

# Atlantic Coast (Wester Ross) Project

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Topic Paper:

## Commercial Fisheries

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This paper is one of a series which have been prepared to help inform the future use and development of the coast and inshore waters of Loch Broom, Little Loch Broom, the Summer Isles and Gruinard Bay. The paper represents the results of basic survey and evaluation work and should not be regarded as a policy document. It is however intended to help in the formulation of policy and to promote discussion. The Atlantic Coast project aims to develop and test an integrated coastal zone plan for this area which can help in the evaluation of development proposals, guide investment, and minimise conflicts of interest. It aims to promote a balanced approach: one that can safeguard the area's core natural assets and sustain or enhance its productivity over the longer term.

The issues that have been set out here have been formulated in response to concerns raised in the project area. Some have scientific backing, while others are based on mainly anecdotal evidence from those directly involved in activities such as fisheries, fish farming, natural history and angling.

### 1. Introduction

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The commercial fisheries within the project area are focused on shellfish, with little finfish caught so close inshore. A number of species are targeted, the most important of which is undoubtedly the Norway Lobster *Nephrops norvegicus*. This species is caught both with trawls and in creels. Other commercially fished species include velvet, brown and green crabs, and lobster, all caught in creels; scallops, caught by dredging or individually by divers; and sprats and squid caught in mid-water trawls. Winkles are collected by hand from the intertidal areas.

Ullapool is an important fishing port, with catches landed from boats operating far out into the Minch and further out towards the edge of the continental shelf, as well as from the local inshore fishery. Catches from the project area are also landed to Achiltibuie, Lochinver and Gairloch, as well as further afield.

The local fleet at present consist of approximately thirty boats from under 10 metres to 18 metres in length. A number of skippers own their own boats, but several of the trawl boats are owned by one of two proprietors in Ullapool.

## **2. Background (history of activity in project area)**

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Commercial fishing began in the project area in the mid 18<sup>th</sup> century, with fishing stations established on both Isle Martin and Tanera Mor. The fishery targeted the then abundant herring, and was highly successful in the early years. Encouraged by this success, the British Fisheries Society founded the village of Ullapool in 1788 and a local industry was established: catching, processing, packing and exporting herring.

Herring were exploited continuously, although with fluctuating success, until the early twentieth century, when the shoals failed to arrive in the Loch Broom area for several consecutive years, and the local fleet went into decline. However, the Second World War gave the local industry a boost, following the closure of east coast fisheries due to mines. Improved catching technology following the war led to considerable increase in catches from further offshore, and once again Ullapool was a thriving port.

However, rapid depletion of stocks led to the complete closure of the Minch herring fishery in 1978, and the attention of the pelagic fleet turned to mackerel. The catch was sold directly to 'klondyker' factory ships from eastern Europe, west Africa and even further afield. During this period, Ullapool became the main mackerel port in Britain, and the harbour had to be extended to cope with the increased traffic.

In the early 1990s, mackerel catches declined and the number of klondykers visiting Ullapool dwindled. The mackerel stocks were under pressure, and there was evidence that their migratory patterns were altering; once again quotas were reduced.

In the 1960s, local boats began to fish for prawns (*Nephrops*), previously considered by-catch and thrown back, but for which a market was beginning to develop. Prawns were caught using creels, as mobile fishing gear (with the exception of scallop dredging, which was permitted in some areas) was banned in inshore waters. However, in 1984, the Inshore Fishing (Scotland) Act removed the three-mile limit which banned the use of mobile gear within three miles of the shore, allowing trawlers and dredgers to work in inshore waters alongside the existing creel fishery. This has led to gear conflict in many parts of the west coast of Scotland.

In the early days of prawn creeling, most fishermen fished prawns for only part of the year (usually spring and summer), turning to lobster and crab creeling in the late summer, then to fishing for herring and sprat through the autumn and winter. During the prawn creeling season, a fleet of creels would be lifted and shot in a different site to allow sites to 'rest' before being fished again. Today, however, the pressure has increased considerably. Most creelers fish for prawns through the majority of the year, and lifted creels are replaced immediately in the same locations to prevent the site being occupied by someone else.

Historically, salmon bag-netting was an important source of employment in the summer months in the coastal communities of the project area. Netting stations existed at Laide, Scoraig, Camus Mhor, Culnacraig, Achduart, Badenscallie, Badentarbet, Fox Point and Reiff. Each station was typically crewed by four men and operating 4 bag nets, with the catch exported by boat or rail to markets in the south. At the height of its activity in the early 20<sup>th</sup> century the fishery continued until the 1980s when catches of wild salmon declined to the point where it became non-viable. Important to the area's social history and economic development the fishery, with its shore-side infrastructure and activity, also provided an additional dimension to the local tourist product.

The history of fisheries in the project area shows a clear repeating pattern: for each target species catches increased and then declined, and the fishery responded by changing to more efficient catching technology, moving out to more distant fishing grounds, or shifting the focus to previously unexploited species. The challenge for today's fishing industry is to ensure that this pattern is not repeated again, and that the existing fisheries can continue to operate in a sustainable manner for years to come.

### **3. Current situation**

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#### **3.1. Commercial fisheries in the project area**

The commercial fishery in the project area focuses mainly on prawns *Nephrops norvegicus*, which are taken either by small inshore trawlers or by creels. Lobster and to a lesser degree brown crab, caught in creels, are important seasonal fisheries. Scallop dredgers work parts of the area occasionally. There have been locally based scallop divers making a living from working the area in the past, but at present there is only one man employed full time in scallop diving. Winkles are gathered in intertidal areas, mainly by locals, for export to the continental market.

##### **3.1.1. The trawl fishery**

There are a number of small trawlers operating in the area (10–18m in length), mainly targeting prawns, although some target sprats and squid during the winter. The majority of these are based locally and operate out of Ullapool. At present nine trawlers are working out of Ullapool. In recent years, a number of boats from further afield including as far away as the east coast, have been seen trawling inside the project area.

Trawling in the project area is carried out by small boats, mainly single trawl with rockhopper ground gear. Visiting vessels in the Minch and possibly also within the project area have recently operated twin rig trawls, but local operators are opposed to the use of this type of gear.

Most trawlers operate well out into the Minch in good weather, only trawling within the project area in rougher weather; however some trawlers work 'inside' even on calm days in order to reduce costs, which has led to some friction with other trawl operators and creelers. Within the project area, trawling is mainly, but not exclusively, carried out in the outer part of Loch Broom, Annat Bay and the area to the west and north of Isle Martin, the area south of Tanera Mor and west of Horse Island, the area between Eilean Dubh and Cailleach Head, and the area to the north of Gruinard Bay. Sheltered parts such as outer Loch Broom and Annat Bay are important trawling areas for rough weather in winter when it is not possible to work in more exposed locations.

Trawlers rarely enter inner Loch Broom or Little Loch Broom due to areas of unsuitable substrate and the abundance of creels in these areas, although both lochs can be, and occasionally are, trawled. Abundant creels in and around the Summer Isles, Badentarbet Bay and Horse Sound also make these areas less accessible to trawlers. Gruinard Bay is rarely trawled, with the exception of the northern part and the area to the north-west of Gruinard Island.

Trawlers are prohibited from working Gruinard Bay and Little Loch Broom during the period from October to March, to protect nursery areas for juvenile herring. However, there is a belief locally that this prohibition is no longer of any value for herring, and that from the point of view of trawl operators it would be more valuable to close the

area in the summer and open it in the winter when it would provide a valuable sheltered area for working in rough conditions.

Due to the nature of trawling, in which the earlier-caught individuals can be hauled for some time before the catch is brought to the surface, a proportion of the prawns caught by trawling are dead or damaged on arrival at the surface and are therefore sold as 'tails', fetching a lower price than live individuals. However, there is a move on the west coast towards supplying the live market, and as a result some trawlers are doing shorter hauls to minimise damage to the catch. This practice has the effect of reducing bycatch of non-target species. However, this development has sparked concern among creel fishermen as it will increase the supply of live prawns and could cause a drop in prices that would make their livelihood unviable.

Trawl-caught prawns are sold to Macrae's of Gairloch, MacRitchie's/Hebridean (Stornoway), Iceberg (Fraserburgh), Sco-Fro (Fort William), and Amazon.

### **3.1.2. The creel fishery**

Creel fishing is carried out throughout the project area, with an estimate nineteen boats operating out of Ullapool, Achiltibuie/Old Dornie, and Camusnagaul on Little Loch Broom. The majority of boats are under ten metres in length, although three boats over ten metres work in the area. Some boats operate far out into the Minch, however most work within the project area, focusing mainly around the Summer Isles, Badentarbet Bay and Horse Sound, Loch Kanaird, inner Loch Broom, Little Loch Broom and inner Gruinard Bay.

Creels are put out ('shot') in fleets of up to 80, usually baited with salted herring. Many creel fishermen voluntarily release egg-bearing or 'berried' females, but there is no requirement to do so. One fisherman is trialling the use of escape hatches to allow undersized prawns to escape easily from creels.

The creel fishery mainly targets *Nephrops*, but during the summer when many females are berried some fishermen shift their focus to velvet crabs, as well as brown and green crabs. Lobsters are caught occasionally. Squat lobsters are caught in some areas, but are considered by-catch and are usually returned to the sea alive.

Creel-caught *Nephrops* are generally larger and in better condition than those caught by trawlers. Carefully handled, and packed individually in 'tubes', they can be sold live which attracts a high price. The catch from the creel fishery in the project area is sold mainly to Michael McLeod in Achiltibuie, and Macrae's of Gairloch. Some live prawns are sold locally to restaurants and hotels during the tourist season, but the vast majority are exported by air or refrigerated vivier trucks to Europe (mainly Spain and Italy) where they are marketed as langoustines.

### **3.1.3. Dredging**

A small number of local prawn trawlers have scallop fishing entitlement, however they are only active very occasionally. The areas to the north and west of the Summer Isles, around the mouth of Little Loch Broom, and around Greenstone Point are dredged regularly by boats from outwith the area.

### **3.1.4. Scallop diving**

A number of local people have made a living through diving for scallops in the project area in the past. At present there are several scallop divers based locally, working both in the area and further afield in the Western Isles and up and down the west coast. A number of other local divers gather scallops from time to time.

### **3.1.5. Winkle gathering**

Collection of winkles from the intertidal area for export to Europe is a source of income for a small number of people in the project area. Winkles are gathered throughout the year, but are targeted especially in the period running up to Christmas, when prices are high. Very little information is available about this fishery, which is at present unmonitored and unregulated. Winkle gatherers are reluctant to share information due to concerns that regulations may be imposed.

### **3.1.6. Crofter creeling**

Crofters and others including visitors have the right to put out a small number of creels provided the catch is for their own private consumption. Such small-scale creeling generally targets lobster and brown crab. As the catch is not sold this activity is unregulated, and the individuals concerned do not require a license. However, there are concerns both that some of the catch may be sold unofficially, and that the creelers may not be aware of legal restrictions such as minimum size and v-notching.

## **3.2. Species information**

### **3.2.1. *Nephrops***

- Female *Nephrops* mature at around three years old, and reproduce annually thereafter. Mating takes place in early summer, and spawning in September. The females carry the eggs under their tails until they hatch in April or May. Egg-bearing females are described as 'berried'.
- *Nephrops* growth rates and size at maturity vary between locations.
- *Nephrops* live in burrows in muddy sediment, from a few metres depth to over 500m, coming out only to feed and find mates. This affords them some natural protection from trawling, which can only catch them when they are on the surface. Berried females rarely come out of the burrow, and are thus protected from capture by trawlers. However, they are frequently caught in creels, to which they are attracted by the bait.
- Recent stock assessments by the Fisheries Research Service indicate that the fishery is sustainable under present levels of effort.

### **3.2.2. *Lobsters and crabs***

- Lobsters and brown, green and velvet crabs spawn in the late summer or early autumn, and the female carries the fertilised eggs under her abdomen until they are ready to hatch in early summer of the following year. The planktonic larvae are carried by the currents until they settle onto the seabed towards the end of the summer. As for *Nephrops*, egg-bearing females are described as 'berried'.
- Size at maturity varies between locations, but lobsters are typically 80-90mm long, while brown crabs tend to be 120-130mm carapace width and velvet crabs 40-50mm carapace width.
- Lobsters and crabs prefer rocky areas with reefs and boulders, although brown crabs will also live in sandy, gravely or muddy habitats. Lobsters and velvet crabs tend not to travel very far, rarely covering distances of more than a few hundred metres. Brown crabs however have been shown to move as much as several kilometres per day, and over a hundred kilometres in the course of several months.
- Recent stock assessments for the West Coast suggest that female lobsters are exploited at the maximum sustainable yield, while males are over-exploited. Crab fisheries in the region are believed to be well below the maximum sustainable yield.

### **3.2.3. *Scallops***

- Scallops are hermaphrodites, releasing both male and female gametes at the same time into the water column where fertilisation takes place. The larvae move with the plankton for several weeks until they settle out onto the seabed. Scallops usually spawn for the first time in the autumn of their second year.
- Scallops can live for more than twenty years. Growth rate varies considerably between locations, and it can take anything from three to over ten years to reach the minimum landing size of 100mm.
- This is a mainly sedentary species, which excavates a shallow recess in mud, sand or gravel; however they are capable of swimming short distances, propelled by jets of water. They can be found in both exposed locations and sheltered sea lochs, to depths of over 180m.
- Recent assessments found the local scallop population structure to be healthy.

### **3.2.4. *Winkles***

- Winkles, or the Common Periwinkle are an intertidal species, living on rocky shores in all but the most exposed locations. They are found mainly on the mid- to lower shore, where they graze on algae.
- They spawn for the first time at around 11-12mm shell height, producing egg-capsules that are carried with the plankton. They can grow to as much as 32mm height.
- There is no information available on the status of the winkle fishery, as the collection of winkles is unregulated.

## **3.3. Gear Conflict**

In general, there is a good relationship between mobile and static gear fishermen in the project area. While there is a certain level of conflict in some areas, most notably around the Summer Isles, it is infrequent and is mainly attributed to the activities of visiting trawlers from outwith the project area. Many local trawlers have experience of working creels, and vice versa, so there is a good mutual understanding between the two groups, and informal systems have developed to minimise conflict.

In effect, this means that certain parts of the project area are by general consent creel-only areas while some other parts are trawl-only, although the boundaries of these areas are fluid and shift over time. The system is not formalised in any way, and local fishermen are in general resistant to formal designation of creel-only or trawl-only zones. The boundaries can be imagined as a linear battleground in which any retreat by one side is immediately reciprocated by an advance from the opposing side.

One negative side effect of this system is that creeling areas tend to be constantly filled with creels, rather than different areas being creeled in rotation as was the traditional practise. This is because if creels are removed from an area trawlers will tend to move in (or if not another creel fisherman will set up his own gear in the area); thus creel grounds are no longer given 'rest' periods as they were in the past.

## **3.4. Fisheries Management in the project area**

### **3.4.1 *Local organisations***

- Ullapool and Assynt Boat-owner's Association (UABA) was established in the mid-1970s. The association was established to represent all local fishermen, regardless of their method of operation. It is a founder member of the West of Four Fisheries Management Group and the Highlands and Islands Fishermen's

Federation, and has supported the work of the Highland Shellfish Management Organisation.

- West of Four Fisheries Management Group (WOFFMG) was established in 1995 as a platform from which voluntary discussion fisheries management issues could be forwarded for consideration by Government. The Group was set up to cover the area west of Four Degrees West, with representation from Northern Ireland to Shetland, as well as east coast operators working on the west. Ullapool and Assynt Fisherman's Association is a member of the group.
- The Highlands and Islands Fisherman's Association (HIFA) represents static gear fishermen in the Scottish Highlands and Islands, in areas where there is not a more local organisation. Its coverage includes the project area, but most if not all local static gear fishermen are members of UABA rather than HIFA. However, HIFA is involved with WOFFMG and with HSMO (see below)
- The Highland Shellfish Management Organisation (HSMO) was established to apply for and administer the powers granted by a Regulating Order with the aims of maintaining and improving the Highland area shellfish fisheries, and achieving long-term sustainability for this important local industry. See section 3.5. below.

### 3.5. Regulations

- There is a seasonal closure from Cailleach Head to Greenstone Point (covering Gruinard Bay and Little Loch Broom) which bans trawling in these areas from October to March. This closure was established to protect juvenile herring, which are believed to use these areas as nursery grounds. However there is some debate locally as to the continuing effectiveness of this closure.
- The Scottish Executive is considering the granting of a Regulating Order for the local management of shellfish (excluding *Nephrops*, winkles and, in the project area, scallops) by the Highland Shellfish Management Organisation. If granted, this Order will hand over much of the responsibility for shellfish fishery management to the local level.
- A several order for scallops exists in Little Loch Broom, and a second has been applied for in Loch Broom.
- The *Nephrops* (prawn) fishery is regulated by quotas. A proportion of the total quota for the UK is allocated to the west of Scotland, and at the time of writing this stands at 11,072 tonnes. Most fishermen are members of Producer Organisations, and it is through these organisations that monthly quota per boat is allocated. The monthly quota is adjusted depending on landings in the previous months. For those fishermen who are not members of producer organisations, the Scottish Executive retains a small part of the total quota, to be allocated to so-called 'non-sector' vessels. The main producer organisation operating in the west of Scotland, including the project area, is the West of Scotland Producer Organisation.
- Crab and lobster fisheries are regulated by minimum landing size, and in some cases additional restrictions (see table 1 below). There is currently no minimum landing size for green crabs.
- The scallop fishery is regulated by minimum landing size (see table 1 below).

Species	Latin name	Min. size	Other restrictions
Norway lobster	<i>Nephrops norvegicus</i>	20mm	
Lobster	<i>Homarus gammarus</i>	87mm long	Maximum landing size 156mm (females only) Landing of v-notched individuals is prohibited.
Brown crab	<i>Cancer pagurus</i>	140mm wide	Landing of berried females is prohibited
Velvet crab	<i>Necora puber</i>	65mm wide	
Green crab	<i>Carcinus maenas</i>	-	
Scallop	<i>Pecten maximus</i>	100mm	
Winkle	<i>Littorina littorea</i>	-	

**Table 1:** minimum landing size and other regulatory mechanisms for shellfish fisheries in Scotland (Source: FRS)

#### **4. Value of this sector**

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An estimated 53 people are employed in commercial fisheries in the project area, 28 in creel fishing, 25 in trawling, and one scallop diver.

In addition, visiting boats not based locally operate in the area from time to time, including creel boats from Aultbea and Gairloch, trawlers from the east coast, and scallop dredgers from the Western Isles. The number of visiting boats making a living from the area is very difficult to quantify.

Seven creel boats employing ten men operate out of Ullapool; three one-man creel boats work out of Ardmair; one two-man boat works out of Little Loch Broom; and eight creel boats, employing thirteen men, operate out of Old Dornie, although at least one of these boats fishes out into the Minch and rarely works within the project area. Around 25 people are employed in the trawl fishery, working on nine boats, all based in Ullapool. At least one scallop diver works in the project area, and an unknown number of individuals are involved in winkle gathering for either all or part of the year.

The commercial fishery supports a number of other jobs alongside those on the boats. At least two local buyers make a living from the produce landed in the project area, and a further five based further afield buy produce landed from the project area. Locally-based buyers employ 3-4 workers to pack and transport produce. Fishermen in the project area repair and maintain their own boats, so there are no full-time jobs in maintenance supporting the fishing industry. Equipment such as nets and creels are bought in rather than made locally.

The non-commercial value of the fishery should not be forgotten. The fact that Ullapool is a busy and picturesque fishing port is a significant element of its attraction for many visitors, who in turn contribute to the local economy. Fishing for home consumption rather than for sale is also significant, especially for communities such as Scoraig where many people endeavour to live a relatively traditional crofting lifestyle and rely on the right to fish or set a small number of creels to provide food for private consumption.

#### **5. Key issues and priorities**

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This section seeks to identify the core assets, main issues, and current priorities for the commercial fisheries sector in the project area.

##### **5.1. Assets**

- Stocks of the principal target species, *Nephrops*, appear to be in a reasonably good state, with no signs of a local decline. However, there is concern that the size of captured prawns has decreased over recent years. Trials of modified creels may provide incentives to make use of the improved design which allows smaller prawns to escape.
- Stocks of other important species including brown crab and velvet crab are not at present showing signs of decline.
- In general, there is a reasonable relationship between mobile and static gear fishermen in the area.
- The Regulating Order being sought by the Highland Shellfish Management Organisation will, if granted, provide an important opportunity for fishermen to play a role in the management and monitoring of shellfish fisheries at a local level.



- The Ullapool and Assynt Fishermen's Association represents the interests of fishermen in the project area, regardless of their method of operation and has shown itself to be an effective organisation.

## 5.2. Issues

- Although the relationships between creelers and trawlers in the project area is generally good, gear conflict does occur from time to time. It is most marked in the Summer Isles area.
- Some creel fishermen voice concern over the impacts of trawling on the seabed and the stocks, although they recognise that, like themselves, trawl fishermen have a living to make.
- Lobsters are found only at low density in the project area, although in the past they were more abundant.
- Despite seasonal fishery closures there is little evidence of recovery in the juvenile herring stocks. Investigation is needed to assess the situation. Local fishermen recognised several distinct stocks of herring with different characteristics (size, spawning season, etc), and the Ullapool area was known for the local 'kanaird herring'. Local fishermen have expressed concern that this local stock may now be extinct.
- The Regulating Order currently being applied for by HSMO will not, if granted, cover *Nephrops* or scallops in the project area. Thus although fishermen would take some control over the management of other shellfish species, they will not have a role in the management of the most economically important species in the project area.
- There are occasional infringements of the seasonal ban on mobile gear in Gruinard Bay and Little Loch Broom.
- There is some conflict between individual trawler operators over the use of the project area; the majority of trawlers fish out into the Minch and fish 'inside' only in rough weather, however some individuals fish 'inside' even when conditions are good.
- There are concerns among creelers that the sale of live prawns caught by trawlers will cause the market price to fall, damaging their livelihood.
- Jambo – despite salvage attempts following the sinking in 2003, half of the original 3,000 tonne cargo of industrial-grade zinc sulphate remains at the wreck site at Eilean à Chàr. The cargo contains traces of toxic heavy metals including cadmium, arsenic and lead which are known to accumulate in locally important commercial species, particularly bivalves and also brown crab. Although initial and subsequent monitoring has not demonstrated widespread contamination assurances are being sought (by Coigach Community Council [others?]) that appropriate monitoring and reporting of the situation is maintained by FRS.
- There is a lack of sound data on fishing, fisheries species and the interactions between fishing activity and the environment in the project area, and more widely on the west coast. In addition, there is a strong feeling locally that the information that *is* gathered is done so entirely independently of the local fishing industry, so that locals do not know what information has been gathered, or what its implications are. This has generated a feeling of exclusion and some resentment, and a lack of faith in the published results.

### 5.3. Priorities

- A glance over the history of fishing in the project area shows a pattern of high exploitation rates followed by declining catches, followed by a shift to a new target species, or a new and more efficient method of capture. The priority for the local inshore fishing industry at present is to ensure that current fisheries are managed sustainably, to ensure that these species too are not fished into decline. This is particularly relevant for species such as Green (shore) crab, which has only begun to be exploited commercially in recent years, and for which there is at present no minimum landing size. The significance of the Highland Shellfish Management Organisation's Regulating Order, if granted by the Scottish Executive, for setting and enforcing local management of shellfish stocks cannot be overstated, and every effort should be made to support the organisation and to ensure that it is able to fulfil its role effectively.
- Efforts should be made to reduce gear conflict in a few 'hotspot' areas

### 5.4. Interaction with other sectors

- There is competition with the aquaculture industry for use of sheltered locations which are important to the commercial fishery during rough weather.
- In general, the interests of the fishing industry and nature conservation coincide, with concern centring on maintenance and protection of fishery species to ensure the long-term sustainability of the industry they support. Nevertheless, there are a number of other concerns including ghost fishing by lost creels and nets, and damage to non-target species and habitats by trawling and dredging. Locals attribute the decline of sea angling in the project area largely to the impacts of trawlers.

## 6. Development opportunities

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### 6.1. Outlook

The scarcity of detailed information on fisheries species, fishing effort and the interactions between commercial fishing and the environment make it extremely difficult to predict the future of inshore fisheries on the scale of this project area.

There are moves towards increased local involvement in fisheries monitoring and management, through initiatives such as HSMO and the Scottish Executive's recently-published *Strategic Review of Inshore Fisheries*. Such developments will give local inshore fishermen a much greater degree of responsibility for management of the resources on which their livelihoods depend.

However, local management will require information (stock assessments, catch statistics and wider environmental effects of fishing activity) to be gathered at a more local scale than it is at present, to ensure that it is as effective as possible.

### 6.2. Development opportunities

- Very significant moves have been made by HSMO, and latterly also by SEERAD to devolve some responsibility for inshore fisheries management to local level. This project may provide an opportunity to trial such local management within a relatively confined area, in partnership with HSMO, and the project may act as a vehicle for attracting funding for such an initiative. Suggestions include;
  - a. Lobster stock enhancement, combined with protection of the central restocked area and v-notching.

- b. Establishment of artificial reefs to provide additional habitat; possibly in conjunction with lobster stock enhancement.
  - c. Trial involvement of local fishermen in setting research and monitoring objectives and in conducting elements of the research.
- There is a generally-held belief, and a body of supporting evidence, indicating that trawling can have a negative impact on seabed habitats and on non-target species. Creeling is not thought to have these impacts to any great extent, being a static and very selective method of fishing. The experience in Loch Torridon suggests that it might be possible with good management and monitoring to certify West Coast creel fisheries as sustainable, and with good marketing thereby attract a premium price. The main environmental prerequisite would be to ensure that the creeling itself was not so intense as to have a negative impact on stocks. Economically, there would be a need to develop a better high-end market for live prawns within the UK, as at present most are exported.

## **7. Conclusions and recommendations**

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It is clear that the main concerns for the inshore fishery in the project area are ensuring the long term sustainability of the industry, and minimising conflict between mobile and static gear fishermen.

In order to achieve this, there is a need for accurate information on the local fishery and stocks, regularly updated through monitoring, and fed back into local management decisions; and for a means of segregating static and mobile gear fisheries. There would also be a need for effective enforcement to back these up. At present the tools are not available for these factors to be achieved readily.

However, some conflict reduction and improved sustainability might be achieved through a zoning approach such as that being explored by the Atlantic Coast Project. For fisheries, this could take the form of defined creel-only and trawl/dredge-only zones. These zones could be complemented by trial 'no-take' areas, providing the sites for an experimental lobster restocking programme, possibly in conjunction with artificial reefs. Such arrangements could have beneficial effects for other sectors such as sea-angling and diving, in addition to the fishing industry.

As the plan produced by the Atlantic Coast Project will be non-statutory, such zonation would have to rely on voluntary agreements; this is a weakness as it is difficult to ensure compliance with voluntary restrictions, especially if the violators are from outwith the project area. Nevertheless, it might provide an opportunity to trial the concept at the local level, and could have a better chance of success if the closed areas and creel-only areas were located close enough to communities that violators can be observed.

However, the lack of clear information on status of stocks and on key areas makes such zonation difficult to achieve, and the process might be given more credibility, especially among the fishermen who would have to implement it, if there was first a research and monitoring period in which local fishermen were involved. Such a step would complement the objectives of HSMO, as well as the recent SEERAD *Strategic Review of Inshore Fisheries*.

In the longer term, the moves towards devolution of responsibility for elements of inshore fisheries management to local management groups (HSMO and the Strategic Review of Inshore Fisheries) could lead to more active and enforceable management

for sustainable fisheries, based on improved data on stocks and population trends as well as geographical segregation.

## **8. Comments and additional information**

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Information in the paper was gathered from published documents, agency records, and local individuals and organisations. If any of the information in the paper is incorrect or incomplete, or if there are significant elements missing, please contact us and changes will be incorporated into the next edition of the paper.

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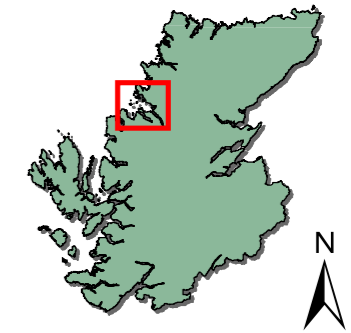
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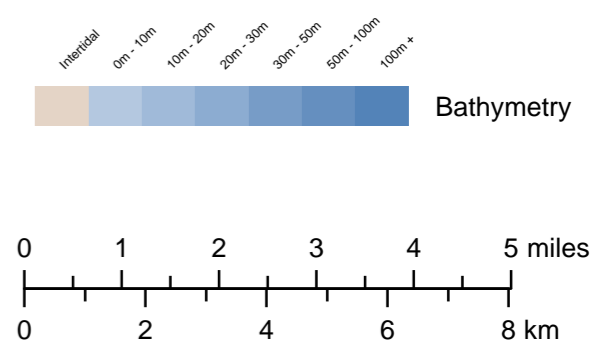
# Atlantic Coast (Wester Ross) Project

## Fisheries



### Legend

- |  |                            |
|--|----------------------------|
| <b>Topic:<br/>Fisheries</b>                                  | <b>Topic:<br/>Map Base</b> |
| Inshore Fishing (Scotland) Act 1984 Seasonal Closure Oct-Mar | Settlement                 |
| Dredging   | river_In                   |
| Trawling   | Main Peak                  |
| Creeling   | Trunk Road                 |
| <b>Topic:<br/>Project Area</b>                               | A Road                     |
| Project Area Seaward Boundary                                | B Road                     |
|  | Other                      |



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