

# North Devon Marine Nature Recovery Plan 2022-2027





Produced for North Devon Biosphere through the Environment Agency's Championing Coastal Coordination funding initiative and delivered by Rose Stainthorp, Beccy MacDonald-Lofts and Kovia.

## Foreword



*Image credit: Aerial 361 Media*

# Contents

1. Introduction .....	6
1.1 Water Environment Improvement Fund (WEIF) - Championing Coastal Coordination (3C's) .....	6
1.2 Policy overview .....	7
1.3 Barriers to marine nature recovery .....	7
1.4 Overview of recommended actions.....	9
1.5 Conservation designations in the North Devon Biosphere Reserve marine area.....	9
2. Habitats of North Devon .....	11
2.1 Coastal dunes, sandy shore & shingle ridge.....	12
2.2 Coastal and estuarine rocky intertidal habitats .....	17
2.3 Coastal and estuarine sediment intertidal habitats .....	22
2.4 Saltmarsh and saline reedbeds .....	27
2.5 Subtidal rocky habitats.....	32
2.6 Subtidal sediment habitats.....	37
2.7 Subtidal vegetated habitats.....	42
2.8 Transitional and coastal waters.....	47
3. Species of North Devon .....	52
3.1 Spiny Lobster ( <i>Palinurus elephas</i> ).....	53
3.2 European lobster ( <i>Homarus gammarus</i> ).....	56
3.3 Edible/ Brown Crab ( <i>Cancer pagurus</i> ).....	59
3.4 Black-legged Kittiwake ( <i>Rissa tridactyla</i> ).....	62
3.5 Common Guillemot ( <i>Uria aalge</i> ) .....	65
3.6 Manx Shearwater ( <i>Puffinus puffinus</i> ) .....	68
3.7 Atlantic Puffin ( <i>Fratercula arctica</i> ).....	71
3.8 Razorbill ( <i>Alca torda</i> ) .....	74
3.9 Curlew ( <i>Numenius arquata</i> ).....	77
3.10 Golden Plover ( <i>Pluvialis apricaria</i> ).....	80
3.11 Lapwing ( <i>Vanellus vanellus</i> ).....	83
3.12 Cod ( <i>Gadus morhua</i> ) .....	87
3.13 Herring ( <i>Clupea harengus</i> ) .....	90
3.14 European bass ( <i>Dicentrarchus labrax</i> ) .....	93
3.15 Salmon ( <i>Salmo salar</i> ) & Sea trout ( <i>Salmo trutta</i> ).....	96
3.16 Plaice ( <i>Pleuronectes platessa</i> ) and Sole ( <i>Solea solea</i> ).....	99
3.17 Native Oyster ( <i>Ostrea edulis</i> ).....	102
3.18 Celtic sea slug ( <i>Onchidella celtica</i> ) .....	105
3.19 Small eyed ray ( <i>Raja microocellata</i> ), Thornback Ray ( <i>Raja cravat</i> ) and Blonde ray ( <i>Raja brachyura</i> ).....	108
3.20 Gold star coral ( <i>Balanophyllia regia</i> ) .....	111
3.21 Sunset cup coral ( <i>Leptopsammia pruvoti</i> ).....	114
3.22 Pink sea fan ( <i>Eunicella verrucosa</i> ).....	117
3.23 Kaleidoscope jellyfish ( <i>Halicystus auricula</i> ).....	120
3.24 Petalwort ( <i>Petalophyllum ralfsii</i> ).....	123
3.25 Harbour porpoise ( <i>Phocoena phocoena</i> ).....	126

3.26 Grey seal ( <i>Halichoerus grypus</i> ) .....	129
--	-----

# 1. Introduction

This Plan covers the biodiversity found in the coastal, estuarine and marine areas of the North Devon Biosphere Reserve which stretches 312km from the Cornwall boundary at Marsland Mouth in the west, through the North Devon Coast Areas of Outstanding Natural Beauty, to Exmoor National Park at Foreland Point (Countisbury) in the east and includes the island of Lundy. It has developed through consultation with stakeholders through the Championing Coastal Coordination Project and looks to highlight the importance of species and habitats of North Devon, the risks to these and what actions can be taken to ensure their presence within the biosphere.



Map showing the marine area within the North Devon Biosphere boundary (red). Credit: North Devon Biosphere

The coastal, estuarine and marine areas of the North Devon Biosphere Reserve have been considered through the North Devon Marine Natural Capital Plan and this Plan looks to develop this work and to act as living document, being updated regularly depending on evidence and understanding, in order to support progress towards the 2030 Vision and integrates with the North Devon Coastal Nature Recovery Plan 2021-25.

## 1.1 Water Environment Improvement Fund (WEIF) - Championing Coastal Coordination (3C's)

The WEIF - 3C's Partnership Grant is to support the testing and trialing of approaches that will inform how to enhance and expand current arrangements for:

- Coordinated planning and delivery of locally owned plans and place-based initiatives through governance frameworks to: better connect decision-makers in places; facilitate collaborative restoration planning and delivery; incorporate data from all different sectors of the community; strengthen policies and provide a direct link from national governance to local communities.
- Coastal champions to strengthen capacity and capability in local stewardship by: incorporating environmental, social and economic processes that span land and sea; including all willing to be involved in goal setting, planning and delivery; creating a network of action with regular feedback on impact; engaging at a range of levels to exchange knowledge, share and acknowledge what is valuable, understand multiple perspectives and gain a high degree of support for delivery; strengthening engagement, facilitation and outreach incorporating environmental data into decisions at a local business level.
- Restoration and recovery of natural habitats to: strategically protect and manage coastal natural capital from coastal change such as erosion and damage by climate related storms and sea level rise; improve community resilience to natural hazards, reduce impacts of biodiversity loss and; improve water quality for wildlife to thrive and provide 'blue carbon' and recreational opportunities through public access. <sup>1</sup>

<sup>1</sup> WEIF – Championing Coastal Coordination Grant Offer letter to North Devon Biosphere (2021)

The North Devon Marine Nature Recovery Plan project has sought to develop the following plan to cover estuarine, intertidal and marine areas within the North Devon Biosphere boundary. The process has involved:

1. Desktop survey of marine wildlife data and relevant literature
2. Stakeholder one-to-one interviews, workshop and survey to define the focus habitats and species for the area
3. Root cause analysis for declines and changes in biodiversity with stakeholders
4. Desktop review of all current local biodiversity plans

These activities have formed the basis for the development of the following plan, which seeks to highlight the habitats and species of most importance to the community of North Devon alongside recommending actions that need to be taken forward to support the recovery of key habitats and species.

## **1.2 Policy overview**

This Marine Nature Recovery Plan is a local implementation plan, developed so we can play a full part in delivering against the international, national and local policies and initiatives summarised in **Table 1**. This Plan sits alongside and overlaps with the North Devon Nature Recovery Plan 2021-2025 already developed for the terrestrial, freshwater and intertidal area of the Biosphere.

The Plan precedes the preparation of North Devon's Local Nature Recovery Strategy (LNRS), required under the 2021 Environment Act, which will set out statutory priorities and actions and it is hoped that the LNRS will extend into the marine.

## **1.3 Barriers to marine nature recovery**

- Lack of resource and capacity across governmental agencies, local authorities and NGOs in relation to marine focus
- Lack of understanding around statutory responsibilities
- Lack of awareness and public understanding of the pressures and threats to marine, estuarine and intertidal habitats and species
- Water quality issues - diffuse and point pollution from agriculture and sewage
- Lack of awareness and enforcement issues leading to disturbance by people, dogs, housing and other development
- Coastal squeeze due to historic land reclamation and unmanaged retreat of intertidal sediment and salt marsh habitat
- Climate change - poor public understanding of issues, global scale, confusion over who is responsible, measurement / accounting issues
- Invasive species - native species expanding their range due to changing environmental conditions and poor management and non-native species being introduced through poor biosecurity and lack of awareness
- Marine plastic pollution - high local population use of certain habitats (dog walking, recreation etc) and increasing tourism demands in the area
- Resistance to changing agricultural / fishing practices e.g. agricultural run-off and uptake of iVMS
- Balancing the prosperity of the local economy with nature recovery and conservation objectives e.g. tourism, nature appreciation, local fishery and livelihoods
- Political drive to embrace marine renewable energy resources before high quality biodiversity is available to effectively inform sustainable development

- Historic lack of marine spatial planning to mitigate impacts upon biodiversity and community wellbeing. (Although beginning to be incorporated into marine planning and licensing, see, for example, policies in South West Inshore and South West Offshore Marine Plan which include a mitigation hierarchy: SW-WQ-1 (water quality), SW-MPA-1, SW-MPA-2, SW-MPA-4 (marine protected areas), SW-BIO-1, SW-BIO-2, SW-BIO-3 (biodiversity), SW-CE-1 (cumulative effects), SW-INNS-1, SW-INNS-2 (invasive non-native species) , SW-DIST-1 (disturbance) , SW-TR-1 (tourism & recreation), SW-SOC-1 (social benefits) , SW-ACC-1 (access) )

**Table 1. International, national and local policies and initiatives which interact with the North Devon Marine Recovery Plan**

Legislative/policy driver
Marine and Coastal Access Act 2009
UK Marine Policy Statement
UK Marine Strategy
National Flood and Coastal Erosion Risk Management (FCERM) Strategy for England
Water Framework Directive (relevance to River Basin Management Plans)
Environment Act 2021
Fisheries Act 2020
Climate Change Act 2008
The Access to the Countryside Order (Coastal Margin amendments)
The Eels (England and Wales) Regulations 2011
The Devon and Severn Inshore Fisheries and Conservation Order 2010
Nature Recovery Green Bill
Conservation of Habitats and Species Regulations 2017
Conservation of Offshore Marine Habitats and Species Regulations 2017
Convention on Wetlands of International Importance 1971
Wildlife and Countryside Act 1981 (as amended)
National Planning and Policy framework (2019)
Levelling up White Paper
Industrial Strategy
North Devon and Somerset Shoreline Management Plan (version 2)
Statutory Local Plans
Southwest area Marine Plan (England)
10 Point Plan for a Green Industrial Revolution
Lundy Marine Management Plan
Torrige and North Devon Joint Local Plan
Exmoor National Park Plan
North Devon AONB Management Plan
Devon County Council Minerals Local Plan



- Incorrect application of the outcomes of the Marine Capital Plan can damage or harm biodiversity rather than restore and enhance it
- Economic drive to carbon offset through blue carbon credits, if flawed in preconception stage will not have the desired effect and could harm biodiversity

#### **1.4 Overview of recommended actions**

- Reestablishment of / reengagement with the Marine Working Group
- Formation of 3+ Marine Officer roles across the coastline to enhance engagement with nature recovery, engage local communities and restore biodiversity
- Promotion of the North Devon Marine Wildlife Aware Accreditation Scheme
- The plan should be used to support the development of the statutory North Devon Nature Recovery Strategy under the Environment Bill
- A holistic Integrated Coastal Zone Management approach should be applied and embedded as local policy-
- Engagement and awareness raising activities including a North Devon Nature festival
- Provision of training and training opportunities to engage local communities in opportunities to protect the local biodiversity such as Shoresearch
- Encouraging “ownership” of local shores, wildlife etc. within and by local communities through the development of local nature community groups or Coastal Champions
- Encompassing all interpretation into one clear, informative and inclusive branding style and creating additional interpretation at suitable shore access points
- Funding for warden(s) to patrol and enforce Public Space Protection Orders (PSPOs) and other habitat / species protections
- Using, enhancing and extending the reach/remit of existing engagement methods such as Codes of Conduct, the Southwest Coast Path App and North Devon Explorer App

#### **1.5 Conservation designations in the North Devon Biosphere Reserve marine area**

The Marine Nature Recovery Plan interacts with:

- North Devon Area of Outstanding Natural Beauty
- four Special Areas of Conservation (Braunton Burrows, Lundy, Bristol Channel Approaches and Tintagel-Marsland-Clovelly Coast)
- five Marine Conservation Zones (Lundy, Northwest of Lundy, Morte Platform, Bideford to Foreland Point, Hartland Point to Tintagel, and the South West Approaches to the Bristol Channel)
- more than 20 Sites of Special Scientific Interest in coastal areas, including the Taw-Torridge estuary, Exmoor coast, Saunton to Baggy Point, and Northam Burrows (**Table 2**)

#### **1.6 Management measures for fishing activities in NDBR:**

- Lundy NTZ: a No Take Zone (NTZ) has been in place off the east coast of Lundy island since 2003. Within a NTZ it is illegal to remove sea life.
- IFCA<sup>2</sup> byelaws restricting netting and mobile gear were extended across the Lundy MCZ (2014), mobile gear is also prohibited within Taw-Torridge estuary.

---

<sup>2</sup> Inshore Fisheries and Conservation Authority

- Netting permit area byelaws prohibit the removal of spiny lobster in Bideford to Foreland Point MCZ, and restrict net types to drift or seine nets in specific locations.
- Seine nets under 20m for sand eel only are permitted under license conditions in Taw Torridge estuary.
- The Trevoze Box has been closed, under EU regulations, to fishing activities between January and March since 2005, with the intention of reducing the fishing mortality of Atlantic cod.
- The Ray Box is a voluntary effort, initiated in 2005 by North Devon fishermen, Welsh and Belgium fishers in which an area is closed to mobile fishing for 6 months of the year to protect nursery grounds for Ray species and allow spawning to take place.
- The Whelk Box is a gentleman's agreement between local and visiting fishermen who use static and mobile gear.

**Table 2. Description of marine conservation designations in the North Devon Biosphere Reserve, the purpose and organisational responsibilities**

Designation	Purpose	Key responsibilities relating to Designations
European Marine Sites (EMS) e.g. Special Area of Conservation (SAC)	Protect habitats and species of European importance designated under the Habitats Directive (EEC, 1992)	Marine Management Organisation (MMO) <ul style="list-style-type: none"> <li>• Responsible for the management of MCZs and EMSs</li> </ul> Inshore Fisheries and Conservation Authorities (IFCAs)
Marine Conservation Zone (MCZ)	Protect nationally important habitats and species designated under the United Kingdom and Coastal Access Act (MCAA) 2009	<ul style="list-style-type: none"> <li>• Between 0-6miles, lead regulators for fisheries within their districts</li> <li>• Under MCAA: duty to 'further the conservation objectives of MCZs'</li> <li>• Under the Conservation of Habitats and Species(Amendment) Regulations 2012: required to exercise their functions which are relevant to nature conservation so as to ensure compliance with the requirements of the Directives</li> </ul> Natural England <ul style="list-style-type: none"> <li>• Undertake condition assessments to identify if features within SACs and MCZs are in favourable condition and a conservation objective of 'maintain' can be applied*</li> </ul>
Sites of Special Scientific Interest (SSSI)	Any land which is of special interest by reason of any of its flora, fauna, geological or physiological features notified under the Wildlife and Countryside Act 1981(amended 1985)	Natural England <ul style="list-style-type: none"> <li>• Provide condition assessment of SSSIs and can advise on appropriate management measures</li> </ul>
Area of Outstanding Natural Beauty (AONB)	Land which meets the criterion for an AONB is protected by the Countryside and Rights of Way Act (CROW) 2000	Natural England <ul style="list-style-type: none"> <li>• Can make orders to designate AONBs or vary the boundaries of existing ones</li> <li>• Give advice to local planning authorities on development proposals in an AONB</li> </ul>

*\*All MPA sites require the designated habitat or species features they contain to be "recovered" or "maintained" to "favourable condition".*

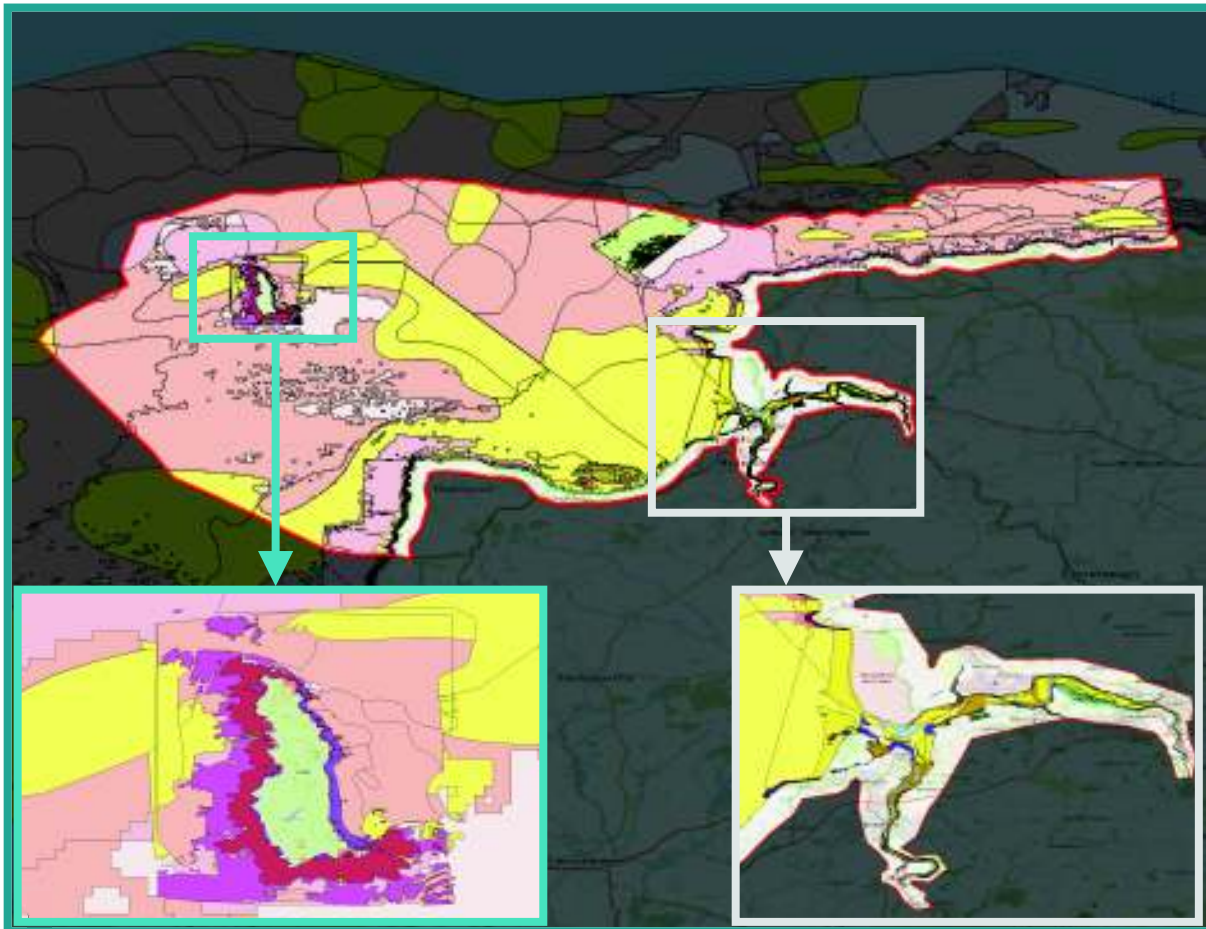
*For MCZ: "... the extent is required to be stable or increasing and its structures and functions, its quality and the composition of its characteristic biological communities are such as to ensure that it remains in a condition which is healthy and not deteriorating" (Carr et al., 2016; JNCC, 2010).*

*For SAC: "... the natural range and area of a habitat feature is stable or increasing and which are necessary for its long-term maintenance are present and are likely to continue to exist for the foreseeable future" (JNCC, 2017).*

## 2. Habitats of North Devon

The marine area is dominated by sedimentary habitats, particularly sand and coarse sediments. There are also rocky reef areas, and pockets of macro-algae. Intertidal habitats include mussel beds, saltmarsh and mudflats within the Taw Torridge estuary, as well as rocky shores and sandy beaches (Figure 1). The sand dunes at Braunton and Northam Burrows are important coastal margin habitats and support protected species including petalwort and the sandbowl snail.

**Figure 1. Map showing the broad scale habitat types present within the marine area of the North Devon Biosphere boundary (red line). Detail of habitat types around Lundy island (blue box) and the Taw-Torridge estuary (light grey box) are highlighted.**



### Legend

A1: Littoral rock and other hard substrata  
 A1.1: High energy littoral rock  
 A1.2: Moderate energy littoral rock  
 A1.3: Low energy littoral rock  
 A1.4: Features of littoral rock  
 A2.1: Littoral coarse sediment  
 A2.3: Littoral mud  
 A2.4: Littoral mixed sediments  
 A2.5: Coastal saltmarshes and saline reedbeds  
 A2.2: Littoral sand and muddy sand  
 A2.7: Littoral biogenic reefs  
 A2.8: Features of littoral sediment  
 A3: Infralittoral rock and other hard substrata

	A3.1: Atlantic and Mediterranean high energy infralittoral rock	
	A3.2: Atlantic and Mediterranean moderate energy infralittoral rock	
	A3.3: Atlantic and Mediterranean low energy infralittoral rock	
	A3.7: Features of infralittoral rock	
	A4: Circalittoral rock and other hard substrata	
	A4.1: Atlantic and Mediterranean high energy circalittoral rock	
	A4.2: Atlantic and Mediterranean moderate energy circalittoral rock	
	A5.1: Sublittoral coarse sediment	
	A5.2: Sublittoral sand	
	A5.3: Sublittoral mud	
	A5.4: Sublittoral mixed sediments	
	B3.1: Supralittoral rock (lichen or splash zone)	
	North Devon Biosphere Marine Boundary	

## 2.1 Coastal dunes, sandy shore & shingle ridge

### Asset & risk register summary

Extent trend	Condition
Insufficient data	



#### Protective measures:

- Braunton Burrows SAC & SSSI
- Northam Burrows SSSI
- Exmoor Priority Habitat

#### Responsibilities:

- Natural England
- Local Authorities
- National Trust
- Private beach owners / managers

#### Interests:

- Armed Forces
- Coastwise
- North Devon AONB
- South West Coast Path Association



**Figure 2. Map showing the locations of dune and related habitats (see Legend) within the North Devon Biosphere Marine boundary (red line).**

Braunton Burrows is the largest sand dune system in northern Devon, forming the core area of the UNESCO Biosphere Reserve, a Special Area of Conservation and SSSI. Other notable dune systems in the area include Northam Burrows, Croyde, Dunes, Woolacombe Warren and Instow Dunes. The plants and animals inhabiting these unique habitats are highly specialised, adapted to living at the very edge of where the land meets the sea, including sea stock and the sand dune tiger beetle. The seaward boundary of Northam Burrows is marked by a shingle ridge made up of a bank of large cobbles and is also designated as a SSSI. Through the action of longshore drift, the cobbles have been transported along the coast from as far as Hartland Point, and

been made smooth and rounded as the waves have picked them up and carried them along. There are a diverse range of other beach habitats in the Biosphere, including wave cut rock platforms (e.g. Welcombe and Marsland Mouth), rock and shingle (Lee Bay), smooth pebbles (Greycliff and Bucks Mills), or sand (Woolacombe Bay) (See Sections 2.2 & 2.3 for more information on rocky shore and sediment shore habitats).

## Locations of importance in NDBR

Location	Conservation designation	Condition
Braunton Burrows	SAC, SSSI	Unfavourable, recovering
Northam Burrows	SSSI	Unfavourable, recovering
Croyde Dunes	No designations, however, North Devon Biosphere Reserve's Nature Recovery Plan 2021-2025 found the overall trend in quality and extent of sand dunes across the area has been declining over many years.	
Woolacombe Warren		
Instow Dunes		

### Key pressures/threats: (See Figure 3 for Root Cause Analysis diagram)

Scrub encroachment and smothering of species-rich short turf by invading rank grassland caused by lack of dynamism in habitat and under grazing.

Community assemblage change due to alien and invasive species e.g. bramble, wild privet, willow and non-native sea buckthorn and Japanese rose.

Erosion of foredunes due to increased frequency and intensity of storms.

Declines in water levels leading to species assemblage change in dune slack communities - probable causes include reduced precipitation, drainage ditch improvements, scrub encroachment and reduced tidal inundation.

Lack of enforcement of Public Space Protection Order (PSPO) with regard to dog walkers.

Threats to associated species e.g. declines in Beachcomber beetle (likely due to overuse of beaches by people, and removal of driftwood from beaches); Sandbowl snail populations (climate-change indicator but lack of data & monitoring)

### Current positive initiatives:

Instow Dune Pen Trial 2020 - fences installed as part of dune management to reduce sand encroachment on roads and trial natural solutions to reduce flood risk in the estuary.

Braunton Burrows management: recent dune slack scraping, control of invasive sea buckthorn and other scrub removal, and ongoing military training use, are starting to restore habitat dynamism

Dynamic Dunescapes project is developing a shared approach to restoration and management.

National Trust dune restoration: invisible electronic cattle fencing project on Woolacombe Warren.

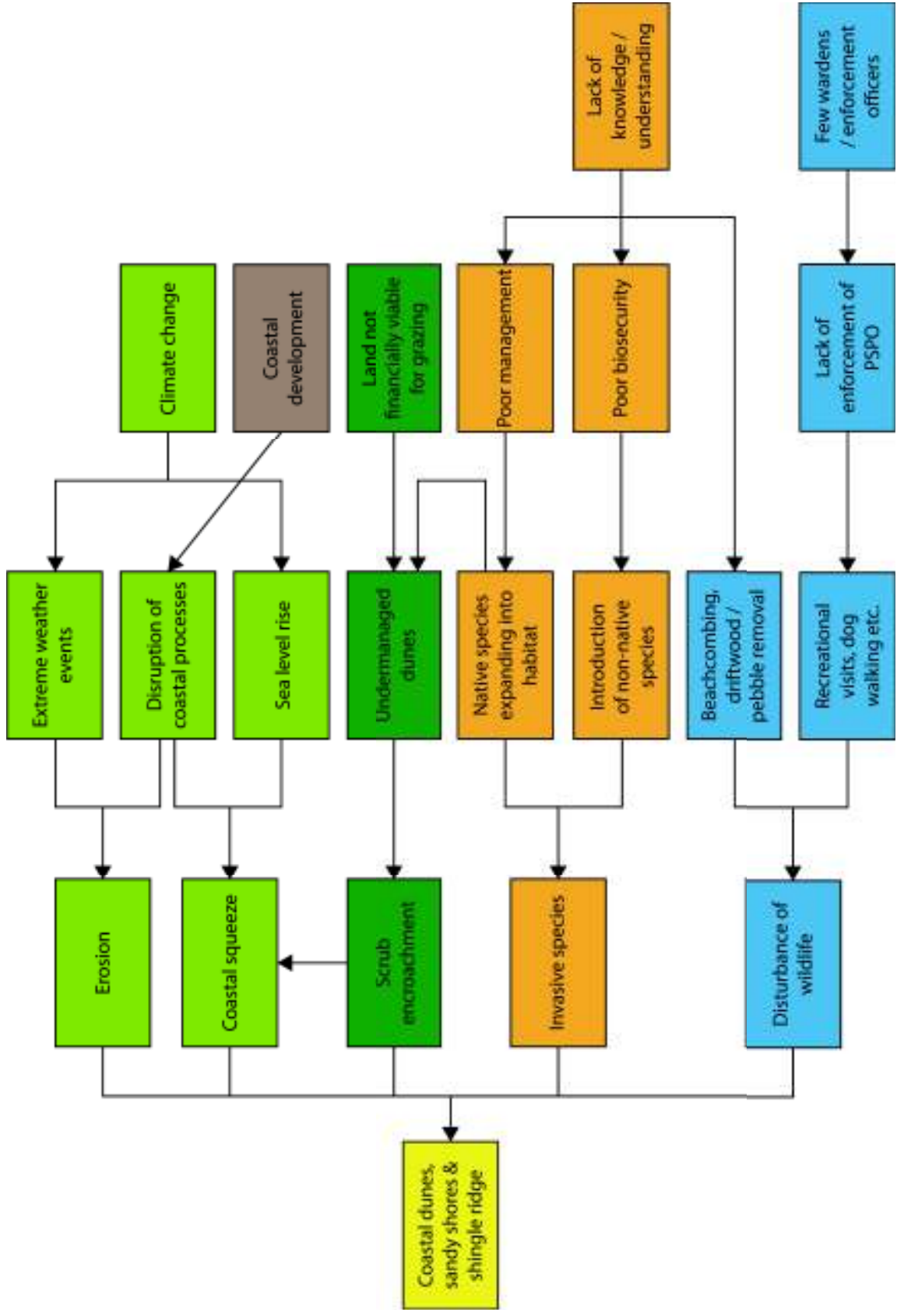
Rhododendron management, especially on Lundy.

Coastwise monitoring & citizen science activities: waterfowl and migratory bird recording, intertidal species presence / abundance surveys (Shoresearch), Invasive Non-native Species (INNS) timed-search surveys

Plastic Free North Devon and other community beach clean groups regularly removing plastics and other marine pollution/litter

Public Space Protection Order (PSPO) in force on beaches to manage people and dogs

Figure 3. RCA diagram for coastal dunes, sandy shore & shingle ridge



## Proposed actions:

Key: ■ Short-term (6months-1year) ■ Mid-term (1-3years) ■ Long-term (3-5+years)

Pressure	Proposed action	Interested parties
Lack of dynamism in habitat	Increase disturbance to expose bare sand and encourage early successional species communities - could be achieved through mechanical devices, allowing more human access, working with farmers and landowners to allow grazing	Beach owners / managers, Local farmers, General public
	Research and trial systems approach to dune management that reintroduces dynamism to late successional stage habitats at a larger scale and across connective habitats	North Devon Biosphere, Natural England, National Trust, Academic / research institutes
Invasive species	Support activities of Coastwise INNS surveys and Dynamic Dunescapes project to record and remove invasive species from dune habitats	Coastwise, General public, North Devon Biosphere, Natural England, National Trust, Beach owners / managers
	Prioritisation and expansion of current invasive species monitoring and control projects to other dune habitats across the North Devon Biosphere	North Devon Biosphere, Coastwise, Beach owners / managers
	Increase education and engagement activities on invasive garden escapees (to both the public and garden centres)	North Devon Biosphere
Climate change (storms, precipitation)	Review technical evidence for proposed Taw-Torridge Coastal Change Management Area (CCMA) and development of CCMA through local plans	Local Councils, Environment Agency, Natural England, Marine Management Organisation
	Continue to test and trial approaches centred on nature-based solutions to build resilience i.e. Instow Dune Pen Trial	North Devon Biosphere, Environment Agency
	Engagement with landowners and public to raise awareness	Local Councils, North Devon Biosphere, North Devon AONB, Natural England, Environment Agency, National Trust
Visitors and public access	Support activities of Plastic Free North Devon (PFND) and other beach cleaning initiatives across the North Devon Biosphere area	PFND, North Devon Biosphere, Local Authorities
	Increase public engagement activities, education and signage regarding marine pollution / litter	PFND, North Devon Biosphere, Local Authorities
	Funding and appointment of warden to enable effective enforcement of Public Space Protection Orders	Local Authorities, North Devon Biosphere, Private beach owners / managers

## **EUNIS Habitat Classification types included in this chapter:**

Coastal dunes and sandy shore (B1); Coastal shingle (B2)

## **References:**

Natural England, Environment Agency, Devon Highways, Instow Parish Council, the North Devon Biosphere Reserve and the Christie Estate (2020) Instow Sand Dunes - Dune Pen Trial 2020 Position Statement. Available at: [https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/instow\\_sand\\_pens\\_dune\\_training\\_trial\\_joint\\_position\\_statement\\_02.06.2020\\_3.pdf](https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/instow_sand_pens_dune_training_trial_joint_position_statement_02.06.2020_3.pdf)

Burden, R. J (1998) A hydrological investigation of three Devon sand dune systems: Braunton Burrows, Northam Burrows and Dawlish Warren. Available at: <https://pearl.plymouth.ac.uk/bitstream/handle/10026.1/2081/RACHEL%20JANE%20BURDEN.pdf?sequence=1>

Devon County Council. List of Beaches and managers by district. Available at: <https://www.devon.gov.uk/wasteandrecycling/fly-tipping/community-litter-pick-pack/list-of-beaches-and-managers-by-district/>

Dynamic Dunescapes. Projects: Devon. Available at: <https://dynamicdunescapes.co.uk/project/devon/>

North Devon Council & Torrington District Council (2021) Coastal Change Technical Evidence Taw-Torrington Estuary Briefing Note. Available at: <https://consult.torrington.gov.uk/kse/folder/92719>

North Devon Biosphere (2021) North Devon UNESCO Biosphere Reserve Nature Recovery Plan 2021-2025: Coast. Available at: [https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/bnrg\\_coast\\_final\\_for\\_uploading\\_3.pdf](https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/bnrg_coast_final_for_uploading_3.pdf)

Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth Available at: <https://ukseasproject.org.uk/cms-data/reports/Natural%20Capital%20Asset%20and%20Risk%20Register%20North%20Devon.pdf>

North Devon and Somerset Shoreline Management Plan (SMP2) (2010) Available at: <https://southwest.coastalmonitoring.org/resources-2/ndascagsmp2/>

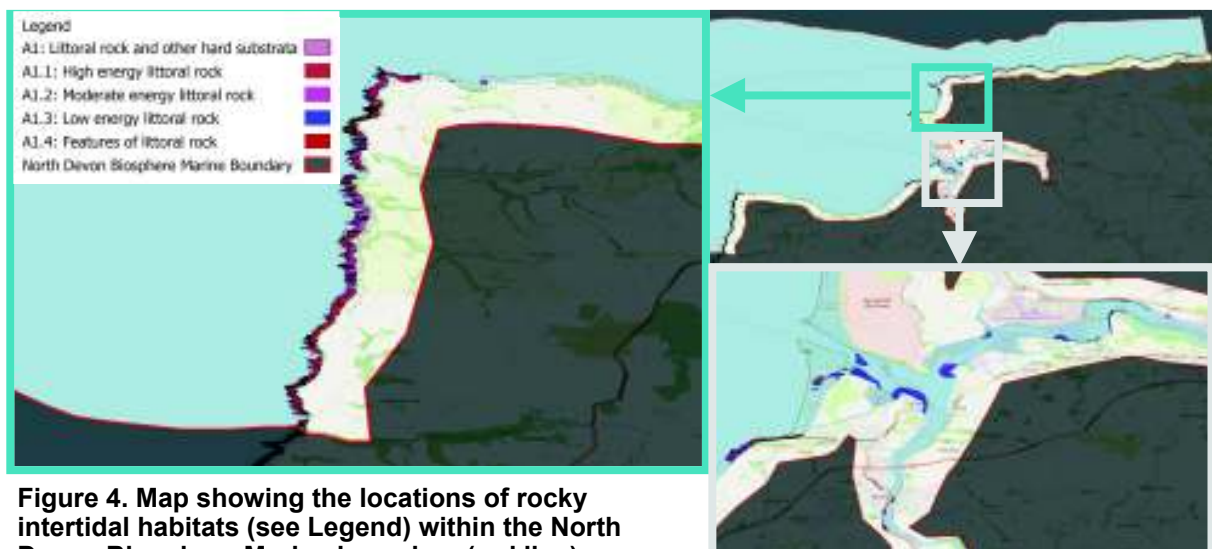


## 2.2 Coastal and estuarine rocky intertidal habitats

Asset & risk register summary	
Extent trend	Condition
Insufficient data	



- Protective measures:**
- Bideford to Foreland Point MCZ
  - Hartland Point to Tintagel MCZ
  - Lundy SAC & SSSI
  - Exmoor and UK BAP Priority Habitat
- Responsibilities:**
- Natural England
  - Local Authorities
  - National Trust
  - Private beach owners / managers
- Interests:**
- Lundy MPA Advisory Group
  - Coastwise
  - North Devon AONB



Rocky shore habitats includes bedrock, boulders and cobbles which occur in the intertidal zone and the splash zone. The upper limit is marked by the top of the lichen zone and the lower limit by the top of the laminarian kelp zone. Many physical variables affect rocky shore communities - wave exposure, salinity, temperature and the daily movement of the tides. In NDBR, intertidal rocky areas provide habitats for many species, including the honeycomb worm. Honeycomb worm reefs are formed from the closely-packed sand tubes constructed by these colonial worms. The reef structures resemble honeycomb and can extend for tens of metres across and up to a metre tall. They, in turn, are able to support a wide range of shore-dwelling species including anemones, snails, shore crabs and seaweeds. This habitat also encompasses rocky habitats in the Taw-Torridge estuary which is a comparatively uncommon feature in estuaries in the UK. Estuarine rocky habitats, along with a complex of other estuarine habitats, are part of the 'connectivity' of land, estuary and open sea. For example, the rich and sheltered waters of estuaries provide nursery grounds for fish, and estuarine rocky habitats are an important component of these nursery grounds.

## Locations of importance in the North Devon Biosphere:

Location	Conservation designation	Condition
Honeycomb worm reefs	Bideford to Foreland Point & Hartland Point to Tintagel SSSI	Favourable, maintain
Intertidal rock habitats	Bideford to Foreland Point & Hartland Point to Tintagel SSSI	Favourable, maintain
Reefs, sea caves and overhangs	Lundy SAC	Favourable, maintain

### Key pressures/threats: (See Figure 5 for Root Cause Analysis diagram)

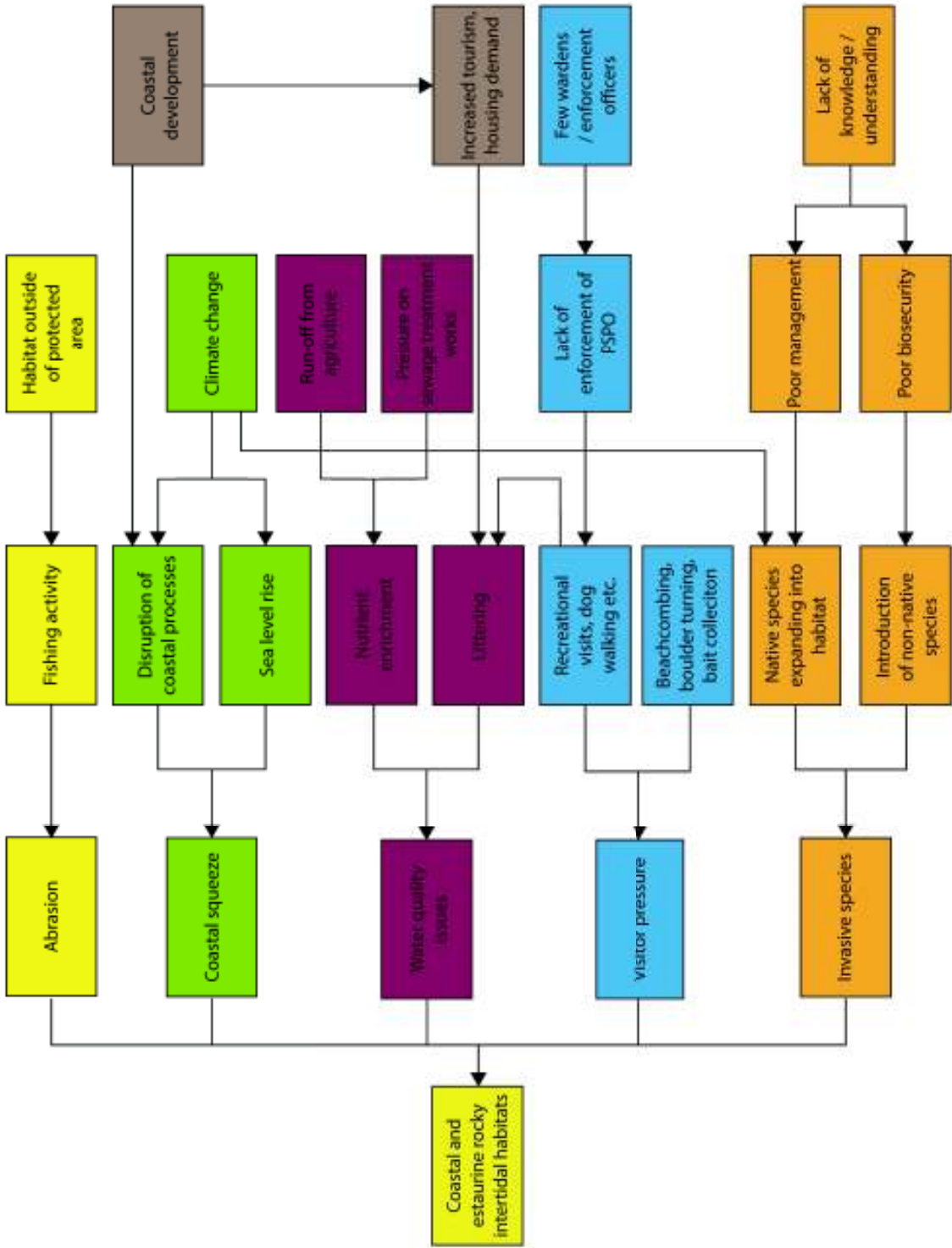
- Climate change - range expansions / contractions of some species in response to climate-related changes in environmental conditions
- Knowledge gaps - Resilient habitats but flora and fauna is changing and these habitats are not systematically monitored in northern Devon so the rate and extent of change in these communities is relatively unknown
- Abrasion - Evidence of historic abrasion pressures linked to fishing activity was identified as having reduced the condition of these habitats in the North Devon Asset and Risk Register
- Human development - Coastal squeeze will continue to reduce the condition and extent of these habitats if adaptive and mitigating measures are not adopted to counteract pressure from human development and climate change (sea level rise, storminess, coastal erosion)
- Visitor pressure - Physical and ecological disturbance of the habitat from public pressure including trampling, boulder turning and associated species disturbance e.g. dog walking, bait collection
- Invasive species - Possible impact of invasive and non-native species now and in the future e.g. *Sargassum spp.*, *Caulacanthus spp.* Pacific oyster
- Water quality - issues due to nutrient enrichment from agricultural run-off, sewage release (also linked to climate change through increased storminess), fuel and oil spills, marine pollution and litter along whole coast

### Current positive initiatives:

- Coastwise monitoring & citizen science activities: waterfowl and migratory bird recording, intertidal species presence / abundance surveys (Shoresearch), Invasive Non-native Species (INNS) timed-search surveys
- Plastic Free North Devon (PFND) and other community beach clean groups regularly removing plastics and other marine pollution/litter
- Public Spaces Protection Order (PSPO) in force on beaches to manage people & dogs
- Various national and local emissions reduction targets and moves to carbon neutrality e.g. proposed aquaculture projects such as Bideford Bay seaweed farm would contribute to carbon sequestration
- Moves to encourage visitors to visit locations away from the Devon coast, particularly during busy periods through BioCultural Heritage Project and North Devon Tourism app
- Shore safari and similar engagement activities run by Coastwise North Devon, Northam Burrows County Park, Parkdean Resorts at Croyde, Combe Martin Museum etc.
- Good signage as regards natural value at some sites (but poor / non-existent at others)
- CRITTER<sup>3</sup> project and Catchment Sensitive Farming in the Countryside Stewardship Water Quality Priority Area - working with farmers to help reduce diffuse pollution from agriculture.

<sup>3</sup> Co-ordinated response for Intertidal Taw Torridge Estuary restoration

Figure 5. RCA diagram for coastal and estuarine rocky intertidal habitats



## Proposed actions:

Key: ■ Short-term (6months-1year) ■ Mid-term (1-3years) ■ Long-term (3-5+years)

Pressure	Proposed action	Interested parties
Water quality	Improve water quality for shellfish and recreational waters in the estuary, deliver SSSI measures, Water Framework Directive objectives, Shoreline Management Plan objectives and address climate change impacts aiming to achieve good quality status by 2030. (CRITTER project) (ND Recovery Plan 2021-2025: Coast)	North Devon Biosphere, Environment Agency, Natural England, Plymouth. & Swansea Universities, Plymouth Marine Aquarium
	Promote measures to reduce disposal of plastics into the environment, increase litter picking, education & awareness of potential impact of plastic on wildlife. (North Devon Recovery Plan 2021-2025: Coast)	Plastic Free Northern Devon Consortium, Local Authorities
	Test and trial approaches centred on nature-based solutions to build resilience e.g. mussel beds for water quality remediation	North Devon Biosphere, Environment Agency
Invasive species	Monitor representative MCZ rocky shores using DWT Shoresearch methodology for citizen scientists, under DWT guidance, to provide baseline data and develop for shore monitoring. (North Devon Recovery Plan 2021-2025: Coast)	Coastwise, Devon Wildlife Trust, North Devon AONB Sustainable Development Fund
	Research and monitoring project on impact of invasives e.g. pacific oysters, <i>Caulacanthus</i> & <i>Sargassum</i> algae. (North Devon Recovery Plan 2021-2025: Coast)	Coastwise, Plymouth MBA
	Increase education and engagement activities on invasive species (to both the public and business)	North Devon Biosphere
	Scoping for biosecurity plans as good practice or required under licence in the North Devon Biosphere including new mariculture enterprises	D&S IFCA, North Devon Biosphere, Local fishing community
Climate change (storms, precipitation)	Review technical evidence for proposed Tav-Torrige Coastal Change Management Area (CCMA) & development of CCMA through local plans	Local Councils, Environment Agency, Natural England, Marine Management Organisation
	Engagement with landowners and public to raise awareness	Local Councils, North Devon Biosphere, North Devon AONB, Natural England, Environment Agency, National Trust
Visitors and public access	Support activities of Plastic Free North Devon (PFND) and other beach cleaning initiatives across the area	PFND, North Devon Biosphere, Local Authorities
	Funding and appointment of wardens to enable effective enforcement of PSPO	Local Authorities, North Devon Biosphere, Beach owners

### **EUNIS Habitat Classification types included in this chapter:**

Littoral rock and other hard substrata (A1); High energy littoral rock (A1.1); Moderate energy littoral rock (A1.2); Low energy littoral rock (A1.3); Features of littoral rock (A1.4); Littoral chalk communities (B3.114, B3.115, A1.441, A1.2143); Honeycomb worm, Sabellaria alveolata reef (A2.71, A2.711, A5.612); Intertidal underboulder communities (A1.2142, A3.2112); Estaurine rocky habitats; Supralittoral rock (lichen or splash zone) (B3.1)

### **References:**

- North Devon Council & Torridge District Council (2021) Coastal Change Technical Evidence Task-Torridge Estuary Briefing Note. Available at: <https://consult.torridge.gov.uk/kse/folder/92719>
- North Devon Biosphere (2021) North Devon UNESCO Biosphere Reserve Nature Recovery Plan 2021-2025: Coast. Available at: [https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/bnnp\\_coast\\_final\\_for\\_uploading\\_3.pdf](https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/bnnp_coast_final_for_uploading_3.pdf)
- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth Available at: <https://ukseasproject.org.uk/cms-data/reports/Natural%20Capital%20Asset%20and%20Risk%20Register%20North%20Devon.pdf>
- North Devon and Somerset Shoreline Management Plan (SMP2) (2010) Available at: <https://southwest.coastalmonitoring.org/resources-2/ndascagsmp2/>

## 2.3 Coastal and estuarine sediment intertidal habitats

Asset & risk register summary	
Extent trend	Condition
Stable	Acceptable
(Littoral mud)	Of Concern



Photo credit: North Devon Biosphere

### Protective measures:

- Bideford to Foreland Point MCZ
- Hartland Point to Tintagel MCZ
- Taw-Torrige SSSI
- Exmoor and UK BAP Priority Habitat

### Responsibilities:

- Natural England
- Local Authorities
- National Trust
- Private beach owners / managers

### Interests:

- Coastwise
- North Devon AONB
- South West Coast Path Association



Figure 6. Map showing the locations of rocky sediment habitats (see Legend) within the North Devon Biosphere Marine boundary (red line).

Sediment habitats within the intertidal zone of the shore include shingle (mobile cobbles and pebbles), gravel, sand and mud or any combination of these. Sediment shores are generally found along relatively more sheltered stretches of coast compared to rocky shores. In the North Devon Biosphere Reserve area there are large expanses of bare sand, pebbles, rock, mud (at estuary mouth) exposed at low tide, in one of the largest tidal ranges in the UK. The diverse range of sediment beach habitats include rock and shingle at Lee Bay, smooth pebbles at Greencliff and Bucks Mills, and sandy shores at Woolacombe Bay. In the shelter of the estuary mudflats have formed where fine silt and clay sediments settle. The mud is very fertile thanks to its high content of organic material, making these habitats ideal for filter-feeding and scavenging invertebrates including bristle worms, bivalves (molluscs with two hinged shells) and mud snails - food for flocks of wading birds. (See also Section 2.4 Coastal saltmarsh and saline reedbeds for more information on these key sediment shore habitats in the North Devon Biosphere Reserve)

## Locations of importance in the North Devon Biosphere:

Location	Conservation designation	Condition
Intertidal sediment habitats	Bideford to Foreland Point & Hartland Point to Tintagel SSSI	Favourable, maintain
Estuary mouth & The Skern	Taw-Torridge SSSI	Unfavourable, no-change
River Taw shores	Taw-Torridge SSSI	Favourable, maintain
River Torridge shores	Taw-Torridge SSSI	Favourable, maintain

### Key pressures/threats<sup>4</sup>: (See Figure 7 for Root Cause Analysis diagram)

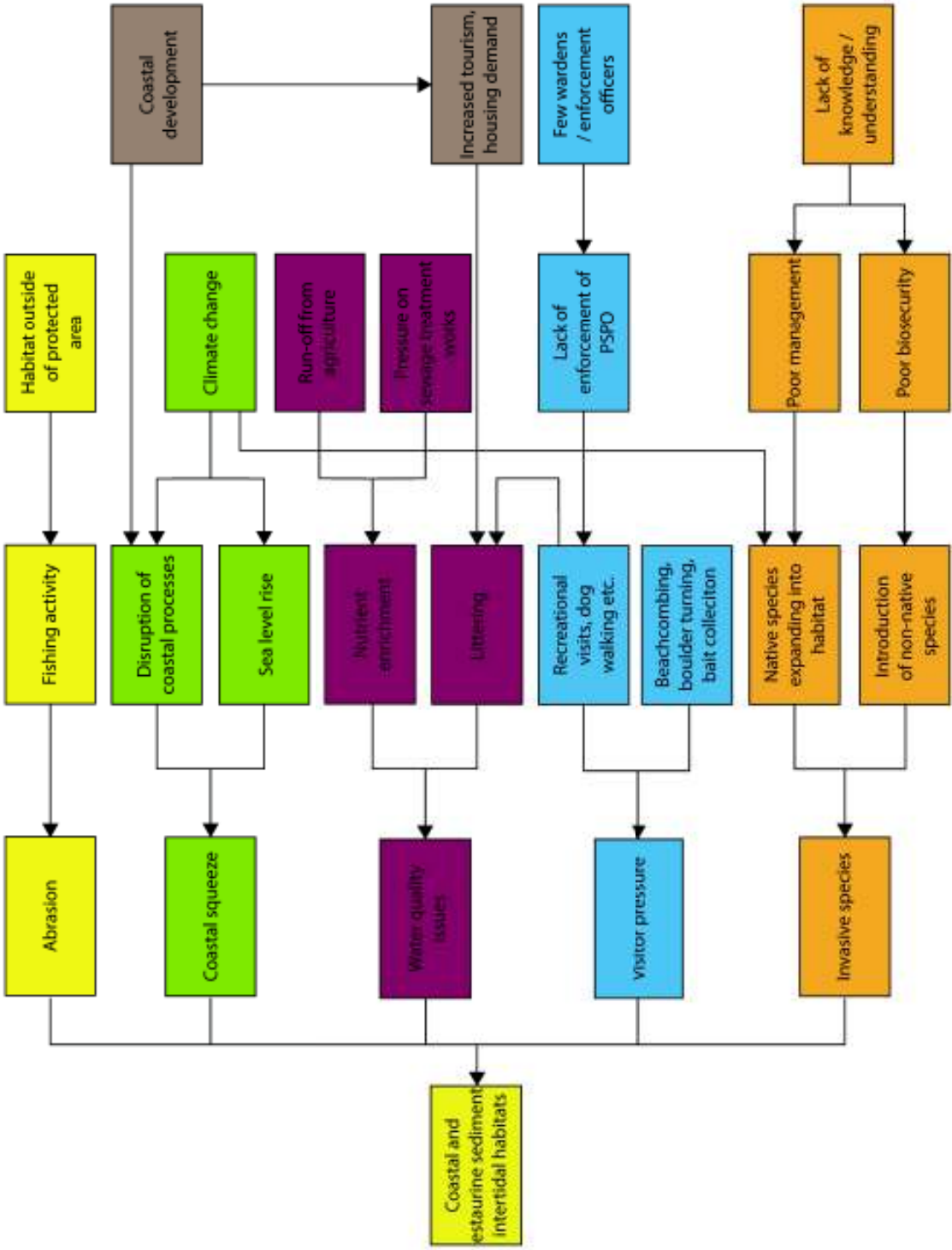
- Climate change - range expansions / contractions of some species in response to climate-related changes in environmental conditions
- Knowledge gaps - habitats are not systematically monitored in northern Devon so the rate and extent of change in these communities is relatively unknown
- Abrasion - Littoral mud habitat provides a moderate contribution to carbon storage / sequestration in the Biosphere but assessed to be "Of Concern" condition due to abrasion from fishing activity and only 43% being contained within MPA (North Devon Asset & Risk Register)
- Coastal squeeze - habitat loss predicted to become an issue, insufficient sediment accretion to keep pace with rising water levels and coastal squeeze due to fixed sea defences becoming ineffective but also preventing natural migration of intertidal sediment habitats inland (North Devon Asset & Risk Register)
- Lack of enforcement of Public Space Protection Order (PSPO) (dog walking)
- Threats to associated species e.g. declines in Beachcomber beetle (likely due to overuse of beaches by people, and removal of driftwood from beaches); disturbance, particularly by dogs, to estuarine and coastal bird species
- Invasive species - Possible impact of invasive and non-native species now and in future e.g. Slipper limpets, Pacific oyster
- Water quality - issues due to nutrient enrichment from agricultural run-off, storm overflow, fuel and oil spills, marine pollution and litter along whole coast

### Current positive initiatives:

- Coastwise monitoring & citizen science activities: waterfowl and migratory bird recording, intertidal species presence / abundance surveys (Shoresearch), Invasive Non-native Species (INNS) timed-search surveys
- Plastic Free North Devon and other community beach clean groups regularly removing plastics and other marine pollution/litter
- PSPO (public spaces protection order) in force on beaches to manage people and dogs
- Various national and local emissions reduction targets and moves to carbon neutrality e.g. proposed aquaculture projects such as Bideford Bay seaweed farm would contribute to carbon sequestration
- Moves to encourage visitors to visit locations away from the Devon coast, particularly during busy periods through BioCultural Heritage Project and North Devon Tourism app
- Shore safari and similar engagement activities run by Coastwise North Devon, Northam Burrows County Park, Parkdean Resorts at Croyde, Combe Martin Museum etc.
- CRITTER project and Catchment Sensitive Farming in the Countryside Stewardship Water Quality Priority Area - working with farmers to help reduce diffuse pollution from agriculture.

<sup>4</sup> See also pressures and current initiatives listed in [Section 2.4 Coastal salt marsh and saline reedbeds](#)

Figure 7. RCA diagram for coastal and estuarine sediment intertidal habitats





## Proposed actions:

Key: ■ Short-term (6months-1year) ■ Mid-term (1-3years) ■ Long-term (3-5years)

Pressure	Proposed action	Interested parties
Water quality	Improve water quality for shellfish and recreational waters in the estuary, deliver SSSI measures, Water Framework Directive objectives, Shoreline Management Plan objectives and address climate change impacts aiming to achieve good quality status by 2030. (CRITTER project) (North Devon Recovery Plan 2021-2025: Coast)	North Devon Biosphere, Environment Agency, Natural England, Plymouth. & Swansea Universities, Plymouth Marine Aquarium
	Promote measures to reduce disposal of plastics into the environment, increase litter picking, education & awareness of potential impact of plastic on wildlife. (North Devon Recovery Plan 2021-2025: Coast)	Plastic Free Northern Devon Consortium, Local Authorities
	Test and trial approaches centred on nature-based solutions to build resilience e.g. mussel beds for water quality remediation	North Devon Biosphere, Environment Agency
Invasive species	Monitor representative MCZ sediment shores using DWT Shoresearch methodology for citizen scientists, under DWT guidance, to provide baseline data and develop for shore monitoring.	Coastwise, Devon Wildlife Trust
	Research and monitoring project on impact of invasives e.g. Slipper limpets, pacific oysters (North Devon Recovery Plan 2021-2025: Coast)	Coastwise, Plymouth MBA
	Increase education and engagement activities on invasive species (to both the public and business)	North Devon Biosphere
	Scoping for biosecurity plans as good practice or required under licence for the area including new mariculture enterprises	D&S IFCA, North Devon Biosphere, Local fishing community
Climate change (storms, precipitation)	Review technical evidence for proposed Taw-Torrige Coastal Change Management Area (CCMA) & development of CCMA through local plans	Local Councils, Environment Agency, Natural England, Marine Management Organisation
	Engagement with landowners and public to raise awareness	Local Councils, North Devon Biosphere, North Devon AONB, Natural England, Environment Agency, National Trust
Visitors and public access	Support activities of Plastic Free North Devon (PFND) and other beach cleaning initiatives across the area	PFND, North Devon Biosphere, Local Authorities
	Funding and appointment of wardens to enable effective enforcement of Public Spaces Protection Orders	Local Authorities, North Devon Biosphere, Beach owners

**EUNIS Habitat Classification types included in this chapter:**

Littoral sediment (A2); Littoral coarse sediment (A2.1); Littoral sand and muddy sand (A2.2); Littoral mixed sediments (A2.4); Littoral biogenic reefs (A2.7); Features of littoral sediment (A2.8); Coastal saltmarsh and saline reedbeds (A2.5) \*see Section 3.3b; Blue mussel beds; Littoral mud (A2.3)

**References:**

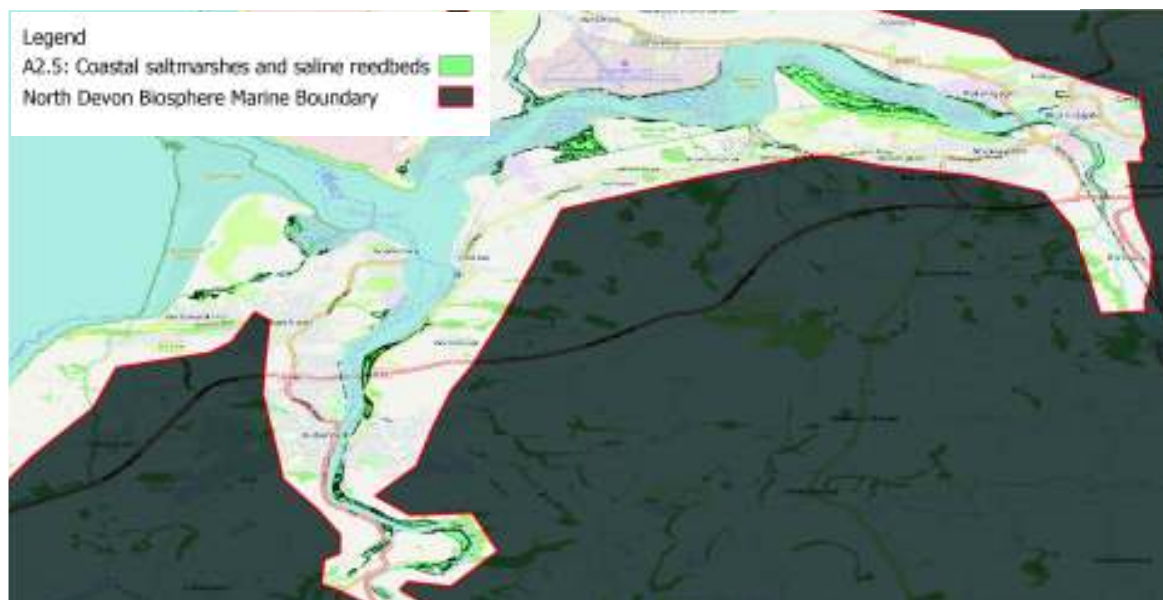
- North Devon Council & Torridge District Council (2021) Coastal Change Technical Evidence Taw-Torridge Estuary Briefing Note. Available at: <https://consult.torridge.gov.uk/kse/folder/92719>
- North Devon Biosphere (2021) North Devon UNESCO Biosphere Reserve Nature Recovery Plan 2021-2025: Coast. Available at: [https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/bnrrp\\_coast\\_final\\_for\\_uploading\\_3.pdf](https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/bnrrp_coast_final_for_uploading_3.pdf)
- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth Available at: <https://ukseasproject.org.uk/cms-data/reports/Natural%20Capital%20Asset%20and%20Risk%20Register%20North%20Devon.pdf>
- North Devon and Somerset Shoreline Management Plan (SMP2) (2010) Available at: <https://southwest.coastalmonitoring.org/resources-2/ndascagsmp2/>
- Environment Agency (2011) Taw Torridge Flood and Coastal Risk Management Study Technical Summary Report. Bristol: Environment Agency. 182 pp.

## 2.4 Saltmarsh and saline reedbeds

Asset & risk register summary	
Extent trend	Condition
Positive	Of Concern



- Protective measures:**
- Hartland Point to Tintagel MCZ
  - Taw-Torridge SSSI
  - Exmoor Priority Habitat
- Responsibilities:**
- Natural England
  - Local Authorities
  - National Trust
  - Private beach owners / managers
- Interests:**
- Coastwise
  - North Devon AONB
  - South West Coast Path Association
  - Environment Agency



**Figure 8. Map showing the locations of saltmarsh and saline seedbed habitats (see Legend) within the North Devon Biosphere Marine boundary (red line).**

Saltmarsh can be found in sheltered coastal areas and are expanses of salt water tolerant grassland, exposed at low tide. This habitat forms where silt and mud collect and allow plants such as marsh samphire and sea purslane to colonise. The plant's abundant seeds are an important source of food for the birds that visit estuaries during the winter and spring. There are large extents of saltmarsh and saline reedbeds within the Taw Torridge Estuary which provide a natural flood prevention service for local communities, as well as being a resource for birds and spawning / nursery area for fish, crustaceans and molluscs. Saltmarsh are also important for climate change, accumulating sediment and organic matter as water levels rise so long as inland migration is not impeded by human development or natural hard barriers. The sediment and plant communities associated with these habitats provide carbon storage and nutrient cycling ecosystem services as well. Saltmarsh habitat is a designated feature of the SSSI and is protected from damaging activities such as removal of the plants under the Wildlife and Countryside Act 1981 (as amended).

## Locations of importance in the North Devon Biosphere:

Location	Conservation designation	Condition
Coastal saltmarsh & reedbed	Hartland Point to Tintagel SSSI	Favourable, maintain
Estuary mouth & The Skern	Taw-Torridge SSSI	Unfavourable, no-change
River Taw	Taw-Torridge SSSI	Favourable, maintain
River Torridge	Taw-Torridge SSSI	Favourable, maintain

### Key pressures/threats<sup>5</sup>: (See Figure 9 for Root Cause Analysis diagram)

- High proportion of salt marsh habitat is contained within MPAs, however, 30% of extent within MPA has conservation objective “recover” due to grazing pressure impacting plant communities. Overall, the North Devon Asset & Risk Register found the condition across the total area of saltmarsh in the Biosphere to be “Of Concern”.
- Poor water quality in the estuary, combined with poor condition of salt marsh habitat, will negatively impact commercial fish stocks and other wildlife that use saltmarsh for nursery and spawning areas.
- Coastal squeeze - habitat loss predicted to become an issue, insufficient sediment accretion to keep pace with rising water levels and coastal squeeze due to fixed sea defences becoming ineffective but also preventing natural migration of intertidal sediment habitats inland (ND Asset & Risk Register)
- Abrasion due to bait digging, launching and retrieving recreation vessels, anchoring and mooring of small recreation craft, hand foraging and dog walking

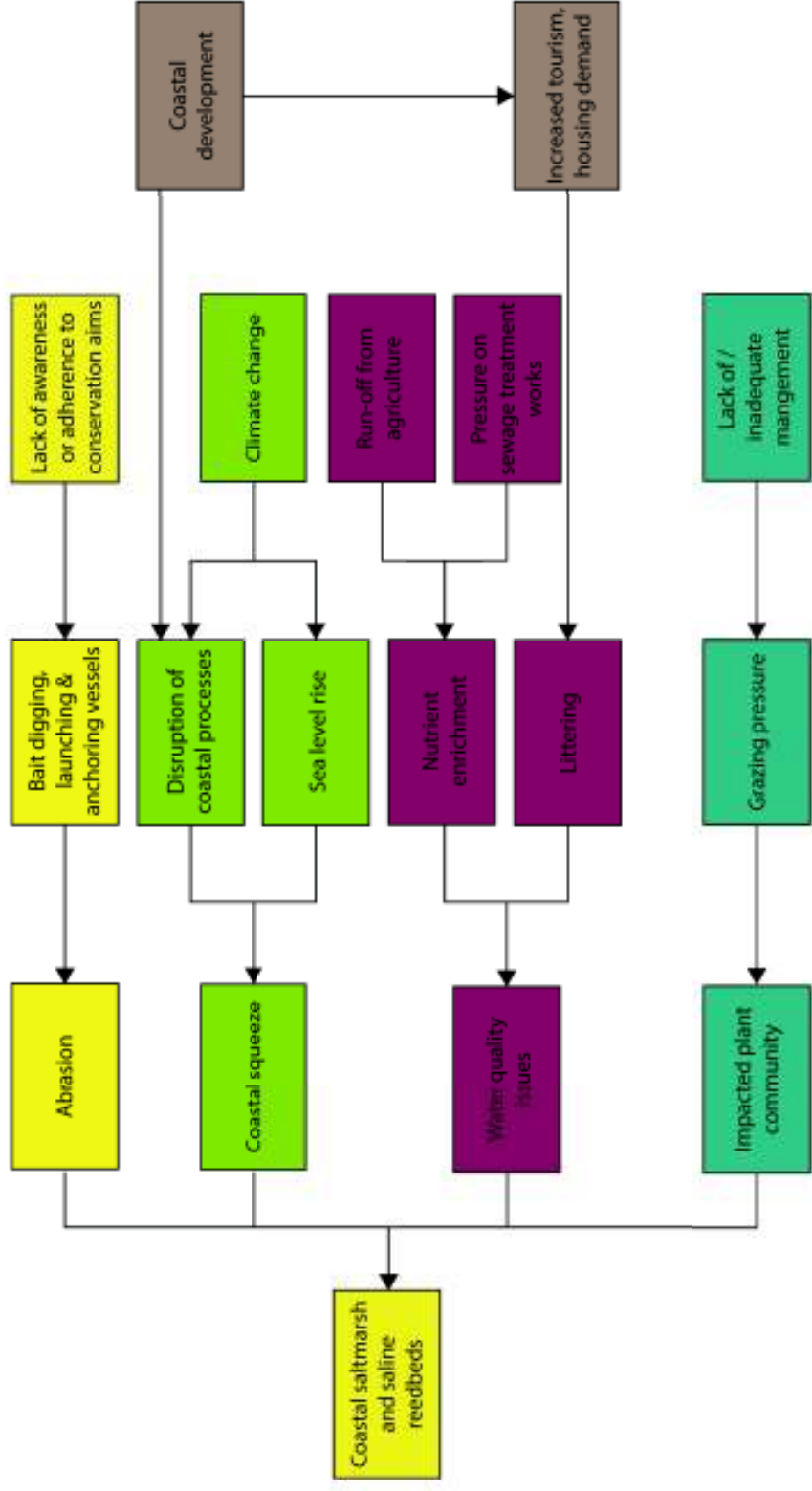
### Current positive initiatives:

- Collaboration between North Devon Biosphere and South West Partnership for Environmental and Economic Prosperity (SWEEP) to create a new tool which helps land managers assess the costs and benefits of re-introducing salt marsh was completed in 2018 - the study identified a number of priority areas for managed realignment in the NDBR area
- North Devon Biosphere and partners are continuing on from the SWEEP study, with the next steps to carry out site surveys, to record the condition and type of the flood defence, outfalls, soil samples, and to look at the current vegetation
- The most recent Shoreline Management Plan (SMP2), though not statutory, has undergone public consultation and provides strong policy advice and direction for sustainable management of the coast in the future
- Horsey Island on the Taw is now a DWT reserve - management and extension to wider Caen Wetlands will maximise biodiversity benefit of natural saltmarsh/mud habitat, with new grazing marsh created further upstream
- North Devon UNESCO Biosphere has won the largest green economy award nationally from the Government’s Community Renewal Fund (CRF) with two linked elements - the Green Biosphere focused on terrestrial projects and the Blue Biosphere focused on offshore wind, aquaculture, marine biodiversity and ‘blue carbon’
  - Biosphere Blue Carbon will deliver innovative habitat projects such as seagrass, saltmarsh, oyster reefs and kelp forests.
  - Coastal Restoration Fund (CRF) activities include geographical site analysis, investment case and commercial strategy, building evidence to extend to other UK coastal areas.

---

<sup>5</sup> See also pressures and current initiatives listed in [Section 2.3 Coastal and estuarine sediment intertidal habitats](#)

Figure 9. RCA diagram for coastal salt marsh and saline reedbed habitats



## Proposed actions:

Key: ■ Short-term (6months-1year) ■ Mid-term (1-3years) ■ Long-term (3-5years)

Pressure	Proposed action	Interested parties
Habitat loss	Prioritise restoration (both condition and extent) of salt marsh in the Biosphere with consideration of the ecological function and connectivity of saltmarshes in the wider Bristol Channel. Specific target: restore / create at least 14ha of coastal land to intertidal (salt marsh and seagrass beds) and freshwater wetland habitats by 2025 (North Devon Nature Recovery Plan 2021-2025:Coast)	North Devon Biosphere, Natural Capital Fund, Flood Defence, Innovative Resilience Fund (IRF)
Grazing pressure	Seek reduction in pressures on intertidal saltmarsh extents (e.g. managing grazing and construction activities on or near salt marsh in Taw-Torridge SSSI)	North Devon Biosphere, Natural England, Landowners
	Develop a network of local voluntary monitors for SSSIs to flag local issues that could impact on that site (e.g. grazing or new development) (North Devon Nature Recovery Plan 2021-2025:Coast)	Natural England, general public (volunteers)
Associated species impacts	Facilitate meeting/partnership of NGOs etc with local birding interests, to coordinate working together for habitat protection and creation around the estuary. (North Devon Nature Recovery Plan 2021-2025:Coast)	RSPB, Devon Wildlife Trust, Natural England, Gaia Trust, WeBS, Devon Birds
Climate change	Share modelling of forthcoming major sediment/habitat shifts in estuary with the public in preparation for remedial & other measures. (North Devon Nature Recovery Plan 2021-2025:Coast)	Environment Agency, Natural England, Local Planning Authorities, North Devon Biosphere, Taw-Torridge Estuary Forum
	Review technical evidence for proposed Taw-Torridge Coastal Change Management Area (CCMA) and development of CCMA through local plans	Local Councils, Environment Agency, Natural England, Marine Management Organisation
	Engagement with landowners and public to raise awareness	Local Councils, North Devon Biosphere, North Devon AONB, Natural England, Environment Agency, National Trust
Water quality	Improve water quality for shellfish and recreational waters in the estuary, deliver SSSI measures, Water Framework Directive objectives, Shoreline Management Plan objectives and address climate change impacts aiming to achieve good quality status by 2030. (CRITTER project) (North Devon Nature Recovery Plan 2021-2025:Coast)	North Devon Biosphere, Environment Agency, Natural England, Plymouth. & Swansea Universities, Plymouth Marine Aquarium

## **EUNIS Habitat Classification types included in this chapter:**

Coastal saltmarsh and saline reedbeds (A2.5)

### **References:**

- North Devon Council & Torrington District Council (2021) Coastal Change Technical Evidence Taw-Torrington Estuary Briefing Note. Available at: <https://consult.torrington.gov.uk/kse/folder/92719>
- North Devon Biosphere (2021) North Devon UNESCO Biosphere Reserve Nature Recovery Plan 2021-2025: Coast. Available at: [https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/bnrp\\_coast\\_final\\_for\\_uploading\\_3.pdf](https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/bnrp_coast_final_for_uploading_3.pdf)
- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth Available at: <https://ukseasproject.org.uk/cms-data/reports/Natural%20Capital%20Asset%20and%20Risk%20Register%20North%20Devon.pdf>
- North Devon and Somerset Shoreline Management Plan (SMP2) (2010) Available at: <https://southwest.coastalmonitoring.org/resources-2/ndascagsmp2/>
- Environment Agency (2011) Taw Torrington Flood and Coastal Risk Management Study Technical Summary Report. Bristol: Environment Agency. 182 pp.
- Ashley, M., Rees, S., & Cameron, A. (2018). North Devon Marine Pioneer Part 1: State of the art report of the links between ecosystem and ecosystem services in the North Devon Marine Pioneer. A report to WWF-UK by research staff at the Marine Institute at Plymouth.

## 2.5 Subtidal rocky habitats

Asset & risk register summary	
Extent trend	Condition
Stable	Of Concern



### Protective measures:

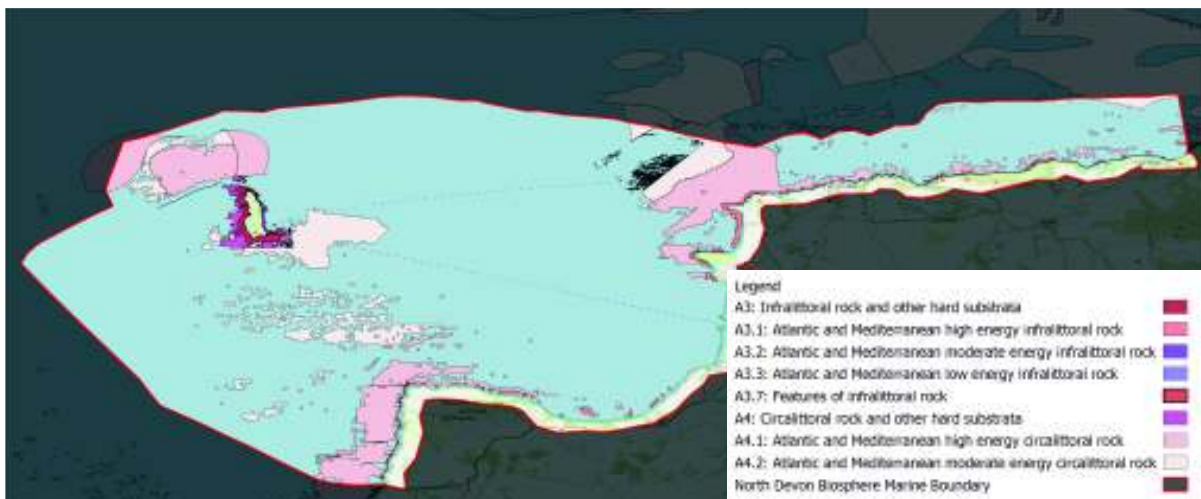
- Bideford to Foreland Point MCZ
- Hartland Point to Tintagel MCZ
- Morte Platform MCZ
- Lundy SAC

### Responsibilities:

- Natural England
- Devon & Severn IFCA
- Marine Management Organisation

### Interests:

- Lundy MPA Advisory Group
- Recreational divers
- North Devon Fishermans Association



**Figure 10. Map showing the locations of subtidal rocky habitats (see Legend) within the North Devon Biosphere Marine boundary (red line).**

Subtidal rock habitats comprise bedrock, boulders and cobbles occurring below low water mark. The communities found here are strongly affected by the availability of light; shallow areas are typically dominated by seaweeds and beyond the depth that light can penetrate (about 50m) communities comprise exclusively animals. Reefs are rocky marine habitats or biologically formed hard structures that rise from the seabed. Lundy is a granite and slate reef system which is considered to be an unusually diverse. The variety of habitats and associated species on the reefs includes a large number of seaweeds and many rare or unusual species, including Mediterranean-Atlantic species at, or very close to, their northern limit of distribution. In particular, fragile long-lived species, such as the soft coral *Parerythropodium coralloides*, sea-fan *Eunicella verrucosa* and a variety of erect branching sponges, are found in deep, sheltered conditions, particularly on the east coast of the island. All five British species of cup-coral are found here, including the scarlet and gold star-coral *Balanophyllia regia* and the sunset cup-coral *Leptopsammia pruvoti*.



## Locations of importance in the North Devon Biosphere:

Location	Conservation designation	Condition
Infralittoral rock	Bideford to Foreland Point Hartland Point to Tintagel SSSI	Favourable, maintain
Circalittoral rock	Bideford to Foreland Point Hartland Point to Tintagel SSSI Morte Platform MCZ	Favourable, maintain Unfavourable, recover Unfavourable, recover
Sponge & anthozoan communities on subtidal rocky	Bideford to Foreland Point Hartland Point to Tintagel SSSI	Favourable, maintain Unfavourable, recover
Reefs, sandbanks & sea caves	Lundy SAC	Favourable, maintain

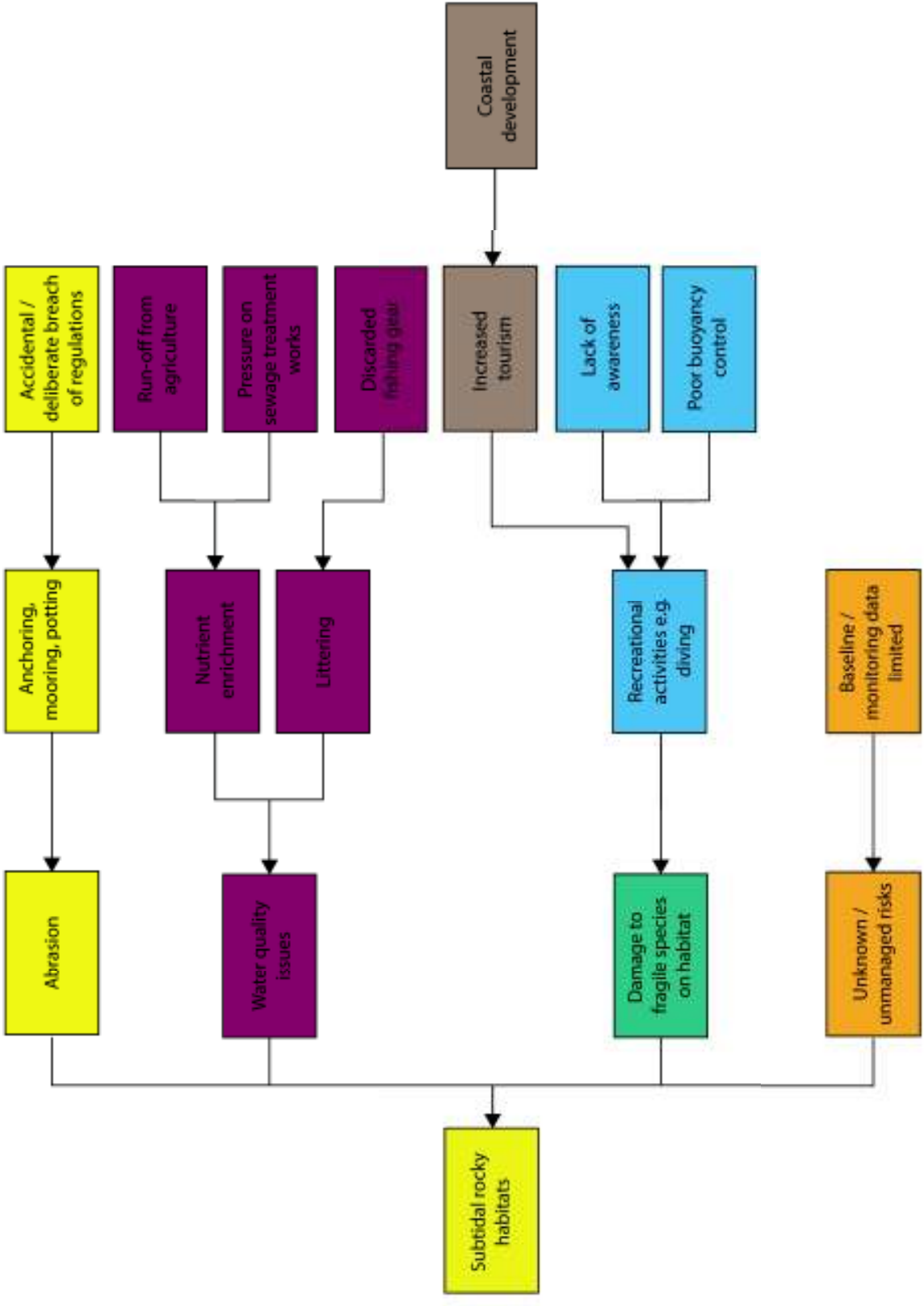
### Key pressures/threats: (See Figure 11 for Root Cause Analysis diagram)

- Abrasion - anchoring and mooring in coastal MCZs, current management measures to limit benthic impact from pressures such as abrasion are limited to MPAs around Lundy
- Discarding of fishing gear including weights, hooks, lines and gaffs
- Recreational activities including diving disturbing / damaging fragile communities
- Pressure from potting activity (Lundy)
- Breach of anchor prohibition at the Knoll Pins (Lundy)
- Unfavourable condition of habitat poses risk to associated species e.g. Atlantic grey seal *Halichoerus grypus* and recreational diving, angling and wildlife watching activities

### Current positive initiatives:

- Current management measures to limit benthic impact from pressures such as abrasion within Lundy MPAs
- 100m exclusion zone around the Knoll Pins to help protect community there (Lundy)
- North Devon Marine Project promoting 'Green Blue Anchoring' and awareness campaign for trials of Advanced Mooring Systems (AMS) across the Southwest to protect subtidal habitats from damage caused by traditional anchors
- D&S IFCA have had iVMS on fishing vessels using mobile gear in the District for some time now
- North Devon UNESCO Biosphere has won the largest green economy award nationally from the Government's Community Renewal Fund (CRF) with two linked elements - the Green Biosphere focused on terrestrial projects and the Blue Biosphere focused on offshore wind, aquaculture, marine biodiversity and 'blue carbon'
  - **"No-Take and Harvest"** - Lundy's Marine Conservation Zone (173km<sup>2</sup>) was the UK's first marine reserve. Its 'No-Take Zone' prohibits all fishing, allowing stocks to recover and overspill into the surrounding waters for harvesting and locking carbon in sediment. CRF activities will pilot, explore the viability and define this commercial model to enable it to be replicated around our shorelines. If successful, this system will enhance fisheries, generate carbon and biodiversity revenues and develop tourism in coastal areas.

Figure 11. RCA diagram for subtidal rocky habitats



## Proposed actions:

Key: ■ Short-term (6months-1year) ■ Mid-term (1-3years) ■ Long-term (3-5years)

Pressure	Proposed action	Interested parties
Data gaps	Explore opportunities for (anonymised) data sharing for demersal fishing, mooring and anchoring with North Devon Biosphere and Marine Working Group to allow up-to-date monitoring and improved habitat management measures	D&S IFCA, North Devon Biosphere
	Encourage and support volunteer surveys of these communities through initiatives such as Seasearch to improve monitoring and knowledge base	Recreational divers, Seasearch
	Promote centralised North Devon Biosphere citizen science/volunteer surveys database to improve data access e.g. North Devon GeoNode	North Devon Biosphere, Plymouth University
	Extend study of fish nursery grounds in Taw-Torridge estuary to understand the use of habitats, and influence of habitat condition, inside and outside coastal MCZs to inform management	North Devon Biosphere, academic institution
Abrasion	Discourage anchoring and the use of shot lines that have the potential to damage this feature - investigate opportunities for alternatives such as eco-moorings	North Devon Biosphere, North Devon Marine, Harbour authorities
Management	Adopt 'whole site approach' to management so that wider ecological structures and processes have potential for 'recovery' and 'renewal' beyond the delineated boundaries of MPA features	DEFRA, Natural England, D&S IFCA, Environment Agency, MMO, North Devon Biosphere
Education	Promote conservation of the communities which rely on these habitats through awareness and education campaigns, including local dive groups and recreational anglers	North Devon Biosphere
	Awareness and education around the use of iVMS for fishing vessels to encourage uptake	North Devon Biosphere

**EUNIS Habitat Classification types included in this chapter:**

Infralittoral rock and other hard substrata (A3); Atlantic and Mediterranean high energy infralittoral rock (A3.1); Atlantic and Mediterranean moderate energy infralittoral rock (A3.2); Atlantic and Mediterranean low energy infralittoral rock (A3.3); Features of infralittoral rock (A3.7); Circalittoral rock and other hard substrata (A4); Atlantic and Mediterranean high energy circalittoral rock (A4.1); Atlantic and Mediterranean moderate energy circalittoral rock (A4.1); Fragile sponge and anthozoan communities on subtidal rocky habitats

**References:**

- Ashley, M., Rees, S., & Cameron, A. (2018). North Devon Marine Pioneer Part 1: State of the art report of the links between ecosystem and ecosystem services in the North Devon Marine Pioneer. A report to WWF-UK by research staff at the Marine Institute at Plymouth.
- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth Available at: <https://ukseasproject.org.uk/cms-data/reports/>

## 2.6 Subtidal sediment habitats

Asset & risk register summary	
Extent trend	Condition
Stable	Of Concern



### Protective measures:

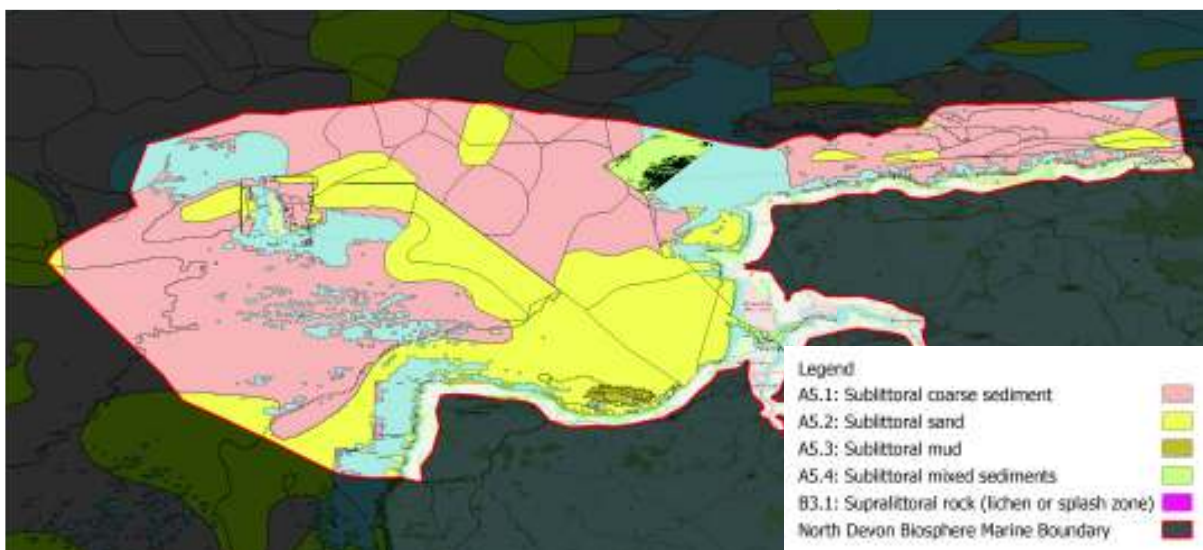
- Bideford to Foreland Point MCZ
- Hartland Point to Tintagel MCZ
- Morte Platform MCZ
- North West Lundy MCZ
- Bristol Channel Approaches MCZ
- Exmoor and UK BAP Priority Habitat

### Responsibilities:

- Natural England
- Devon & Severn IFCA
- Marine Management Organisation

### Interests:

- Lundy MPA Advisory Group
- North Devon Fishermans Association



**Figure 12. Map showing the locations of subtidal sediment habitats (see Legend) within the North Devon Biosphere Marine boundary (red line).**

These sediment habitats typically extend from the extreme lower shore (below the intertidal zone) down to a depth of 200m. Sediment types range from boulders and cobbles, through pebbles and shingle, coarse sands, sands, fine sands, muds, and mixed sediments. Sublittoral coarse sediment and sublittoral sand habitats cover huge extents of NDBR. Shallow sublittoral habitats that are exposed to stronger tidal currents and increased wave action tend to support less diverse communities dominated by robust, mobile or burrowing species adapted to the variable conditions. In contrast, in sheltered or deeper waters that are less perturbed by natural disturbance some of the most diverse marine communities can be found. Many of the inshore habitats are important nursery grounds for juvenile commercial species such as flatfishes and bass. While offshore, coarse sediment and sand habitats support commercially important fish and shellfish fisheries.

## Locations of importance in the North Devon Biosphere:

Location	Conservation designation	Condition
Subtidal coarse sediment	Bideford to Foreland Point SSSI Hartland Point to Tintagel SSSI North West Lundy MCZ Bristol Channel Approaches MCZ	Favourable, maintain Unfavourable, recover Unfavourable, recover Unfavourable, recover
Subtidal mixed sediment	Bideford to Foreland Point SSSI Morte Platform MCZ	Favourable, maintain Unfavourable, recover
Subtidal sand sediment	Bideford to Foreland Point SSSI Hartland Point to Tintagel SSSI Bristol Channel Approaches MCZ	Unfavourable, recover Unfavourable, recover Unfavourable, recover

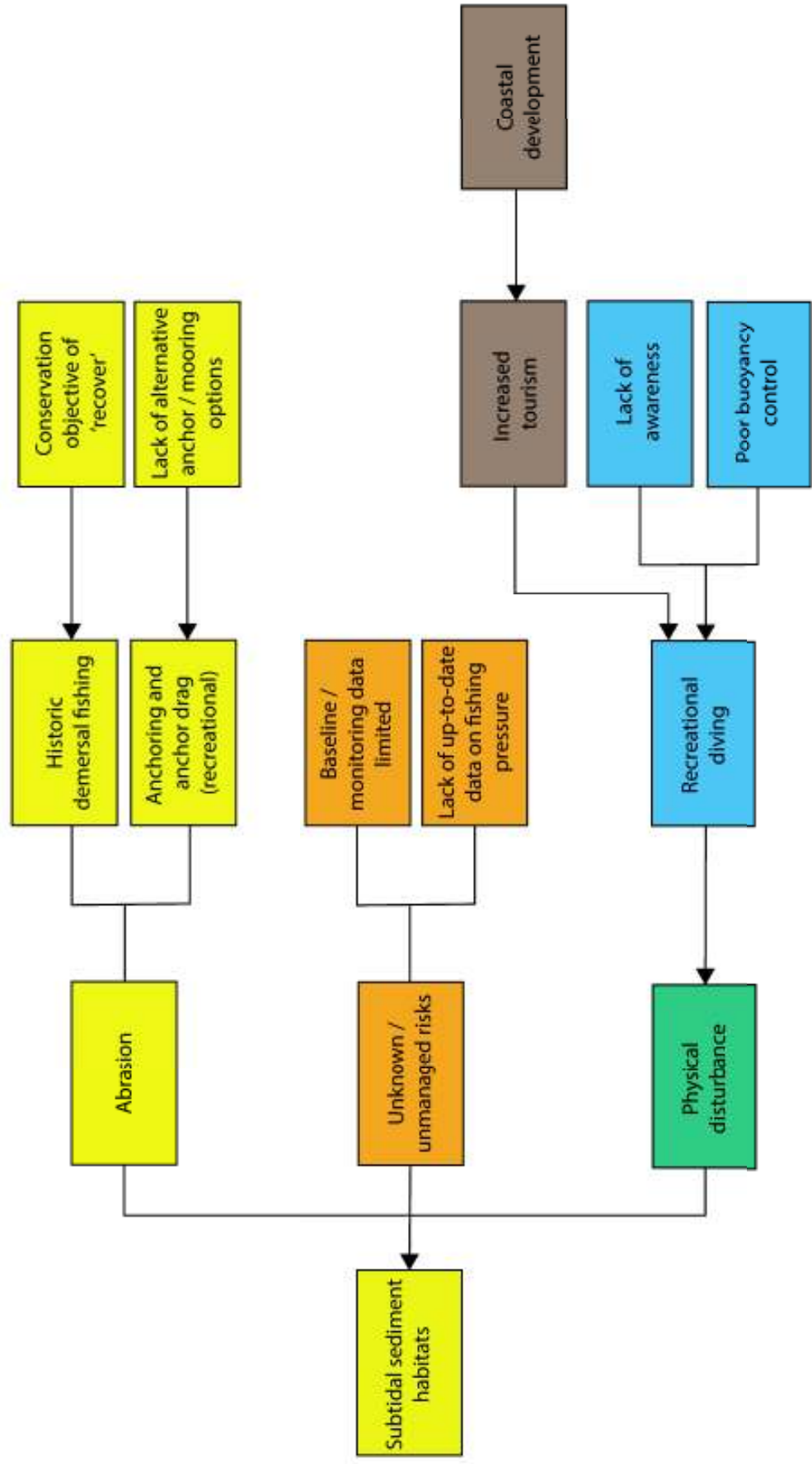
### Key pressures/threats: (See Figure 13 for Root Cause Analysis diagram)

- Abrasion - historic pressure from demersal fishing, however, MCZ assessments and subsequent Natural England advice demonstrate no current additional need to manage demersal fishing on this habitat type (e.g. in Bideford to Foreland Point MCZ)
- Accidental / deliberate breaches of regulations and byelaws by commercial fishing vessels
- Physical disturbance - anchoring and anchor drag (recreational vessels and ships) and recreational divers (poor diver buoyancy)
- Limited knowledge / access to data on recent levels of fishing pressure - narrow evidence base and potentially missing targeted management measures to reduce risks
- Only small proportions of subtidal sediments are within MPAs, with the majority of the extent of subtidal habitats designated with conservation objectives of 'recover'

### Current positive initiatives:

- Current management measures to limit benthic impact from pressures such as abrasion within Lundy MPAs
- Scallop collection by divers has some restrictions throughout D&S IFCA's District (size and closed season restrictions apply to all diving permit holders), no removal of scallop allowed in Lundy NTZ or Knoll Pins, and daily bag limit for recreational diving permit holders applies throughout the District
- North Devon Marine Project promoting 'Green Blue Anchoring' and awareness campaign for trials of Advanced Mooring Systems (AMS) across the Southwest to protect subtidal habitats from damage caused by traditional anchors
  - D&S IFCA have had iVMS on fishing vessels using mobile gear in the District for some time now
- North Devon UNESCO Biosphere has won the largest green economy award nationally from the Government's Community Renewal Fund (CRF) with two linked elements - the Green Biosphere focused on terrestrial projects and the Blue Biosphere focused on offshore wind, aquaculture, marine biodiversity and 'blue carbon'
  - **"No-Take and Harvest"** - Lundy's Marine Conservation Zone (173km<sup>2</sup>) was the UK's first marine reserve. Its 'No-Take Zone' prohibits all fishing, allowing stocks to recover and overspill into the surrounding waters for harvesting and locking carbon in sediment. CRF activities will pilot, explore the viability and define this commercial model to enable it to be replicated around our shorelines. If successful, this system will enhance fisheries, generate carbon and biodiversity revenues and develop tourism in coastal areas.

Figure 13. RCA diagram for subtidal sediment habitats



## Proposed actions:

Key: ■ Short-term (6months-1year) ■ Mid-term (1-3years) ■ Long-term (3-5years)

Pressure	Proposed action	Interested parties
Data gaps	Explore opportunities for (anonymised) data sharing for demersal fishing, mooring and anchoring with North Devon Biosphere and Marine Working Group to allow up-to-date monitoring and improved habitat management measures	IFCA, North Devon Biosphere
	Encourage and support volunteer surveys of these communities through initiatives such as Seasearch to improve monitoring and knowledge base	Recreational divers, Seasearch
	Promote centralised North Devon Biosphere citizen science/volunteer surveys database to improve data access e.g. North Devon GeoNode	North Devon Biosphere, Plymouth University
	Extend study of fish nursery grounds in Taw-Torridge estuary to understand the use of habitats, and influence of habitat condition, inside and outside coastal MCZs to inform management	North Devon Biosphere, academic institution
Abrasion	Discourage anchoring and the use of shot lines that have the potential to damage this feature - investigate opportunities for alternatives such as eco-moorings	North Devon Biosphere, North Devon Marine, Harbour authorities
Management	Adopt 'whole site approach' to management so that wider ecological structures and processes have potential for 'recovery' and 'renewal' beyond the delineated boundaries of MPA features	Natural England, IFCA, Environment Agency, MMO, North Devon Biosphere
Education	Promote conservation of the communities which rely on these habitats through awareness and education campaigns, including local dive groups and recreational anglers	North Devon Biosphere
	Awareness and education around the use of iVMS for fishing vessels to encourage uptake	North Devon Biosphere



**EUNIS Habitat Classification types included in this chapter:**

Sublittoral coarse sediment (A5.1); Sublittoral sand (A5.2); Sublittoral mud (A5.3); Sublittoral mixed sediments (A5.4)

**References:**

- Ashley, M., Rees, S., & Cameron, A. (2018). North Devon Marine Pioneer Part 1: State of the art report of the links between ecosystem and ecosystem services in the North Devon Marine Pioneer. A report to WWF-UK by research staff at the Marine Institute at Plymouth.
- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth Available at: <https://ukseasproject.org.uk/cms-data/reports/>

## 2.7 Subtidal vegetated habitats

### Asset & risk register summary

#### Extent trend

#### Condition

Insufficient data



#### Protective measures:

- Lundy SAC
- Marine & Coastal Access Act 2009

#### Responsibilities:

- Natural England
- Devon & Severn IFCA
- Marine Management Organisation

#### Interests:

- Lundy MPA Advisory Group
- Recreational divers
- North Devon Fishermans Association

MAP OF KEY LOCATIONS TO BE ADDED

**Figure 14. Map showing the locations of subtidal vegetated habitats (see Legend) within the North Devon Biosphere Marine boundary (red line).**

Kelp is the name given to several species of large brown seaweed. It has a similar structure to a plant, with a branching holdfast that roots it to the seabed, a thin hard stalk (called a stipe) and fronds that spread out like leaves. Where conditions are right, kelp can form dense underwater forests, which are among the most productive and diverse ecosystems on Earth. As well as supporting a wide variety of life, these habitats also provide us with a range of services. Kelp forests alter the movement of water and can provide a buffer against storm surges by reducing wave energy. This helps reduce the removal of sediments from beaches and coastal erosion rates. As climate change creates more severe weather, kelp forests are becoming more and more important. At Lundy, the algal species within the kelp forests are of particular interest as a number are rare and some are at or near the limit of their biogeographical distributions (for instance, the golden kelp *Laminaria ochroleuca* is currently at its northern limit at Lundy). The change in the abundance of such species around the island could indicate changes in the environment, particularly that of sea temperature, and current research suggests there could be ecological implications of this shift in terms of epiphyte abundance, grazer assemblage structure, shading and competition for space on the reef, if *L. ochroleuca* outcompetes *L. hyperborea* in future years.

### Locations of importance in the North Devon Biosphere:

Location	Conservation designation	Condition
Kelp forest communities	Lundy SAC	Favourable, maintain

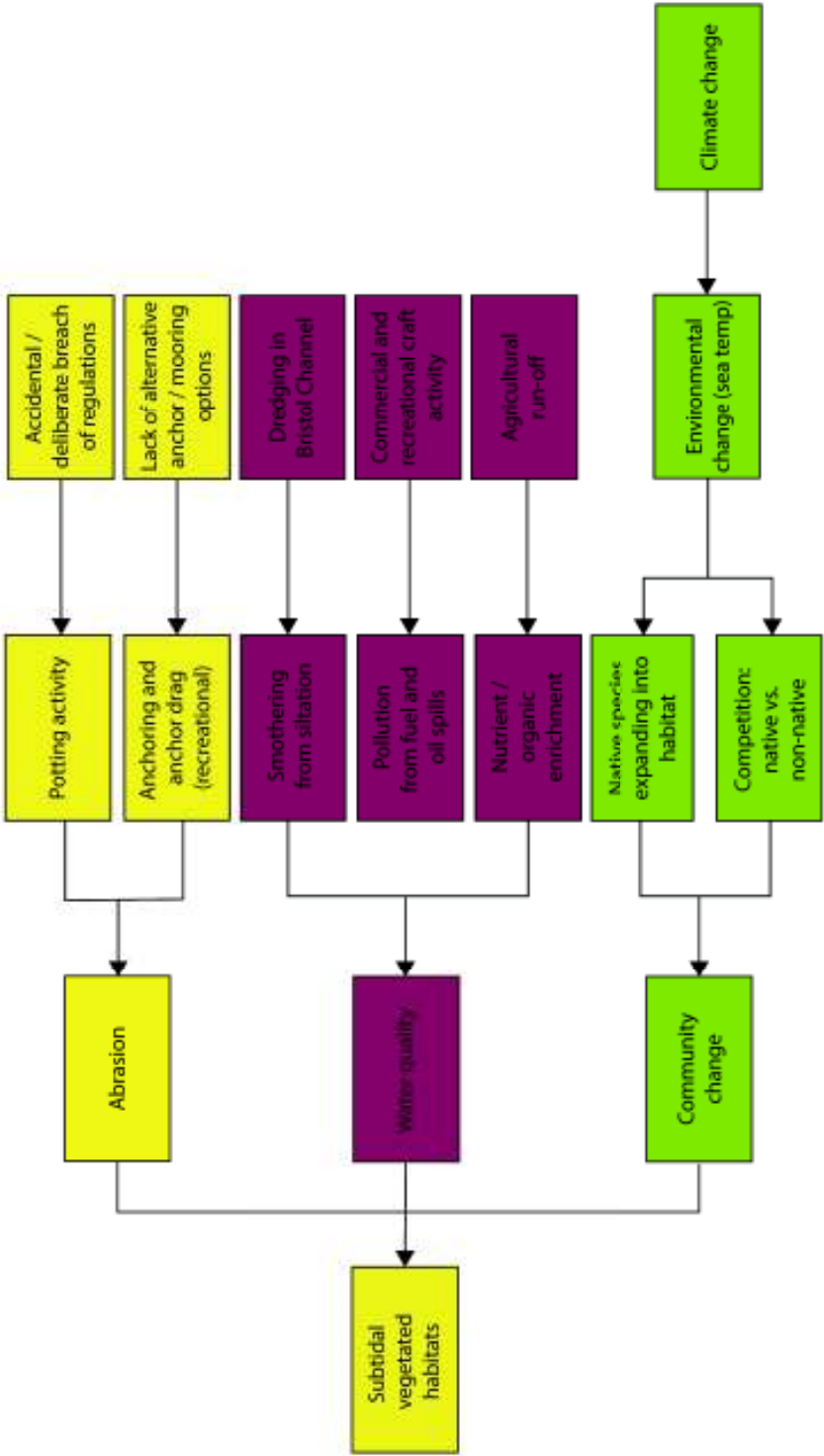
### Key pressures/threats: (See Figure 15 for Root Cause Analysis diagram)

- Climate change - change in community assemblage due to environmental change (particularly sea temperature) which could impact habitat functioning
- Abrasion / physical disturbance - anchoring, anchor drag, potting activity
- Non-native species competing with native species
- Smothering through siltation from dredging activities within the Bristol Channel
- Pollution from fuel and oil spills
- Diver collection of shellfish species
- Nutrient/organic enrichment

### Current positive initiatives:

- North Devon Marine Project promoting 'Green Blue Anchoring' and awareness campaign for trials of Advanced Mooring Systems (AMS) across the Southwest to protect subtidal habitats from damage caused by traditional anchors
- Visitor mooring available within Gannets' Bay and Brazen Ward to prevent damage by anchoring in this area.
- Snorkel Safaris allow visitors to immerse themselves within the kelp forest communities
- Underwater photography competitions (such as Splash In!) engage divers with the spectacular marine environment at Lundy, thereby promoting its conservation for the future
- Kelp forests within the No Take Zone are protected from extractive activities
- Bottom towed gear (or demersal mobile gear) is prohibited on all reef features including the kelp forest communities.

Figure 15. RCA diagram for subtidal vegetated habitats



## Proposed actions:

Key: ■ Short-term (6months-1year) ■ Mid-term (1-3years) ■ Long-term (3-5years)

Pressure	Proposed action	Interested parties
Data gaps	Research and monitoring of algal species richness to assess any changes. There is uncertainty around whether there has been a reduction in species richness since designation of Lundy SAC	Lundy MPA Advisory Group, Natural England
	Investigate potential changes to subtidal fauna and flora which may be expected under current climate change predictions	Lundy MPA Advisory Group, Natural England
	Investigate the degree of threat and options to control invasive non-native marine species e.g. <i>Sargassum muticum</i> which have already colonised; other algal species may be expected	Lundy MPA Advisory Group, Natural England
	Investigate effects of recreational anchoring around Lundy island to assess its impact on kelp forests	Lundy MPA Advisory Group, Natural England
Abrasion	Discourage anchoring and the use of shot lines that have the potential to damage this feature - investigate opportunities for alternatives such as eco-moorings	North Devon Biosphere, North Devon Marine, Harbour authorities
Management	Adopt 'whole site approach' to management so that wider ecological structures and processes have potential for 'recovery' and 'renewal' beyond the delineated boundaries of MPA features	Natural England, IFCA, Environment Agency, MMO, North Devon Biosphere
Education	Promote conservation of the communities which rely on these habitats through awareness and education campaigns, including local dive groups and recreational anglers	North Devon Biosphere

**EUNIS Habitat Classification types included in this chapter:**

Tide-swept algal communities (L.hyperborea) (A3.126, A3.213); Kelp and seaweed communities on sublittoral sediment (A5.52)

**References:**

- Ashley, M., Rees, S., & Cameron, A. (2018). North Devon Marine Pioneer Part 1: State of the art report of the links between ecosystem and ecosystem services in the North Devon Marine Pioneer. A report to WWF-UK by research staff at the Marine Institute at Plymouth.
- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth Available at: <https://ukseasproject.org.uk/cms-data/reports/>
- The Landmark Trust: Lundy's Code of Conduct. Available at: <https://www.landmarktrust.org.uk/globalassets/lundy.pdf>

## 2.8 Transitional and coastal waters

Asset & risk register summary	
Extent trend	Condition
Stable	Of Concern



**Protective measures:**

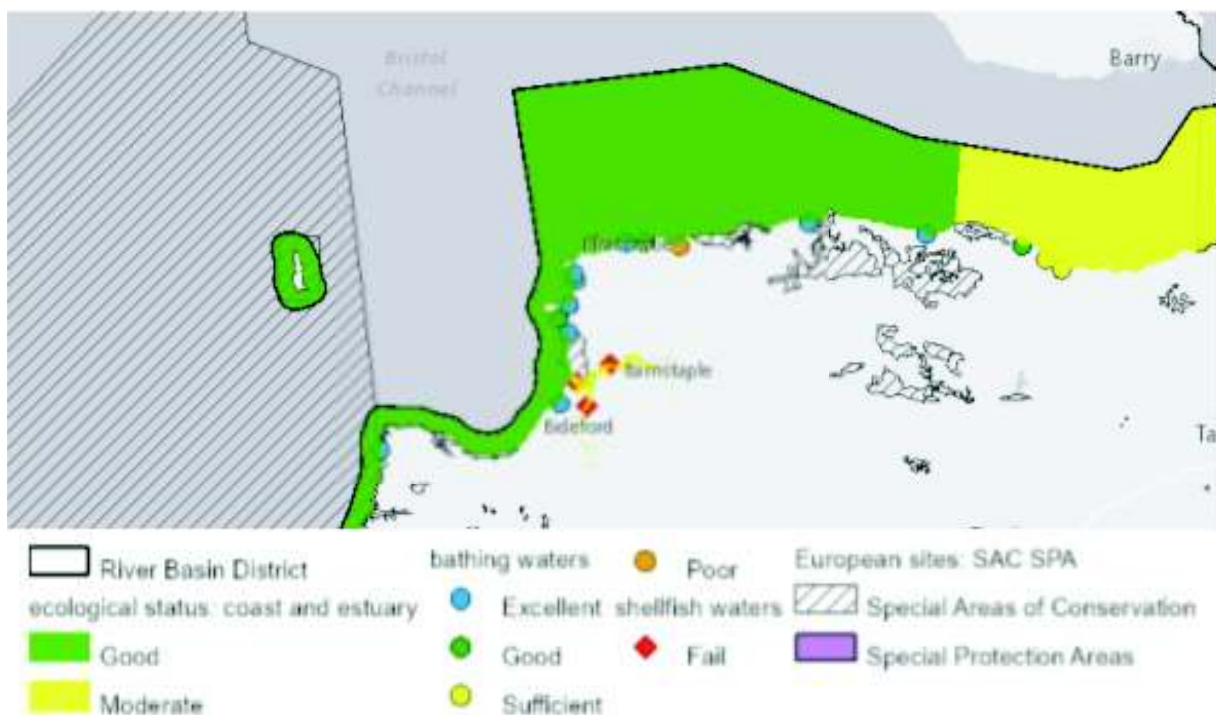
- Bideford to Foreland Point MCZ
- Hartland Point to Tintagel MCZ
- Morte Platform MCZ
- North West Lundy MCZ
- Bristol Channel Approaches MCZ
- Exmoor and UK BAP Priority Habitat

**Responsibilities:**

- Natural England
- Devon & Severn IFCA
- Marine Management Organisation

**Interests:**

- Lundy MPA Advisory Group
- North Devon Fishermans Association



**Figure 16. Map showing the locations and ecological status of transitional and coastal water bodies and bathing waters (see Legend) within the North Devon Biosphere Reserve.**

The water column of the outer Bristol Channel and eastern Celtic Sea interacts with almost the entire extent of the NDBR. Within NDBR there are 6 estuarine and coastal water bodies. Although not all beaches and coves can be accessed from land due to steep cliffs, NDBR contains 11 designated bathing waters.

## Locations of importance in the North Devon Biosphere Reserve:

Water Body	Conservation designations	Status (2019)
Taw/Torridge	Nitrates Directive, Shellfish Water Directive, Braunton Burrows SAC, Urban Waste Water Treatment Directive	Moderate ecological status
Taw Estuary	Nitrates Directive, Shellfish water Directive, Braunton Burrows SAC	Moderate ecological status
Barnstaple Bay	Bathing Water Directive, Shellfish Water Directive, Tintagel-Marsland-Clovelly Coast SAC, Braunton Burrows SAC	Good ecological status
Cornwall North	Bathing Water Directive, Tintagel-Marsland-Clovelly Coast SAC	Good ecological status
Bristol Outer Channel South	Bathing Water Directive	Good ecological status
Lundy	Lundy SAC	Good ecological status

### Key pressures/threats: (See Figure 17 for Root Cause Analysis diagram)

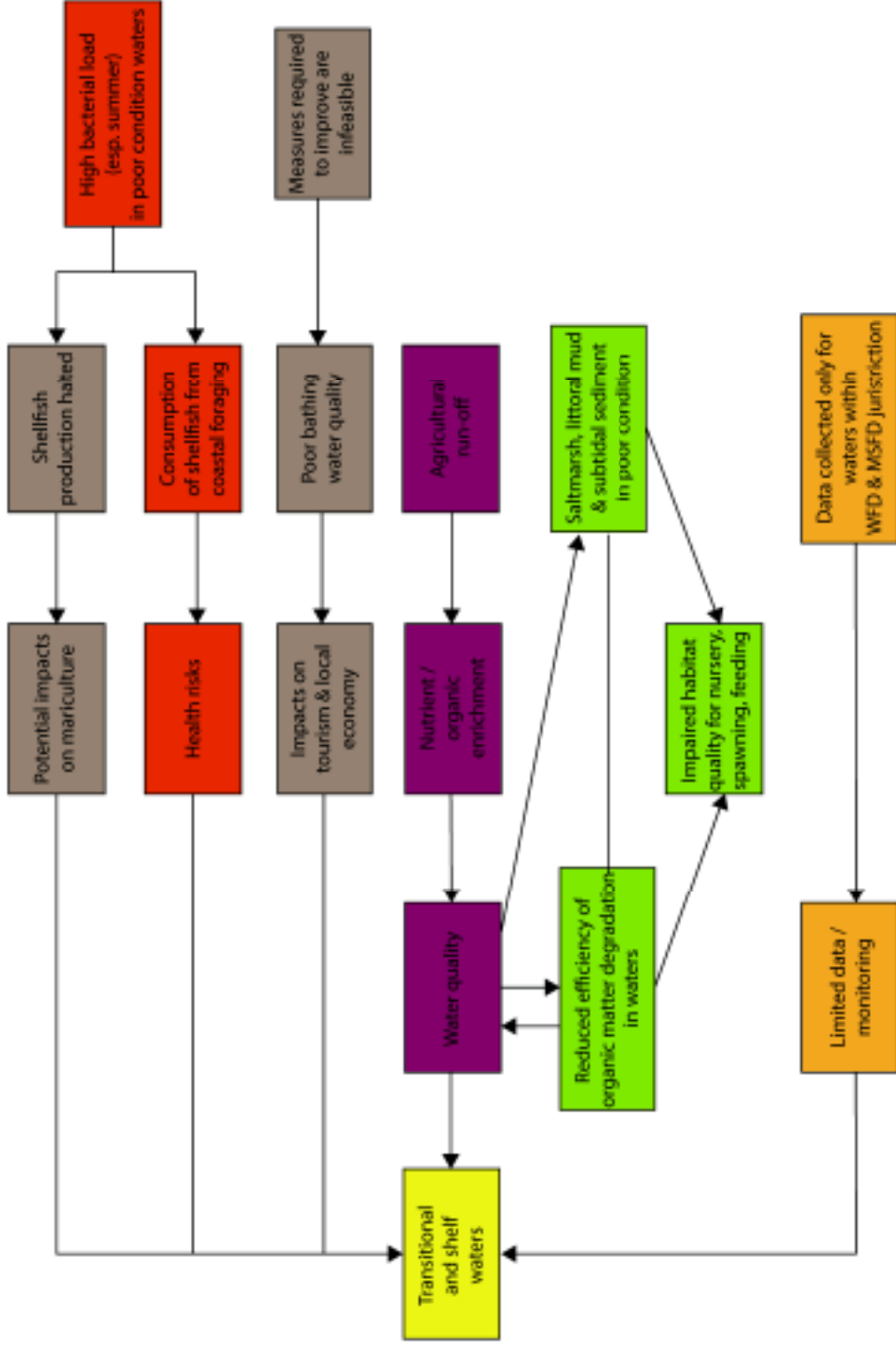
- Water bodies are required to have all status categories (ecological, chemical and hydrological) classified as 'good' or 'high' to meet Water Framework Directive (WFD) requirements. Two water bodies (Taw/Torridge and Taw Estuary) failed to meet WFD standards, receiving a classification of 'Moderate' in 2019.
- Taw Estuary designated as a Polluted Water (Eutrophic) under Nitrates Directive due to point source and diffuse pollution from freshwater sources. The likelihood of poor water quality in the estuary also has implications for:
  - shellfish waters and bathing waters within the estuary
    - the provision of suitable habitat to support species that use these waters as nursery, spawning and feeding grounds including commercially important fish species
    - tourism and recreational activities including wildlife watching
- Two previously designated bathing waters (Instow, Ilfracombe Wildersmouth) have had their designations removed- infeasible to deliver the measures that were required to improve water quality
- Nutrient enrichment from agricultural run-off, sewage release (also linked to climate change through increased storminess), fuel and oil spills, marine pollution and litter along whole coast
- Lack of data / monitoring - the condition of water bodies is only available for waters that are assessed within the jurisdiction of the WFD and Marine Strategy Framework Directive (MSFD)
- Poor condition / management of other habitats, including saltmarsh, littoral mud and subtidal soft sediment, reduces the efficient degradation of organic matter and other biological processes which are essential for achieving ecological water body WFD targets and bathing water quality.

### Current positive initiatives:

- Taw-Torridge and North Devon Streams Catchment Sensitive Farming Partnership was set up in 2009 to work with farmers to reduce diffuse pollution from agriculture.
  - Work is ongoing and currently focussed on farmers in the Countryside Stewardship Water Quality Priority Area
- The North Devon Catchment Partnership co-ordinates and promotes action for healthy rivers and streams across the whole of North Devon. It covers the River Taw and Torridge catchments, Hartland, Clovelly and Exmoor streams.



Figure 17. RCA diagram for transitional and shelf waters



## Proposed actions:

Key: ■ Short-term (6months-1year) ■ Mid-term (1-3years) ■ Long-term (3-5years)

Pressure	Proposed action	Interested parties
Pollution	Buffer the rivers from road and urban run-off and ensure clean water is separated from combined sewerage systems including septic tanks and rural sewage systems leading to a 50% reduction in the number of Combined Sewer Overflow spills. (North Devon Nature Recovery Plan 2021-2025: Wetlands and Water bodies)	Devon County Council, SouthWest Water, District Councils
	Reduce the occurrence of point source and diffuse pollution. Category 1 pollution incidents reduced by 50% from 9 (2010-19) to 4 or less (2020-29). Category 2 and 3 pollution incidents reduced by 50%. Increased proactive targeted Silage, Slurry and Agricultural Fuel Oil (SSAFO) and Farming Rules for Water compliance checks completed. (North Devon Nature Recovery Plan 2021-2025: Wetlands and Water bodies)	Environment Agency, Natural England, Landowners, Businesses
Awareness and management	Double public participation, education and awareness through the facilitation of citizen science monitoring of the rivers (e.g. river fly, citizen science (2021 WRT baseline is 52 sites, 23 surveyors), eyes on the river) and coordination (e.g. catchment hub). Contribute to advocacy for better standards for bathing water quality standards. (North Devon Nature Recovery Plan 2021-2025: Wetlands and Water bodies)	North Devon Biosphere, Environment Agency, Westcountry Rivers Trust
	Increase awareness of pollution and Farming Rules for Water and guidance on when Incident Hotline should be used so that all farmers are aware. Education campaign with farmers and the general public regarding the Farming Rules for Water and Storing silage, slurry and agricultural fuel oil (SSAFO) regulations. (North Devon Nature Recovery Plan 2021-2025: Wetlands and Water bodies)	North Devon Biosphere, Westcountry Rivers Trust, Devon Wildlife Trust, Environment Agency
Monitoring	Evaluate water quality of Taw/Torridge and northern Devon streams through citizen science water quality assessments. (North Devon Nature Recovery Plan 2021-2025: Wetlands and Water bodies)	Westcountry Rivers Trust, Environment Agency, North Devon Biosphere, Coastwise

**Habitat definitions in this section:**

- Transitional waters: Bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows. (Article 2(6) Water Framework Directive)
- Coastal water: Surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters. (Article 2 (7) Water Framework Directive)

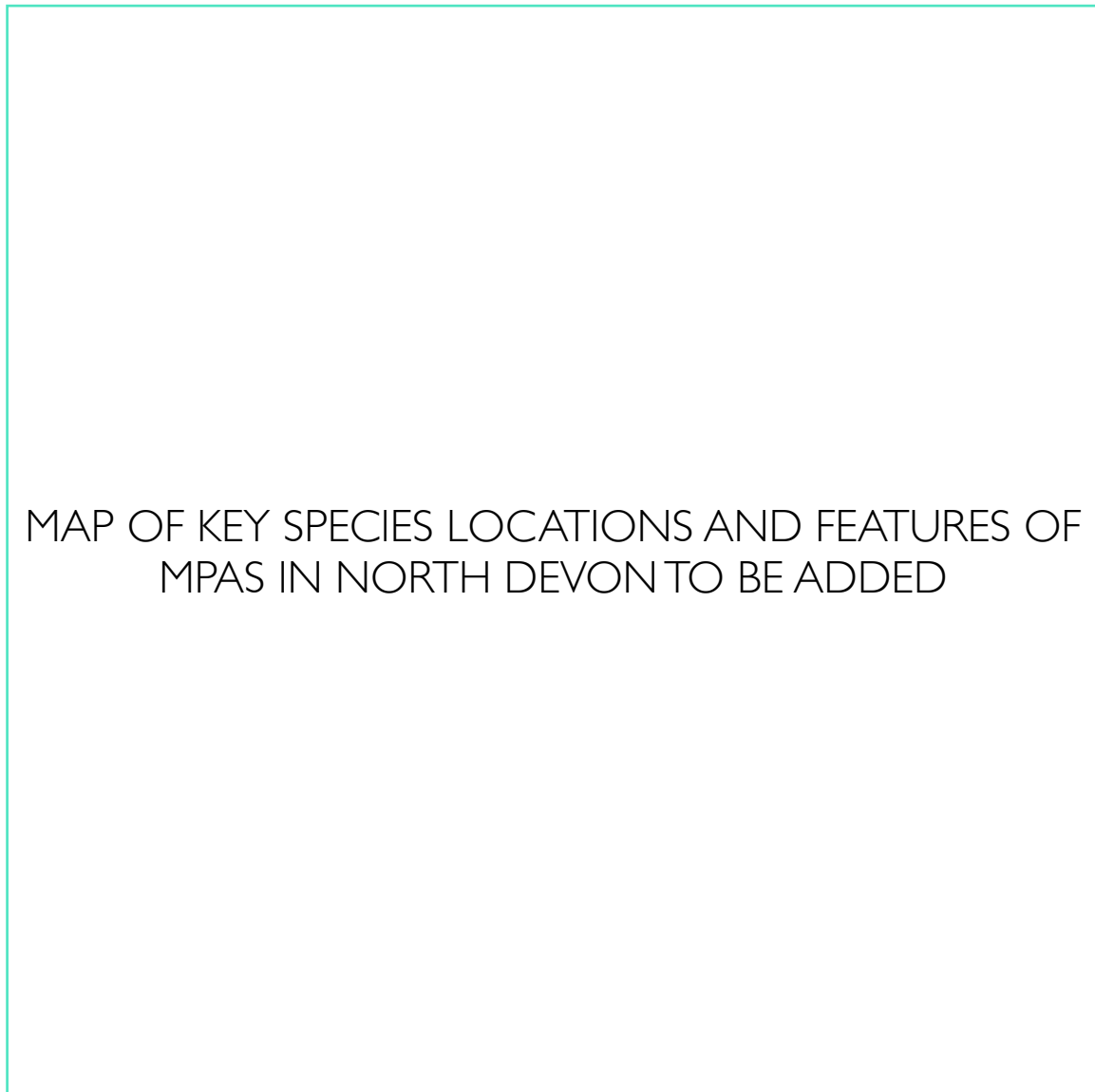
**References:**

- Ashley, M., Rees, S., & Cameron, A. (2018). North Devon Marine Pioneer Part 1: State of the art report of the links between ecosystem and ecosystem services in the North Devon Marine Pioneer. A report to WWF-UK by research staff at the Marine Institute at Plymouth.
- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth Available at: <https://ukseasproject.org.uk/cms-data/reports/>
- North Devon Biosphere (2020) Biosphere Nature Recovery Plan 2021-2025: Wetlands & Water bodies. Available at: [https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/bnrp\\_wetlands\\_and\\_waterbodies\\_final\\_for\\_uploading\\_3.pdf](https://www.northdevonbiosphere.org.uk/uploads/1/5/4/4/15448192/bnrp_wetlands_and_waterbodies_final_for_uploading_3.pdf)

### 3. Species of North Devon

The estuary supports some regionally and nationally important populations of waterbirds, and curlew, lapwing and golden plover are designated features of protected areas. Protected seabirds including puffins, razorbill, Manx shearwater, guillemot and kittiwake are found in the area, primarily on the cliffs of Lundy. Subtidally, demersal fish species as well as crab and European lobster are important for commercial fisheries, and protected species include seals, porpoise, spiny lobster and pink sea fans.

**Figure 18. Map showing the key species locations and MPAs with species as designated features in the North Devon Biosphere**



### 3.1 Spiny Lobster (*Palinurus elephas*)

Asset and risk register summary	
Extent trend	Condition
N/A	Of Concern



Photo credit: Lundy Management Plan 2017

<p><b>Protective measures:</b></p> <ul style="list-style-type: none"> <li>• Marine and Coastal Access Act 2009               <ul style="list-style-type: none"> <li>• FOCI species of MCZ</li> </ul> </li> <li>• Species of Principal Importance (NERC Act 2006)</li> <li>• Wildlife and Countryside Act 1981</li> </ul> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"> <li>• Natural England</li> <li>• Devon &amp; Severn IFCA</li> </ul> <p><b>Interests:</b></p> <ul style="list-style-type: none"> <li>• Lundy MPA Advisory Group</li> <li>• North Devon Fishermans Association</li> <li>• Local fisherman</li> </ul>
--

In the North Devon Biosphere, there is the potential for self-sustaining populations of Spiny Lobster. Most of the larvae released from Lundy Island, and between Bideford to Foreland Point remain within the Bristol Channel and show high concentrations off Hartland. The population is thought to be in decline throughout the whole of the South-West. They are typically associated with rocky reefs in the circalittoral zone. Spiny Lobster are the target of conservation attention due to fishing pressures, both commercial and recreational. Subsequently, they feature on various conservation lists: UK BAP priority species list, the Devon Species Conservation Concern List, Natural England’s Sensitive Species list, and the UK BAP priority species.



**Locations of importance:**

Spiny lobsters are associated with rocky reefs of the circalittoral zone.

Location	Conservation designation	Condition
Lundy	MCZ	Recover
Bideford to Foreland Point	MCZ	Recover
Hartland	N/A	N/A

**Key pressures/threats:** (See **Figure 18** for Root Cause Analysis diagram)

Throughout the 1960s and 70s, the Spiny lobster population was overfished for both commercial and recreational reasons. Other threats include a lack of understanding of their history and ecology. Lundy is a very popular destination for diving, and the illegal collection of Spiny Lobster are a big issue. It is also believed that not all sightings are reported.

**Current positive initiatives:**

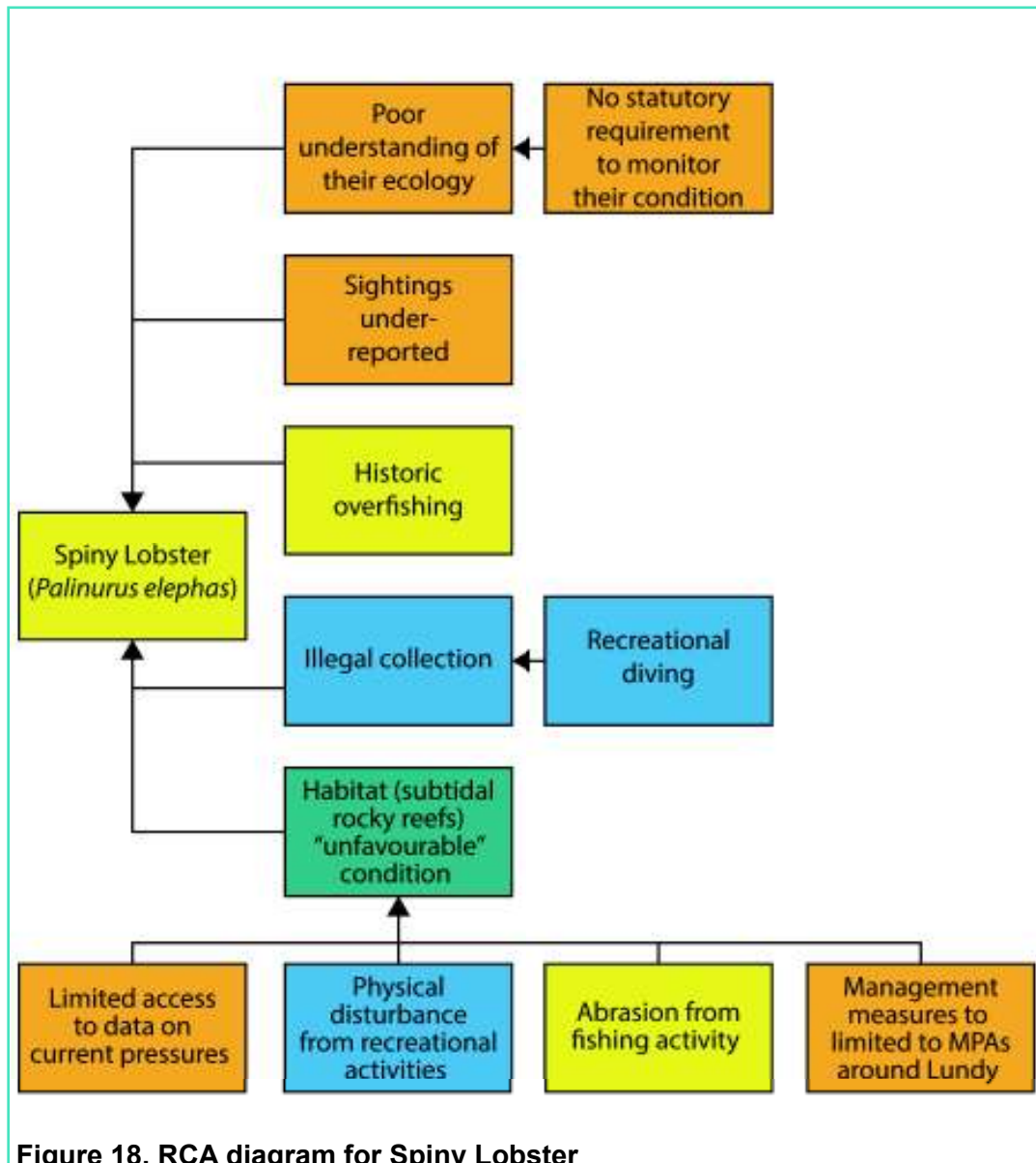
- Stocks at Lundy are being monitored through tagging or V-notching individuals. This is being undertaken by Devon and Severn IFCA to learn more about their ecology.
- Devon and Severn IFCA's minimum conservation reference size is larger than EU/National regulation.

**Relevant local policies:**

- Spiny Lobster are a designated feature of Lundy's MCZ. However, there is no statutory requirement to monitor their condition. The taking of individuals from Lundy MCZ is prohibited through a Devon and Severn IFCA byelaw.
- Devon and Severn IFCA Potting Permit Byelaw manages the potting fisheries for commercial and recreational potters as well as recreational divers:
  - Prevents recreational removal of more than 2 per diver per day in Bideford to Foreland Point MCZ and Knoll Pins
  - Prevents removal of those that are berried, 'mutilated', recently moulted, or smaller than 110mm across the carapace.
- There are similar restrictions in the Netting Permit Byelaw and through the Mobile Fishing Permit Byelaw and the Potting Permit Byelaw

**Proposed actions:**

Proposed action	Purpose	Risk if not completed	Lead
Expand the population monitoring research through increased engagement with the tagging project	Enhance the data available to support decision making	Decision makers are not able to use the widest dataset	D&S IFCA
Initiate onboard surveys of fishing vessels to gather morphometric data	Enhance the data available to support decision making	Decision makers are not able to use the widest dataset	D&S IFCA
Encourage Divers to log all their sightings on GeoNode	Enhance the data available to support decision making	Decision makers are not able to use the widest dataset	North Devon Biosphere D&S IFCA



**Figure 18. RCA diagram for Spiny Lobster**

### References:

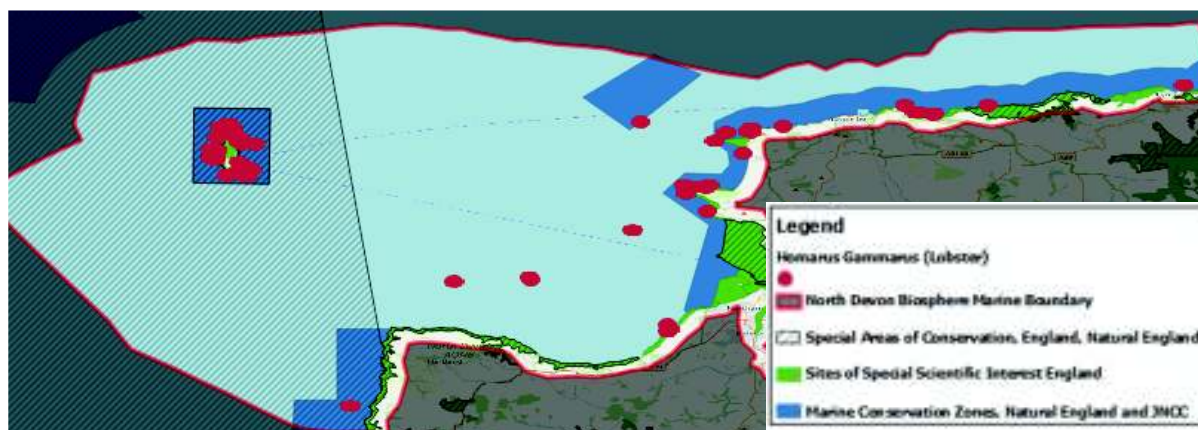
- Berridge, R., 2019, Identification of Wintering Wildfowl High Tide Roosts & Recreational Disturbance Impacts on the Taw Torridge Estuary Site of Special Scientific Interest (SSSI). Natural England Commissioned Reports, Number 281
- Bolton, C. 2018. *Palinurus elephas* (spiny lobster/crawfish/crayfish) in the South-West. Natural England Commissioned Reports, Number 297
- Hunter, E. 1999. Biology of the European spiny lobster *Palinurus elephas* (Fabricius, 1787) (Decapoda: Palinuridae). *Crustaceana* 72: 545-565.
- Lundy Management Forum. 2017. Lundy Marine Management Plan 2017. Written by Rebecca MacDonald and revised by Robert Irving. Produced for Natural England by the Landmark Trust, Lundy Island
- Whomersley P, Van der Molen J, Holt D, Trundle C, Clark S and Fletcher D (2018) Modeling the Dispersal of Spiny Lobster (*Palinurus elephas*) Larvae: Implications for Future Fisheries Management and Conservation Measures. *Front. Mar. Sci.* 5:58.doi: 10.3389/fmars.2018.00058

## 3.2 European lobster (*Homarus gammarus*)



Asset and risk register summary	
Extent trend	Condition
N/A	Acceptable
<p><b>Protective measures:</b></p> <ul style="list-style-type: none"> <li>• Devon &amp; Severn IFCA Byelaws</li> </ul> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"> <li>• Devon &amp; Severn IFCA</li> </ul> <p><b>Interests:</b></p> <ul style="list-style-type: none"> <li>• Lundy MPA Advisory Group</li> <li>• North Devon Fishermans Association</li> <li>• Local fisherman</li> <li>• Marine Management Organisation</li> </ul>	

The European lobster is an important food source, and it is fished in the North Devon Biosphere area, fetching high prices. The lobster fishery at Lundy provides for local fisherman and has served them for many years. Overall, stocks appear to be stable, and the South-West population has been classified as moderate by Cefas. The population within Lundy's No Take Zone reveal considerable recovery, which will cause a spill-over effect into the surrounding waters. However, there is a lack of evidence at the local level for lobster abundance in the North Devon Marine Area. Landings in the North Devon region show a declining trend between 2010 and 2017.



Locations of importance:

Location	Conservation designation	Condition
Lundy	N/A	Described as Stable in Lundy Marine Management Plan 2017
Morthoe	N/A	Area of multiple records (NBN Atlas)
Baggy Point	N/A	Area of multiple records (NBN Atlas)



**Key pressures/threats: (See Figure 19 for Root Cause Analysis diagram)**

- Regular harvesting is a key pressure for Lobster.
- Ghost fishing by abandoned pots
- Unmonitored and unlicensed catch by recreational divers
- Since local data is lacking for North Devon, the Cefas Southwest lobster stock report is an important source. It reveals that Southwest lobster stocks are exploited above the minimum reference limits and are approaching the maximum sustainable yield.

**Current positive initiatives:**

- Shell fishermen from the North Devon Fishermen’s Association in conjunction with Devon & Severn IFCA\* have been tagging and tail notching lobsters to survey and assess the health of berried lobster stock on the ground.
- The crab and lobster Fishery Improvement Project (FIP) action plan by project UK is supported by Devon & Severn IFCA
- Lundy’s No Take Zone saw a seven-fold increase in the population of lobster

**Relevant local policies:**

- The 2015 potting permit Bylaw introduced by Devon and Severn IFCA manages potting fisheries through the introduction of permits. It sets the minimum conservation reference size for European Lobster at 90mm, this is 3mm larger than the UK standard.
- Devon & Severn IFCA have prohibited the landing of berried hens (female carrying eggs).
- Devon & Severn IFCA enforce a total fishing ban on the east coast of Lundy Island inside No Take Zone

**Proposed actions:**

Proposed action	Purpose	Risk if not completed	Lead
EC legislation prohibits the landing in ports of lobster, but Devon & Severn do not.	Adjustment in policy would aid their conservation.		D&S IFCA
Encourage Divers to log all their sightings on GeoNode	Enhance the data available to support decision making	Decision makers are not able to use the widest dataset	North Devon Biosphere D&S IFCA

**References:**

- Project UK. (2017). Lobster Cefas Stock Status Report. Available at: <https://www.seafish.org/article/project-uk>
- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital
- Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the
- University of Plymouth.

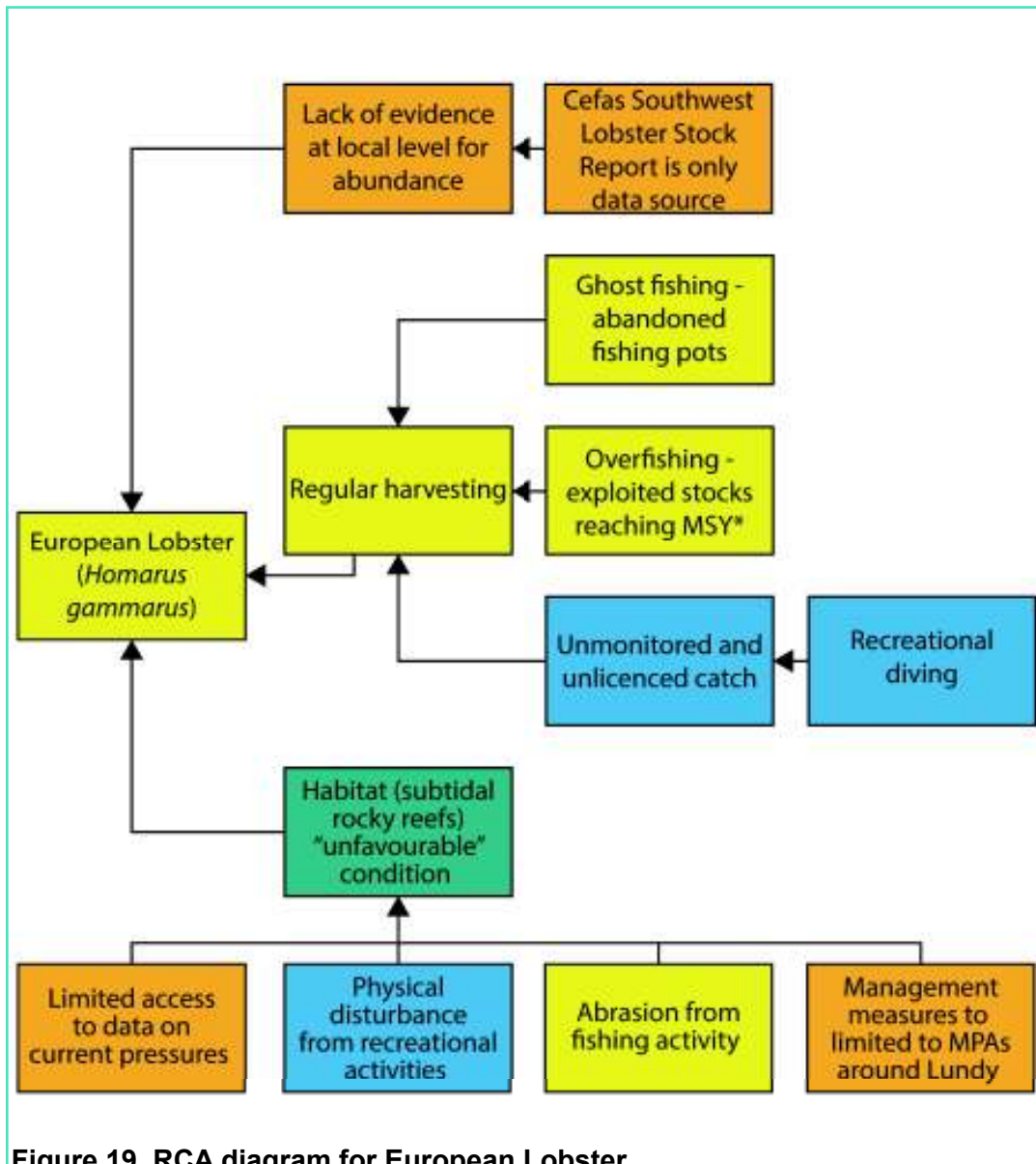


Figure 19. RCA diagram for European Lobster

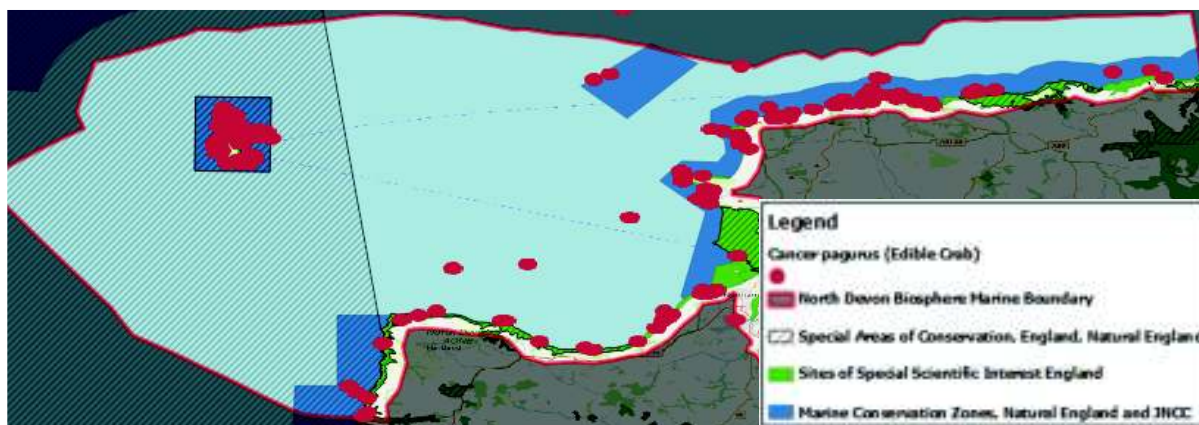
### 3.3 Edible/ Brown Crab (*Cancer pagurus*)

Asset and risk register summary	
Extent trend	Condition
N/A	Acceptable



<p><b>Protective measures:</b></p> <ul style="list-style-type: none"> <li>• Devon &amp; Severn IFCA Byelaws</li> </ul> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"> <li>• Devon &amp; Severn IFCA</li> <li>• CEFAS</li> </ul> <p><b>Interests:</b></p> <ul style="list-style-type: none"> <li>• Commercial &amp; recreational pot fishermen</li> <li>• Coastwise</li> <li>• Project UK</li> <li>• Marine Management Organisation</li> </ul>
---

The edible crab is found throughout the NE Atlantic on mixed coarse grounds, mud, and sand from the shallow sublittoral to depths of roughly 100 meters. Associated habitats include kelp forest, circalittoral bedrock, and stable boulder habitats. Edible crab has been fished at Lundy for many years and with the current levels of potting, stocks appear to be stable. The No Take Zone around Lundy showed an initial population decline in the first five years because of competition with lobster however, there does not appear to have a lasting impact. Cefas find the status of female stocks around the Southwest to be good, with moderate exploitation levels.



Locations of importance:

Location	Conservation designation	Condition
Lundy	N/A	Described as Stable in Lundy Marine Management Plan 2017

### Key pressures/threats: (See Figure 20 for Root Cause Analysis diagram)

- Brown crab are a non-quota species which leaves it at risk of exploitation. There are also very low amounts of data for landings of males which presents a significant problem when assessing exploitation levels and stock size for males.
- There exists a data gap for nursery habitat

### Current positive initiatives:

- Devon & Severn IFCA enforce various byelaws for the minimum landing size, maximum pot limit, maximum vessel length, and removal of parts of crabs
- No Take Zone on the east coast of Lundy prohibits taking of crab in this area
- CEFAS and Devon & Severn IFCA are researching stock levels of edible crab
- Coastwise inter-tidal surveys record sightings of crab and other species
- The crab and lobster Fisheries Improvement Plan (FIP) by project UK is supported by Devon and Severn IFCA

### Relevant local policies:

- The 2015 potting permit Bylaw introduced by Devon and Severn IFCA manages potting fisheries through the introduction of permits. It sets the minimum conservation reference size for Edible Crab at 150mm for female and 160mm for male crab.

### Proposed actions:

Proposed action	Purpose	Risk if not completed	Lead
Further analysis of Monthly Shellfish Activity Return (MSAR) data	Allow D&S IFCA to understand regional stocks and their pressures	Data gaps hindered effective stock management	Devon & Severn IFCA
Encourage Divers to log all their sightings on GeoNode	Enhance the data available to support decision making	Decision makers are not able to use the widest dataset	North Devon Biosphere Devon & Severn IFCA

### References:

- Cefas. 2020. Cefas Status Stock Report 2019, Edible crab (Cancer Pagurus). Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/974752/Crab\\_assessments\\_2019\\_\\_March\\_21\\_update.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/974752/Crab_assessments_2019__March_21_update.pdf)
- Lundy Management Forum. 2017. Lundy Marine Management Plan 2017. Written by Rebecca MacDonald and revised by Robert Irving. Produced for Natural England by the Landmark Trust, Lundy Island.

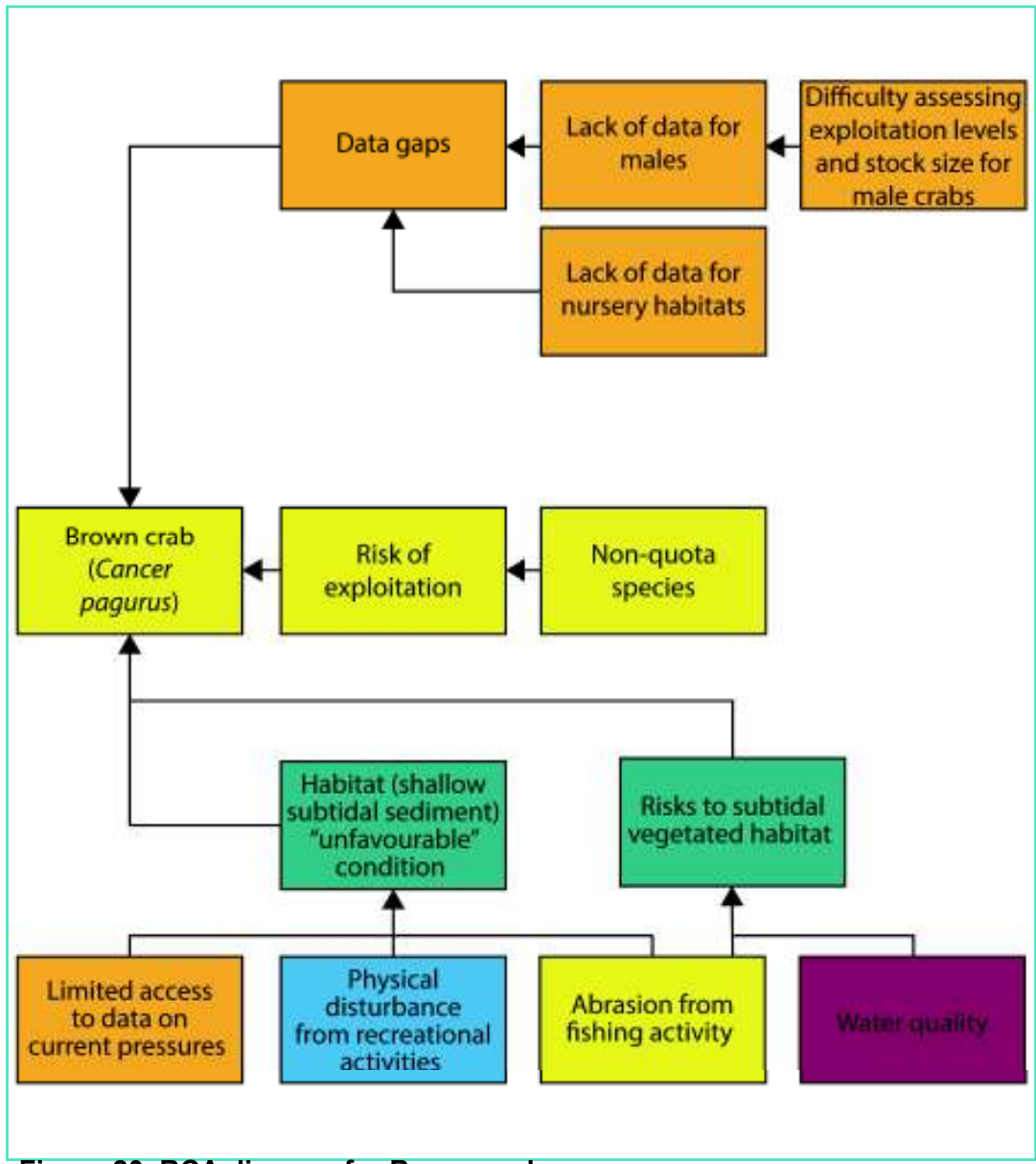


Figure 20. RCA diagram for Brown crab

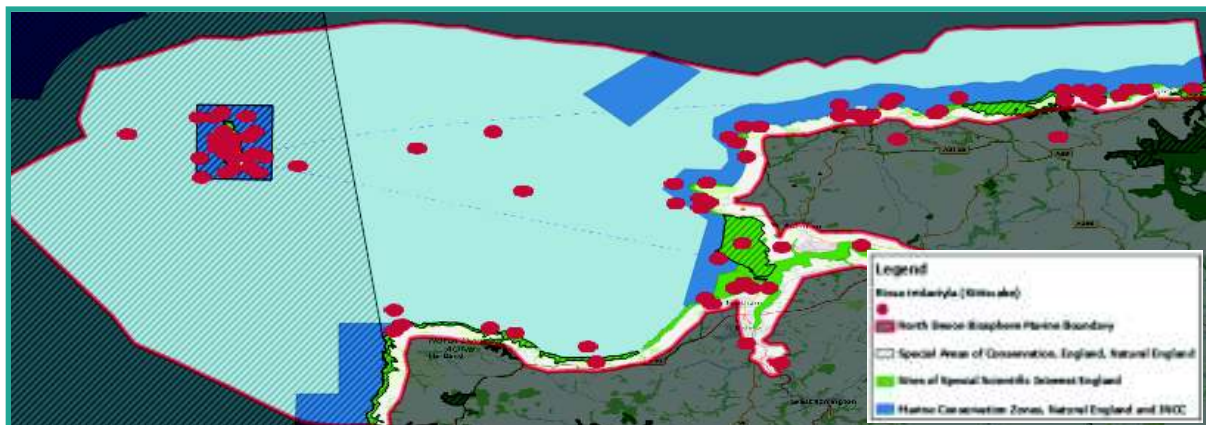
### 3.4 Black-legged Kittiwake (*Rissa tridactyla*)

Asset and risk register summary	
Extent trend	Condition
Positive	Of Concern



- Protective measures:**
- Lundy SSSI
- Responsibilities:**
- Lundy management (Lundy only)
  - Natural England
- Interests:**
- RSPB

Kittiwakes first colonised and bred in Devon in the 1930s. They use Devon clifftops and rock ledges to nest between February and August. JNCC survey data (1998-2002) reveal Lundy and Lynmouth as particularly key locations of importance. Hamilton et al (2016) evidence that Kittiwake numbers in Southern England are declining at an alarming rate. Predictions suggest that conditions will become more unfavourable for breeding Kittiwake around the NE Atlantic in the future. As a result, Kittiwakes feature on the Devon Species of Conservation Concern list and the OSPAR species list.



Locations of importance:

Location	Conservation designation	Condition
Lundy	Lundy SSSI	Unassessed
Lynmouth	N/A	Area of multiple records (NBN Atlas)
Ilfracombe	N/A	Area of multiple records (NBN Atlas)
Baggy Point	N/A	Area of multiple records (NBN Atlas)

### Key pressures/threats: (See Figure 21 for Root Cause Analysis diagram)

- Tourism and subsequent human disturbance, particularly during nesting, pose a great threat to Kittiwake.
- During the busy summer season, marine litter can be found along the coast and Kittiwake mistake the litter for something edible.
- Another key threat is declining food availability, particularly sand eel, which is often linked to poor Kittiwake productivity.

### Current positive initiatives:

- Protected through the Lundy SSSI and included within the Lundy Management Plan
- The North Devon Marine Wildlife Aware Accreditation Scheme (NDMWAAS) re-launched in 2021, engaging coastal and marine business with online training leading to annual individual and/or business accreditation with promotion through the North Devon Explorer App.
- Marine Management Organisation #Operation Seabird working closely with local police teams to highlight the vulnerabilities of wildlife breeding and living in the area
- Annual monitoring of a breeding site by Lundy as part of the SSSI management programme

### Relevant local policies:

- Protected by the Wildlife and Countryside Act 1981
- SSSI designation for Lundy
- Lundy Marine Management Plan 2017

### Projects/Action:

Proposed action	Purpose	Risk if not completed	Lead
Further support for the Lundy monitoring programme	Increases reliability of breeding population data and monitors future trends	Data opportunity is not taken	RSPB Lundy Warden Lundy Field Society
Abundance studies on sand eels and other prey are required, particularly as warming seas are causing sand eel decline.	Develop understanding of sand eel distribution and potential changes affecting seabird colonies	Unable to predict affect of climate change on seabird colonies and unable to support conservation measures to protect sand eel stocks	RSPB Devon & Severn IFCA
Promote NDMWAAS	Raise awareness of the issues and sensitivity of species with businesses	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere and Lundy
Expand NDMWAAS to include general public and school engagement	Raise awareness of the issues and sensitivity of species with the general public	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere and Lundy

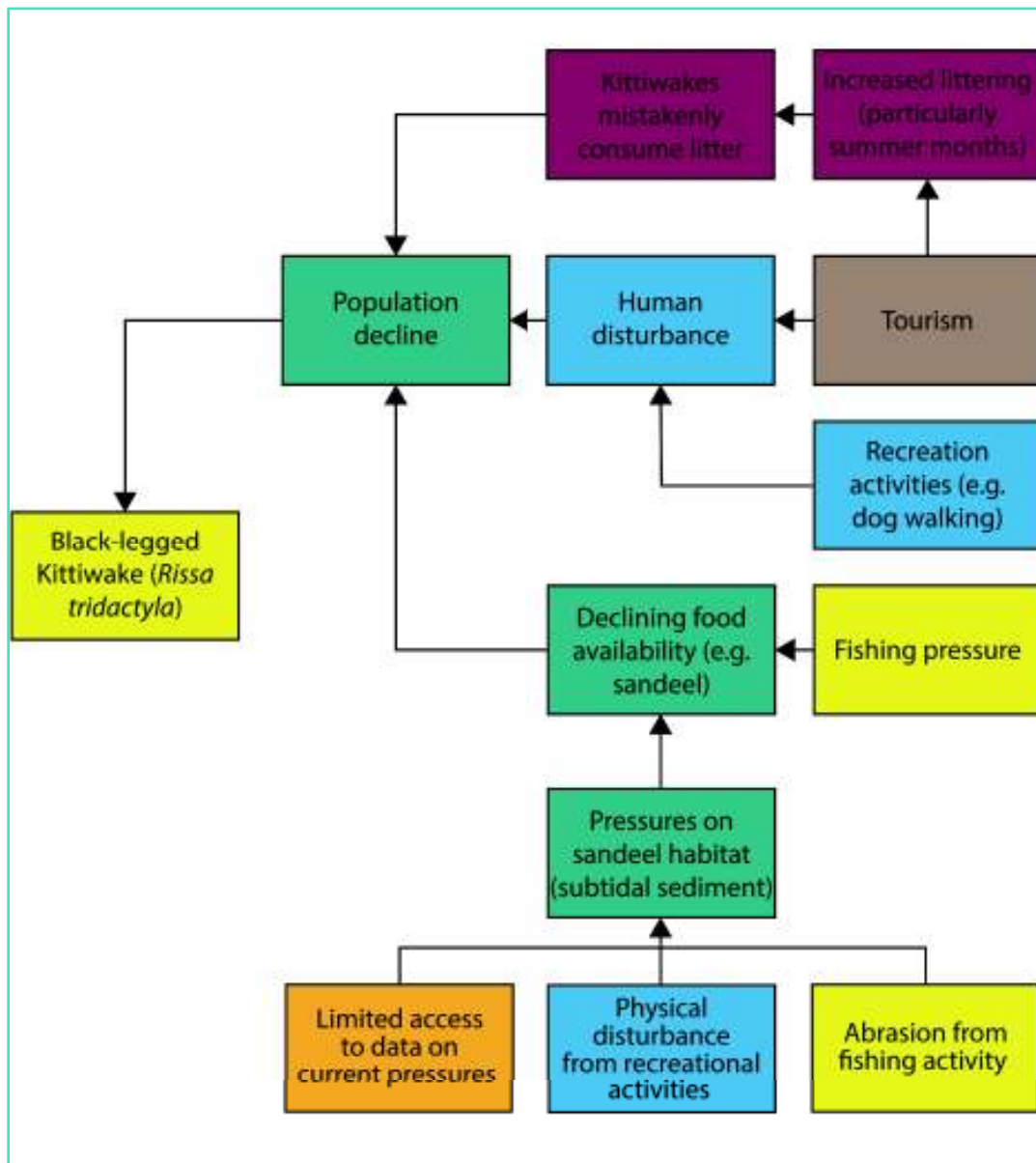


Figure 21. RCA diagram for Black-legged kittiwake

### References:

- Dunn, Euan. Revive our Seas: The case for stronger regulation of sandeel fisheries in UK waters. 2021. Available at: [https://www.rspb.org.uk/globalassets/downloads/documents/campaigning-for-nature/rspb2021\\_the-case-for-stronger-regulation-of-sandeel-fisheries-in-uk-waters.pdf](https://www.rspb.org.uk/globalassets/downloads/documents/campaigning-for-nature/rspb2021_the-case-for-stronger-regulation-of-sandeel-fisheries-in-uk-waters.pdf)
- McMurdo Hamilton, Thalassa & Brown, Andy & Lock, Leigh. (2016). Kittiwake declines extend to southern England and beyond: an update on colonies at the southern edge of the species' Northeast Atlantic range. *British Birds*. 109. 199-210.
- Lundy Management Forum. 2017. Lundy Marine Management Plan 2017. Written by Rebecca MacDonald and revised by Robert Irving. Produced for Natural England by the Landmark Trust, Lundy Island
- P. Ian Mitchell, Stephen F. Newton, Norman Ratcliffe and Timothy E. Dunn (Eds.). 2004. *Seabird Populations of Britain and Ireland: results of the Seabird 2000 census (1998-2002)*. Published by T and A.D. Poyser, London.



## 3.5 Common Guillemot (*Uria aalge*)

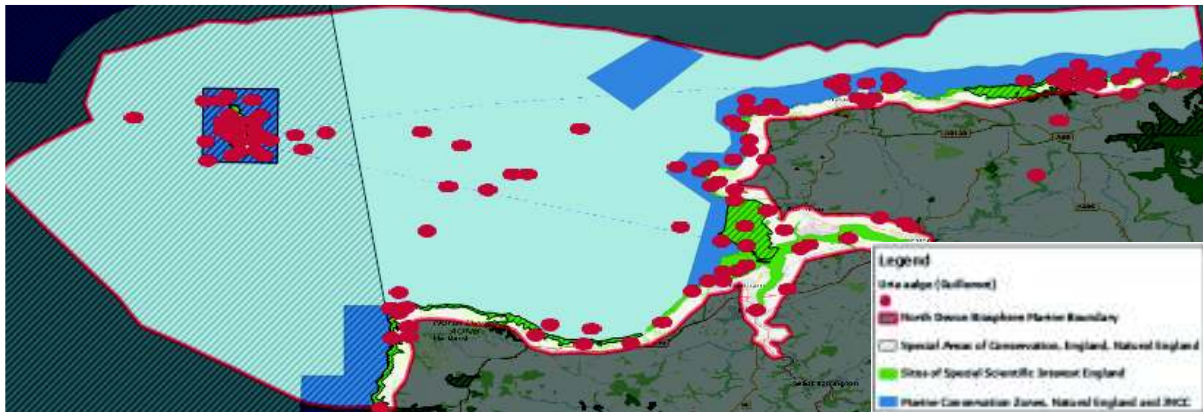
Asset and risk register summary	
Extent trend	Condition
Positive	Good



<p><b>Protective measures:</b></p> <ul style="list-style-type: none"> <li>• Lundy SSSI</li> </ul> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"> <li>• Lundy management (Lundy only)</li> <li>• Natural England</li> </ul> <p><b>Interests:</b></p> <ul style="list-style-type: none"> <li>• RSPB</li> </ul>
--

Photo credit: Lundy Marine Management Plan 2017

Guillemots are classified as dispersive seabirds. After the breeding season, the birds from Lundy can travel as far as southern Norway and Portugal. They return to the breeding ledges as early as October, but their attendance in autumn and winter is largely influenced by weather conditions. Guillemot are associated with sheer cliffs or rocky outcrops. They feed upon fish, mostly sand eels, and sprats. The numbers of Guillemot have increased on Lundy, since the island became rat free, from 2,348 individuals in 2000 to 9,880 individuals in 2021, according to the RSPB.



### Locations of importance:

Location	Conservation designation	Condition
Lundy	SSSI	Unassessed but RSPB survey shows increase
Martinhoe	N/A	Area of multiple records (NBN Atlas)
Lynton	N/A	Area of multiple records (NBN Atlas)

**Key pressures/threats:**

- Increased storminess affecting autumn and winter occupancy at breeding ledges
- Disturbance of nest sites by vessels too close to the shore
- Disturbance at sea by watercraft and vessels
- Marine pollution
- Reduced fish stocks, particularly of sand eel
- Wind Farm development affect the abundance of guillemots

**Current positive initiatives:**

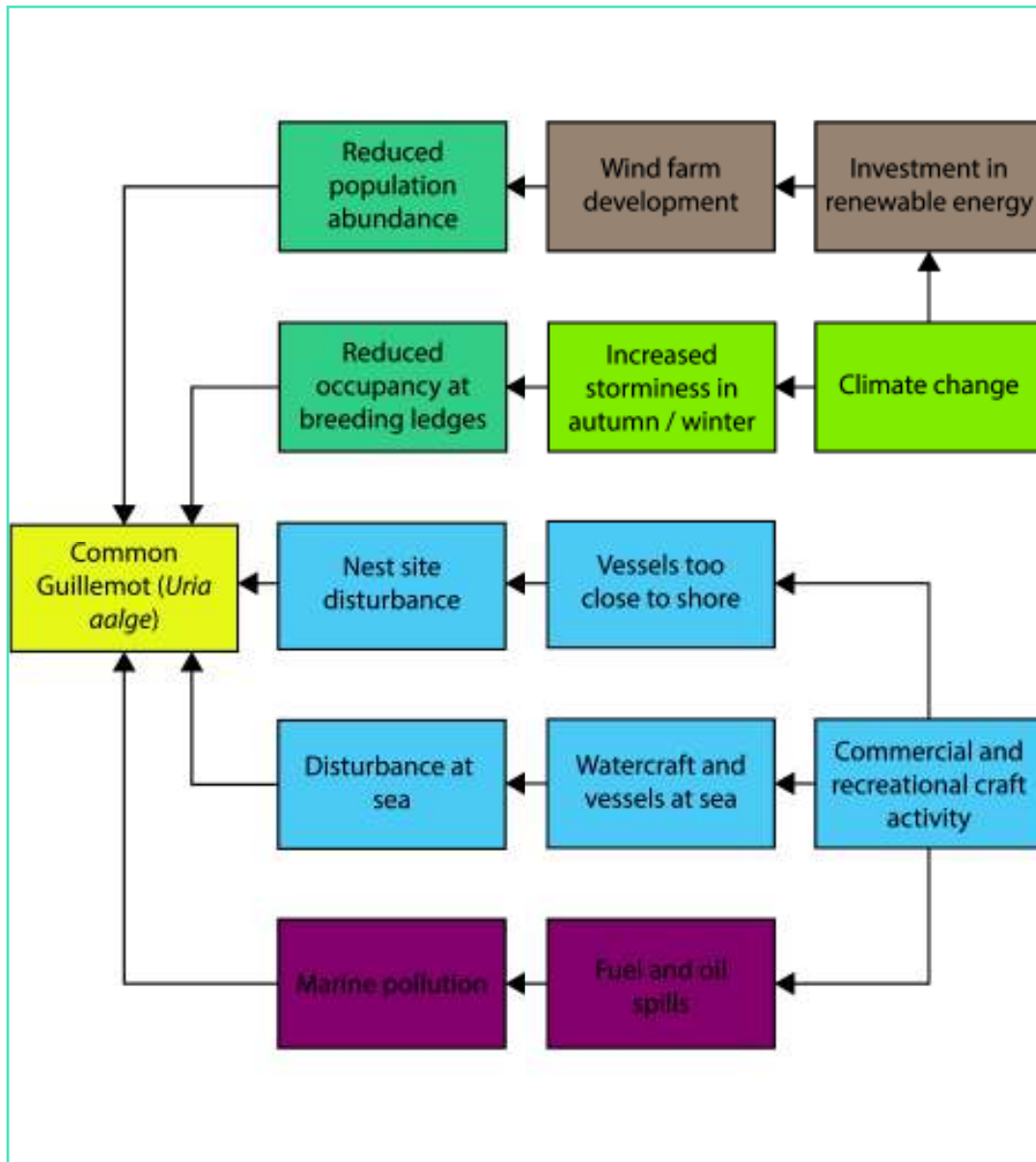
- The MOD No Fly-Zone for aircraft is in operation from April to October which reduces disturbance during the breeding season.
- Protected through the Lundy SSSI and included within the Lundy Management Plan
- The North Devon Marine Wildlife Aware Accreditation Scheme (NDMWAAS) re-launched in 2021, engaging coastal and marine business with online training leading to annual individual and/or business accreditation with promotion through the North Devon Explorer App.
- MMO #Operation Seabird working closely with local police teams to highlight the vulnerabilities of wildlife breeding and living in the area
- Annual monitoring of a breeding site by Lundy as part of the SSSI management programme

**Relevant local policies:**

- Protected by the Wildlife and Countryside Act 1981.
- SSSI designation for Lundy
- Lundy Marine Management Plan 2017

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Further support for the Lundy monitoring programme	Increases reliability of breeding population data and monitors future trends	Data opportunity is not taken	RSPB Lundy Warden Lundy Field Society
Abundance studies on sand eels and other prey are required, particularly as warming seas are causing sand eel decline.	Develop understanding of sand eel distribution and potential changes affecting seabird colonies	Unable to predict effect of climate change on seabird colonies and unable to support conservation measures to protect sand eel stocks	RSPB Devon & Severn IFCA
Promote NDMWAAS	Raise awareness of the issues and sensitivity of species with businesses	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere Lundy
Expand NDMWAAS to include general public and school engagement	Raise awareness of the issues and sensitivity of species with the general public	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere Lundy



## References:

- RSPB. 2021. Celebrating Seabird Success on the Island of Lundy and the Isles of Scilly. Available at: <https://community.rspb.org.uk/ourwork/b/rspb-england/posts/celebrating-seabird-success-on-the-island-of-lundy-and-the-isles-of-scilly>
- Dunn, Euan. Revive our Seas: The case for stronger regulation of sand eel fisheries in UK waters. 2021. Available at: [https://www.rspb.org.uk/globalassets/downloads/documents/campaigning-for-nature/rspb2021\\_the-case-for-stronger-regulation-of-sandeel-fisheries-in-uk-waters.pdf](https://www.rspb.org.uk/globalassets/downloads/documents/campaigning-for-nature/rspb2021_the-case-for-stronger-regulation-of-sandeel-fisheries-in-uk-waters.pdf)
- Lundy Management Forum. 2017. Lundy Marine Management Plan 2017. Written by Rebecca MacDonald and revised by Robert Irving. Produced for Natural England by the Landmark Trust, Lundy Island
- Peschko, Verena., et al. (2020). Effects of offshore windfarms on seabird abundance: Strong effects in spring and in the breeding season. *Marine Environmental Research*. 162.

## 3.6 Manx Shearwater (*Puffinus Puffinus*)

Asset and risk register summary	
Extent trend	Condition
Positive	Good



**Protective measures:**

- Lundy SSSI

**Responsibilities:**

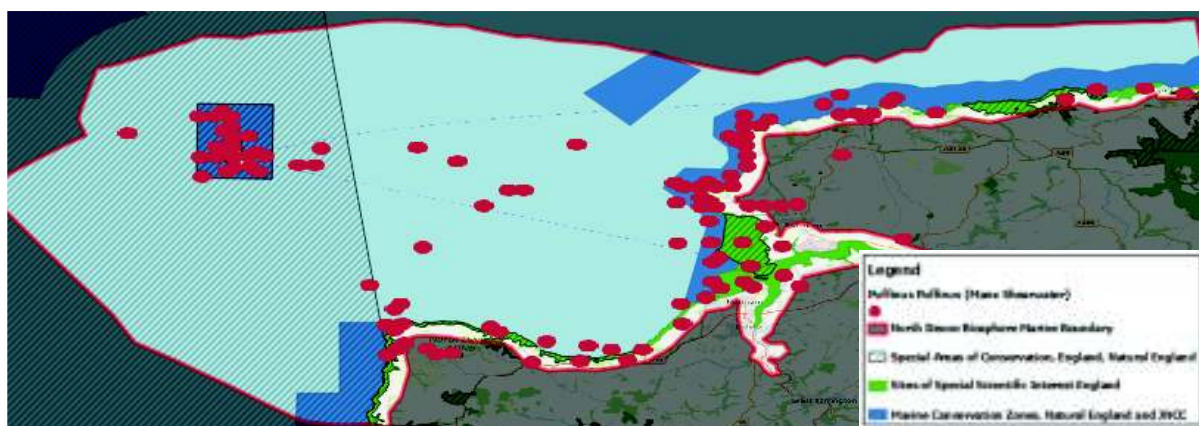
- Lundy management (Lundy only)
- Natural England

**Interests:**

- RSPB

Photo credit: Lundy Marine Management Plan 2017

The UK is home to a huge 80% of the global breeding Manx shearwaters. Manx shearwaters undertake trans-equatorial migrations twice a year, where they spend roughly October to February in the South Atlantic, off the coast of Argentina, Uruguay, and Brazil, before returning to breed in the NE Atlantic between March and September. They are associated with steep slopes and remote rocky islands. Since they are a ground nesting species, they are vulnerable to predators such as rats. Subsequently, the numbers of Manx Shearwater have increased on Lundy since the island became rat free, from 297 breeding pairs in 2000 to 5,504 pairs in 2021, according to the RSPB.



**Locations of importance:**

Location	Conservation designation	Condition
Lundy	SSSI	Unknown
Baggy point	N/A	Area of multiple records (NBN Atlas)

### Key pressures/threats:

- Predation by rats
- Marine pollution, particularly oil on the water surface
- Disturbance by humans, vessels, and watercraft. Especially as the breeding season coincides with peak tourist season
- No statutory protection when at sea
- Lack of food availability, such as sand eels

### Current positive initiatives:

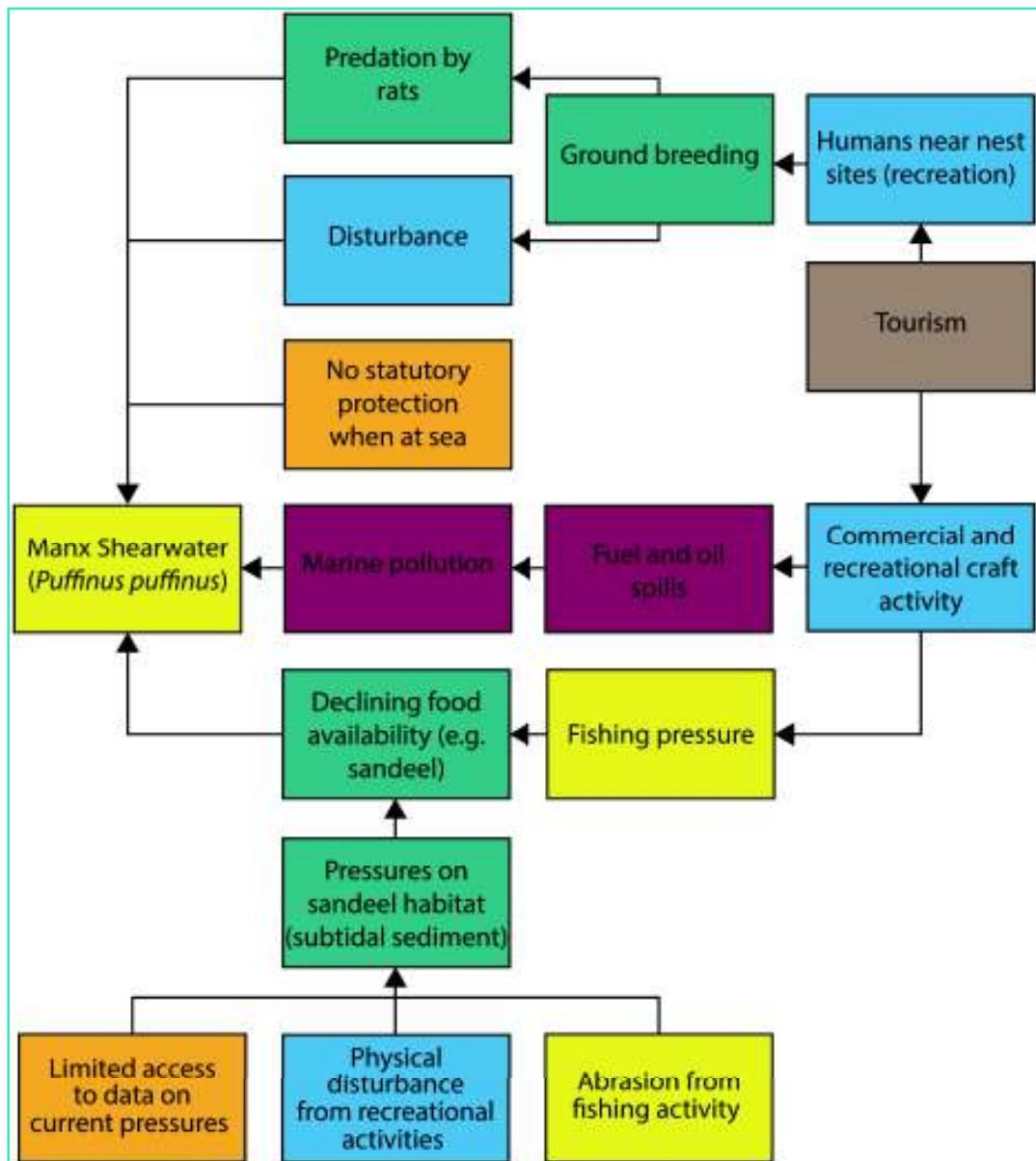
- The MOD No Fly-Zone for aircraft is in operation from April to October which reduces disturbance during the breeding season.
- Manx shearwater surveys are completed every four years on Lundy to monitor the breeding colony there. The team are made up of RSPB and Natural England staff, supported by the Lundy Conservation Team.
- Protected through the Lundy SSSI and included within the Lundy Management Plan
- The North Devon Marine Wildlife Aware Accreditation Scheme (NDMWAAS) re-launched in 2021, engaging coastal and marine business with online training leading to annual individual and/or business accreditation with promotion through the North Devon Explorer App.
- MMO #Operation Seabird working closely with local police teams to highlight the vulnerabilities of wildlife breeding and living in the area

### Relevant local policies:

- SSSI designation for Lundy
- Lundy Marine Management Plan 2017

### Projects/Action:

Proposed action	Purpose	Risk if not completed	Lead
Further support for the Lundy monitoring programme	Increases reliability of breeding population data and monitors future trends	Data opportunity is not taken	RSPB with Lundy Warden and Lundy Field Society
Abundance studies on sand eels and other prey are required, particularly as warming seas are causing sand eel decline.	Develop understanding of sand eel distribution and potential changes affecting seabird colonies	Unable to predict affect of climate change on seabird colonies and unable to support conservation measures to protect sand eel stocks	RSPB with Devon and Severn IFCA?
Promote NDMWAAS	Raise awareness of the issues and sensitivity of species with businesses	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere and Lundy
Expand NDMWAAS to include general public and school engagement	Raise awareness of the issues and sensitivity of species with the general public	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere and Lundy



## References:

- Farrar, Andre. 2018. Monitoring the recovery of Manx shearwaters on Lundy. Available at: <https://community.rspb.org.uk/ourwork/b/science/posts/monitoring-the-recovery-of-manx-shearwaters-on-lundy>
- Lundy Management Forum. 2017. Lundy Marine Management Plan 2017. Written by Rebecca MacDonald and revised by Robert Irving. Produced for Natural England by the Landmark Trust, Lundy Island
- RSPB. 2021. Celebrating Seabird Success on the Island of Lundy and the Isles of Scilly. Available at: <https://community.rspb.org.uk/ourwork/b/rspb-england/posts/celebrating-seabird-success-on-the-island-of-lundy-and-the-isles-of-scilly>

### 3.7 Atlantic Puffin (*Fratercula arctica*)

Asset and risk register summary	
Extent trend	Condition
Positive	Good



Photo credit: Lundy Marine Management Plan 2017

<p><b>Protective measures:</b></p> <ul style="list-style-type: none"> <li>• Lundy SSSI</li> </ul> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul> <p><b>Interests:</b></p> <ul style="list-style-type: none"> <li>• RSPB</li> <li>• North Devon Biosphere</li> <li>• Lundy Field Society</li> <li>• Natural England</li> </ul>
--

The British Isles are home to a significant proportion of the world population of Puffin, roughly 10%. Lundy is famed for its puffins, and they can be most likely spotted between April and July. Sand eels are their main source of prey, but they also feed on smaller fish in the sand eels' absence. Puffins use steep cliffs for nesting burrows, like other seabirds such as gulls. The numbers of Puffins have increased on Lundy since the island became rat free, from as little as 13 birds in 2000 to 848 individuals in 2021, according to the RSPB.



**Locations of importance:**

Location	Conservation designation	Condition
Lundy	SSSI	Unassessed

**Key pressures/threats:**

- During the 19<sup>th</sup> century, the puffins on Lundy were exploited for their meat, oil and plumage
- Human disturbance, particularly during the tourist season on Lundy
- Lack of food availability, such as sand eels
- Wind farms affecting foraging behaviour of puffins

**Current positive initiatives:**

- The MOD No Fly-Zone for aircraft is in operation from April to October which reduces disturbance during the breeding season.
- Protected through the Lundy SSSI and included within the Lundy Management Plan
- The North Devon Marine Wildlife Aware Accreditation Scheme (NDMWAAS) re-launched in 2021, engaging coastal and marine business with online training leading to annual individual and/or business accreditation with promotion through the North Devon Explorer App.
- MMO #Operation Seabird working closely with local police teams to highlight the vulnerabilities of wildlife breeding and living in the area
- An annual monitoring programme is ongoing for a breeding colony on Lundy to determine productivity success

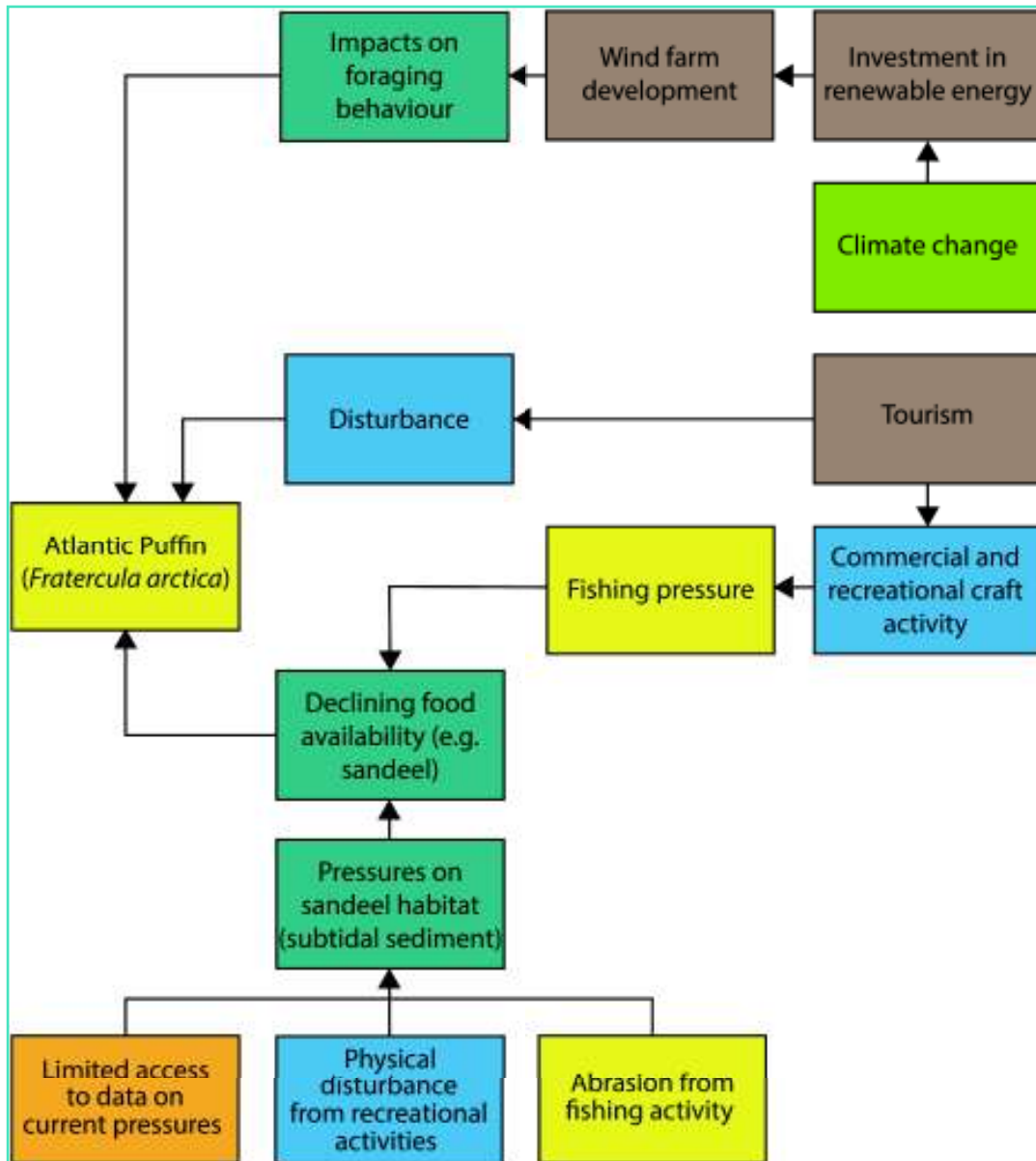
**Relevant local policies:**

- When respected, the 5-knot speed restriction stipulated in the MPA Code of Conduct reduces disturbance to near-shore rafting birds.
- Puffin feature on the Devon Species of Conservation Concern list.

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Further support for the Lundy monitoring programme	Increases reliability of breeding population data and monitors future trends	Data opportunity is not taken	Lundy Warden RSPB
Abundance studies on sand eels and other prey are required, particularly as warming seas are causing sand eel decline.	Develop understanding of sand eel distribution and potential changes affecting seabird colonies	Unable to predict affect of climate change on seabird colonies and unable to support conservation measures to protect sand eel stocks	RSPB
Promote NDMWAAS	Raise awareness of the issues and sensitivity of species with businesses	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere Lundy
Expand NDMWAAS to include general public and school engagement	Raise awareness of the issues and sensitivity of species with the general public	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere Lundy





**References:**

- Lundy Management Forum. 2017. Lundy Marine Management Plan 2017. Written by Rebecca MacDonald and revised by Robert Irving. Produced or Natural England by the Landmark Trust, Lundy Island
- RSPB. 2021. Celebrating Seabird Success on the Island of Lundy and the Isles of Scilly. Available at: <https://community.rspb.org.uk/ourwork/b/rspb-england/posts/celebrating-seabird-success-on-the-island-of-lundy-and-the-isles-of-scilly>

### 3.8 Razorbill (*Alca torda*)

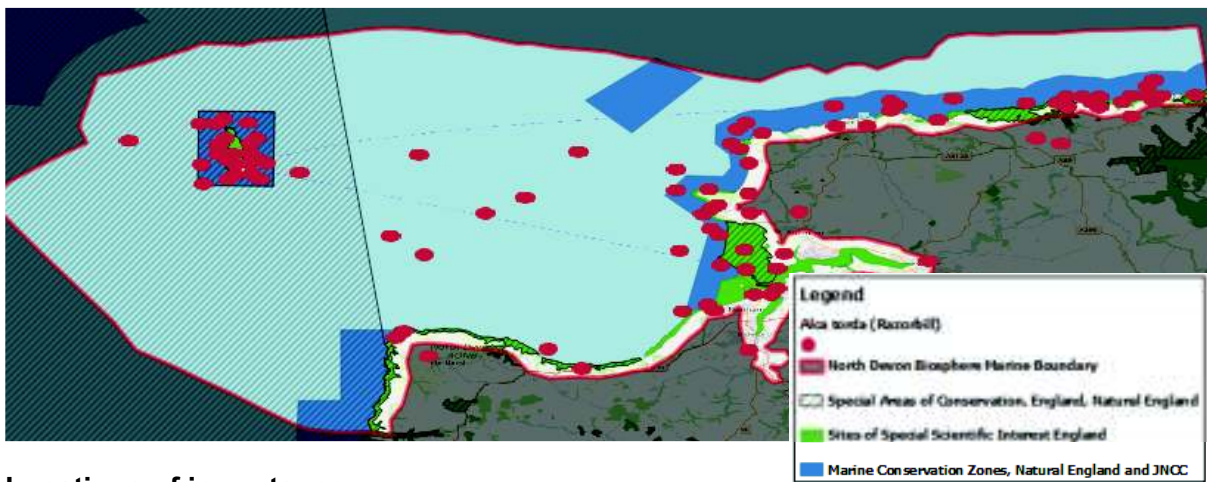
Asset and risk register summary	
Extent trend	Condition
Positive	Good



<p><b>Protective measures:</b></p> <ul style="list-style-type: none"> <li>• Lundy SSSI</li> </ul> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"> <li>• Lundy management (Lundy only)</li> </ul> <p><b>Interests:</b></p> <ul style="list-style-type: none"> <li>• RSPB</li> <li>• Natural England</li> </ul>
--

Photo credit: Lundy Marine Management Plan 2017

Razorbills come to the North Devon coast each spring to breed in cliff-side colonies. They frequently nest higher up the cliffs than guillemots and use crevices between granite blocks and boulders. They feed mainly on herring, sprats and sandeels. The numbers of Razorbills have increased on Lundy since the island became rat free, from as little as 950 individuals in 2000 to 3,533 individuals in 2021, according to the RSPB. Razorbills are listed as a ‘species of principal importance’ in England. Bideford to Foreland Point is a key site for razorbills, but they are currently not a listed feature and lack protection.



Locations of importance:

Location	Conservation designation	Condition
Lundy	SSSI	Unassessed but RSPB surveys show increase
Lynmouth	N/A	Area of multiple records (NBN Atlas)

**Key pressures/threats:**

- Disturbance at nesting sites by vessels coming too close to the cliffs
- Marine Pollution
- Declining fish stocks, particularly sand eels
- Wind farms

**Current positive initiatives:**

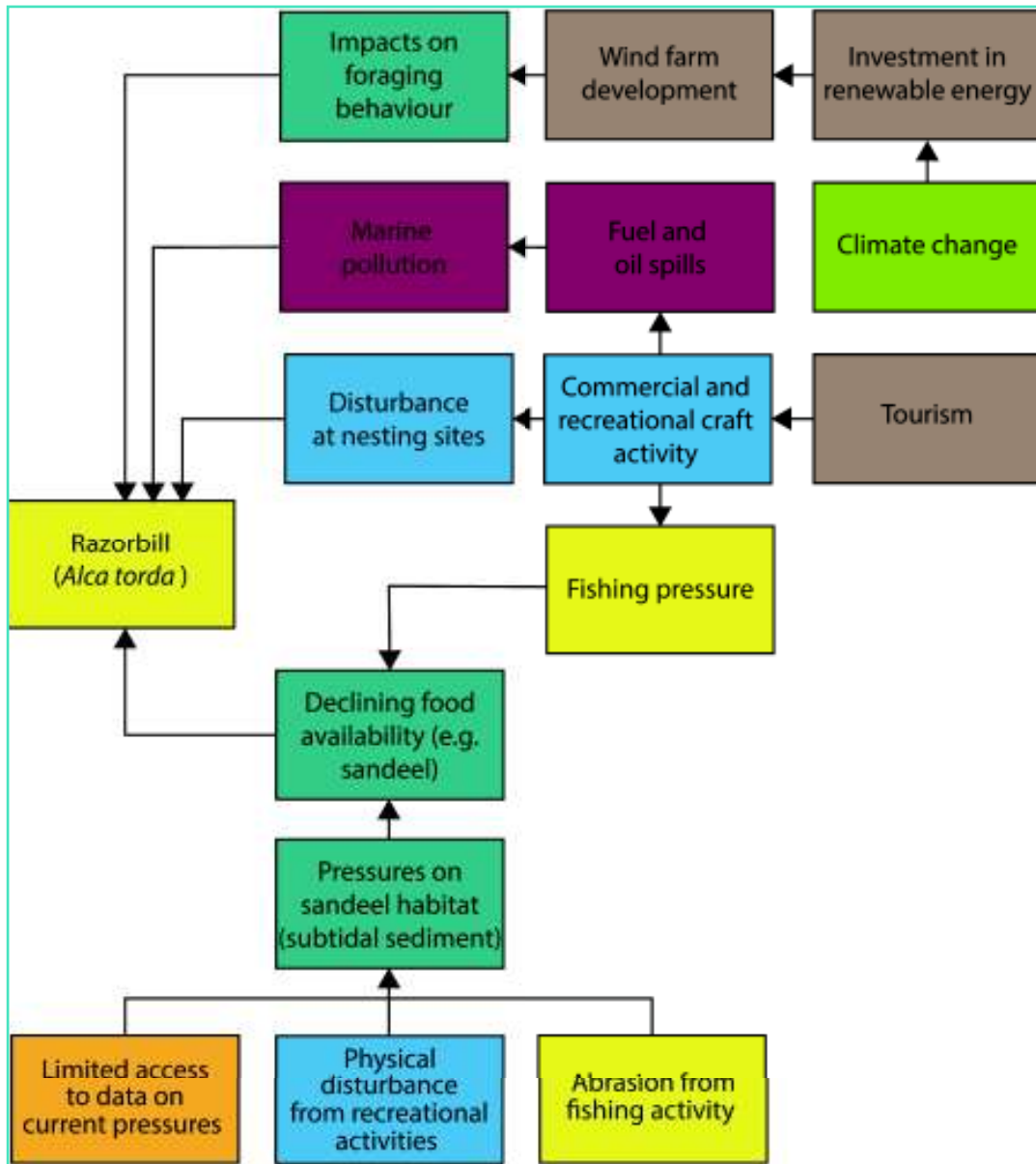
- The MOD No Fly-Zone for aircraft is in operation from April to October over Lundy which reduces disturbance during the breeding season.
- Protected through the Lundy SSSI and included within the Lundy Management Plan
- The North Devon Marine Wildlife Aware Accreditation Scheme (NDMWAAS) re-launched in 2021, engaging coastal and marine business with online training leading to annual individual and/or business accreditation with promotion through the North Devon Explorer App.
- MMO #Operation Seabird working closely with local police teams to highlight the vulnerabilities of wildlife breeding and living in the area

**Relevant local policies:**

- When respected, the 5-knot speed restriction stipulated in the MPA Code of Conduct reduces disturbance to near-shore rafting birds.
- Razorbills feature on the Devon Species of Conservation Concern list.
- A designated feature of the Lundy SSSI and covered through the Lundy Management Plan

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Promote NDMWAAS	Raise awareness of the issues and sensitivity of species with businesses	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere and Lundy
Expand NDMWAAS to include general public and school engagement	Raise awareness of the issues and sensitivity of species with the general public	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere and Lundy
Advocate for Razorbills to be added to as a listed feature of Bideford to Foreland Point MCZ	Protect razorbills at the site and monitor the population	Breeding razorbills continue to be unprotected at the site	RSPB
Establish a community scientist survey and monitoring programme for seabirds on the North Devon coast to support the national seabird survey	Develop our understanding of seabird species and their breeding success	Conservation measures are weak without a good baseline understanding of species	RSPB with North Devon Biosphere and JNCC Seabird Survey team



**References:**

- Amaral-Rogers, Vanessa. 2016. Can you help North Devon Seabirds and their homes? Available at: <https://community.rspb.org.uk/getinvolved/b/specialplaces/posts/can-you-help-north-devon-seabirds-and-their-homes>
- Lundy Management Forum. 2017. Lundy Marine Management Plan 2017. Written by Rebecca MacDonald and revised by Robert Irving. Produced for Natural England by the Landmark Trust, Lundy Island
- RSPB. 2021. Celebrating Seabird Success on the Island of Lundy and the Isles of Scilly. Available at: <https://community.rspb.org.uk/ourwork/b/rspb-england/posts/celebrating-seabird-success-on-the-island-of-lundy-and-the-isles-of-scilly>

### 3.9 Curlew (*Numenius arquata*)

Asset and risk register summary	
Extent trend	Condition
Negative	Acceptable

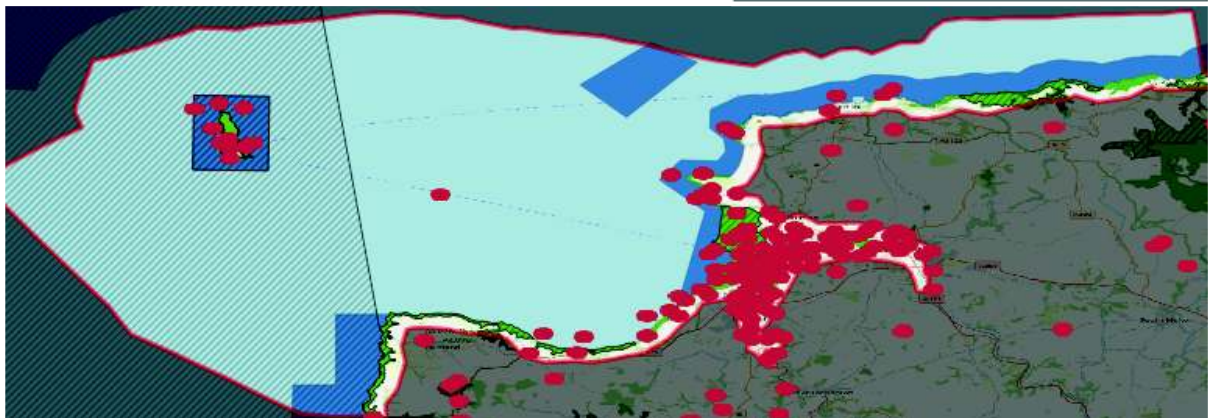


Photo credit: Martin Batt

<p><b>Protective measures:</b></p> <ul style="list-style-type: none"> <li>•Taw-Torridge SSSI</li> </ul> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"> <li>•Natural England</li> </ul> <p><b>Interests:</b></p> <ul style="list-style-type: none"> <li>•Farmers</li> <li>•RSPB</li> <li>•North Devon Biosphere</li> </ul>
---

The UK's curlew population has been described as one of the worlds largest but fastest declining, making it a conservation priority nationally. It appears that the Curlew may have already become extinct on Exmoor as a breeding species. The Curlew Call website shows 1 probable and 1 possible breeding site in the Taw-Torridge estuary. An international Curlew Working Group has been formed to progress its conservation since the dispersed nature of the breeding populations requires large-scale solutions. SSSI health checks carried out by Natural England show that Curlew declines are in line with national trends.

Legend	
<span style="color: red;">●</span>	Numenius arquata (Curlew)
<span style="border: 1px solid red; display: inline-block; width: 10px; height: 10px;"></span>	North Devon Biosphere Marine Boundary
<span style="border: 1px dashed black; display: inline-block; width: 10px; height: 10px;"></span>	Special Areas of Conservation, England, Natural England
<span style="background-color: lightgreen; display: inline-block; width: 10px; height: 10px;"></span>	Sites of Special Scientific Interest England
<span style="background-color: lightblue; display: inline-block; width: 10px; height: 10px;"></span>	Marine Conservation Zones, Natural England and JNCC



**Locations of importance:**

Location	Conservation designation	Condition
Taw-Torridge estuary	Taw-Torridge SSSI	Acceptable
Ilfracombe	N/A	Area of multiple records (NBN Atlas)
Baggy point	N/A	Area of multiple records (NBN Atlas)

**Key pressures/threats:**

- Fragmented landscape and habitat loss, particularly through farming
- Disturbance by ramblers, joggers, dog-walkers etc.

**Current positive initiatives:**

- SSSI health checks carried out by Natural England compare local population trends against national averages
- A wetland bird survey (WeBS) is carried out every month and the data is sent to BTO.

**Relevant local policies:**

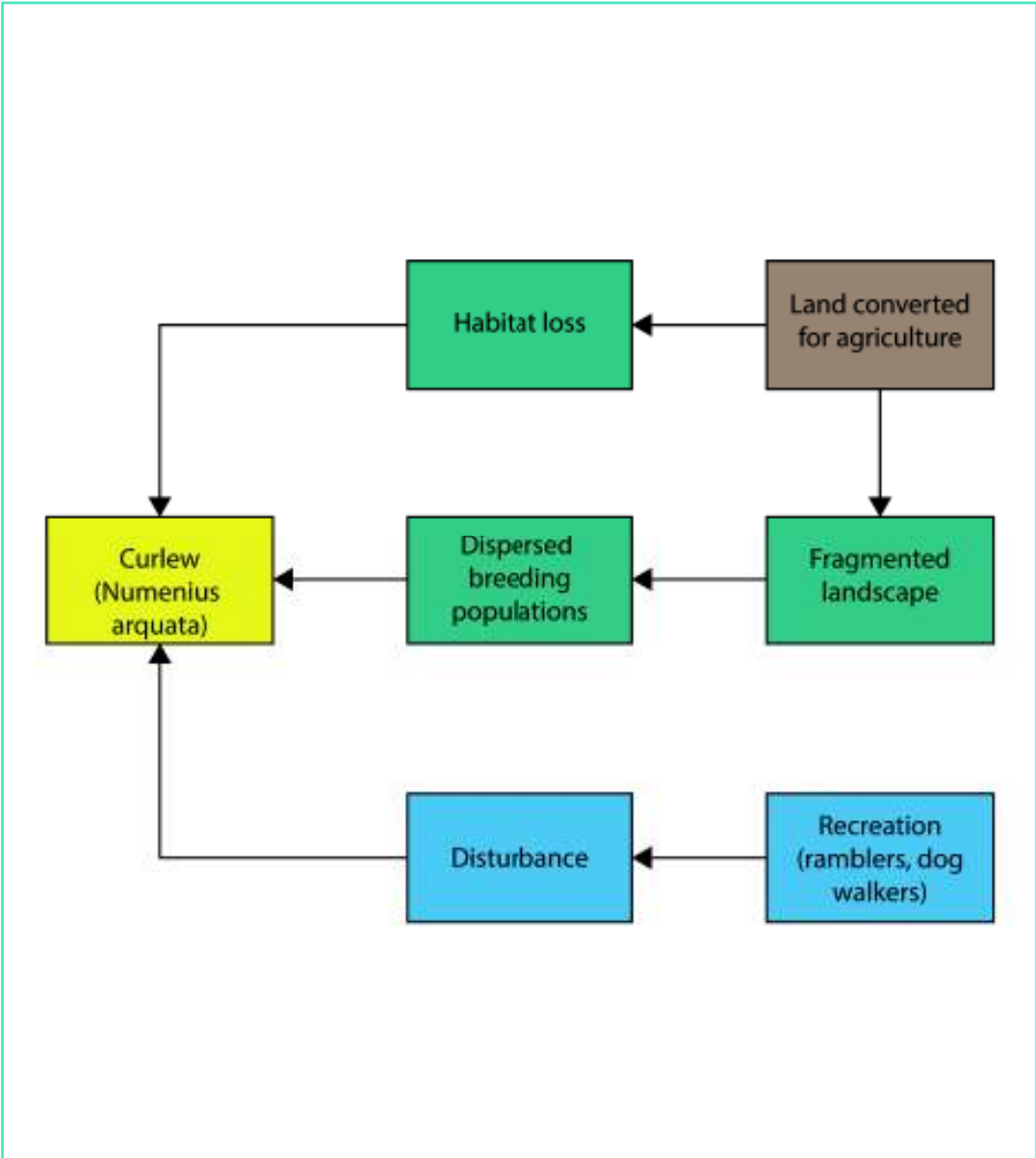
- Curlew are identified as a Species of Principal Importance in England in Section 41 of the 2006 Natural Environment and Rural Communities Act.
- The curlew sits on the Devon Species of Conservation Concern list.

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Restoration of functionally habitats should be considered through wider landscape solutions.	Curlew conservation goes together with conservation of other landscape features, such as flower-rich hay meadows and other invertebrates.	Un-holistic approach risks affecting population by not supporting its wider habitat use	North Devon Biosphere RSPB
Investigate the development of additional bird hides using the Axe/ Seaton as a case study.	To increase sustainable engagement with bird watching/ surveying, there needs to be greater access.	Risk of disturbance continues to increase with staycation rise	North Devon Biosphere RSPB
Identify and establish at least two disturbance free zones (during the nesting season) at suitable locations around the estuary for each of the following breeding birds: ringed plover, oystercatcher, curlew, lapwing, shelduck.	Reduce disturbance during the nesting season	Risk of disturbance continues to increase with staycation rise	North Devon Biosphere RSPB

**References:**

- Call of the Curlew. 2020. Breeding Curlew on Exmoor. Available at: <http://www.curlewcall.org/breeding-curlew-on-exmoor/>
- Devon Birds. 2017. Curlew- a bird on the brink. Available at: [https://www.devonbirds.org/news/the\\_harrier/the\\_harrier?blogMonth=2&blogYear=2017&blogEntry=13738](https://www.devonbirds.org/news/the_harrier/the_harrier?blogMonth=2&blogYear=2017&blogEntry=13738)



## 3.10 Golden Plover (*Pluvialis apricaria*)

Asset and risk register summary	
Extent trend	Condition
Negative	Good



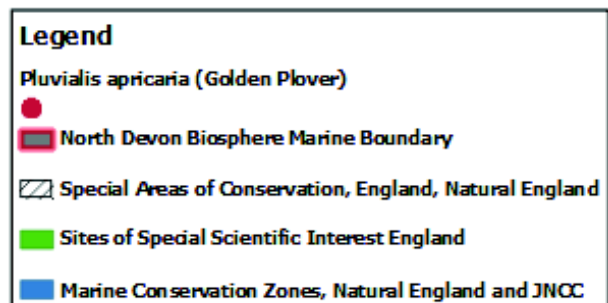
**Protective measures:**

- Taw-Torridge SSSI

**Interests:**

- Devon Wildlife Trust
- RSPB
- North Devon Biosphere

The Golden Plover occupies their breeding grounds from May to September. Following that the winter season brings the largest numbers as the flocks build up after the breeding season. The Taw-Torridge estuary is an important habitat for non-breeding Golden Plover, and they have been identified as an interest feature for the Taw-Torridge SSSI. But there are threats identified for this landscape. Disturbance by dog walkers pose a large threat, as does sea level rise, the loss of the sand dune system, and warmer temperatures through spring and summer. Golden Plover and Lapwing are the most numerous waders on the Taw-Torridge Estuary and in general, the wintering population appears to be highly variable. Devon Wildlife Trust counted 2,000 Golden Plover at Horsey Island (in the Taw-Torridge Estuary) in 2020.



### Locations of importance:

Location	Conservation designation	Condition
Taw-Torridge estuary	Taw-Torridge SSSI	Good



**Key pressures/threats:**

- Sheep grazing affects nest survival
- Warmer springs and summers advance the breeding phenology of Golden Plovers and their prey
- Walking and dog walking are very prevalent on the estuary and cause disturbance

**Current positive initiatives:**

- A wetland bird survey is carried out every month and the data is sent to BTO.
- SSSI health checks carried out by Natural England compare local population trends against national averages

**Relevant local policies:**

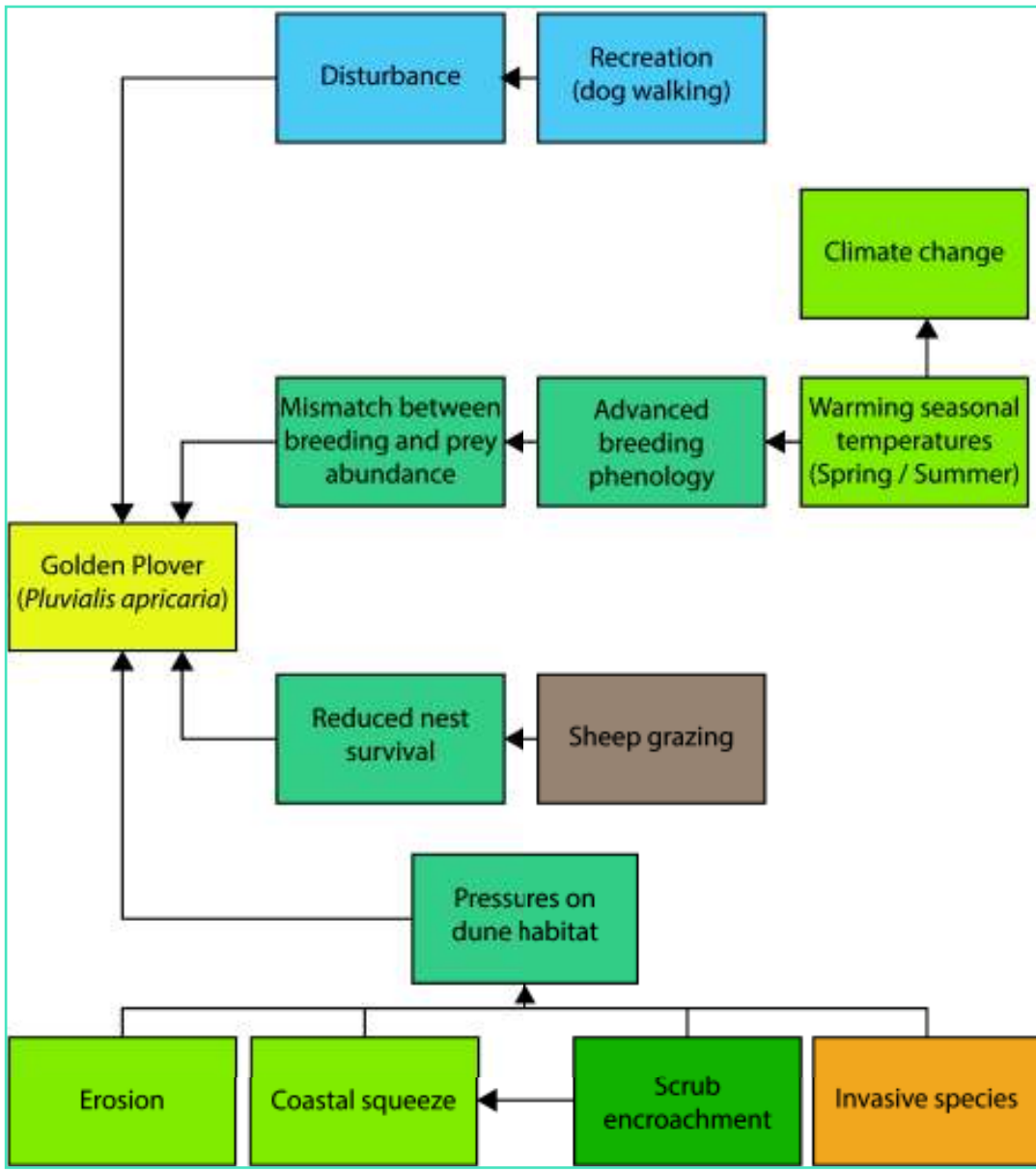
- SSSI interest feature

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Restoring upland functionally linked habitats	Assist in the conservation of Golden Plovers and other species (curlews etc.).		
Interpretation/ awareness campaign around disturbance possibly using North Devon Explorer and South West Coast Path Apps	Recreational use of the estuary, particularly walking and dog walking, causes disturbance	Risk of disturbance continues to increase with staycation rise	RSPB/ North Devon Biosphere
Identify and establish at least two disturbance free zones (during the nesting season) at suitable locations around the estuary for each of the following breeding birds: ringed plover, oystercatcher, curlew, lapwing, shelduck.	Reduce disturbance during the nesting season	Risk of disturbance continues to increase with staycation rise	RSPB/ North Devon Biosphere

**References:**

- Berridge, R. Identification of Wintering Wildfowl High Tide Roosts & Recreational Disturbance Impacts on the Taw Torridge Estuary Site of Special Scientific Interest (SSSI). Natural England Commissioned Reports, Number 281.
- Massimino, D. et al. (2019) BirdTrends 2019: trends in numbers, breeding success and survival for UK breeding birds. BTO Research Report 722. BTO, Thetford. [www.bto.org/birdtrends](http://www.bto.org/birdtrends)
- Pearce-Higgins, J., 2011. Modelling conservation management options for a southern range-margin population of Golden Plover *Pluvialis apricaria* vulnerable to climate change. *Ibis*, 153(2), pp.345-356.



### 3.11 Lapwing (*Vanellus vanellus*)

Asset and risk register summary	
Extent trend	Condition
Negative	Acceptable



**Protective measures:**

- Taw-Torridge SSSI

**Interests:**

- Devon Wildlife Trust
- RSPB
- North Devon Biosphere

Lapwing are associated with littoral sediments, and the Taw-Torridge estuary is an important proportion of the UK’s non-breeding wintering population. However, they are threatened by walkers and dog walkers causing disturbance and flight-based responses. A SSSI health check of the Taw-Torridge Estuary found that Lapwing are in line with national population trends. Lapwing and Golden Plover are the most numerous waders on the Taw-Torridge Estuary and in general, the wintering population appears to be highly variable.



**Locations of importance:**

Location	Conservation designation	Condition
Taw-Torridge estuary	Taw-Torridge SSSI	Acceptable

**Key pressures/threats:**

- Walking and dog walking are very prevalent on the estuary in winter
- Fragmented landscape and habitat loss, particularly through farming

**Current positive initiatives:**

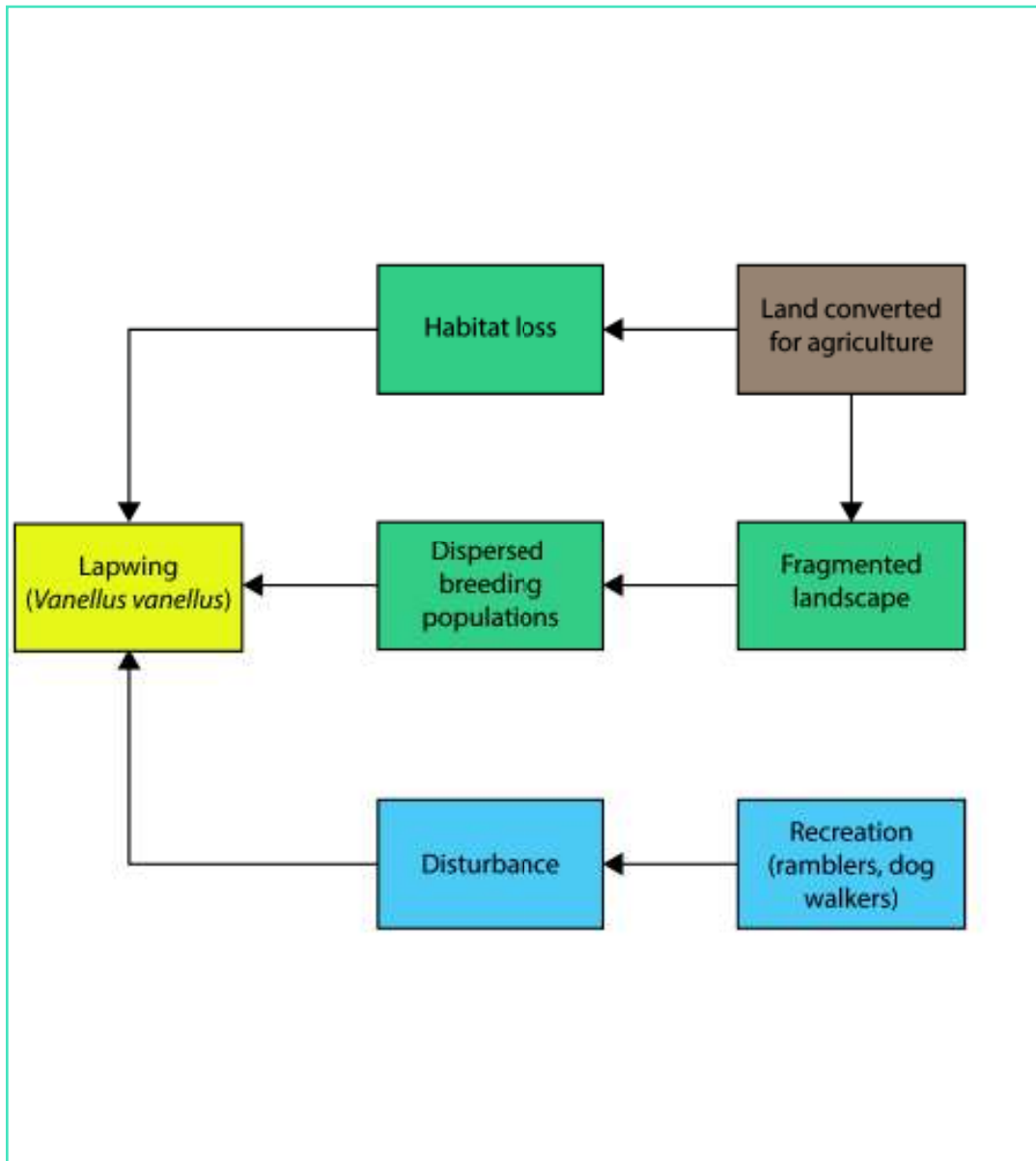
- A wetland bird survey is carried out every month and the data sent to BTO.
- SSSI health checks carried out by Natural England compare local population trends against national averages

**Relevant local policies:**

- Lapwing feature on the Devon Species of Conservation Concern list.

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Interpretation/ awareness campaign around disturbance possibly using North Devon Explorer and South West Coast Path Apps	Recreational use of the estuary, particularly walking and dog walking, causes disturbance	Risk of disturbance continues to increase with staycation rise	RSPB/ North Devon Biosphere
Investigate the development of additional bird hides using the Axe/ Seaton as a case study.	To increase sustainable engagement with bird watching/ surveying, there needs to be greater access.	Risk of disturbance continues to increase with staycation rise	RSPB/ North Devon Biosphere
Identify and establish at least two disturbance free zones (during the nesting season) at suitable locations around the estuary for each of the following breeding birds: ringed plover, oystercatcher, curlew, lapwing, shelduck.	Reduce disturbance during the nesting season	Risk of disturbance continues to increase with staycation rise	RSPB/ North Devon Biosphere
Determine if a functionally linked habitats study is appropriate	Improve understanding of functionally linked areas used by the species in North Devon	Un-holistic approach to conservation measures doesn't support the species effectively	Natural England



**References:**

- Berridge, R. Identification of Wintering Wildfowl High Tide Roosts & Recreational Disturbance Impacts on the Taw Torridge Estuary Site of Special Scientific Interest (SSSI). Natural England Commissioned Reports, Number 281.
- Massimino, D. et al. (2019) BirdTrends 2019: trends in numbers, breeding success and survival for UK breeding birds. BTO Research Report 722. BTO, Thetford. [www.bto.org/birdtrends](http://www.bto.org/birdtrends)
- Pearce-Higgins, J., 2011. Modelling conservation management options for a southern range-margin population of Golden Plover *Pluvialis apricaria* vulnerable to climate change. *Ibis*, 153(2), pp.345-356.

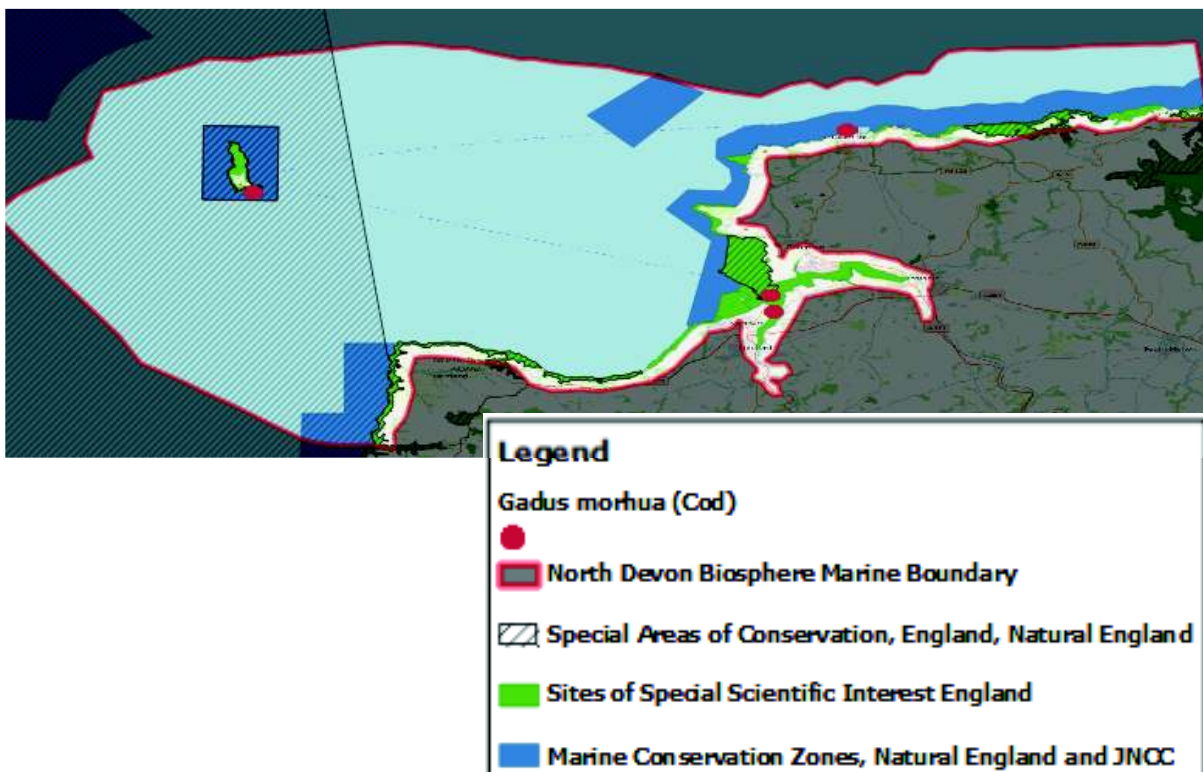


### 3.12 Cod (*Gadus morhua*)

Asset and risk register summary	
Extent trend	Condition
Negative	Acceptable

Image to be added	<p><b>Protective measures:</b></p> <ul style="list-style-type: none"> <li>•Devon Species of Conservation Concern</li> </ul> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"> <li>•Devon &amp; Severn IFCA</li> </ul> <p><b>Interests:</b></p> <ul style="list-style-type: none"> <li>•Local fishermen</li> <li>•North Devon Fishermen Association</li> </ul>
-------------------	--

Cod are found in the North Atlantic and Arctic. They can be caught off the North Devon coast all year round, but the main season is November-February. They are among the most important of the commercial fishes. Overall, there has been a decline in catch per unit effort from stock assessment survey trawls in and adjacent to the North Devon marine area since 2010. Cod are listed on the OSPAR species list, the RSPB priority list, and they are a 'species of principle importance' in England. The North Devon area contains spawning grounds for Cod which require conserving. A recent study shows future declines in cod are highly likely due to climate projections in the Celtic Sea, English Channel, and southern North Sea through the 21<sup>st</sup> century.



**Locations of importance:**

Location	Conservation designation	Condition
Taw-Torridge estuary	N/A	Area of multiple records (NBN Atlas)

**Key pressures/threats:**

- Cod are a prime fish for commercial fisheries and over-fishing is a threat.
- Sea temperature rise reportedly reduces the size of cod and forces them north into cooler waters

**Current positive initiatives:**

- The North Devon Fishermen Association are working to be the first association where all boats are accredited by the Seafish Responsible Fishing Scheme.

**Relevant local policies:**

- Cod feature on the Devon Species of Conservation Concern list.
- Devon & Severn IFCA Byelaw that sets the minimum conservation reference size for Cod at 35cm, in line with EU/ National sizing.

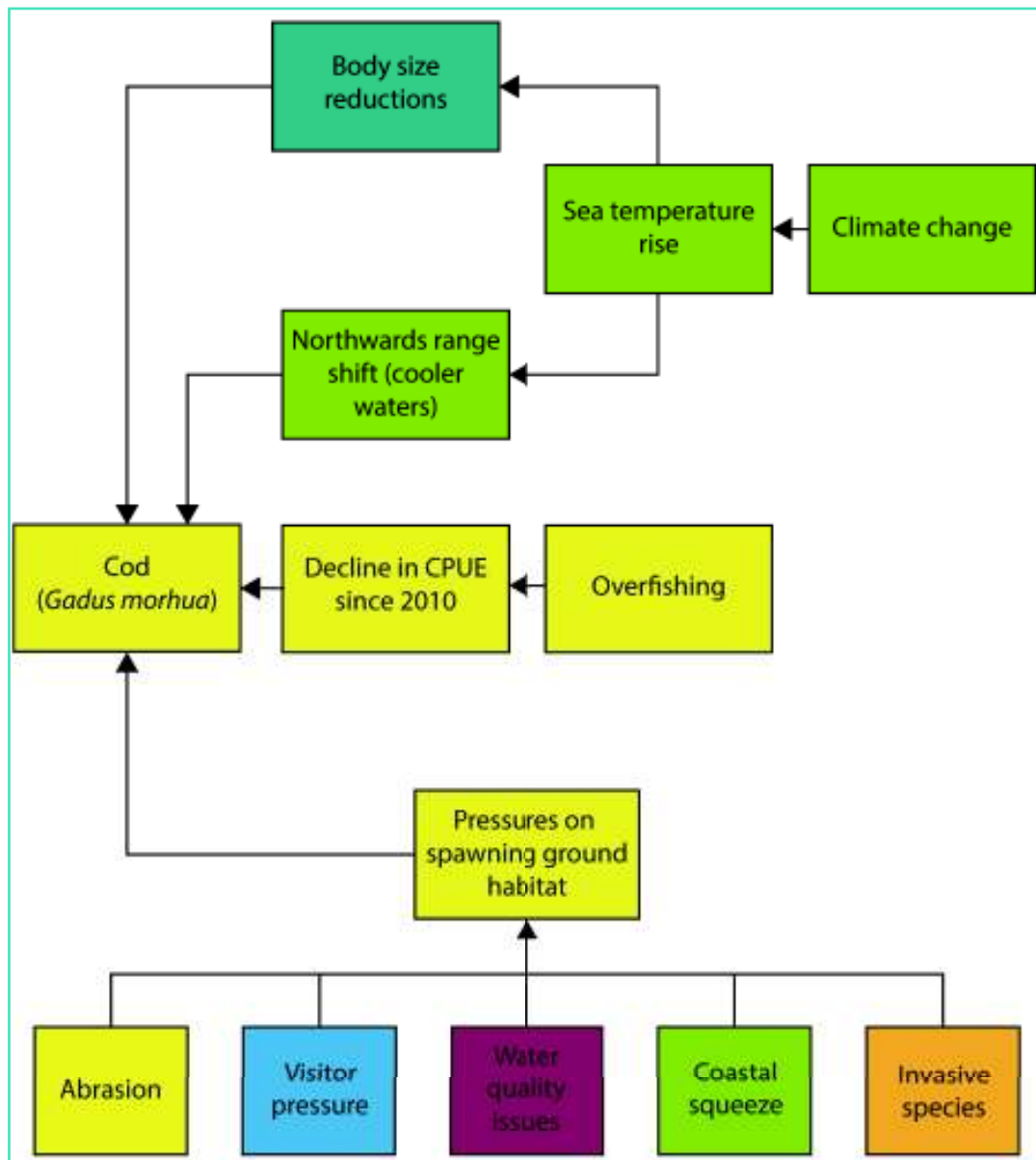
**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Work with Anglers to record species and numbers caught.	Improve evidence base for management	Continue to be unsure around health of population	Devon & Severn IFCA with Angling Trust
Work with Anglers to record species and numbers caught.			

**References:**

- Maltby KM, Rutterford LA, Tinker J, Genner MJ, Simpson SD. Projected impacts of warming seas on commercially fished species at a biogeographic boundary of the European continental shelf. *J Appl Ecol.* 2020; 57:2222–2233. <https://doi.org/10.1111/1365-2664.13724>
- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth.





### 3.13 Herring (*Clupea harengus*)

Asset and risk register summary	
Extent trend	Condition
Stable	Acceptable



*Photo credit: Devon & Severn IFCA*

**Protective measures:**

- N/A

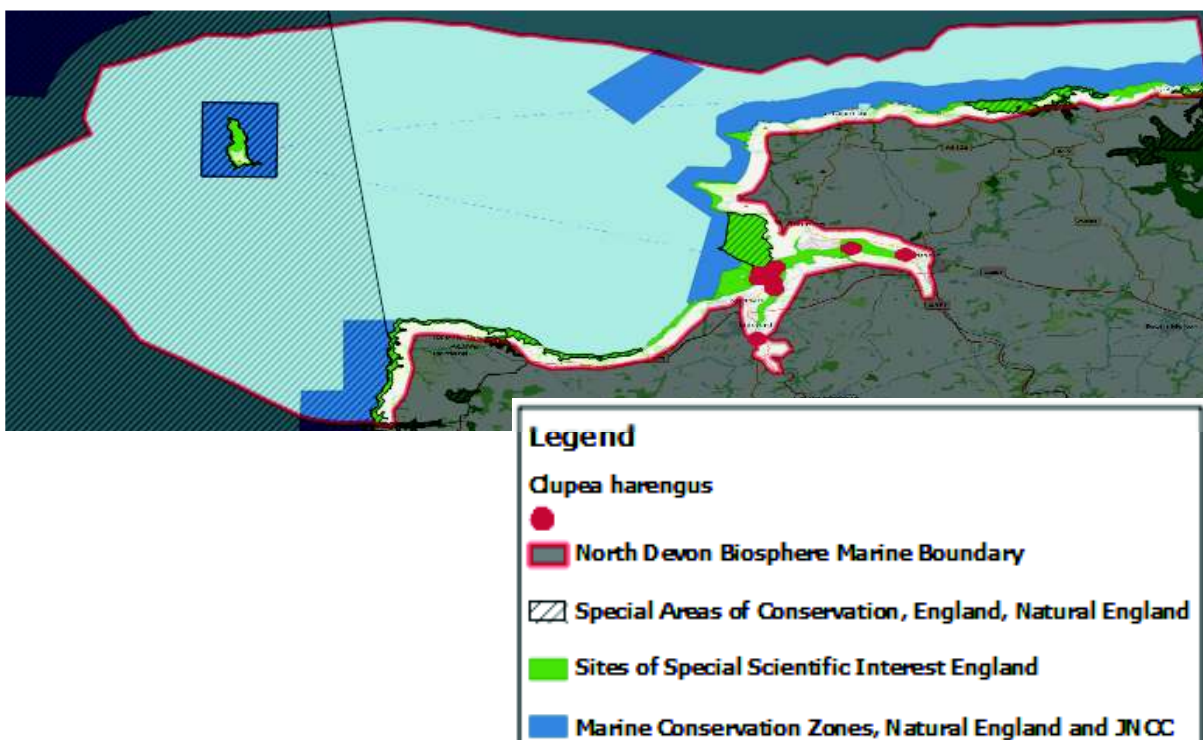
**Responsibilities:**

- Devon & Severn IFCA

**Interests:**

- Local fishermen
- North Devon Fishermen Association
- North Devon Biosphere

The North Devon marine area contains important spawning and nursery grounds for Herring. The season for Herring fishing is between September-December. Assessment of monotonic trends between 2010-2017 report a slight increase in the catch per unit of effort (total catch divided by the total amount of effort used to harvest the catch, Kg per hr) in North Devon. However, there is not enough data available to understand the status of populations fished in Devon & Severn IFCA’s district. Herring is a staple food source for some seabirds and marine mammals. Herring is particularly vulnerable to habitat loss because their different life stages have strong dependence on specific particle size benthic habitats.



**Locations of importance:**

Location	Conservation designation	Condition
Taw-Torridge estuary	N/A	N/A

**Key pressures/threats:**

- Habitat loss affecting the Herring's life stages. Activities with a negative impact on the spawning habitat of herring include the extraction of marine aggregates and erection of structures.
- Lack of data in the Devon & Severn IFCA region, particularly for more localised management of stocks, but genetic studies highlight the likely existence of multiple genetically discrete spawning populations
- Overfishing

**Current positive initiatives:**

- Devon & Severn IFCA\* have developed a Fisheries Research Management Plan for Herring and set various byelaws for its conservation.

**Relevant local policies:**

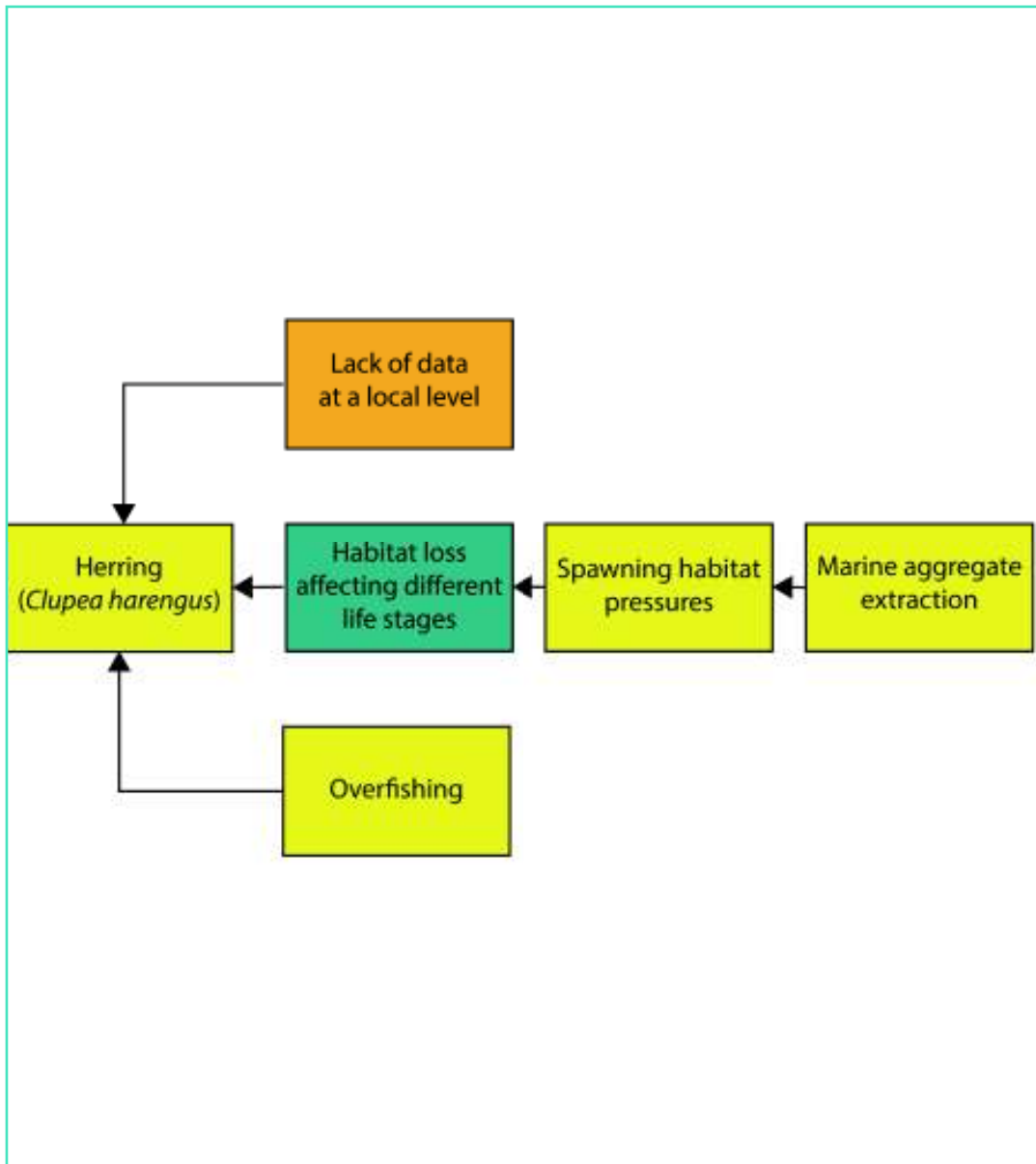
- Devon & Severn IFCA set the minimum fishing size for Herring at 20cm, matching the EU and national standards.

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Bristol Channel herring population research project	Understanding the size, extent, and distribution of genetically distinct herring stocks in the Bristol Channel is required.	Stocks will continue to be assessed as one population affecting conservation measures	D&S IFCA
Possible spawning habitats at Clovelly to be investigated			D&S IFCA
Models showing the migratory movements of Bristol Channel herring stocks	Understand the management scale required	Stocks will continue to be assessed as one population affecting conservation measures	D&S IFCA

**References:**

- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth.
- Peverley, M. and Stewart, J.E. (2021). Fisheries Research & Management Plan:
- Atlantic Herring (*Clupea harengus*) in the North of Devon and Severn IFCA's District. Devon and Severn Inshore Fisheries and Conservation Authority & North Devon Biosphere.



## 3.14 European bass (*Dicentrarchus labrax*)

Asset and risk register summary	
Extent trend	Condition
Stable	Unknown

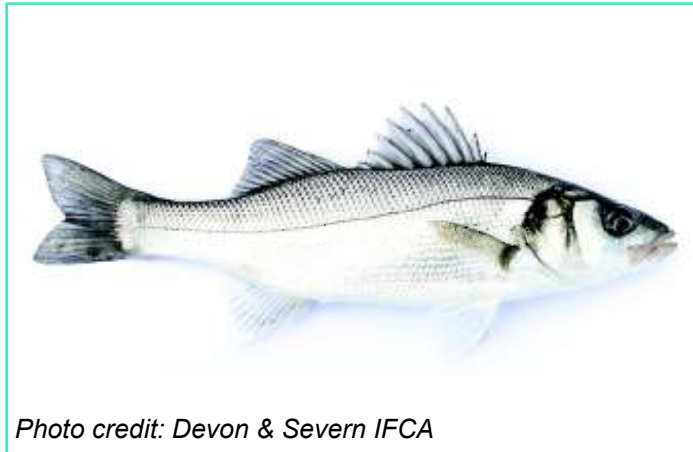


Photo credit: Devon & Severn IFCA

### Protective measures:

- N/A

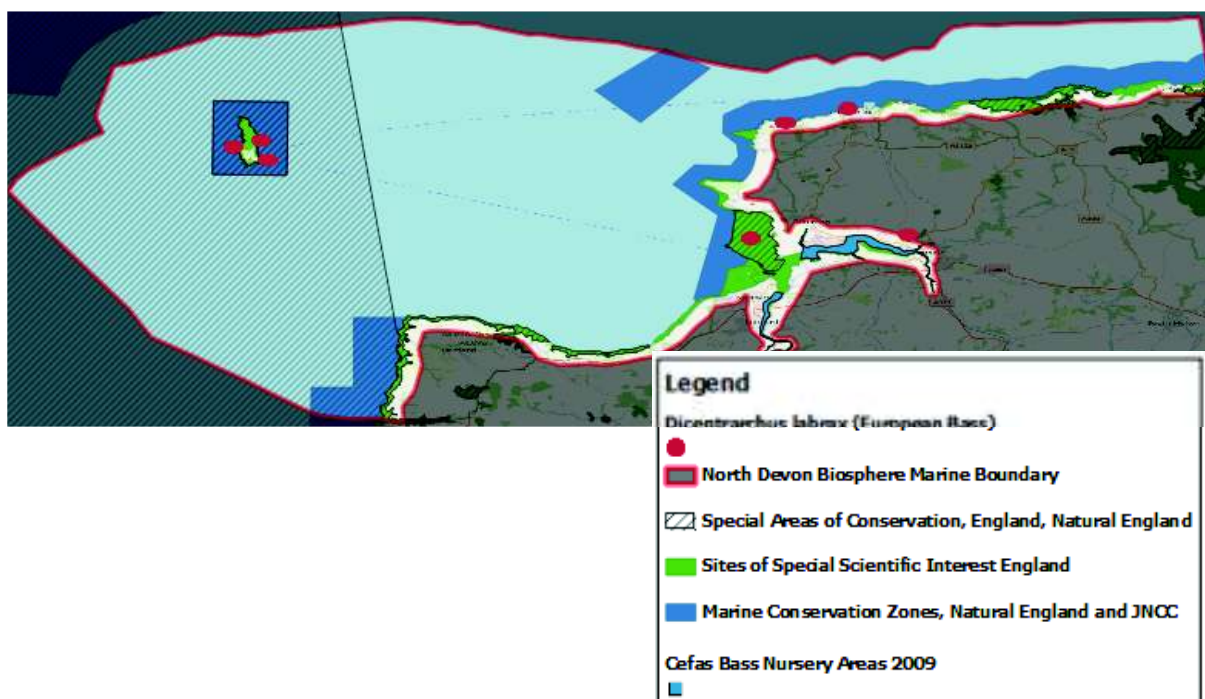
### Responsibilities:

- Devon & Severn IFCA

### Interests:

- Local fishermen
- North Devon Fishermen Association
- University of Plymouth

European Bass are found in nearshore environments and the bottom of estuaries. They can be found in the Eastern Atlantic, Mediterranean and Black Sea. Their diet changes with age, with younger fish eating mostly invertebrates and moving onto other fish as they age. Bass are a commercially valuable species and shoals in inshore waters make them an easy species for fisherman to target in large numbers. The North Devon fishermen landed slightly less than 1 tonne of Bass (documented) in 2019, totalling roughly £1.7 million. Spawning success is directly linked to temperature which means Bass are likely to migrate North in the future. A tagging study in the 1980s found that the inner Bristol Channel and Severn Estuary is a vital nursery ground for Bass under a year old, and there are now reportedly multiple nursery grounds off the North Devon Coast.



**Locations of importance:**

Location	Conservation designation	Condition
Taw-Torridge estuary	N/A	N/A
Minehead	N/A	Health of population unknown

**Key pressures/threats:**

- Overfishing and targeting shoals in inshore waters
- Spawning success linked to sea temperature
- Vulnerable to sea temperature rise

**Current positive initiatives:**

- Devon & Severn IFCA have developed a Fisheries Research Management Plan for Bass and various byelaws may have positive impacts on Bass conservation.
- Devon & Severn IFCA are undertaking Bass netting research

**Relevant local policies:**

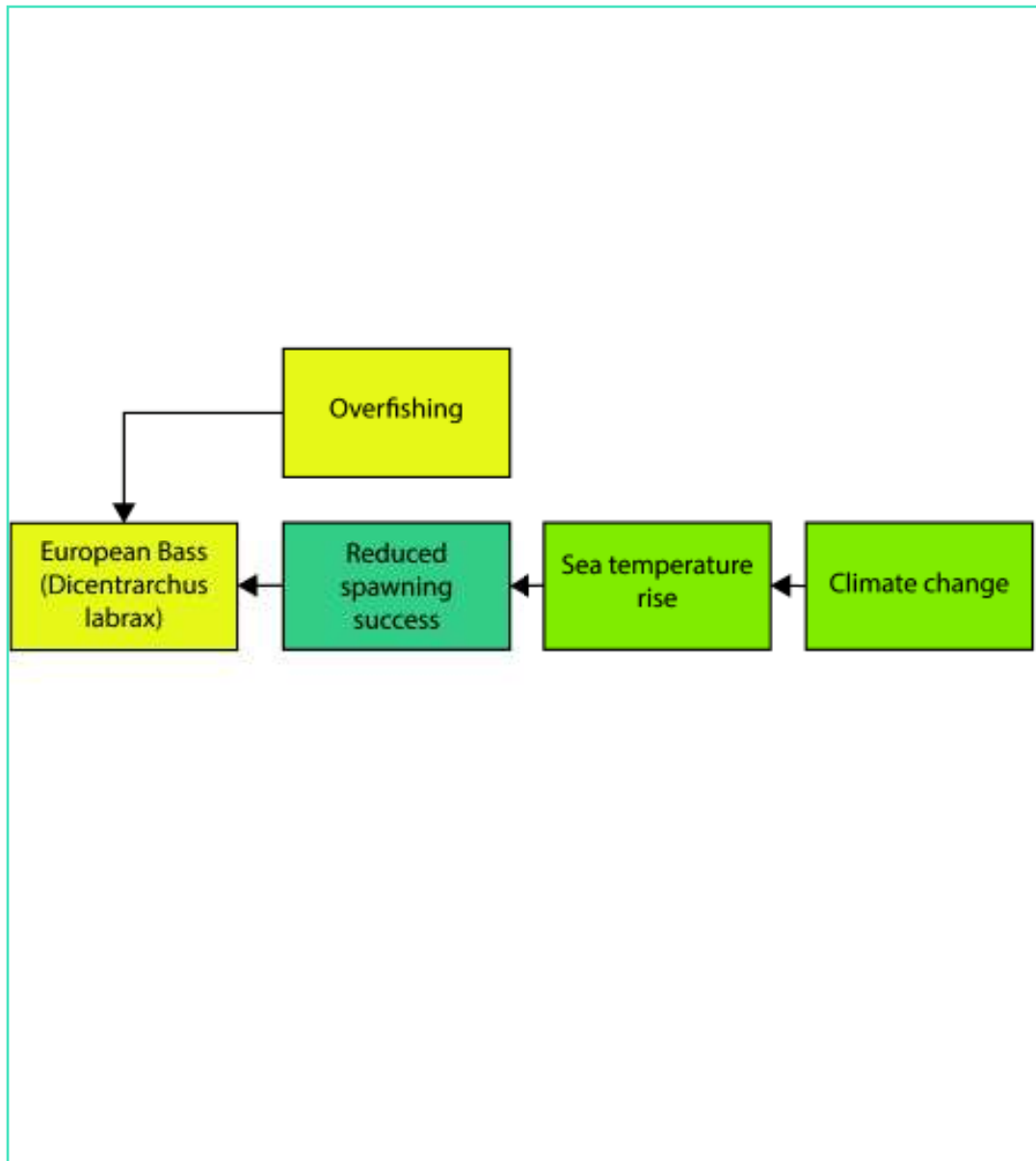
- EU and national legislation prohibits the catch of sea bass smaller than 42cm.
- National legislation prohibits retaining bass in February and March for commercial purposes. For recreational fishing, Bass may only be retained between 1st March and the end of November, with a maximum of two Bass per day.

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Continue with Fish INTEL tagging project	Research is required to understand where sea bass spend their various life cycles to help manage exploitation on the Taw Torridge.	Knowledge affects decision making therefore greater knowledge supports effective management	Plymouth Uni/ Interreg. Support from D&S IFCA
Work with local fishers to plan future research	Develop relationships and collect further data	Understanding within fishing community isn't strengthened and risk of exploitation impacting population increases	D&S IFCA
Improve landings data collection- current and strengthen legislation to support this	Current legislation does not require all sea bass landings to be recorded affecting data quality	The accuracy around landings continues to be flawed	D&S IFCA

**References:**

- Peverley, M. and Stewart, J.E. (2021). Fisheries Research & Management Plan: European Sea Bass (*Dicentrarchus labrax*) in the North of Devon and Severn IFCA's District. Devon and Severn Inshore Fisheries and Conservation Authority & North Devon Biosphere. 57 pp + appendices.
- Stamp, T., Clarke, D., Plenty, S., Robbins, T., Stewart, J. E., West, E., and Sheehan, E. Identifying juvenile and sub-adult movements to inform recovery strategies for a high value fishery—European bass (*Dicentrarchus labrax*). – ICES Journal of Marine Science, 78: 3121-3134 .

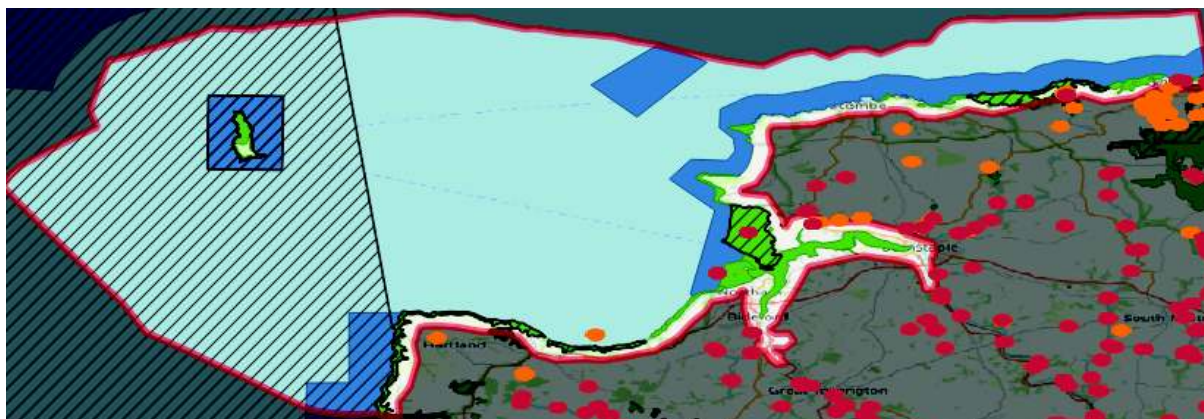


### 3.15 Salmon (*Salmo salar*) & Sea trout (*Salmo trutta*)

Asset and risk register summary	
Extent trend	Condition
Salmon	Negative
Sea trout	Stable

Image to be added	<p><b>Protective measures:</b></p> <ul style="list-style-type: none"> <li>•Taw-Torridge SSSI</li> </ul> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Interests:</b></p> <ul style="list-style-type: none"> <li>•Local fishermen</li> <li>•North Devon Fishermen Association</li> <li>•Environment Agency</li> </ul>
-------------------	--

Salmon and Sea Trout are migratory species that spend their first few years in fresh water, and there after they migrate to the sea. Little is known about where they stay at sea, but they return to their place of birth to spawn. The Taw-Torridge estuary provides an important migratory route for these species and its hydromorphological, chemical and ecological health is essential for maintaining stocks. Fishing on the Taw Torridge is for both recreational and commercial purposes and it is most likely to take place all year round. Development along the Taw-Torridge poses a great threat to the important migratory routes. Net catch per unit of effort data for the Taw-Torridge has been compared for 2013-2014 and 2015-2016, and reveals limited change for Salmon or Sea Trout.





**Locations of importance:**

Location	Conservation designation	Condition
Taw-Torridge estuary	SSSI	Acceptable

**Key pressures/threats:**

- Development along the Taw-Torridge
- Water quality issues due to urban expansion and changes in agricultural practices
- Overfishing

**Current positive initiatives:**

- Salmon and Sea Trout feature on the Devon Species of Conservation Concern list.
- The Environment Agency and Natural Resources Wales use catch return data annually to assess and manage salmon and sea trout stocks in a sustainable way.

**Relevant local policies:**

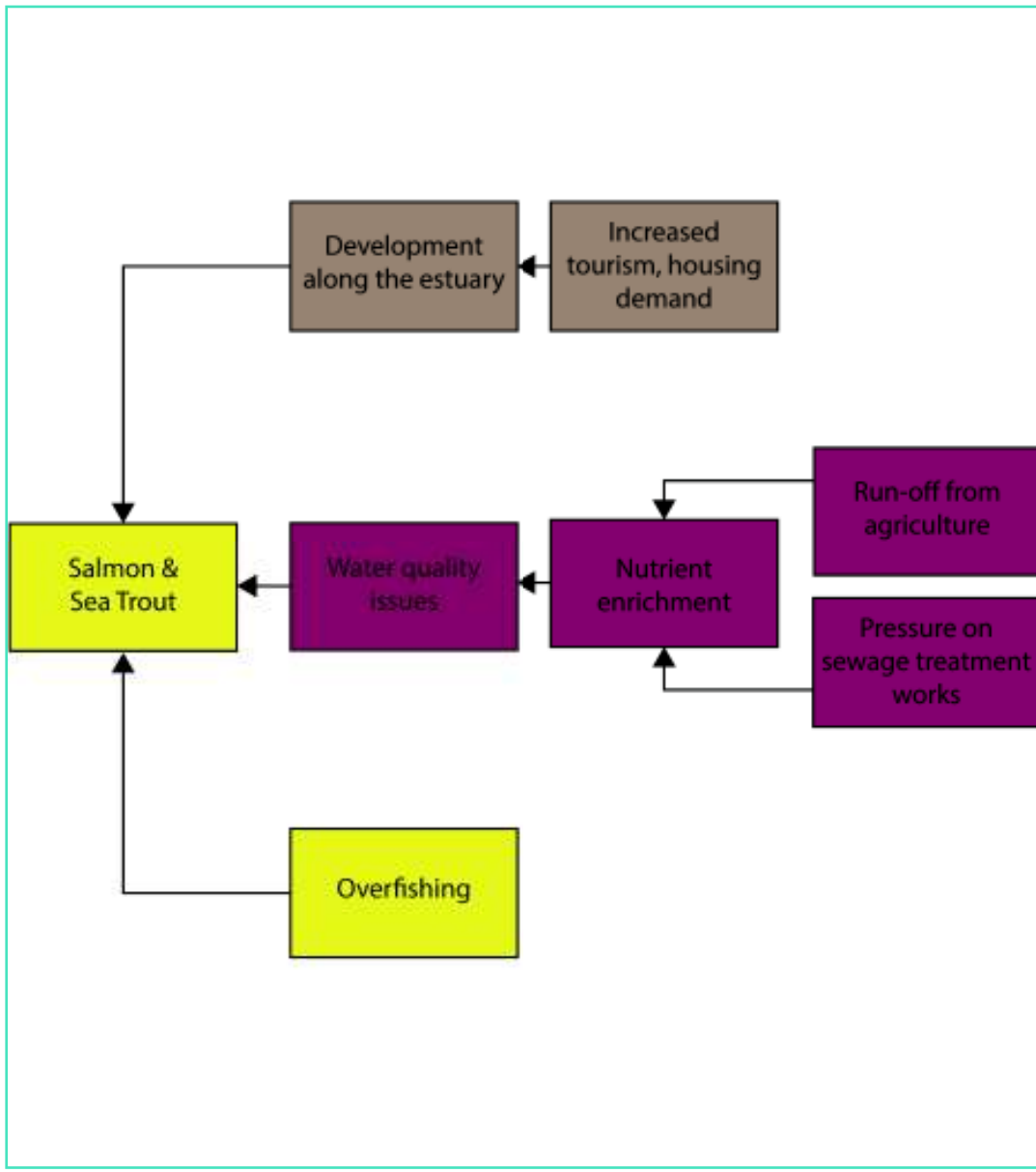
- Salmon are listed under the Conservation of Species and Habitats Regulations 2010.
- SSSI notified feature.
- Fixed engine byelaw enforced by D&S IFCA prohibits the placing and use of fixed engines for taking sea fish.

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Improvement of spawning habitat including possible removal of weirs where appropriate.	Improve spawning area access on the Taw-Torridge	Further decline in population	EA with Angling Trust
Revisit the opportunity for the development of a Hatchery on the Torridge	Increase local population	Population continues to decline	River Torridge Fishery Association

**References:**

- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth.



### 3.16 Plaice (*Pleuronectes platessa*) and Sole (*Solea solea*)

Asset and risk register summary	
Extent trend	Condition
Stable	Acceptable

Image to be added

**Protective measures:**

- Sole are Devon Species of Conservation Concern

**Responsibilities:**

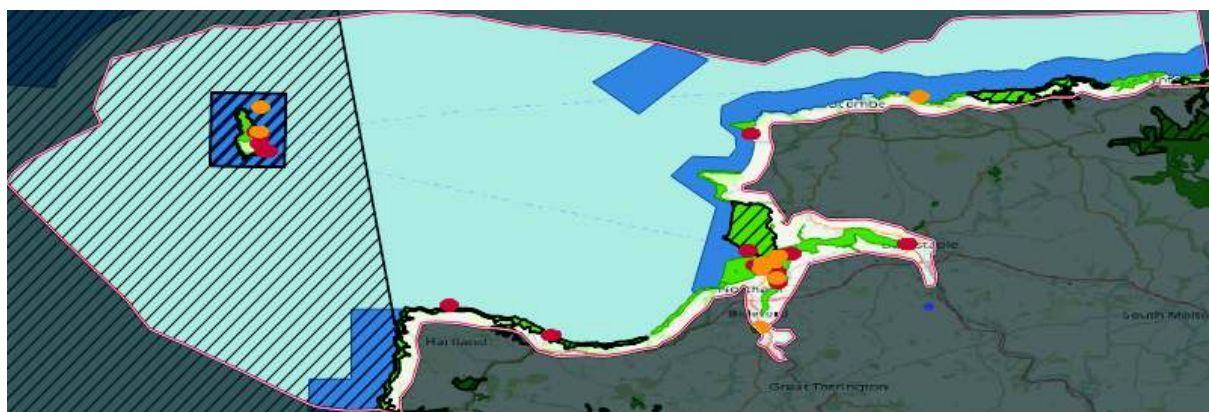
- Devon & Severn IFCA

**Interests:**

- Local fishermen
- North Devon Fishermen Association

Sole is a benthic species that live on sandy and muddy bottoms. Habitats within designated Marine Protected Areas, such as estuarine saltmarsh and coastal infralittoral reef, provide important nursery grounds. Their depth varies from the shore down to 300m and they are caught all year round using bottom trawling. Sole feed mainly on polychaete worms, small soft-shelled bivalves, small fishes and crustaceans. In North Devon, there has overall been a decline in catch per unit effort of Sole. Sole and the Thornback ray represent the highest value fisheries in 2017 from landings by vessels within the North Devon Marine area

Plaice live between a few meters to around 100m deep on mixed bottoms. The older the fish, the deeper the occurrence. Plaice mainly feed on thin-shelled molluscs and polychaetes. They are regarded as the most important flatfish for fisheries in Europe and the main catching season in North Devon is March-November. There was an overall decline in the North Devon fishing sector between 2010-2017 however, there was an increase in landing volume of Plaice between 2014-2017. The North Devon marine area contains spawning and nursery ground for Plaice.



**Locations of importance:**

Location	Conservation designation	Condition
Lundy West Coast	N/A	Area of multiple records (NBN atlas)
Taw-Torridge Estuary	N/A	Area of multiple records (NBN atlas)
Morte Point	MCZ	Acceptable

**Key pressures/threats:**

- Plaice and Sole are commercially important and at risk of overfishing
- Sea temperature rise are expected to force Plaice north into cooler waters

**Current positive initiatives:**

- Sole feature on the Devon Species of Conservation Concern list
- Trawl surveys for stock assessment are conducted by Cefas (as part of the UK Irish Sea and Bristol Channel Beam Trawl Survey) annually in September and October. The surveys principally target Plaice and Sole but all species caught are recorded (length, sex and environmental conditions).

**Relevant local policies:**

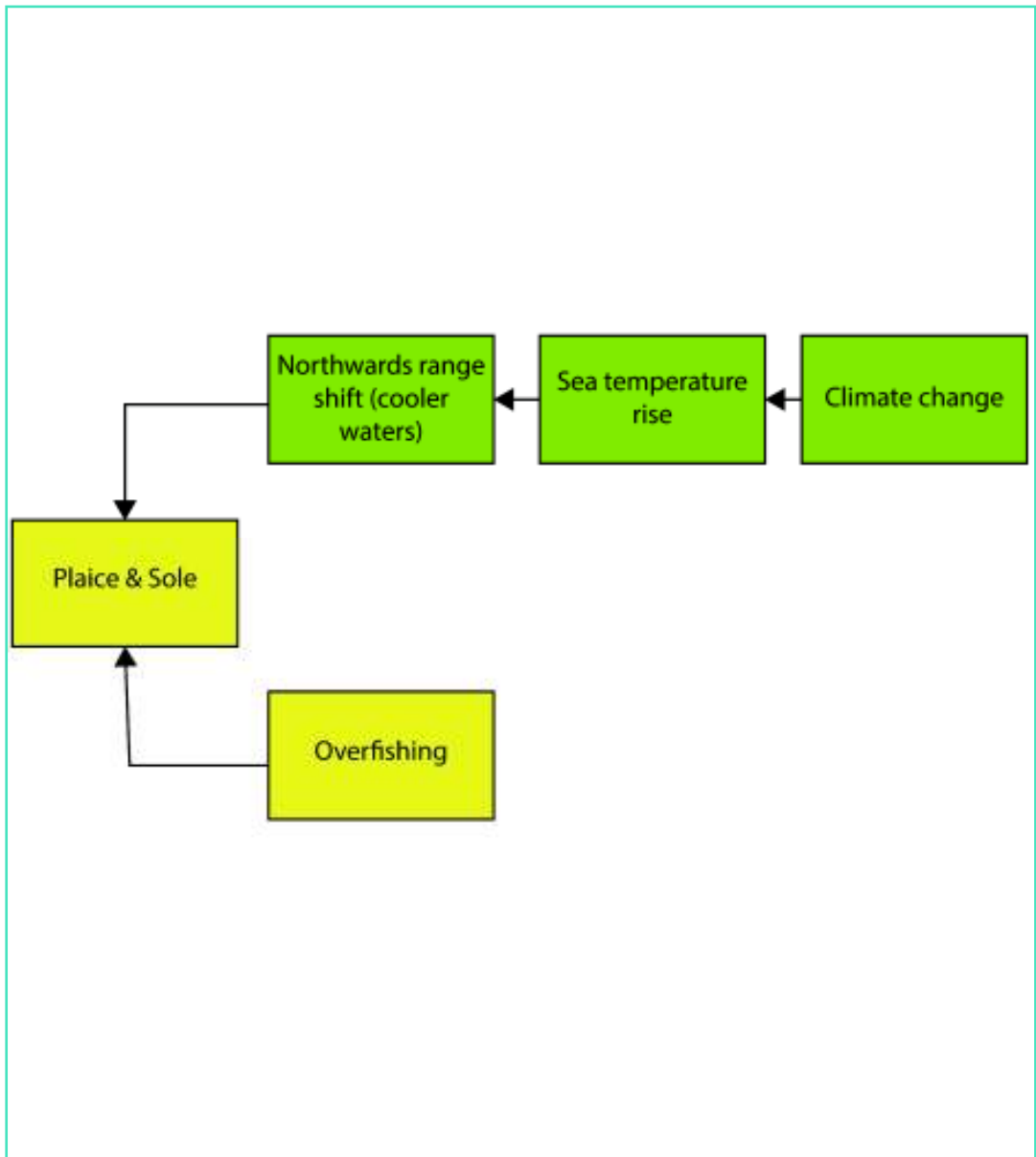
- Devon & Severn IFCA Byelaw that sets the minimum conservation reference size for Plaice at 27cm, and Cod at 24cm.

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Work with Anglers to record species and numbers caught.	Improve evidence base for management	Continue to be unsure around health of population	Devon & Severn IFCA with Angling Trust

**References:**

- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth.



## 3.17 Native Oyster (*Ostrea edulis*)



Photo credit: [nativeoysternetwork.org](http://nativeoysternetwork.org)

### Protective measures:

- UK BAP Priority Species

### Responsibilities:

- 

### Interests:

- Local fishermen
- Recreational divers

Native Oyster is widely distributed around the British Isles, thriving on firm bedrock and artificial substitutes. Oysters require plankton rich waters, and they live up to depths of 20m. There is reportedly no major stock in the Southwest but there are functioning oyster farms in Porlock. Native Oysters provide important ecosystem services including filtration and sequestration of pollutants. They are gregarious animals, and start their lives as males and as they mature, they will change sex regularly dependent on the water temperature. The native oyster provide us with a range of ecosystem services such as water quality improvement, increased species biodiversity, protected nursery grounds for juvenile fish, and nitrogen level reductions.

### Legend

*Ostrea edulis* (Native Oyster)



North Devon Biosphere Marine Boundary



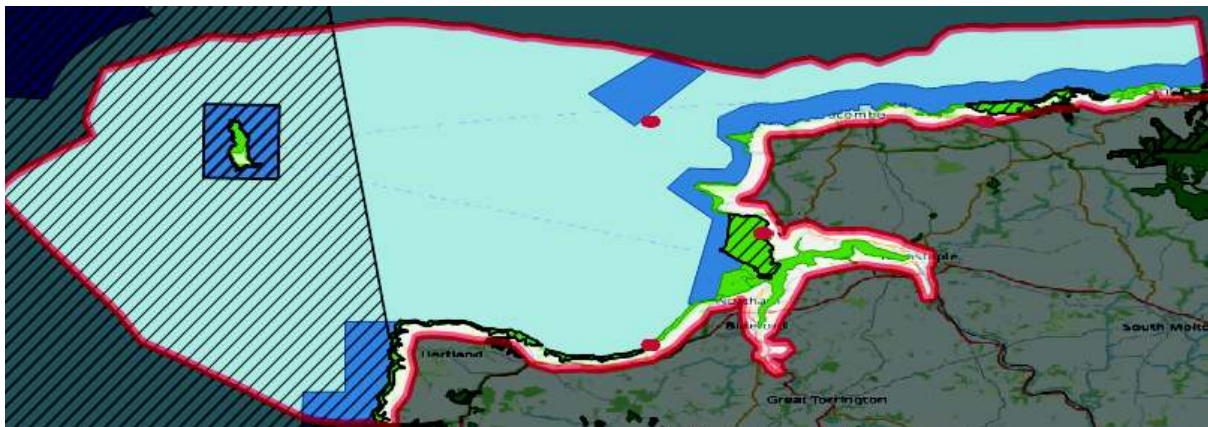
Special Areas of Conservation, England, Natural England



Sites of Special Scientific Interest England



Marine Conservation Zones, Natural England and JNCC



**Locations of importance:**

Location	Conservation designation	Condition
No major stock reported	N/A	N/A

**Key pressures/threats:**

- Overharvesting
- Disease, particularly Bonamiosis
- Competition with invasive Pacific Oysters
- Habitat loss
- Pollution

**Current positive initiatives:**

- The shellfish industry in the UK remains carefully regulated, including a closed season from 14 May- 4th August prohibiting harvesting (although not of farmed oysters).
- There is a European Directive that governs the spread of diseases amongst bivalves.
- Coastwise undertake regular invasive non-native species surveys at two intertidal sites. They have recorded Pacific Oysters in low numbers.

**Relevant local policies:**

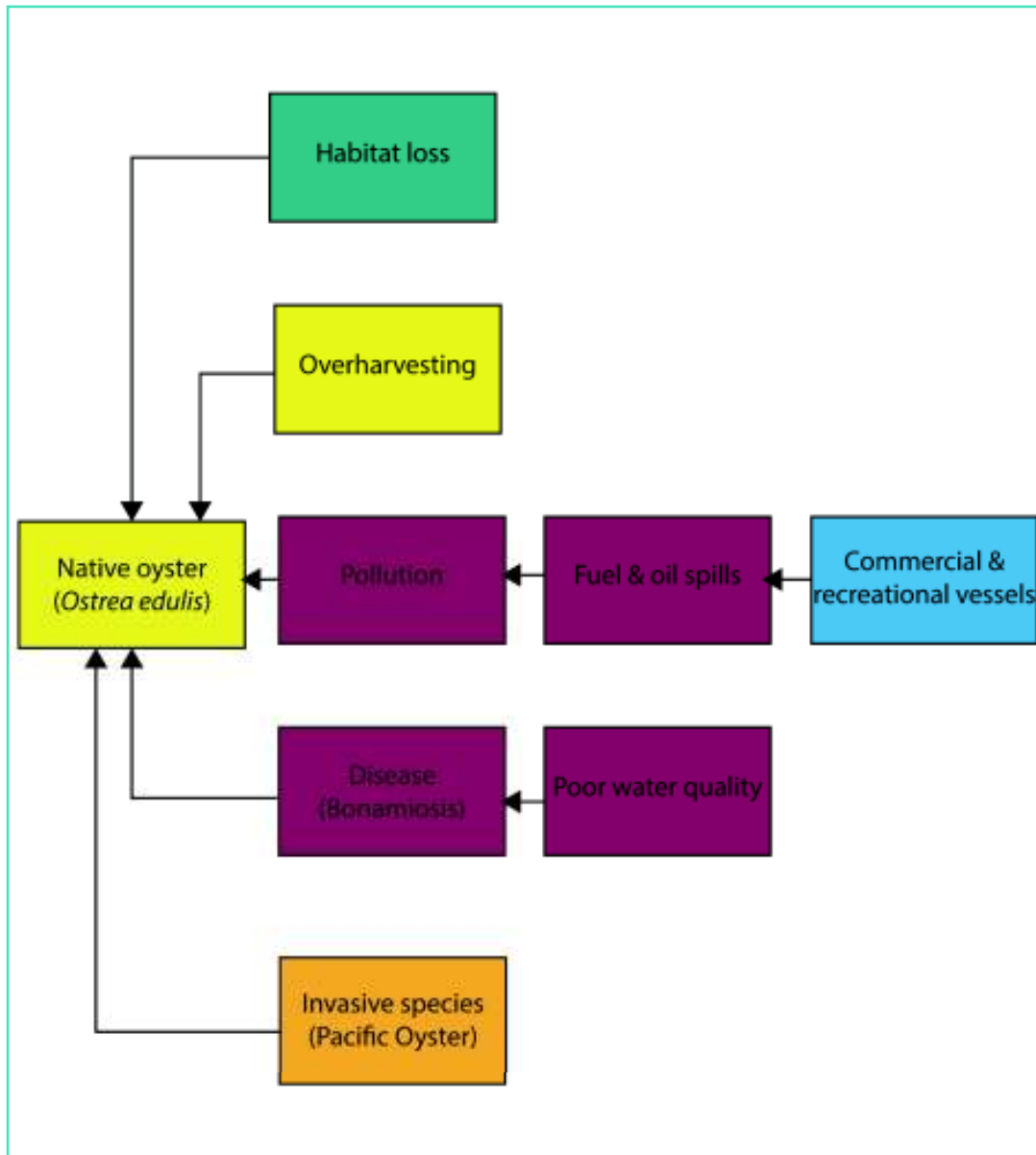
- N/A

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Scoping project to assess whether there are sites with suitable habitat and environmental conditions in the North Devon Biosphere to support native oysters	Identify sites with potential for new oysters farms	Loss of opportunity to diversify local fishery economy	Devon & Severn IFCA with North Devon Biosphere
Targeted monitoring of known sites where native oysters have been recorded	Create evidence baseline to assess local populations, and monitoring change over time in response to changing climate and potential impact of Pacific Oyster spread	Miss opportunity to implement management measures that will support local population growth in the North Devon Biosphere	North Devon Biosphere with academic institutions

**References:**

- Preston J., Gamble, C., Debney, A., Helmer, L., Hancock, B. and zu Ermgassen, P.S.E. (eds) (2020). European Native Oyster Habitat Restoration Handbook. The Zoological Society of London, UK., London, UK. .





## 3.18 Celtic sea slug (*Onchidella Celtic*)

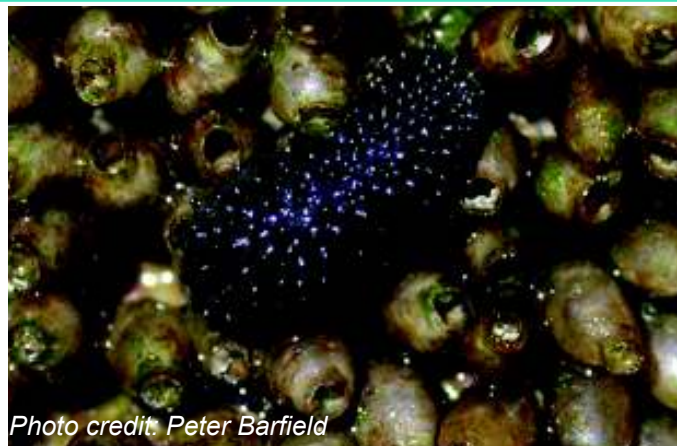


Photo credit: Peter Barfield

### Protective measures:

- 

### Responsibilities:

- 

### Interests:

- Coastwise
- North Devon Biosphere

Celtic Sea Slugs are endemic to the North and South coasts of Devon and Cornwall. They are a smaller species that only grow to roughly 13mm in size and they can be found living on exposed rock or sandy shores. Celtic Sea Slugs forage for algae and small diatoms and head up the shore as the tide raises. In the North Devon area, records show the sea slug occurs between Saunton and Croyde bay. The Celtic Sea Slug is a pulmonate slug meaning it does not have gills and is more adapted to terrestrial and freshwater habitats. The Celtic Sea slug hibernates in the winter between November and April.



**Locations of importance:**

Location	Conservation designation	Condition
Croyde Bay	N/A	N/A

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Undertake regular monitoring at Saunton and Croyde Bay between April- November.	To assess population abundance and understand threats	Decline in population	Coastwise

**References:**

- Rowley, S.J. 2005. *Onchidella celtica* Celtic sea slug. In Tyler-Walters H. and Hiscock K. Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 27-03-2022]. Available from: <https://www.marlin.ac.uk/species/detail/2076> .



### 3.19 Small eyed ray (*Raja microocellata*), Thornback Ray (*Raja cravat*) and Blonde ray (*Raja brachyura*)

Asset and risk register summary	
Extent trend	Condition
Small eyed ray	Stable / Acceptable
Thornback ray	Stable / Of Concern
Blonde ray	Stable / Of Concern



Juvenile Thornback ray. Photo credit: D&S IFCA

**Protective measures:**

- N/A

**Responsibilities:**

- Devon & Severn IFCA

**Interests:**

- Local fishermen
- North Devon Fishermen Association
- University of Plymouth
- Cefas

The targeted trawl fishery in the Bristol Channel has, in recent years, landed roughly £1 million of skate and rays annually. The Fisheries Research Management Plan developed by Devon & Severn IFCA found that stakeholders described skates and rays' fisheries as vital for keeping fishing viable. Overall, there has been a decline in catch per unit effort of small-eyed ray from stock assessment survey trawls in North Devon since 2010. These three species of rays favour coastal waters.

Small eyed rays breed in the English Channel in summer and females lay between 54 and 61 eggs a year in sandy or muddy flats. Small eyed rays exist in localised abundance that can be vulnerable to game and commercial fishing.

Thornback rays favour a range of substrate including sand, mud, and gravel. Catch per unit effort data shows a positive trend between 2010-2017 in the Bristol Channel. Thornback rays represent a low value species that are landed in relatively high volume in the North Devon Marine area.

The blonde ray is a bottom dwelling species found at depths of 150m in the North-East Atlantic. They prefer soft substrate such as sandy bottoms and banks. Young blonde rays feed on small crustaceans and adults feed on larger species such as sand eels and dragonets.



### Locations of importance:

Location	Conservation designation	Condition
Saunton (Small eyed ray)	N/A	N/A
Woolacombe (Small eyed ray)	N/A	N/A
Morthoe (Thornback ray)	N/A	N/A
Lundy (Thornback ray)	N/A	N/A
Lundy (Blonde ray)	N/A	N/A

### Key pressures/threats:

- Bristol Channel's targeted skates and rays trawl fishery is one of the largest in the UK.
- Overfishing
- A preference for inshore and coastal habitats makes them susceptible to degradation and human disturbance

### Current positive initiatives:

- Devon & Severn IFCA have developed a Fisheries Research Management Plan for Rays.
- North Devon Fishermen Association close an area, known as Ray box, to mobile fishing (trawling) for 6 months of the year (North of Lundy).
- Devon & Severn IFCA have previously monitored the movement patterns of Thornback and Blonde ray in the Bristol Channel.
- There was an increase in stock assessment surveys CPUE (number per km<sup>2</sup>) for thornback ray in North Devon between 2010-2017

### Relevant local policies:

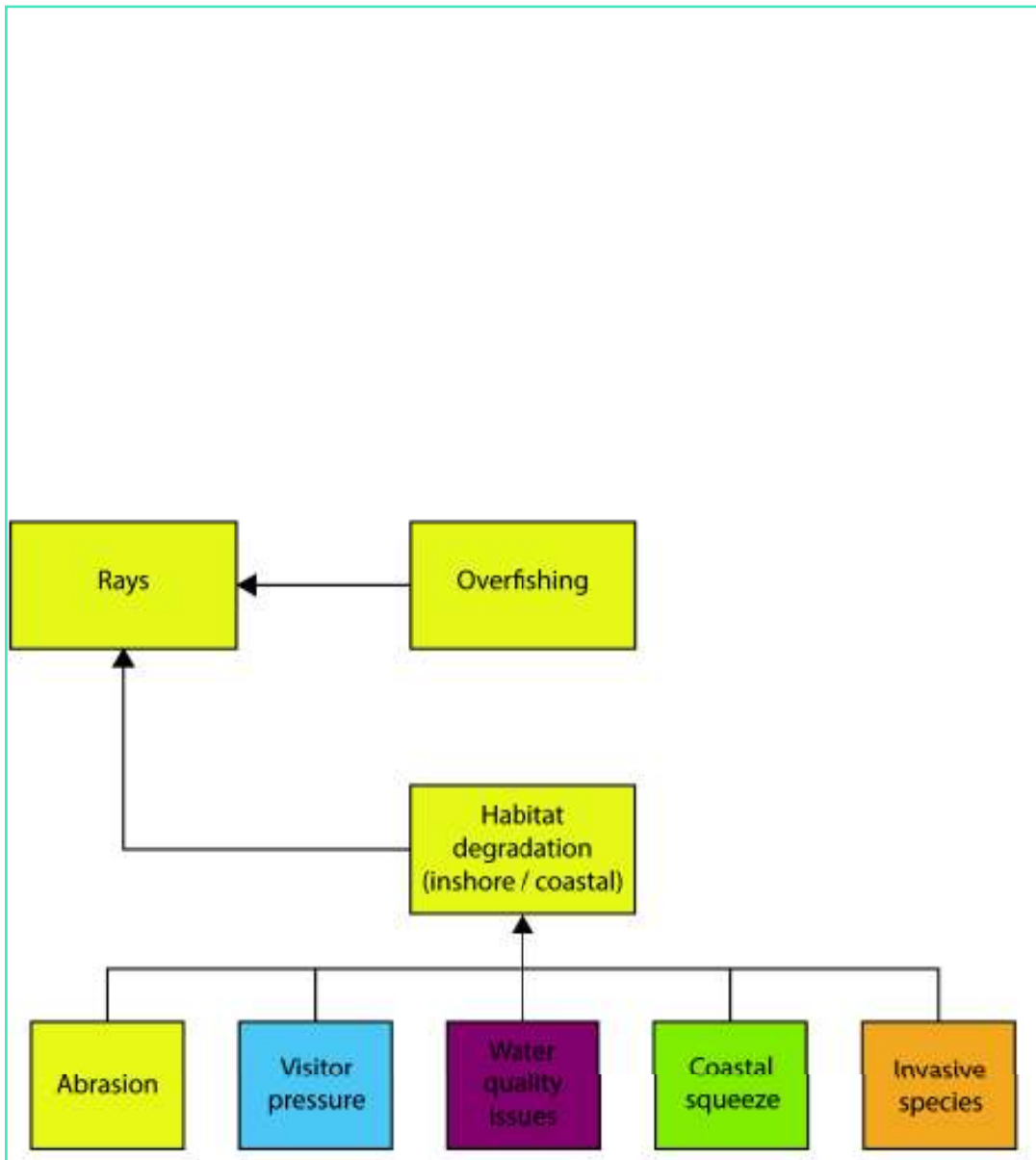
- Rays have a Total Allowable Catch (TAC) but there is no minimum landing size so the NDFA introduced a voluntary minimum landing size, which has been increased to 45cm in wingspan.

### Projects/Action:

Proposed action	Purpose	Risk if not completed	Lead
Reintroduce tagging research in the Bristol Channel.	To achieve ray management, we need to understand their distribution.	Management measures are hindered by data source	University of Plymouth/ Cefas

### References:

- Gibson-Hall, E., 2018. Raja brachyura blonde ray. In Tyler-Walters H. and Hiscock K. Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line].
- Peverley, M. and Stewart, J.E. (2021). Fisheries Research & Management Plan: Skates & Rays in the North of Devon and Severn IFCA's District. Devon and Severn Inshore Fisheries and Conservation Authority & North Devon Biosphere. 63 pp + appendices
- Plymouth: Marine Biological Association of the United Kingdom. [cited 14-03-2022]. Available from: <https://www.marlin.ac.uk/species/detail/2320>
- Rees, S.E., Ashley, M., Cameron, A. 2019. North Devon Marine Pioneer 2: A Natural Capital Asset and Risk Register. A SWEEP/WWF-UK report by research staff the Marine Institute at the University of Plymouth



## 3.20 Gold star coral (*Balanophyllia regia*)

Asset and risk register summary	
Extent trend	Condition
Stable	Acceptable



Photo credit: Lundy Marine Management Plan 2017

### Protective measures:

- Lundy SAC

### Responsibilities:





- Natural England

### Interests:

- Divers
- Lundy Warden
- Coastwise

Gold star cup coral is a stony coral found within the shallow subtidal zone. Lundy is close to this species northern limit of its range, but it is an area of high concentration for the gold star cup coral. The population that has been studied at Devil's Kitchen on Lundy shows that it is considered stable or increasing. Records also show they have been identified along the North Devon coast between Lee and Ilfracombe. Gold star cup coral is one of the five cup coral species found in British waters (all of which can be found around Lundy).



Legend	
	Balanophyllia regia (Gold Star Coral)
	North Devon Biosphere Marine Boundary
	Special Areas of Conservation, England, Natural England
	Sites of Special Scientific Interest England
	Marine Conservation Zones, Natural England and JNCC

**Locations of importance:**

Location	Conservation designation	Condition
Lundy	SAC	Stable
Ilfracombe	N/A	Trends unknown, data required

**Key pressures/threats:**

- Sea temperature rise
- Capability to continue survey work due to funding
- Pollution through increased suspended sediment affecting feeding
- Storminess increasing the probability of damage by abrasion

**Current positive initiatives:**

- Two populations of Gold Star Corals within the Devil's kitchen at Lundy have been monitored regularly since 1971. When other populations are found, they are recorded.

**Relevant local policies:**

- The designation of Lundy SAC requires the assessment of the condition of the intertidal reef features. This is done partly by assessing the population of gold star cup coral.
- Key management documents include Lundy Management Plan (2017), Natural England (2014) Site Improvement Plan: Lundy and Lundy SAC Regulation 33 Conservation Advice Package (2012).

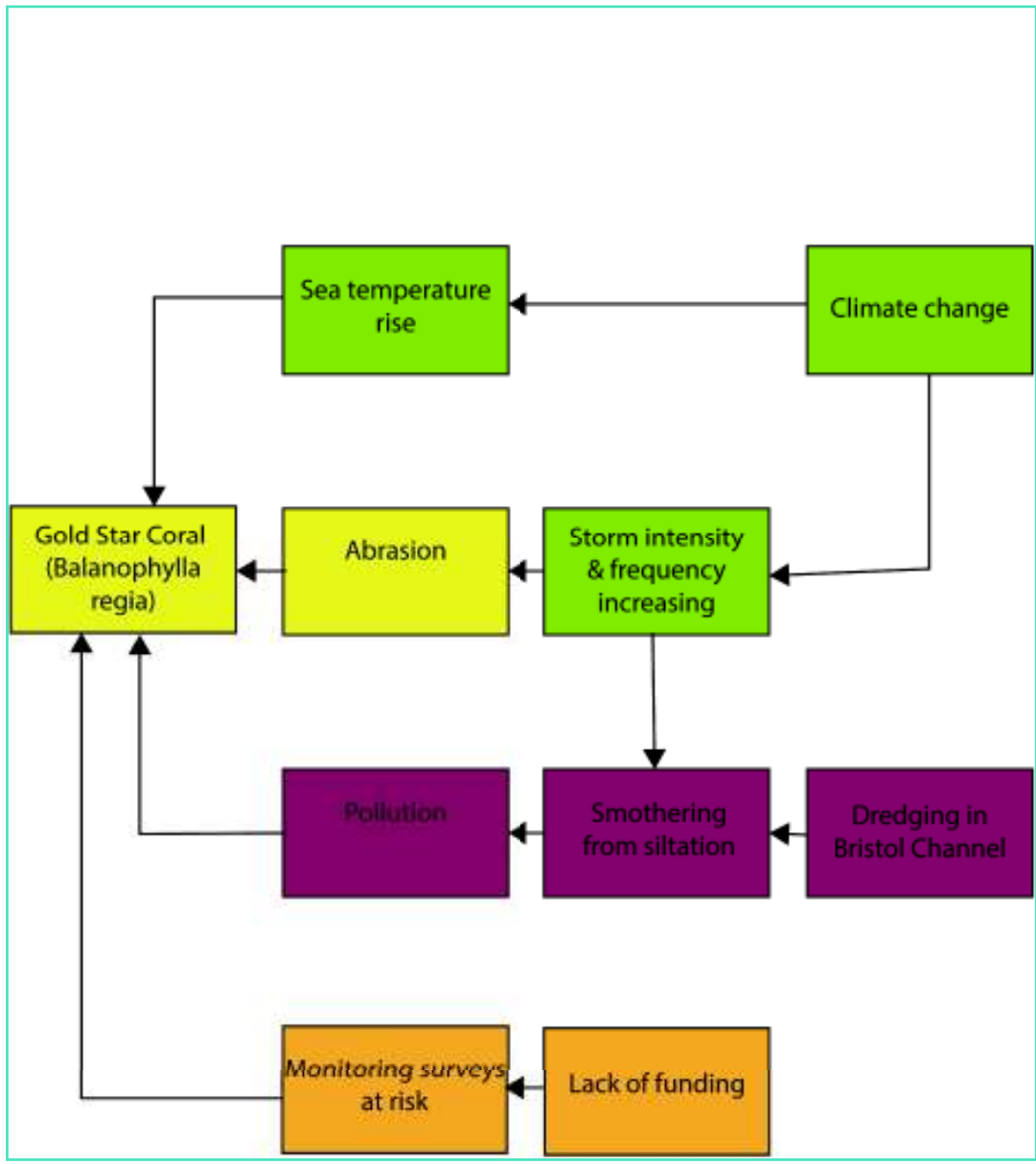
**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Continue with the monitoring at Devil's Kitchen	Understand changes to the population	Loose valuable continuous data set	Lundy warden
Establish monitoring for them as part of Shoresearch North Devon	Establish locations on the mainland and monitor them to learn more about the distribution of this species	Continue with limited information on their range and population size for North Devon	Coastwise with support from Lundy Warden (Keith Hiscock/ Robert Irving?)

**References:**

- Fowler, S.L. & Pilley, G.M. 1992. Report on the Lundy and Isles of Scilly marine monitoring programmes, 1984-1991. The Nature Conservation Bureau Ltd. Unpublished report to English Nature, Peterborough.
- MacDonald, R. 2016. The presence and abundance of the scarlet and gold star coral *Balanophyllia regia* and Devonshire cup coral *Caryophyllia smithii* on Lundy: 1970 to 2015. Unpublished report to Natural England.
- Lundy Management Forum. 2017. Lundy Marine Management Plan 2017. Written by Rebecca MacDonald and revised by Robert Irving. Produced for Natural England by the Landmark Trust, Lundy Island





## 3.21 Sunset cup coral (*Leptopsammia pruvoti*)



Photo credit: Lundy Marine Management Plan 2017

### Protective measures:

- Lundy SAC

### Responsibilities:

- Natural England

### Interests:

- Divers
- Lundy Warden
- Coastwise

The sunset cup coral is a stony coral, found across the western Mediterranean but it is thought to be a rarity in British waters. It is largely a solitary species, although they can be found in small colonies. Lundy is thought to be close to the northern limit of its range, and it is a key area for the sunset cup coral in North Devon. Presence was first recorded at Lundy in 1969, a first in Britain, and since then it has been the focus of conservation efforts. Monitoring at Lundy shows that this species is in decline since monitoring began in 1984. The root cause of this decline is unknown. It appears that recruitment cannot keep up with loss. The sunset cup coral is a nationally rare species that has only been recorded at five locations at five locations in the UK, all in the South-West.



### Legend

#### *Leptopsammia pruvoti* (Sunset Cup Coral)



North Devon Biosphere Marine Boundary



Special Areas of Conservation, England, Natural England



Sites of Special Scientific Interest England



Marine Conservation Zones, Natural England and JNCC

**Locations of importance:**

Location	Conservation designation	Condition
Lundy	SAC	Stable

**Key pressures/threats:**

- Sea temperature rise caused by global climate change
- Pollution in the form of suspended sediment affecting feeding mechanisms
- The anchor exclusion zone at Knoll Pins being breached

**Current positive initiatives:**

- A photographic monitoring programme, established in 1984, records changes in population.
- 100m Anchor Exclusion Zone around the Knoll Pins
- The No Take Zone covers most individuals and potting is not permitted here.

**Relevant local policies:**

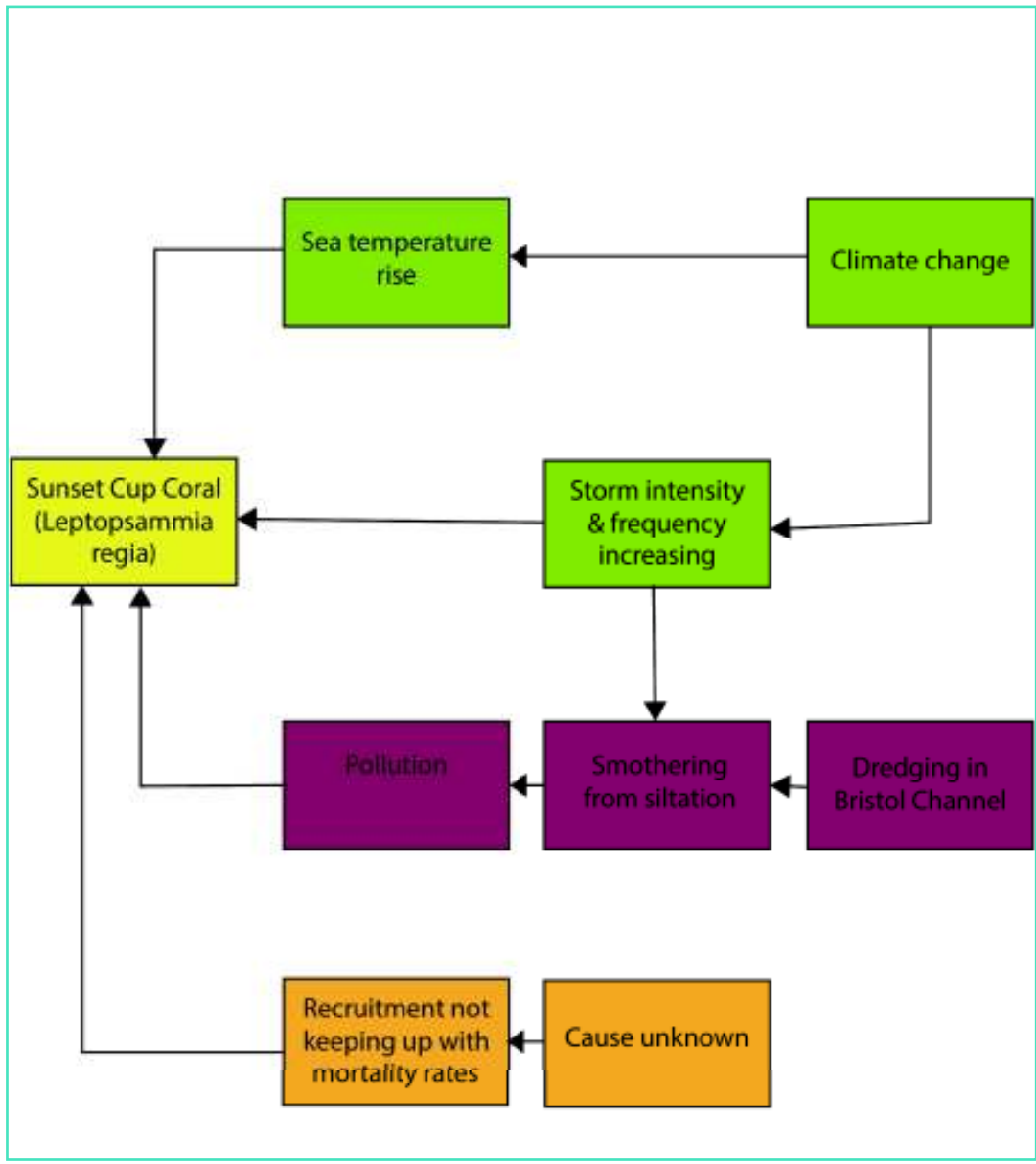
- The designation of Lundy SAC requires the assessment of the condition of the intertidal reef features.
- Key management documents include Lundy Management Plan (2017), Natural England (2014) Site Improvement Plan: Lundy and Lundy SAC Regulation 33 Conservation Advice Package (2012).

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Establish monitoring programme	Collect data to better understand health of population	Continue with restricted data	Lundy Warden /NE lead with support from Keith Hiscock and Robert Irving
Investigate the reasons for population decline and the lack of recruitment	Research to better understand the species	Continue with a lack of understanding	Lundy warden/ NE to connect with university partners

**References:**

- Fowler, S.L. & Pilley, G.M. 1992. Report on the Lundy and Isles of Scilly marine monitoring programmes, 1984-1991. The Nature Conservation Bureau Ltd. Unpublished report to English Nature, Peterborough.
- Irving, R.A. *Leptopsammia pruvoti* at Lundy – teetering on the brink? Porcupine Marine Natural
- History Society Newsletter 15: 29-34.



## 3.22 Pink sea fan (*Eunicella verrucosa*)

Asset and risk register summary	
Extent trend	Condition
Unknown	Good



Photo credit: Lundy Marine Management Plan 2017

### Protective measures:

- Lundy SAC
- Hartland Point to Tintagel MCZ
- Bideford to Foreland Point MCZ

### Responsibilities:

- Natural England

### Interests:

- Divers
- Coastwise
- Environment Agency

Pink sea fan is a coral that is found from the Mediterranean to the South-West of England. Lundy is close to the most northern limit. In the 1960s, large numbers of pink sea-fan were collected by divers from Lundy, and this was one of the main reasons for enacting the voluntary Marine Nature Reserve. In the early 2000s, pink sea fan came under threat again from bacterial disease. Recovery is ongoing and may take decades. This is because it is extremely slow growing with infrequent reproduction. Pink sea fan is recognised on the UK priority species list and on the Nationally Scarce Marine Species list.

### Legend

#### *Eunicella verrucosa* (Pink sea-fan)

- North Devon Biosphere Marine Boundary
- ▨ Special Areas of Conservation, England, Natural England
- Sites of Special Scientific Interest England
- Marine Conservation Zones, Natural England and JNCC



### Locations of importance:

Location	Conservation designation	Condition
Lundy	SAC	Unknown
Hartland Point to Tintagel MCZ	MCZ	Recover
Bideford to Foreland Point MCZ	MCZ	Maintain
Combe Martin Bay	N/A	Identified in stakeholder interview as being a key site

### Key pressures/threats:

- Damage through potting activity
- Disturbance by anchoring and anchor drag
- Entanglement with angling equipment
- Poor knowledge of nutrification over time threatens how we manage biodiversity.

### Current positive initiatives:

- Natural England produced a Site Improvement Plan for pink sea fan in Lundy in 2014.
- Pink sea fan feature on the Devon Species of Conservation Concern list.

### Relevant local policies:

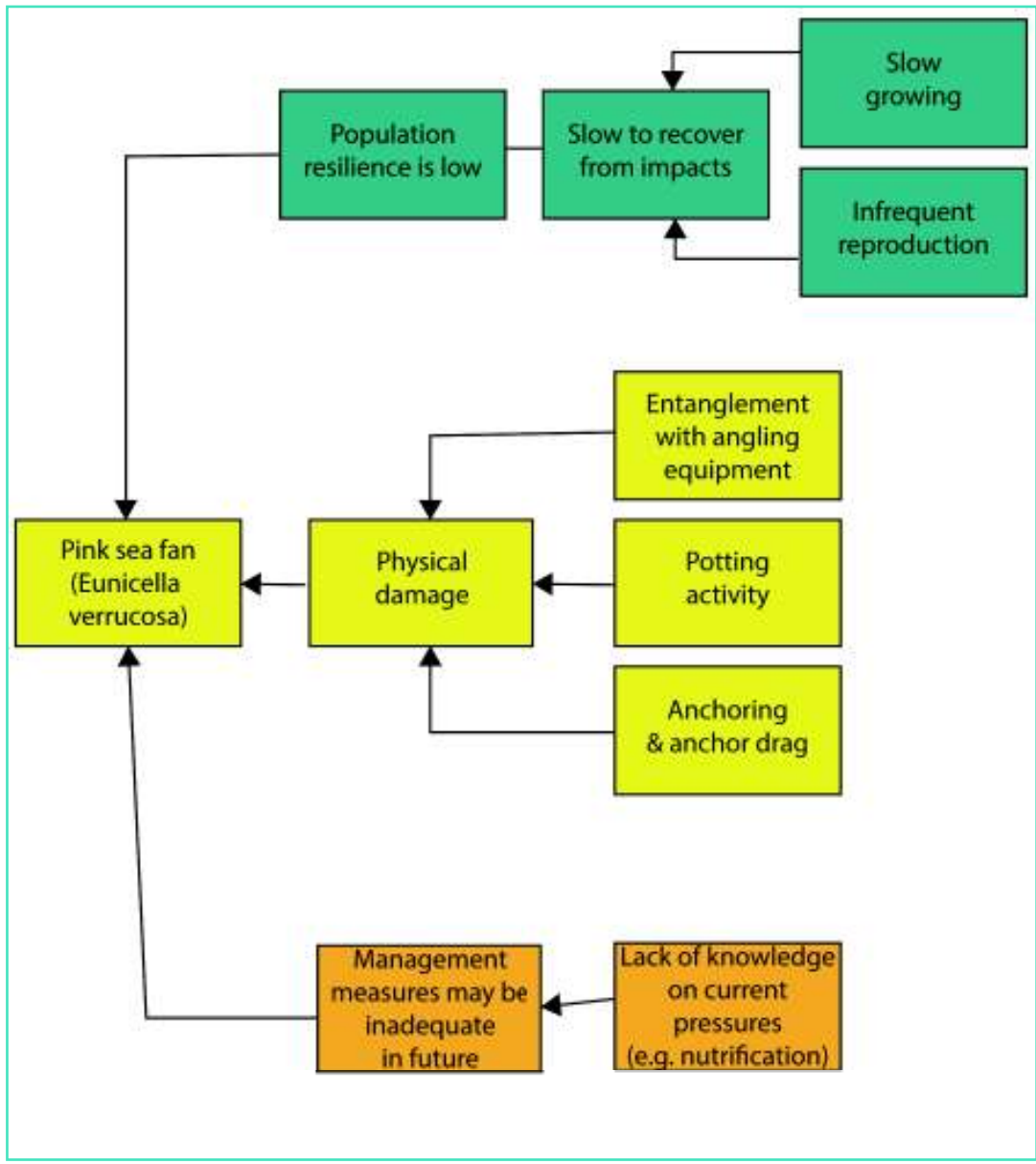
- The network of Marine Conservation Zones in North Devon, under-pinned with legislative measures provide protection to pink sea fan.
- Legally, this is probably the most heavily protected invertebrate in UK waters.

### Projects/Action:


Proposed action	Purpose	Risk if not completed	Lead
Research into the population at Combe Martin	Determine the influence of nutrient levels and anchoring/disturbance to the population – provide enough evidence for a byelaw		University with support from Environment Agency
Form a local pink sea fan monitoring programme for North Devon to expand on Seasearch annual monitoring at Lundy	Work with divers to report incidences of detached sea fans, to understand frequency and monitor condition of the species	Opportunity to collect further data on the populations of North Devon is missed restricting conservation measures	Natural England with support from Seasearch and local dive clubs
Introduce a small highly protected area at Combe Martin Bay to protect the biodiversity			Devon and Severn IFCA

### References:

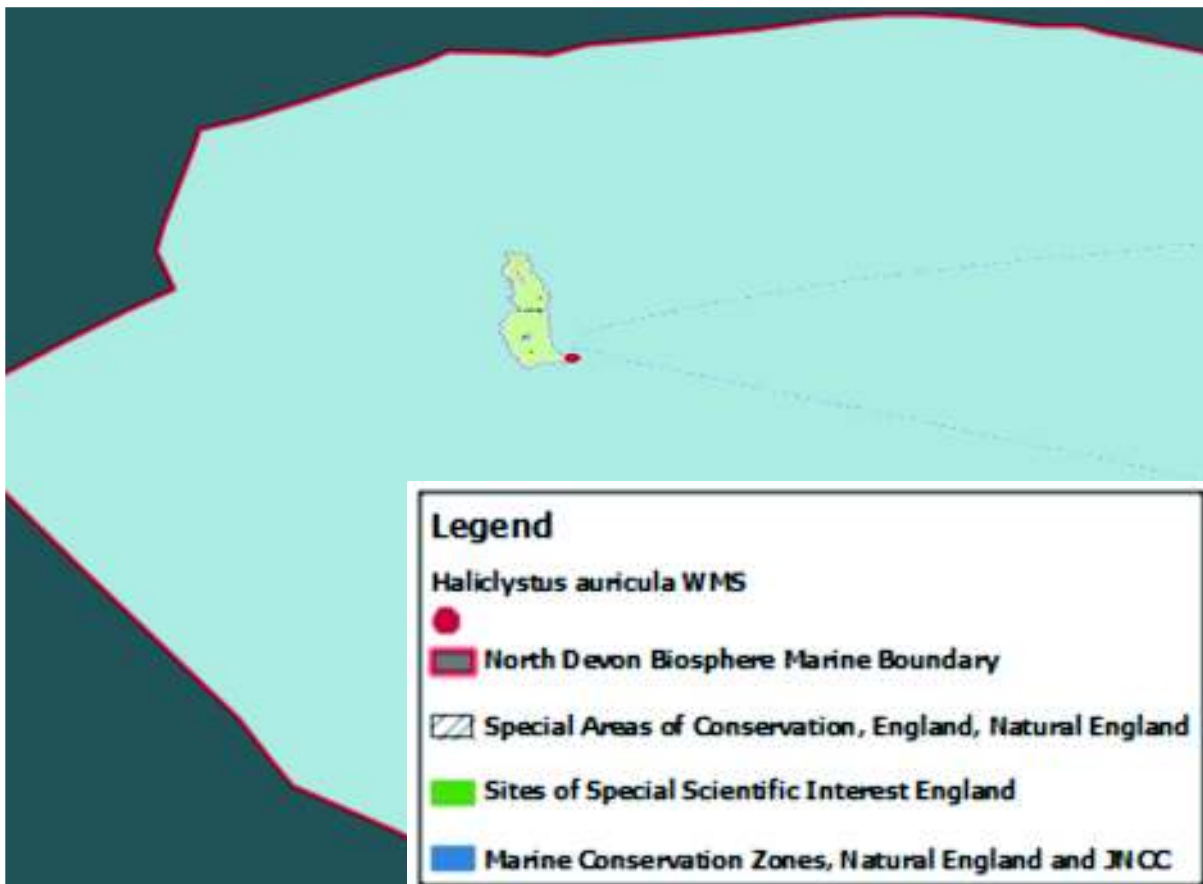
- Pikesley, S., et al. 2016. Pink sea fans as indicators of the spatial efficacy of Marine Protected Areas in southwest UK coastal waters.
- Lundy Management Forum. 2017. Lundy Marine Management Plan 2017. Written by Rebecca MacDonald and revised by Robert Irving. Produced for Natural England by the Landmark Trust, Lundy Island
- North Devon Coast Areas of Outstanding Natural Beauty: State of the AONB Report 2014-2018. Available at: <https://www.northdevon-aonb.org.uk/resources/state-aonb-report-2014-2018>



### 3.23 Kaleidoscope jellyfish (*Haliclystus auricula*)

 <p>Photo credit: Marco Faasse</p>	<p><b>Protective measures:</b></p> <ul style="list-style-type: none"><li>• N/A</li></ul> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"><li>• N/A</li></ul> <p><b>Interests:</b></p> <ul style="list-style-type: none"><li>• Divers</li><li>• Coastwise</li><li>• Local fishermen</li></ul>
---	--

The Kaleidoscope jellyfish is a funnel-shaped jellyfish that reaches 2.5cm in height. They are fixed to the substratum by a stalk and are typically found on macroalgae and seagrasses in the mid intertidal and shall sublittoral. Their colouring varies from grey/green to red/brown. They are recorded on the west coast of Britain and Ireland, and NBN atlas reveals a singular record at Lundy. It is reported that the Kaleidoscope jellyfish were 'common' at on Lundy in the early 1970s. However, monitoring studies, that started in 1984, have not found stalked jellyfish in rockpools on Lundy.





**Locations of importance:**

Location	Conservation designation	Condition
Lundy	N/A	Single NBN Atlas record

**Key pressures/threats:**

- Damage by anchoring
- Lack of data/ knowledge of North Devon population

**Current positive initiatives:**

- The LIFE recreation ReMEDIES project, established by Natural England in 2019, works to raise awareness on the importance of seagrass and the species they support (such as stalked jellyfish) in five key locations in the south-west. Although none are on the North Devon coast, it is a good example of how awareness can be raised.

**Relevant local policies:**

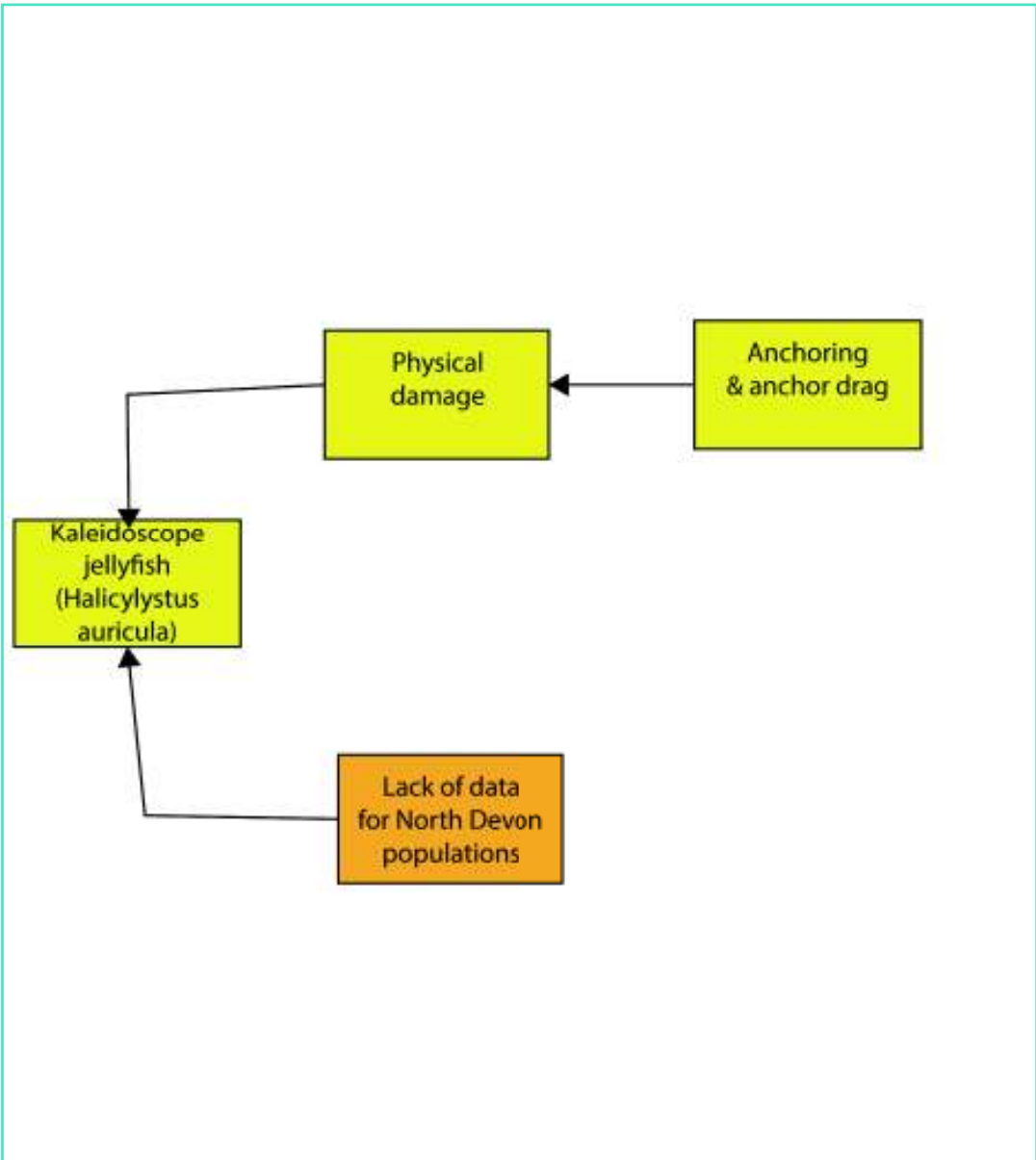
- N/A

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Model a similar project to the Life Recreation ReMEDIES on the North Devon coast.	Improve the condition of seagrass and its associated species	Limited understanding and continued damage to seabed habitats	Natural England
Initiate surveying for stalked jellyfish, particularly on Lundy	Understand the extent of the population	Limited understanding	Lundy Warden/ Coastwise

**References:**

- Hiscock, K. 2002. Changes in the Marine Life of Lundy. Available at: [https://fs-resources.s3.amazonaws.com/ar52/LFS\\_Annual\\_Report\\_Vol\\_52\\_Part\\_16.pdf](https://fs-resources.s3.amazonaws.com/ar52/LFS_Annual_Report_Vol_52_Part_16.pdf)
- Natural England. 2019. LIFE Recreation ReMEDIES: Reducing and Mitigating Erosion and Disturbance Impacts affecting the Seabed. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/858657/ReMEDIES-project-note-1.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/858657/ReMEDIES-project-note-1.pdf)



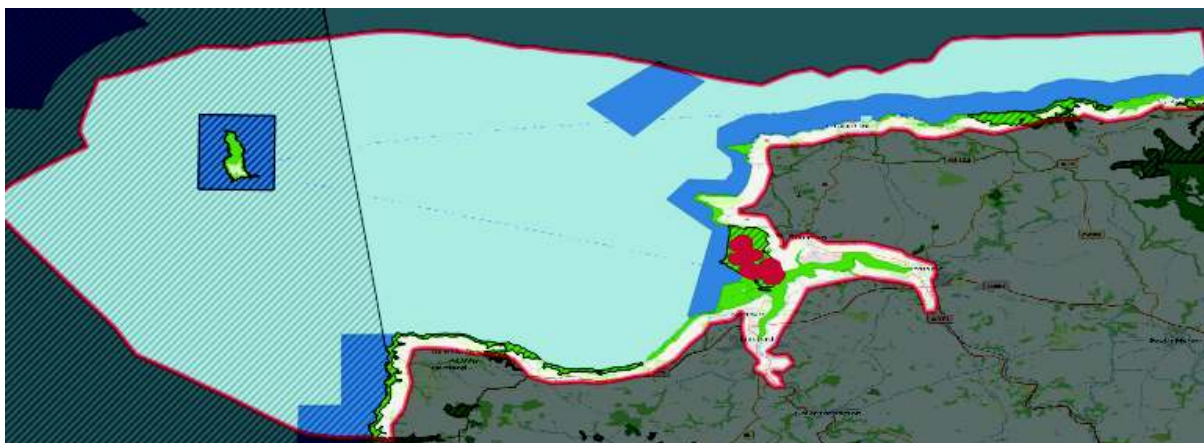
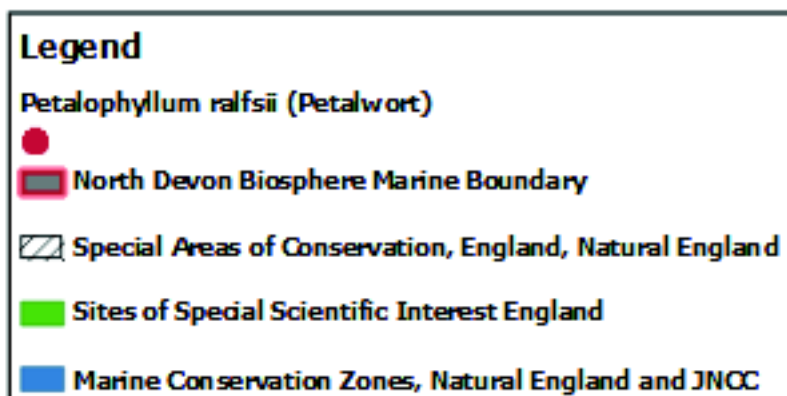
## 3.24 Petalwort (*Petalophyllum ralfsii*)

Asset and risk register summary	
Extent trend	Condition
Unknown	Acceptable



- Protective measures:**
- Branton Burrows SSSI
- Responsibilities:**
- Natural England
- Interests:**
- National Trust
  - Plantlife
  - Coastwise

Petalwort is a protected small plant that can be easily confused for moss. Petalwort can be found in sand dune systems and only survives in areas where vegetation is kept short. Because of its small size, it struggles to compete with larger plants for light and space. As a result, a certain level of trampling can provide the right conditions for Petalwort to thrive, but over-trampling remains a threat. Petalwort have been recorded in limited locations within the North Devon biosphere. Petalwort is an Annex II species that are a primary reason for selection of the Branton Burrows SSSI. A large population (around 3000 thalli) of Petalwort is recorded at Branton Burrows, making it one of two sites selected for this species in the South-West.



**Locations of importance:**

Location	Conservation designation	Condition
Braunton Burrows	SSSI	Excellent / above threshold

**Key pressures/threats:**

- Over-trampling, particularly with its proximity to the South-West Coast Path
- The growth of rank vegetation due to eutrophication caused by dog fouling

**Current positive initiatives:**

- Plantlife and the National Trust are working closely with the Christies Estates to run the dynamic dunescapes project. It is working to rejuvenate sand dune systems at Braunton Burrows and Woolacombe.

**Relevant local policies:**

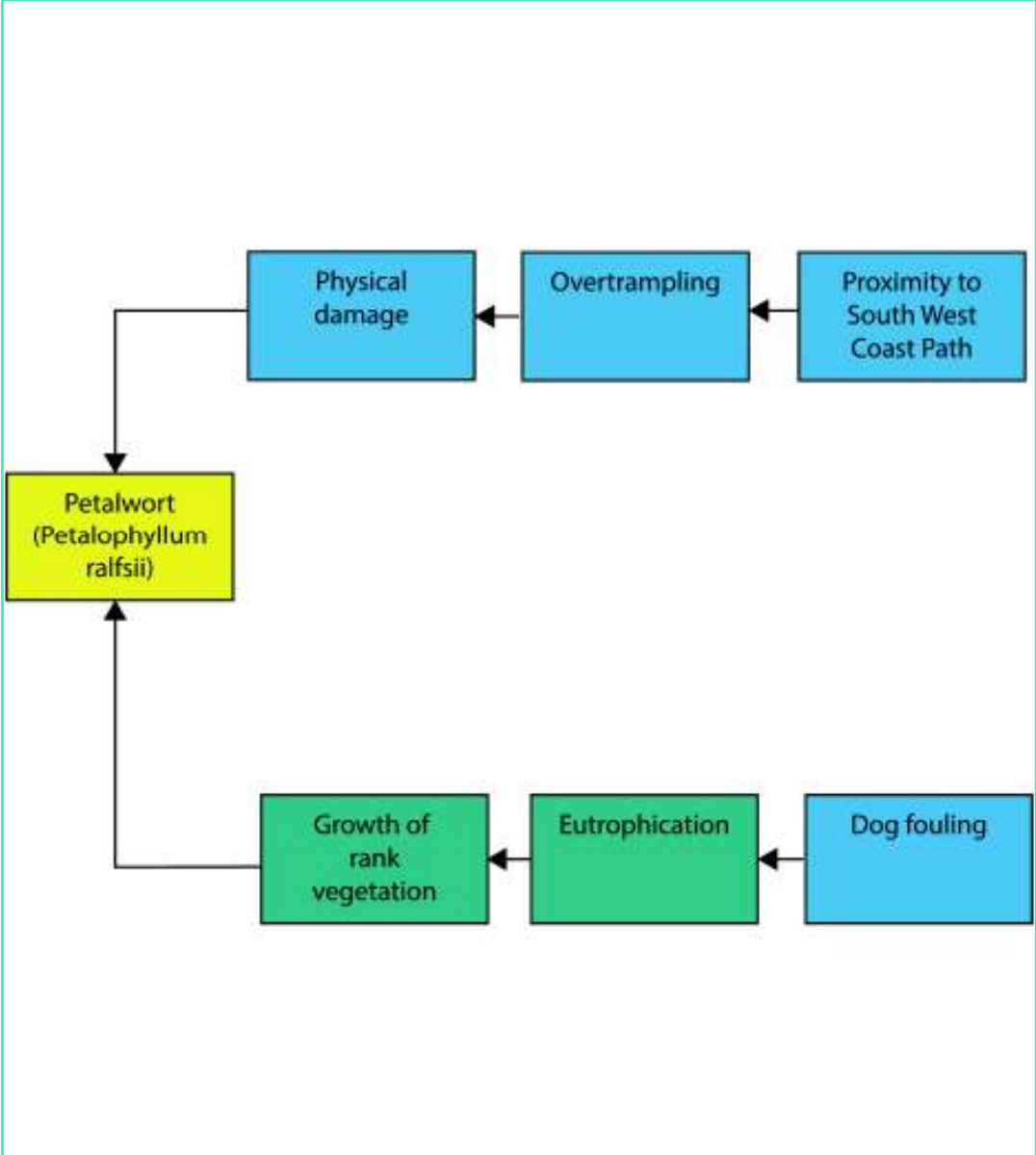
- Annex II species
- SSSI protected species

**Projects/Action:**

Proposed action	Purpose	Risk if not completed	Lead
Engagement with walkers along the South -West Coast Path – either through interpretation boards or alerts through the Southwest Coastal Path/ North Devon Explorer Apps	Raise awareness and reduce Petalwort trampling. Alerts through apps to let walkers know when they are in an area with Petalwort.	Trampling pressure increases as staycations become more popular.	SWCP
Undertake regular monitoring between May-September using Plantlife's methodology	Collect valuable data on the population, its distribution and impact of trampling	State of population is monitored irregularly, and threats are not identified early	Coastwise/ Dynamic Dunescapes/ Plantlife

**References:**

- Natural England. 2020. England Coast Path Stretch: Combe Martin to Marsland Mouth. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/856140/combe-martin-marsland-mouth-overview.PDF](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/856140/combe-martin-marsland-mouth-overview.PDF)
- Plantlife, 2006. Petalophyllum Ralfsii- Plantlife. Available at: [https://www.plantlife.org.uk/application/files/1314/7913/4111/Petalophyllum\\_ralfsii\\_dossier.pdf](https://www.plantlife.org.uk/application/files/1314/7913/4111/Petalophyllum_ralfsii_dossier.pdf)



## 3.25 Harbour porpoise (*Phocoena phocoena*)

Asset and risk register summary	
Extent trend	Condition
Unknown	Good

Image to be added	<p><b>Protective measures:</b></p> <ul style="list-style-type: none"> <li>• Bristol Channel Approaches SAC</li> </ul> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"> <li>• Natural England</li> </ul> <p><b>Interests:</b></p> <ul style="list-style-type: none"> <li>• Sea Watch Foundation</li> <li>• MARINElife</li> <li>• Wildlife tours</li> </ul>
-------------------	---

The harbour porpoise population within the Bristol Channel Approaches SAC site, which overlaps with the Western side of the North Devon Marine area, has been identified as being within the top 10% of persistently high-density areas in UK waters, for both winter and summer seasons. The site is predicted to support approximately 2,147 individuals, which represents approximately 4.7% of the population within the UK part of the Celtic and Irish Seas management unit. The pressures on harbour porpoise are mostly anthropogenic from bycatch to disturbance and pollution.



Legend	
<b>Phocoena Phocoena (Harbour porpoise)</b>	
●	North Devon Biosphere Marine Boundary
▨	Special Areas of Conservation, England, Natural England
■	Sites of Special Scientific Interest England
■	Marine Conservation Zones, Natural England and JNCC

### Locations of importance:

Location	Conservation designation	Condition
Bristol Channel Approaches	SAC	Maintain
Bristol Channel	N/A	N/A - SeaWatch surveys show possible resident population around Minehead

### Key pressures/threats:

- Plastic pollution causes entanglement and ingestion
- Bioaccumulation
- Bycatch in static nets
- Chemical pollution
- Disturbance by boats and personal watercraft

### Current positive initiatives:

- MARINELife and SeaWatch currently carry out cetacean monitoring. Both groups offer survey training with MARINELife providing volunteer Wildlife Officers and surveyors to Lundy on the MS Oldenburg (by sea) and SeaWatch carrying out local coastal survey work (from land). Both groups are interested in increasing their survey effort.
- The North Devon Marine Wildlife Aware Accreditation Scheme (NDMWAAS) re-launched in 2021, engaging coastal and marine business with online training leading to annual individual and/or business accreditation with promotion through the North Devon Explorer App.
- MMO #Operation Seabird working closely with local police teams to highlight the vulnerabilities of wildlife breeding and living in the area

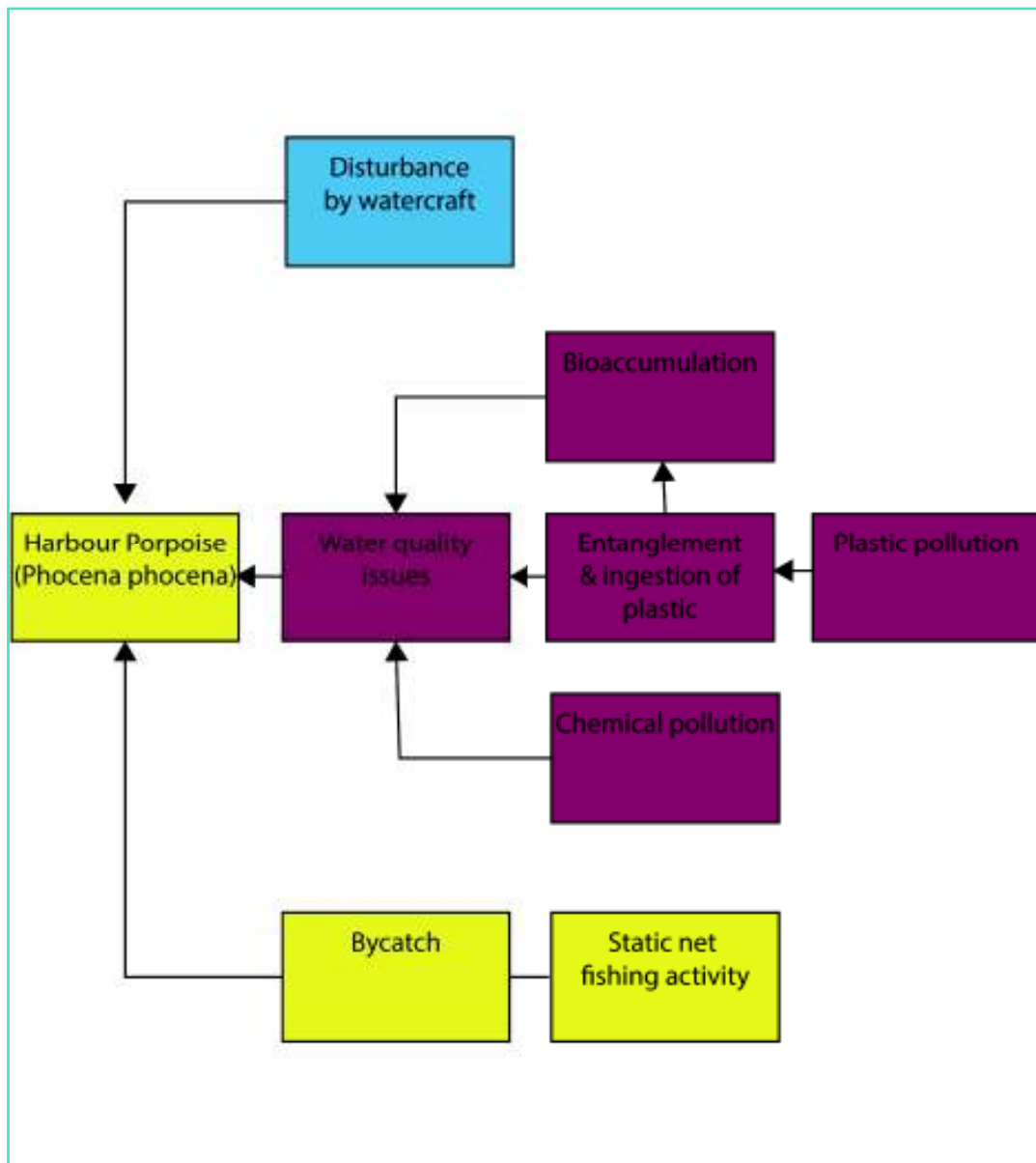
### Relevant local policies:

- Species listed under the Conservation of Species and Habitats Regulations 2010. Intentional killing, disturbance, and trading of the animal or parts of them is illegal
- North Devon Council has declared for ocean recovery and will be integrating a source-to-sea approach within its policies and strategies

### Projects/Action:

Proposed action	Purpose	Risk if not completed	Lead
Promote NDMWAAS	Raise awareness of the issues and sensitivity of species with businesses	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere and Lundy
Expand NDMWAAS to include general public and school engagement	Raise awareness of the issues and sensitivity of species with the general public	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere and Lundy
Provide opportunities for, and promote planned events, by MARINELife and SeaWatch to deliver training	Expand the number of community members trained in surveying to increase data collection	Continue to have limited data on the species	North Devon Biosphere

- IAMMWG, Camphuysen, C.J. & Siemensma, M.L. 2015. A Conservation Literature Review for the Harbour Porpoise (*Phocoena phocoena*). JNCC Report No. 566, Peterborough. 96pp.
- JNCC. 2015. SAC Selection Assessment: Bristol Channel Approaches / Dynesfeydd Môr Hafren. January 2016. Joint Nature Conservation Committee, UK. Available from: <http://jncc.defra.gov.uk/pdf/BristolChannelApproachesSelectionAssessmentDocument.pdf>
- JNCC. 2021. Bristol Channel Approaches. Available at: <https://jncc.gov.uk/our-work/bristol-channel-approaches-mpa/>





## 3.26 Grey seal (*Halichoerus grypus*)

Asset and risk register summary	
Extent trend	Condition
Unknown	Good



Photo credit: Martin Batt

- Protective measures:**
- Lundy SAC and SSSI
- Responsibilities:**
- Natural England
- Interests:**
- Lundy management

Lundy Island provides habitat for breeding grey seals. Seals are present on the island all year round using the island habitat to rest on their migration routes around the Celtic Sea. All aspects of their lifecycle are catered for here including resting, moulting, foraging, socialising and breeding. The North Devon rocky shore coastline habitat, provides suitable areas for seals to haul out for resting, digesting and socialising, mostly for adult females (North Devon seal photo identification project, 2018). Occasionally the smaller Common seal can also be seen across the North Devon coastline but infrequently and of unknown origin. The locations of these vital haul out sites and the seals' inquisitive nature can lead to issues with human disturbance and increased risk of injury through entanglements with human objects such as fishing nets and frisbees.

**Locations of importance:**

Location	Conservation designation	Condition
Lundy	SAC and SSSI	Stable
Hartland	N/A	N/A
Morthoe	N/A	N/A

**Key pressures/threats:**

- Climate change causing habitat shifts and shifts in prey as well as extreme weather events and ground swells ripping up fishing gear increasing the risk of entanglement
- Tourism boats and recreational activities becoming more prevalent and causing disturbance
- Human disturbance and public behaviour, albeit usually unintentional
- Lack of knowledge for grey seal immigration or deaths
- Increased storminess causing pups to be washed off beaches and separated from mothers
- Decline in food stocks, particularly sandeels
- Grey seals are only protected through the SAC and SSSI designations at Lundy, and this does not extend to the North Devon coastline

**Current positive initiatives:**

- Cornwall Seal Group Research Trust's citizen science research on individual identification and tracking developing understanding of their movements across the southwest
- Grey seal feature on the Devon Species of Conservation Concern List
- County Wildlife Sites can be designated for Grey seals
- Grey seal population and breeding monitoring surveys are carried out on Lundy as part of the conservation monitoring on the island
- MARINELife and SeaWatch collect data on seals sighted in the area. Both groups offer survey training with MARINELife providing volunteer Wildlife Officers and surveyors to Lundy on the MS Oldenburg (by sea) and SeaWatch carrying out local coastal survey work (from land). Both groups are interested in increasing their survey effort
- The North Devon Marine Wildlife Aware Accreditation Scheme (NDMWAAS) re-launched in 2021, engaging coastal and marine business with online training leading to annual individual and/or business accreditation with promotion through the North Devon Explorer App
- MMO #Operation Seabird working closely with local police teams to highlight the vulnerabilities of wildlife breeding and living in the area

**Relevant local policies:**

- Grey seals are a designated feature of Lundy SAC and Lundy SSSI.
- Conservation of Grey seals act 1970.
- Conservation of Species and Habitats Regulations 2010.
- Wildlife and Countryside Act (pending)

## Projects/Action:

Proposed action	Purpose	Risk if not completed	Lead
Work is needed to link North Devon with other regions, given the migratory nature of seals.	Understand the migratory nature of seals	The range of seals, and impact of threats, remains misunderstood	Cornwall Seal Research Trust
Support development of local seal groups	Collect further data	Continue with limited understanding of movements and potential of human impacts	Cornwall Seal Research Trust working with SeaWatch and MARINElife
Promotion of the Lundy Seal Code of Conduct and expand to North Devon Biosphere	Raising awareness and uniform approach across the Biosphere	Increased potential of disturbance at sites away from Lundy	North Devon Biosphere and Lundy warden
Promote NDMWAAS	Raise awareness of the issues and sensitivity of species with businesses	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere and Lundy
Expand NDMWAAS to include general public and school engagement	Raise awareness of the issues and sensitivity of species with the general public	Lack of awareness continues to cause possible disturbance of the species	North Devon Biosphere and Lundy

## References

- Bellam, K., Bennett, S., James-Hussey, A., Watson, L., Ottaway, A., and Sayer, S. 2019. The growing disturbance in the United Kingdom.
- Cornwall Seal Group Research Trust. 2020. Annual Report 2020 and 2021. Available at: <https://www.cornwallsealgroup.co.uk/wp-content/uploads/2021/01/Annual-report-2020-V6.pdf> and <https://www.cornwallsealgroup.co.uk/2022/03/2021-srt-and-seals/>
- Lundy Management Forum. 2017. Lundy Marine Management Plan 2017. Written by Rebecca MacDonald and revised by Robert Irving. Produced for Natural England by the Landmark Trust, Lundy Island
- Lundy Atlantic Grey Seal Halichoerus Grypus Population And Productivity Studies In 2021 By Rosie Ellis, Lucy Mortlock, Chloe Woolfenden, Eleanor Grover and Dean Jones. Email: [warden@lundyisland.co.uk](mailto:warden@lundyisland.co.uk)

