

# INTERTIDAL HARVESTING IN NORTHERN IRELAND

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**Further information**

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## Intertidal Harvesting in Northern Ireland

## Intertidal Harvesting in Northern Ireland

### Background

The main species harvested from the intertidal zone are cockles, mussels, oysters, periwinkles, whelks and razor clams. Whilst cockles and mussels may be gathered using a rake, the remaining species are gathered by hand, either for commercial or personal use. In addition to the shellfish species, intertidal harvesting may also be carried out for the purpose of bait collection for angling, generally for Polychaete worms but also for crabs. Seaweed is also collected from the intertidal for use in horticulture, food, cosmetics and seaweed baths.

Intertidal harvesting is carried out at low tide with, on some occasions, boats being used to travel to islands to collect shellfish. Because of the lack of equipment and/or knowledge required to harvest intertidal shellfish, the sector is open to anyone.

Whilst intertidal harvesting rarely involves the use of mechanical equipment, it still has a negative impact on the environment. Intertidal harvesting can affect the sustainability of stocks as it is not formally regulated meaning there are no log books etc. to monitor what is being lifted from the intertidal area and therefore there is a lack of information on the effort placed on the fishery. There is also a lack of information available on the current status of the stock. This can jeopardise the sustainability of populations.

Also, if there is no minimum landing size then, whilst large animals will be selectively harvested, once these large animals have been removed then smaller specimens can be removed leading to a collapse in the stock. In Scotland, the market demand is for winkles greater than 13mm. However, due to overfishing there is a lack of animals of this size and it has been reported that 5-20% of the catch is now undersized with these small animals being of no economic value (Cashmore and Burton, 1998). In the case of winkles, large animals tend to become infected with trematodes reducing egg production and so the smaller animals have the greatest reproductive capacity. By harvesting small animals the future reproductive potential of the population may be significantly impacted.

Harvesting may also affect the recovery of a population. Smyth *et al.* 2009 found that whilst stocks of the oyster *Ostrea edulis* in Strangford Lough increased to 1.2 million in 2003, by 2005 they had decreased by almost half. Whilst there was a reported *Bonamia* outbreak in the Lough around this time, there was a lack of broken shell, which would be expected to be found in the case of a natural mortality. This, in addition to the lack of medium and large sized oysters present indicated that the stock had been depleted due to unregulated exploitation.

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Intertidal harvesting has the potential to affect non-target species. Indeed, in a Defra report published in 2006 bait digging/collection was found to be of a high threat to marine biodiversity (Boyes *et al.* 2006). Numerous studies have shown that in areas of heavy footfall, marine communities are impacted (Beauchamp and Growing, 1982; Brosnan, 1993; Brosnan and Crumrine, 1994; Ghazanshahi *et al.* 1983; Liddle, 1975). Tramping affects species both directly by crushing and dislodgement and indirectly by impacting the interaction between species (Brosnan and Crumrine, 1994), for example removing predators, or competitors, allowing a species to dominate an area. Winkles are important grazers and if they are removed then the structure of the area may be affected by an increase in algae coverage, thus limiting the space available for other species.

Boulders have been shown to have a well developed zonation with the top of the boulder colonised by brown and green algae, barnacles and limpets. The underside has hydroids, anemones, polychaetes, bivalves, bryozoans, sponges, ascidians, nudibranchs, snails, echinoderms and small decapods (including peeler crabs) (Liddiard, 1989). Whilst experienced harvesters tend to collect animals from the seaweed and around the edges of the stones, inexperienced collectors, or those who move around the coast and have no desire to protect each area, move stones and leave them unturned ((McKay and Fowler, 1997). This exposes shelter seeking species to, air and wave action which can lead to desiccation and displacement as well as an increased chance of predation. In addition, the species on the top of the rock will be damaged when it is rolled over.

Digging for species, particularly worms, affects the sediment of the area. Undisturbed sediment has a well mixed surface layer on top of an anoxic layer. Contaminants can be held in this anoxic layer (Fowler, 1999). Digging brings this anoxic layer to the surface with the contaminants released into the water when the tide passes over the area.

The process of Intertidal harvesting can cause significant disturbance to benthic habitats which can affect the abundance and availability of the prey species available for birds. In addition the presence of people harvesting from the intertidal area causes disturbance to birds reducing the time they spend feeding in the area. Intertidal harvesting for commercial purposes peaks during the winter months when there is an increased market demand and thus better prices for shellfish. This peak in activity coincides with the peak in the presence of overwintering and migrating birds which need to feed continually to survive the winter (Fowler, 1999). Intertidal harvesting means that instead of feeding, birds are expending energy to move to alternative feeding grounds.

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### Northern Ireland Intertidal Fishery

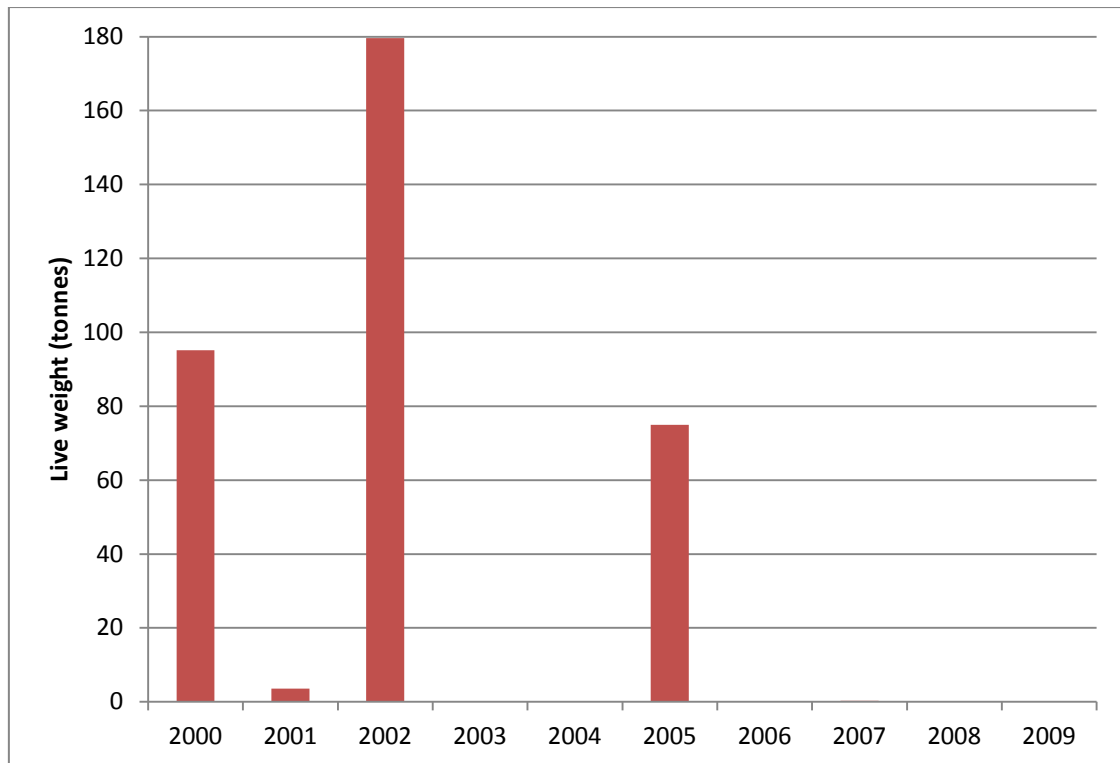
In Northern Ireland the main species harvested intertidally is the periwinkle. In the early 1900's Strangford lough hosted a commercial fishery for winkles with 3 tonnes annually being harvested and sent to mainland UK. A survey carried out between 2004 and 2005 found that today, winkle picking still occurs at high levels around Strangford Lough, with winkle pickers accounting for 87% of all harvesters observed (Johnson *et al.*, 2008).

Landings of periwinkles into Northern Ireland are extremely unreliable as there is no log book to be completed and returned to DARD stating the quantity harvested. However, using the reported landings (Figure 1) a peak in periwinkle landings occurred in 2002 when 180 tonnes were landed with a first sale value of £137,600. The peak in harvesting occurs around Christmas when market demand increases the price from approximately £1,400 to £2,200 per tonne (Cummins *et al.* 2002). In 2002, during the reported peak in periwinkle landings, 95% of the total landings were taken in December.

Unregulated harvesting in Northern Ireland is a major issue, as it is across the rest of the UK and Ireland. At Portnaboe and Port Ganny, during 2009 and 2010 at least 6 different gangs were witnessed harvesting intertidally. In some cases the shellfish are confiscated and returned, however as many of the harvesters are foreign nationals, language barriers can be an issue when explaining the legalities of intertidal harvesting. There are also concerns at the level of unregulated harvesting occurring around Strangford Lough.

Within Northern Ireland there is also a number of intertidal aquaculture sites used for the on-growing of species, most significantly, the Pacific oyster, *Crassostrea gigas*, (there is some on-growing of native oysters and clams). Currently there are several licensed sites in Northern Ireland including 3 in Larne, 1 in Killough, 1 in Dundrum Bay, 2 in Strangford Lough and 3 in Carlingford Lough. In addition to oyster aquaculture there are applications in process for the development of sites to be used for periwinkle aquaculture. There is strong market demand for periwinkles, and aquaculture gives Northern Ireland the potential to maximise growth rates and supply the market as required, thus providing significant economic input.

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**Figure 1** Reported landings of periwinkles in Northern Ireland by intertidal harvesting

### UK and Ireland Management Measures

The foreshore is owned by the Crown Estate and therefore there is a common law right for everyone to have access to the intertidal zone and to gather shellfish. This was highlighted in Northern Ireland in 1998 when a plaintiff appeared in the High Court of Justice claiming his right to collect shellfish from between the low and high water marks for personal use on a section of the foreshore owned by the National Trust. Whilst under the National Trust Act (Northern Ireland) 1946 “*no unauthorised person shall on Trust property knowingly take, molest or wilfully disturb, injure or destroy any living creature or the eggs of any living creature or spread or use any net or set or use any snare or other engine, instrument, lamp, lure or other means for the taking, injury or destruction of any such living creature or its eggs whether in or above trust property*” the common law entitlement to collect shellfish was found to overrule the Act. However, Several Orders remove (‘severe’) the right for the public to harvest from a particular area and allocate the rights of a fishery to a single person, group or organisation. Several Orders have been previously used in Scotland. Regulatory Orders are an alternative way of limiting foreshore harvesting. A regulatory order can be implemented for an area which means that licences are required to fish in that area. The licences may contain conditions which have to be met thus regulating the fishery.



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If someone is being employed to harvest shellfish commercially from the intertidal zone, then the employer must be in the possession of a Gangmasters Licence. The Gangmasters Licensing Authority (GLA) was set up under the Gangmasters (Licensing) Act 2004 to “safeguard the welfare and interests of workers whilst ensuring labour providers operate within the law”. If a person is found to be using workers to collect shellfish from the intertidal without a Gangmasters Licence then they can face a fine or imprisonment. In Northern Ireland there is currently no-one operating a Gangmasters License.

Intertidal harvesting has little regulations, however, the water quality from where the animal has been harvested does have to meet certain standards. All shellfish waters must be designated following guidelines in The Shellfish Waters Directive 2006/113/EC (which replaced Council Directive 79/923/EEC). Under the SWD the water is monitored for pH, suspended solids, salinity, dissolved oxygen, petroleum hydrocarbons, organo-halogenated substances and metals (silver, arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc). Two additional criteria used by the Department of Environment for the designation of shellfish waters are:

- the shellfish harvesting area is established – to be demonstrated by the receipt of a full classification (A-C) awarded by the FSA under the EU Food Hygiene Regulations for the same species in each of the last 3 years; and
- the shellfishery has been active for each of the last 3 years.

The SWD does not protect the quality of shellfish for human consumption; this is regulated by The EU Food Hygiene Regulations (Regulation (EC) No 853/2004 and Regulation (EC) No 854/2004). The former lays down the end product standards that bivalves must meet before being placed on the market for human consumption. Regulation (EC) No 854/2004 lays down the requirements for the competent authority, the Food Standards Agency, in terms of official controls on food of animal origin intended for human consumption. This includes the classification of sites for shellfish prior to harvesting for human consumption. Classification depends on the levels of microbiological contamination detected in flesh samples. There are three classes of site

- Class A – may be collected for direct human consumption
- Class B – for human consumption only after treatment in a purification centre or after relaying
- Class C – placed on the market only after relaying over a long period so as to meet the health standards

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Regulation (EC) No 854/2004 also requires the FSA to monitor classified shellfish harvesting sites for a range of contaminants including e.coli, marine biotoxins, phytoplankton and chemical contaminants.

As laid down in Regulation (EC) 853/2004 and Regulation (EC) 558/2010 "*marine gastropods, should be excluded from provisions on the classification of production areas*". However, they still do need to meet the end-product requirements as set out by the EU Food Hygiene Regulations. Therefore all buyers of gastropods must be registered with Environmental Health so that the correct testing can be carried out prior to being sold to the public. The appropriate documentation is also required, stating the location of the area from which the animals were harvested.

Aside from the environmental health regulations, there is very little formal regulation of the intertidal zone. Whilst whelks and razor clams are protected by a minimum landing size as set out in Council Regulation 850/98, cockles, mussels and winkles have no EU MLS. In England, a number of the IFCA's have introduced MLS for these species as well as increasing the MLS set out by the EU for razor clams and whelks (Table1).

In addition to setting a MLS a number of the IFCA have put additional regulations on aspects of intertidal harvesting. In the jurisdiction of the Southern IFCA if raking for cockles the head width of the rake must not exceed 305mm, with spacing between the teeth of no less than 22.5mm. The Eastern IFCA has set up a similar bye-law for the Humber Estuary but with a tooth spacing of no less than 20mm. Within the Eastern IFCA and North Western IFCA boundaries, a permit is required to fish more than 5kg of cockles or mussels within a 24 hour period.

Some of the IFCA's also operate a closed season with the Southern IFCA having a closed season for periwinkle fishing between the 13<sup>th</sup> May and 15<sup>th</sup> September (inclusive) and the Eastern IFCA having a closed season for cockle harvesting in the Humber between 1<sup>st</sup> May and 31 August (inclusive).

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**Table 1** Minimum landing sizes as set out in Council Regulation 850/98 and those used by the English Inshore Fisheries and Conservation Authorities

Species	EU MLS (mm)	Eastern IFCA	North Western IFCA	Cornwall IFCA	Devon and Severn IFCA	Southern IFCA	Kent and Essex IFCA
Razor clam	100						
Cockles		If can pass through an opening 20mm <sup>2</sup> must be returned	If can pass through an opening 20mm <sup>2</sup> must be returned	If can pass through an opening 20mm <sup>2</sup> must be returned	If can pass through an opening 19mm <sup>2</sup> must be returned	If can pass through an opening 23.8mm <sup>2</sup> must be returned	
Mussels		51	45		50.8	50	50
Periwinkles				If can pass through an opening 16mm <sup>2</sup> must be returned	If can pass through an opening 16mm <sup>2</sup> must be returned		
Whelks	45						
Oyster					If can pass through an opening 57mm <sup>2</sup> must be returned	70	70

## Intertidal Harvesting in Northern Ireland

### Current Management of Intertidal Harvesting in Northern Ireland

Prior to 2001 the Department of Agriculture and Rural Development did not have the power to regulate the intertidal area as it was not specified in the Fisheries Act 1966. The Fisheries (Amendment) Act (Northern Ireland) 2001 gave DARD powers to regulate fisheries up to the high water mark. Following this amendment the Strangford Lough (Prohibition of Fishing for Shellfish) Regulations (Northern Ireland) 2001 was created which prohibits the removal of shellfish “*from or by any means of any mechanically propelled vehicle*” within Strangford Lough. This therefore prohibits the use of tractor dredges for harvesting of cockles and the use of use of quad bikes or other mechanised transport for the removal of animals from the intertidal. Other than this, there is no fisheries legislation restricting intertidal harvesting.

The Department of the Environment have responsibility for the ‘protection of the aquatic environment through the regulation of water quality, and the conservation of freshwater, marine flora, fauna, and hydrological processes. In performing this duty DOE is required to have regard to the needs of industry and agriculture, the protection of fisheries and the protection of public health’. The Marine Division monitors water quality and ensure compliance with the Shellfish Water Directive. In Northern Ireland the SWD is transposed into NI legislation through the Surface Waters (Shellfish) (Classification) (Amendment) Regulations (Northern Ireland) 2009.

Under Regulation (EC) No 854/2004 the Northern Ireland Food Standards Agency must classify sites where shellfish are harvested for human consumption. In Northern Ireland the primary indicator for classification of sites is the e-coli count (Table 2).

Under section 42 of the 1930 Belfast Corporation Act, all shellfish gathering is prohibited along shores of Belfast lough “*it shall not be lawful for any person to gather any shellfish from any part of the foreshore of that portion of Belfast Lough over the waters of which the Corporation have jurisdiction...*”.

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**Table 2** E.Coli tolerances for the classification of shellfish waters in Northern Ireland (information from FSA)

Category	Result (Per 100g Flesh)	Action
<b>A</b>	<230 E.Coli/100g of flesh	May go directly for human consumption if end product standard met.
<b>B</b>	<4600 E.Coli/100g of flesh	Must be subject to purification, relaying in Class A area (to meet Category A requirements) or cooked by an approved method.
<b>C</b>	<46,000 E.Coli/100g of flesh	Must be subject to relaying for a period of at least 2 months or cooked by an approved method.
	>46,000 E.Coli/100g of flesh	Prohibited. Harvesting not permitted.

The Pacific oyster, which is a non-native species, was introduced into Strangford Lough in the 1970's when it was believed it would not be able to breed naturally due to unfavourable conditions. However, naturally settled Pacific oysters have been found around Northern Ireland, proof that the species is capable of reproducing in our waters. To prevent further spread of the Pacific oyster DARD have stipulated that all *C. gigas* used in aquaculture must be sterile. Whilst previously triploid animals were used, having the added advantage of faster growth in comparison to reproductive animals, it has been found that triploids may have the potential to become fertile and therefore their use poses a threat of further spread of the species. The impact of non-native and invasive species is also highlighted in conservation legislation such as the Habitats Directive and Wild Birds Directive as well as animal and plant health legislation.

### Potential Regulatory Measures for Intertidal Harvesting

Table 3 summarises possible actions for the management of intertidal harvesting in Northern Ireland.

## Intertidal Harvesting in Northern Ireland

**Table 3** Possible actions for the management of intertidal harvesting in Northern Ireland

Challenge	Resolution	Possible Action	Reasoning
Obligations to protect Marine Environment	Regulation of harvesting	A daily catch limit to distinguish between commercial as opposed to personal use	Currently there is no definition as to what is classified for personal use as opposed to what is for commercial use. Without this limit being established it will be almost impossible to police for illegal fishing as harvesters can state that it is for personal use. Whilst the common right to collect shellfish from the foreshore cannot be removed completely, it is important that commercial fishing, which has the potential to significantly affect an area, is regulated effectively.
Lack of data available	Information on scale of harvesting needed	Activity reports	Activity reports should be required from commercial harvesters so that there is a form of monitoring over the sector, providing DARD with information about the number of fishermen who harvest from the intertidal and where this takes place.
		Scale of harvesting examined	Currently no information is available on the effort placed on intertidal harvesting or the stocks which are exploited. A study should be carried out to estimate the levels of harvesting around Northern Ireland.
Sustainability of stocks	Protection of stock	Minimum landing size for periwinkles	Currently periwinkles, which are the most commonly harvested species from the intertidal zone, are not protected by a MLS in Northern Ireland. Whilst market demands directly affect the periwinkles lifted, some buyers may still buy undersized animals. Any undersized which are not bought are returned to the shore, or, on occasions, discarded. Setting a legal MLS would prevent buyers from being able to hold undersized specimens, which, in return, would stop harvesters collecting undersized animals. The animals can then be left on the shore to reproduce. Indeed in periwinkles, due to the trematode infection usually incurred by larger animals, it is the smaller animals which are the most fecund and so require protection.
Lack of focus on Inshore	Improved dissemination of information	Public education	The public should be educated on any new regulations and the impacts that intertidal harvesting can have on the environment. Such education may be in the form of a Code of Conduct which includes information on the impacts of harvesting, safety aspects of intertidal harvesting and knowledge of the GLA.

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