

Pots, Traps & Creels Interactions with Tide-Swept Communities

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

<p>Assessment Summary:</p> <p>Pots, Traps & Creels Interactions with Tide-Swept Communities</p>	<p><u>Assessment of impact pathway 1: Physical damage to a designated habitat feature:</u></p> <p>No studies were found that directly or indirectly measured or estimated impacts of potting on Tide-Swept Communities 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 Tide-Swept Communities could cause physical damage to the substrate (e.g. movement of sediment).</p> <p><u>Assessment of impact pathway 2: Damage to a designated habitat feature via removal of, or other detrimental impact to, associated biological communities:</u></p> <p>No studies were found that directly or indirectly measured or estimated impacts of potting on Tide-Swept Communities 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 Tide-Swept Communities habitat could cause damage to some of the subtidal biological communities.</p> <p>Confidence in this assessment is low (please see section 8).</p>
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3. Feature description

<p>Feature Description: Tide Swept Communities</p>	<p>Tide-Swept Communities are complex and diverse, often leading to hotspots of biodiversity. The strong movement of water brings an abundance of food and oxygen to support the wide-ranging marine life, whilst the topography, substrate and location determine the types of species that occur (Chapman, 2008). The seabed is typically characterised by coarse materials, such as boulders and gravel, as finer sediments are carried away (Chapman, 2008).</p> <p>In very sheltered Tide-swept areas, a range of seaweed biotopes (see Annex 1 for definition) may be present (MarLIN, 2020). On mid eulittoral rock, some areas are characterised by the wrack <i>Ascophyllum nodosum</i> and associated sponges and ascidians (<i>Dendrodoa grossularia</i> and <i>Ascidiella scabra</i>) due to the rich supply of nutrients through the elevated water movement [LR.HLR.FT.AscT]. When moving towards the lower eulittoral rock, the wrack <i>Fucus serratus</i> becomes the dominant seaweed with a range of filter-feeding organisms, including sponges (<i>Grantia compressa</i>, <i>Halichondria panicea</i> and <i>Hymeniacidon perleve</i>) and bryozoans (<i>Electra pilosa</i>, <i>Flustrellidra hispida</i> and <i>Alcyonidium gelatinosum</i>) [LR.HLR.FT.FserT]. <i>Laminaria hyperborea</i> may dominate in areas of moderate tidal exposure on infralittoral rock and provide shelter for a rich fauna and flora on the kelp stipe itself (known as epiphytes), but also on the underlying rockface (typically bryozoans, anthozoans and sponges) [IR.MIR.KR.LhypT]. There are several <i>Laminaria spp.</i> biotopes which occur under slightly different conditions and resulting in differences in associated species, see Annex 1 for further details.</p> <p>Tide-Swept Communities are also found at the mouths of estuaries (JNCC, 2015). At the transitional area between estuary and sea, soft mud and fine sand may be layered, polychaetes (<i>Nephtys hombergii</i> and <i>Streblospio shrubsolii</i>) and bivalves (<i>Macoma balthica</i>) are the main fauna [LS.LMu.MEst.NhomMacStr]. On sandy beaches with good drainage, there will be a lack of megafauna regardless of tidal influence.</p> <p>In deeper waters or on vertical rockfaces the biotopes are mainly dominated by filter feeders which are capable of maintaining a strong foothold on the substrate. Some of these biotopes include: <i>Balanus crenatus</i> and <i>Tubularia indivisa</i> on extremely tide-swept circalittoral rock [CR.HCR.FaT.BalTub], <i>Tubularia indivisa</i> on tide-swept circalittoral rock [CR.HCR.FaT.CTub], <i>Alcyonium digitatum</i> with dense <i>Tubularia indivisa</i> and anemones on strongly tide-swept circalittoral rock [CR.HCR.FaT.CTub.Adig].</p>
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4. Gear description

Gear: Description: Pots, Traps & Creels	<p>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).</p> <p>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 m² footprint) and side or top-entry parlour pots or 'D-creels' (0.24-0.55 m² 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 m² 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).</p> <p>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 preference, vessel size and the available deck space to store the pots once they have been hauled (Seafish, 2020b).</p> <p>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).</p> <p>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).</p> <p>Baited pots can capture undersized target species, non-target invertebrates and occasionally fish species (Pantin <i>et al.</i>, 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).</p>
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5. Assessment of impact pathways

<p>Assessment of impact pathway 1</p>	<p>1. Physical damage to a designated habitat feature (Physical Impacts):</p> <p>No studies were found that directly or indirectly measured or estimated physical impacts of potting on Tide-Swept Communities or similar habitats. As potting is a subtidal activity it is unlikely to interact with intertidal parts of this habitat.</p> <p>Assessments based on expert knowledge suggest that potting is of limited concern to Tide-Swept Communities (Hall <i>et al.</i>, 2008; Tillin <i>et al.</i>, 2010; Walmsley <i>et al.</i>, 2015).</p> <p>If potting were to occur across the Tide-Swept Communities, 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 <i>et al.</i>, 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 <i>et al.</i>, 1996; Roberts <i>et al.</i>, 2010; JNCC & NE, 2011). During spring tides, strong wind and large waves may cause unintentional movement of pots and any associated seabed abrasion could be increased (Eno <i>et al.</i>, 2001; Sørensen <i>et al.</i>, 2015; Stephenson <i>et al.</i>, 2015).</p> <p>Depending on the footprint and the intensity of potting it is possible the impacts from pots, weights or anchors making contact with subtidal Tide-Swept Communities could cause physical damage to the substrate (e.g. movement of sediment).</p>
<p>Assessment of impact pathway 2</p>	<p>2. Damage to a designated habitat feature via removal of, or other detrimental impact to, associated biological communities (Impacts on Biological Communities):</p> <p>No studies were found that directly or indirectly measured or estimated impacts of potting on the Tide-Swept Communities or similar habitats. As potting is a subtidal activity it is unlikely to interact with intertidal parts of this habitat.</p> <p>If potting were to occur across Tide-Swept Communities, 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 <i>et al.</i>, 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 <i>et al.</i>, 1996; Roberts <i>et al.</i>, 2010; JNCC & NE, 2011; Gall, 2020). During spring tides,</p>

	<p>strong wind and large waves may cause unintentional movement of pots and any associated seabed abrasion could be increased (Eno <i>et al.</i>, 2001; Sørensen <i>et al.</i>, 2015; Stephenson <i>et al.</i>, 2015).</p> <p>Tide-Swept Community biotopes have been assessed to a range of pressures by MarLIN (Hall <i>et al.</i>, 2008; Tillin <i>et al.</i>, 2010). Relevant pressures for the assessment of potting impacts is primarily abrasion to biological communities. MarLIN abrasion sensitivity assessments for Tide-Swept Community biotopes shown in Annex 1 conclude: a range of sensitivities from low to medium sensitivity to abrasion with a small number of intertidal biotopes having low to medium sensitivity to penetration.</p> <p>Please refer to the MarLIN website which provides further information about the assessment methodology and the supporting evidence (www.marlin.ac.uk/).</p> <p>Depending on the footprint and the intensity of potting it is possible the impacts from pots, weights or anchors making contact with Tide-Swept Communities habitat could cause damage to some of the subtidal biological communities.</p>
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6. SACs where the habitat occurs as a component of a designated feature

<p>Lleyn Peninsula and the Sarnau SAC</p>	<p>The Lleyn Peninsula and the Sarnau SAC contains examples of the Tide-Swept Communities 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.</p> <p>The following features contain Tide-Swept Communities habitat within the Lleyn Peninsula and the Sarnau SAC:</p> <ol style="list-style-type: none"> 1. Reefs 2. Large Shallow Inlets and Bays 3. Sandbanks which are slightly covered by sea water all the time (at the lower (seaward) edge) 4. Estuaries 5. Mudflats and Sandflats not covered by sea water at low tide (at the lower (seaward) edge)
<p>Menai Strait and Conwy Bay SAC</p>	<p>The Menai Strait and Conwy Bay SAC contains examples of the Tide-Swept Communities habitat, as evidenced by data and relevant literature (NRW, 2018b). Please see the latest SAC feature condition assessment for information on the location and condition of features.</p> <p>The following features contain Tide-Swept Communities habitat within the Menai Strait and Conwy Bay SAC:</p> <ol style="list-style-type: none"> 1. Reefs

	<ol style="list-style-type: none"> 2. Large Shallow Inlets and Bays 3. Mudflats and Sandflats not covered by sea water at low tide (at the lower (seaward) edge)
Carmarthen Bay and Estuaries SAC	<p>The Carmarthen Bay and Estuaries SAC contains examples of the Tide-Swept Communities 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.</p> <p>The following features contain Tide-Swept Communities habitat within the Carmarthen Bay and Estuaries SAC:</p> <ol style="list-style-type: none"> 1. Large Shallow Inlets and Bays 2. Mudflats and sandflats not covered by sea water at low tide (at the lower (seaward) edge) 3. Estuaries 4. Sandbanks which are slightly covered by sea water all the time (at the lower (seaward) edge)
Pembrokeshire Marine SAC	<p>The Pembrokeshire Marine SAC contains examples of the Tide-Swept Communities 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.</p> <p>The following features contain Tide-Swept Communities habitat within the Pembrokeshire Marine SAC:</p> <ol style="list-style-type: none"> 1. Reefs 2. Large Shallow Inlets and Bays 3. Estuaries 4. Sandbanks which are slightly covered by sea water all the time (at the lower (seaward) edge) 5. Mudflats and Sandflats not covered by sea water at low tide (at the lower (seaward) edge)
Cardigan Bay SAC	<p>The Cardigan Bay SAC contains examples of the Tide-Swept Communities 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.</p> <p>The following features contain Tide-Swept Communities habitat within the Cardigan Bay SAC:</p> <ol style="list-style-type: none"> 1. Reefs 2. Sandbanks which are slightly covered by sea water all the time (at the lower (seaward) edge)
Dee Estuary SAC	<p>The Dee Estuary SAC contains examples of the Tide-Swept Communities 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.</p> <p>The following features contain Tide-Swept Communities habitat within the Dee Estuary SAC:</p>

	<ol style="list-style-type: none"> 1. Mudflats and sandflats not covered by sea water at low tide (at the lower (seaward) edge) 2. Estuaries
Severn Estuary SAC	<p>The Severn Estuary SAC contains examples of the Tide-Swept Communities habitat, as evidenced by data and relevant literature (NRW, 2018g). Please see the latest SAC feature condition assessment for information on the location and condition of features.</p> <p>The following features contain Tide-Swept Communities habitat within the Severn Estuary SAC:</p> <ol style="list-style-type: none"> 1. Estuaries 2. Sandbanks which are slightly covered by sea water all the time (at the lower (seaward) edge) 3. Mudflats and sandflats not covered by sea water at low tide (at the lower (seaward) edge)

7. Evidence Gaps

- Direct studies to measure the impacts from potting on Tide-Swept Communities 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
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.

9. References

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Annex 1: Welsh biotopes included in the AWFA potting and Tide-Swept Communities 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.

Biotope Components	MarESA sensitivity to abrasion	MarESA sensitivity to penetration
LR.HLR.FT.AscT	High	Not relevant
LR.HLR.FT.FserT	Medium	Not relevant
LR.HLR.FT.FserTX	Medium	Medium
LS.LMu.MEst.NhomMacStr	Low	Low
LS.LSa.MoSa.BarSa	Not sensitive	Not sensitive
IR.MIR.KR.LhypT	Medium	Not relevant
IR.MIR.KR.LhypT.Ft	Medium	Not relevant
IR.MIR.KR.LhypT.Pk	Medium	Not relevant
IR.MIR.KR.LhypTX	Medium	Not relevant
IR.MIR.KR.LhypTX.Ft	Medium	Not relevant
IR.MIR.KR.LhypTX.Pk	Medium	Not relevant
IR.MIR.KR.LhypVt	Medium	Not relevant (NR)
IR.MIR.KT.LdigT	Medium	Not relevant
IR.MIR.KT.LsacT	Medium	Not relevant
IR.MIR.KT.XKT	Medium	Not relevant
IR.MIR.KT.XKTX	Medium	Not relevant
CR.HCR.FaT.BalTub	Low	Not relevant
CR.HCR.FaT.CTub	Low	Not relevant
CR.HCR.FaT.CTub.Adig	Low	Not relevant

CR.HCR.FaT.CTub.CuSp	Low	Not relevant
CR.HCR.XFa.ByErSp.DysAct	Medium	Not relevant
CR.HCR.XFa.CvirCri	Low	Not relevant
CR.HCR.XFa.FluCoAs	Low	Not relevant
CR.HCR.XFa.FluCoAs.SmAs	Low	Not relevant
CR.HCR.XFa.FluHocu	Low	Not relevant
CR.HCR.XFa.SpAnVt	Medium	Not relevant
SS.SCS.ICS.HeloMsim	Low	Medium
SS.SSa.SSaVS.MoSaVS	Low	Low