

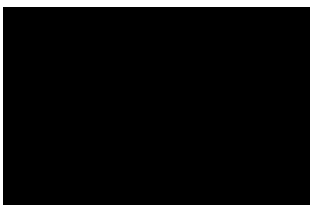


License Application for Sustainable hand-harvesting of *Ascophyllum nodosum* at Clew Bay (SAC Site Code 1482). In accordance with National Parks & Wildlife Service conservation objectives for marine and coastal habitats and species, and the EU Habitats Directive 92/43/EEC.

Appendix 4:

Code of Practice for *A. nodosum* harvest activities in Clew Bay SAC.

Prepared by: BioAtlantis Ltd.
Date of submission: 20/01/2014
Date of revision: 21/02/2024



21/02/2024

Table of Contents

SECTION 1: Introduction	3
SECTION 2: Securing the Code of Practice during the operation phase	4
2.1. Step 1: On-site survey & schedule	4
2.2. Step 2: Recruitment of personnel	4
2.3. Step 3: Training	4
2.4. Step 4: Verification of systems	4
2.5. Step 5: Full implementation	4
Section 3: Sustainable hand harvesting of <i>A. nodosum</i>	5
3.1. Management of harvesting activities:	5
3.2. Resource Database	5
3.3. Certificate to harvest	5
3.4. Navigation to harvest sites	6
3.5. Health and Safety	6
3.6. Harvest Records:	6
3.7. Accident and Incident Reporting:	6
3.8. Harvesting of <i>A. nodosum</i> :	7
3.9. Completion of harvest, subsequent pick-up and quality check:	8
3.10. Assessment of harvest operations:	8
3.11. By-catch:	8
3.12. Harvest Quantity and batch code	8
3.13. Communicating with BioAtlantis:	8
3.14. Prevent interactions:	8
SECTION 4: Marine and coastal habitats	8
Table 1: List of marine habitat types in the Clew Bay SAC and the area potentially affected.	9
SECTION 5: Harbour Seals and Birds	10
5.1. Introduction	10
5.2. General Measures:	10
5.3. Site Specific measures:	11
5.4. Other requirements:	11
SECTION 6: Otters	15
SECTION 7: Environmentally safe navigation:	16
7.1. Introduction:	16
7.2. Protecting mudflat, sandflat, intertidal sandy mud, estuarine mud, fine-sand, Atlantic Salt Meadow, shingle and reef areas.	16
SECTION 8: Tourism, sport and recreation	16
SECTION 9: Aquaculture	17
SECTION 10: Angling and fisheries activities	18
SECTION 11: Other seaweed harvesting activities	18
SECTION 12: Invasive species	19
REFERENCES	19

21/02/2024

SECTION 1: Introduction

Clew Bay is a wide, sheltered western facing bay located in Co. Mayo, at a distance of approximately 16 km from east to west and 11 km from north to south. Clew Bay's drumlin landscape was formed during the last glacial period and is characterised by a large number of islands containing mixed substrata. Notably, the bay has in excess of 90 islands and 100Km of coastline that contains harvestable quantities of the intertidal seaweed, *Ascophyllum nodosum*. Clew bay supports a diverse range of human activities spanning fisheries, aquaculture, tourism, recreation, sport and hand harvesting of invertebrates and algae. The site is a Special Area of Conservation (SAC) selected for a range of habitats and species listed on Annex I and II of the E.U. Habitats Directive.

BioAtlantis Ltd. aim to sustainably develop the seaweed industry in Co. Mayo. The company has applied for a license to sustainably hand harvest 11,018 Tonnes of *A. nodosum* in Clew Bay annually, in a manner that minimises and prevents any potential effects on species and habitats in the Complex, whilst also providing sustainable work to hand harvesters. BioAtlantis has developed this **Code of Practice** to ensure that harvesting is undertaken in a sustainable manner and works closely in-line with conservation objectives specified for the SAC for a range of Annex I and II habitats and species. Key measures outlined in this **Code of Practice** include:

Methods to ensure *A. nodosum* is harvested in a sustainable manner:

- Implementation of sustainable harvesting techniques to ensure regeneration post harvesting.
- Management to limit harvesting to $\leq 20\%$ of the total *A. nodosum* biomass per site per annum.
- Full traceability: harvest location, quality and quantity of harvested seaweed and persons involved.
- Continuous disturbance of Annex I marine community types cannot exceed recommended levels.

Environmentally safe navigation techniques:

- Use of a collection boat (if deemed applicable to the area) to pick up floating bags/nets at high tide, preventing impacts on the foreshore, or harvesters towing floating bags/nets from harvest sites to pick-up points (in some cases, certain individuals with existing seaweed harvesting rights may prefer to land seaweed at pick up points).
- Prevent impacts on mudflats, sandflats, intertidal sandy mud, estuarine mud, fine-sand, salt meadows, shingle and reef areas.

Methods to prevent impacts on relevant wildlife and animal species:

- Harbour Seals, Birds, Otters.

Requirements to prevent interactions and in-combination effects with the following:

- Tourism, sport and recreation.
- Aquaculture, angling and fisheries activities.
- Other seaweed and invertebrate harvesting activities.
- Spread of invasive species.

The Code of Practice has been developed based on the peer reviewed literature, best scientific knowledge, risk assessments and previous surveys in Clew Bay (see Application documents and appendices). The Code of Practice must be adhered to by all staff and harvesters supplying *A. nodosum* to BioAtlantis and management within the company, to ensure that the objectives for protecting the Clew Bay SAC are adhered to in an effective manner.

Note: This document was updated following a public consultation between Dec 2014 and Jan, 2015 and includes additional planned and existing activities and mitigation measures where required.

21/02/2024

SECTION 2: Securing the Code of Practice during the operation phase

2.1. Step 1: On-site survey & schedule (Start date: Month 1. Duration: 1-2 weeks).

Following on-site surveys by University College Dublin and an additional assessment and exclusion of areas with existing seaweed harvesting rights, the estimated maximum annual harvest of *A. nodosum* was revised to 11,018 Tonnes. These assessments will form the basis of developing the production plan. To verify the accuracy of the plan, time will be spent on the ground for approximately 1-2 weeks, to identify recently harvested sites which require a fallowing period to recover. A schedule will then be agreed with the harvesters to meet SAC and production requirements.

2.2. Step 2: Recruitment of personnel (Completed by end of month 1).

Most personnel will be in place by the end of month 1. Hand harvesters will be contracted and the harvesting system and plan will be explained. A Resource Manager and some staff/sub-contractors involved in transport will be hired or contracted during this time.

2.3. Step 3: Training (Start date: month 1. Duration: 3 months)

On completion of the on-site survey above, figures will be verified and revised accordingly. From here, training will be provided to harvesters where necessary. This will initially involve theoretical training (1-2 days) to explain the system and requirements of the harvesters on the ground to ensure that the SAC is protected according to the Code of Practice. Training will be carried out by staff in BioAtlantis, along with local personnel using detailed training material. Once theoretical training is complete, practical on-site training will take place. This will involve harvesters performing harvesting tasks according to the harvesting schedule. BioAtlantis will monitor and assess the technique employed to verify that the correct technique is in use and that the correct steps are being taken. In the event that hand harvesters encounter any difficulties, BioAtlantis staff will provide further training. Harvesters will finally receive certification to confirm that they have received training and are verified in having a full understanding of the system.

2.4. Step 4: Verification of systems (Start date: month 1. Duration 3 months)

During the initial 3 months of the operational phase, all software, communications, transport and quality systems will be optimized and verified as being effective. This will ensure that systems are fully operational and in place when commercial harvesting begins.

2.5. Step 5: Full implementation (Start date: month 4. Duration: lifetime of the licence)

Once staff and harvesters are verified as having sufficient training and understanding of the system, commercial hand harvesting will begin in accordance with the schedule. This will be managed by the Resource Manager who will report directly to BioAtlantis management. A key requirement in implementing and securing a functioning system for sustainable *A. nodosum* harvesting, are effective control measures, reporting and monitoring systems. These are set out in this Code of Practice document and form a key framework for managing and ensuring that the system is adhered to in a precise, correct, seamless and traceable manner. A key component to ensuring this will be a strong and robust auditing system. BioAtlantis will conduct audits covering the items listed below:

(a) Quarterly Audit:

- Audit Part A: Records, Forms & Documents.

21/02/2024

- Step 1: Forms: receipt of training & verification of understanding.
- Step 2: Completed Training Certs (obtained through training above).
- Step 3: Records, forms & documents (general).

➤ **Audit Part B: Quality Assessment (documentation):**

- Step 1. GRNs (Clew Bay).
- Step 2. Production Logsheets (Production Facilities).
- Step 3. Incident Reports.
- Step 4. Non-conformance Reports.
- Step 5. Software Systems.
- Step 6: Site Inspection forms.

(b) Annual Audit (on-site):

- Step 1. Site Quality (inspection of harvested sites).
- Step 2. Harvest methods (inspection of techniques).
- Step 3. Collection boat (if deemed applicable to the area).

The Audit form is attached (Appendix 8). Additionally, see Tables 10, 11, 12 and 16 of the application for details on: Control Measures, Action Limits/non-conformance, Analytical Procedures, Monitoring Schedule, Corrective Actions and Verification. The harvesting system will be reviewed annually to assess and verify the control measures and determine areas in need of improvement.

Section 3: Sustainable hand harvesting of *A. nodosum*

3.1. Management of harvesting activities:

BioAtlantis will be responsible for managing commercial harvesting activities. To prevent in combination effects from occurring, the following will apply:

- Harvesters will not cut *A. nodosum* in any areas where there are existing appurtenant rights or burdens in relation to the harvesting, gathering or removal of seaweed from the shore, without first obtaining permission from the person to whom those rights belong.
- Where Profit-à-Prendre rights to harvest seaweed are successfully registered with the PRAI, the harvesting plans must be adjusted to ensure that those individuals can continue to harvest *A. nodosum*.

3.2. Resource Database

For the effective management of the Clew Bay area, BioAtlantis will create a database of the islands and coastal areas. This database is required to:

- Determine sites that require fallowing to allow for adequate recovery from recent activities.
- Determine rotation requirements (i.e. extrapolation and calculation of the duration or fallowing period required prior to a particular area being fit for re-harvest).
- Prevent harvest activities that would lead to a decline in yield.
- Record the details of each harvest, how much, by whom & when.

3.3. Certificate and training

Harvesters receiving training in methods which ensure *A. nodosum* recovery and regeneration post-harvest can supply *A. nodosum* to BioAtlantis. Training will be provided by BioAtlantis where necessary, and a certificate of training will be provided.

21/02/2024

3.4. Navigation to harvest sites

Harvesters must follow pre-planned harvest schedules. Schedules will be provided by BioAtlantis in advance of harvest to ensure no entry into protected areas at times inappropriate or damaging to species and habitats. Should any confusion arise, the Resource Manager must be contacted.

3.5. Health and Safety

Harvesters must comply with H&S requirements and relevant Maritime Legislation. Essential H&S requirements and key equipment include:

- An efficient marine outboard engine capable of manoeuvring boat safely ahead and astern, and steering the boat at its maximum speed in the fully loaded condition within the limits of the intended area of operation; an anchor with rope of length at least equal to four times the length of the boat; a permanently rigged suitable painter (rope) not exceeding the length of the boat and which may also be used as a tow rope.
- Adequate seating or thwarts, pair of oars and rowlocks, bailer, hand-held distress flares or a portable horn, boat hook, waterproof torch, approved lifejacket or personal flotation device for each person on boat, communication device(s), navigation maps and compass.
- Mobile phone, sharp blade cutters, measuring tape, binoculars (to assess presence/absence of seals or mudflats, sandflats or intertidal sandy mud areas), harvest bags/nets and hi visibility buoys.
- Pick up of bags/nets: ensure that bags/nets containing seaweed are located away from piers or typical boating routes. These must be made visible using buoys etc., and be hauled for pick-up when transport is scheduled.
- Pick up of loose harvested seaweed: Where certain individuals with existing seaweed harvesting rights wish to land seaweed in loose form at pick up points, those individuals involved in harvesting or pick-up must park appropriately and not block access to the road, coast or marine area for other users.
- Lifting of harvested seaweed: Follow all standard operating procedures to manage the lifting of bag/nets or loose harvested seaweed.
- Temporary storage of bags: Follow all standard operating procedures to manage temporary storage of bag/nets or loose harvested seaweed.

3.6. Harvest Records:

The Goods Received Note (GRN) must be completed by the person or transport company in receipt of the harvested seaweed. Alternatively, such information may be provided in other suitable formats by electronic or other means on site and/or at BioAtlantis' production facilities. Without a completed GRN, harvested *A. nodosum* may not be accepted. A second GRN will also be completed on receipt of the seaweed at BioAtlantis' factory. Where quality cannot be checked on collection, assessments will be undertaken by production/QC staff by random or specific inspections.

3.7. Accident and Incident Reporting:

Sites must be harvested according to the schedule. This ensures that sensitive sites (e.g. seal and bird sites), sandflats or intertidal sandy mud areas are avoided. All accidents, incidents and near misses must be recorded immediately and reported to the Resource Manager who will complete an Incident Report Form (Appendix 3). Incidents which should be reported include:

- Health and safety accidents or near misses.
- Incidents relating to disturbance of seals during navigation (e.g. , e.g. flushing into the water).
- Incidents of disturbance or damage to any mudflat, sandflat, intertidal sandy mud, fine sand areas.

21/02/2024

3.8. Harvesting of *A. nodosum*:

When harvesting *A. nodosum*, the following is required:

- Once a site is approved according to the schedule, harvest can take place. Harvest can only occur at sites containing a high density of *A. nodosum* and which have been approved by BioAtlantis' personnel. On arrival, harvesters will determine whether or not the site is suitable for harvest. They will be receive training by BioAtlantis on the criteria required to make this determination, if necessary.
- Date & time of harvest, site name and location within the site (required for completing the GRN).
- When cutting *A. nodosum*, ensure that a minimum of 200mm (8 inches) of material is left behind. This limit will be inspected by the Resource Manager as it is essential in order to:
 - Avoid overharvesting or extensive removal of *A. nodosum* canopy coverage, which could otherwise lead to changes in community structure or biodiversity stasis or could impact the ecosystem in general, e.g. animals resident in the intertidal zone, coastal habitats, etc.
 - Avoid dormant/resting species at the canopy base (e.g. periwinkles) and ensure sufficient biomass coverage to allow free living forms of *L. littorea* and other species settle and establish at the base.
 - Avoid plants containing periwinkle egg masses, thus preventing harvest of viable eggs.
 - Prevent by-catch of benthic, sessile, slow moving/mobile species present on the shore at low tide.
- *A. nodosum* holdfast must be left fully intact and attached to substrate to allow for recovery. Holdfast bycatch exceeding >1% will represent a severe non-conformance (inspected on the GRN). The Production Manager will perform spot checks on harvested seaweed for evidence of stones and holdfast, as such contaminants may damage production equipment. Non-conformances may be issued depending on the severity of the incident. This limit on holdfast content is essential to:
 - Prevent mortality of *A. nodosum* and prevent injury to *A. nodosum* holdfast.
 - Prevent severe removal of habitat for understory species.
 - Avoid physical disturbance of dormant or resting species at the base of the canopy.
 - Avoid occurrence of overharvesting which could impact on the ecosystem in general.
- Ensure that no other types of seaweed other than *A. nodosum* are harvested and/or placed into harvest bags/nets. Inspections will be carried out at the pick-up point in Clew Bay and at production facilities in Tralee, Co. Kerry. The presence of contaminants may result in potential corrective actions, depending on the severity of the non-conformance. Harvesters must limit *Fucus* content of harvested *A. nodosum* to no more than 5%, thus preventing removal of an additional canopy source which supports periwinkles, limpets and other species.
- When cutting the weed and filling the bags/nets, ensure that excessive levels of sand, shingle, pebbles, stones or holdfasts are not inadvertently included. In the event of non-conformances, training may be provided to harvesters where necessary.
- Harvest must be limited to 20% of the total available *A. nodosum* biomass per site per annum, in order to allow for sufficient regrowth. The limitation at 20% avoids overharvesting which could impact on the ecosystem in general, and reduces the removal of species such as hemiparasitic *Polysiphonia lanosa* (Linnaeus) Tandy, which commonly grows on *A. nodosum*.
- To reduce potential for anthropogenic impacts (e.g. intensity of trampling) on the biotope, the numbers of harvesters are limited to: 2-4 per small-medium sized sites, 4-6 per medium to large islands and 6-10 on larger islands. The Resource Manager and other staff may inspect sites for brief

21/02/2024

periods. Low numbers of individual working along the foreshore in this way, will ensure that BioAtlantis work within the limit of 15% disturbance limit.

- Harvest must not take place in areas within 50m of sewage outfalls or other source of pollution. This will ensure that stressed *A. nodosum* growth is not exacerbated further by harvest activities.
- Ensure that there are no physical interactions with biogenic reef in the rare event that it is encountered on the shore (e.g. honeycomb structures or mussels).

3.9. Completion of harvest, subsequent pick-up and quality check:

- The following must be recorded on the GRN: Date, Harvester Name / No., Pick-up location, Harvest Location (site name, Region, e.g. northern shore). See Appendix 3 for a copy of the GRN.
- Quality checks must be conducted to confirm that the seaweed is free of the following: (a) Sand, gravel, stones or debris, (b) *A. nodosum* holdfasts. and (c) other species (e.g. *Fucus*, 1-5% max.).
- The seaweed will be weighed by BioAtlantis at pick up points and/or on delivery to the processing facility.

3.10. Assessment of harvest operations:

The Resource Manager will inspect sites post-harvest to confirm that harvesters are operating as specified to ensure:

1. Cutting of *A. nodosum* is >200mm above holdfast .
2. No more than 20% of the total available biomass per site per annum is harvested.
3. Activities only take place at approved sites.
4. Health and safety requirements are adhered to.

See Appendix 3, "Site Inspection Form", for further details.

3.11. By-catch:

Take care not to co-harvest other species. Co-removal of amphipods, isopods, periwinkles or other Animalia identified post-harvest must be collected and returned to the water, where possible.

3.12. Harvest Quantity and batch code

Quantity of harvest (no. bags/nets, weight per bag/net, time and date of harvest), Inspection check (pass: Y/N).

3.13. Communicating with BioAtlantis:

Harvesters must keep in regular contact and report their activities to BioAtlantis. In most cases reporting will be via the Resource Manager and GRN. However, harvest plans will be communicated regularly over the phone or via email or post to designated harvesters by the Resource Manager.

3.14. Prevent interactions:

Follow pre-planned harvest schedules in order to avoid potential congestion at pick up points such as piers that may be busy at certain times.

SECTION 4: Marine and coastal habitats.

To ensure that the area, structure and function, future prospects and conservation status of marine and coastal habitats is maintained, harvesters will ensure the following:

(a) Harvesting is not permitted in the following areas:

- Fine Sands areas (Dominated by *Nephtys cirrosa* community).

21/02/2024

- Intertidal sandy mud areas (*Tubificoides benedii* and *Pygospio elegans* community complex).
 - Maerl habitats.
 - Mudflats & sandflats not covered by seawater at low tide.
 - Sandbanks that are slightly covered by sea water all the time.
 - Submerged or partially submerged sea fans.
 - Zostera (seagrass) habitats.
 - Coastal habitats beyond the *A. nodosum* zone.
- (b) When travelling to harvest zones, avoid impacts with the above habitats by adhering to Section 7 of the Code of Practice, “Environmentally safe navigation”. Doing so will prevent disturbance to soft substratum areas and their associated communities and species.
- (c) When operating in the intertidal zone where *A. nodosum* is present (sheltered reef and shingle substratum areas), adhere to all aspects of this Code of Practice. This will ensure that (i) the habitat area is maintained and (ii) structure and function is maintained or improved. It also ensures that the future prospects and conservation status of reef and shingle areas are maintained or enhanced, whilst also preventing in combination effects with existing and planned activities.
- (d) BioAtlantis must ensure that continuous disturbance of each community type does not exceed an approximate area of 15% (recommended by NPWS to ensure adherence to the EU Commission’s requirements). Working within this limit is critical to ensure compliance with the European Commission Article 17 reporting framework which considers disturbances of >25% of an area in an Annex I habitat to represent an unfavourable conservation status. The area affected by harvest activities/annum is provided in Table 1. To adhere with these limits, harvesting locations and activities must be planned and recorded. Sites will be inspected prior to scheduled harvest to confirm sufficient biomass of *A. nodosum* is present and recovery post harvesting. Inspection of sites post-harvest will be undertaken to ensure compliance with sustainable hand harvest methods. The status and quality of the *A. nodosum* habitat must be maintained by adhering to the sustainable harvesting methods and limits specified for the extent of these harvesting activities.

Table 1: List of marine habitat types in the Clew Bay SAC and the area potentially affected.

Marine community types (Clew Bay SAC)	Total Area in Clew Bay SAC (m ²)	Area affected by harvest activities/ annum		Area of Large Shallow Inlets and Bays [1160] affected/annum (%)
		(m ²)	(%)	
Zostera Community	1,423,891	0	0.0%	0.0%
Shingle	1,855,000	235,549	12.7%	0.23%
Reef	26,870,000	1,331,699	4.9%	1.31%
Maerl Dominated community	2,878,607	0	0.0%	0.0%
Fine Sands Dominated by <i>Nephtys cirrosa</i> community	2,950,308	0	0.0%	0.0%
Intertidal sandymud with <i>T. benedii</i> and <i>P. elegans</i> community complex	7,817,100	0	0.0%	0.0%
Mudflats & sandflats not covered by seawater at low tide	12,541,069	0	0.0%	0.0%

21/02/2024

SECTION 5: Harbour Seals and Birds.

5.1. Introduction

As harbour seals are highly sensitive to human behaviour, the key objective of the Code of Practise is to ensure that “Disturbance events” do not occur. In addition, certain species of breeding and wintering birds can be disturbed by human presence and may be sensitive to alterations in food supply. Therefore, this Code of Practise also works to ensure that behaviour and food supply to these protected species is unaffected by harvest activities.

The following rules and guidelines were developed based on findings from the published peer-reviewed literature, NPWS guidelines and recommendations from organizations such as the Hampshire & Isle of Wight Wildlife Trust (Anon 2016). Harvesters will be provided with training on seal behaviour and requirements of birds by staff at BioAtlantis. Similar training will also be provided in relation to Otter. The requirements are explained as follows:

5.2. General Measures:

Seasonality: Harbour seals are present throughout the year in aquatic and terrestrial habitats, including intertidal shorelines. Equal emphasis will be placed on not disturbing the behaviour throughout the year. Important aspects of the annual life cycle includes:

- Breeding (May-July approx.)
- Moulting (August-September approx.)
- Outside the breeding and moulting seasons (i.e., from October-April, ‘resting sites’).

Several species of breeding and wintering birds must not be disturbed at established sites during sensitive times. Harvesters will operate based on known locations of established breeding, moulting and resting sites of harbour seals (NPWS, 2011A) and sites of relevance to important bird species.

Requirements in relation to seasonality:

- Harvesting is prohibited at moulting sites between Aug-Sept, while permitted between Oct-July.
- Harvesting is prohibited at breeding sites between May-July, and permitted between Aug-April.
- Sites not used by seals during breeding/moulting seasons may be accessed between May-Sept.
- Harvesting is prohibited at resting sites between Oct-April, and permitted between May-Sept.
- Where sites serve dual functions (e.g. breeding & moulting), avoidance times may be prolonged.
- Sites serving triple functions (breeding, moulting & resting) must be avoided all year around.
- Harvest boats must not enter within 100m of breeding and moulting sites during sensitive times. In addition, certain bird sites may not be entered at sensitive times of the year.

Locations and Sites: The location of haul out sites are identified on the maps. In cases where haul out sites occur together in numbers, they may be distinguished and defined further by their geographical names or grouped together into single units. Bird wintering and breeding sites are also indicated.

Data Recording: Harvest boats cannot land at breeding or moulting sites between May-July and Aug-Sept respectively. Harvest location and pick-up points will be recorded on GRNs (Appendix 3). GRNs will be checked by audit to ensure compliance. Harvesters must report incidents of seal disturbance to the Resource Manager who will record it on the Incident Report Form. Similar measures are in place to ensure avoidance of bird breeding and wintering sites at sensitive times of the year.

21/02/2024

Navigation: To minimise the effects of boats on seal behaviour, best practice for boating activities will require that harvesters (a) work according to pre-planned schedules and (b) avoid stalling/slowing down unnecessarily en route to harvest locations or pick up points (pier, etc), as these behaviours can lead to alterations in seal behaviour (flushing etc.). This is particularly relevant when operating within 100m of haul out sites. These measures will reduce the risk of being noticed by seals at haul out sites, not subject to harvest activities at a given time.

5.3. Site Specific measures:

- **Inisherkin:** There are a number of breeding/moulting sites (e.g. Inishgowla, Inishnacross and Inishcooa) in close proximity to resting sites at Inisherkin. Between Oct-April, seals will be resting at Inisherkin. Thus, harvest activities at nearby breeding/moulting sites could potentially impact on resting behaviour. To prevent impacts, the boat cannot be <100m of resting sites at Inishskerkin.
- **Inishcull:** Several islands (Inishpult, Inishfeis, Freaghillaun-luggagh) and breeding sites surround a resting site at Inishcull. Between Oct-April navigation is not be permitted within 100m of Inishcull.
- **Inishturbid-Inishquirk:** Between these two islands lies an important resting site for harbour seals. Navigation between Oct to April will not be permitted within 100m of this resting site.
- **Additional sites:** A breeding site lies between Derrynish, Lanhoney, and Inishbarnagh. Access to islands surrounding this site is not permitted within 100m during the breeding season. Several islands are important for breeding and wintering birds (pers. comm. NPWS) and are listed in Table 2. Similar to harbour seals, they sites will be avoided at sensitive times of the year.

5.4. Other requirements:

Harbour Seals:

- Always follow pre-planned harvest schedules provided by BioAtlantis. When navigating within 100m of haul out sites, harvesters should observe sites from a distance with binoculars. If avoidance/disturbed behaviour is observed (e.g. rapid changes in direction away from the boat), increase distance between the boat and the site if possible.
- Never approach seals in a 'bow on' manner. When in proximity to their sites approach from the side and maintain a constant speed. If a seal is observed in open water, slow down (<5knts) or no-wake speed. To minimise disturbance, ensure movements are steady and in parallel to the animal.
- If a seal is encountered, ensure an escape route is provided. Avoid 'boxing-in' the animal or blocking narrow channels. If a mother and pup are encountered, leave the vicinity immediately and slowly.
- Navigation is not permitted within 100m of sites where harvesting is prohibited due to the presence of seals
- In the event that seal disturbance is observed, the event must be reported to the Resource Manager, who will record the details in the Incident Report Form.
- Noise must be kept to a minimum, for example, avoid revving of engines or shouting.
- On rare occasions, seals can display curiosity towards humans. If seals approach boats, maintain the course at constant speed or remain stationary. Do not approach the seal.
- If you encounter seals on a site not recognised as a haul-out site, leave the area promptly and quietly and report to the Resource Manager who will record the event in the Incident Report Form.

Birds (Breeding and Wintering)

- Always follow pre-planned harvest schedules provided by BioAtlantis.

21/02/2024

- Harvesting is prohibited at important breeding sites during Spring/Summer periods. Harvesting is prohibited at important wintering sites during Autumn/Winter periods (table 2).
- Sites which are out of bounds are indicated in Table 2 below.
- To minimise disturbance, ensure activities on islands are maintained in the intertidal *A. nodosum* zone.
- Avoid estuarine areas containing soft mud or marsh at the mouths of rivers between Sept-April. Ensure caution if in the vicinity of these areas between May-Aug.
- Avoid approaching, chasing, scaring or putting birds to flight at any time, including roosting or feeding birds.
- If approaching shore at high tide, move slowly and keep distance from groups of resting birds.

Preventing interactions with tourism & recreation:

Harvesting cannot take place at seal/bird sites at sensitive times of the year, thus preventing in combination effects with tourism and recreation activities (e.g. Power Boat Trips, Sea Trampoline, Sit-On-Top Kayaking, Stand up Paddling, Sea Kayaking, Dinghy Sailing, Stand Up Paddle Boarding, Keel Boat Sailing).

21/02/2024

Island/site No.	Site Name	Harbour seals			Birds		Control measures	
		Breeding Site	Moulting Site	Resting Site	Breeding site	Wintering site	Avoidance	Attendance
3	Roslynagh	Yes					May to July	Aug to April
5	Inishdasky	Yes					May to July	Aug to April
7	Inishtubrid			Yes			Oct to April	May to Sept
13	Moynish More	Yes				Yes	Oct-July	Aug to Sept
14	Moynish Beg (L865938)				Yes		March to Sept	Oct to Feb
17	Inishilra	Yes					May to July	Aug to April
19	Roeillaun (L875930)				Yes		March to Sept	Oct to Feb
20	Inishdeashbeag	Yes	Yes	Yes			Avoid all year round	
20	Inishdeashmore	Yes	Yes				May to Sept	Oct to April
21	Inishcorky	Yes			Yes		March to Sept	Oct to Feb
22	Inishcarrick	Yes					May to July	Aug to April
24	Muckinish	Yes					May to July	Aug to April
25	Inishdaweel	Yes					May to July	Aug to April
27	Illanascraw	Yes					May to July	Aug to April
28	Freaghullanluggagh	Yes					May to July	Aug to April
38	Inishcuill			Yes			Oct to April	May to Sept
39	Mauherillan (L920919)				Yes		March to Sept	Oct to Feb
50	Inishakillew		Yes				Aug, Sept	Oct to July
63	Forilan		Yes				Aug, Sept	Oct to July
62	Inishgowla South		Yes				Aug, Sept	Oct to July
62	Carrickwee	Yes	Yes				May to Sept	Oct to April
64	Carrickawart Island		Yes	Yes			Aug to April	May to July
66	Dorinish (L9086)				Yes		March to Sept	Oct to Feb
67	Inishimmel (L908857)				Yes		March to Sept	Oct to Feb
71	Inisheeney (L920845)		Yes			Yes	Aug to March	April to July

21/02/2024

Island/site No.	Site Name	Harbour seals			Birds		Control measures	
		Breeding Site	Moulting Site	Resting Site	Breeding site	Wintering site	Avoidance	Attendance
72	Finnaun Island	Yes	Yes				May to Sept	Oct to April
73	Corillan		Yes				Aug, Sept	Oct to July
74	Carricknamore		Yes				Aug, Sept	Oct to July
75	Stony Island		Yes	Yes	Yes		Avoid all year round	
76	Green Islands	Yes	Yes	Yes	Yes		Avoid all year round	
Cz 2.6	Pigeon Pt. (L949850).					Yes	Oct to March	April to Sept
Cz 5.13	Rosturk (L869956),					Yes	Oct to March	April to Sept
Cz 5.17	Rosmurrevagh (L852958)					Yes	Oct to March	April to Sept
-	Mulranny Saltmarsh (L827963)					Yes	Outside of licence application area. No harvest will take place here.	
-	Carrowholly (L956850)					Yes	Oct to March	April to Sept
-	Bertraw (L903834).					Yes	Oct to March	April to Sept
-	Carrickwee (NE Clew Bay)	Yes					May to July	Aug to April
-	Burrishoole Channel						Avoid all year round to ensure no impact on catchment, connected lakes, fish and otters.	
-	Estuarine areas containing soft mud or marsh at the mouths of rivers.					Yes	Sept-April	Ensure caution if in the vicinity of these areas between May-Aug.

Table 2: Sensitive ecological receptors within the study area and control measures implemented for mitigation.

21/02/2024

SECTION 6: Otters

Otters may be sensitive to human presence and alterations of food source and supply. To avoid or prevent disturbance or interactions with otters, ensure the following:

- All activities are maintained within the intertidal *A. nodosum* zone. Avoid linear habitats located beyond the intertidal zone or marine riparian areas beyond the foreshore. Only use existing routes.
- Never interfere with couching sites, holts, access paths/routes, that may be present near coastal areas, agricultural fencing, roads, slipways, access points or other areas.
- Avoid large trees near coastal areas as they can represent important otter breeding and resting sites. Avoid undisturbed areas (e.g. impenetrable scrub/reeds) which are refuges for otters.
- Do not behave in an obtrusive or noisy manner around otters.
- Never interfere with, deliberately approach or disturb otters or their cubs that are resting, sleeping, hunting, feeding or foraging in water or on the shore during the daytime, dawn or dusk. Ensure caution during the periods of breeding, rearing and hibernation.
- If migrating/commuting otters are encountered in water, do not obstruct their movement. Slow down boat and give sufficient space to pass without “boxing” them in, blocking narrow channels or acting as a barrier to commuting or connectivity.
- If encountered on the shore, allow otters free access and ample opportunity to escape to the water/land. Do not behave in manner causing them to move away or flee human disturbance.
- To prevent in combination effects, adhere to the above measures at all times, particularly when working in areas known to exhibit signs of otter activity.

To prevent impacts on the dietary and other requirements of otter, the following measures apply:

- Follow pre-planned schedules and harvest in areas defined by BioAtlantis. Harvesting is limited to 20% of the total available *A. nodosum* biomass per site per annum, to allow for sufficient regrowth.
- Harvesting must not take place beyond the *A. nodosum* zone, as these habitats represent the broader habitat range of the otter’s prey during adult and early life stages, including: flowing and static freshwater areas (rivers, streams, canals, lakes, reservoirs, ponds), deep water subtidal areas (>30m), shallow subtidal areas (<30m), exposed areas, estuarine mud areas, brackish waters, subtidal gravel/coarse bottom substratum, intertidal soft bottom (sand/mud), lagoons, maerl, rock pools, saltmarsh habitats, seagrass, subtidal soft bottom (sand/mud) and exposed waters in the vicinity of rocky cliffs.
- Avoid exposed and non-sheltered areas that represent the otter’s broader habitat range, hunting ground and foraging area.
- Avoid co-harvesting non-*A. nodosum* material near coastal habitats, near the shoreline or on the shore. Ensure that inadvertent by-catch of other algae, dead/senescing algae, amphipods, isopods or other *Animalia* or material is prevented and minimized.
- Do not remove the *A. nodosum* holdfast and take care not to disturb rocky/crevice substratum.
- Avoid all freshwater aquatic linear habitat and riparian environments including lakes and rivers and other areas (e.g. east side of InishGowla South).
- Harvesting cannot occur in fresh water habitats, including at the mouth of Lough Furnace or the Burishoole Catchment. This prevents potential impacts on salmon, trout and European eel, in turn preventing any impacts on otter.

21/02/2024

SECTION 7: Environmentally safe navigation:

7.1. Introduction:

The following rules and guidelines have been developed on the basis of NPWS's objectives for ensuring protection of mudflat, sandflat, intertidal sandy mud, fine-sand and Atlantic Salt Meadow environs of Clew Bay. These guidelines must be adhered to by all harvesters supplying *A. nodosum* to BioAtlantis.

7.2. Protecting mudflat, sandflat, intertidal sandy mud, estuarine mud, fine-sand, Atlantic Salt Meadow, shingle and reef areas.

Harvesting *A. nodosum* along rocky shorelines located beyond mudflat, sandflat, intertidal sandy mud, estuarine mud or fine-sand areas requires that work be done in a manner that prevents impacts with these substratum areas. Training will be provided, where necessary, to ensure that harvesters are aware of requirements for protecting these areas and species residing within these habitats in the SAC. Important aspects to the code of practice are as follows:

- Advanced preparations will be necessary in advance of work in these locations. Always adhere to clearly defined harvesting schedules provided by BioAtlantis.
- It is essential not to enter into mudflat, sandflat, intertidal sandy mud, estuarine mud or fine-sand areas during low tide. Entry into these areas at low tide will cause physical damage to these environs and the associated species. These areas will be indicated clearly in the maps provided. Access by boat to rocky shores located beyond these areas must be undertaken at high tide or when the tide has begun to recede.
- If mudflat, sandflat, intertidal sandy mud, estuarine mud or fine-sand areas are entered into inadvertently, promptly leave and inform the Resource Manager of the incident who will record the incident.
- When approaching coastal areas in small boats, ensure that contact with reef, shingle or estuarine mud is minimal. This will ensure no damage is inflicted on boat or on reef or shingle habitat.
- In smaller boats, always approach the shore at slow pace so as to avoid intertidal reef (i.e. mixed substrate of pebbles and cobbles) or shingle. Along the western margin of Clew Bay there are small patches of subtidal boulders and cobbles which must be avoided.
- The harvest collection boat (if deemed applicable to the area) will be fitted with a depth sounder to ensure that contact with the reef is avoided. Hard substrate will be encountered between 2-14m and should be avoided. The sonar depth sounder must be in working order during all collection activities. This measure will ensure that displacement or disturbance of reef and species therein does not occur.
- To ensure that *A. nodosum* harvesting does not negatively impact on the Atlantic Salt Meadow (ASM) habitat in general, *A. nodosum* must not be harvested at the fringes of these areas.

SECTION 8: Tourism, sport and recreation

Tourist, sport and recreation activities may cause anthropogenic disturbances and disturb sensitive harbour seals and bird species. To prevent interactions with these activities, the following is required:

- As a general policy, hand harvesters will avoid sites where tourism, sport and recreation activities are observed to be taking place. This will be determined on a case-by-case basis.

21/02/2024

- Harvesters must not work within 50m of bases where tourism and recreation-related equipment or vessels are manually introduced in the water (e.g. kayaks). This ensures that no in combination effects occur, such as exacerbation of anthropogenic disturbance which could give rise to localized reductions in density of intertidal seaweed and the associated biotope.
- Harvest may occur on Collanmore Island between Sept-April. This will prevent in combination effects such as exacerbation of anthropogenic disturbance during peak tourist season (May-Aug).
- Harvest will not occur at Mulranny.
- Hand harvesters will not work at Roman Island or Westport harbour between May and August. This prevents any in combination effects from occurring during peak season.
- Harvesting will not take place on the east side of Inishraher where a retreat centre is located.
- As a general policy, hand harvesters must ensure the following:
 - (a) Boats and vessels:**
 - Maintain distance from other boats or vessels, such as power boats, cruise boats, kayaks, rib boats, row boats, rib boats, fishing boats when travelling to sites, thus preventing any in combination effects.
 - Maintain distance from passenger ferries and cargo vessels and ensure no interactions with their routes and activities.
 - (b) Site avoidance:** Avoid sites where sports, leisure activities, education excursions, retreats, seaweed foraging days, discovery tours or workshops are observed to be taking place. This will be determined on a case-by-case basis. Harvesters must not interact with people on the shore engaging in these activities.
 - (c) Water sports:** Harvesters and operators of boats must ensure caution when operating in the vicinity of floating water sports, yacht moorings and areas where other sports such as dinghy sailing, water skiing and jet skiing are taking place (e.g. in the vicinity of Mayo Sailing Club, the Sruhnameel Channel and Schoolhouse Bay). Ensure caution when operating in known areas of importance to swimmers and kayakers (e.g. Rosmindle Pool).
 - (d)** Harvesters and operators of boats must keep well clear of boats during training and racing and must observe "power gives way to sail" conventions when appropriate.
 - (e)** Respect the space of all recreational users when operating in the complex.
 - (f)** If operating near causeways and connected sites, adhere closely to this Code of Practice to prevent disturbance to wildlife such as birds or otters (e.g. causeway linking Claggan and Inishnakillew).

SECTION 9: Aquaculture

To ensure that hand harvest activities do not exacerbate any negative effects associated with aquaculture in Clew Bay, the following is required:

- Harvest activities cannot take place at breeding, resting or moulting sites during sensitive times of the year. Similar approaches must be taken with Inishcorky and other islands in close proximity to Inishcorky, namely Inishdeashmore, Inishdeasbeag, unnamed neighbouring island off Inishdeasbeag and Inishnacross (Marine Institute, 2014 and 2019).
- Caution is required when approaching/operating near areas where planned and existing aquaculture sites are in relative proximity to seal sites and bird breeding/wintering sites.

21/02/2024

- The requirements for environmentally safe navigation must be followed to ensure no in combination effects which could damage mudflats/sandflats, where aquaculture sites are located.
- Ensure caution when travelling in the vicinity of defined aquaculture navigation routes. Do not impede workboat or tractor access to aquaculture sites along access routes, including but not limited to those associated with Clynish, Inishcottle, Inishcottle Pier, Kilmeena, Knockmanus, Murrisk, Newfield (Mulranny), Roigh Pier (near Rockfleet bay), Roskeen South (Carrowbeg), Roskeen south, Rosmoney Pier, Ross, Rosslaher, Rossmalley, Rossmoney, Rossymailley and Tiernaur, quays, piers, private laneways or routes or other pick up points.
- Do not interfere with aquaculture users who are licensed to harvest or grow seaweed.
- Ensure that no aspects of *A. nodosum* harvesting give rise to any physical interaction or contact with aquaculture production units, their structures or anchors.

SECTION 10: Angling and fisheries activities.

- There are several sites of relevance to fisheries and sea angling in Clew Bay. Harvesters must work to ensure that the space of fishermen and sea angler's is respected at all times.
- Ensure that the space of recreational/shore anglers is respected, particularly when competitions and festivals take place, e.g. during summer in areas including the following: Mallaranny Strand, Curraun, Lough Furnace Newport pier, Newport Quay, Rossnakilly, Rossnakilly, Ross, Rossanrubble, Altapheebera and Whiteheather.
- Keep distance and do not interfere with licensed salmon draft fishermen who may cut back seaweed when using their nets.
- Seaweed harvesting may only take place in the intertidal *A. nodosum* zone and not in subtidal areas of relevance to fisheries activities such as potting (lobster, crab, shrimp, whelk, nephrops), dredging (e.g. scallop, native oyster, cockle), trammel net fishing for bait, otter trawl, tangle net (crayfish), gillnet, Mid-water trawl. Activities in subtidal waters permitted include site visits, inspections, surveys, collection of harvested seaweed, transport and transfer to pick up points.
- Avoid interactions with non-*A. nodosum* habitats which represent the broader habitat range of fish, shellfish, invertebrates and fisheries species during adult and early-life stages, including: deep water areas, seagrass, estuarine mud areas, saltmarsh, lagoons, maerl, subtidal gravel/coarse bottom, subtidal soft bottom areas, intertidal soft bottom areas and exposed shores.
- Avoid soft substratum areas where bait digging for ragworm/lugworm is observed to be taking place.

SECTION 11: Other seaweed harvesting activities

BioAtlantis is responsible for commercial harvesting of *A. nodosum*. To ensure compliance with Clew Bay's conservation objectives and prevent in combination or cumulative effects, the following applies:

- Harvesting is not permitted in areas with existing appurtenant rights/burdens in relation to seaweed, without first obtaining permission from the person to whom those rights belong.
- Where Profit-à-Prendre harvesting rights are successfully registered with the PRAI, the harvesting plans must be adjusted to ensure that those individuals can continue to harvest *A. nodosum*.
- If unlicensed large-scale commercial harvesting is observed to occur, this will be recorded and advice will be sought from the relevant authorities on how to proceed. BioAtlantis will not harvest in such areas until *A. nodosum* has regenerated and will work to ensure that any harvesting is

21/02/2024

limited to 20% of the total available biomass per site per annum and continuous disturbance of each community type does not exceed the required limit.

- Any commercial user having small requirements of approximately 1 tonne per annum (e.g. hotels, health Spas) will be identified and BioAtlantis will work to prevent in combination effects.
- BioAtlantis will not harvest beyond Rossmurrevagh, thus avoiding much of the Mulranny area. This avoids in combination effects with tourism/recreational excursions in the area, which may be focused on seaweed, e.g. "Seaweed harvesting discovery days".
- Harvesting activities must not impact on other people who harvest small volumes of seaweed, edible seaweeds or invertebrates for their own personal use, e.g. dillisk, carrageenan, limpets, mussels, clams, periwinkles and scallops.

SECTION 12: Invasive species

To ensure that harvest activities do not act as a vector and lead to the spread of the invasive species, such as *Bonamia ostreae*, *Botrylloides violaceus*, *Caprella mutica*, *Crassostrea gigas*, *Crepidula fornicata*, *Didemnum vexillum*, *Perophora japonica*, *Sargassum muticum*, *Spartina anglica* and *Styela clava*, BioAtlantis will ensure the following:

- Boats will be painted once a year with appropriate anti-fouling paint.
- The harvesters boats will not leave Clew Bay. In the rare case that they do, harvesters must implement appropriate cleaning measures on land.
- All bags/nets must be cleaned with appropriate cleaning agents or other suitable methods on delivery to production facilities and returned to harvesters in a clean condition.
- Harvesting will be limited to the *A. nodosum* zone and will not take place in subtidal areas, exposed or semi-exposed sites.
- Harvesters must keep distance from aquaculture units to prevent the spread of any species that may be associated with artificial structures.
- Harvesters will prevent disturbance to rocky substratum, will avoid co-harvesting non-*A. nodosum* material and of other *Animalia*, algae or dead, drifting material/algae will be prevented and minimized.

REFERENCES

Anon (2016). Code of Conduct. Hampshire & Isle of Wight Wildlife Trust in partnership with Chichester Harbour Conservancy. Accessed 02/03/2021