

**COMMENTS FOR FIDC ON THE ENVIRONMENT AND
HERITAGE
SERVICE'S SUSTAINABLE SEAWEED HARVESTING
WORKSHOP**

**3rd – 4th October 2006
Newcastle, Co Down**

The purpose of this workshop was to gather together the Regulatory Authority (DoE - Government Officials), Scientists, the Licensing Authority (Department of Agriculture and Rural Development), the Industry (all 5 seaweed collectors/producers in Northern Ireland were there) and environmental groups. The specific aim was to discuss draft documents on “Environmentally Sustainable Seaweed Harvesting in Northern Ireland – an Environment and Heritage Service Position Statement” and a Code of Practice for the Industry.

This was quite an innovative approach. There is virtually no seaweed harvesting in Northern Ireland – just 5 small companies/individuals who hand harvest for a range of users (food additive, seaweed baths, horticulture/agricultural use) and, in anticipation of the industry expanding and more regulation/licensing likely DoE wished to involve industry in a process of stakeholder engagement prior to release of consultation

position statement and Code of Practice documents (I attach the *draft* copies of these documents.

The first day consisted mainly of background information papers (Coastal Zone Management in a changing climate; Overview of the seaweed resource in Northern Ireland; Seaweed harvesting in Ireland - the industry approach; Ecological impacts of seaweed harvesting; Ownership of the shore and wrack rights; Nature conservation legislation and harvesting; Technological developments into seaweed products and aquaculture in Northern Ireland; Seaweed harvesting applied research from the Republic of Ireland).

The main focus in day 2 was on 3 workshops – Legislation and Regulation; Sustainable Harvesting; Ecological impacts. All delegates (including industry reps) discussed all 3 topics in very frank and full discussion. Overall outcomes from the meeting were summarised as:-

1. Legislation
 - Confusion about legal contracts in Northern Ireland. Need for an EHS accessible legal guide.
 - Anxiety about a perceived refusal position.
 - Concern about over and under regulation
 - Gaps in legislation on seaweed harvesting
 - Outside designated sites
 - Below LWM

- Designation doesn't fully reflect what seaweed is (floating vs non-floating etc.)
 - Co-ordinated central body.
- The argument for self-regulation-data exchange; monitoring; policing.
2. Code of Conduct
- Need two types – one a sample list of do's and don'ts for collectors to follow, the other a more detailed list of specifications for companies. Could lead to accreditation (through the ISIO?).
 - There was general support for Mariculture provided it was complementary to wild harvesting; with native species only; Integrated systems have a lot of promise (Scottish example – fish farm/shellfish and seaweed to mop up the nutrients).
3. Environmental Sustainability of Harvesting
- Big gaps in knowledge – what is the resource-biomass/standing stock/productivity of native species; How much driftweed is there.
 - Quality of existing data – need for a modelling approach.
 - What is a natural system? – Almost all are man-modified.
 - Establish no-take zones.
 - Scale is the issue – hand harvesting is OK should we allow mechanical harvesting?.
 - French system is currently unsustainable, Iceland Norwegian, New Brunswick are all examples of good practice.

The summary discussion concluded with Action Points:

1. What is the seaweed resource and where is it.
2. Need a good Code of Practice, developed by the Industry *with* the Regulator.
3. Tidy up application process for consent to harvest.
4. Position statement to be modified and go on website.
5. EHS should alleviate the anxiety within a responsible industry.
6. Laymans Guide for essential legal framework.
7. Central resource pool for Regulation/Licensing.
8. Learn from best practice elsewhere.
9. What about Wrack Rights?
10. Construct a database of what is going on in Ireland – keep all up on new product development.

In many ways the Falklands are in the same position as Northern Ireland were a few years ago and it seems as if Northern Ireland are going about the whole process of regulating and directing a sustainable industry in the right way. Involving the industry at this early stage and highlighting the dearth of the knowledge (they will be commissioning more appropriate research) is an example of good practice it would be well worth following. Wearing my government hat I have very close contacts with those involved in DoE (EHS) who are working on this and they would be very happy to share their experiences and give appropriate advice to the Falklands if it wished to go down this route. Kenny Parker (from my own Department – DARD - Department of Agriculture & Rural Development) is the Licensing Authority in Northern Ireland. He is familiar with the Falklands situation (met with producers on an earlier visit) and would be happy to come along to the proposed C-Mar meeting I referred to in my covering note.

Dr Jim McAdam

APPENDIX 1

ENVIRONMENTALLY SUSTAINABLE SEAWEED HARVESTING IN NORTHERN IRELAND



Environment and Heritage Service Position Statement

This Position Statement was issued in March 2007 and will be reviewed as required.

This document outlines the Environment & Heritage Service (EHS) position on seaweed harvesting in Northern Ireland and was produced through a process of stakeholder engagement.

EHS Mission Statement

Our aim is to protect, conserve and promote the natural and built environment for the benefit of present and future generations.

1. Introduction

Seaweed is a general term for a diverse group of organisms which play an important role in marine ecosystems. These primary producers provide a foundation for marine food webs and important habitats for associated marine flora and fauna.

For hundreds of years, seaweeds have traditionally been collected by man for use as food, medicine and fertiliser. Seaweeds now play a wide and varied role in modern life and are used as a food resource and a source of industrial and pharmaceutical chemicals. Management on an ecosystem-based approach is essential to ensure

that a balance is achieved between the importance of seaweeds in marine ecosystems and their use by humans.

2. Objectives of this Position Statement

In accordance with recent UK Government marine conservation initiatives and the EHS Business Plan, the objectives of this position statement are to:

- Protect and conserve the marine and coastal environment
- Facilitate the sustainable management of seaweed resources in Northern Ireland
- Work in partnership with others to develop a code of practice.

3. Legislation and Designations

3.1 Legislation

The main pieces of legislation (see Box 1 for details) applicable to seaweed harvesting in Northern Ireland are:

- The Environment (Northern Ireland) Order 2002
- The Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995
- The Wildlife (Northern Ireland) Order 1985

Box 1 - Legislation

The Environment (Northern Ireland) Order 2002 (the Order) -

Consent - in accordance with Article 32 of the Order, any owner/occupier wishing to carry out a Notifiable Operation listed in the declaration document must apply for the Department's written consent. If an owner/occupier is refused consent, does not receive a response within three months or is aggrieved by any condition attached to the consent, they have the right of appeal under Article 33(2) of the Order. Any person contravening Article 32 or who intentionally or recklessly destroys or damages an Area of Special Scientific Interest (ASSI) is guilty of an offence under Article 46 of the Order.

Assent – Any Public Body, either undertaking a Notifiable Operation or permitting others to carry out a Notifiable Operation is required to obtain the Department's assent under Articles 39 or 40 of the Order. If the Public Body proposes to carry out the operations otherwise than in accordance with the terms of the Department's assent, it must inform the Department of the date it is proposing to start the operation (which must be after the expiry of 28 days from the Department receiving notice) and how it has taken account of the terms of the assent. This is because it must ensure that the operation gives rise to as little damage to ASSI features as is reasonably practicable. The Public Body will be required to restore the site to its former condition as far as reasonably practicable, if any such damage does occur. If the Public Body does not ensure that the above requirements are adhered to, it will be guilty of an offence under Article 46(2) and (3) of the Order.

The Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (the Habitat Regulations) - The Department uses Articles 32, 39 and 40 of The Environment (Northern Ireland) Order 2002 to provide appropriate management and protection to the site selection features of Natura 2000 sites (Special Area of Conservation and Special Protection Area).

However, Under Regulation 43 of the Habitat Regulations, a Competent Authority before deciding to undertake, or give any consent, permission or other authority for a

plan or project which is likely to have a significant effect on a Natura 2000 site must make an appropriate assessment of the implications for the site in view of that site's conservation objectives. The Authority must agree to the plan or project only having ascertained that it will not adversely affect the integrity of the Natura 2000 site. This is in compliance with Article 6 of the Habitats Directive.

The Wildlife (Northern Ireland) Order 1985

Seaweed harvesting activities could have an adverse effect on some protected wildlife species, including seals and breeding birds. The Wildlife (Northern Ireland) Order 1985 makes it an offence to disturb seals whilst they are hauled out or to disturb wild birds whilst in, on or building a nest. It is also an offence to introduce non-native species (see Section 4.8).

3.2 Designated Sites

Currently, there are 32 Areas of Special Scientific Interest (ASSI's), 6 Special Areas of Conservation (SAC's), 7 Special Protection Areas (SPA's), 5 Ramsar sites, 15 Nature Reserves and 1 Marine Nature Reserve within the coastal zone. Some sites have multiple designations eg Strangford Lough is an ASSI, SAC, SPA, Ramsar site, Nature Reserve and a Marine Nature Reserve.

Sites designated as ASSI's are protected by limiting the activities of owners/occupiers. Notifiable Operations must not be undertaken without first receiving written consent from EHS and third parties must apply for consent from EHS through the owner/occupier.

EHS will refuse consent for any operation/activity that is likely to have an adverse impact upon the feature interests for which a site was declared. These impacts can either be direct (e.g. destruction of habitat) or indirect (e.g. disturbance to feeding birds). In the case of seaweed, if it is either a feature or an attribute of a feature, it is unlikely that consent will be given for anything but insignificant associated activities.

4. Issues

4.1 Wrack rights and the ownership of the shore

The issues surrounding wrack rights are currently being reviewed and will be explored at the workshop on 3rd-4th Oct 2006.

4.2 Sustainability

Sustainable development is defined by World Commission on Environment and Development (1987), as "*development which meets the needs of the present without compromising the ability of future generations to meet their own needs*".

In Northern Ireland, the [Regional Development Strategy](#), [The Northern Ireland Biodiversity Strategy](#), and the Department of the Environment's [Promote Sustainable Living](#) outline the Northern Ireland Government's commitment at a strategic level to

support and promote sustainable development, the effective protection of the environment and biodiversity, and the prudent and sustainable use of natural resources. DoE's strategy document "Promote Sustainable Living" outlines ten guiding principles to sustainable development which includes taking a long-term perspective, respecting environmental limits, employing the precautionary principle and using scientific knowledge.

EHS Position

EHS supports the sustainable use of natural seaweed resources:

- EHS will work with other groups in an integrated approach
- EHS will co-operate with the industry to determine sustainable limits
- EHS will develop a Code of Conduct with the seaweed industry in Northern Ireland

4.3 Biodiversity

Seaweeds play an important role in marine and coastal ecosystems. As primary producers, seaweeds form the basis of many marine food chains and harvesting can affect the overall balance of the ecosystem. It can also have significant effects on the harvested resource and associated species. Seaweed acts as an important habitat for marine and coastal species, providing spawning and nursery grounds for many marine species, including several commercially important fish. The diverse invertebrate and fish communities associated with seaweed also provide an important foraging habitat for birds and mammals.

Seaweed harvesting activities can cause disturbance to wildlife, which can be particularly vulnerable during feeding and breeding periods. Associated harvesting activities can also cause damage to the substrate as a result of the methods used to harvest seaweed or gain access to harvesting sites.

EHS position

EHS is committed to maintaining and conserving Northern Ireland's marine biodiversity.

- EHS will support environmentally sustainable methods of seaweed harvesting and adherence to a code of conduct.
- EHS will refuse consent for any operation/activity that is likely to have a significant adverse impact upon the feature interests for which a designated site was declared.
- EHS will not permit disturbance to any species protected under The Wildlife (Northern Ireland) Order 1985.

4.4 Coastal processes

Seaweed (e.g. kelp beds) and accumulated drift seaweed play an important role in coastal processes by dissipating wave energy and turbulence, thereby protecting the coast from erosion. They also capture sediment and nutrients, improving the food supply for dependent biological communities. In addition, the relatively sheltered seaweed environment provides protection for many marine animals from the extreme physical stresses associated with high energy coasts.

Removal of seaweed may result in higher wave energy impacting the coast, increasing the likelihood of coastal erosion in soft sediment areas.

EHS position

EHS aims to protect coastal environments and their dependant communities by ensuring that natural coastal processes are not adversely interrupted.

- EHS will refuse consent for any operation/activity that is likely to have a significant adverse impact upon the feature interests for which a designated site was declared.
- EHS will not support any harvesting activity which will have a significant adverse impact on coastal processes.

4.5 Harvesting Methods

At present in Northern Ireland, seaweed is harvested largely by non-mechanical methods. However, mechanical harvesting techniques could threaten the marine ecosystem and undermine sustainable use of the seaweed resource.

Species specific hand harvesting methods and rotation cycles are outlined in the Sustainable Seaweed Harvesting Code of Conduct.

EHS position

EHS will support environmentally sensitive methods of seaweed harvesting and adherence to a Code of Conduct

- EHS will not support mechanical harvesting unless it can be demonstrated that it will not have a significant adverse impact on the environment.

4.6 Driftweed harvesting/beach cleaning

Driftweed is a term used to describe seaweed which has been washed ashore by the wind and sea. It was historically collected in Ireland for use as a natural fertiliser. Driftweed is an important component of marine and coastal ecosystems. It plays a crucial role in sand dune development by enabling pioneering salt tolerant plants to establish along the driftline. Driftweed also provides an important food source and shelter for invertebrates, which in turn provide food for birds and mammals.

Some resort beaches are regularly manually or mechanically cleaned, resulting in the removal of driftweed. However, the Blue Flag criteria states that *“algae or other vegetation should be left to decay on the beach unless it constitutes a nuisance”* and *“evidence must be provided to show that recognized local conservation organizations or interests have been approached for advice and consultation and that the interests of protected sites and rare or protected species have been satisfactorily addressed.”*

Driftweed harvesting for commercial purposes and beach cleaning can have a very significant adverse impact on marine and coastal processes and biodiversity.

EHS position

EHS promotes the retention of driftweed on beaches because of its valuable role in sand dune development and as a habitat and food source for animals. The Blue Flag criteria support this position.

- EHS will refuse consent for any driftweed harvesting or beach cleaning operations/activities that are likely to have a significant adverse impact upon the feature interests for which a designated site was declared.
- EHS advises that, in accordance with Blue Flag criteria, driftweed should be left to decay on beaches and a nature conservation organisation should be consulted if it is considered that it constitutes a nuisance.

4.7 Climate Change

Seaweeds are particularly sensitive to temperature and their distribution is largely determined by the limiting effect of temperature. Due to the North Atlantic Drift, Ireland has milder air and sea temperatures than those of other countries at similar latitudes. The mild temperature allows both northern (cold-adapted) species and southern (warm-adapted) seaweed species to coexist. Some of these species are at the edge of their geographical distribution in Ireland and are therefore most likely to respond to climate change. It is predicted that UK temperatures will increase by 1.5°C - 4°C by 2080, which may alter the composition of seaweed communities.

It is also predicted that sea level in the UK will rise by 9-69cms by 2080. Sea level rise could significantly alter the shape of the coastline and depth distributions near to the shore, changing the hydrography of the intertidal and subtidal zones. This in turn would impact on seaweed species distribution and abundance. In addition, predicted increases in the frequency of storm surges and larger waves could also significantly impact on seaweeds through increased offshore erosion.

Due to the fact that many seaweeds are sensitive to temperature and wave exposure, it is important that the impacts of climate change on seaweed resources are taken into consideration when determining sustainable seaweed harvesting levels.

EHS position

- EHS aims to promote the sustainable management of the seaweed resource to ensure that it is best able to adapt to a changing climate.

4.8 Mariculture and non-native species

Marine aquaculture (mariculture) offers an alternative to harvesting natural seaweed populations. However, mariculture can have implications for marine and coastal biodiversity through destruction and degradation of natural habitats. Farmed seaweed can also compete with natural populations for nutrients and space.

The introduction of non-native species for cultivation or the unintentional introduction of non-native species may also have significant impacts on the marine environment. Invasive non-native species can have significant environmental, economic and public health impacts and are now considered to be the second most important threat to global biodiversity. The introduction of species beyond their natural range is rising sharply, due to increased transport, trade, travel and tourism and the greater accessibility of global goods.

In Northern Ireland, it is an offence under the Wildlife (Northern Ireland) Order 1985, to plant or otherwise cause to grow in the wild any plant which is included in Part II of Schedule 9.

EHS position

EHS will support environmentally sustainable mariculture activities.

- EHS will refuse consent for any mariculture operation/activity that is likely to have a significant adverse impact upon the feature interests for which a designated site was declared.
- EHS will not support the introduction of non-native species for the purpose of seaweed harvesting or cultivation in accordance to the Wildlife (Northern Ireland) Order 1985.

APPENDIX 2

Environmentally Sustainable Seaweed Harvesting Code of Conduct

1. Consents

All required consents and permissions must be sought and received from landowners, right holders, EHS and other Government departments and agencies, before harvesting can proceed.

2. Pre-Harvesting Plan

It is good practice to produce a harvesting plan prior to commencement of harvesting activities. This plan should include:

- a) Baseline report
- b) Rotation cycles
- c) Harvesting methods
- d) Environmental protection measures

a) Baseline Report

- The baseline report should be carried out on a site specific basis
- The report should detail the available biomass, percentage cover and the annual growth rate of the target species.
- An assessment should be also be made of the physical attributes of the site eg slope, substrate, wave exposure etc.

b) Rotation cycles

- A sufficient rotational time between successive harvesting in any one site should be allowed, to facilitate the regeneration and recovery of the resource and associated ecosystem. Species specific rotation cycles should be used and guidelines are outlined in Table 1.
- In any given location, a comparable area adjacent to the harvested areas should be left unharvested. This will provide a reproductive pool for re-colonisation of the target seaweed species and associated animals and plants.

c) Harvesting methods

- The quantity of seaweed collected that can be sustainably harvested at each site should be determined on a site by site basis. This will depend on the species

- harvested, available biomass, physical attributes of the site, wave exposure and annual growth rate. As a precautionary measure, the amount of the target species harvested from a given area should be well below its annual growth rate.
- Hand harvesting methods should be used to collect seaweed. These include hand grabbing, raking, or the use of knives or sickles for cutting.
 - Species specific harvesting methods should be used and are outlined in Table 1.

d) Environmental protection measures

- Stones and/or seaweed not harvested should always be returned to their original position.
- Associated fauna inadvertently collected with the target species should be returned to the harvested area, if possible
- Damage and disturbance to the surrounding environment should be minimised e.g. avoid dislodging rocks and boulders, avoid use of vehicles on the shoreline, avoid trampling of associated habitats in the area and use existing slipways and jetties to launch boats.
- Avoid disturbing wildlife e.g. seals and birds.

3. Harvesting Records

It is good practice for harvesters to record and monitor the following information to aid assessment of sustainable management:

- location of harvesting area, including grid reference
- date & time
- tidal state
- date of previous cropping
- harvesting method used
- size of patch cropped
- percentage cover of the target species within the cropped patch using the SACFOR Scale *
- average length of target species within the cropped patch
- reproductive state of target species within the cropped patch
- wet weight of each species harvested
- photographs of the harvesting area before and after cropping

* *SACFOR Scale*

Superabundant – greater than 80% cover

Abundant – 40-79% cover

Common – 20-39% cover

Frequent – 10-19% cover

Occasional – 5-9% cover

Rare – 1-5% cover

Table 1: Harvesting methods

Species	Harvesting cycle	Harvesting method
Knotted wrack (<i>Ascophyllum nodosum</i>)	3-6 years (Baardseth, 1970 (Hill & White, 2004 Marlin)).	Cut at a height of 15-25cm above the holdfast
Carrageen (<i>Chondrus crispus</i>) and False Irish Moss (<i>Mastocarpus stellatus</i>)	Around 18 months (Mathieson & Burns 1975, Rayment & Pizzola 2004)	The frond should be cut above the holdfast
Bladder Wrack (<i>Fucus vesiculosus</i>) and Toothed Wrack (<i>Fucus serratus</i>)	1-3 years (White, 2004(Marlin))	Cut at a height of 15-25cm above the holdfast
Thongweed (<i>Himantalia</i>)	Short recovery period if	

<i>elongata</i>)	relatively small area harvested (Hill, 2004)	
Oarweed (<i>Laminaria digitata</i>), Tangle (<i>Laminaria hyperborea</i>), Sugar Kelp (<i>Laminaria saccharina</i>) and Dabberlocks (<i>Alaria esculenta</i>)	4- 6 years (4 year cycle when harvesting a small area and 6 year cycle when harvesting a larger area) (Wilkinson, 1995)	Allow juvenile plants to remain uncut
Dulse (<i>Palmaria palmata</i>)	5 months if only 50% of the biomass is collected (Hill, 2003)	

References:

Hill, J.M., 2003. *Palmaria palmata*. Dulse. *Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [on-line]*. Plymouth: Marine Biological Association of the United Kingdom. [cited 19/07/2006]. Available from: <http://www.marlin.ac.uk/species/Palmariapalmata.htm>

Hill, J.M. & White, N., 2004. *Ascophyllum nodosum*. Knotted wrack. *Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [on-line]*. Plymouth: Marine Biological Association of the United Kingdom. [cited 19/07/2006]. Available from: <http://www.marlin.ac.uk/species/Ascophyllumnodosum.htm>

Rayment, W.J. & Pizzola, P.F., 2004. *Chondrus crispus*. Carrageen. *Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [on-line]*. Plymouth: Marine Biological Association of the United Kingdom. [cited 19/07/2006]. Available from: <http://www.marlin.ac.uk/species/Chondruscrispus.htm>

White, N., 2004. *Fucus vesiculosus*. Bladder wrack. *Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [on-line]*. Plymouth: Marine Biological Association of the United Kingdom. [cited 19/07/2006]. Available from: <http://www.marlin.ac.uk/species/Fucusvesiculosus.htm>

White, N., 2004. *Himanthalia elongata*. Thongweed. *Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [on-line]*. Plymouth: Marine Biological Association of the United Kingdom. [cited 19/07/2006]. Available from: <http://www.marlin.ac.uk/species/Himanthaliaelongata.htm>

Wilkinson, M. (1995). Information review on the impact of kelp harvesting. *Scottish Natural Heritage Review* No. 34. 54 pp.

Contacts

For information on Designated Sites please contact
EHS, Conservation Designations and Protection Tel: (028) 9054 6595

For information on Policy and Wildlife Order issues please contact
EHS, Biodiversity Unit Tel: (028) 9054 6502

Further reading

Brundtland report on the Environment and Development, 1987

[The Ecosystem Approach.](#)

[Regional Development Strategy](#)

[Northern Ireland Biodiversity Strategy](#)

<http://www.seasideawards.org.uk/uploadeddocs/BeachCriteriaExplanatoryNotes2006.pdf>

Legislation

[The Environment \(Northern Ireland\) Order 2002](#)

[The Conservation \(Natural Habitats, etc\) Regulations \(Northern Ireland\) 1995](#)

[Wildlife \(Northern Ireland\) Order 1985](#)

Ten Main Recommendations from EHS Sustainable Seaweed Harvesting Workshop

Recommendation	EHS Action
1. Position Statement must include a synopsis of the status of the seaweed industry in NI at present	Synopsis included in Section 3
2. Acknowledge knowledge gap	New section (Section 12) included
3. Code of Practice should be developed in partnership with the industry	SLMAC, C-Mar and industry development of Code of Practice included
4. Clear guidance needed on consent process	Consent process included
5. EHS should support a responsible industry with “free riders” being addressed	Section 3 refers to consequential environmental legislation
6. Position Statement should contain a clear statement on the legal framework and Wrack Rights issue	Section 3 has been rewritten and Wrack Rights issue has been included
7. Position statement should list current products and potential developments	Not suitable for inclusion in Code of Practice
8. Position Statement should contain a who’s who of Seaweed interests	Not suitable for inclusion in Code of Practice
9. Position statement should learn from best practice elsewhere and should contain an all Ireland dimension	Entire document draws on best practice elsewhere
10. Position Statement should address under-regulation	EHS have stated in Section 3 that there is a need in the future to introduce regulation

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