

HUMBER MANAGEMENT SCHEME

Fisheries

Lead Author: North East Sea Fisheries Committee - Giles Bartlett, Environmental Officer.
Additional Input: Mike Elliot, Chris Firth, Emma Giles, Emma Hawthorne, Nigel Proctor & Judith Stout.

Activities

Commercial Fisheries

- i) **Trawling** - this takes place in the middle and outer estuary down to the limit of the Humber Estuary European marine site at Donna Nook. Trawling for sole also takes place around the area of Donna Nook. In the area regulated by North East Sea Fisheries Committee (NESFC) (see Management: General), on average up to ten vessels work the fishery - all hold permits issued by North East Sea Fisheries Committee. The main season is autumn to early spring. Some issues relate to discards of fish, particularly flatfish and other marine organisms, possibly lamprey species. However, EU and UK Regulations (EU850/98) adopted in 2001 state that vessels must work separator attachments to shrimp trawls. This legislation was strengthened in 2002 with the introduction of UK legislation (SI2870) which prohibits shrimp trawling without a separator trawl or sorting grid.

- ii) **Static Gear**
 - Longlining** - takes place throughout the year, vessels work lines for whitefish within the estuary. Long-lining for cod takes place mainly in winter on the stretch of coast between Donna Nook and East Halton on the south bank, and Old Hall on the north bank.

 - Netting** - is permitted subject to seasonal and technical restrictions. Occasionally illegal nets are detected, primarily in foreshore locations where they can catch salmonids and pose a hazard to other wildlife.

 - Potting** - is on a limited scale, for crab, spring to summer in the vicinity of the forts and one anchorages in the outer estuary.

- iii) **Salmon & Sea Trout** - are increasing in number as water quality improves in the Humber and the rivers. The fish move through the estuary on their spawning migration to rivers in the catchments of the Ouse and Trent. Small numbers of sea trout also enter a number of watercourses flowing directly into the estuary, such as the River Hull, on short term feeding migrations. The salmon population heading for the Trent system is primarily the result of a stocking programme carried out in 1999/2000, whilst the population in the Ouse has benefited from improved effluent treatment leading to higher concentrations of dissolved oxygen in the Selby area, a historical water quality barrier to migration. This fishery is regulated by the Environment Agency, exploitation, is only permitted by anglers, using rod and line, licensed by the Agency. Although still in a redevelopment phase, this fishery potentially has a high economic value. The beneficiaries would mainly be communities in the middle and upper reaches of the rivers concerned.

- iv) **Eel Fishing** - takes place along the fringes of the estuary and is regulated and licensed by the Environment Agency. The traps used are normally of the 'Dutch Fyke' design, but strings of Criggs, [basket like structures] are being increasingly used. In the year 2002 a total of 145 traps were licensed for use on the north bank of the estuary. The figure for the south bank is not yet available. There are some concerns regarding an eel fishery at Naburn and its lamprey bycatch, for which there is a specialist market as pike bait. Although this fishery is outwith the site boundary the impact on the interest features of the site needs to be assessed. It is estimated that this fishery removes around 3 tonnes or 45,000 individual lamprey per annum.

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- v) **Cockle Gathering** - Commercial cockle gathering takes place on one main bed located close to Grainthorpe Haven, near Horseshoe Point, on the south bank of the Humber Estuary. Limited gathering also takes place on a smaller bed located on Cleethorpes foreshore. A permit is required to collect more than 5 kg of cockles per day within the NESFC District. At present, there are 30 permit holders, who are limited to hand gathering. The permit is not site specific. Gathering takes place throughout the year, however, the main season is late summer/autumn. During 2001 up to 200 tonnes of cockles were gathered from the beds. The beds between Tetney Haven and Donna Nook are currently closed (2003). In 2003 Department for Environment, Food and Rural Affairs undertook consultation on whether areas near Cleethorpes should be designated under the European Shellfish Waters Directive (76/923/EEC).

Recreational Activities

Angling - recreational angling takes place throughout the estuary during the year, mainly from the shore, although effort peaks during winter and early spring (October to March) when anglers target cod, whiting and flounder. Summer shore angling has historically been much reduced in comparison to the winter angling season, however, in recent years the popularity of summer shore matches has increased significantly with the advent of divisional and club championships.

Boat angling - also takes place and is generally concentrated during the winter when species like cod and whiting are more abundant. During the summer, species including Dover sole, bass, tope, flounder and thornback ray are targeted.

There is also limited angling activity in the lower reaches of drains and streams flowing into the estuary, where anglers exploit stocks of flounder and eel. It is thought that this fishery has suffered due to increased drainage of the land and associated flood defence.

Generally, anglers are becoming increasingly more conservation aware, with catch and release a common practice. Within the Humber catchment, it is estimated there are in excess of 20,000 sea anglers. An indeterminate proportion of which may at some time fish along the banks of the Humber Estuary or from charter boats along the outer margins of the Humber Approaches. Some of these anglers are members of recreational sea angling clubs, many of which are in turn affiliated to regional or national associations such as the National Federation of Sea Anglers (NFSA), Sea Anglers Matchman Federation (SAMF) or the Bass Anglers Sportfishing Society (BASS).

Throughout the year several angling competitions or matches are held, ranging in size from in club matches to national or international matches with in excess of 1000 anglers participating in the largest competitions. Consequently, this activity has significant social and economic benefits for the area. In terms of regulations, anglers should comply with EU and UK legislation regarding fish and shellfish sizes, the NFSA also has a recommended list of minimum sizes for fish, many of which are larger than the current EU and UK minimum landing size and in addition include a range of species not included under current legislation. They are legally bound to observe local byelaws with respect to their activities (see bait digging). Additionally, locals clubs may have a code of practice; similarly the NFSA has guidelines, which it considers to be good practice.

Bait Digging - takes place throughout the outer estuary during the year. Gatherers mainly target lugworm *Arenicola spp.*, ragworm *Nereis spp.* and white ragworm *Nephtys spp.* However, in addition, other bivalve species may be gathered such as gaper *Mya spp.* cockles *Cerastoderma edule* and razor shells *Ensis spp.* Generally, bait is hand gathered using spades, forks, rakes or specialist bait pumps. (Recreation and Tourism - Annex G3)

Other issues

Fish Impingement - Research indicates that large numbers of fish, including lamprey can be entrained in some power station cooling waters although further research on the Humber is required to determine whether this constitutes a significant mortality to fish populations. This entrainment shows that both river and sea lamprey are found in the Humber Estuary throughout the year. Discussions are continuing with all parties involved in order to seek a practical resolution to the issue, which will also be examined as part of the Regulation 50 review of permits.

Fish Obstruction - The discharge of water from catchments flowing into the Humber Estuary and the lower sections of the Trent and Ouse is heavily regulated. Many of these man-made structures prevent the natural passage of fish and other estuarine organisms, which use the river system as part of their life cycle. For example, man-made structures and low water levels in our rivers can prevent migratory fish, such as salmon, swimming up the river to their spawning grounds. Fish congregating below an obstruction can be susceptible to environmental stresses, which make them more prone to disease or vulnerable to poaching. Building fish passes into structures can avoid many of these problems. On the Humber Estuary, the effect of such obstructions on the populations of resident fish species, such as smelt, is unclear, as no detailed investigation has been carried out. However a number of important drainage systems, are no longer able to contribute in any significant way. There are some concerns regarding the impact this may have on resident and migratory fish populations. The presence of these structures can have the same effects as the creation of water quality barriers due to poor oxygenated conditions. The effects of the latter barriers also requires further research to quantify its importance. (Flood Defence & Land Drainage Annex B2).

Management

The North East Sea Fisheries Committee and Eastern Joint Sea Fisheries Committees undertake the management and regulation of fisheries within the boundary of the Humber Estuary European marine site. They have certain powers to make byelaws and regulate through the issue of permits, assessment of stock levels, fish minimum landing size and other technical measures, such as minimum mesh sizes. Other authorities involved are Environment Agency (EA), English Nature (EN), Department of Environment, Food and Rural Affairs (Defra) and local authorities. The two main fisheries, which have the greatest potential to impact the site, are those for shrimp and cockles. The cockle fishery is managed through a byelaw that ensures that only larger cockles are taken for consumption by requiring a 20mm square aperture through which a cockle cannot pass, a closed season between May and August, and the requirement to fish using a hand rake only. Since May 2002, the main cockle beds within the estuary have been closed due to low adult stock levels. NESFC are currently consulting on the introduction of a Regulating Order to manage the cockle fishery on a sustainable basis.

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The Environment Agency regulates and manages freshwater and salmonid fisheries. In the case of salmon and sea trout, these powers extend to six miles out from the low water mark, around the coast of England and Wales. Along the coast of Yorkshire and Northumbria, the Agency licences interceptory nets for the taking of salmon and sea trout. The southerly limit of this fishery is Spurn Point and no netting is licensed inland of this point. This has not always been the case, until the late 1960s salmon netting was carried out under permit from the Yorkshire Ouse River Board, with most of the activity centred around the Faxfleet to Saltmarsh area of the River Ouse. This fishery produced annual catches of several thousand salmon until the late 1930s. Because of the threatened status of salmon the prospects for restoring the commercial fishery, assuming a continued improvement in stocks is poor. Eel fishing is licensed under byelaw by the North East Region for traps set on the north bank of the estuary and in drains, rivers and streams flowing into the tidal area. On the south bank, the Agency's Anglian Region presently does not have powers to require nets to be licensed for use in the estuary, but licences are required for fishing in the tributary systems flowing into it. This anomaly will be addressed by the introduction of a national set of byelaws for the management of eel stocks and, a nationally consistent system of charging for licences.

Defra has powers to intervene under the Countryside & Wildlife Act (1981) relating to sensitive species such as shad (twaites and allis shad *Alosa alosa* & *A fallax*) and smelt (*Osmerus eperlanus*). However, officers of Sea Fisheries Committees do not have these powers, this is an example of a complicated and fragmented conservation regulatory framework, particularly with regard to the marine or estuarine environment. The various agencies involved can have gaps in their enforcement powers, duties and obligations. Similarly, there may even be differences in approaches between organisations with regard to different issues between regions. The possible result of this is that species and habitats in different regions are subject to different levels of management and protection.

Current management objectives

European and National Regulations are aimed at the conservation both of particular species to achieve sustainable fisheries and of habitats to achieve a sustainable environmental use. Similarly, supplementary activities are intended to assist with economic, social and environmental sustainability within the site.

Current management for nature conservation

The Environment Agency has a duty to manage the water resources of England and Wales as laid down in the Water Resources Act 1963. The principles behind the Act support the concept of sustainability and require the Agency to consider the reasonable need for an abstraction in the light of any impact it may have on the environment or the rights of other water users. There have been amendments to the legislation since 1963 but the concepts and approach remain the same within present legislation, notably the Water Resources Act 1991 and the Environment Act 1995. Also under the Environment Act 1995, the Agency has a range of conservation duties to promote the flora and fauna. The Agency will also acquire obligations under the EU Water Framework Directive, which was transposed into UK law in January 2004. The aim of the Directive is to establish a framework for the protection of waters and the maintenance or achieving of good ecological status. The Directive has implications for the majority of industry, including the water, agriculture, development and construction industries and all businesses that have discharge consents, trade effluent licences or abstraction licences. The Directive has two key elements, firstly it establishes a system of management of the water environment based on river basin districts, and secondly, it introduces a programme of measures to maintain and where necessary to improve water quality. The Directive also contains a provision to establish a register of 'Protected Areas' for the protection of 'economically significant aquatic species'.

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The Sea Fisheries Committees have added environmental responsibilities under the Habitats Directive 1994 and Countryside and Rights of Way Act 2000. The Sea Fisheries (Wildlife Conservation) Act 1992 requires Sea Fisheries Committees to have a “due regard to the conservation of marine flora and fauna” when enacting Byelaws or Regulations and to achieve a sustainable fisheries management regime through sound principles. The Environment Act 1995 allows members to be appointed to the Committee with knowledge or experience in environmental matters.

Defra has responsibilities for marine, flood and coastal defence policy. Its remit also includes agricultural and fisheries policy and management. The department also regulates dredging, disposal at sea and the use of oil dispersants.

English Nature’s responsibility is to produce the conservation objectives for the site. The maintenance of the Humber European marine sites, its features of interest and the habitats and species indicated under the Directives is the responsibility of all the Relevant Authorities.

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Further Information

Legislation

Conservation (Natural Habitats & c.) Regulations 1994.
Council Regulation (EC) No. 850/98. Article 25 restrictions on fishing for shrimps to protect flatfish
Salmon & Freshwater Fisheries Act 1975
Sea Fisheries (Wildlife Conservation) Act 1992
Statutory Instrument no 2870. The Shrimp Nets Fishing Order 2002.
The Environment Act 1995
Water Resources Act 1991
Water Resources, England and Wales Statutory Instrument No. 3242, 2003

References

Blaber *et al* 2000. Effects of fisheries on estuarine ecosystems.
Crangon fisheries (ECODISC). EU (DGXIV A: 3) project 97/SE/025, pp117
Crangon fishery. Report for MAFF (Chief Scientist Group, London) Food Research Centre, University of Lincolnshire and Humberside 1997.
Defra, 2002. General fisheries Technical Conservation Rules 25pp
Elliot, M., Nedwell, S., Jones, V., Read, S.J., Cutts, N.D. & Hemingway, K.L. 1998. Intertidal sand and mudflats & subtidal mobile sandbanks (volume II) An overview of dynamics and sensitivity characteristics for conservation management of marine SACs.
Elliott, M & Hemingway, KL (Eds.), 2002. Fishes in Estuaries, Blackwells, Oxford, pp636.
Environment Agency, 2003. Position statement on Humber Power.
Firth, C. 2002. Environment Agency. Humber Outfalls: Fish Access Report 97pp.
Fowler, S.L.1999. Guidelines for managing the collection of bait and other shore animals within UK European marine sites. English Nature (UK Marine SACs Project). 132 pages.
Gubbay, S. & Knapman, P.A. 1999. A review of the effects of fishing within UK European marine sites. English Nature (UK Marine SACs Project), 134 pages.
Holst, R. & Revill, A. 2001. The selective properties of sieve nets. ICES Fish Capture Committee, Seattle, 23-27 2001.
Humber Power 2002. Report to support IPC Authorisation AH4195.
Jones, L. A., Hiscock, K, & Connor, D.W. 2000. Marine habitat reviews. A summary of ecological requirements and sensitivity characteristics for the conservation and management of marine SACs. Peterborough, Joint Nature Conservation Committee. (UK Marine SACs Project report).
MAFF Lowestoft. Internal Report No. 19.
NESFC Performance Plan 2003.
Pawson, M.G.; Rogers, S.I. 1989. The coastal fisheries of England and Wales. Part II: A review of their status in 1988.
Rees, H.L. 1982. History and Current Status of Commercial Fisheries in the Humber Estuary: an investigation carried out on behalf of the Humber Estuary Committee. pp. 47
Revill, A. 1997. The economic and biological impacts of discarding in the UK (East Coast)
Revill, A. et al,1999. The economic and biological consequences of discarding in the European Scottish Association for Marine Science (UK Marine SACs Project).

www.humber-bib.hull.ac.uk
www.esfjc.org.uk (website in development)
www.environment-agency.org.uk
www.neseafish.gov.uk
www.ukmarinesac.org.uk/fisheries
www.ukmarlin.ac.uk

Factors arising from the activity

Activity	Location	Present /historic levels of activity	Existing management Responsible Organisations	Relevant Authority Bold = Lead	Possible effect on features	Significant Effects
A1/ Angling (Annex G1)	*	Low to high depending on season/ location	NESFC ESFJC EA	NESFC ESFJC EA	Physical damage: Abrasion Very limited, localised and low level impact on intertidal sediments in middle and outer estuary from launching and retrieval of vessels. Also, there may be a very limited impact on sub-tidal sediments from vessels with anchors.	NO
<p>*Specific sites of interest include: Hessle foreshore, Makro wall, Hull dock frontage, Paull frontage to Thorngumbald Drain Stoney Creek, Old Hall, Hawkins Point, Chalky Point (Kilnsea Village), Spurn & Kilnsea mudflats Spurn Point. On the south bank; anywhere from Barton to Cleethorpes. Angling vessels are predominantly berthed at Grimsby (HCA-Meridian Quay) and are also launched from Cleethorpes</p>					<p>Non physical disturbance: Noise and visual Possible impact due to localised high number of anglers on estuary but the activity has been going on for some time. Where matches are carried out may be significant short term impact.</p> <p>Biological disturbance: Selective removal of species. Possible impact on birds through reduction in prey species, however different sized fish are targeted so effects may be limited.</p>	YES NO
A2/ Long-lining for skate and cod	Between East Halton and Donna Nook (middle to outer estuary)	Low	ESFJC NESFC Defra	ESFJC NESFC	<p>Physical damage: Abrasion Launching and retrieval of vessels may cause abrasion to intertidal areas in the outer estuary but at a very low level. There may be a very limited impact on subtidal sediments from vessels with anchors.</p> <p>Biological disturbance: Selective extraction of species Removal of commercially valuable fish species, primarily cod and whiting. However, birds target different sized fish to anglers.</p>	NO NO

Activity	Location	Present /historic levels of activity	Existing management Responsible Organisations	Relevant Authority Bold = Lead	Possible effect on features	Significant Effects
A3/ Cockle gathering	Outer estuary	High	NESFC Defra EN	NESFC EN	Physical loss: Removal and smothering Limited removal of intertidal sediments in the middle and outer estuary but smothering of benthos as a result of fishing practice.	YES
					Physical damage: Abrasion & Siltation Localised damage can be caused by vehicles crossing intertidal and saltmarsh in the middle and outer estuary.	YES
					Non physical disturbance: Noise and visual presence In middle and outer estuary and birds such as oystercatchers that feed on bivalves will be disturbed while feeding in the same areas as the cockle gatherers, particularly when Quad bikes are used.	YES
					Biological disturbance: Selective extraction of species Removal of cockles (exceeding 14mm). Minimal damage to immature stocks. No impact on SAC, no occurrence in Inner Estuary.	YES In middle and outer estuary
A4/ Netting	Mostly Outer estuary Donna Nook Limited in Middle estuary	Low	NESFC ESFJC Defra	NESFC ESFJC	Physical damage: Abrasion Limited impact from launching boats and people walking on intertidal area Limited impact from equipment on intertidal sediments.	NO
					Non toxic contamination: Changes in turbidity Very limited impact on subtidal sandbanks	NO

Activity	Location	Present /historic levels of activity	Existing management Responsible Organisations	Relevant Authority Bold = Lead	Possible effect on features	Significant Effects
A4/ Netting continued					Biological disturbance: Selective extraction of species Removal of non-target fish species and sizes. Removal of commercially valuable fish species primarily cod, sole, thornback and spotted ray but SPA birds will target different sized fish. Removal of nursery function in estuary.	NO
A5/ Potting for crab	Outer estuary (mainly Donna Nook and further south)	Low	ESFJC NESFC	ESFJC NESFC	Physical damage: Abrasion Very limited impact from launching boats and people walking on intertidal area. Some impact on subtidal habitats from interaction with gear.	NO
					Biological disturbance: Selective extraction of species Limited impact on benthic habitats - removal of edible crab, lobster and whelk. By-catches, such as juvenile crab and lobster normally returned alive.	NO
A6/ Trawling (shrimp)	Middle, outer and beyond	High (main season between August and January)	ESFJC Defra NESFC	ESFJC NESFC	Physical loss: Removal Bed resuspension and increased turbidity; by-catches of lamprey and other estuarine or marine species, especially non-target species and sizes.	NO
Statutory instrument came into force January 2003. Interpretation may mean that not all shrimp vessel have to fit separator devices.					Physical damage: Abrasion To subtidal/ intertidal areas trawled – localised and minimal.	NO

Activity	Location	Present /historic levels of activity	Existing management Responsible Organisations	Relevant Authority Bold = Lead	Possible effect on features	Significant Effects
A6/ Trawling (shrimp) Continued					<p>Biological disturbance: Selective extraction of species Effects of trawling can alter benthic features and communities - removal of flora and fauna including brown and pink shrimp, and estuarine fish species, especially juveniles (estuarine nursery species).</p> <p>Non toxic disturbance: Changes in turbidity Potential resuspension of contaminated sediments. Limited impact on subtidal sandbanks.</p>	<p>?</p> <p>To be determined</p> <p>NO</p>
A7/ Trawling (sole)	Middle, outer and beyond	Low (Season between April and October, effort declined over last 10 years due to biological and-economic factors)	NESFC ESFJC	ESFJC	<p>Physical loss: Removal By-catches of estuarine or marine species, possibly including lamprey.</p> <p>Physical damage: Abrasion To subtidal/ intertidal areas trawled – localised and minimal.</p> <p>Biological disturbance: Selective extraction of species Effects of trawling can alter benthic features and communities - removal of flora and fauna estuarine fish species; removal of juvenile (nursery) stages.</p> <p>Non toxic disturbance: Changes in turbidity Very limited impact on subtidal sandbanks.</p>	<p>?</p> <p>To be determined</p> <p>?</p> <p>To be determined</p> <p>?</p> <p>To be determined</p> <p>NO</p>

Activity	Location	Present /historic levels of activity	Existing management Responsible Organisations	Relevant Authority Bold = Lead	Possible effect on features	Significant Effects
A8/ Bait digging (Annex G3)	Intertidal Areas (Outer estuary; Spurn Bight, Kilnsea and Easington Flats, Cleethorpes, Theddlethorpe	Medium	EN LA NESFC ESFJC	EN LA NESFC ESFJC	Physical damage: Abrasion Digging of intertidal sediments. When commercial quantities removed, a lot of movement of people and vehicles causing localised damage. To intertidal habitats.	YES
					Non-physical disturbance: Noise & Visual When commercial quantities removed, a lot of movement of people and vehicles causing localised disturbance	YES
					Biological disturbance: Selective extraction of species Removal of worm species and possible damage to important food for SPA birds. In many cases the intertidal mud is not returned to the hole, which increases smothering and extends the recovery time of the benthos; occurrence after settlement may damage recruitment levels.	YES
A9/ Salmon and sea trout angling	Inner and tributaries	Currently no licences issued on the Humber.	EA NESFC	EA NESFC	Physical loss: Removal of fish species.	NO
					Physical damage: Abrasion Does not take place within estuary.	NO
					Biological disturbance: Selective extraction of fish species by licensed anglers.	NO

Activity	Location	Present /historic levels of activity	Existing management Responsible Organisations	Relevant Authority Bold = Lead	Possible effect on features	Significant Effects
A10/ Eel trapping	Inner and middle fringes of the estuary and river Derwent	Low-Activity declining on historical levels	Defra EA NESFC	EA NESFC	Physical loss: Removal By-catches of lamprey are thought to be fairly high and other species are likely to be caught.	YES
					Physical damage: Abrasion Some limited abrasion to intertidal area due to people but activity limited along the banks of the Humber.	NO
					Biological disturbance: Selective extraction of eels	? To be determined
A11/ Fish impingement (Annex C1)	Throughout estuary – mainly middle		Defra EA EN NESFC	EA EN NESFC	Physical loss: Removal Fish and shellfish species from river including lamprey.	YES
A12/ Barriers to fish movement (Annex B2)	Throughout river catchment, at weirs, pumping stations, clough doors, sluices and flap valves, which bar fish passage.	Some over 100 years old, others added up to 1980s.	EA LA IDBs	EA LA IDBs	Physical Loss: Reduced breeding success and individual mortality Disruption to fish migrations and breeding patterns.	YES
					Biological disturbance: Impeded movement to spawning grounds. Water quality barriers as the result of poor oxygen levels, especially under low flow and warm conditions, will prevent usage by fishes.	YES
N.B. For all activities there will be some Noise and Visual presence but, with the exception of cockle gathering, this was felt not to be significant, unless it causes disturbance to areas used as a high tide roost. Also, at Donna Nook, part of the Ramsar site, the activities were felt to take place too far away and at too low an intensity to have any impact on the area the seals use to breed.						

Internal Natural Factors

Natural erosion and deposition cycles in the estuary may move sediments and cause a smothering of nursery and feeding areas of fishes. They may also change the suitability of area for maintaining shellfish populations.

External Factors

Unmanaged exogenic pressures such as sea-level rise and isostatic rebound (land sinking) will result in coastal squeeze and thus a loss of habitat for fish feeding, unless compensatory measures are taken. Changes to fish distribution through global warming may result in southern species, such as bass and red mullet, becoming more frequent and northern species, such as cod, becoming less common. The number of rare species currently taken in the area may increase although it is not known if these will constitute viable populations.

Excessive fishing in the North Sea would reduce the spawning populations and thus the return of nursery stages of marine fishes, such as cod and plaice, to the estuary. Similarly, any excessive deterioration of spawning areas and feeding areas upstream would reduce the populations of diadromous fishes migrating through the estuary. Such a deterioration may be through physical removal or physical or water quality barriers.

Aggregate extraction in adjacent marine areas could affect the spawning areas of some fish species, such as herring, and thus potentially lead to reductions in populations using the estuary.

Many of the fishes identified as being rare or fragile (Annex 2 species) in this area by definition have low populations and thus little is known about those species. They may therefore be dependent of areas away from the Humber, e.g. shad may be dependent of French populations for breeding such that threats in those areas will affect the Humber populations.

Management Options

Greater information on the magnitude (spatially and temporally) of water quality barriers and on the presence of physical barriers will allow the significance of these for affecting the migratory fishes to be determined. Similarly, the further quantification of habitat destruction or loss by bait digging will allow its significance to be determined. Further information on the stock sizes of the commercially fishes species will allow the significance of the present stock harvesting to be determined. Finally, further information on the effects of other activities, such as power station impingement, will allow the degree of significance to be attributed to the activities.

Management Action

Activity	Factor	Proposed management actions	Timetable	Implementation Bold = Lead RA
A1/ Angling (Annex G1)	F3	Code of Conduct and intertidal netting review (Consultation with local & National Angling Clubs/Associations, regarding best practice review).	On-going	NESFC ESFJC EA

Activity	Factor	Proposed management actions	Timetable	Implementation Bold = Lead RA
A2/ Long-lining for skate and cod	F3	Monitor	On-going	NESFC ESFJC
A3/ Cockle gathering	F4/F5	Implement new Byelaw (Confirmed 6 th February 2003) including improved technical and seasonal control measures. Code of Conduct re: access routes Regulating Order Examine opportunities for an order to limit fishing effort. Preliminary consultation February 2003.	On-going On-going On-going	NESFC EN
A4/ Netting	F3	Monitor	On-going	NESFC ESFJC
A5/ Potting for crab	F3	Monitor	On-going	NESFC ESFJC
A6/ Trawling (shrimp)	F4/F5	Research Bycatches of lamprey and other species through fleet surveys and practical studies. Examine whether existing legislation is strong enough to manage fishery and sub-feature. Examine possibility of local byelaw for separator device and maximum beam size.	Monitoring Autumn 2003 possibly in conjunction with EA Lamprey study.	NESFC ESFJC EN
A7/ Trawling (sole)	F3	Monitor	On-going	NESFC ESFJC EN
A8/ Bait Digging	(Annex G3)			

Activity	Factor	Proposed management actions	Timetable	Implementation Bold = Lead RA
A9/ Salmon & sea trout angling	F3	Monitor migratory species populations and actions restocking (EA).	On-going	NESFC EA
		Review of intertidal netting & enabling byelaw.	On-going	
A10/ Eel trapping	F6	Assessment of Eel trapping under the Habitats Regulations 48-53.	Ouse Humber Lamprey study to examine impact of this operator	NESFC EA EN
A11/ Fish impingement (Annex C1)	F4/F5/F6	Develop prioritised programme for reducing obstructions to the movement of fish to and from watercourses around the site. The first passes were operational in 2004.	E.A. position statement published March 2003	NESFC EA EN
		Ongoing discussion between NESFC, Environment Agency and English Nature, and review of abstraction licences under Regulation 50. Implement Habitats Regulations (review of consents - abstraction licence).	Ouse-Humber Lamprey Study, to examine impacts and catchment population; Hull University (IECS) study to further quantify impingement (2003-4) By March 2006	
A12/ Barriers to fish movement	(Annex B2)			