# Pots, Traps & Creels Interactions with Peat & Clay Exposures

## 1. Introduction

The Assessing Welsh Fishing Activities (AWFA) Project is a structured risk-based approach to determining impacts from current and potential fishing activities (undertaken from licensed and registered commercial fishing vessels), upon the features of European marine sites (EMS) in Wales.

Further details of the AWFA Project, and all completed assessments to date, can be found on the AWFA website.

The methods and process used to classify the risk of interactions between fishing gears and EMS features, as either purple (high), orange (medium) or green (low) risk, can be found in the AWFA Project Phase 1 outputs: Principles and Prioritisation Report and resulting Matrix spreadsheet.

## 2. Assessment summary

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| **Assessment Summary: Pots, Traps & Creels Interactions with Peat & Clay Exposures** | **Assessment of impact pathway 1: Physical damage to a designated habitat feature:**<br><br>No studies were found that directly or indirectly measured or estimated the impacts of potting on Peat and Clay Exposures or similar habitats. As potting is a subtidal activity it is unlikely to interact with intertidal parts of this habitat. Expert judgement suggests the impacts from pots, weights or anchors making contact with subtidal parts of the Peat and Clay Exposures habitat could cause permanent physical damage to the feature.<br><br>**Assessment of impact pathway 2: Damage to a designated habitat feature via removal of, or other detrimental impact to, associated biological communities:**<br><br>No studies were found that directly or indirectly measured or estimated impacts of potting on Peat and Clay Exposures or similar habitats. As potting is a subtidal activity it is unlikely to interact with intertidal parts of this habitat. Expert judgement and indicative MarLIN sensitivity assessments suggest the impacts from pots, weights or anchors making contact with the Peat and Clay Exposures habitat could cause damage to some of the subtidal biological communities.<br><br>Confidence in this assessment is **low** (please see section 8). |

## 3. Feature description

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| **Feature Description: Peat & Clay Exposures** | Peat and Clay Exposures are comprised of several relevant biotopes (see Annex 1 for full biotope descriptions and definition). LR.HLR.FR.RPid refers to littoral peat and is characterised by the presence of a variety of boring piddocks. LR.MLR.MusF.MytPid refers to eulittoral firm clay characterised by small clumps of *Mytilus edulis*, *Elminius modestus* and *Littorina littorea* on the surface.<br><br>This habitat includes littoral and sublittoral examples of Peat and Clay Exposures, both of which are soft enough to allow them to be bored by a variety of piddocks, particularly *Pholas dactylus*, *Barnea candida* and *Barnea parva*. Peat and Clay Exposures with either existing or historical evidence of piddock activity are unusual communities of limited extent, adding to the biodiversity interest where they occur. These unique and fragile habitats are irreplaceable, arising from former lakebed sediments and ancient forested peatland (or 'submerged forests'). Depending on erosion at the site, both clay and peat can occur together or independently of each other.<br><br>Where peat is present on the shore or in shallow waters, the surface may be characterised by algal mats consisting of the red seaweed *Ceramium spp*. and the green seaweeds *Ulva lactuca* and *Ulva intestinalis*. However, sand scour can limit the cover provided by these seaweeds. The crabs *Carcinus maenas* and *Cancer pagurus* often occur in crevices in the peat, with hydroids in any small pools. On clay, seaweed cover is generally sparse with species such as *Mastocarpus stellatus* and *Ceramium spp.* attached to loose-lying pebbles or shells. On the surface of the clay, there may be small clumps of the mussel *Mytilus edulis*, together with barnacles and the winkle *Littorina littorea*. The polychaete worms *Polydora spp.* and *Hediste diversicolor* can sometimes be present within the clay. When the piddocks have died, their holes provide a micro-habitat for species such as small crabs and anemones such as *Cereus pedunculatus* and *Aulactinia verrucosa*.<br><br>It is known that peat and clay beds exist sublittorally, but the extent and maximum depth of this habitat is not known. There is little information on the communities associated with subtidal examples of Peat and Clay Exposures, but the flora and fauna is likely to be different to those found associated with intertidal examples. It is possible that subtidal exposures of this habitat support communities, which may or may not include piddocks. Surveys of a subtidal Peat and Clay Exposure in the Menai Strait recorded the piddock *Zirfaea crispata*, a sparse cover of hydroids (e.g. *Sertularia cupressina*, *Hydrallmania falcata*, *Tubularia indivisa* and *Nemertesia antennina*), and crabs – *Cancer pagurus*, *Necora puber* and *Carcinus meanas*.<br><br>Depending on its location, this habitat can experience periodic inundation and emergence from sediments. This habitat encompasses examples of Peat and Clay Exposures with either existing or historical piddock activity (i.e. dead shells in piddock holes). This habitat also encompasses occurrences of Peat and Clay Exposures with no |

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| | evidence of either past or present piddock activity, but which have the potential for this community to develop on the basis of environmental conditions and presence of similar beds locally (BRIG, 2008).<br><br>Following storms when the peat habitat may be covered in sand there may be a reduction in the amount of algal species.<br><br>Many of the characterizing species that are present in the biotope are suspension/filter feeders, so productivity of the biotope would probably be largely dependent on detrital input (Tillin & Budd, 2008).<br><br>Outcrops of fossilized peat in the eulittoral may project above sand level by >15cm and form extensive platforms up to 100m in length across the shore. Fossilized peat tends to be firm and relatively erosion resistant (Murphy, 1981).<br><br>Many of the species associated with this biotope are commonly found on various shore types and are either mobile or rapid colonisers (Tillin & Budd, 2008). |

## 4. Gear description

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| **Gear Description: Pots, Traps & Creels** | Pots, traps and creels (pots) are rigid cage-like structures designed to capture fish or shellfish species living on or near the seabed (FAO, 2001; Seafish, 2020a). They typically comprise one or more funnel-shaped entrances that guide fish or shellfish into one or more easily accessed and usually baited compartments (FAO, 2001; Seafish, 2020a).<br><br>UK pot designs, sizes and construction materials vary geographically and according to target species, environmental conditions and fisher's preference (Seafish, 2020a). Top-entry inkwell pots (0.28-0.47 $m^2$ footprint) and side or top-entry parlour pots or 'D-creels' (0.24-0.55 $m^2$ footprint) weighing 15-20kg are used to catch crab or lobster and are made from wire, rubber, metal and netting (Gravestock, 2018; Cornwall Creels, 2020; Seafish, 2020a). Solid sided 20-30 litre rectangular containers with holes in the sides (0.09-0.14 $m^2$ footprint), a mesh funnel at the top, a concrete bottom and weighing 6-12kg are used to target whelks (Channel Pots, 2020; Seafish, 2020c). Lightweight plastic tubular pots with small-mesh sides and funnel entries at either end are used to target prawns (Coastal Nets, 2020; Seafish, 2020a).<br><br>Pots can be fished individually or in strings (fleets), where several pots are attached to a length of rope, laid along the seabed and marked at either end with a rope to the surface and a marker buoy (Seafish, 2020a). The number of pots in a fleet will depend on factors including pot design, target species, habitat fished, fisher's |

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| | preference, vessel size and the available deck space to store the pots once they have been hauled (Seafish, 2020b).<br><br>Fishers can have multiple strings of pots deployed at any one time, hauled following a soak time of 24-48 hours (Seafish, 2020a). Multi-compartment 'parlour' pots generally retain catch for longer periods making them more suitable for longer soak times, whereas single-compartment 'inkwell' pots are subject to more escapees during longer soak times (Swarbrick & Arkley, 2002).<br><br>Strings of lighter traps, such as prawn creels, use anchors or weights at either end to reduce movement in tides (Seafish, 2020a). Other pots are designed to be heavy or utilise concrete-weighted end-pots that replace the need for anchors or weights (Seafish, 2020b). Strings of pots are deployed (or shot) one at a time whilst the boat slowly moves over the target fishing ground (Seafish, 2020a). Single pots are generally set in rocky inshore areas and can be bounced along the seabed until they contact rock or reef (FAO, 2001).<br><br>Baited pots can capture undersized target species, non-target invertebrates and occasionally fish species (Pantin *et al*., 2015). However, the use of appropriate-sized mesh coverings, or the addition of large-mesh panels or escape-gaps, can ensure smaller individuals and non-target species are able to escape (Seafish, 2020a). |

## 5. Assessment of impact pathways

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| **Assessment of impact pathway 1** | **1. Physical damage to a designated habitat feature (Physical Impacts):**<br><br>No studies were found that directly or indirectly measured or estimated impacts of potting on the Peat and Clay Exposures or similar habitats. As potting is a subtidal activity it is unlikely to interact with the intertidal parts of this habitat.<br><br>Assessments on the impact of potting on the physical structure of Peat and Clay Exposures have not been undertaken (Walmsley *et al*., 2015).<br><br>If potting were to occur across Peat and Clay Exposures, the general physical impacts from static gear, including pots, weights or anchors, making contact with the seabed during gear deployment could cause surface disturbance and abrasion (JNCC & NE, 2011; Walmsley *et al*., 2015). Where pots are fixed in strings, the retrieval of pots, or incidences of rough weather, could lead to ropes, pots and anchors dragging over or entangling seabed structures, potentially causing physical damage or abrasion to the seabed (MacDonald *et al*., 1996; Roberts *et al*., 2010; JNCC & NE, 2011). During spring tides, strong wind and large waves may cause |

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| | unintentional movement of pots and any associated seabed abrasion could be increased (Eno *et al*., 2001; Sørensen *et al*., 2015; Stephenson *et al*., 2015).<br><br>Depending on the footprint and the intensity of potting it is possible the impacts from pots, weights or anchors making contact with Peat and Clay Exposures habitat could cause permanent physical damage to the feature (e.g. scour marks). |
| **Assessment of impact pathway 2** | **2. Damage to a designated habitat feature via removal of, or other detrimental impact to, associated biological communities (Impacts on biological communities):**<br><br>No studies were found that directly or indirectly measured impacts of potting on the biological communities of the Peat and Clay Exposures feature or similar habitats. As potting is a subtidal activity it is unlikely to interact with the intertidal parts of this habitat.<br><br>Assessments on the impact of potting on the biological communities of Peat and Clay Exposures have not been undertaken (Walmsley *et al*., 2015).<br><br>If potting were to occur across Peat and Clay Exposures, the general physical impacts from static gear, including pots, weights or anchors, making contact with the seabed during gear deployment could cause surface disturbance and abrasion to biological communities (JNCC & NE, 2011; Walmsley *et al*., 2015). Where pots are fixed in strings, the retrieval of pots, or incidences of rough weather, could lead to ropes, pots and anchors dragging over or entangling seabed structures, potentially causing physical damage or abrasion to the biological communities (MacDonald *et al*., 1996; Roberts *et al*., 2010; JNCC & NE, 2011, Gall, 2020). During spring tides, strong wind and large waves may cause unintentional movement of pots and any associated seabed abrasion could be increased (Eno *et al*., 2001; Sørensen *et al*., 2015; Stephenson *et al*., 2015).<br><br>Peat and Clay Exposures biotopes have been assessed to a range of pressures by MarLIN (Tillin and Budd, 2008; Tillin and Marshall, 2020). Relevant pressures for the assessment of potting impacts are primarily abrasion and penetration of the sediment. MarLIN abrasion and penetration sensitivity assessments for Peat and Clay Exposure biotopes shown in Annex 1 conclude: both biotopes have a medium sensitivity to abrasion and high sensitivity to penetration.<br><br>Please refer to the MarLIN website which provides further information about the assessment methodology and the supporting evidence (www.marlin.ac.uk/).<br><br>Depending on the footprint and the intensity of potting it is possible that the impacts from pots, weights or anchors making contact with Peat and Clay Exposures habitat could cause damage to some of the biological communities. |

## 6. SACs where the habitat occurs as a component of a designated feature

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| **Lleyn Peninsula and the Sarnau SAC** | The Lleyn Peninsula and the Sarnau SAC contains examples of the Peat and Clay Exposures habitat, as evidenced by data and relevant literature (NRW, 2018a). Please see the latest SAC feature condition assessment for information on the location and condition of features.<br><br>The following features contain Peat and Clay Exposures habitat within the Lleyn Peninsula and the Sarnau SAC:<br>1. Reefs<br>2. Large Shallow Inlets and Bays<br>3. Estuaries<br>4. Mudflats and sandflats not covered by seawater at low tide (at the lower (seaward) edge) |
| **Menai Strait and Conwy Bay SAC** | The Menai Strait and Conwy Bay SAC contains examples of the Peat and Clay Exposures habitat, as evidenced by data and relevant literature (NRW, 2018b). Please see the latest SAC feature condition assessment for date information on the location and condition of features.<br><br>The following features contain Peat and Clay Exposures habitat within the Menai Strait and Conwy Bay SAC:<br>1. Reefs<br>1. Large Shallow Inlets and Bays |
| **Dee Estuary SAC** | The Dee Estuary SAC contains examples of the Peat and Clay Exposures habitat, as evidenced by data and relevant literature (NRW, 2018c). Please see the latest SAC feature condition assessment for information on the location and condition of features.<br><br>The following features contain Peat and Clay Exposures habitat within the Dee Estuary SAC:<br>1. Estuaries<br>2. Mudflats and sandflats not covered by seawater at low tide (at the lower (seaward) edge) |
| **Carmarthen Bay and Estuaries SAC** | The Carmarthen Bay and Estuaries SAC contains examples of the Peat and Clay Exposures habitat, as evidenced by data and relevant literature (NRW, 2018d). Please see the latest SAC feature condition assessment for information on the location and condition of features.<br><br>The following features contain Peat and Clay Exposures habitat within the Carmarthen Bay and Estuaries SAC:<br>1. Estuaries<br>2. Large Shallow Inlets and Bays |

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| | 3. Mudflats and sandflats not covered by seawater at low tide (at the lower (seaward) edge) |
| **Pembrokeshire Marine SAC** | The Pembrokeshire Marine SAC contains examples of the peat and clay exposures habitat, as evidenced by data and relevant literature (NRW, 2018e). Please see the latest SAC feature condition assessment for information on the location and condition of features.<br><br>The following features contain peat and clay exposures habitat within the Pembrokeshire Marine SAC:<br>1. Large Shallow Inlets and Bays<br>2. Reefs |
| **Severn Estuary SAC** | The Severn Estuary SAC contains examples of the Peat and Clay Exposures habitat, as evidenced by data and relevant literature (NRW, 2018f). Please see the latest SAC feature condition assessment for information on the location and condition of features.<br><br>The following features contain Peat and Clay Exposures habitat within the Severn Estuary SAC:<br>1. Estuaries<br>2. Mudflats and sandflats not covered by seawater at low tide (at the lower (seaward) edge) |

## 7. Evidence Gaps

- Direct studies to measure the impacts from potting on Peat and Clay Exposures habitat.
- A study comparing the impacts from different types of pots and methods of potting.

## 8. Confidence assessment

The confidence score is the sum of scores from three evidence components: quality, applicability and agreement. These are qualitatively assessed as high, medium or low using the most appropriate statements in the table below, and these are numerically represented as scores of 3, 2, or 1 respectively.

A total confidence score of 3 – 5 represents low confidence, 6 or 7 shows medium confidence and 8 or 9 demonstrates high confidence in the evidence used in the assessment.

**This assessment scores 4, representing low confidence in the evidence.**

| Confidence | Evidence quality | Evidence applicability | Evidence agreement |
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| **High** | Based on more than 3 recent and relevant peer reviewed papers or grey literature from established agencies. | Based on the fishing gear acting on the feature in the UK. | Strong agreement between multiple (>3) evidence sources. |
| **Medium** | Based on either relevant but older peer reviewed papers or grey literature from less established agencies; or based on only 2-3 recent and relevant peer reviewed evidence sources. | Based on similar fishing gears, or other activities with a similar impact, acting on the feature in the UK. | **Some disagreement but majority of evidence agrees. Or fewer than 3 evidence sources used.** **Score 2.** |
| **Low** | **Based on either less relevant or older grey literature from less established agencies; or based on only 1 recent and relevant peer reviewed evidence source.** **Score 1.** | **Based on similar fishing gears acting on the feature in other areas, or the fishing gear acting upon a similar feature in the UK.** **Score 1.** | Little agreement between evidence. |

N.B. When evidence is indirect the evidence quality and applicability will be capped to medium, to ensure that direct evidence gaps are captured in this approach.

## 9. References


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## Annex 1: Welsh biotopes included in the AWFA potting and Peat and Clay Exposures assessment

The term 'biotope' refers to both the physical environment (e.g. substrate) and the unique set of species associated with that environment (Tyler-Walters and Jackson, 1999). Biotopes are defined by the JNCC Marine Habitat Classification for Britain and Ireland Version 15.03 (https://mhc.jncc.gov.uk/) and sensitivities to abrasion and penetration are from the Marine Evidence based Sensitivity Assessment (MarESA) (https://www.marlin.ac.uk/sensitivity/sensitivity_rationale). The MarESA approach considers a range of pressures and benchmarks for all biotopes using all available evidence and expertise (Tyler-Walters *et al*., 2018). The MarESA sensitivity to abrasion and penetration assessments highlighted in the table below consider any type of potential abrasion to the surface substratum and associated biology and do not specifically refer to potting activity (Tyler-Walters *et al*., 2018). High sensitivity indicates a significant loss of species combined with a recovery time of more than 10 years. Medium sensitivity indicates either significant mortality combined with medium recovery times (2-10 years) or lower mortality with recovery times varying from 2 to 25+ years. Whilst a low sensitivity indicates a full recovery within 2 years.

| Component Biotopes | MarESA sensitivity to abrasion | MarESA sensitivity to penetration |
|---|---|---|
| LR.HLR.FR.RPid | Medium | High |
| LR.MLR.MusF.MytPid | Medium | High |