A3.23 Macaronesian communities of infralittoral algae moderately exposed to wave action

Summary

This habitat occurs in the infralittoral zone in areas that are moderately exposed to wave action and currents. It is characterised by the presence of many photophilic algae covering areas of bedrock and boulders. In the case of the Azores there are associated biotopes characterised by brown algae some of which form a turf on the rock surfaces. In the southern archipelagos of Madeira, Selvagem and Canary Islands, the diversity of biotopes is much greater as is the variety of macroalgae.There are also many associated epiphytes and small marine invertebrates amongst the algal cover.

The main threat to this habitat is related to the high intensity of urban coastal development which has taken place on the most populated islands of Macaronesia in recent decades. This has exerted significant pressures on coastal habitats and can have a detrimental effect on adjacent sublittoral habitats such as this. Fishing and poaching activities are other important indirect causes of habitat degradation in the infralittoral zone. The increase of international maritime traffic in the harbours of the main cities of the Canaries Archipelago and, more recently, oil-platform maintenance work, are a potential entrance vector for marine exotic species although any ecological effects on Macaronesia habitats have not been yet evaluated.

Beneficial measures include the regulation of coastal development and of discharges to the marine environment as well as controls on the introduction of invasive species. Marine Protected Areas which include this habitat can act as a focus for the introduction of such measures.

Synthesis

There is insufficient information to determine historical, current or future trends in quantity or quality of this habitat although it is considered likely to decline in the future if conservation measures are not introduced.

This habitat has a large EOO and AOO, and therefore qualifies as Least Concern under criterion B. However the habitat is assessed as Data Deficient both at the EU 28 and EU 28+ levels because of the lack of information on its area and any trends in quantity and quality.

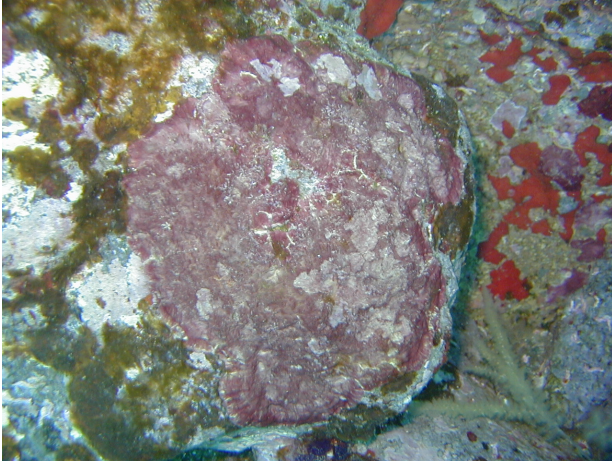| Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Data Deficient	-	Data Deficient	-

Sub-habitat types that may require further examination

None.

Habitat Type

Code and name

A3.23 Macaronesian communities of infralittoral algae moderately exposed to wave action

Rocky infralittoral zone habitat characterised by encrusting algae including *Peyssonnelia* spp.Porto Santo, Madeira, Portugal (© R.Haroun).

Habitat description

This habitat is characterised by the presence of many photophilic algae covering areas of bedrock and boulders. It occurs in the infralittoral zone in areas that are moderately exposed to wave action and currents.

In the case of the Azores - northern archipelago – four associations are recognized: one of the brown algae *Colpomenia sinuosa*, another one of the red genus *Peyssonnelia*, with *P. rubra* as most common species. The two other biotopes are mainly associated to brown macroalgae, such as *Zonaria tournefortii – Dictyota spp.* and Turf (calcareous and non calcareous) with *Dictyota spp.* and *Stypocaulon scoparium / Halopteros filicina*.

In the southern archipelagos: Madeira, Selvagem and Canary Islands the diversity of biotopes is much greater as is the variety of associated macroalgae. Where the articulated calcareous algae *Ellisondia* (*Corallina*) *elongate* is the characteristic species, there are also many associated epiphytes and small marine invertebrates. The brown foliose macroalgal biotope is characterised mainly by *Lobophora variegata*, with other dictyotales such as *Zonaria tournefortii*, *Dictyota spp., Stypopopdium zonale* as major elements.There is also an associated biotope composed by the green algae *Pseudotetraspora marina*), which has been spreading along areas of moderately exposed infralittoral rocks in the Canary Islands. The biotope characterised by *Cymopolia barbata* covers large shallow infralittoral rocks in locations with strong sunlight. In the eastern canarian archipelago, another conspicuous biotope is that of *Padina pavonica,* which is sometimes associated with *Cladostephus spongiosus*, *Hypnea* and *Spyridia*.

On horizontal rocky surfaces the red algae *Lophocladia trichoclados* may form nearly monospecific stands. Seasonal red algal of the genera *Galaxaura*, *Dudresnaya*, *Liagora* and *Helminthocladia*, are key elements of another conspicuous biotope, whereas the turf forming articulated calcareous algae *Haliptilon*, *Jania* and *Amphiroa* are widespread biotope in the Selvagem and Canary Islands.

Indicators of quality:

Both biotic and abiotic indicators have been used to describe marine habitat quality. These include: the presence of characteristic species as well as those which are sensitive to the pressures the habitat may face; water quality parameters; levels of exposure to particular pressure, and more integrated indices which describe habitat structure and function, such as trophic index, or successional stages of development in habitats that have a natural cycle of change over time.

There are no commonly agreed indicators of quality for this habitat, although particular parameters may have been set in certain situations e.g. protected features within Natura 2000 sites, where reference values have been determined and applied on a location-specific basis.

Characteristic species:

Zonaira tournefortii can form dense canopies with *Stypopodium zonale, Dictyota (Canistrocarpus) spp.* and to a lesser extent *Padina pavonica* also frequent. The green alga *Dasycladus vermicularis* may form mats on horizontal surfaces. Vagile associated form is abundant and diverse including molluscs, crustaceans echinoderms and numerous fish.

In Madeira and in many canarian locations, the algal species typically observed are *Zonaria tournefortii*, *Stypopodium zonale*, *Dictyota bartayresiana*, *Padina pavonica Dasycladus vermicularis Asparagopsis armata* and *Cottoniella filamentosa*. Associated molluscs may include *Haliotis tuberculat*a, *Charonia lampas lampas*, *Hexaplex trunculus*, *Astraea rugosa*, *Erosaria spurca* and *Octopus vulgaris*. Crustaceans such as *Stenorhynchus lanceolatus Maya squinado,Percnon gibbese*, and echinoderms such as *Diadema africanum*, *Sphaerechinus graularis*, and *Marthasteria glacialis*. Abundant fish may include *Synodus synodus*, *Muraena augusti*, *Serranus atricauda*, *Diplodus vulgaris*, *D. sargus cadenati*, *D. cervinus cervinus*, *Oblada melanura*, *Pomadais incises*, *Chromis limbatus*, *Abudefduf luridus*, *Thalassoma pavo*, *Centrolabrus trutta*, *Sparisoma cretense*, *Scorpaena maderensis*, *Canthigaster rostrate* and *Sphoeroides marmoratus*.

In the Canary Islands, and within the *Pseudotetraspora marina* biotope is frequent to observe sponges of the genus *Batzella* and/ or *Cinachyrella*, and in the biotope dominated by *L. trichoclado,* another filamentous red alga *Cottoniella filamentosa* is common.

Classification

EUNIS (2004):

Level 4. A sub-habitat of 'Atlantic and Mediterranean moderate energy littoral rock' (A3.2) with modifications to include Macaronesia.

Annex 1:

1170 Reefs

MAES:

Marine - Marine inlets and transitional waters

Marine – Coastal

MSFD:

Shallow sublittoral rock and biogenic reef

EUSeaMap:

Shallow photic rock or biogenic reef

IUCN:

9.2 Subtidal rock and rocky reefs

Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?

Unknown

Justification
Geographic occurrence and trends

Region	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
North-East Atlantic	Macaronesia: Present	Unknown Km^2	Unknown	Unknown

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	501,455 Km^2	86	Unknown Km^2	EOO and AOO have been calculated on the available data. Although this data set is known to be incomplete the figures exceed the thresholds for threatened status.
EU 28+	501,455 Km^2	86	Unknown Km^2	This habitat does not occur outside the EU28

Distribution map
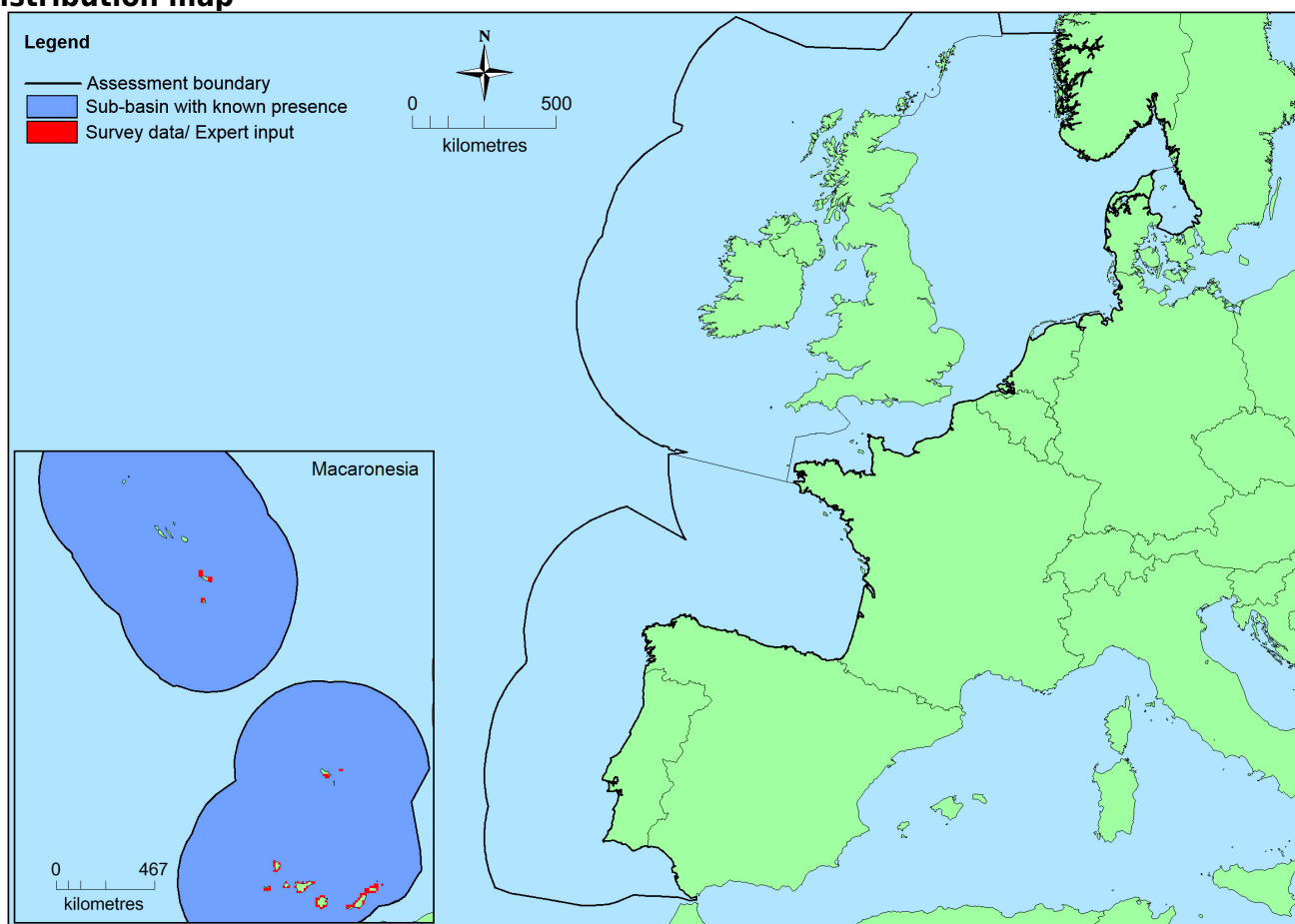
There are insufficient data to provide a comprehensive and accurate map of the distribution of this habitat. This map has been generated using EMODnet data from modelled/surveyed records for the North East

Atlantic (and supplemented with expert opinion where applicable) (EMODnet 2010). EOO and AOO have been calculated on the available data presented in this map however these should be treated with caution as expert opinion is that this is not the full distribution of the habitat.

How much of the current distribution of the habitat type lies within the EU 28?

100% is hosted by EU 28 in the Macaronesian region of the North East Atlantic.

Trends in quantity

There is insufficient information on past extent of this habitat to determine historical trends in quantity. As it occurs in shallow waters which are subject to different degrees of human pressures such as habitat destruction or modification it is considered likely to decline in the future if conservation measures are not introduced.

- Average current trend in quantity (extent)
  EU 28: Unknown
  EU 28+: Unknown
- Does the habitat type have a small natural range following regression?
  No
  Justification
  This habitat does not have a small natural range as it is present in the Azores, Madeira and the Canary Islands.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  This habitat does not have a small natural range as it is present in the Azores, Madeira and the Canary Islands.

Trends in quality

There is insufficient information about this habitat to determine historical trends in quality. As it occurs in shallow waters which are subject to different degrees of human pressures such as habitat destruction or modification it is considered likely to decline in the future if conservation measures are not introduced.

- Average current trend in quality
  EU 28: Unknown
  EU 28+: Unknown

Pressures and threats

The main threat to this habitat is related to the high intensity of urban coastal development which has taken place on the most populated islands of Macaronesia in recent decades. Harbour construction and tourism resorts have exerted significant pressures on coastal habitats and can result in increased sedimentation and changes in the hydrogological regime, with detrimental effects on adjacent sublittoral habitats such as this. Fishing and poaching activities have become important indirect causes of habitat degradation in the infralittoral zone. Poorly managed waste disposal and sewage discharge can be an additional pressure but this is less likely given the exposed conditions where this habitat occurs.

The increase of international maritime traffic in the harbours of the main cities of the Canaries Archipelago and, more recently, oil-platform maintenance work, maypotentially lead to the introduction of marine exotic species. The ecological effects of such species in Macaronesian habitats have not been evaluated.

List of pressures and threats

Urbanisation, residential and commercial development

Urbanised areas, human habitation
Discharges

Biological resource use other than agriculture & forestry

Fishing and harvesting aquatic resources

Pollution

Pollution to surface waters (limnic, terrestrial, marine & brackish)
    Nutrient enrichment (N, P, organic matter)
Marine water pollution

Invasive, other problematic species and genes

Invasive non-native species

Conservation and management

This habitat is included within some Marine Protected Areas where there are associated management measures, regulations and codes of conduct but not necessarily targeting this specific habitat. Regulation of coastal development and of discharges to the marine environment as well as control on activities that may potentially lead to the introduction of invasive species are other measures that could benefit this habitat.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality

Measures related to spatial planning

Other spatial measures
Establish protected areas/sites

Measures related to urban areas, industry, energy and transport

Urban and industrial waste management
Managing marine traffic

Conservation status

Annex 1:

1170: MMAC FV

When severely damaged, does the habitat retain the capacity to recover its typical character and functionality?

There is insufficient information to determine whether this habitat retains the capacity to recover when severely damaged.

Effort required

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	Unknown %	Unknown %	Unknown %	Unknown %

This habitat is only present in the EU 28 in the North East Atlantic region. There is insufficient information on the past extent of this habitat to determine historical trends in quantity. As it occurs in shallow waters, in areas subject to pressure from development, it is considered likely to decline in the future if conservation measures are not introduced. The scale of any such future decline cannot be estimated at the present time. This habitat has therefore been assessed as Data Deficient under Criteria A.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50,000 Km^2	Unknown	Yes	No	>50	Unknown	Yes	No	No
EU 28+	>50,000 Km^2	Unknown	Yes	No	>50	Unknown	Yes	No	No

This habitat has a large natural range in the North East Atlantic region. The precise extent is unknown however as EOO >50,000km^2 and AOO >50, this exceeds the thresholds for a threatened category on the basis of restricted geographic distribution. The distribution of the habitat is such that the identified threats are unlikely to affect all localities at once. This habitat has therefore been assessed as Least Concern under criterion B1 (b,c) B2 (b,c) and B3 and Data Deficient for all other criteria.

Criterion C and D: Reduction in abiotic and/or biotic quality

Criteria C/D	C/D1		C/D2		C/D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %

Criterion C	C1		C2		C3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %

Criterion D	D1		D2		D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	Unknown %	Unknown%	Unknown %	Unknown%	Unknown %	Unknown%
EU 28+	Unknown %	Unknown%	Unknown %	Unknown%	Unknown %	Unknown%

This habitat occurs in the infralittoral zone of the Macaronesian islands which are subject to different types and degrees of human pressures such as habitat destruction or modification. There is insufficient information to determine historical or future trends in quality although it is considered likely to decline in quality in the future if conservation measures are not introduced. This habitat has therefore

been assessed as Data Deficient under Criteria C/D.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	Unknown
EU 28+	Unknown

There is no quantitative analysis available to estimate the probability of collapse of this habitat type.

Overall assessment "Balance sheet" for EU 28 and EU 28+

	A1	A2a	A2b	A3	B1	B2	B3	C/D1	C/D2	C/D3	C1	C2	C3	D1	D2	D3	E
EU28	DD	DD	DD	DD	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	DD	DD	DD	DD	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Data Deficient	-	Data Deficient	-

Confidence in the assessment
Low (mainly based on uncertain or indirect information, inferred and suspected data values, and/or limited expert knowledge)

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