Seaweed Harvesting Northern Ireland

Position Statement

May 2026

Department of
Agriculture, Environment and Rural Affairs

An Roinn
Talmhaíochta, Comhshaoil agus Gnóthaí Tuaithe

Depairtment o'
Fairmin, Environment an' Kintra Matthers

www.daera-ni.gov.uk

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Foreword

This document outlines the DAERA position on seaweed harvesting in Northern Ireland.

The Position Statement was initially drafted in 2007; it was subsequently reviewed in March 2024 and finalised in April 2026. In doing so, this Position Statement reflects the evolving marine policy context in Northern Ireland. It reflects the Marine Protected Areas (MPA) Strategy for the Northern Ireland Inshore Region 2025–2030, published in February 2026, which emphasises the effective management, recovery and monitoring of marine habitats, including kelp forests, maerl beds and seagrass habitats. It also aligns with the Northern Ireland Blue Carbon Action Plan 2025–2030 (published April 2025), which recognises kelp forests, maerl beds, seagrass habitats and shellfish beds as blue carbon habitats contributing to climate change mitigation and adaptation.

Practical guidance for seaweed harvesters is set out separately in the *Northern Ireland Seaweed Harvesting Code of Conduct*, which should be read alongside this Position Statement.

Figure 1 - Kelp Forest – County Down

Introduction

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

For hundreds of years seaweeds have been traditionally collected by man for use as food, medicine and fertiliser. Seaweeds still play a wide and varied role in modern life and are used as a food resource and a source of industrial and pharmaceutical chemicals.

Figure 2 – Examples of seaweed uses

Objectives of this Position Statement

The objectives of this Position Statement are to protect and conserve the marine and coastal environment through the:

- Provision of advice on the legislative requirements for seaweed harvesting
- Description of high-level principles and considerations used to assess seaweed harvesting activities, with practical harvesting guidance provided separately through the *Seaweed Harvesting Code of Conduct;* and
- Facilitation of the sustainable management of seaweed resources in Northern Ireland.

Ecological importance of seaweed

Marine algae have several important ecological functions, including:

- providing a habitat for a wide variety of species
- providing foraging habitat and a food source
- acting as a spawning and nursery ground
- providing a refuge from predators
- role in coastal protection though dissipation of wave energy and capturing sediments and nutrients, and
- Carbon (CO_2) sink etc.

Figure 3 - Seaweed offer multiple ecological functions

Legislation

To collect seaweed from the foreshore and/or seabed in Northern Ireland, it is necessary to obtain permission from the relevant landowner. In Northern Ireland, both the seabed (to the 12 nautical mile territorial limit) and the foreshore (the area between the Mean High Water (MHW) and Mean Low Water (MLW) mainly belongs to the Crown Estate, with some remaining area owned by the Ports Authorities, Local Authorities, the National Trust, Royal Society for the Protection of Birds (RSPB) and private landowners. Coastal land above the high-water mark is usually in private ownership.

Further information on the Crown Estate foreshore and seabed ownership, and seaweed harvesting licensing can be found below:

- Coastal Title and Ownership Viewer, The Crown Estate
- Seaweed harvesting | The Crown Estate

Public rights to harvest seaweed

As an extension of the private right to fish and gather items from the sea, members of the public can take fresh seaweed which is floating in the sea. Floating seaweed on the foreshore (occurring as either fresh vegetation or drift) can be harvested as part of this public right when the tide is in. However, seaweed remaining as fresh vegetation or drift when the tide is out cannot be taken, unless some other legal basis for taking seaweed is established. Similarly, seaweed cast above the high-water mark belongs to the owner of the land. There is no public right to take seaweed in these circumstances and another legal basis for claiming a right to take seaweed must be established.

A private individual or individuals who have been gathering seaweed from the shore for a period of time may be able to assert a legal right to do so (sometimes referred to as ‘wrack right’). An informal right of this nature may be recognised where the person or persons concerned have been taking seaweed from a particular part of the shore for more than 20 years. However, such rights are not unrestricted. While taking small quantities of seaweed for personal use is allowed, taking large quantities which might damage the seaweed ‘crop’ in a particular area or have an adverse effect on the local marine environment is not permissible under nature conservation laws.

Figure 4 – Seaweed hand gathering for personal uses (left) and commercial purposes (right)

Relevant legislation

Seaweed harvesting is not currently regulated through a specific licensing or permit system as such. However, it is controlled by the following legislation in terms of its impact on nature:

- The Marine and Coastal Access Act 2009[1]
- The Marine Act (Northern Ireland) 2013[2]
- The Environment (Northern Ireland) Order 2002[3]
- The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)[4]
- The Wildlife (Northern Ireland) Order 1985 (as amended)[5]
- The Wildlife and Natural Environment Act (Northern Ireland) 2011[6]

DAERA, as the Competent Authority, oversees and enforces environmental policy and legislation in Northern Ireland. Further information on the relevant legislation is given below.

Marine and Coastal Access Act 2009

The Marine and Coastal Access Act 2009 aims to ensure sustainable use of UK seas while strengthening the protection of marine and coastal environments. Within DAERA Marine and

[1] Marine and Coastal Access Act 2009
[2] Marine Act (Northern Ireland) 2013
[3] The Environment (Northern Ireland) Order 2002
[4] The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995
[5] The Wildlife (Northern Ireland) Order 1985
[6] Wildlife and Natural Environment Act (Northern Ireland) 2011

Fisheries Division, the Marine Licensing Branch is responsible for the licensing of activities involving construction, deposition or removal of substances or objects within Northern Irish territorial waters.

Hand harvesting of seaweed taken directly from the seabed for commercial or personal use does not normally fall within the scope of marine licensing requirements. However, where a vehicle, vessel, marine structure or floating container is used to remove harvested, seaweed, such activity is subject to licensing controls. This should be distinguished from the removal of seaweed, typically drift material, for purposes such as beach cleaning by or on behalf of a public authority, which constitutes an exempted activity[7] under Article 21 of the Marine Licensing (Exempted Activities) Order (Northern Ireland) 2011. Such exempted removal does not require a marine licence but must be notified to the licensing authority, unless it is likely to have a significant effect on a protected site, in which case a marine licence may still be required. A consent under the Environment (Northern Ireland) Order 2002 may also be necessary where the activity could affect an Area of Special Scientific Interest (ASSI).

Marine Protected Areas (MPAs)

Many coastal areas have protected status, such as Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Marine Conservation Zones (MCZs) and Areas of Special Scientific Interest (ASSIs). Collectively these sites are referred to as Marine Protected Areas (MPAs). These are detailed below.

In order to collect seaweed from designated sites, either the landowner (for ASSIs) or the applicant (for SACs, SPAs and MCZs) must obtain permission from DAERA Northern Ireland Environment Agency (NIEA).

Information on Marine Protected Areas can be found using the DAERA Marine Map Viewer:

- Northern Ireland Marine Mapviewer (daera-ni.gov.uk)

[7] The Marine Licensing (Exempted Activities) Order (Northern Ireland) 2011

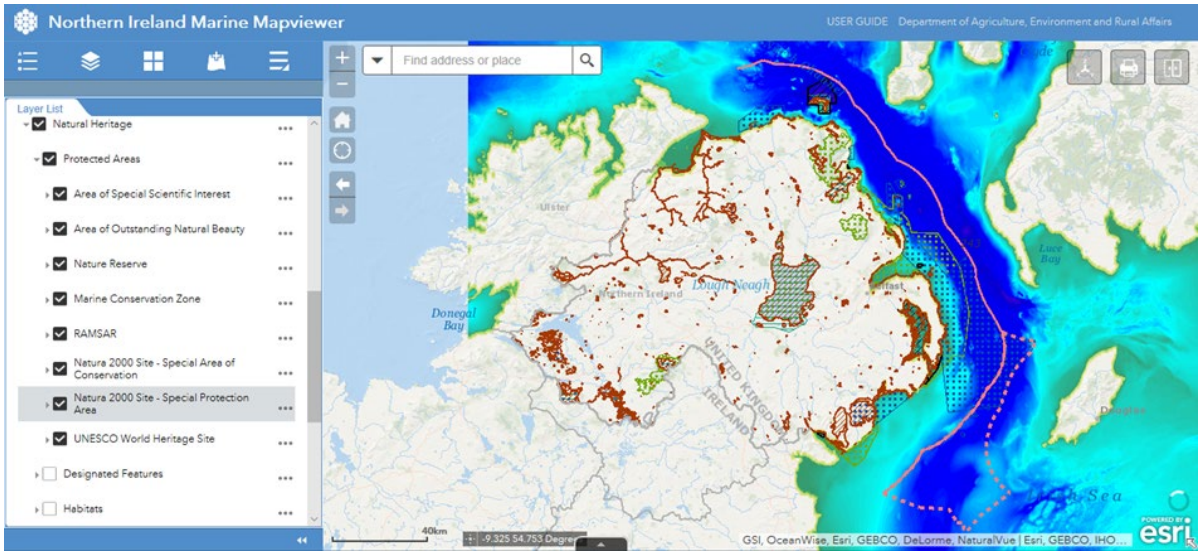


Figure 5 – Northern Ireland Marine Mapviewer showing the protected sites network

Within Northern Ireland territorial waters (out to 12 nautical miles) a network of MPAs have been designated in order to:

- Protect, conserve and restore species, habitats and ecological processes which have been adversely affected by human activities or under threat and/or decline
- Prevent degradation of, and damage to protected species, habitats and ecological processes, following the precautionary approach
- Protect and conserve areas that best represent the range of species, habitats and ecological processes in the maritime area.

In assessing permissions within MPAs, DAERA will consider whether proposed seaweed harvesting activities could hinder site integrity, recovery objectives or ecosystem function as set out in the Marine Protected Areas Strategy for the Northern Ireland Inshore Region 2025–2030[8].

Each designation is regulated under separate legislation as follows:

The Environment (Northern Ireland) Order 2002

The Environment (Northern Ireland) Order 2002 is designed primarily to protect areas deemed to be particularly important for nature conservation at a national level which are formally designated by DAERA as ASSIs. Almost all coastal areas in Northern Ireland are

[8] Marine Protected Areas Strategy for the Northern Ireland Inshore Region 2025-2030 | Department of Agriculture, Environment and Rural Affairs

either in or near one or more designated sites. Each ASSI contains specially protected features which are sensitive to activities, which may have a negative impact on their conservation status. These are called ‘notifiable activities’ and require special permission from NIEA before they can be carried out. NIEA has an online service for operations and activities requiring this permission.

In most cases, the person responsible for carrying out the seaweed harvesting or the landowner will apply for permission (termed ‘Consent’), however, in some instances the local council/public authority may apply for permission (termed ‘Assent’) on behalf of the harvester. In both situations there must be permission from the landowner to apply for this permission.

In assessing applications for Consent or Assent, NIEA will determine, in consultation with DAERA Marine and Fisheries Division, whether the activity is likely to damage protected features within the ASSI. Where an activity is permitted, this must be carried out in a way as to give rise to as little damage as is reasonably practicable. NIEA may attach certain conditions to the Consent/Assent to ensure damage is avoided or mitigated.

The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)

The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (hereafter referred to as the ‘Habitats Regulations’) provide for the protection of areas considered to be of particularly importance at European level. These are formally designated by DAERA as SACs and SPAs.

This network of sites supports the natural habitat types and species listed The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995, to maintain them or, where appropriate, restore them to a favourable conservation status in their natural range.

If the seaweed collection is to take place within an SAC or SPA, then the competent (Public) authority must undertake a Habitats Regulations Assessment (HRA).
Where the removal of seaweed is found to have a potentially significant adverse impact on the protected area, the Competent Authority must not permit the activity, unless it can be demonstrated that the impact can be avoided, or mitigated or there are over-riding reasons of public interest which can justify the activity. This process is carried out in consultation with DAERA Marine and Fisheries Division.

The Marine Act (Northern Ireland) 2013

The purpose of the Marine Act (Northern Ireland) 2013 is to ensure the Department acts in a way which contributes to the achievement of sustainable development in Northern Ireland. As part of this contribution DAERA must designate Marine Conservation Zones (MCZs) to safeguard vulnerable or unique marine species and habitats of national importance in the Northern Ireland inshore region to contribute to an ecologically coherent UK network of Marine Protected Areas (MPAs).

Where the removal of seaweed is found to have a potentially significant adverse impact on the MCZ, the Competent Authority must not permit the activity unless it can be demonstrated that the impact can be avoided, mitigated or there are over riding reasons of public interest which can justify the activity. The process is carried out in consultation with DAERA Marine and Fisheries Division.

The Wildlife and Natural Environment Act (Northern Ireland) 2011

The Wildlife and Natural Environment Act (Northern Ireland) 2011 places a statutory biodiversity duty on public bodies, including DAERA, requiring them to further the conservation of biodiversity in the exercise of their functions. In the context of activities such as seaweed harvesting, this duty requires consideration of the potential impacts on marine and coastal ecosystems, including priority habitats and species, and promotes the sustainable management of natural resources to ensure that biodiversity is conserved and, where possible, enhanced.

Protected Species

When carrying out activities in the marine environment, everyone has a responsibility to ensure that protected species are not adversely impacted.

Seaweed collection often takes place in or near areas that may be used by protected species for resting, feeding and breeding. Different species are afforded varying levels of protection under the legislation outlined below.

A wildlife licence may be issued by DAERA to authorise that would otherwise constitute an offence under nature legislation. A licence will only be granted where the activity satisfies the requirements set out in the relevant legislation. In all cases, the use of mitigation measures

should be considered in the first instance to reduce the likelihood of an offence occurring. A wildlife licence should be considered as a last resort to enable the activity to proceed.

- Marine Wildlife Licensing | Department of Agriculture, Environment and Rural Affairs

Figure 6 - Protected species: Basking shark (Cetorhinus maximus) (left) and Common dolphin (Delphinus delphis) (right)

The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)

Under this legislation it is an offence to deliberately disturb, capture, injure or kill a wild animal of a European Protected Species included to Schedule 2 of these Regulations. This includes all species of dolphin, porpoises and whales as well as marine turtle species.
It is also an offence to:

(a) Deliberately obstruct access to a breeding site or resting place of such an animal
(b) Damage or destroy a breeding site or resting place of such an animal
(c) Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal of a European protected species, or any part of, or anything derived from, such an animal.

The Wildlife (Northern Ireland) Order 1985 (as amended)

Under the Wildlife (Northern Ireland) Order 1985 (as amended) it is an offence to intentionally or recklessly disturb, capture, injure a common seal (*Phoca vitulina*), grey seal (*Halichoerus grypus*) or basking shark (*Cetorhinus maximus*), angel shark (*Squatina squatina*), common skate (*Dipturus batis*), short snouted seahorse (*Hippocampus hippocampus*), spiny seahorse (*Hippocampus guttulatus*), spiny lobster (*Palinurus elaphas*) and fan mussel (*Atrina fragilis*).

It is also an offence to intentionally or recklessly:

- damage or destroy, or obstruct access to, any structure or place which any such animal uses for shelter or protection
- damage or destroys anything which conceals or protects any such structure
- to have in possession or control any live or dead or any part of, or anything derived from, such an animal, or
- disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.

In addition, it is also an offence to intentionally or recklessly,

- disturb the common seal (*Phoca vitulina*), grey seal (*Halichoerus grypus*) or basking shark (*Cetorhinus maximus*) at any time or
- to sell or transport any Schedule 7 animal dead or alive at any time. This includes common seal (*Phoca vitulina*), grey seal (*Halichoerus grypus*), basking shark (*Cetorhinus maximus*), short snouted seahorse (*Hippocampus hippocampus*), spiny seahorse (*Hippocampus guttulatus*), spiny lobster (*Palinurus elaphas*), common sea-urchin (*Echinus esculentus*) and fan mussel (*Atrina fragilis*).

Figure 7 – Harbour (common) seals (Phoca vitulina) hauling out (left) and Grey seal (Halichoerus grypus) pup (Right) during Autumn to early winter

Marine Non-native Invasive Species

Non-native species can have an extremely negative impact on native ecosystems. Under Article 15 of the Wildlife (Northern Ireland) Order 1985 (as amended) it is an offence to release or allow to escape into the wild any plant or animal which,

(a) is of a kind which is not ordinarily resident in and is not a regular visitor to Northern Ireland in a wild state (or is a hybrid of any animal of that kind), or

(b) is included in Part I of Schedule 9 (or is a hybrid of any plant or animal included in that Part).

During harvesting it is important to be aware of non-native species and to follow some simple principles which help to minimise their spread and release into the wild. For more information on how to reduce the impact of non-native species please see the attached Code of Practice.

Figure 8 – Invasive non-native species: wireweed (Sargassum muticum) (left) and wakame (Undaria pinnatifida) (right), illustrating the potential spread of non-native seaweeds along the Northern Ireland coastline.

Figure 9 – Information leaflet for the Carpet Sea Squirt Invasive Species

Marine Policy

In addition to relevant legislation, seaweed harvesting is governed by local and national marine policy. The **UK Marine Policy Statement (MPS)**[9] is the framework for preparing Marine Plans and taking decisions affecting the marine environment. It contributes to the achievement of sustainable development in the United Kingdom marine area and has been prepared and adopted for the purposes of section 44 of the Marine and Coastal Access Act 2009.

The MPS will facilitate and support the formulation of Marine Plans, ensuring that marine resources are used in a sustainable way in line with the high-level marine objectives and will:

Promote sustainable economic development;

- Enable the UK's to move towards a low-carbon economy, in order to mitigate the causes of climate change and ocean acidification and adapt to their effects
- Ensure a sustainable marine environment which promotes healthy, functioning marine ecosystems and protects marine habitats, species and our heritage assets, and
- Contribute to the societal benefits of the marine area, including the sustainable use of marine resources to address local social and economic issues.

When making decision regarding permissions and licenses every Competent Authority must consider the MPS.

Figure 10 - Coastal harbour and nearshore marine environment in Northern Ireland

[9] 10164 UK Marine Policy Statement (MPS)

The Draft Marine Plan for Northern Ireland

The Marine and Coastal Access Act 2009 (MCAA) and the Marine Act (Northern Ireland) 2013 (The Marine Act), require DAERA as the Marine Plan Authority (MPA), to prepare marine plans. The draft Marine Plan for Northern Ireland[10] has been developed within the framework of the UK Marine Policy Statement. This will facilitate the sustainable development of the marine area.

The draft Marine Plan is a material consideration by public authorities taking decisions which affect or might affect the marine area. It will also be used by anyone who has an interest in the marine area, including those bringing forward proposals and stakeholders who wish to comment on such proposals.

Impacts of seaweed harvesting

Biodiversity

Biodiversity is the variety of all living things. Seaweeds are primary producers which form the basis of many food chains and play an important role in marine and coastal ecosystems. Living seaweed acts as an important habitat for marine and coastal species and can provide spawning and nursery grounds for many marine species, including several commercially important fish. The diverse invertebrate and fish communities associated with seaweed beds also provide an important foraging habitat for birds and mammals.

Figure 11 – Encrusting Coralline algae(left) and Fucoid canopy

[10] Marine Plan for Northern Ireland | Department of Agriculture, Environment and Rural Affairs

Driftweed is a term used to describe seaweed which has been washed ashore by the wind and sea. It is an important component of the coastal ecosystem, providing food and shelter for invertebrates, which in turn act as a food source for other species. Harvesting living seaweed or driftweed can affect the overall balance of the marine ecosystem as well as the availability of the harvested species itself. Evidence suggests that the decline of *Laminaria digitata* along the French coast is likely driven by a combination of factors, including increasing seawater temperatures associated with climate change and pressures related to harvesting, alongside other environmental influences[11, 12, 13] .

Seaweed harvesting activities can also disturb wildlife and cause damage to the substrate because of the methods used to harvest seaweed or gain access to harvesting sites. Many shore animals and plants are heavily dependent on large seaweeds to protect them from desiccation. Removal of biomass leads to habitat loss for species such as crabs and other crustaceans, some of which are commercially important.

Figure 12 - Dunlin (Calidris alpina) and Purple Sandpiper (Calidris maritima) foraging on seaweed

[11] Environmental factors and commercial harvesting: exploring possible links behind the decline of the kelp Laminaria digitata in Brittany, France
[12] pone.0066044 1..10
[13] Sustaining Kelp Resources: The Challenges of Harvesting Laminaria digitata | Springer Nature Link

Coastal Processes

Living seaweed (e.g. kelp beds) can play an important role in coastal processes by dissipating wave energy and turbulence, thereby protecting the coast from erosion. It also captures 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 large volumes of living seaweed may result in higher wave energy impacting the coast, increasing the likelihood of coastal erosion in soft sediment areas.

Harvesting or clearance of drift seaweed ('beach cleaning')

Driftweed can play a role in sand dune development by enabling pioneering salt tolerant plants to establish along the driftline. Removal of driftweed can adversely affect this process. Furthermore, driftweed provides an important habitat and food source for invertebrates and higher organisms. Some beaches are regularly cleaned, either manually or mechanically, resulting in the removal of driftweed. However, beach cleaning can have a very significant adverse impact on marine and coastal processes and biodiversity. DAERA advises against complete clearance of drift seaweed from strandlines and would recommend having larger proportions in place during winter months, when overwintering birds may depend on it as a food source. Consent must be sought from the Department for beach cleaning.

Figure 13 - Driftweed

Climate change

Climate change is projected to result in hotter, drier summers and warmer, wetter winters in Northern Ireland, with an associated increase in the frequency and intensity of extreme events, including droughts, heatwaves, and heavy rainfall leading to flooding. For the Northern Ireland marine environment, the impacts of climate change include relative sea level rise, increased seawater temperatures, ocean acidification and changes in ocean circulation. Understanding the impacts and effects of climate change is key to maintaining a healthy environment. This will influence how we use and value our coasts and seas both now and in the future.

Table 1 - The latest set of projected changes in climate for Northern Ireland come from the 2018 Climate Projections shown in the table below.

	2050s RCP2.6 (50th percentile)	2050s RCP6.0 (50th percentile)	2080s RCP2.6 (50th percentile)	2080s RCP6.0 (50th percentile)
Annual Temperature	+1.1°C	+1.2°C	+1.2°C	+2.1°C
Summer Rainfall	-11%	-11%	-10%	-15%
Winter Rainfall	+3%	+3%	+7%	+10%
Sea level rise (Belfast)	+14cm	+16cm*	+27cm	+58cm

Table source CCRA-Evidence-Report-Northern-Ireland-Summary-Final.pdf (ukclimaterisk.org)

Adaptation is necessary to deal with the potential impacts of these changes which are already underway. Sea level rise, increased flooding and coastal erosion will lead to increased vulnerability of habitats and significant change along parts of the coast. The Climate Change Act (Northern Ireland) 2022 places requirements on Northern Ireland departments and public bodies to plan for climate change through carbon budgets, Climate Action Plans and reporting duties, including assessment of climate risks and adaptation responses. Adapting to the impacts of climate change is now a priority for determining the sustainability of activities on the coast.

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. These projected impacts are consistent with findings from the UK Climate Change Risk Assessment, which identifies significant risks to coastal environments, habitats and species from sea-level rise, flooding and extreme weather.

Seaweeds are particularly sensitive to temperature, and their distribution is largely determined by the limiting effect of temperature. Scientific evidence shows that ocean warming, marine heatwaves and acidification can alter the composition, abundance and geographic ranges of seaweed communities[14]. 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) seaweed 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 uncertain how particular species will react to a changing climate. However, evidence has indicated that the distribution of some seaweed species in Ireland has already changed, possibly because of climate change. More broadly, global evidence indicates climate-driven shifts in seaweed distribution, including range contractions at warm limits and expansions at cooler limits. To determine how seaweeds are responding to a changing climate, DAERA will contribute to long term data sets on seaweed distribution and abundance and will review its position on seaweed harvesting accordingly.

Government in Northern Ireland is committed to implementing the UK Climate Change Programme, both in terms of cutting greenhouse gas emissions and examining likely impacts and adaptations which need to be considered. This commitment is underpinned by the Climate Change Act (Northern Ireland) 2022, which sets a legally binding target of at least 100% reduction in net greenhouse gas emissions (net zero) by 2050, alongside interim targets (including at least 48% reduction by 2030) and a system of carbon budgeting and climate action planning.

[14] Frontiers | Editorial: Impacts of climate change on seaweeds

Blue Carbon habitats

Blue carbon habitats marine and coastal habitats that are important for carbon capture and storage. Examples include saltmarsh, kelp forests, maerl, seagrass beds, shellfish beds and subtidal sediments

In addition to providing essential benefits for climate change adaptation and mitigation, blue carbon habitats also provide a range of other high-value ecosystem services, such as protection against coastal erosion and flooding, habitats to support wider biodiversity, nursery grounds for commercially important fish species, and benefits for societal wellbeing.

The importance of blue carbon habitats and their contribution to climate change adaptation and mitigation is now globally recognised. If these habitats are degraded or damaged, their carbon sink capacity is lost, and the stored carbon may be released back into the environment.

Kelp forests are a blue carbon habitat, with carbon captured in the living material throughout the seaweeds' photosynthesizing lifespan. The flows of carbon capture and release in kelp are not well understood globally, although the wider associated benefits of kelp forests are. They are valuable habitats and nurseries for other species; they are a vital global primary producer; and they are efficient storm damage buffers.

Kelp forests are recognised as a blue carbon habitat within the Northern Ireland Blue Carbon Action Plan 2025–2030. Proposals to harvest kelp will therefore be carefully assessed where activities may undermine carbon storage, ecosystem services or restoration objectives identified within the Action Plan.

This does not represent a presumption against harvesting but reflects a precautionary approach where evidence requirements may be elevated in areas identified as important blue carbon habitats.

Work is currently ongoing to map current extent of blue carbon habitats, including extent mapping and predictive modelling for kelp forest, as well as to determine potential locations for blue carbon habitat restoration and creation.

Seaweed species

The below table provides a list of the seaweed species commercially harvested in Northern Ireland. Annex II provides general advice on the sustainable harvesting of a number of these species. This advice is based on the best evidence currently available and is not exhaustive.

Table 2 - List the seaweed species commercially harvested in Northern Ireland

Phylum	Species harvested in Northern Ireland	Common name	State harvested
Green algae	*Ulva* spp.	Sea lettuce	Attached
Brown algae	*Fucus serratus*	Serrated wrack	Attached
	Fucus vesiculosus	Bladder wrack	Attached
	Ascophyllum nodosum	Knotted wrack	Attached
	Himanthalia elongata	Thongweed, sea spaghetti	Attached
	Laminaria digitata	Oarweed, kelp	Drift
	Laminaria hyperborea	Oarweed, kelp	Drift
	Saccharina lattisima	Sugarkelp	Drift and attached
	Alaria esculenta	Dabberlocks	Attached
Red algae	*Mastocarpus stellatus*	False Irish moss	Attached
	Chondrus crispus	Carrageen moss, Irish moss	Attached
	Palmaria palmata	Dulse	Attached
	Porphyra spp.	Laver, sloke, nori	Attached
	Corallina officinalis		Attached

Figure 14 - Some seaweed species commercially harvested in Northern Ireland: Ascophyllum nodosum (left) and Himanthalia elongata (right)

Sustainability

Sustainable development is defined in the Northern Ireland Sustainable Development Strategy[15] 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 Northern Ireland Executive’s Sustainable Development Strategy and the Regional Development Strategy 2035[16], outline the Government’s strategic commitment to promoting sustainable development, protecting the environment, and ensuring the prudent use of natural resources.

In addition, the Department of Agriculture, Environment and Rural Affairs (DAERA) has consulted on a draft Nature Recovery Strategy for Northern Ireland to 2032[17], which will fulfil the statutory requirement for a Biodiversity Strategy under the Wildlife and Natural Environment Act (Northern Ireland) 2011. This emerging strategy sets out actions to halt and reverse biodiversity loss, promote the sustainable use of biodiversity, and ensure that nature recovery is integrated across government policy and decision-making.

Figure 15 – seaweed hand gathering

[15] NI Executive Sustainable Development Strategy - 'Everyone's Involved' | Department of Agriculture, Environment and Rural Affairs
[16] Regional Development Strategy 2035 | Department for Infrastructure
[17] Draft Nature Recovery Strategy - Extended Consultation Period | Department of Agriculture, Environment and Rural Affairs

Harvesting seaweed sustainably

If not carried out sensitively harvesting of seaweed can have detrimental effects on numerous species as well as on physical processes. In Northern Ireland, seaweeds are largely harvested using handheld tools. DAERA advises that this technique is the least damaging ecologically and that mechanical harvesting techniques could threaten the marine ecosystem, undermining the sustainable use of the seaweed resource.

DAERA advises that all seaweed harvesting in Northern Ireland should follow the principles set out in the *Seaweed Harvesting Code of Conduct*, including measures to minimise disturbance, avoid over-harvesting, protect associated species, and reduce biosecurity risks.

For any commercial harvesting activity, data should be obtained on standing crop biomass of the species to be harvested, as well as percentage coverage, reproductive season and growth season information. The following factors should also be considered when evaluating potential impacts of any seaweed harvesting operation:

- Associated species and nursery function
- Loss of important habitat for associated species
- Specific vulnerabilities
- Collection methods and equipment
- Frequency of harvesting
- Effect of repeated harvesting on the species – loss of stocking algae
- Effect of harvesting on community composition
- Loss of seaweed functions (i.e. wave dissipation)
- Access issues (trampling and disturbance to wildlife)
- Following any quotas and recording biomass taken (species, date and location)

Figure 16 – Commercial seaweed harvesting

Mariculture and Non-native species

Marine aquaculture (mariculture) offers an alternative to harvesting natural seaweed populations. There are positive aspects of mariculture, such as creating new habitats for marine organisms and contributing to the removal of excess nutrients in coastal waters and estuaries. However, it can also have negative implications for marine and coastal biodiversity through the destruction and degradation of habitats and competition 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 (as amended), to plant or otherwise cause to grow in the wild any plant which is included in Part II of Schedule 9.

Knowledge Gaps

There is currently limited information on the biomass, distribution and productivity of living seaweed and driftweed around the Northern Ireland coastline, although some information exists e.g. biomass estimates for *Ascophyllum nodosum* in Strangford Lough and the Ards Peninsula. Very little research has been carried out in Northern Ireland on the direct and indirect effects of harvesting on biodiversity and coastal processes. In addition, there is a lack of specific information on the carrying capacity of marine ecosystems to support seaweed harvesting and mariculture.

This position statement is based on the best available knowledge to date and will be reviewed as our knowledge base expands.

Northern Ireland Seaweed Harvesting Code of Conduct

Department of Agriculture, Environment and Rural Affairs
An Roinn Talmhaíochta, Comhshaoil agus Gnóthaí Tuaithe
Depairtment o' Fairmin, Environment an' Kintra Matthers
www.daera-ni.gov.uk

DAERA advises that anyone harvesting seaweed in Northern Ireland should follow this Code, whether harvesting is for personal or commercial purposes.

Before you harvest – key requirements

- Obtain permission from the landowner first
- Consult DAERA Marine and Fisheries Division and your local Council before harvesting
- Check if the site is within an ASSI, SAC, SPA or MCZ - NI Marine Map Viewer
- Harvest seaweed only by hand – mechanical methods must not be used
- Do not use vehicles on the foreshore unless a Marine Licence has been issued
- It is an offence to cause the spread of non-native species
- It is an offence to cause disturbance to protected species, including birds and marine mammals

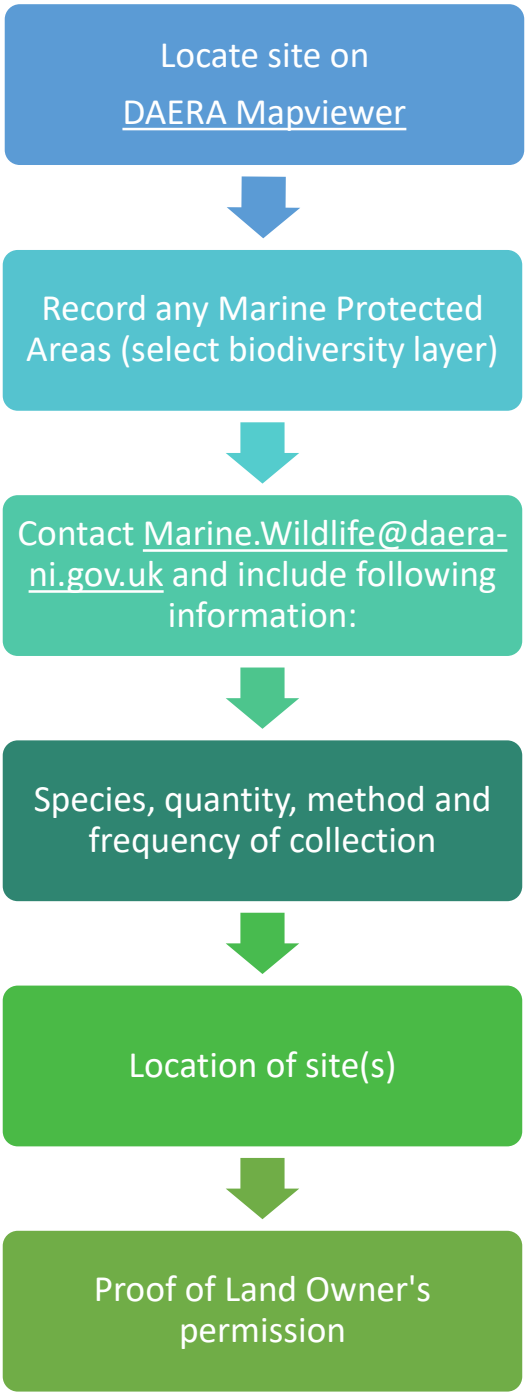
Harvesting advice

- Collect less than one third of any individual plant to allow regrowth
- Cut fronds well above the point of growth and always leave the holdfast attached
- Harvest sparsely, taking only a small proportion of standing stock
- Rotate harvesting areas and allow time for recovery (up to several years)
- Harvest during active growth seasons and after reproduction where possible
- Ensure a substantial proportion of mature plants remain
- Keep records of species, volumes, dates and locations harvested

Protect wildlife and habitats

- Keep at least 100 m away from wildlife, especially nesting birds (Mar–Jul) and seal pup season (Aug–Jan)
- Minimise trampling on the shore and avoid taking bycatch
- Replace rocks carefully in their original position
- Follow Check, Clean, Dry biosecurity principles when moving between sites
- Take extra care when harvesting non-native species to avoid spreading spores
- Do not remove all drift seaweed from strandlines – it provides important habitat
- Limit harvesting in erosion-prone areas such as dunes and near kelp forests

Annex I – Seaweed harvesting permission flowchart



If your site lies within an Area of Special Scientific Interest (ASSI), you may be requested to seek consent for harvesting. This can be applied for online Areas of Special Scientific Interest | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

Annex II – Species specific considerations for seaweed harvesting

Brown seaweeds

Species	Common name	Ecology	Sustainable harvesting advice
Himanthalia elongata	Thongweed	Usually annual Unusual morphology, reproductive fronds make up 98% of the seaweed's biomass[18] Reproductive fronds grow throughout the winter and spring, before summer reproduction. Fronds then disintegrate	Harvest in summer after the reproductive season. Reproductive structures are visible as dark circles on fronds. If harvesting occurs during the reproductive season, then harvest only one of the two main fronds.
Laminaria digitata	Kelp/ oarweed	Perennial Growth is from the meristem at the base of the fronds, rather than the tips. Growth is fastest throughout spring and summer[19] Two reproductive peaks; in early summer and late summer/autumn Alternation of generations with two	Cut by hand, avoiding the meristem at the base of the fronds. Collect only the upper parts of the frond and harvest areas sparsely, as kelp forests have a function in wave dissipation, shoreline protection and habitat provision. Harvest during early spring, before the summer reproductive peak.

[18] Seasonal growth and recruitment of Himanthalia elongata Fucales, Phaeophycota) in different habitats
[19] Laminaria digitata.pdf

		morphologically distinct phases. Familiar form of *L. digitata* is the large sporophyte	
Laminaria hyperborea	Kelp/ Cuvie	Perennial Growth is from the meristem at the base of the fronds, rather than the tips. Growth is again fastest in spring and summer, but completely ceases at the end of summer until the next year[19] Alternation of generations with two morphologically distinct phases. Familiar form of *L. hyperborea* is the large sporophyte Habitat for at least 238 species of macrofauna. This is in addition to the large mobile mammals, such as grey and common seals.	Cut by hand, avoiding the meristem at the base of the fronds. Collect only the upper parts of the fronds and harvest areas sparsely. Harvest during the first half of the year when growth is most rapid Avoid harvesting during and after the spring/summer reproductive period.
Saccharina latissima	Sugar kelp	Perennial Growth is from the meristem at the base of the fronds, rather than	Cut by hand, avoiding the meristem at the base of the fronds. Harvest during spring and summer, avoiding the

		the tips. Growth is fastest throughout spring and summer Reproduction starts during autumn and continues until early spring[20, 21] Alternation of generations with two morphologically distinct phases. Familiar form of *S. lattisima* is the large sporophyte	autumn/winter reproductive season.
Alaria esculenta	Dabberlocks	Perennial Growth is from the meristem at the base of the fronds, rather than the tips. Reproduction occurs during the autumn and winter. Reproductive sporophylls are in clusters at the top of the stipe, just below the fronds Alternation of generations with two morphologically distinct	Cut by hand, avoiding the meristem and sporophylls at the base of the fronds. Avoid harvesting during autumn and winter, when the seaweed is reproductively active.

[20] Drew, G.H. (1910) *Annals of Botany*

[21] MarLIN

		phases. Familiar form of *A. esculenta* is the large sporophyte	
Fucus vesiculosus	Bladder wrack	Short-lived perennial species Appearance varies markedly in different environments. Most common form has many distinct air vesicles in the frond Reproduction peaks in the spring and summer[22], [23] Life cycle is direct, with sporophytes producing gametes	Cut fronds at 30cm or more from the base. Avoid harvesting during the spring/summer reproductive period. Number of reproductive receptacles on the seaweed increases greatly as it ages and regrowth potential decreases. Solely harvesting large mature individuals is not advised[1]
Fucus serratus	Serrated wrack	Short lived perennial species, with one distinct form[22,23] Reproduction peaks in the autumn/winter, although can vary greatly with locality Life cycle is direct, with sporophytes producing gametes	Cut fronds at 30cm or more from the base. Avoid harvesting during the autumn/winter reproductive season. Number of reproductive receptacles on the seaweed increases greatly as it ages. Solely harvesting large mature individuals is not advised[1]

[22] degruyterbrill.com/document/doi/10.1515/bot-2016-0081/pdf?licenseType=free
[23] Microsoft Word - Bachelorscriptie Feis.doc

Ascophyllum nodosum	Knotted wrack	Long lived perennial species Reproduction peaks during spring[24] Life cycle is direct, with sporophytes producing gametes This seaweed supports a very diverse species group, particularly when older individuals link up to form a complex habitat[25]	Collect only the upper parts of the seaweed, preserving some of the older more complex habitat. Avoid harvesting during the spring reproductive peak. Harvest only from small areas, with areas of un-harvested *Ascophyllum* breaking them up. This may help avoid the negative effects of harvesting on associated fauna. Leave two years between harvesting an area, preferably recovery time should be longer

Green seaweeds

Species	Common name	Ecology	Sustainable harvesting advice
***Ulva* spp.**	Sea lettuce	Pseudo perennial, with the base, but not the fronds, surviving from year to year. Rapid growth in spring and summer when reproduction also peaks[26] Reproduction can be both sexual and	Harvest during the rapid growth phase in spring and summer, leaving the holdfast and some of the fronds intact.

[24] 51771.pdf
[25] Harvest Recovery of a North Atlantic Intertidal Seaweed, Ascophyllum nodosum: Experimental Design Issues
[26] Ulva life cycle

		asexual. Sporophyte and gametophyte form are morphologically very similar[27] *Ulva* species can rapidly form algal blooms in favourable conditions, sometimes known as 'green tides'. These can be damaging to both other marine organisms and the wider ecosystem[28, 29, 30]	

Red seaweeds

Species	Common name	Ecology	Sustainable harvesting advice
Palmaria palmata	Dulse	Perennial Alternation of generations. Familiar form of dulse is the large sporophyte or the male gametophyte. Female gametophytes are very small and once fertilized are taken over by the sporophyte	Ensure the holdfast and some of the blade is left intact for re-growth.

[27] How does sea lettuce grow? - GNA
[28] Massive Ulva Green Tides Caused by Inhibition of Biomass Allocation to Sporulation
[29] Frontiers | A comprehensive review of remote sensing techniques for monitoring Ulva prolifera green tides
[30] Ulva prolifera green-tide outbreaks and their environmental impact in the Yellow Sea, China

Chondrus crispus	Carrageen/Irish moss	Normally perennial Rapid growth during spring and summer[31] Reproduction occurs during the autumn and winter Alternation of generations, with a diploid sporophyte and separate gametophytes for each sex[32]	Harvest only a small proportion of the largest blades. Harvest during the spring/summer rapid growth period. Avoid harvesting during the autumn and winter when reproduction is ongoing and recovery is much slower
Mastocarpus stellatus	False Irish moss	Perennial Alternation of generations with morphologically very distinct phases. Familiar forms are the gametophytes, with the sporophyte originally thought to be a different species[33]	Ensure the holdfast and some of the blade is left intact for re-growth.
Porphyra species	Laver	Perennial Five common species around the UK, but more are still being discovered.	Ensure basal portion remains intact for regrowth. Cut well above the base. Do not strip entire plant from rocks

[31] "Ecological studies of economic red algae. v. growth and reproduction o" by Arthur C. Mathieson and Richard L. Burns
[32] To gel or not to gel: differential expression of carrageenan-related genes between the gametophyte and tetasporophyte life cycle stages of the red alga Chondrus crispus | Scientific Reports
[33] Phycokey - Mastocarpus

		Alternation of generations. Familiar form is the large gametophyte, whilst the sporophyte is microscopic and was previously thought to be a separate species	
Corallina officinalis	Coral Weed	Calcareous seaweed which grows to only 12cm Unusual appearance, more like that of coral. Distinctive pink colour, due to the white lime in the base and the seaweed's reddish pigment Perennial base, with new fronds growing each year. Fronds can regrow from the base[34] Alternation of generations with morphologically very similar gametophytes and sporophytes	Ensure the crustose base is left intact for regrowth.

[34] Coral weed (Corallina officinalis) - MarLIN - The Marine Life Information Network

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Graham Gannon (Peninsula Kelp Company)

Soak Seaweed Baths

Christine Picton

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Natural England

Natural Resources Wales

Marine Scotland

Nature Scot

For further information:

Marine & Fisheries Division, Marine Conservation and Reporting Branch

Clare House
303 Airport Road West.

Belfast

BT3 9ED

E-mail: Marine.Wildlife@daera-ni.gov.uk

www.daera-ni.gov.uk

Department of
Agriculture, Environment and Rural Affairs

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