, which 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 set fyke nets for eels in the estuary and up the river, although the numbers of fishermen are involved in this fishery has dwindled. 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.

5.3.24 Dunwich, Sizewell and Thorpeness

Around a half a dozen of the 20 or so longshore boats that fish along this stretch of coast do so full-time. 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. Most 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 20-25 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. Pots are set for brown crabs and lobsters between February and November, with increasing quantities of crab being taken early in the season. Some of the larger boats use otter or beam trawls for mainly sole, plaice, rays, whiting and shrimp, whilst flatfish and rays are taken in fixed nets. During the summer and autumn, nets are drifted for bass, sea trout and mullet, bass are caught on hand and longlines, and a few eel fyke nets are sometimes set in the Rivers Alde and Ore.

5.3.26 Orford and Hollesley Bay

Between 10-15 boats, nearly all of which are under 10 m, fish along this stretch of coast and within the River Ore. 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 species. Longlines are used during the same period for cod, rays and dogfish. From spring onwards, 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 and up to 40 miles offshore. Nets are drifted along the coast for sea trout, bass and mullet, and bass are also caught on longlines. Several boats each use up to 200 pots for lobsters and crabs in season. Sole, bass, mullet, crab and lobster are also caught in the river. During the summer, 1 or 2 modern GRP boats (known as 'fastworkers') use rod and lines, commercially or for angling charter, on wrecks and banks up to 30 miles offshore for cod and bass plus smaller amounts of pollack and ling.

There is a fyke net fishery for eels in the River Ore, although this has attracted less interest over the years as eel 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.

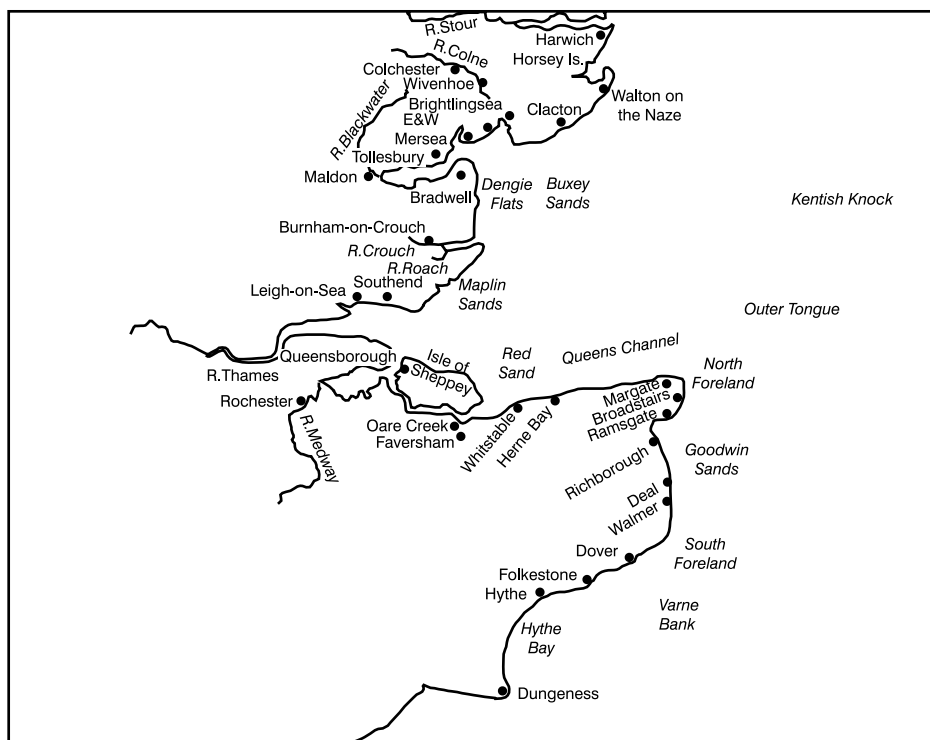
5.3.27 Felixstowe Ferry

Felixstowe harbour and the small villages situated along the River Deben support around 30 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 now 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 of less than 10 m who use longlines and trammel nets for cod and whiting in winter (when available) and dogfish, rays, sole and bass in spring and summer, when they also set pots for lobsters. 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. Half a dozen boats of less than 10 m work on a part-time basis in the Orwell, netting and trawling for eels, bass and flatfish during the summer and drift netting for herring during the winter. The bass fishery attracts many recreational angling boats who fish in the estuaries and outside. In the past, more fishermen were involved in the eel fishery, but catches have fallen over the years and there has been a widespread incidence of the red spot virus (*Vibrio anguillarum*) which can result in up to 50% of the landings being unfit for live sale.

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 that allows small boats to fish most of the year. Here, the larger boats trawl for sole, cod, sprats, herring, thornback ray, eels and shrimp, and dredge for whiteweed and cockles. The smaller boats work oyster lays, use fixed and drift nets for sole, cod, bass and mullet, longlines for cod and occasionally bass, handlines for bass, eel fyke nets and whelk and lobster pots. Some boats exploit 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 for cod and whiting in winter. The static gear fleet set gill, tangle and trammel nets for the same species and use 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 within 4 miles of the shore, 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 - most commonly the thornback ray - 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 year end. During the 1990's, the declining share of the national quota allocated to non-sector vessels over 10 m severely reduced the economic viability of the local fleet. Under-10 m vessels were restricted by closure of the fishery during the first part of the season. 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 such as bass.

The cod fishery begins in autumn and involves otter and pair trawls, gill and trammel nets and longlines, but this has declined markedly in the last few years. 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 preferred 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, and trammel nets are used to catch bass from spring through to autumn, and the availability of live sandeels has made rod and line more popular amongst commercial fishermen and anglers. The Essex coast no longer represents the northerly limit of the commercial bass fishery in the North Sea. 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 Kingsnorth. Grey and, to a lesser extent, golden-grey mullet are caught in beach seines, fixed and drifted nets, often as a by-catch with 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 discrete inshore stock that spawns in spring in the northern part of the Thames Estuary, including Blackwater Estuary, and the North Sea herring in the southern half of the estuary which mixes seasonally with the discrete stock. Fishermen exploiting the spring-spawning stock require a licence from DEFRA and are

restricted to drift net only in the northern half of the Thames Estuary, whereas trawling is the main method used in the southern half of the estuary. Kent and Essex SFC have also introduced closed seasons and minimum mesh sizes through byelaws to safeguard this herring stock. CEFAS carry out a survey of the spring-spawning stock each year and a TAC (usually around 100 - 200 t) is set, although the full TAC has not been taken recently due to poor demand. 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 mainly sold for fishmeal.

6.2.3 Diadromous fish (e.g. salmon, eel)

Although salmon have been returning to the Thames following stocking with fry reared from eggs originating from stocks in the River Shannon (Ireland), there is no licensed salmon fishery in the Thames Estuary. Fyke nets and trawls are used to catch eels in many of the Essex rivers and estuaries, including the Thames. Brown/yellow eels are landed in spring and summer, and silver eels during autumn when they embark on their annual spawning migration from freshwater to the sea. Until 2000, one licence was issued by the EA for a single boat or pair eel trawl (with 16-20 mm mesh), and catches kept in vivier tanks on board were transported to live storage tanks on land before being taken to market (usually Billingsgate). There has been little activity in this fishery since then due to poor returns.

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

The Thames cockle fishery supports both local and visiting vessels. The local fleet uses a "new solids handling pump" system that 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 this fishery, but after the collapse of the Dutch cockle fisheries (particularly the Waddensea fishery) in the late-1980s and declines in other UK cockle stocks (e.g. in the Welsh Dee and the Wash), the Thames cockle fishery expanded rapidly and is now the most productive in the UK. Kent and Essex SFC monitors stocks and regulates the fishery through seasonal closures, and maximum vessel and dredge size. In 1994, the Kent and Essex SFC was granted the Thames Cockle Fishery Order, which limits the number of vessels that may fish the major beds and imposes restrictions on fishing effort and damage rates which enabled improved control and management of the fishery. It is usual for all cockle

beds to be closed from 14 December to 3rd June. Fishing was restricted to two 14-hour periods per week during 1998 and 1999, and a number of beds remained closed for the whole year to allow recovery of stocks. Cockle fishermen, DEFRA scientists and industry are usually consulted before seasonal restrictions are implemented. During the second half of 2001 into 2002, most cockle beds in the Thames Estuary were subject to closure by TPOs that were issued as a result of positive tests for DSP toxins in cockle meats.

Wild and cultivated 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, and half-grown native oysters from the south coast are relayed for on-growing. 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 sites for the spat. The oyster harvesting season usually begins in late summer and can last until spring. Pacific oysters grow faster than the native species, and can be harvested during the closed season for native oysters in the summer months. They are resistant to frost, which allows 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 70 mm. 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 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. Small trawlers either tow single or twin light beam trawls for brown shrimp from November to May in many estuaries along the Essex coast, although the main fishery in the Thames Estuary has declined in recent years. Shrimp vessels from the Wash occasionally fish local grounds. Periwinkles are gathered by hand from many estuaries (e.g. Colne, Blackwater and Thames).

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. Local whiteweed processing plants constructed during the 1980s provide a small but steady demand.

6.3. Description of coastal fisheries by port

6.3.1 Harwich

Up to 15 full-time and 16 part-time vessels fish from Harwich and landing places along the southern bank of the Stour Estuary. Most boats are under 10 m and tend to fish within a 12-mile radius. 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 trawl fishery involves 12 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, when some boats opt to use nets and lines rather than trawls. Around a dozen under-10 m boats use otter and beam trawls for sole and shrimp (occasionally) 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 year round out to 30 miles offshore. 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, around 20 of the boats use set nets and drift nets for sole, rays, bass and mullet, and cod nets in autumn and winter, and 16 vessels employ longlines for cod, rays or bass. One vessel dredges for oysters. A few eel fyke nets are set, which also obtain a by-catch of lobsters. There is now no driftnetting for sprats or herring, which used to take place during the autumn and winter.

6.3.2 Walton-on-the-Naze and Clacton

The 4 full-time and one part-time boats set up to 300 pots for lobsters and crabs in summer, when 4 part-time beach boats of 4-6 m use trammel nets and longlines for bass, sole, plaice and cod. Four full-time vessels engaged in netting, potting and lining work out of Walton backwaters, and 3 full-time and 5 part-time boats moored off Clacton use nets and longlines. Some boats supplement their summer earnings by chartering angling trips. The beds of an oyster farm at Horsey Island Several Fishery are stocked with native 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 8 full-time trawlers of 8-15 m, 3 full-time static gear boats, nearly all under 10 m, plus 10 part-time boats using towed and set 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, when vessels from surrounding ports often join the local fleet. The sole fishery begins in March with plaice and rays forming an important by-catch. One or two boats use twin beam trawls for brown shrimp from November to May within the Colne Estuary, and whiteweed is sometimes 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. Two boats set pots for whelks virtually the entire year round. The native oyster fishery in the Colne was ruined by *Bonamia*, although a slow recovery has been reported since the beginning of the 1990s. One or two boats occasionally dredge for native oysters further offshore. Up to 12 cockle-dredging boats from local and distant ports frequently base themselves in Brightlingsea to fish cockle beds around the mouth of the River Crouch on the Buxey Sands and Dengie Flats. Overfishing of these cockle stocks resulted in Kent and Essex SFC closing the beds throughout 1998, with only very limited fishing permitted in 1999. In 2001, the Buxey Sands was only opened to cockle fishing from August until mid October, with all other areas in the fishery open as usual from 4 June to 14 December.

6.3.4 West Mersea (including Tollesbury)

Sixteen full-time and 13 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. Around 15 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 in these trawl fisheries, as well as using nets for sole, rays, bass and mullet during the summer, and 5 boats use drift nets for herring and gill and trammel nets for cod and whiting in winter. Fyke-netting activity in the estuary has declined due to a scarcity of eels. A few of the smaller boats join the drift net fishery for herring in the Blackwater, but fishing is inconsistent, demand limited and prices low.

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*, and 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. Two shellfish purification plants have been constructed to comply with new EC Hygiene Directives. The part-time fleet partakes in the above-mentioned fisheries, particularly during the warmer months.

6.3.5 Maldon and Bradwell

Out of a total of 8 boats fishing from Maldon and Bradwell, only 2 fish full-time (from Bradwell) and most use static gear or trawl. Some boats use drift nets for herring both within and just outside the Blackwater 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, and the area around the warm effluent discharged from Bradwell power station remains closed to bass fishing despite the facility having ceased operating early in 2002. Fyke nets are set for eels during the summer and autumn. From a fleet of around 16 in the 1980s, only 2 boats now take out charter angling trips from Bradwell, catching mainly rays, smooth-hounds, bass and whiting. One full-time boat cultivates 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

Burnham-on-Crouch is the most important of the numerous landing places along the Rivers Crouch and Roach, which collectively support 6 full-time and 6 part-time vessels, 5 of which are now operated as a hobby. Four 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. A further 4 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, and both drift and 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 for shrimps occurs in the estuaries of the Rivers Crouch and Roach during the summer,

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. Charter and private angling boats work from the Crouch, with the bass fishery attracting attention in the summer and whiting or cod in the winter. Four vessels are partially involved in working private oyster beds and in the production of both Pacific and native oysters, the latter also being harvested from offshore beds.

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 one or two registered vessels use set gill nets for mullet and bass, and eel fyke nets. Three otter trawlers of less than 10 m target sole during the summer and otter/pair trawl for cod, sprats and herring during winter. These vessels do a little harvesting of whiteweed using dredges. During the spring and summer, eels and whitebait are sometimes caught together in pair trawls with by-catches of smelts, mullet and bass.

6.3.8 Leigh-on-Sea and Holehaven

The fishing activity at these ports involves 11 full-time 11-15 m cockle-harvesting boats, 19 full-time and 16 part-time 7-22 m vessels that mainly work trawl gear, with 10 of these boats also using drifted and fixed gill nets and 2 setting longlines. The cockle fleet concentrates its efforts on the Maplin Sands, where they are joined by two cockle boats from Whitstable.

Up to 4 trawlers over 12 m and around a dozen under 10 m vessels now target sole for much of the year using mainly twin and triple otter trawls. Some vessels work singly or in pairs to trawl for whiting, sprats and herring during the winter months, although cod has not been targeted recently due to scarcity. A few smaller boats occasionally use beam trawls for brown shrimps and one boat pots for whelks. The traditional summer whitebait fishery no longer has a local market. 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 have severely restricted landings by non-sector vessels over 10 m, and have delayed the start of the sole fishery for under-10 m vessels. Some vessels have turned to working from English Channel ports in January and February, dredging for scallops, although weather has often restricted their success. The part-time fleet use trawls 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 three part-time fishing boats. There has been no pair trawling since 1996, due to the scarcity of cod and whiting in autumn, lack of sprats and the collapse of the eel fishery. The effort on whiteweed fishing has been reduced to just two vessels working to one local processing plant. Two or three boats will dredge for native oysters during the winter months if the price is high enough, otherwise there is very little fishing from this port between November and March. For the rest of the year, vessels use triple-rigged otter trawls for sole, taking a few rays and mixed flatfish. Two full-time vessels use gill, tangle and trammel nets for cod, bass, mullet, rays and sole in season. Fishing for eels with fyke nets, which supported several local boats in the recent past, has declined to very low effort levels due to poor returns. A small number of lobster pots are set during the summer. Fishing for bass is prohibited within 2 MAFF-designated bass nursery areas in the Medway, adjacent to Kingsnorth and Grain power stations. Beach seining for grey mullet takes place in summer with 90 mm mesh nets, 200-350 m long and 3-4 m deep. Two cockle boats from Leigh on Sea moved permanently to Queenborough at the end of 2001.

Historically, there is a so-called 'floating' fishery in the River Medway that is the prerogative of the Free Fishermen of Rochester. This is presently being challenged legally.

6.3.10 Faversham

Three full-time boats fish from Oare Creek, landing cod, whiting, herring and sprats using pair and otter trawls, and native oysters using dredges from autumn until spring. In spring and summer, sole, plaice rays and bass are taken in otter trawls, and 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 one boat does a small amount of whelk potting.

6.3.11 Whitstable

Out of 13 full-time fishing vessels at Whitstable, 6 of 9-14 m work multi-rigged otter trawls for most of the year, particularly for sole, cod and whiting, with rays and bass targeted for short periods. Two boats regularly dredge for native oysters in autumn and winter. There is very little pair trawling now due to the scarcity of roundfish and eels. Three 12 m vessels dredge for cockles mainly on the Maplin Sands off the Essex coast and only fish local grounds during periods of bad weather. The remainder rely on static gear, mainly

whelk pots throughout the year, along with set and drift nets for sole, bass and mullet, and pots for lobsters and brown crabs. The oyster fishery has received more attention during the 1990s as natural stocks began to recover from *Bonamia* and landings of cod and whiting continue to be poor. Up to four boats move to Rye to fish for scallops during the winter when fishing on local grounds has become too poor for them to make a living. Local private grounds may only be fished by arrangement with the owners. Shellfish processors situated around the harbour deal with cockles, lobsters, oysters and whelks.

6.3.12 Herne Bay

Three full-time and around 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 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 are used for bass and mullet during the warmer months. Cod and herring are caught in gill and drift nets in the winter. A small fleet of trailer-launched boats use rod and line mainly in summer for bass and rays on a recreational or semi-commercial basis.

6.3.13 Margate

Only 2 or 3 full-time boats (around 8-9 m in length) and three part-time boats work gill, trammel and drift nets. Herring (probably from the North Sea stock rather than the Thames' stock) are only occasionally fished with drift nets, and trammel netting for rays is also less frequent nowadays due to vessels concentrating on the sole fishery. During the mid 1990s, several boats moved from Margate to work full time from Ramsgate Harbour, and there is no longer any potting for lobsters or whelks from Margate. A combination of weather and tides can curtail netting operations here for long periods during the winter.

For most of the period between April and late November, vessels work mainly trammel nets for soles and mixed flatfish. Due to the scarcity of fish in recent years, nets are being set from low water mark out to as far as 15 to 20 miles offshore, where the fishermen run the risk of nets being trawled away and lost. Some of the full-time boats work in excess of 50 nets, a considerable increase since the early-1980s. One or two boats also set nets for bass during the warmer months. Wreck netting in summer yields the occasional good catches of cod, pollack, bass and conger eel. During the winter, gill nets are used to take cod. In view of poor returns from eel fyke netting, no one from this port participates in this licensed fishery.

6.3.14 Broadstairs

Three or four part-time boats under 10 m use nets and pots, and most boats now fish from neighbouring ports. Herring drift nets are also worked in winter. From spring onwards, drift and anchored nets take sole, rays and bass, and pots take lobsters and brown crabs. Soles are the single most important species and are targeted until December, although the start of this fishery for under 10 m boats has recently been delayed until April to allow continuous fishing to the end of the year. The lobster season usually ends around November. As with Margate, several vessels moved from here to work full time at Ramsgate, and only small landings are made at Broadstairs throughout the year. A few trailed angling and semi-commercial rod and line boats may launch at Broadstairs during the summer.

6.3.15 Ramsgate

A busy port with merchant and ferry interests (though these are now much reduced), Ramsgate has the largest fleet of netting boats on the Kent and Essex coast. Due to further removals under the Government's decommissioning scheme, there is now only one 12 m full-time trawler working from Ramsgate (though trawlers from the south coast visit occasionally). The rest of the fleet comprises 25 full-time and 5 part-time netting boats of under 12 m in length.

The one trawler uses a triple-rigged otter trawl, targeting sole and other flatfish from April until November and rays in spring. During winter, the main fishing is for cod and whiting and for scallops from Rye when the fishing is bad on local grounds. Gill and trammel nets are set by several boats for cod and whiting which come close inshore during the winter. In spring, most of the full-time static gear boats and many part-time boats turn to sole, using French-style cross-tide trammel nets and also gill nets which are both fixed and drifted across local sands, and landing plaice and rays as a by-catch until late autumn. During the summer, bass are caught in drift nets, cod nets are used over wrecks, and pots are set off this rocky coast for lobsters, crabs and whelks. Some vessels have also used nets for cuttlefish during the warmer months, though there has been less activity in this fishery recently. The majority of static gear boats are involved in angling charters, and there are also several specialist charter and private angling vessels that fish wrecks and banks for principally cod and bass. There is now no driftnetting for North Sea herring from this port.

6.3.16 Deal and Walmer (including Richborough)

Two or three full-time and several part-time beach-launched 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 which 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, and charter angling trips are becoming a popular alternative to commercial fisheries.

6.3.17 Dover

Of the half dozen licensed boats at this port, only 3 have worked in recent years, fishing out of 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 towards 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. Set gill nets and longlines account for cod and whiting in autumn and winter, when drift nets are occasionally used for herring to supply a small local market.

6.3.18 Folkestone

Around 15 boats fish from this sheltered harbour where some of the daily landings are sold from stalls directly to the public. The full-time fleet comprises 6 otter trawlers (only one over 10 m) and 6 netting and potting boats (all under 10 m), plus 3 part-time static gear boats. The trawlers target cod and whiting from late autumn through winter, with a by-catch of 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 and some boats base themselves at Ramsgate for better catches of flatfish and roundfish in season

Longlines are no longer used regularly at Folkestone. All static gear boats now work fixed nets or pots for shellfish and, during change-over periods, both types of gear will sometimes be worked. From spring onwards, 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 that can total

over 5,000 m and result 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 early in the season, and effort then switches towards lobster by the middle of the summer, with crabs and lobsters being caught through autumn. Whelks are caught in pots set in the Bay, generally from April till October. During the warmer months, one or two of the larger boats act as guard support to Channel Swimmers, and some of the full-time fishermen also charter angling trips during the summer to supplement their earnings.

6.3.19 Hythe

Three or four full-time and a similar number of part-time boats, all under 10 m, are launched from the beach and fish mainly within Hythe Bay. Most of the boats work sole nets within the bay (sometimes within 100 m of the coast) from March through to November, with by-catches of plaice, rays and crabs. Two boats occasionally use otter trawls for sole and plaice at this time. All boats used to switch to cod netting from autumn through the winter, with a by-catch of mixed flatfish and whiting, but poor returns from this fishery in recent years has caused some boats to leave the fleet.

6.3.20 Dungeness

Another place where there has been a steady decline in the number of fishing vessels working, there are less than a dozen beach boats, all under 10 m, launched from this small peninsula. Most boats switch between working multi-rigged otter trawls and gill and trammel nets. Whilst fishing activity tends to be concentrated in Rye and Hythe Bays on the sheltered east side of Dungeness, in recent years many fishermen started to work further offshore to make better catches. Some boats opt to trawl when conditions are not suitable for netting, e.g. during strong tides and stormy weather. Cod and whiting, which were the mainstay, have been replaced by sole as the main target species, with by-catches of plaice and lemon sole. Nets and longlines are used in winter for cod and whiting, often on Bullock Bank, which is fished in spring for sole. Herring and sprats are caught in drift nets by 1 or 2 very small boats. In spring, the larger boats set nets out to the middle of the Channel for sole, rays and lemon sole, and some gear is also set over wrecks to yield cod, bass, pollack and the occasional lobster. The smaller boats concentrate on the sole fishery closer inshore until autumn, mainly using heavy cross-tide French-styled trammel nets and taking a by-catch of plaice and rays. During winter, 2 or 3 boats have worked the local scallop fishery. Fishing for bass is prohibited in a MAFF-designated nursery area around the warm water discharges from the power stations at Dungeness.

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 mainstay of local fishing activity is the use of trammel and gill nets 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. The increase in the use of set nets since the early-1970s has reached a plateau, and there is now little friction between fixed and mobile gear fishermen. A Fixed Engine Byelaw (resulting from the 1986 Salmon Act), that prevents nets being set in very shallow water in summer, is well observed.

Healthy lobster stocks are exploited on sporadic rocky grounds close inshore, particularly at Selsey, Shoreham, Brighton and Newhaven, with brown crabs being caught on cleaner grounds further offshore. Whelks have become a very important resource, with seasonal fisheries yielding up to 2 t per hauling for some pot fishermen. Non-quota stocks such as cuttlefish, squid, black bream, bass and red mullet are now targeted more than ever by trawlers, as quotas for pressure-stock species have become very restrictive. Some of the larger vessels 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 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 that at least 60% of the District's fishing fleet were setting nets for most of the year and that, within 3 miles of the coast, some 600,000 m and 200,000 m of nets were being used by full-time and part-time fishermen, respectively. Spider crab invasions of inshore grounds have interfered with and reduced the importance of the sole fishery in spring, when cuttlefish are now often the main target. Sole and plaice provide the mainstay through to late autumn, and other species such as rays, turbot and brill are also landed. During the winter rather 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 for flatfish, rays and cod in season. Sussex SFC byelaws prohibit boats over 14 m from fishing within 6 miles of the coast. The sole fishery attracts visiting beam trawlers that compete for local resources, but the exclusion by national legislation (in June 1982) of beam trawlers of more than 70 gross registered t or 300 bhp from the 12-mile zone helps 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 bass are taken in most months of the year. A Sussex SFC byelaw sets a minimum cod-end mesh size of 90 mm for pair trawlers fishing to the west of Shoreham (in practice

many pairs voluntarily use 120 mm to avoid catching juvenile black bream and bass). Another byelaw (introduced in July 1998) prevents trawling within ¼ nautical mile from baselines between Dungeness and Shoreham (excluding the area between Eastbourne and Cuckmere Haven) between 1 May and the last day of October, in order to protect juvenile flatfish.

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

Several gear types are used for bass including drift nets, trammel nets, rod and line and otter and pair trawls. Bass are caught close to the shore from spring through to late autumn. There are many inlets along this coastline where bass may spend their first few years, and Chichester Harbour was designated a bass nursery area in 1990 by MAFF with seasonal fishing restrictions to protect the juveniles. Grey 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. Sandeels are now prohibited as bait in bass nursery areas.

Both herring and sprat generate little interest these days as market demand is generally low. 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 lobster and crab fisheries occur off Selsey and Eastbourne, and lobsters have provided an improving income 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. Whelk potting has increased in importance and a Sussex SFC byelaw has been introduced to prevent whelks under 25 mm being landed. A small number of boats set pots for prawns.

Scallops are harvested using Newhaven dredges, and rejuvenated beds between Shoreham and Eastbourne

have been subject to intense fishing pressure with heavy catches during 1998 and 1999. A new byelaw to restrict fishing effort has been proposed in order to regulate this fishery. Pacific and native oysters are cultivated within Chichester Harbour and native oysters are also dredged from natural beds. A closed season from the start of May to the end of October is imposed by the Sussex SFC and oysters that can be passed through a circular ring with an internal diameter of 70 mm cannot be retained. However, poor export prices have recently diminished the importance of this fishery. 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.

7.2.4 Diadromous fish (e.g. sea trout and eel)

Although sea trout enter and spawn in some rivers in this district, there are no licences issued to take them in nets. Licensed fyke nets are set for adult eels in many of the estuaries and harbours between spring and autumn.

7.3 Description of coastal fisheries by port

7.3.1 Rye

Rye has a strong fishing tradition and is one of two 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 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 use otter or pair trawls for herring or sprats in winter, depending on demand. The sole population in Rye Bay attracts trawlers from Belgium and other UK ports (e.g. Portsmouth and Brixham). Scallops are sometimes dredged by two local vessels between November and May, and by occasional visitors.

The netting fleet, of which the majority fish part-time, use gill, tangle and trammel nets for sole, plaice and cod, and drift nets for herring, sprats and bass, and eel fyke

nets are used in Rye Harbour. 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 offer charter angling trips. A single traditional keddle net (a form of stake net authorised under a mediaeval Royal charter) is still operated at nearby Winchelsea, catching a wide variety of species, from spring to late autumn.

7.3.2 Hastings

Although fixed netting has been the main activity of 38 full-time boats, mainly open ‘punts’ of 6-8 m but including 10 boats of 9-11 m, four steel trawlers under 10 m 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 fish market constructed in 1993. Trammel and gill nets are set for cod and whiting during winter, and a few boats use drift nets for herring, beginning around October, and for sprat in January and February. From spring onwards, trammel and tangle nets are set for flatfish, particularly sole, plaice and rays, and take an important by-catch 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 lines, 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 have become 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, and this can amount to over 8,000 m of netting per boat. Conflicts between fixed net and beam trawling crews have intensified as static gear fishermen set nets further offshore in search of improved catches. Aggregate dredging activities on Shingle Bank, a traditional fishing ground, were associated with a change in 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 200 beach boats are launched from this coast, chiefly by pleasure anglers, with a few setting 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 rod and line are used over wrecks and yield cod, pollack, ling and bass. Cod and whiting are targeted in winter using gill nets, and 3-4 boats use drift nets 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

The majority of the 25-30 vessels operate from the Sovereign Harbour marina, rather than from the beach between Langney and Eastbourne, and around a dozen fish full time. Most boats are 6-8 m and set nets and pots, and a dozen also use otter trawls. 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 their survival. The second most important crab and lobster fishery in the district takes place on sand/gravel and rocky reefs off Eastbourne and involves nearly all of the local full-time fishermen. Some boats set over 1000 pots each for brown crabs and lobsters out to 6 miles offshore, with velvet and green shore crabs often taken as a by-catch. The largest operator has a vivier facility. 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, the fishery picks up again in September when cock lobsters prevail. Inshore fishermen have become increasingly dependent on potting as white fish landings from netting have fallen through a scarcity of fish inshore and quota restrictions. Substantial quantities of whelks have been landed here in recent years, in an opportunist fishery.

From autumn through winter, gill and trammel nets are set for cod and whiting, and drift nets are used for herring and sprats. In 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’, in which chains are 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 a small fleet of commercial and recreational vessels use rod and line catch bass around Beachy Head and on offshore reefs and wrecks. Otter trawls are often used in summer for flatfish and 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 for brown crabs out to 5 miles offshore in spring, and then they are joined by the rest of the fleet using 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 off Beachy Head from May to November using rod and line with artificial lures or sandeels 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, though marketing opportunities are limited. Scallop dredging has increased since mid 1990s, and six vessels of around 15 m fish offshore between Beachy Head and Selsey from November to May. From spring onwards, twin and triple otter trawl rigs, tangle and trammel nets are used for flatfish, especially plaice and sole. As the water begins to warm, black bream, red mullet, bass, mullet and cuttlefish appear inshore; pair trawlers can land up to 8 t of black bream in a day, which can cause marketing problems. John Dory are also landed and a good market exists in France. Bass are caught on rod and line on reefs and wrecks off Beachy Head, but boats are having to fish further from port (up to 30 miles) to maintain catch rates after several years of sustained fishing pressure on local marks.

Over 20 potting permits have been issued to both full- and part-time fishermen, and two 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, gill nets are set around wrecks for cod, pollack and ling, and some 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 around 10 beach boats of 4.5 to 7 m set nets, pots and handlines. Approximately 100 small boats are launched along the beach for pleasure angling, a few of which set nets and pots. Sole and plaice provide the main catches in trammel and tangle nets and trawls from early spring

through to late autumn, with a by-catch of turbot and rays. Fishing effort has increased since the mid-1980s and some boats now set 30-50 nets. Spider crabs have become a serious problem in the summer, preventing set 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. These vessels also fish for whelks when the market is favourable. Half a dozen 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 and, with two 15 m vessels, sometimes dredge for scallops between November and May. The remainder of the fleet are between 4-12 m and use trammels, trawls and, seasonally, drift nets. Cod and whiting are taken during the winter in trawls and, in rocky areas inaccessible to trawlers, with trammel nets; 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 in February/March, followed by sole and then turbot, rays and brill through summer until autumn. At the start of the season, 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 rod and line, 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, with 2 or 3 setting over 1,000 pots offshore. Along with whelk potting, this fishery has become increasingly popular since the 1980s as landings of white fish have fallen.

7.3.9 Worthing

Approximately 34 beach boats work along this stretch of coast, the majority are 4.5-6 m in length and are owned by part-time fishermen and anglers. There are five 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 being landed occasionally. Plaice, sole and 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 rod and line 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 use 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 lines, a method that 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, and part of the landings is sold through beach stalls, especially during the summer to tourists. To the east, fishermen concentrate more on netting, using tangle and trammel nets for sole, plaice, rays and turbot in 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 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 among the rocky reefs close inshore. Pots are also set for whelks and prawns, especially towards the end of the lobster season.

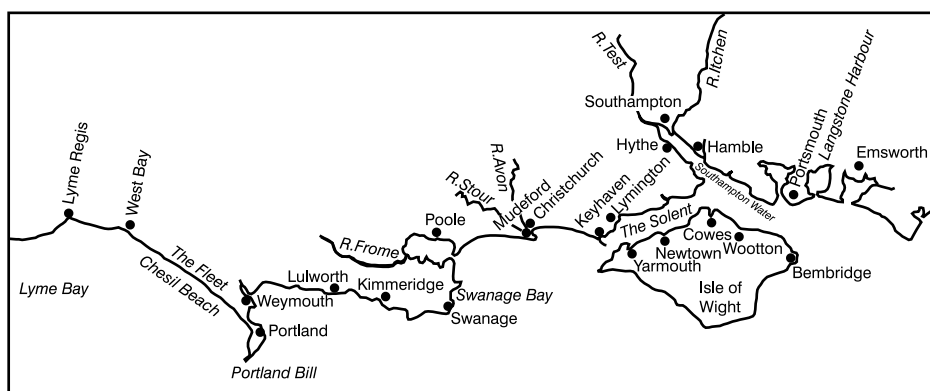
7.3.12 Selsey

This small beach landing is renowned for its lobster fishery. This involves nearly all of the 23 full-time potting 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 or sandeel-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 here dredge for oysters 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 in the Solent under the jurisdiction of the Southern SFC. In spring, some fishermen switch to trawling or netting for white fish and potting for brown crabs and lobsters, some moving to Selsey to set pots. Chichester Harbour has been designated a bass - nursery area where fishing for bass from a boat or using sandeels as bait is prohibited between 1 May and 31 October. Otherwise, bass are caught using gill nets, trawls and handlines, and grey 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.

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



8.1 Synopsis of current inshore fisheries

The coast between Selsey Bill and Swanage contains Langstone and Portsmouth Harbours, Southampton Water, the Solent and Poole Harbour, areas which provide relatively sheltered water in all but extreme weather conditions and which enable many smaller boats to work in comfort for such high-value species as sole, oysters, bass and lobsters. Further to the west, the coast is more exposed to the prevailing south-westerlies, and only Portland Bill offers any protection. A local byelaw limits the size of fishing vessels allowed to work in the Southern SFC district to 12 m in overall length and, apart from the Portsmouth beam trawlers and dredgers, there are few vessels along this coast which are not day-boats. These vary in size from 4 to 5 m punts, which are characteristic of this coast and worked single-handedly in the harbours, up to 12 m potters operating out to mid-Channel.

A stricter legislative regime has seen a marked decline in the number of part-time fishermen, and the number of vessels registered with the SFC fell from 800 in 1994 to 469 by mid 2001. Over 80 % of the boats that are actively fishing are now full-time and, given technical improvements, it is likely that the level of fishing effort has not diminished and has actually increased in the potting fleet. There has also been an increase in charter

(and casual) angling vessels, which is now a year-round industry of considerable importance to the local economy. Catch data are not recorded for anglers and hobby fishermen, but it is probable that their take over the year constitutes a considerable proportion of some species' landings.

Crab and lobster provide half of the value of all landings in the district, with other shellfish making up a further 25% and finfish the balance. Consequently, the welfare of the shellfish stocks is of major concern for the future of the industry. A large proportion of the shellfish catch is exported directly to the Continent (where better prices are often offered than in Britain) via the local ferry ports, whilst the finfish supply local markets and some is transported to Billingsgate.

The wide variety of fish found along this coast has encouraged local fishermen to be versatile, and many of the boats in the inshore fleet are fitted to work a number of fishing methods corresponding to seasonal fisheries throughout the year. This flexibility has also allowed them to exploit new species and to cope with frequently changing market conditions. Typical examples in recent years have been the expansion of the spider crab market; the whelk boom; increased demand for cuttlefish; a halving of oyster prices and the expansion of the velvet crab fishery.

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, when landings of plaice are often greatest on spring tides when they are more active. Larger meshed tangle nets are set for 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 which can be severely restricted by high densities of weed in the water.

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. Red mullet and black bream are caught in otter and pair trawls in spring and summer.

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

The bass fishery attracts considerable effort involving both lines and nets throughout the region and, in most localities, this fishery provides income for many part-time and casual fishermen between May and November. Bass are taken in gill and trammel nets, on rod and line, longlines and, sometimes, in trawls. This species is also important to the charter boat industry. Problems with weed and the success of using sandeels as bait has prompted many commercial fishermen to switch from netting to rod and lining which usually takes place at dusk and dawn. A total of 6 harbours, bays and estuaries in this district are MAFF - designated bass nursery areas in which there are seasonal restrictions on fishing for bass from a boat. Bass are taken further offshore by visiting pair trawlers that sometimes 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. Gill nets are used for herring and mackerel, and sprat are taken in otter and pair trawls during the colder months, though none of

these fisheries is popular due to low market demand. Mackerel catches are mainly sold for bait.

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

There are licensed salmon and sea trout seine net fisheries in the common estuary of the Avon and Stour (part of Christchurch Harbour), and in the joint estuary of the Frome and Piddle (Poole Harbour). A national Byelaw was introduced by the EA in April 1999, that restricts the salmon fishing season to a 1 June start and requires salmon caught in sea trout fisheries before that date (season starts 15 April) to be released alive.

There are licensed fisheries for eels in many of the estuaries and harbours within this district, taking growing and adult eels in fyke nets between spring and autumn, and elvers in traps 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)

The Solent and its surrounding Harbours is one of few regions in the UK supporting a healthy self-regenerating native oyster fishery, which was not decimated by *Bonamia* in the 1980s. This fishery is managed through byelaws setting 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); MLS (oysters that can pass through a circular ring of 70 mm internal diameter cannot be retained); and a ban on night fishing (between 1600h and 0800h). In addition, the larger part of the Solent itself is designated as a regulated fishery with access limited to licence holders. Two several orders have been granted for oyster beds in Stanswood Bay and Calshot, which are administered by fishermen's co-operatives and may be seeded from the wild stock. Most of the catch before Christmas is sold to the Continent, though the recovery of the Continental oyster fisheries has seen a decline in demand and a consequent 50% drop in first-sale prices. There is demand from the east coast for oysters to restock layings in the spring.

The stock of American hard-shelled clams in Southampton Water, the northern part of the Solent and in Portsmouth and Langstone Harbours was subject to a very productive dredge fishery in the late 1970s and early 1980s, but overfishing has left it much reduced and it is now only occasionally exploited. Scallop dredging takes place mainly in the west of the district, but this is an opportunistic fishery as the beds tend to be rather transient. The one regular scallop fishery which has persisted in recent years is by divers on rough ground in the summer.

The Poole Fishery Order covers the whole Harbour and gives both several order and regulating rights for oysters, mussels, clams and cockles. The previously extensive oyster fishery was wiped out by *Bonamia* in the late 1980s, since when mussel relaying for fattening has become the main activity on the several layings which extend to over 500 acres. The mussels are mainly acquired from off Portland. Clams, cockles and oysters are also farmed on a smaller scale. Manila clams have established themselves in Poole Harbour in recent years, and these provide a good regulated winter fishery for around 30 small vessels.

Catches of cuttlefish and squid taken in otter trawls and traps are subject to wide fluctuations, but they have provided a much welcomed addition spring fishery in recent years, especially when quota restrictions constrain landings of 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 many part-time fishermen participate. In some sheltered areas, lobsters are caught during the winter months, when the higher market prices make it viable despite low catch levels. 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

Half of the 20 boats fishing from this Harbour do so full time, the main effort being during the summer when bass, mullet, sole, plaice, lobster and crabs are targeted. There is a small public oyster fishery which attracts vessels from nearby ports such as Portsmouth. Many of the remaining boats charter angling trips and set the occasional net or pot. There is a popular rod and line fishery for bass, both within the Harbour and around its entrance, which has been designated a 'bass - nursery area' by MAFF and is closed for bass fishing from a boat or with sandeels as bait from 1 May to 31 October. 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, though quota restrictions on sole sometimes culminate 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

The Camber supports a reducing inshore fleet that comprised 28 boats of 6-12 m at the end of 2001. These vessels use a variety of fishing methods outside the Harbour; within which fishing is restricted because of Naval activities. An additional 12 or so vessels regularly use this port for landing. 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, roundfish and flatfish are caught in trawls and fixed nets, and pelagic fish such as sprats are periodically trawled. Local boats work in the regulated oyster fishery and in the public fishery during the open season. The smaller oyster boats often fish the more obscure oyster beds 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 two main fishing ports located in Southampton Water, the former supporting 18 boats and the latter around 4. Although a constant stream of marine traffic restricts fishing activities within Southampton Water, molluscs are harvested there, but most local fishing takes place outside. From autumn, oysters are dredged by up to 16 vessels. Native oysters are dredged from the Solent and are cultivated around the entrance to Southampton Water (e.g. Calshot and Stanswood Bay). 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. Dredging for the American hard-shelled clam in Southampton Water has virtually ceased, owing to stock depletion. Cod and whiting are taken by 2 or 3 boats using otter trawls and several smaller boats using gill nets, and cuttlefish are taken in traps and by trawling from April to June. During the spring and summer, 3 vessels trawl for sole, plaice and bass, and the others use longlines, rod and line 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 the inner of Southampton Water, including the tidal rivers Hamble, Itchen and Test, under the bass nursery area legislation. There are salmon runs to the Rivers Test and Itchen, where the two licensed seine nets no longer

operate. One seine net is licensed to take sea trout in the Beaulieu River.

8.3.4 Lymington

Lymington has a small harbour that supports around 26 boats of 7-12 m. Fishing activity centres around trawling and netting for white fish and cuttlefish, dredging for native oysters, netting and lining for bass and potting for lobsters and crabs. Sport angling from private and specialist charter vessels is very popular and some commercial fishermen also offer charter angling trips during the summer. Up to a dozen visiting oyster dredgers periodically base themselves here during the winter. 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

The local fleet now stands at 6 boats all under 10 m, setting pots for brown crabs, spider crabs, lobsters and, recently, velvet crabs for which a market has been developed in France and which provide a welcome addition to earnings. A few vessels may dredge oysters or trawl or net for cod and whiting from December to March. For the remainder of the year, these and other boats use otter and beam trawls and set tangle nets for sole, plaice and rays, gill nets for bass and mullet, and longlines for bass. Several boats offer charter angling trips.

8.3.6 Mundeford and Christchurch

A narrow channel enters a large harbour accommodating mainly pleasure boats and around 24 commercial fishing boats. Six boats of 6-8 m set pots for lobsters and crabs, 10 full-time and some seasonal boats take bass on lines along Christchurch Ledge, and 2 full-time plus 2 or 3 part-timers may trawl or net for sole and bass between the Needles and Poole. Five licences are issued for beach seining for salmon and sea trout from small rowing boats in the common estuary of the Avon and Stour (part of Christchurch Harbour). In support of the national byelaw introduced by the EA in April 1999, that requires salmon caught in sea trout fisheries before the start of the salmon fishing season (15 April to 1 June) to be released alive, a scheme funded since 1998 through the Wessex Rivers Trust and Tesco's extends this requirement in this fishery to the season's end on 31 July.

8.3.7 Isle of Wight

There are a total of 54 registered fishing boats working from the island. All but a few use static gear and the majority of boats are based in the three main ports (Bembridge, Cowes and Yarmouth), although a few

work from coves and landing places around the island. At Bembridge, around 32 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, and local grounds tend to be saturated with pots. Lobsters generally provide the mainstay of this fishery, 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. Around 8 boats fish from Cowes and Wootten 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 has 14 boats under 12 m each using up to 800 pots, netting and lining. A few additional part-time boats use static gear and charter angling trips.

8.3.8 Poole

There are around 86 registered fishing boats operating out of Poole Harbour, of which 30 fish 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. Most of boats under 8 m operating within the Harbour are punts, harvesting clams and cockles, gill and trammel netting for mullet, and potting for prawns, lobsters and brown and spider crabs. There is one licensed seine netsman operating in the joint estuary of the Frome and Piddle, catching salmon and sea trout from 1st June to 30 September. A few licensed eel fyke nets are set on the Frome in the Wool area, and there are eel racks at East Burton and on the Piddle 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 from other fisheries and re-laid into the Harbour. Cockles and various species of clams are also grown on the layings, together with a limited number of Solent oysters.

Potting is the main activity of the larger boats, which fish between the Isle of Wight and St Albans. Trawling takes place in Poole Bay, where 4 full-time boats over 10 m take sole, rays, plaice and cuttlefish during the warmer months. There is extensive netting along the coast except when weed becomes a problem in summer, and mid-water trawls are sometimes used for sprats west of the Solent in winter. The bass fishery is important to the local fleet, which uses mainly handlines and some longlines and nets sometimes seaward of the Isle of Wight. During the bass season, up to 30 boats may fish the Haven entrance and Christchurch Ledge, drift lining or taking out angling parties, and catching sandeels off Hook Bank for bait. There is a ban on bass fishing from a boat in most of Poole Harbour, between 1 May and

31 October, under the nursery area legislation. These boats turn to oysters, crabs and trawl 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

Of 17 boats registered here, only 4 boats under 12 m worked on a full-time basis in 2001 setting lobster pot off St. Albans Head. A further 6-8 boats net for flatfish, use handlines and nets for bass and pot for lobsters during the summer on a less regular basis. Two or three boats offer charter angling trips.

8.3.10 Kimmeridge and Lulworth

One boat from Kimmeridge and two from Lulworth set pots for crabs and lobsters in Swanage Bay. Scallops are gathered by commercial divers from rough ground on Lulworth Bank during the summer. This is an area particularly favoured by shore anglers, who target bass, mullet, wrasse and pollack.

8.3.11 Weymouth and Portland

Around 85 registered boats are now based in these two ports. The pot fishery provides the principal source of revenue and has developed rapidly since the 1970s, now supporting 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. Several are equipped with vivier tanks to keep up to 5 t of live crabs on board, thus enabling them to sell directly to buyers. Landings are sometimes made into France if first sale prices there make it more profitable. A small number of potters also set nets for marketable fish and pot bait, although netting is restricted by strong tides. The smaller boats, of less than 8 m, fish inshore and each set 100-500 pots for lobsters and brown and velvet crabs.

Around 15 boats of 8-12 m use otter trawls and, in addition to traditional white fish such as cod, whiting, rays, 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.

Red mullet are an increasingly important component of catches. One 14 m vessel dredges for scallops full time, and other boats target scallops occasionally, although most inshore scallop beds have been cleared of marketable-sized scallops and are being left to regenerate. Scallops are also harvested by divers in areas too rough to dredge. One boat dredges mussels off Portland Bill to supply the layings in Poole Harbour. Between 10-15 boats of 6-10 m use rod and line or 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. A few boats also use gill nets and seines for bass and mullet. In 1990, MAFF designated the Fleet - a lagoon separated by Chesil Beach from the sea - as a bass nursery area where bass fishing from a boat is prohibited all year round. Chartering angling trips is a popular business here and involves up to 30 boats of various sizes all year round (including some trawlers and potters during the summer).

8.3.12 West Bay

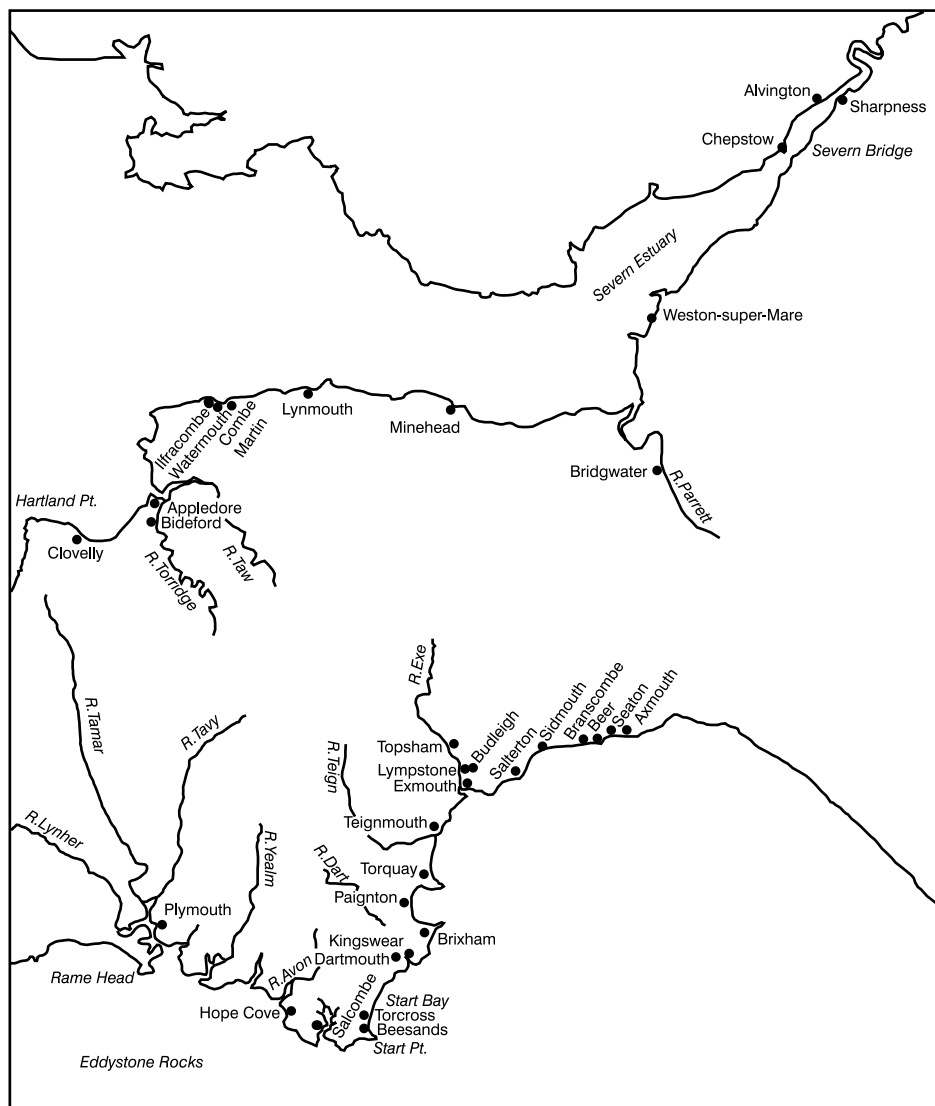
A small sheltered harbour supports 14 registered vessels including otter trawlers of 9-11 m that fish within Lyme Bay all year round. During the summer, landings comprise mainly sole, plaice, rays, brill and whiting, and rays, cod, whiting and some flatfish are taken in winter. These boats sometimes target queen scallops after Christmas when, if the weather is bad, they may work from Brixham. Cuttlefish traps are used from April to June. Potting for crabs and lobsters is the main activity and 10 boats of 6-8 m use pots seasonally or take out angling parties to wrecks or rough ground. There are 15-20 small (4 m) boats setting nets or up to 10 pots during the summer.

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 when there is sufficient demand. Between 6 and 8 boats set pots for brown crabs and lobsters out to 6 miles offshore and as far east as Portland Bill, and velvet crabs are taken as a by-catch. A few of these boats also set nets around wrecks for cod, pollack and ling. A few 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 here 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: offshore vessels, the majority of which are based in Brixham and Plymouth; coastal trawlers, beam trawlers and scallop dredgers; and small inshore day boats that use a variety of static gears.

Although the south coast of Devon is more sheltered than the north coast, 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 15% of total crab landings into England and Wales in 2000. In most of the Devon estuaries there are licensed beach seine fisheries for salmon and sea trout, some of which are subject to buy-back schemes due to the depleted state of salmon stocks. Though drift netting is popular for

mullet and bass, many of the estuaries are bass nursery areas and strict measures governing netting and other methods have been introduced to preserve bass and migratory salmonid stocks.

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, John dory, flounder, ray, monkfish, red mullet, sea bream, gurnard and dogfish)

Inshore otter and beam trawlers land a wide variety 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 other more traditional species. Beam trawlers operating inshore switch between white fish and dredging for 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 seasonal abundance of species. A few boats operate in pairs, but most in this region choose to operate alone. A byelaw of Devon SFC (5 June 1996) prohibits boats over 15.24 m fishing for sea fish (including scallops) within 6 miles of the coast (although larger boats are exempt providing they were fishing during the year before the date of this byelaw and continue to be registered in the same ownership). The use of trawl gear has also been prohibited in specified areas such as Start Bay and within estuaries to help protect juvenile fish stocks. Lundy Island and adjacent waters is a Marine Nature Reserve and a Special Area of Conservation, within which some fishing activities are prohibited.

Nets and longlines are set by the small boats, often in areas inaccessible to 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 yield pollack, ling, cod and monkfish, and these species are caught along with turbot and spurdogs on longlines in areas where strong tidal currents prevent netting. Fixed nets may be set only where authorised by the Devon SFC byelaws 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, pilchards, sprat, bass, grey mullet and sandeel)

There is a traditional mackerel fishery on both the south and north coasts of Devon. Following the development of purse seining and pair trawling in the 1970s, an area around the south-west coast was designated the 'Mackerel Box' under European legislation. This regulation is intended to conserve mackerel stocks (particularly juveniles) by prohibiting all types of netting for mackerel, 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. In 1990, MAFF designated many Devon estuaries as 'bass - nursery areas', where bass fishing from boats is subject to seasonal closures and sandeels may not be used as bait. 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 the Rivers Exe, Teign, Dart, Tavy and Tamar along the south coast, and the Taw and Torridge on the north coast. The salmon fishery in the Severn Estuary involves seine nets, lave nets and putcher ranks, some of which have not been fished since 1999. These fisheries are subject to annual and weekly closure times which tend to vary according to river and fishing method, but all are subject to the national Byelaw introduced by the EA in April 1999, that requires salmon caught in sea trout fisheries before the start of the salmon fishing season (1 June) to be released alive.

Many rivers, throughout the district, support eel fyke net fisheries usually between spring and autumn. Elver dip nets are used in a few rivers on the North Coast when the elvers are migrating into freshwater in winter and early 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)

The south Devon coastline supports the largest brown crab potting fleet in the UK, comprising 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. On both south and north coasts there are numerous smaller inshore boats that set up to 800 pots each, usually within a few miles of the coast. The national MLS for brown crabs taken off this coast 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. Velvet, green shore and spider crabs are also landed. Tangle nets are used for crawfish and spider crabs, and prawns and whelks are taken in some areas using pots.

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 scarcer inshore and subject to quota controls. Scallops are found on loose shingle and dead shell, and are caught by working dredges repeatedly over the most densely populated areas. Scallops can be harvested all year, although they spawn in the spring and are then of poor quality. At this time sole, plaice, rays, turbot and brill appear inshore and some boats switch to beam trawling. Devon SFC byelaws set close season from July to September for scallops and limit the type, size and number of dredges allowed. A by-catch of 10 dozen scallops per landing from trawls is permitted. Queen scallops are primarily taken as by-catch in trawl fisheries. Cuttlefish are taken in traps and nets by small boats working within one mile of the shore. With squid, they 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 when the large beam trawling fleets work further offshore and land their catches elsewhere.

Oysters are cultivated in many of the larger estuaries, Pacific oysters being preferred to native oysters 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.

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 one boat operates from the beach. Three fishing boats, all under 10 m, are involved in the brown crab and lobster pot fishery from spring through autumn, with spider and velvet crabs taken mainly as a by-catch. A few boats use otter trawls and fixed nets for demersal fish such as sole, plaice, rays, turbot, dogfish and whiting, and occasionally use mid-water trawls for sprats in autumn. Nets are sometimes used to supply bait for pots. The bass fishery attracts many anglers in season and commercial boats take out 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 cod and whiting in winter, flatfish in the spring and herring in the autumn, and nets are also set over wrecks for a variety of fish including cod, pollack, bass, ling and conger. One otter trawler primarily lands flatfish, rays and dogfish from spring and cod, whiting and sprats in autumn and winter. The fishermen will often haul their gear early in the morning before they depart for daily charter trips, upon which the fleet is becoming more dependent throughout the summer period.

9.3.3 Sidmouth

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

9.3.4 Budleigh Salterton

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

9.3.5 Exmouth

This large, well sheltered harbour accommodates 6 over-10 m vessels and most of the local fleet of 28 under-10 m boats, working from the estuary of the

River Exe. Three boats of up to 15 m use otter and beam trawls, set pots and may also dredge for scallops. In addition to white fish, non-quota species such as squid and cuttlefish are landed especially during the summer. The autumn and winter sprat fishery has now ceased due to lack of demand. Ten licences are issued for the use of beach seines to catch salmon and sea trout between Lympstone and Topsham in the Exe Estuary from 1 June to 18 August. 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 targeted by both commercial and recreational rod and line fishermen, who favour as bait live sandeels that are also caught in the estuary. The Exe Estuary is a designated bass nursery area, where fishing for this species by boat and with sandeels as bait is prohibited between 1 May and 31 October.

Mussels are cultivated by several people within the Exe Estuary, where high water temperatures towards the end of the summer can trigger a second spawning, rendering the quality of the meat poor until the following year. Pacific oysters are also re-laid for on-growing in the estuary. A few boats set pots for crustacea and whelks.

9.3.6 Teignmouth

The Teign Estuary contains a large bay which supports numerous industries including dredging and merchant shipping companies, as well as containing many yacht moorings. The 5 trawlers (2 over 10 m) 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 and sandeels, potting for crustacea and whelks, handlining for bass and gathering periwinkles by hand. This estuary is designated a bass nursery area and fishing for bass from a boat has been prohibited from 1 May to 31 October. Four salmon licensees seine net for salmon and sea trout from 15 March to 31 August.

Mussels and Pacific oysters are cultivated in the river, juvenile mussels being obtained from the River Exe and juvenile oysters from hatcheries. Mussels are farmed on 385 acres of beds that are covered by the Teign mussel fishery order. Pacific oysters began to be cultivated here in the late-1970s and this is now one of the most important oyster growing areas in England and Wales. One of the main problems facing mollusc cultivation in the Teign Estuary was the poor water quality caused by sewage effluents and agricultural run-off, and it was included in MAFF's 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 (1 over 10 m) based here. In autumn, 2 Scottish boats sometimes 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 seasonally. 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 fished part-time. The majority set pots for brown crabs and lobsters from spring through to autumn. A few set nets for demersal and pelagic fish, and charter angling trips have become increasingly important for commercial fishermen since the 1980s.

9.3.9 Brixham

This is one of the largest ports in the south-west and has a traditional trawling background supplying a large daily fish market. The district offices of the Devon FSC and DEFRA Sea Fisheries Inspectorate are both situated here. During the early-1980s, many fishermen bought new boats and engaged in beam trawling, which is a more effective gear for targeting flatfish and can be worked on much rougher ground compared to otter trawls. Twelve of the 30 beam trawlers of between 15-29 m operating out of this port periodically fish inshore, though several of them that do not have 'Pressure Stock' licences are virtually confined to scallop dredging outside the 6 mile limit. Some of the other beam trawlers switch to scallop dredging in periods of quota restrictions or when flatfish are scarce inshore. Most of the 40 otter trawlers over-10 m registered in Brixham, Teignmouth and Exmouth are 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, non-quota species including cuttlefish, squid, red mullet and sea bream are landed. Several of the Brixham boats mid-water trawl for sprats in winter. There are also over 40 under-10 m vessels fishing from Brixham using a variety of gears. Several of the smaller vessels set nets for species such as cod, pollack and ling, often around wrecks, and some of these boats concentrate on the pot fishery, setting up to 10,000 pots mainly for brown crabs out to 6 miles offshore. Another 10 boats use gill nets, tangle nets, handlines and, in some cases, trawls, in addition to pots. Cuttlefish traps are set by one vessel between April and June.

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. Around 15 boats are over 10 m and set between 800 and 1,500 pots each in the mid-Channel area, 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 fewer 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 trawl fisheries men has led to non-statutory agreements designating potting and trawling zones which alternate on a seasonal basis.

Pacific oysters are cultivated within the river and nets are used both in the estuary and outside it for bass, mullet and sandeels. The estuary is a designated bass nursery area and bass fishing from a boat is permitted only between 1 January and 30 April. Eleven licensed seine nets take salmon and sea trout in the Dart River and Estuary between 15 March and 14 August, with a weekly closure between 0600h Saturday and 0600h Monday. Total annual landings of salmon exceed those of sea trout, despite the salmon season not opening until 1 June.

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 the larger boats usually set over 1,200 pots, and the inshore fleet set 200-800 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 most commonly used, although parlour pots are used inshore. Like the potters of Kingswear, the Salcombe fleet also has problems with trawlers, despite the designated potting/trawling areas, especially when visiting boats dredge the areas for scallops. A trawl cutting through a string of up to 100 pots, each valued at £50, can prove very costly. Four or five inshore boats set tangle nets for flatfish, fyke nets for eels, and gill nets for cod, whiting and pelagic fish. The estuary is a designated bass nursery area 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.

There is a small scallop fishery within the estuary, licensed and restricted by Devon SFC from mid December to mid March.

9.3.13 Hope Cove and the River Avon

The 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. In the Avon Estuary, a few people grow mussels and oysters, and there is a licensed salmon fishery, although the rights have been purchased by EA South Western Region and are not currently exercised. The Rivers Avon and Yealm are both designated bass nursery areas in which boat fishing for bass and the use of sandeels as bait are prohibited 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 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, scallop dredges and mid-water trawls. The latter method is used in the autumn and winter on most of the pelagic species, by local vessels that normally operate singly, or by visiting Scots pair-teams that have also increasingly targeted bass. There are 7 or 8 local beamers and others from Brixham also make sporadic landings at Plymouth. 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 species such as plaice, whiting, lemon sole, turbot, and monkfish, for most of the year, but other non-quota species such as red mullet and cuttlefish have recently become more important. Pilchards are occasionally targeted in winter and several trawlers also use nets and lines at times. 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 concentrates its efforts on grounds within 14 miles of the coast, the Eddystone 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. Without the 'Mackerel Box', 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 from a boat in the Plymouth river estuaries is prohibited as the area is a designated bass nursery area. In 2001, 24 licences were issued for seine netting for salmon and sea trout in 3 estuaries leading into Plymouth Sound. The fishery begins on 1 June and ends on 31 August, though all these fisheries were compensated not to fish after particular dates in 2001: Tavy (4 licences; after 1 July), Tamar (15; 8 August) and Lynher (5; as Tamar). 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 is limited during the winter, when poor weather and big tides result in many boats being hauled ashore 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 such as gurnard, mackerel or dogfish is usually obtained from trawler fleets landing elsewhere. 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 lies a few miles up the Torridge Estuary. The number of fishing vessels using both quays has increased over the last twenty 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 36 h in fine weather) landing a mixed demersal catch. 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, which 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 offer charter angling trips during the summer. Parts of the Torridge and Taw Estuaries are designated bass nursery areas, and fishing for bass from a boat is prohibited between 1st May and 31st October. A total of 14 licences are available for the use of seine nets to catch salmon and sea trout between 1st June and 31st August in the Taw and Torridge, subject to a weekly closure between 0600 on Friday and 0600 on Monday. Natural stocks of mussels, oysters and cockles are exploited in the common estuary on a small scale, and mussels and Pacific oysters are cultivated, though some beds are currently closed for hygiene reasons until water quality improves. There has recently been interest in this area as a source of seed mussels for other fisheries as well as for direct sale.

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, whilst 2 boats do both. Most of the pots are brought ashore in October/November. Two or 3 boats are over 10 m and set up to 800 pots principally for brown crabs and lobsters 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, and take conger, dogfish, rays, pollack and cod. Drift nets are used to take herring and bass in season. Six boats are involved in chartering angling trips in summer for mackerel and shark. Bass and mackerel are caught on rod and by recreational and commercial anglers.

9.3.20 Combe Martin and Watermouth

Up to half a dozen boats fish seasonally with 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. Catches are sometimes sold to local hotels and restaurants. There is one licensed fixed engine for salmon and sea trout on the River Lyn, which was not operated in 2001.

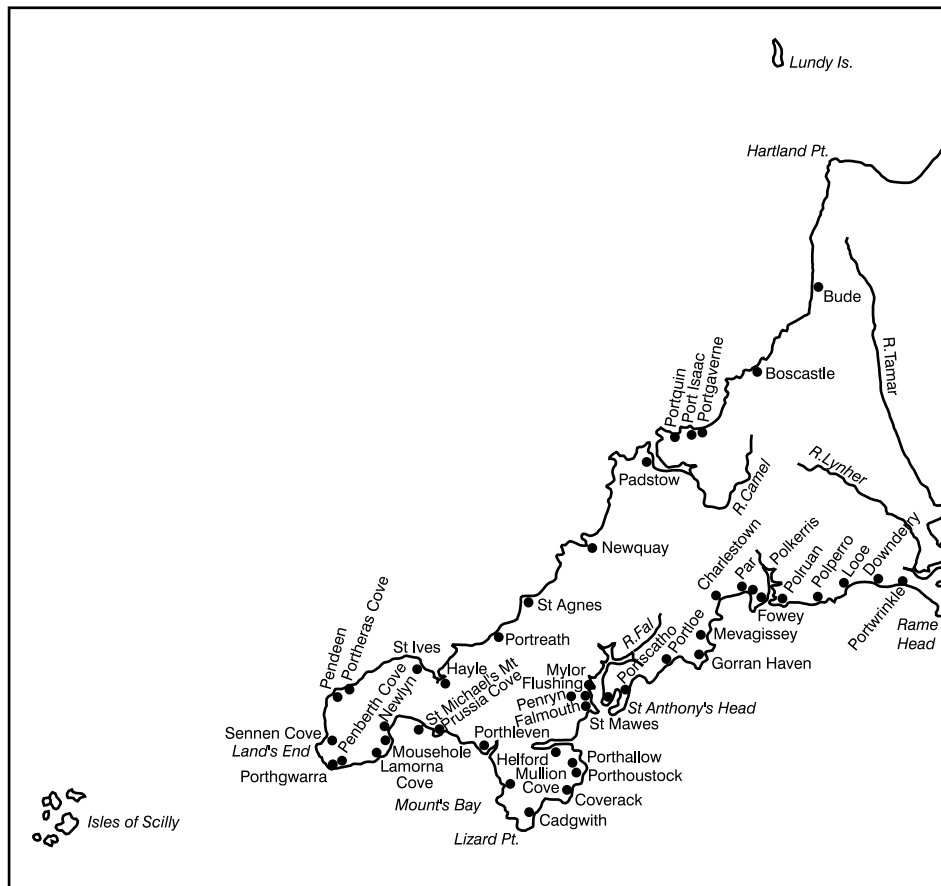
9.3.22 Minehead and Bridgwater

Two small part-time boats work out of Minehead setting pots and taking out angling parties. At Bridgwater, the two salmon putcher ranks within the estuary of the River Parrett have not been operated since 1999. 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 stake-netmen 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. 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 a lesser extent, sea trout are taken in the Severn Estuary. The licensed fishery comprises 4 seine nets, 20 (half season) lave nets and 7 fixed engines (e.g. putchers). Seine and lave nets are used between 1 June and 31 August, whereas fixed engines are fished between 1 June and 15 August. There are salmon putchers 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 are taken for use as angling bait along the low water mark off Weston-super-Mare.

10. CORNWALL: Rame Head To Bude (Cornwall SFC and Isles Of Scilly SFC)



10.1 Synopsis of current inshore fisheries

This coast is subject to varying degrees of exposure and water currents from the Atlantic Ocean in the west to the more sheltered English Channel in the south, and provides a wide range of resources in fisheries which tend to be very seasonal. This area is included in the distribution of southerly species such as red mullet and John Dory and also northerly species such as cod. Small day-boats proliferate along the south coast, the majority setting pots for crabs and lobsters, using longlines for demersal species on rough ground, handlines for mackerel and bass, and a variety of gill and tangle nets for cod, ling, 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.

Inshore beam trawlers target flatfish for most of the year, though 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. A Cornwall SFC byelaw (under review) prohibits boats over 18.3 m using trawls, purse seines or ring nets within 6 miles of the coast. Most of the inshore trawlers are based in Newlyn and, 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. Ports and 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 that can be used on wrecks and rough ground, local resources are more heavily exploited than in the past. Potting activity is highest during the warmer months with pots set out to 30 miles from the shore for crabs and lobsters. Traditional open boats of around 5 m operate out of many Cornish coves, mainly on the south coast, handlining for mackerel and bass, with some local potting and gillnetting (where this is permitted).

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)

The largest part of the whitefish landings are taken by beam trawlers working offshore for monkfish, megrim, lemon sole and sole. Otter trawlers exploit more seasonal fisheries, with cod and whiting landed from autumn through winter and flatfish in spring – mainly megrim and ray for many boats all year - feature in greater quantities. As mentioned above, non-quota species such as squid and lemon sole are becoming increasingly important.

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 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 rarely used. Boats of 6-8 m can set over 8,000 m of net, although the average is probably in the region of 1,500 to 3,000 m. Netting restrictions introduced by the EA 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 decline in the use of longlines, this method is still important in offshore 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.

10.2.2 Pelagic species

(e.g. mackerel, bass, herring, pilchards, sprat, mullet and sandeel)

Handlining is undertaken by the majority of small boats, which operate along the south coast from autumn through to spring when shoals of mackerel appear inshore and during the spring and summer off the north coast. Daily landings can amount to 200 stones per man when using between 20-40 hooks on each line. Under European legislation, trawling and purse seining for mackerel has been prohibited in an area around the south-west tip of the UK (known as the 'Mackerel Box') which was introduced to protect juvenile mackerel and thus conserve stocks.

Herring and sprats are taken in relatively small quantities by trawlers and small boats using drift nets, although poor demand limits effort. Pilchards and horse mackerel are taken within the Mackerel Box by industrial trawlers, most of which are from Scotland or Denmark. Bass and mullet are caught in fixed and drifted gill nets inshore and in estuaries, although netting restrictions issued to protect salmonids and the designation of several bass nursery areas by MAFF effectively preclude this fishery in many estuaries. Bass are also caught by the smaller boats on handlines using lures or live sandeels or mackerel as bait and occasionally on longlines. The increased popularity of the bass 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 or seine gear close to the shore. A Cornwall SFC byelaw stipulates a MLS for bass as 37.5 cm, which applies between baselines and 6 miles offshore.

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 and sea trout seine net fisheries (see Plymouth) and on the north coast licensed drift nets are used in the River Camel. The salmon fishing season on these rivers commence on 1 June and ends on 31 August, though sea trout can be taken in the River Fowey from 2 March, provided all salmon caught before 1 June are released alive (as required by the national Byelaw introduced by the EA in April 1999). 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 coastline, 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 and this attracts many part-timers into the fishery. A limited lobster fishery continues through winter when pots set in sheltered areas also yield an important by-catch of velvet crabs that are exported. Spider crabs are also caught for the export market using pots and tangle nets, with peak landings made during spring and summer, when spider crabs appear to form dense spawning aggregations inshore, particularly on the north coast. Tangle nets are also used occasionally for lobsters and the much sought after (and now rare) crawfish.

Boats fishing for lobsters, crawfish and crabs requires a permit issued by Cornwall SFC: these are not limited by number but require fishermen to submit catch and effort data. A Cornwall SFC byelaw (under review) prohibits boats over 16.46 m overall length fishing for shellfish inside 6 miles.

Scallops are harvested from inshore grounds using Newhaven dredges. The majority of locally-based vessels are under 16.46 m and are therefore allowed to dredge up to the shoreline. A few of the boats which use dredges are chiefly involved in other fisheries, but 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 vessels dredge scallop beds further offshore, sometimes within the 12 mile limit. Increasing quota restrictions on white fish, the expansion of markets abroad, and the delay in introducing licence for scallops until 1999, have all helped the development of the scallop fishery. Byelaws restricting the number and type of dredges a vessel can use, and banning the practice of 'cutting out' scallops at sea, have been introduced by the Cornwall SFC. Queen scallops are occasionally 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. Though native oyster fisheries were devastated by *Bonamia* during the 1980s, the small fishery using sailing dredgers and hand dredging in Carrick Roads (Fal Estuary) still persists and has shown signs of improvement in recent seasons. 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 pots for lobsters and crabs from spring through to summer and fishing activity in winter is minimal.

10.3.2 Looe

Twenty-six 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 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. Many vessels may pair-trawl in the area, taking good catches of mainly whiting, with a few prime fish (e.g. lemon sole, bass or monkfish). Five or six trawlers switch to dredging for scallops from spring through to autumn.

Twenty smaller boats use nets and handlines or longlines, a few use pots, and an additional 10 or so part-timers use handlines for mackerel and may offer charter angling trips. The mackerel handline fishery begins in autumn when the shoals appear inshore and catches can be as high as 200 stones per man per day. Handline jigs are also used for squid during the summer. Gill nets are set close inshore for cod in the winter and for 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. Angling tourism is important to this port, and several vessels offer specialised charter trips for mackerel, blue shark and on wrecks.

10.3.3 Polperro

Eight boats of 6-11 m set gill and tangle nets for roundfish and flatfish in season, handlines are used by most boats, and 5 also set longlines for pollack, ling, rays and conger eels, often when tides prove unfavourable for netting. Four boats of 10-12 m trawl for whiting, plaice, lemon sole, sole, rays and cod within 12 miles of the coast, one of these periodically dredges for scallops, and two use nets. A few small open boats use handlines. Two boats use pots for lobster and crabs.

10.3.4 Fowey/Polruan

These two ports are on either side of the Fowey Estuary, where 3 over-10 m boats dredge for scallops and one also trawls. Some of these boats do not have pressure stock licences and have come to depend entirely on scallop dredging since the 1980s. White fish landings have fallen inshore (as a result of a scarcity of fish), and new markets have been found abroad for the scallops which may have been found in high densities off this coast. In addition to scallops, these vessels also land a small whitefish by-catch.

Seven smaller boats from both ports use nets for cod, conger eels and ling, and pots for lobsters and brown crabs, some fishing part-time. Visiting scallop-dredging boats are sometimes blamed for towing away static gear. Two salmon licensees use seine nets to catch salmon and sea trout in the Fowey Estuary, from 2 March to 31 August. These licensees were compensated not to fish between 2 March and 15 June in 2001.

The Fowey Estuary is a designated bass nursery area where bass fishing from a boat is prohibited between 1 May and 31 December.

10.3.5 Polkerris

There is now no boat fishing commercially here.

10.3.6 Charlestown and Par

Two full-time 6 m vessels work pots for crabs and lobsters and 2 boats use nets seasonally for monkfish and rays.

10.3.7 Mevagissey

Seven otter trawlers of 9-14 m, 2 of which may sometimes pair-trawl, land demersal fish virtually all year round, though three may move to Newlyn at times. Cod, whiting, squid and lemon sole make up the bulk of landings in winter, and lemon sole, squid, whiting, plaice, turbot, brill and rays are targeted in spring. During the summer, those boats that carry on trawling are more dependent on non-quota species such as cuttlefish, lemon sole and squid. Around 25 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 various white fish species in season, and one of the larger boats fishes for hake to the south of Ireland, and also for tuna off the shelf edge south-west of the Celtic Sea. Nets set inshore also take a significant 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 Eddystone to Lizard Point. An additional 10 or so mainly part-time boats under 10 m use a variety of methods during the year, including handlines for mackerel and bass. Many boats charter angling trips, especially during the summer when the harbour is popular with tourists.

10.3.8 Gorran Haven

Three part-time boats of 3 - 4 m use nets and pots from spring through to autumn.

10.3.9 Portloe

Six boats fish regularly from this small cove, setting between 250 and 400 pots each within a few miles of the shore for brown crabs and lobsters and taking a by-catch of velvet and spider crabs. Gill and tangle nets and, sometimes, longlines are set for turbot, sole, rays, monkfish, pollack, ling, cod and spurdogs, and handlines are occasionally used for bass and mackerel in season.

10.3.10 Portscatho

Two part-time boats of less than 5 m work pots and nets.

10.3.11 St Mawes

A total of 6 boats under 15 m dredge for scallops within 12 miles of the coast, between Looe and Lizard Point. Two of these boats also use beam or otter trawls for demersal fish, depending on profitability, and two other boats use trawls all year round. The Percuil River is a designated bass nursery area where fishing for bass from a boat is prohibited from 1 May to 31 December. Native oysters are cultivated in the river, but stocks have remained low since the outbreak of *Bonamia* during the 1980s.

10.3.12 Mylor

Three boats use nets and 3 set pots, the largest netter (of over 12 m) fishing the deep-water grounds to the south-west for hake and rarely operating inside 12 miles. The rest of the fleet are under 10 m and use gill nets for cod, pollack and ling, tangle nets for rays, turbot and monkfish, or set between 250 and 300 pots each for lobsters and brown and velvet crabs.

10.3.13 Flushing

There are two boats of 12-15 m, one dredging for scallops and the other using nets or longlines for ling and conger eel. There are 6 part-time boats under 10 m using nets and pots.

10.3.14 Penryn

A small quay is used by 3 boats, 2 of which have sold their pressure stock licences and fish within 20 miles of the coast for scallops. The other boat sets nets for demersal fish.

10.3.15 Falmouth

Out of the 30 or so boats working from this port, 12 of 10-20 m dredge for scallops and some also trawl for white fish. There are 3 netters and 1 potter of over 10m. The under-10 m boats 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 autumn. A couple of boats also pair trawl for sprats during autumn. The majority of static gear boats set nets part-time for a variety of species, and also use rod and line or handlines for bass and mackerel in season. Some charter angling trips. The upper reaches of the Fal Estuary are a designated bass nursery area where bass fishing is prohibited from a boat between 1 May and 31 December. There is a native oyster fishery 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). In addition to the local fleet, Anglo-Spanish netters and trawlers make frequent landings at Falmouth.

10.3.16 Helford

Out of 10 boats landing into this fishing village, 5 full-time vessels of 8 -10 m and one over 10 m set gill nets and 2 under-10 m boats use pots and nets. The larger gill netters target hake and monkfish well offshore in summer and spend the rest of the year setting nets for a variety of demersal fish within 30 miles of the coast. The smaller operators use nets within 12 miles of the coast all year round. Two potting boats catch mainly brown crabs, spider crabs and some lobsters. Handlines are used for bass from spring onwards and for mackerel in the autumn. Bass fishing from a boat in the Helford River, which is a designated a bass nursery area, is prohibited between 1 May and 31 December. Native oysters are still cultivated in the Helford Estuary, despite the outbreak of *Bonamia* during the 1980s, and mussels are now also being cultivated.

10.3.17 Porthallow and Porthoustock

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

10.3.18 Coverack

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

10.3.19 Cadgwith

Eight boats of 5-7 m fish static gear along this rocky coastline out to a few miles offshore. The pot fishery provides the mainstay with each boat setting 200 - 500 pots and landing lobsters, brown, spider 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 and monkfish in spring.

10.3.20 Lizard Point

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

10.3.21 Mullion Cove

Three full-time beach boats principally pot for lobsters and brown crabs, one setting 375 pots whilst the others each set between 150 and 250 pots. This

coast lies exposed to the Atlantic weather fronts and, consequently, pots can only be safely set between May and October.

10.3.22 Porthleven

Four full-time potters and 16-18 part-time boats using pots and nets are all under 10 m. One trawler of around 10 m works part-time. From spring through to autumn, gill and tangle nets are set for demersal fish and pots mainly for brown crabs.

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 in Cornwall are based. A regular fleet of 50 trawlers and 52 static gear boats land their catches into the daily fish market, plus visiting boats from Brixham, Looe, Mevagissey, Ireland and the Channel Islands. A further 25 part-time vessels work mainly nets and handlines. Most of the 33 local beam trawlers are 25-29 m in length and operate exclusively offshore for monkfish, megrim, lemon sole and sole. Beam trawling became popular during the early-1980s and is responsible for the increase in landings of flatfish during this period. Around 18 otter trawlers of 9-25 m land a variety of species into this port, the boats under 16 m regularly fish within 12 miles of the coast. Cod, whiting, plaice, megrim, rays and lemon sole make up the bulk of landings during winter, with sole, megrim, plaice, rays and whiting predominating during the warmer months. Since the late-1980s, non-quota species such as cuttlefish, squid and lemon sole have become increasingly important to both the inshore fishing fleet and local merchants and processors as white fish landings have fallen.

Up to 60 boats, between 5 and 25 m, set enmeshing nets from this port, the larger boats fishing hake nets and tangle nets for monkfish, turbot and rays well offshore and often take an important by-catch of lobsters and crawfish. The inshore fleet set gill nets for demersal fish, sometimes around wrecks, and for pelagic fish such as herring, bass and grey mullet. Boats of between 8-12 m are capable of setting up to 15,000 m of net each. In addition to netting, some boats also set longlines. About 18 boats, 6 of which are over 12 m, set pots for brown crabs both inshore and offshore. The remaining boats fish inshore, netting and using handlines if mackerel or bass appear. Mackerel are exploited by local and visiting boats in Mount's Bay whenever they are available. A few boats may use 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. During the summer, around seven part-time boats join the fleet.

10.3.26 Lamorna Cove

One part-time beach boat sets demersal nets and handlines for bass, pollack and mackerel during the warmer months of the year.

10.3.27 Penberth Cove

Five boats of 4-5 m set pots for lobsters, crawfish and crabs (brown, spider and velvet), one also sets gill nets for cod, rays, pollack and dogfish, and they may all use handlines for mackerel and bass.

10.3.28 Isles of Scilly

There are 12 full-time and a similar number of small, part-time vessels working from the Isles of Scilly, the majority of which fish part-time and catch shellfish which are transported by vivier lorry from the buyers in Cornwall to either France or Spain. All five inhabited islands have boats working from them:

St Agnes, has two part-time boats setting parlour pots for crab and lobster and tangle nets for crawfish. **Bryher** has one full-time and one part-time boat fishing similarly. On **St Martin's**, one part-time boats sets parlour and inkwell pots for crab and lobster and tangle nets for crawfish, two boats use tangle nets for crawfish, turbot and monkfish, and two pot for lobsters and net for grey mullet.

One full-time stern trawler and one full-time crab potter, and the single tangle netter over 10 m, are based at **St Mary's** together with 8 part-time boats mainly working inkwell and parlour pots for lobster and crabs and a few tangle nets. **Tresco** has two part-time lobster boats and one part-timer setting nets for crawfish and flatfish during the warmer months. Pacific oysters are cultivated off St Mary's and Bryher Islands. The Isles of Scilly have their own SFC, with a byelaw that prohibit boats over 11 m (except those with historic rights and those using longlines or handlines) from fishing within 6 miles of baselines.

10.3.29 Porthgarra

One small part-time beach boat uses pots and handlines.

10.3.30 Sennen Cove

A small slip supports 3 full-time and up to 10 part-time/hobby boats of 4-6 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. 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 and handlines used for mackerel when they appear.

10.3.31 Portheras Cove (near Pendeen)

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

10.3.32 St Ives

A fleet of 14 boats, all under 10 m, use a variety of nets within the Bay and out to 10 miles offshore, and a few boats also work handlines or set pots. Tangle nets are used to catch demersal fish and crustacea, such as lobster, crawfish and spider crabs, with each boat setting up to 20,000 m of net. Thirty two part-time vessels work a few nets and join in the handline fisheries. Gill netting for bass has been restricted in the Bay in order to protect salmon and sea trout that were caught as a by-catch, and a voluntary code of conduct (in consultation with RSPB) advocates that their use is limited to 1 hour before sunset and 2 hours after, in order to minimise sea bird entanglement. Mackerel appear in early spring, and the handline fishery through the summer involves some of the netting boats and others operating from this port. The charter angling sector is heavily dependent on the mackerel.

10.3.33 Hayle

Around 22 boats tie up on both sides of the River Hayle, a dozen of which set pots and the rest use nets, handlines and one trawls. There are shellfish storage facilities on the quayside and vivier-equipped lorries transport shellfish to the Continent. The larger boats, including 2 over 10m, set pots out to 15 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 kept inshore during spring during the sole beam-trawl fishery in order to prevent them being trawled away. A dozen boats under 10 m are involved in netting, and may work up to 10,000 m of nets each. The nets are set on rough ground where trawl gear cannot be used, for demersal fish such as pollack, ling, turbot, monkfish, rays and cod, together with a valuable catch of spider crab in spring and some bass in summer. Some of the nets are fished virtually the entire year round.

10.3.34 Portreath

Five boats of 5-8 m work mainly pots for lobsters and crabs principally during the warmer months, as the weather usually prevents fishing during the winter. Nets are set on rough ground for the same demersal species as at Hayle. 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 of less than 6 m.

10.3.36 Newquay

Twenty boats work from this port that, though partially sheltered by the headland, is subject to strong tides which restrict activity on the fishing grounds. Twelve boats 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 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 most shellfish are collected by lorry for export to France and Spain. The spider crab fishery has become very important in spring and summer.

10.3.37 Padstow

Situated in the Camel Estuary, this port is the most important on the north coasts of Cornwall and Devon. Of the 22 full-time boats, 6 use beam trawls (and net or pot), 2 set nets and 14 use pots. The netters target turbot, monkfish, cod and pollack, and 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 have 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 engaged in the local sole fishery. Fourteen boats are involved with the pot fishery during the summer months, the smaller ones working perhaps 250 pots on the inshore grounds and the larger and faster vessels work anything up to 1000 pots each as far away as Lundy Island. 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 beam-trawl fleet. Nearly all the shellfish are exported weekly by vivier truck to Europe direct from the quayside. Some of the smaller boats handline for mackerel and bass.

The River Camel is a designated bass nursery area and fishing for bass from a boat within the estuary is prohibited between 1 May and 30 November. There is a cockle bed within the estuary which is currently closed pending the making of byelaws to control its exploitation. 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 1 June and ends 31 August, and it is closed between 0600h Saturday and 0600h Monday during the season.

10.3.38 Portquin

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

10.3.39 Port Isaac

Eight boats, two of which are over 10 m, work pots between Port Isaac and Lundy. The smaller vessels set between 250 to 400 pots each, while the two larger vessels each work 1,200 pots, hauling approximately 400 pots per day. The main species targeted are lobster, brown crab and spider crab. There is also a small amount of netting for rays, plaice, cod and herring in season, as well as crawfish.

10.3.40 Portgaverne

One small part-time beach boat works pots.

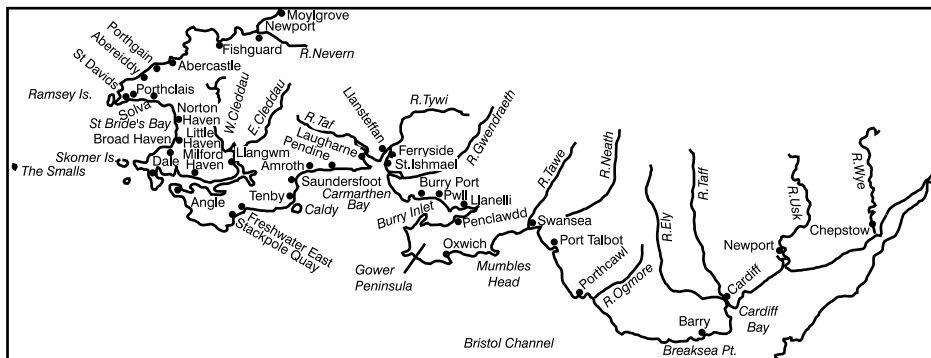
10.3.41 Boscastle

One full-time vessel of nearly 10 m is involved in chartering angling trips during the summer and, with two part-time boats of 4.5-7 m, setting mainly pots and, to a lesser extent, nets within a few miles of the coast.

10.3.42 Bude

Seven mainly part-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 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.

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 working outside 6 miles, except at Milford Haven. Even then, 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 the fishery of greatest local economic importance. 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 rod and line fishery has proved extremely popular amongst commercial and recreational fishermen, and a small sandeel seine-net fishery has been developed to supply bait. Mollusc fisheries have been widely affected by the EC Shellfish Hygiene Directive for which purifying tanks are required and, in some instances, fisheries have been closed. Continuing improvements in water quality have, however, opened new fishing opportunities for wild and transplanted stock.

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 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 set along sandy shores are tended to at low tide and commonly take flatfish such as flounders, dabs and plaice, as well as bass. South Wales SFC byelaws stipulate a MMS of 100 mm for all nets, except trawl and seine. 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 that attracts visiting beam trawlers from the south coast of Devon and Cornwall and Belgium. South Wales SFC prohibit boats over 14 m registered length within 3

miles of the coast, and beam trawls with an aggregate length of over 4 m within 6 miles in the SFC District, unless by historical usage.

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. There are numerous netting restrictions specifying the type of net permitted in certain areas (especially in and around estuaries to protect juvenile bass and salmon and sea trout), length and distance between nets and marking requirements. The bass rod and line fishery has expanded since the late-1980s due to these restrictions, and low cost of fishing gear and high demand for this species has provided a quick and easy profit. The Burry Inlet and Three Rivers estuaries have been designated as bass nursery areas by national legislation, augmented by South Wales SFC byelaw, where fishing for bass from a boat or with sandeels as bait is prohibited during the warmer months. The popularity of bass angling has increased demand for sandeels and, in 1999, 95 permit holders used beach seines and light trawl gear for this species within South Wales SFC district.

Herring attract a small amount of effort, usually in the form of drift netting in Swansea Bay and Milford Haven, as demand is low. Mackerel are caught in drift nets and the chartered angling sector is highly dependent on mackerel during the summer. Sprats are occasionally taken in mid-water trawls.

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

A variety of licensed salmon fishing methods, such as coracles and hand-held nets (e.g. lave nets), are employed in South Wales and reflect local culture. Commercial salmon fisheries now take place only on the Rivers Tywi, Taf, Cleddau and Nevern, as well as along the coast: the Wye and Usk putcher and drift net fisheries were bought out after the 1999 season.

Fyke nets are set in some rivers and estuaries for brown/yellow eels from spring through the 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, whelk, 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 and around the islands, whereas brown crabs are caught both inshore and offshore. Pots and nets are used for crawfish around rocky inshore areas and for spider crabs both inshore and offshore, and pots are also set for prawns in N. Pembrokeshire. South Wales SFC has, since 1980, operated 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 90 mm as measured along the carapace.

A regulatory order in the Burry Inlet supports 50 – 60 licence holders who hand gather cockles, though not on Sundays. South Wales SFC byelaws allow hand gathering of cockle elsewhere in the district, subject to seasonal and night closures. As market opportunities have improved since the 1980s, cockles have attracted more interest and, since 1993, cockle beds at Ferryside, Llansteffan and Laugharne have been increasingly exploited. Under the EC Shellfish Hygiene Directive, bivalves 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 approved water quality. Cultivated and wild stocks of mussels and oysters are harvested from a few estuaries, where water quality improvements have seen beds re-opened in recent years. 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 or in need of management. From July 2001 and into 2002, cockle beds in the Burry Inlet were closed by TPO as a result of positive DSP toxin tests.

Since 1995, a whelk fishery has developed, mainly in Carmarthen Bay, but also offshore of Gower and Fishguard. Large vessels prosecute the latter fisheries during the winter and set up to 2500 pots each. Up to 1000 pots per boat are used on inshore grounds. Effort is dependent upon price, which at £650 /tonne attracted up to 25 vessels in 1995, falling back to 8 – 12 vessels in recent years when prices fell to £ 350 – 400/tonne. Peak catches of around 2000 t were recorded in 1996, with 1000 t in 1998.

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.

There has been interest in recent years in the development of hydraulic and towed dredge fisheries for clams of various species, including razor fish (*Ensis arcuatus*) to supply European markets with live produce. Fisheries regulators and environmental interests continue to appraise the scope for such a fishery, which would have to be sustainable and in keeping with environmental obligations.

Squid are taken seasonally (June - August) off the Gower coast and Lundy by Swansea-based trawlers using pelagic trawls.

11.3 Description of coastal fisheries by port

11.3.1 Chepstow to Newport

Gill nets, which used to be set for bass, mullet and flounders, have almost disappeared in this area due to enforcement of EA byelaws. The tidal regime (strong currents and great amplitude) near the mouth of the Severn and its tributaries was always a limiting factor in this fishery. Six or 7 under-10 m vessels work part time from the Usk at Newport, using small beam trawls for flatfish and brown shrimps, and taking out charter angling trips, especially for cod which have remained relatively abundant in the area.

Salmon and sea trout are taken in 7 lave nets in the Wye Estuary between 1 June and 31 August. From 2000, drift netting in the mouth of the Usk and in Newport Bay was bought out by local interests in perpetuity and the putcher rank just upstream of Uskmouth was bought out for 5 years. Elver fishing is very popular on the tidal reaches of the Wye between Bigsweir and Tintern during March - May. Fyke nets are also fished on the Wye, taking yellow/brown eels in spring and summer and silver eels from late summer through 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 fish part time with static gear and otter trawls. Nets are set for plaice, rays, dabs, flounders and bass in summer and cod and whiting in winter. There are netting restrictions to

protect salmonids seaward of the Taff, Ely and Ogmore estuaries and along the coast between Port Talbot and Porthcawl. Also, national bass nursery area legislation prohibits bass fishing at any time within 1 nautical mile radius of Breaksea Point (where warm water effluent is discharged from Aberthaw power station) to protect 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, and recreational angling is popular along sandbanks off Porthcawl.

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, which are confined to fishing grounds within 20 miles of the coast targeting plaice, turbot, whiting and rays along the sandbanks from spring through autumn, 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.

Around 25 boats under 10 m work a variety of static gear. Gill nets and drift nets are used for cod, bass and herring in season and tangle nets are set from spring onwards for turbot, rays and brill, although there are netting restrictions 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 rod and line between spring and autumn both by commercial and recreational boats from Swansea, Oxwich and Burry Port, fishing off the Gower Peninsula. This fishery has expanded since the late-1980s following the success and availability of live sandeels as bait. Floating lines are also set for shark in summer offshore in the Bristol Channel. 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, and brown, velvet and green shore crabs are also taken.

Since 1993, cockles and mussels have been harvested in small areas around south Gower and in Swansea Bay and bait, particularly lugworms is dug from the foreshore. A private Several Order for mussel cultivation has been established at Mumbles in Swansea Bay since 1994. Mussel seed is taken under SWSFC authorisation from intertidal and sub-littoral areas.

There are between 50 and 60 licensed cockle gatherers in the Burry Inlet working mainly from Penclawdd. Cockles are gathered by hand using rakes and processed by the fishermen themselves. The South Wales SFC regulates the fishery through annual licences under the Burry Inlet Cockle Fishery Order (1965) and, with CEFAS, carries out a survey of cockle stocks twice each year in order to recommend an appropriate annual catch. In an average year, a TAC of around 2,500 t (30% of the standing biomass) is recommended, which may be increased during the year if stocks are abundant. Daily quotas are used to limit fishing effort and are adjusted during the season to make stocks last. There has been renewed exploitation of some cockle beds previously closed because of poor water quality, which has now been improved to EC standards. Mussels are gathered off Pwll according to availability, and at Whiteford Point. If heavy settlement of mussel causes some loss of cockles, this is addressed by SFC- authorised hand gathering and dredging from vessels, with the seed mussel frequently being sold for on-growing. Bait digging within Burry Inlet has increased since the 1980s and the SFC has had to allocate areas for bait digging in order to minimise disturbance on cockle beds.

11.3.4 Llanelli and Burry Port

Trawlers of 8-12 m occasionally use Burry Port or Llanelli, but the basis of the fleet is up to 70 smaller, trailer-launched boats which use rod and line or nets for bass. Fishing activity is mainly part-time from spring through to autumn, when otter trawls are used in Carmarthen Bay for flatfish and rays, plus the occasional landing of bass. Cod and whiting are sometimes taken in winter. An under-10 m fleet of up to 20 boats set pots for lobsters and crabs around the Gower Peninsula, and use nets (only stake nets are permitted in Burry Inlet under South Wales SFC byelaw) for flatfish, rays, bass and mullet. Several of these boats fish part-time. Drift nets are sometimes employed for bass and mullet outside the estuaries. The Burry Inlet is a designated bass nursery-area and sea fishing from a boat is prohibited between 1 May and 31 October in the inshore part by SFC byelaw. 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. The Three Rivers joint estuary are a designated bass nursery area and sea fishing from a boat is prohibited by SFC byelaw between 1 May and 31 October. Nets are

set in Carmarthen Bay for plaice, turbot and rays, and drift nets are used for bass particularly at the entrance to the estuary.

Licensed salmon fisheries in the Tywi Estuary involve 5 seine nets and 5 coracles, and one wade net and one coracle in the Taf Estuary. Sea trout are landed throughout the season which begins 1 March and ends 31 August and is subject to a weekly closure between 0600h Saturday and 1200h Monday, and any salmon caught before 1 June are released alive as required by the national Byelaw.

When available, mussels are gathered off St Ishmael and there is a small and persistent cockle fishery in the Taf and Gwendraeth Estuaries. Cockle stocks appear less consistently at Ferryside and Lansteffan and, in 1993 which was an exceptional year, an estimated 4724 t of cockles were harvested from this region. Since 1994, the annual average has been closer to 1000 t

11.3.6 Saundersfoot

Out of 6 full-time boats of 5-10 m, two use otter trawls, though all boats set nets and whelk and lobster pots. During the summer, they are joined by several part-timers who also use static gear. 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. Tangle nets are set during the warmer months for plaice, turbot and rays, and gill nets for spurdog, bass and mullet. Herring are occasionally targeted during autumn. Bass are also taken by rod and line around Drift Rock and Offing Patches 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 two occasionally use otter trawls or set whelk pots. From spring through to autumn, nets are set in Carmarthen Bay for flatfish, rays and bass and pots for lobster and crabs, and rod and line is used for bass around Caldey Island. 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. Lydstep and Freshwater East are popular venues from which small boats are launched for bass angling around Govan Shoals. Sandeels are taken in seine nets from local beaches for bait. The licensed coastal salmonid fishery which used seine and wade nets in this area has not operated for several years.

11.3.8 Milford Haven (including Dale and Angle)

A large offshore fleet of around 43 British-registered vessels of Spanish ownership or origin are based in this port. 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 two areas, and may land their catches at Milford but more often in Spain. 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 part time. The brown crab fishery expanded rapidly during the late-1980s and the larger vessels now set up to 1,000 pots each out to 30 miles offshore around the Smalls. The smaller boats set pots within a few miles of the coast for lobsters, brown and, more recently, velvet crabs. A few tangle nets are set in rocky areas for crawfish. Many of the under-10 m fleet are involved in netting. The Milford Haven herring fishery uses gill nets and is centred around Llangwm from February until April, although supply often exceeds demand. Gill netting for bass and mullet also takes place, but as set netting may catch salmon and sea trout, it is not permitted upstream of the Cleddau Bridge. An area in Pembroke Bay around the power station outfall is a designated bass nursery area where fishing for sea fish from a boat is prohibited by SFC byelaw 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 June to 31 August and have a weekly closure from 0600 on Saturday to 1200 on Monday. Native oyster beds in the Haven support a small autumn fishery.

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 set and drift nets are used 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 rod and line, and lobsters and crabs in pots. Set nets are used around Skomer Island for crawfish and spider crabs, and also for bass and pollack.

11.3.10 Solva, Porth Clais and St Davids

Six full-time and up to 20 part-time boats of 5-14 m set pots for lobsters and brown crabs, and 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 Aberiddy 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 drift nets are occasionally used for herring in autumn. Fishing virtually ceases here in winter.

11.3.12 Abercastle

Three full-time potting boats set up to 500 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 3 vessels of around 15 m that use beam trawls for sole, plaice and rays from March to November, and switch 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 tangle nets and longlines, the latter being used for spurdogs and rays during the warmer months. Out of 21 potting boats, 4 are over 10 m and principally target brown crabs, setting up to 1,000 pots each out to 30 miles offshore around the Smalls area. More than half of the remaining 17 smaller boats work on a full-time basis and potting continues through winter either in sheltered areas or further offshore. These boats set up to 600 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 Continental markets and are despatched in vivier lorries with crabs and lobsters. Tangle nets are used for spider crabs and crawfish, a method that 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 that fish seasonally for crabs and lobsters. Other beach boats occasionally put to sea during the summer and use nets or rod and line 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, though any salmon caught prior to 1 June must be released alive.

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 and shrimp fisheries. Inshore boats and vehicles use beam trawls 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 a declining fleet of boats that 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 inshore 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 less available. Visiting beam and otter trawlers may fish within the 12 miles zone, for example during the spring sole and autumn plaice fisheries. These vessels will probably have a considerable effect on by-catch species such as cod, whiting and rays. North Western and North Wales SFC byelaws prevent vessels fishing within 3 miles of the coast between Rhyl and Haverigg Point (northern area) if they exceed 13.7 m, and between Cemaes Head and Rhyl (southern area) if they exceed 15.2 m

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 some 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.

Since 2000, a Recovery Programme has been implemented to reduced exploitation of the cod spawning stock in the Irish Sea, which was considered by ICES to be on the verge of collapse. In 2002, the European Commissions regulations included a prohibition on the use of demersal trawls, enmeshing nets or lines within the main cod-spawning area in the north-west Irish Sea between 14 February and 30 April, though otter trawls could be used to take *Nephrops* provided they were fitted with an appropriate selective device (80 mm square mesh, 140 mm diamond mesh or a separator panel), or if the catch was at least 85% queen scallops and no more than 5% cod. Flatfish beam trawls were also permitted providing the entire top sheet is made with diamond mesh of at least 180 mm.

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 in autumn and 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 when 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 between 1 June and 31 August (unless otherwise indicated, when they are subject to the requirement under the national Byelaw introduced in 1999 to release alive any salmon caught prior to 1 June). 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 has introduced a permit scheme for lobster, crawfish and crab fisheries in its district, and also released hatchery-reared juvenile lobsters in Cardigan Bay between 1984-1988. Brown crabs also provide an important resource off the Lleyn 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 are caught in tangle nets in a few rocky areas (e.g. off Bardsey Island), as are spider crabs in the south of Cardigan Bay. Whelks are taken in pots set off Lleyn 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. Some of the Fleetwood otter trawlers target *Nephrops* in deep waters off Cumbria, between May and September, often landing into Whitehaven.

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). North Western and North Wales SFC 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.

Cockles are harvested from estuaries along the coast of Cardigan Bay, Conwy Bay (on 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 only on Lafan Sands. 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 become 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 south-west 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 in Cardigan Bay 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 in the River Teifi and around its estuary, fishes pots and nets. Pots are set for lobsters and brown crabs from spring through to autumn, with lobsters and velvet crabs targeted towards 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. Two seine nets and 10 coracle nets are licensed 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 on 1st April and ends 31 August, with a weekly closure between 0600h Saturday and 1200h Monday. Netting for sea fish in this estuary is restricted to reduce the illegal capture of salmon and sea trout and because it is a designated bass nursery area in which fishing for bass from a boat is prohibited between 1 May and 31 October.

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 they 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 caught 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, though 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 are often worked single-handedly to set up to 300 pots out to 6 miles. Brown crabs, velvet crabs, prawns and whelks are also taken in pots. Interest in prawns and velvet crabs has risen since the late-1980s and both provide a useful income, 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 rod and line and by handlining 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 to 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, for virtually the whole year, with lobsters providing the mainstay and brown and velvet crabs are 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, though the Dyfi Estuary is a designated bass nursery area 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 (season 1 April to 31 August), and another draft net is licensed to fish in the Dysynni Estuary. 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 here (especially from South Wales and Merseyside). This 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 that formerly concentrated on lobsters has been run down and now comprises 6 full-time 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 onwards 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 rod and line along the sand bar, though the Mawddach Estuary is a designated bass nursery area where fishing for bass from a boat is prohibited between 1 May and 31 October. In 2001, two licences were issued for seine netting for salmon and sea trout in the Mawddach Estuary. 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 gathered 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 are both designated bass nursery areas. One licensed seine net is used to take 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. The seine nets licensed to take salmon and sea trout in the Dwyfawr Estuary did not operate in 2001. There is little fishing activity during the colder months.

12.3.11 Pwllheli

Three trawlers of 10-12 m fish Cardigan Bay throughout the year for a mixed catch of white fish, and 8 smaller boats use nets and pots and are joined by several part-time boats in the summer. 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 a significant 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) being landed to 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 involving beach boats of 4-6 m prevails from this small community and further round the tip of the Llyn Peninsula. Some boats set up to 200 pots for lobsters, crabs and whelks from spring through to the end of the year or until the weather turns rough. Fishermen process their own catches of lobsters and brown crabs for a local market that 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 rays, plaice, turbot, sole, flounders, bass, mullet, pollack, cod and whiting. Dogfish are used for pot bait. Beach nets are set overnight and tended during the next low tide. Several boats run 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 for 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 each sets up to 400 pots pot for whelks, lobsters and crabs, 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. Rod and line and 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. The seine net fishery for salmon and sea trout in the Menai Strait between the Rivers Seiont and Gwyrfrai did not operate in 2001, and is being phased out in 2002.

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. The several order site also covers a natural mussel bed, and juvenile mussels are often obtained from Caernarfon Bar. Up to 50 people may gather cockles from Traeth Melynog, and other shellfish including periwinkles and mussels provide short-term employment. In summer, especially on bank holidays, large numbers of trailed angling boats visit this area, often to fish for bass off the Caernarfon Bar.

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 landings fell and by 1993 only around 6 local boats remained. Two vessels over 10 m 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 Lley 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 that is used by 3 or 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, particularly for rays, has become the main method of fishing here since the late-1980s following the demise of the spurdog longline fishery; 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, uses gill nets 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 occasionally take out angling parties.

12.3.21 Red Wharf Bay

Beach boats of up to 6 m are launched from this bay to 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 pots around Puffin Island for lobsters and crabs. Cockles are taken from Red Wharf Bay by hand. Commercial and recreational bass fishing from boats is very popular around Puffin Island and off Beaumaris, from which 2-3 charter anglers operate.

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 Orders 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 years 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 domestic retail outlets. Mussels are also provided for on-growing in the UK and in France and the Channel Islands. Cockles are regularly collected by hand further west along Lafan Sands in Conwy Bay and, since the early-1990s, have been harvested using hydraulic suction dredgers under the authorisation of the North Western and North Wales SFC.

Only one 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 is one licensed salmon draft (seine) net used between Menai Bridge and Llanfairfechan and across to Puffin Island.

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 and 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 inside 6-miles 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. Three fishermen operate a purification plant and market their own catches, whilst the remainder supply merchants in Bangor and Holyhead. In summer, 6-8 boats take out angling parties and employ 10-12 men. 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 bass fishing from a boat within the estuary is prohibited between 1 May and 31 October, it being a designated bass - nursery area. There are two licences for salmon and sea trout seines in the Conwy estuary, and two 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 using baited traps.

12.3.24 Rhos-on-Sea

One full-time under-10 m boat 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 part-time boats, some of which also set nets for sole, plaice, flounders, rays, bass

and mullet. Shrimps may be taken in trawls and push nets. The sling (drift) net salmon fishery along this coast was bought out in 1998 and no longer operates.

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 (the EA acts as a SFC within the Dee Estuary), fewer than 30 boats remain. 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 8 draft (seine) net licences were issued in 2001 to fish for salmon and sea trout in the canalised section of the river between Connah's Quay and Chester. This fishery is subject to a weekly closure from 2400 on Thursday to 2400 on Sunday. Bass fishing from boats is prohibited between 1 June and 30 September in the estuary, which is a designated bass nursery area.

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 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 rod and line. 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 can change from year to year. The main landings are on the English side, since the intertidal banks there are easily reached by tractor-trailers. In a good year, up to 400 mainly casual workers gather cockles during the season. The EA is applying for a Regulating Order to control the cockle fishery. This fishery produced over 1000 t of cockles in 2001, for which exceptionally good prices were reported to have been obtained.

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, usually using push nets for shrimp, gathering cockles or setting nets and lines.

12.3.29 Liverpool

There are two full-time fishermen plus a number of part-time and casual boats trawling, shrimping and charter angling from within the Mersey Estuary. Visiting vessels (e.g. UK and Belgium beam trawlers and Scottish scallop dredgers) land their catches into Liverpool Docks from where the fish are consigned to either UK or continental outlets.

12.3.30 Blundellsands and Formby

Fifteen 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 in 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 used 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 12 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 (boiled) on board. Nets are set intertidally or are drifted for flatfish, bass and mullet; a couple of boats trawl for flatfish, shrimps and rays; and cockles are gathered using hand-rakes.

12.3.32 Ribble Estuary, Hesketh, Preston and Lytham

Up to 14 boats, half full time and all under 8 m, fish from several landing places within the Ribble Estuary, and most trawl for shrimps from autumn through to spring and occasionally target white fish. One or 2 full-time and several part-time boats set nets for bass and mullet, with bass also taken on handlines. In 2001, six licensed drift nets were used in the Ribble Estuary for salmon and sea trout. Cockles are gathered from beds within the estuary depending on availability and demand.

12.3.33 Lytham St Annes and Blackpool

Two full-time boats are 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 20 vessels supplying a daily fish market. A high proportion of the local otter trawling fleet are over 15 m and 30-40 years old. They fish beyond 3 miles on grounds in the eastern Irish Sea, the North Channel, Kish Banks and St Georges Channel 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 Deeps 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. Some foreign boats are eligible to fish in the 6-12 mile band, and UK boats over 13.7 m must fish at least 3 miles from the coast.

Six to 8 part-time boats use static gear, mainly nets, and a further 8 may take out 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 Dock

Three or 4 part-time boats under 10 m use lines, otter and shrimp trawls 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 trawl seasonally 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. Eighteen licences were issued in 2001 to use drift or whammel (seine) (6) and haaf/heave hand-held (12) nets for salmon and sea trout in the Lune Estuary. 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 by boat is prohibited between 1 June and 30 September in an area off Heysham power station, a designated bass nursery area. 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 April 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 (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 part-time in Morecambe Bay and the cockle fishery can attract over 150 people from North Wales and Merseyside.

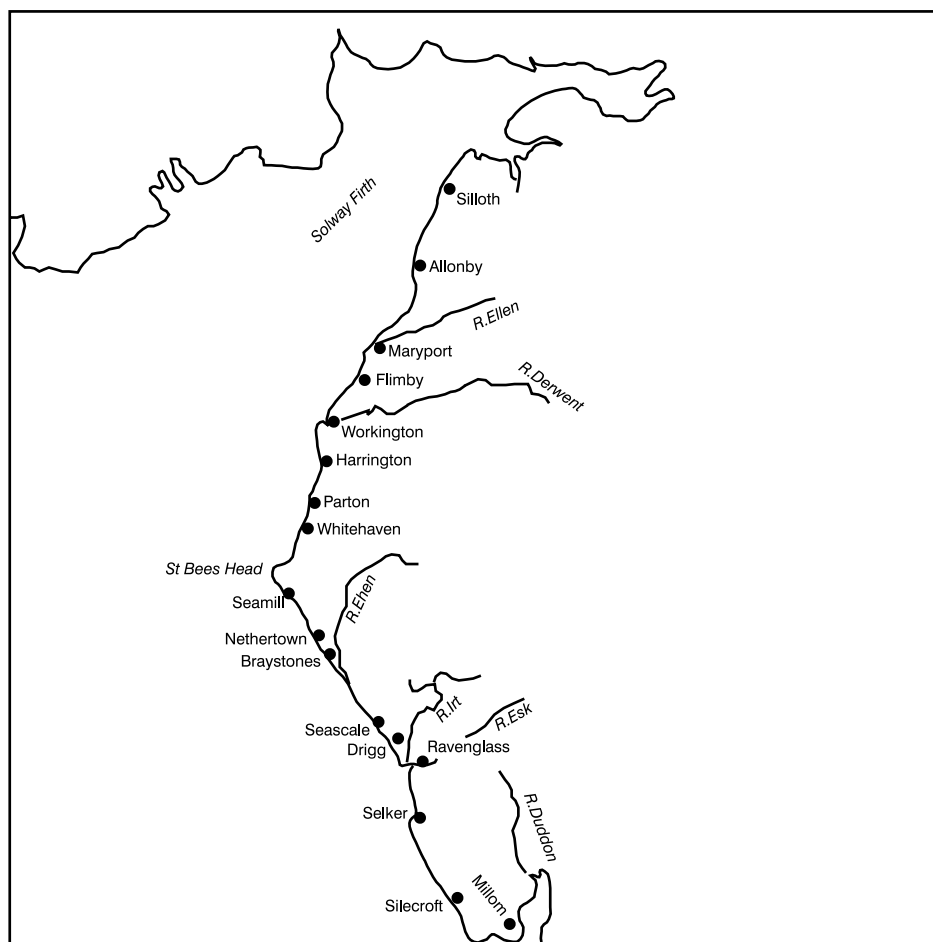
12.3.40 Barrow-in-Furness

Two full-time otter trawlers over 12 m and 3 full-time beam trawlers of 10-12 m land white fish throughout the year, one 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. Several trailed angling boats regularly launch from the Walney Channel in the summer, fishing mainly for bass. Employment in local heavy industry 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. 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 bass, cod and rays. Access to local mussel beds is difficult on foot due to liquefied sands. There were no nets licensed to take salmon and sea trout in 2001.

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 use otter trawls for *Nephrops* and white fish, 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. At times, they can find themselves in competition with a large visiting fleet from all over the UK, usually during periods of heavy fishing for *Nephrops* on grounds to the south and southwest of St Bees Head. 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 have traditionally predominated in otter trawl and seine net catches during the colder months. Though the cod fishery off Whitehaven and southwest of St Bees Head has gone into sharp decline, haddock catches in these areas have increased considerably since 1996. The sole fishery begins in spring and attracts a visiting fleet of beam trawlers from Brixham, which work the Scallop

bank area, and the occasional Belgium beam trawler outside the 12 mile zone. A Cumbria SFC byelaw prohibits boats over 13.7 m from fishing within 3 miles of the coast, other than when using handlines. Flatfish (e.g. sole, plaice, turbot and brill) continue to provide the mainstay on inshore grounds, together with rays during the warmer months and especially within the Solway Firth. The larger vessels tend to fish further offshore during this period when otter trawlers engage in the seasonal *Nephrops* fishery.

The static gear fleet take cod in gill and trammel nets and on longlines 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 to reduce the risk of losing gear to trawlers. Nets set in intertidal areas are sometimes supported by stakes and take cod, rays and flatfish. Cumbria SFC byelaws restrict netting activity around rivers, prohibit nets exceeding 240 m in length, stipulate a minimum distance of 300 m between 2 nets, and require that all static gear is marked.

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

The commercial bass and mullet fisheries Cumbria tend to be less regular than further south, as both species are reaching the northerly extent of their range here. However during 2000 and 2001, the quantities of bass taken in the area appeared to indicate that the fish are now moving further north than previously. Bass are taken on longlines and handlines and in nets during the summer. A small quantity of mackerel and herring are taken in trawls and nets and mackerel are taken 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 98 haaf net licences were issued in 2001, though the numbers vary between years more than other salmon fishing methods. Salmon and sea trout are also taken in traditional fish traps used in some rivers, e.g. 3 coops and 1 drift net are operated along the Cumbrian coast. The open season for salmon fisheries lasts from 1 June until 31 August (unless otherwise indicated), and netting restrictions for sea fish 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 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 on those few occasions when the tides are at their slackest and the weather settled. White fish, particularly cod, whiting, haddock and plaice, can provide an important by-catch, and the statutory inclusion of an 80 mm square-mesh section in nets with a minimum mesh size of 70 mm gives juvenile whiting a better chance of escaping. Trawlers from Scotland, Northern Ireland and Eire fish the same grounds as the local fleet and occasionally land their catches into Whitehaven.

The Solway Firth shrimp fishery involves local boats under 10 m towing beam trawls and occasionally attracts boats from other UK ports. 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 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 along the Scottish coast, 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, and operate permit schemes (there were over 150 permits for hand-raking mussels in 1999) to assist the management of both species. There has recently been increased fishing effort for mussels from beds in the upper Solway between Dubmill Point and Skinburness, and 1000 t were harvested in 1999. Trawlers from Maryport and Silloth dredge for mussels, and they are gathered from the Ravenglass Estuary by hand (MLS of 45 mm) with fishermen using boats to reach outlying beds inaccessible by foot. 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; 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 the Ravenglass Estuary, Seascale, Braystone and Seamill beaches, 3 of which could be considered full-time. There has been an increase in the number of fishermen setting nets out to 3 miles offshore mainly along the Nethertown and Drigg beaches, around 20 now taking sole, plaice, rays, turbot and bass from March to November and cod

and whiting in winter. Some also use drift nets during the warmer months for bass. 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. Lobster pots are set on the rocky outcrops and take a by-catch of brown and velvet crabs, and whelk pots are also used with some boats setting up to 500 pots each. Cumbria SFC operate a permit scheme covering lobster, crab and whelk potting in a season which extends from March to September. 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 when fishing around wrecks off St Bees Head. A small number may set the odd net or pot.

13.3.2 Whitehaven

Whitehaven supports 12 full-time vessels, 5 of which are over 13.7 m and are therefore not permitted to fish within the SFC district. The majority work otter trawls for *Nephrops* and white fish, and 2 vessels also use anchor seine nets. 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* has provided the main value in landings at Whitehaven. The main effort for *Nephrops* is concentrated west of St Bees Head south to Selker, 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 exceed 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 Scottish rather than local boats which participate.

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 two boats set pots for lobsters and brown crabs and also take velvet crabs. Up to 10 boats are launched from Parton beach and set nets for demersal fish, use drift nets for bass, and rod and line 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 5 trawlers only one is 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. Since 1996, three or four boats have fished up to 200 whelk pots each during the autumn and winter. Only one of these boats fishes full time. During the winter months, there are occasional mackerel landings from visiting UK and Irish pelagic boats.

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. In recent years, 3 of the 4 salmon and sea trout drift net licences on this coast have been compensated by the Derwent Owners Association for not fishing, and there are closed areas around the mouths of the Rivers Ellen, Derwent and Ehen.

13.3.6 Maryport

Most of the 16 full-time otter and beam trawlers over 12 m (6 are over 13.7 m) 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, whilst the rest land whiting, cod, rays and flatfish. Visiting boats occasionally land into Maryport, where a Fishermen's co-operative operates from purpose-built premises alongside the harbour. 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.

13.3.8 Silloth

The most northerly port in north-west England, Silloth has 8 shrimping boats, of which one is capable of hydraulic dredging for cockles. Most of these boats have also dredged

for mussels since the early-1990s. Shrimps are caught year round in beam trawls from low-water channels in the Solway Firth, except during very cold spells and stormy weather in winter when shrimps migrate offshore. The Solway Firth is 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.

A considerable reduction in cockle stocks during the early-1990s (attributed to poor recruitment) resulted in a total closure of the fishery in the Cumbria SFC District and on the Scottish side of the Solway Firth. Landing of cockles has been prohibited since late 1994, and fishing is unlikely to commence until regulating orders are in place.

There are salmon and sea trout fisheries in the rivers Esk and Eden and, in 2001, 98 licences were issued for haaf netting and 3 licences for traps (coops) in the Upper Solway from 1 June to 9 September.

14. CONCLUSIONS

Despite the decline in activity noted in some areas, coastal fisheries remain 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. in many bays and estuaries, and (iii) where there is a high rate of unemployment, e.g. parts of south Wales and the North-West where heavy industry once prevailed. In other areas, where tourism is a vital part of the local economy, demand from the restaurant and hotel trade for a wide range of fresh, locally-caught fish and shellfish has increased as a result of changes in eating habits by a more sophisticated public.

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, and marketing and management controls. In particular, the market has widened, both at home and abroad, making fishing viable for species for which there was little demand twenty years ago. Nevertheless, the trend in inshore fishing since the late-1980s has been of falling catches and profitability, especially in areas which had been dependent on cod and whiting, which have shown a marked decline. Profits fell through rising operational costs against decreasing catches and, for some species, such as plaice, low first sale prices. Fishermen responded by increasing fishing effort, usually in terms of quantity of static fishing gear, in many cases moving to smaller, more efficient vessels and away from towed gears that involve greater fuel costs. Where possible, they have re-directed effort towards non-quota species, such as cuttlefish, prawns, rays and red mullet, as a valuable alternative to traditional fisheries provided new markets can be found for them. Opportunistic effort may be intense, and this may reduce the length of time a fishery remains profitable. In their attempts to sustain local resources, many SFCs have introduced 'fishery orders' covering major mollusc fisheries, allowing them to regulate numbers of fishing boats exploiting a particular resource, the 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 the larger part of their income from fishing - a definition that 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, though estimates are available from various licence and permit schemes for particular fisheries operated by several SFCs (e.g. shellfish permit schemes operated by Cornwall and South Wales SFCs). In the past, the importance of recreational angling to local fisheries has often been ignored, but several SFCs now have at least one member with a background in the angling sector. For many commercial skippers, charter fishing represents welcome and increasingly important seasonal income. They support the local bait and tackle trades and all are dependent on sustainable resources.

We are increasingly aware of the conservation needs of marine resources and of more general environmental issues as our knowledge of marine ecosystems and the interactions with man's activities improves. Integrated coastal zone management plans encompassing all marine activities are being developed by 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.

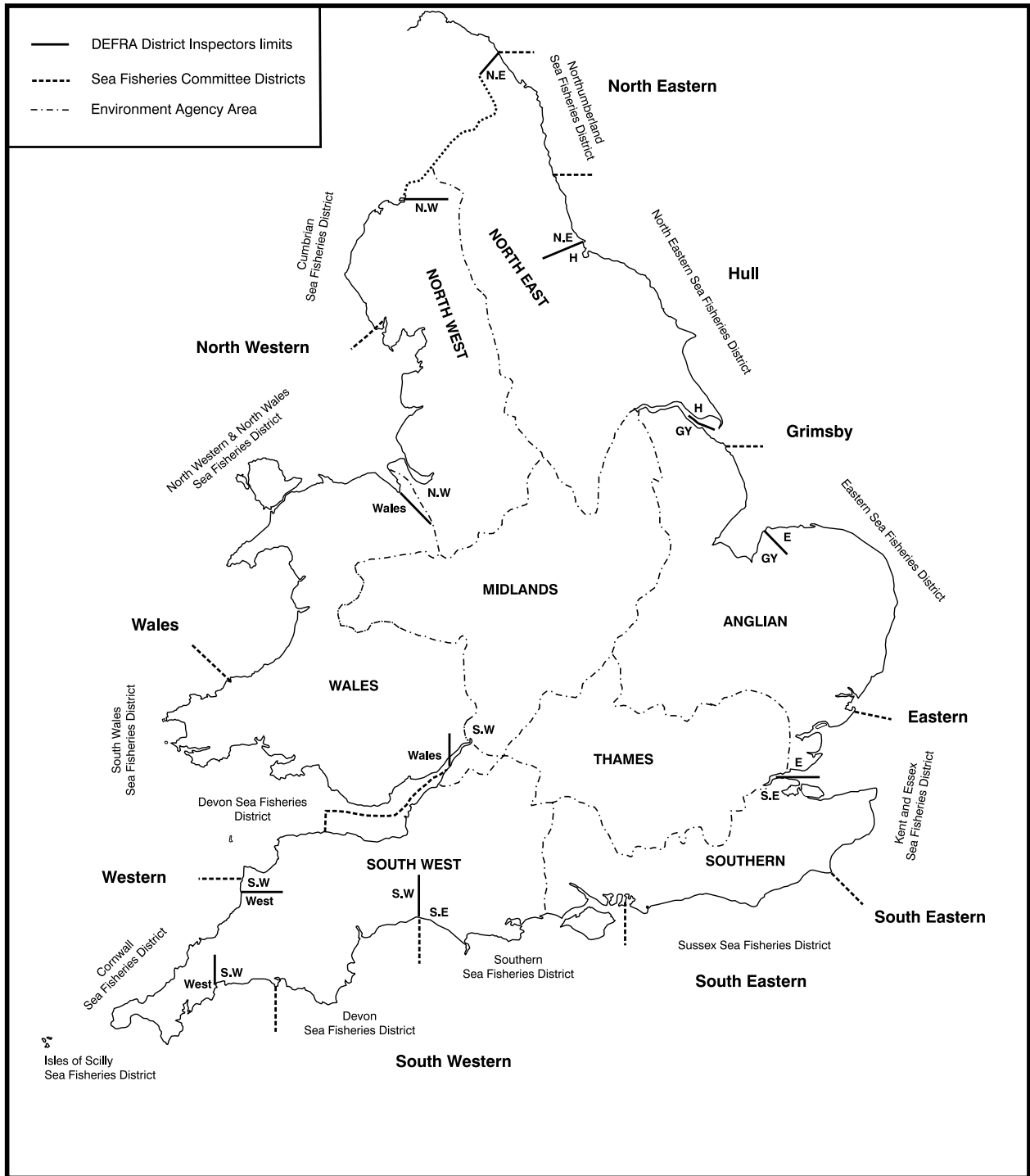
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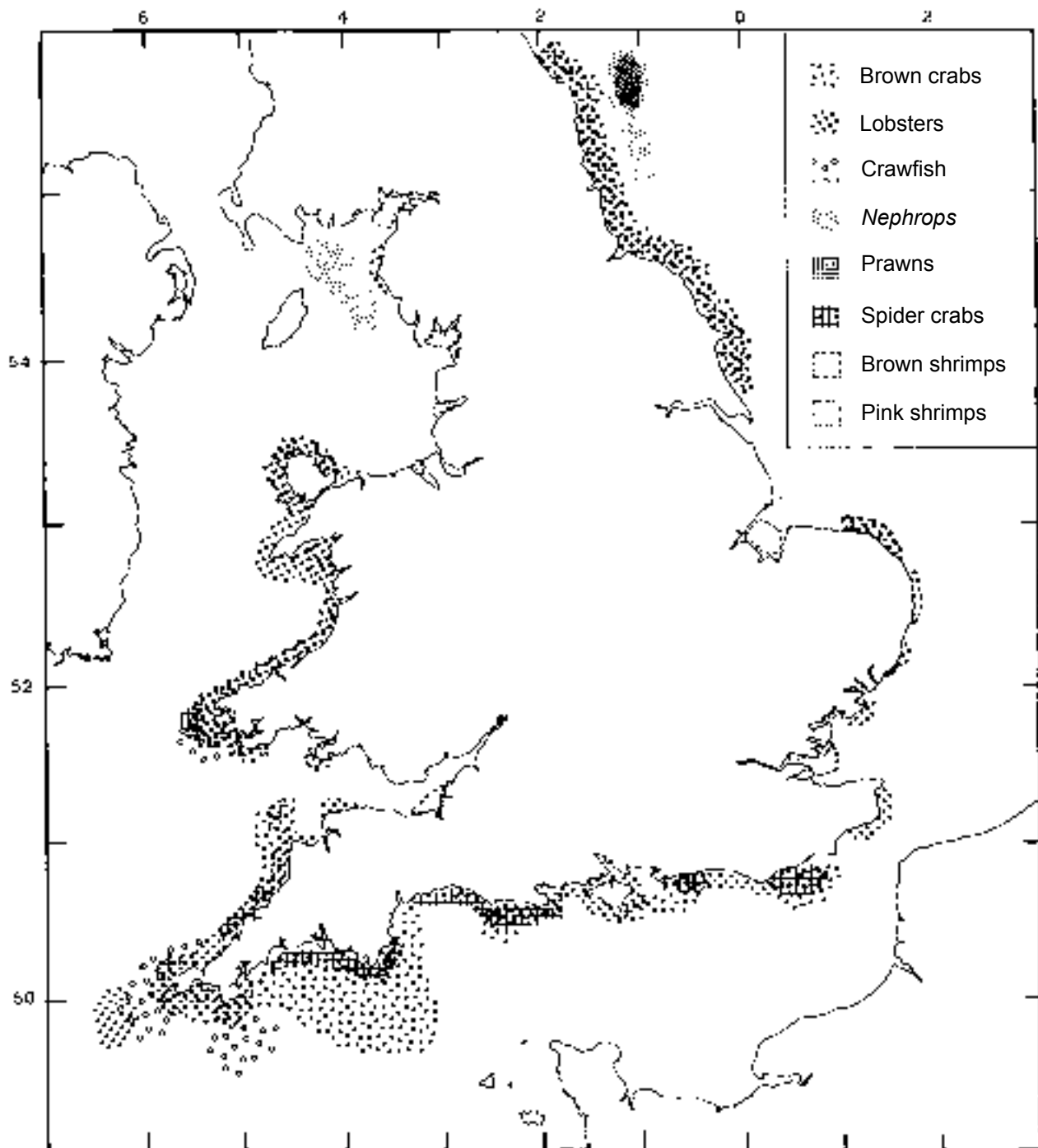
Appendix 1. The common and scientific names of fish and shellfish species mentioned in this report

Bass	(<i>Dicentrarchus labrax</i>)	Mullet, red	(<i>Mullus surmuletus</i>)
Bream	(<i>Pagellus</i> spp.)	Mussel	(<i>Mytilus edulis</i>)
Brill	(<i>Scophthalmus rhombus</i>)	<i>Nephrops</i> (Dublin	(<i>Nephrops norvegicus</i>)
Clam, American	(<i>Mercenaria mercenaria</i>)	Bay prawn or	
Clam, Manila	(<i>Tapes philippinarum</i>)	Norwegian lobster)	
Cockle	(<i>Cardium edule</i>)	Oysters, native	(<i>Ostrea edulis</i>)
Cod	(<i>Gadus morhua</i>)	Oysters, Pacific	(<i>Crassostrea gigas</i>)
Conger eel	(<i>Conger conger</i>)	Periwinkle	(<i>Littorina littorea</i>)
Crab, brown	(<i>Cancer pagurus</i>)	Pilchard	(<i>Sardina pilchardus</i>)
Crab, spider	(<i>Maia squinado</i>)	Plaice	(<i>Pleuronectes platessa</i>)
Crab, velvet	(<i>Liocarcinus puber</i>)	Pollack	(<i>Pollachius pollachius</i>)
Crab, shore	(<i>Carcinus maenus</i>)	Prawns, deep sea	(<i>Pandulus borealis</i>)
Crawfish	(<i>Palinurus elephas</i>)	Prawn, English	(<i>Palaemon (leander) serratus</i>)
Cuttlefish	(<i>Sepia officinalis</i>)	Razorshell	(<i>Ensis ensis</i>)
Dab	(<i>Limanda limanda</i>)	Saithe/coalfish	(<i>Pollachius virens</i>)
Dogfish, nurse/huss	(<i>Scyliorhinus stellaris</i>)	Salmon	(<i>Salmo salar</i>)
Dogfish, spurdog	(<i>Squalus acanthias</i>)	Sandeel	(<i>Ammodytes</i> spp.)
Dogfish, spotted	(<i>Scyliorhinus canicula</i>)	Scallop	(<i>Pecten maximus</i>)
Dogfish, unspecified	Dogfish unspecified	Scallop, queen	(<i>Chlamys opercularis</i>)
Dory	(<i>Zeus faber</i>)	Sea trout	(<i>Salmo trutta</i>)
Eel	(<i>Anguilla anguilla</i>)	Shrimp, brown	(<i>Crangon vulgaris</i>)
Flounders/fluke	(<i>Platichthys flesus</i>)	Shrimp, pink	(<i>Pandalus montagui</i>)
Gurnard	(<i>Triglidae</i> spp.)	Shrimp, unspecified	Shrimps, unspecified
Haddock	(<i>Melanogrammus aeglefinus</i>)	Silver smelt	(<i>Osmerus eperlanus</i>)
Hake	(<i>Merluccius merluccius</i>)	Skate/ray	(<i>Raja</i> spp.)
Herring	(<i>Clupea harengus</i>)	Sole, Dover	(<i>Solea solea</i>)
Horse mackerel	(<i>Trachurus trachurus</i>)	Sprat	(<i>Sprattus sprattus</i>)
Lemon sole	(<i>Microstomus kitt</i>)	Squid	(<i>Loligo</i> spp.)
Ling	(<i>Molva molva</i>)	Tope	(<i>Galeorhinus galeus</i>)
Lobster	(<i>Homarus gammarus</i>)	Turbot	(<i>Scophthalmus maximus</i>)
Mackerel	(<i>Scomber scombrus</i>)	Whelk	(<i>Buccinum undatum</i>)
Mixed demersal	Unspecified demersal fish	Whitebait	(<i>Sprattus sprattus</i> and <i>Clupea harengus</i>)
Monkfish/angler	(<i>Lophius piscatorius</i>)	Whiting	(<i>Merlangius merlangus</i>)
Mullet, grey	(<i>Liza ramada</i> , <i>Liza aurata</i> and <i>Chelon labrosus</i>)		

Appendix 2. DEFRA, SFC and EA districts of England and Wales



Appendix 3. The major crustacean fisheries of England and Wales



Appendix 4. The major molluscan fisheries of England and Wales

