



**Centre for
Ecology & Hydrology**

NATURAL ENVIRONMENT RESEARCH COUNCIL

CEH Dorset

Winfrith Technology Centre
Winfrith Newburgh
Dorchester
Dorset DT2 8ZD

Telephone (01305) 213500
Main Fax (01305) 213600
www.ceh.ac.uk

**EUNIS HABITAT CLASSIFICATION
MARINE HABITAT TYPES:
REVISED CLASSIFICATION AND
CRITERIA, September 2004**

Cynthia E Davies
Dorian Moss¹

Project Leader: Mark Hill
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Dorian Ecological Information Ltd. ¹
21 Stapleford Road
Whissendine
Oakham
Rutland
LE15 7HF, UK
Tel. +44 (0)1664 474629
e-mail: dor@dorianmoss.com
<http://www.dorianmoss.com>

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1 INTRODUCTION

Since the inception of the European Environment Agency there has been a continuous work programme towards the following objectives: to develop a comprehensive parameter-based European habitat classification framework and to work towards the description of European habitat types within the parameter framework.

The habitat classification forms an integral part of the European Nature Information System (EUNIS), developed and managed by the European Topic Centre for Nature Protection and Biodiversity (ETC/NPB in Paris) for the European Environment Agency (EEA) and the European Environmental Information Observation Network (EIONET). The process of development of the classification was documented in previous reports by Davies & Moss (1998, 1999).

The EUNIS web application (<http://eunis.eea.eu.int/index.jsp>) (EEA 2003) provides access to publicly available data in a consolidated database.

The information includes:

- Data on Species, Habitats and Sites compiled in the framework of NATURA2000 (EU Habitats and Birds Directives),
- Data collected from frameworks, data sources or material published by ETC/NPB (formerly the European Topic Centre for Nature Conservation).
- Information on Species, Habitats and Sites taken into account in relevant international conventions or from International Red Lists.
- Specific data collected in the framework of the EEA's reporting activities, which also constitute a core set of data to be updated periodically.

The habitat classification has been amended since its first publication in 1999 (Davies & Moss 1999) in response to proposals received at international workshops concentrating on marine habitats. These were organised by the OSPAR Commission, The International Council for the Exploration of the Sea (ICES) and the European Environment Agency (EEA) in autumn 2000, and a meeting of the ICES Marine Habitats Mapping Working Group in spring 2001. Further amendments were made in response to comments from a number of users of the classification, and in order to update the direct links between the EUNIS classification and other initiatives, notably the Palaeartic habitat classification, CORINE Land Cover nomenclature and Annex I of the EU Habitats Directive 92/43/EEC.

The most recently published full classification is contained on the EUNIS web site (EEA 2003), together with keys for identification of all habitat types at levels 1, 2 and 3 of the hierarchy, the glossary of terms and background information on the rationale of the classification and history of its development. The revision of marine and coastal habitats given in this report results from discussion of proposals for revision made by the EEA (Davies & Moss 2004) in response to proposals received from the OSPAR Biodiversity Committee and a paper from workers in the Baltic Sea area (see Section 3 below). These proposals were discussed fully in a meeting of Baltic Sea Marine experts, held at SYKE, Helsinki, Finland 8th – 9th July, 2004. A list of the participants in the workshop is given in Annex 1 below. The revision has been made to ensure that the EUNIS Habitat classification meets the needs of users within OSPAR and the Baltic Sea area. This report also includes the classification and key to coastal habitats for comparison and completeness

A complete revision of the full classification will be published on completion of the current year's work programme and the web site will be updated accordingly. It should be noted that there may be some minor differences in the wording of habitat descriptions between the final published version and the draft in this Report, as it may be necessary to edit for clarity and consistency.

2 BACKGROUND

2.1 Definition and scale

For the purposes of EUNIS, 'habitat' is defined as: “**plant and animal communities as the characterising elements of the biotic environment, together with abiotic factors (soil, climate, water availability and quality, and others), operating together at a particular scale**”. The factors included in the definition should all be addressed in the descriptive framework of the habitat classification.

The EUNIS habitat classification is comprehensive and covers the whole of the European land and sea area. i.e. the European mainland as far east as the Ural Mountains, including offshore islands (Cyprus; Iceland but not Greenland), and the archipelagos of the European Union Member States (Canary Islands, Madeira and the Azores), Anatolian Turkey and the Caucasus.

The scale selected for the EUNIS habitat classification is that occupied by small vertebrates, large invertebrates and vascular plants. It is the same as that generally adopted by other European scale typologies, for example by the Palaearctic habitat classification (Devillers & Devillers-Terschuren, 1996) and is comparable to the scale applied to the classification of syntaxa in traditional phytosociology. Samples of between 1 m² and 100 m² will generally be adequate to categorise habitats. At the smaller scale, “**microhabitats**” (features generally occupying less than 1 m² which are characteristic of certain habitat types and important for some smaller invertebrates and lower plants) can be described. Examples are decaying wood, found in mature forests and required by invertebrates whose function is decomposition, or animal dung in grassland environments. At the larger scale, habitats can be grouped as “**habitat complexes**”, which are frequently occurring combinations or mosaics of individual habitat types, usually occupying at least 10 ha, which may be inter-dependent. Estuaries, combining tidal water, mud flats, saltmarshes and other littoral habitats, are a good example.

2.2 The EUNIS habitat type classification: Descriptions of level 1 habitats

There are 10 level 1 categories, the definitions of which are given below:

A Marine habitats

Marine habitats are directly connected to the oceans, i.e. part of the continuous body of water which covers the greater part of the earth's surface and which surround its land masses. Marine waters may be fully saline, brackish or almost fresh. Marine habitats include those below spring high tide limit (or below mean water level in non-tidal waters) and enclosed

coastal saline or brackish waters, without a permanent surface connection to the sea but either with intermittent surface or sub-surface connections (as in lagoons). Rockpools in the supralittoral zone are considered as enclaves of the marine zone. Includes marine littoral habitats which are subject to wet and dry periods on a tidal cycle including tidal saltmarshes; marine littoral habitats which are normally water-covered but intermittently exposed due to the action of wind or atmospheric pressure changes; freshly deposited marine strandlines characterised by marine invertebrates. Waterlogged littoral saltmarshes and associated saline or brackish pools above the mean water level in non-tidal waters or above the spring high tide limit in tidal waters are included with marine habitats. Includes constructed marine saline habitats below water level as defined above (such as in marinas, harbours, etc) which support a semi-natural community of both plants and animals. The marine water column includes bodies of ice.

B Coastal habitats

Coastal habitats are those above spring high tide limit (or above mean water level in non-tidal waters) occupying coastal features and characterised by their proximity to the sea, including coastal dunes and wooded coastal dunes, beaches and cliffs. Includes free-draining supralittoral habitats adjacent to marine habitats which are normally only affected by spray or splash, strandlines characterised by terrestrial invertebrates and moist and wet coastal dune slacks and dune-slack pools. Excludes supralittoral rock pools and habitats adjacent to the sea which are not characterised by salt spray, wave or sea-ice erosion.

C Inland surface waters

Inland surface waters are non-coastal above-ground open fresh or brackish waterbodies (e.g. rivers, streams, lakes and pools, springs), including their littoral zones. Includes constructed inland freshwater, brackish or saline waterbodies (such as canals, ponds, etc) which support a semi-natural community of both plants and animals; seasonal waterbodies which may dry out for part of the year (temporary or intermittent rivers and lakes and their littoral zones). Freshwater littoral zones include those parts of banks or shores that are sufficiently frequently inundated to prevent the formation of closed terrestrial vegetation. Excludes permanent snow and ice. Note that habitats that intimately combine waterlogged mires and vegetation rafts with pools of open water are considered as complexes.

D Mires, bogs and fens

Wetlands, with the water table at or above ground level for at least half of the year, dominated by herbaceous or ericoid vegetation. Includes inland saltmarshes and waterlogged habitats where the groundwater is frozen. Excludes the water body and rock structure of springs and waterlogged habitats dominated by trees or large shrubs. Note that habitats that intimately combine waterlogged mires and vegetation rafts with pools of open water are considered as complexes.

E Grasslands and lands dominated by forbs, mosses or lichens

Non-coastal land which is dry or only seasonally wet (with the water table at or above ground level for less than half of the year) with greater than 30% vegetation cover. The vegetation is dominated by grasses and other non-woody plants, including mosses, macrolichens, ferns, sedges and herbs. Includes semiarid steppes with scattered *Artemisia* scrub. Includes successional weedy vegetation and managed grasslands such as recreation fields and lawns. Excludes regularly tilled habitats dominated by cultivated herbaceous vegetation such as arable fields.

F Heathland, scrub and tundra

Non-coastal land which is dry or only seasonally inundated (with the water table at or above ground level for less than half of the year) with greater than 30% vegetation cover. Tundra is characterised by the presence of permafrost. Heathland and scrub are defined as vegetation dominated by shrubs or dwarf shrubs of species that typically do not exceed 5 m maximum height. Includes shrub orchards, vineyards, hedges (which may have occasional tall trees). Also includes stands of climatically-limited dwarf trees (krummholz) < 3m high, such as occur in extreme alpine conditions. Includes *Salix* and *Frangula* carrs. Excludes *Alnus* and *Populus* swamp woodland.

G Woodland, forest and other wooded land

Woodland and recently cleared or burnt land where the dominant vegetation is, or was until very recently, trees with a canopy cover of at least 10%. Trees are defined as woody plants, typically single-stemmed, that can reach a height of 5 m at maturity unless stunted by poor climate or soil. Includes lines of trees, coppices, regularly tilled tree nurseries, and tree-crop plantations. Includes *Alnus* and *Populus* swamp woodland and riverine *Salix* woodland. Excludes *Corylus avellana* scrub and *Salix* and *Frangula* carrs. Excludes stands of climatically-limited dwarf trees (krummholz) < 3m high, such as occur at the arctic or alpine tree limit. Excludes parkland and dehesa with canopy less than 10%, which are listed under sparsely wooded grasslands E7.

H Inland unvegetated and sparsely vegetated habitats

Non-coastal habitats with less than 30% vegetation cover (other than where the vegetation is chasmophytic or on scree and or cliff) which are dry or only seasonally wet (with the water table at or above ground level for less than half of the year). Subterranean non-marine caves and passages including underground waters. Habitats characterised by the presence of permanent snow and surface ice other than marine ice bodies.

I Regularly or recently cultivated agricultural, horticultural and domestic habitats

Habitats maintained solely by frequent tilling or arising from recent abandonment of previously tilled ground such as arable land and gardens. Includes tilled ground subject to inundation. Excludes shrub orchards, tree nurseries and tree-crop plantations.

J Constructed, industrial and other artificial habitats

Primarily human settlements, buildings, industrial developments, the transport network, waste dump sites. Includes highly artificial saline and non-saline waters with wholly constructed beds or heavily contaminated water (such as industrial lagoons and saltworks) which are virtually devoid of plant and animal life.

3 DEVELOPMENT OF THE CLASSIFICATION

3.1 OSPAR BDC proposals

Proposals for further development of the classification have been assisted by a review of literature describing marine habitats in the OSPAR maritime area. OSPAR Contracting Parties undertook a review of literature relating to marine habitats in their own national territory and EEZs, following guidance provided by the UK as lead country. Literature reviews were received from the following Contracting Parties: Belgium, France, Iceland, Ireland, Netherlands, Norway, Portugal and Sweden; in total over 700 habitat descriptions were submitted. Analysis of these habitat data was undertaken to confirm the existing habitat types in the EUNIS system, propose new habitat types where appropriate and to provide an initial indication of the distribution, by country, of each habitat type.

In parallel with the literature reviews by the Contracting Parties, the United Kingdom has undertaken detailed analysis of some 30,000 benthic samples (intertidal and subtidal) held on the Joint Nature Conservation Committee's national marine database, together with a review of literature relating particularly to offshore sediment habitats. This has led to a major revision of the UK's marine habitat classification (originally published in 1997) for the 0-200 nautical mile zone, and which also covers inshore habitats around Ireland. The first phase of this work, for intertidal rock and sediment habitats and for circalittoral (animal-dominated) subtidal habitats, was released on-line in April 2003:

www.jncc.gov.uk/MarineHabitatClassification.

Revision of the remaining sections (infralittoral or algal-dominated subtidal rock habitats and subtidal sediment habitats) is now complete and was released in August 2004 (Connor et al 2004).

On the basis of the analysis of literature submitted by Contracting Parties and the revision to the UK classification, the OSPAR Biodiversity Committee proposed a revision of the marine units in the EUNIS Classification as it relates to marine habitats of the north-east Atlantic (OSPAR 2004).

3.2 ALLECO proposals

Marine habitats in the Baltic Sea area were not reviewed as part of the OSPAR proposals. The current Baltic dimension of the EUNIS marine classification system is derived from the underwater biotope classification system of HELCOM (Helsinki Commission 1998). While covering most of the existing habitat types of the underwater Baltic Sea, the HELCOM classification lacks the required detail for accurate management decisions. Within EUNIS, the Baltic underwater biotopes were often classified as distinct from their Northern Atlantic or Mediterranean counterparts even if they were functionally identical. This clearly indicated

a need for amendments and revision of the Baltic underwater habitats in the existing EUNIS system. The EUNIS Habitat classification system is only validated at levels 1-4 for marine units (1-3 for all others). Habitat types at lower levels have been directly adopted from other classification systems, sometimes leading to duplication and inaccuracy in the hierarchical logic (Backer *et al* 2004).

In view of the identified need for a comprehensive, EUNIS-compatible classification system of marine biotopes for the Baltic Sea area, Backer *et al* presented proposals for a framework for such a classification. This has been tested using data from some of Alleco's benthic mapping investigations in Finland and includes the derived biotope classes. The Alleco proposals took account of the proposals made by the OSPAR (2004).

3.3 EEA Response to Alleco and OSPAR proposals

The EEA's EUNIS team reviewed the proposals made by OSPAR (2004) and by Backer *et al* (2004) and assessed them for compatibility with the EUNIS parameter framework. The OSPAR proposals were discussed with the OSPAR representative, David Connor.

Proposals to incorporate the suggestions made by both the above parties into the EUNIS habitat classification were presented in a report to the EEA and ETC/NPB (Davies & Moss 2004).

3.4 Baltic Marine Habitats Workshop July 2004 and beyond

A workshop for Baltic Sea marine experts was convened by the EEA on 8th – 9th July 2004 at SYKE, Helsinki, Finland. Representatives from all countries bordering the Baltic Sea were invited. The proposals made by the EEA (Davies & Moss 2004) were discussed fully at the workshop and further modifications to the typology and criteria were agreed. A list of participants in the workshop is given in Annex 1.

The HELCOM HABITAT committee requested ICES (the International Council for the Exploration of the Sea) to include the Baltic Sea in their marine habitat classification and mapping programme for 2004. They specified that the EUNIS classification system should be taken into consideration as well as other ongoing projects in the region such as the CHARM project on “Characterization of the Baltic Sea Ecosystem Dynamics and function of coastal types”, which is connected with the EU Water Framework Directive. From HELCOM's point of view, biotope mapping could be a useful instrument for collecting information on biotopes and habitats of the Baltic Sea. They acknowledged the need to co-ordinate and, as appropriate, to harmonize the methods used for biotope in mapping the different Baltic Sea countries. To ensure that the EUNIS typology is compatible with this process, the classification and criteria resulting from the Baltic Marine Habitats Workshop were discussed with David Connor, the Chairman of ICES Working Group on Marine Habitat Mapping (WGMHM) at a meeting on 10th August 2004.

This report summarises the outcome of the workshop and presents the typology as finally agreed by both the workshop and the WGMHM Chairman.

The main agreements reached are listed in Table 1 below.

Table 1

Habitat type(s)	A2.4, A5.4
Issue	Sedimentary habitats which included non-mobile boulders were not identifiable in the classification.
Proposal	Broaden A2.4 'Littoral mixed sediments' and A5.4 'Sublittoral mixed sediments' to allow mixed substrata.
Solution	A2.4 and A5.4 are mainly sediment habitats which may have a small non-mobile component. Mosaics of mobile and non-mobile substrates where the individual components are identifiable at the appropriate scale should be considered as a complex. Proposal modified after discussion with David Connor. Retained original habitat titles. Added 3 new complexes X31 – X33. Modified criteria Aiii, Av, a10, a30.
Habitat type(s)	A6 Deep Sea
Issue	This habitat type does not exist in the Baltic
Proposal	Modify criterion Aiv to clarify
Solution	Modify criterion Aiv to clarify. Amended to 'The Baltic Sea is a shelf sea and follows path = <i>Yes</i> (sublittoral)'
Habitat type(s)	Hydrolittoral Rock
Issue	Intermittent and irregular submersion and exposure; Previous proposal had been to include the hydrolittoral with A1.3 'Low energy littoral rock'.
Proposal	Communities are different from those of A1.3 and should be considered as 'Features of littoral rock' A1.4
Solution	Add criterion a1. Recode hydrolittoral rock habitats within A1.4
Habitat type(s)	Hydrolittoral sediment
Issue	Intermittent and irregular submersion and exposure; Previous proposal had been to split the hydrolittoral between units A2.1 to A2.5
Proposal	Communities are different from those of A2.1 to A2.5 and should be considered as 'Features of littoral sediment' A2.8
Solution	Add criterion a5. Recode hydrolittoral sediment habitats within A2.8
Habitat type(s)	Geolittoral wetlands and meadows
Issue	Unclear whether these habitats fitted the criteria for marine and coastal habitats
Proposal	Clarify criteria
Solution	Split geolittoral into saline and non-saline types. Include saline and brackish geolittoral habitats in A2.5 'Upper saltmarshes' and to link non-saline geolittoral wetlands and meadow habitats to D5 'Sedge and reedbeds normally without free-standing water'. Criterion 3 modified.
Habitat type(s)	Permanent brackish pools in the geolittoral
Issue	Existing criteria did not make it clear that these were classified together with 'Rockpools in the supralittoral' rather than with 'Dune-slack pools'.
Proposal	Clarify criteria
Solution	Insufficient data are available. The practical solution was to retain 'Permanent brackish pools in the geolittoral' as 'Features of littoral rock' with 'Rockpools'. Criteria Aii and a3 were modified to clarify this.
Habitat type(s)	'Hydrolittoral <i>Mytilus edulis</i> beds'
Issue	This is not the only species of mussel found in the Baltic
Proposal	Modify habitat name
Solution	Rename habitat type to Hydrolittoral mussel beds

Habitat type(s)	Infralittoral and circalittoral rock (A3, A4)
Issue	Criterion Avi specified foliose algae as characterising species for A3. Other macrophytic filamentous algae should be included.
Proposal	Broaden criterion from foliose to other macro-algae.
Solution	Criterion Avi modified to include foliose or filamentous macro-algae.
Habitat type(s)	Infralittoral and circalittoral rock (A3, A4)
Issue	Survey methods don't always allow presence of algae to be detected.
Proposal	Identify means of recognising this.
Solution	Note added to level 2 diagram and criterion Avi 'for mapping purposes it may be necessary to map combined A3/A4 where the presence of algae cannot be detected by the survey method.'
Habitat type(s)	Bubbling reefs in sublittoral euphotic zone
Issue	These reefs, although themselves hard, are formed on soft sediments. Existing position in the classification was incorrect.
Proposal	Move from circalittoral rock to 'Features of sublittoral sediments' A5.7.
Solution	Moved to 'Features of sublittoral sediments' A5.7.
Habitat type(s)	Baltic sublittoral rock habitats
Issue	Existing range of energy status was inappropriate for habitats in the Baltic Sea. Other parameters were also seen to be significantly different from those in the Atlantic.
Proposal	Create new units at level 3 to accommodate Baltic sublittoral rock habitats
Solution	Added A3.4, A3.5, A3.6 (in infralittoral rock) and A4.4, A4.5, A4.6 (in circalittoral rock). Criteria a18, a19, a24 and a25 added separating the Baltic on a geographical basis with three appropriate exposure levels within each of A3 and A4. Existing units A3.1 - A3.3 and A4.1 - A4.3 renamed to distinguish them as 'Atlantic and Mediterranean' habitats.
Habitat type(s)	Various HELCOM Red List sublittoral rock types
Issue	Insufficient data exists for the position of these in the hierarchy to be determined using EUNIS criteria.
Proposal	Funding should be sought to enable further survey work and development of the classification and improve the HELCOM Red List
Solution	Relevant HELCOM Red List sublittoral rock habitats deleted from the EUNIS typology and cross-referenced at level 3 to the new Baltic units.
Habitat type(s)	Reefs
Issue	Not all reefs are biogenic
Proposal	Rename 'Littoral biogenic reefs' to 'Littoral biogenic structures' A2.7
Solution	Following clarification with David Connor, habitat name 'Littoral biogenic reefs' retained. Reefs of non-biogenic origin are already accommodated within A1. ('Sublittoral biogenic structures' renamed to 'Sublittoral biogenic reefs' A5.6 for consistency. 'Oyster beds' moved to 'Sublittoral mixed sediments' A5.4 as they are not reef-forming)
Habitat type(s)	' <i>Beggiatoa</i> spp. on anoxic sublittoral mud'
Issue	Existing position in 'Sublittoral mud' A5.3 was incorrect.
Proposal	Move to 'Features of sublittoral sediment' A5.7
Solution	Moved to 'Features of sublittoral sediment' A5.7. Existing criterion a28 applies.

Habitat type(s)	Coastal habitats
Issue	The existing criterion to separate Coastal habitats was inadequate for the Baltic coast. Some Baltic coastal habitats are indistinguishable from inland counterparts and are not characterised by proximity to the sea. However, Baltic sea-cliffs are not characterised by halophytic angiosperms but are characterised by wave or ice-erosion associated with the sea.
Proposal	Modify criterion 4 to separate Coastal habitats (characterised by their proximity to the sea (salt spray, wave or ice erosion). Rename B3.3 to omit word halophytic.
Solution	Criterion 4 modified. Unit B3.3 renamed and criterion b13 modified.
Habitat type(s)	Unvegetated rock stacks and islets above the splash zone
Issue	These islets in the Baltic remain unvegetated due to wind exposure.
Proposal	Add habitat
Solution	Habitat B3.27 'Rock stacks and islets above splash zone' added. B3.12 renamed to 'Rock stacks and islets above high tide level in splash zone'.
Habitat type(s)	Unvegetated Baltic rocky shores and cliffs B3.24
Issue	Why this unit is specified as Baltic?
Proposal	Remove term Baltic
Solution	The name was retained as other units in B3.2 are distinguished on a geographical basis.
Habitat type(s)	Sublittoral coarse sediment in varying salinity A5.11
Issue	Why is this unit 'sublittoral' and others specify 'infralittoral' or 'circalittoral', also Baltic is not varying salinity.
Proposal	Rename to clarify component habitats
Solution	Infralittoral coarse sediment in reduced salinity A5.11
Habitat type(s)	<i>Zostera</i> beds in infralittoral sediments A5.533 and Angiosperm communities in reduced salinity A5.54
Issue	These overlap since Baltic <i>Zostera</i> beds could be in either category.
Proposal	Rename as necessary to remove duplication
Solution	A5.533 renamed <i>Zostera</i> beds in full salinity infralittoral sediments, HELCOM red list infralittoral habitats with unspecified macrophyte vegetation deleted and cross-referenced to A5.5
Habitat type(s)	Angiosperm communities in reduced salinity A5.54
Issue	Need to include <i>Zostera</i> and <i>Scirpus</i> beds
Proposal	Add new level 5 units
Solution	Vegetation of brackish waters dominated by <i>Scirpus lacustris</i> or <i>Scirpus tabernaemontani</i> A5.544 and <i>Zostera</i> beds in reduced salinity infralittoral sediments A5.545 added

David Connor noted that further research may show that the salinity gradient is the main driving force in the Baltic Sea rather than energy levels and degree of exposure and that future development of the classification may need to reflect this. It was also noted that it seems inconsistent that rocky habitats in the Baltic are treated as distinct level 3 habitats whereas sediment types are fully integrated with those of the Atlantic and Mediterranean. Until sufficient survey data is available and has been analysed, the present typology presents a practical solution.

3.5 Future needs

The aim to ensure that the EUNIS classification of marine habitats as far as level 3 includes Baltic marine habitats has been achieved as a result of the July workshop, previous meetings and the project reported by Backer *et al* (2004). However the completion of the classification in the Baltic to the same level of detail as in the north-east Atlantic remains an ongoing need. Among the outstanding tasks which can be mentioned are:

1. Mobilisation of existing data so that habitats which have been described in regional projects can be assessed and added to the classification framework appropriately (e.g. data collected by Alleco as reported by Backer *et al* (2004)).
2. Replacement of the habitats on the HELCOM Red List by habitat types supported by more detailed descriptions including e.g. exposure levels, salinity, characteristic species.
3. Identification of further data collection needs in order to achieve (2) above and preparation of a project plan to enable these gaps in data to be filled.
4. A first priority for the Baltic area should be the development of a more detailed marine classification similar to the UK and Ireland classification, based on the biology of the Baltic (which would then feed into EUNIS in a similar way).
5. Eventually, the detailed marine classification should be used in conjunction with the ICES WGMHM in the establishment of a marine habitat mapping project, complementary to the MESH project in parts of the north-east Atlantic, using the EUNIS habitat classification as a basis of mapping units.

The meeting identified the following possible approaches to achieve these aims:

- The ICES Marine Habitat Committee (chaired by Heye Rumohr), meeting at the 2004 ICES Annual Science Conference, should be made aware of these needs.
- The spring 2005 meeting of the ICES Working Group on Marine Habitat Mapping will be held at Bremerhaven, Germany, with the hope that more participants from the Baltic countries will be able to attend and give substance to a discussion of a Baltic habitat mapping project.
- ICES is receiving a budget from HELCOM towards this work.
- ICES has a large marine ecosystem approach (led by Jan Thulin) and could initiate a regional sea project. There is funding available for infrastructure building in Poland, Lithuania and Latvia. Access to this might be via HELCOM.
- EU INTERREG funding might be sought – this should be discussed between representatives of the Baltic countries, as recommended by the WGMHM in their 2004 report.
- There is a danger that at the transition from the 2001-2004 European Topic Centre on Nature Protection and Biodiversity to its successor in 2005 it might be assumed that the EUNIS habitat classification is complete. The European Environment Agency must be made aware that the EUNIS classification work in the Baltic is incomplete.

4 HIERARCHICAL CLASSIFICATION, REVISED AUGUST 2004

The list below is the revised list of Marine and Coastal habitat units to level 3 as agreed by the Workshop on Baltic Sea marine habitats and OSPAR/ICES. It should be noted that the scope of the EUNIS classification is to level 4 for marine units (A). **The completion of the classification in the Baltic to the same level of detail as in the north-east Atlantic remains an ongoing need as units specific to the Baltic require description and input of data.**

Habitats below the current level 3 are presented in Annex 2. While the scope of the EUNIS classification is to level 4 for marine units (A), it is limited to level 3 for coastal units and the remainder of the classification (units B-J). More detailed habitat units have been linked from other classifications and act as an indication of how the EUNIS habitat classification can combine other classifications into a common framework. Names of the more detailed units are generally those of their parent classification, augmented or edited where necessary only for consistency with other EUNIS names or for greater clarity.

Table 2

EUNIS Habitat code	Scientific name
A	Marine habitats
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	Littoral sediment
A2.1	Littoral coarse sediment
A2.2	Littoral sand and muddy sand
A2.3	Littoral mud
A2.4	Littoral mixed sediments
A2.5	Coastal saltmarshes and saline reedbeds
A2.6	Littoral sediments dominated by aquatic angiosperms
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
A3.4	Baltic exposed infralittoral rock
A3.5	Baltic moderately exposed infralittoral rock
A3.6	Baltic sheltered 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

EUNIS Habitat code	Scientific name
A4.3	Atlantic and Mediterranean low energy circalittoral rock
A4.4	Baltic exposed circalittoral rock
A4.5	Baltic moderately exposed circalittoral rock
A4.6	Baltic sheltered circalittoral rock
A4.7	Features of circalittoral rock
A5	Sublittoral sediment
A5.1	Sublittoral coarse sediment
A5.2	Sublittoral sand
A5.3	Sublittoral mud
A5.4	Sublittoral mixed sediments
A5.5	Sublittoral macrophyte-dominated sediment
A5.6	Sublittoral biogenic reefs
A5.7	Features of sublittoral sediments
A6	Deep-sea bed
A6.1	Deep-sea rock and artificial hard substrata
A6.2	Deep-sea mixed substrata
A6.3	Deep-sea sand
A6.4	Deep-sea muddy sand
A6.5	Deep-sea mud
A6.6	Deep-sea bioherms
A6.7	Raised features of the deep-sea bed
A6.8	Deep-sea trenches and canyons, channels, slope failures and slumps on the continental slope
A6.9	Vents, seeps, hypoxic and anoxic habitats of the deep sea
A7	Pelagic water column
A7.1	Neuston
A7.2	Completely mixed water column with reduced salinity
A7.3	Completely mixed water column with full salinity
A7.4	Partially mixed water column with reduced salinity and medium or long residence time
A7.5	Unstratified water column with reduced salinity
A7.6	Vertically stratified water column with reduced salinity
A7.7	Fronts in reduced salinity water column
A7.8	Unstratified water column with full salinity
A7.9	Vertically stratified water column with full salinity
A7.A	Fronts in full salinity water column
A8	Ice-associated marine habitats
A8.1	Sea ice
A8.2	Freshwater ice
A8.3	Brine channels
A8.4	Under-ice habitat
B	Coastal habitats
B1	Coastal dunes and sandy shores
B1.1	Angiosperm communities of sand beach driftlines
B1.2	Sand beaches above the driftline
B1.3	Shifting coastal dunes

EUNIS Habitat code	Scientific name
B1.4	Coastal stable dune grassland (grey dunes)
B1.5	Coastal dune heaths
B1.6	Coastal dune scrub
B1.7	Coastal dune woods
B1.8	Moist and wet dune slacks
B1.9	Machair
B2	Coastal shingle
B2.1	Shingle beach driftlines
B2.2	Unvegetated mobile shingle beaches above the driftline
B2.3	Upper shingle beaches with open vegetation
B2.4	Fixed shingle beaches, with herbaceous vegetation
B2.5	Shingle and gravel beaches with scrub
B2.6	Shingle and gravel beach woodland
B3	Rock cliffs, ledges and shores, including the supralittoral
B3.1	Supralittoral rock (lichen or splash zone)
B3.2	Unvegetated rock cliffs, ledges, shores and islets
B3.3	Rock cliffs, ledges and shores, with angiosperms
B3.4	Soft sea-cliffs, often vegetated

5 KEY TO THE CLASSIFICATION, REVISED AUGUST 2004

Defining parameters for the units comprising the EUNIS Habitat Classification are held in a database. These defining parameters have been used to develop a key to habitats to level 3. The following pages present the key to habitat units A and B, revised to accommodate the amendments to the classification agreed in Helsinki.

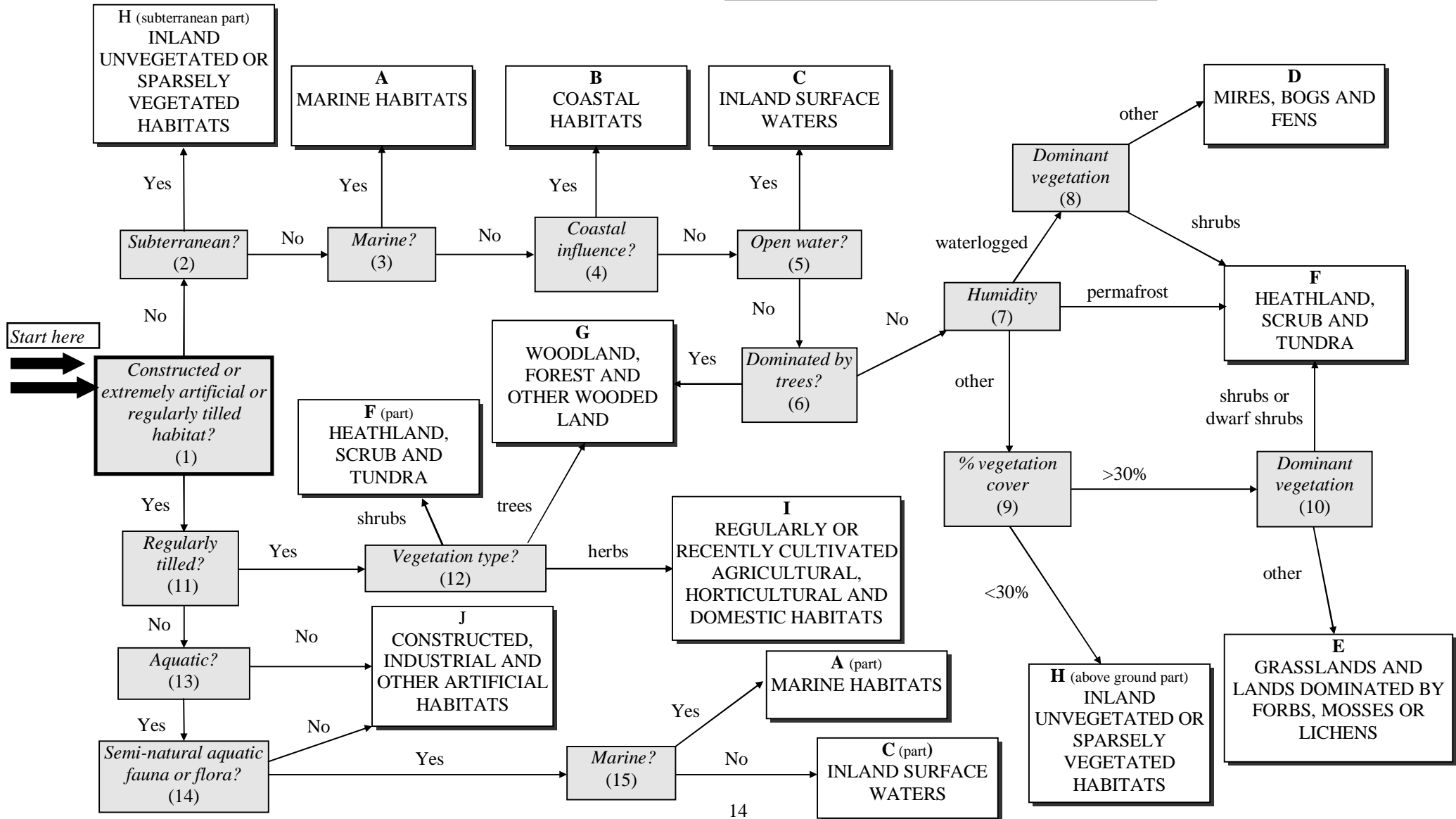
5.1 Use of the key

Criteria diagrams for levels 1 to 3 of the proposed revision of the EUNIS Habitat Classification units A – Marine Habitats and B, Coastal Habitats are presented with additional detailed explanatory notes accompanying each grey 'decision box'. These notes explain how the decision box is to be applied, and form an integral and essential part of the criteria. For levels 1 and 2, the notes follow the diagrams after each level and are numbered sequentially across levels 1 - 2. For level 3 criteria, the notes are numbered sequentially within each level 1 unit with the appropriate lower case letter preceding the number (e.g. a1 is the first note for criteria for Marine level 3 units). Criteria have been developed for all units to level 3. Criteria have also been developed for salt marshes at level 4. The complete key is available on the website together with a glossary of terms to aid in the interpretation of terminology in the classification. An extract from the Glossary of terms is included in this report (Annex 3).

EUNIS Habitat Classification: criteria for Level 1

(number) refers to explanatory notes to the key

Note: Complex habitats may not readily be located as an entity, as they comprise a number of different habitat units. Complexes are listed under code X.



Note: Complex habitats may not readily be located as an entity, as they comprise combinations of a number of different habitat units. Complexes are listed under code X.

Explanatory notes to the key: Level 1

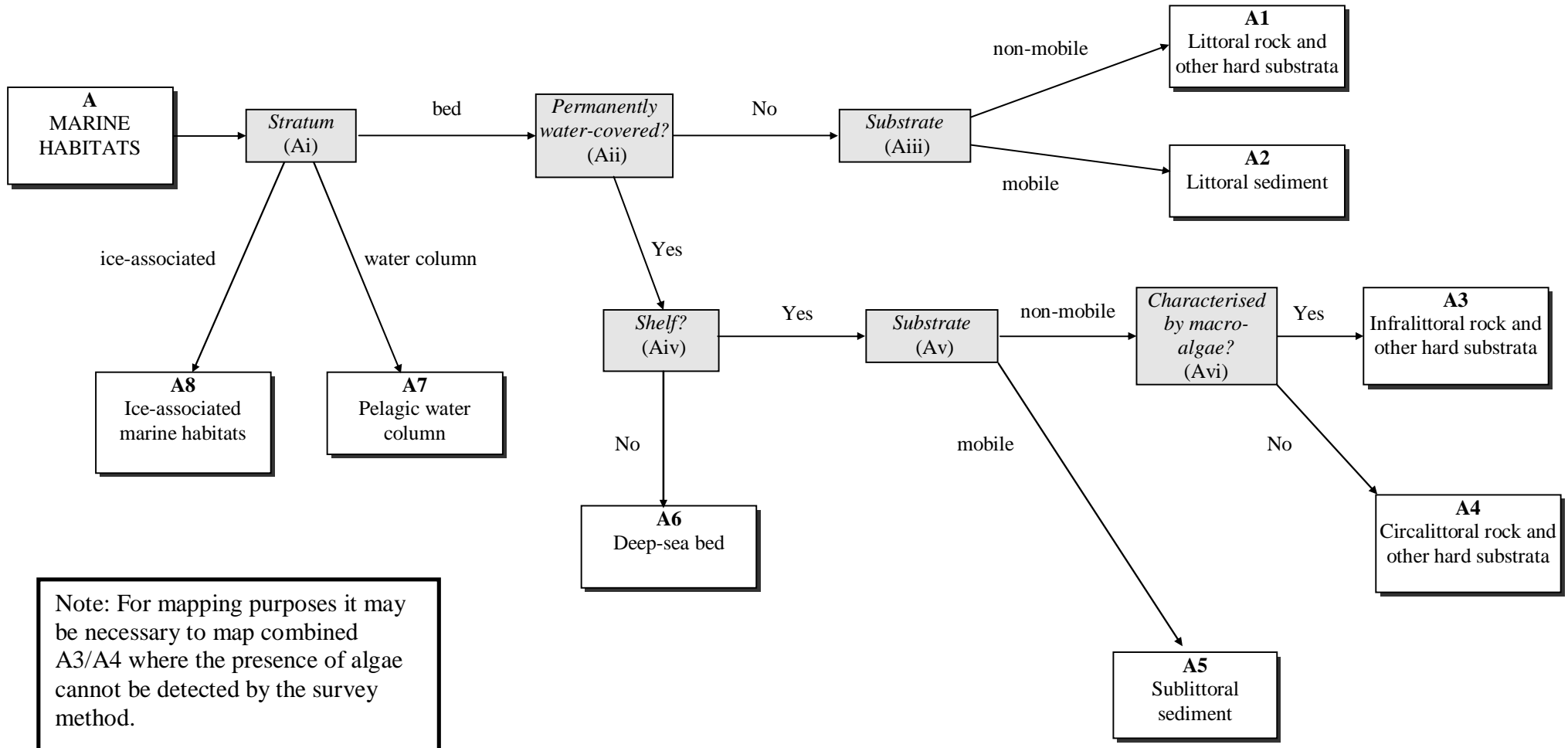
1. Is the habitat highly artificial, i.e. either constructed or with a man-made substrate; industrial; maintained solely by frequent tilling; or pioneer and ruderal communities arising from recent abandonment of previously tilled or constructed habitats (path = *Yes*)? All other habitats follow path = *No*. Note that habitats which originated through extractive industries (quarries, mines, peat diggings etc) but which have been colonised by natural or semi-natural plant and/or animal communities (other than pioneer or ruderal communities) follow path = *No*.
2. The criterion separates subterranean non-marine caves and passages and underground waters (path = *Yes*).
3. Marine habitats including marine littoral habitats (path = *Yes*) are distinguished. Note that marine habitats are directly connected to the oceans, i.e. part of the continuous body of water which covers the greater part of the earth's surface and which surround its land masses. Marine waters may be fully saline, brackish or almost fresh. Marine habitats include those below spring high tide limit (or below mean water level in non-tidal waters), coastal saltmarshes, and also enclosed coastal saline or brackish waters, without a permanent surface connection to the sea but either with intermittent surface or sub-surface connections (as in lagoons). Waterlogged littoral zones of the sea above the spring high tide limit in tidal waters are included with marine habitats (path = *Yes*). Rockpools in the supralittoral zone are considered as enclaves of the marine zone and follow the marine path. Waterlogged saltmarsh habitats and saline or brackish pools above the mean water level of non-tidal marine waters (parts of the geolittoral) are included with marine habitats and follow path = *Yes*; non-saline habitats above the mean water level in non-tidal waters follow path = *No*. Free-draining supralittoral habitats adjacent to marine habitats normally only affected by spray or splash and old strandlines characterised by terrestrial invertebrates follow path = *No*.
4. Habitats occupying coastal features and characterised by their proximity to the sea (salt spray, wave or ice erosion), including beaches, cliffs, coastal dunes and wooded coastal dunes and dune-slack pools, are separated (path = *Yes*) from other habitats (path = *No*). Note that habitats occupying coastal features but not characterised by salt spray, wave or ice erosion follow path = *No*. Note also that habitats which are characterised primarily by temperature (such as garrigues and phrygas) rather than by their proximity to the sea also follow path = *No*.
5. Habitats with open water (e.g. rivers, streams, lakes and pools) and the littoral zones of the waterbodies (path = *Yes*) are separated from other terrestrial habitats including those with the water table permanently at or near the surface, but normally without free-standing water. Note that waterlogged habitats with integral pools of open water are considered as complexes. Enclosed coastal saline or brackish waters, without a permanent surface connection to the sea but either with intermittent surface or sub-surface connections (as in lagoons) are categorised under A Marine habitats; dune-slack pools characterised by their proximity to the sea are categorised under B Coastal habitats
6. Habitats where the dominant vegetation is, or was until very recently, trees, with a canopy cover of at least 10% are distinguished (path = *Yes*) from habitats dominated by other types of vegetation or without vegetation or dominated by animal communities. Trees are typically single-stemmed and are normally able to reach a height of 5m at maturity but this height may be lower at high latitudes or altitudes. Note that lines of trees, coppices, and very recently clear-felled areas with pre-existing ground cover, not yet re-stocked and with no succession to weedy

vegetation follow path = *Yes*. Occasionally tall shrubs such as hazel (*Corylus*) and some willows (*Salix*) may have a woodland-type structure and follow path = *Yes*. Tree heaths, for example tree-like formations of *Erica arborea*, also follow path = *Yes*. Sparsely wooded areas of grassland with canopy cover of 5 - 10%, including parkland, and clear-felled areas with successional weedy communities follow path = *No* and are categorised under E, Grassland and tall forb habitats. Hedges which may have occasional tall trees follow path = *No*, and are categorised under F, Heathland, scrub and tundra. Dwarf trees and scrub (under 50cm such as occur in extreme alpine conditions) follow path = *No* and are categorised under F, Heathland, scrub and tundra. Canopy cover 10% and height 5m are taken from the FAO TBFRA 2000 definitions (Temperate and Boreal Forest Resource Assessment 2000). It should be noted that in some areas e.g. the Boreal zone, the normal dividing point is 30%. Statistics produced at a regional scale might reflect this divergence.

7. The criterion separates habitats which are *waterlogged*; those which are characterised by the presence of *permafrost*; and *other*. *Waterlogged* refers to habitats which are saturated, with the water table at or above ground level for at least half of the year, e.g. bogs, marshes, carr vegetation. *Permafrost* relates to habitats where the soil is at a temperature of less than 0°C throughout the year (see glossary). The *other* path should be followed in the case of: habitats which are: always dry; mesic, moist or humid; only seasonally wet; regularly but infrequently flooded or occasionally flooded by extreme weather conditions but which are free-draining; wet but not waterlogged; permanent snow and ice.
8. Waterlogged terrestrial habitats are divided according to the type of dominant vegetation: *shrubs*; or *other*. Note that shrubs refers to larger species such as some willows (*Salix* spp.) but dwarf shrub species (for example ericoid species) follow path = *other*. Note also that habitats dominated by trees (G) are separated earlier (note 6).
9. Habitats with *less than 30%* vegetation cover are separated from those with *greater than 30%* vegetation cover. Note that chasmophytic, scree and cliff vegetation follow path = *<30%*.
10. Habitats with greater than 30% vegetation cover are divided according to the type of dominant vegetation: *shrubs or dwarf shrubs*; or *other* grasses and non-woody vegetation (including bryophytes and lichens where cover is greater than 30%). Note that habitats dominated by trees (G) are separated earlier (note 6).
11. Habitats maintained solely by frequent tilling or arising from recent abandonment of previously tilled ground such as arable land and gardens (path = *Yes*) are distinguished from completely artificial habitats (path = *No*), which are primarily human settlements, industrial developments, transport or waste dump sites or highly artificial waters with wholly constructed beds or heavily contaminated water.
12. Regularly tilled habitats are separated according to dominant vegetation type: *shrub* orchards; *tree* nurseries and tree-crop plantations; and habitats dominated by cultivated herbaceous vegetation (path = *herbs*).
13. Constructed aquatic freshwater, brackish or saline habitats such as marinas, harbours, industrial lagoons, saltworks, canals, ponds and highly artificial waters follow path = *Yes*. Constructed terrestrial habitats including buildings and the transport network follow path = *No*.
14. Constructed aquatic habitats (such as marinas, harbours, canals and ponds etc) which support a semi-natural aquatic fauna and flora follow path = *Yes*. Constructed aquatic habitats which are virtually devoid of plant and animal life or which have an un-naturally restricted species list or which are dominated by exotic species follow path = *No*. Highly artificial saline habitats such as industrial lagoons and saltworks or habitats with heavily contaminated water follow path = *No*.
15. Constructed marine habitats with semi-natural fauna or flora (path = *Yes*), are separated from inland constructed non-marine surface water habitats with semi-natural fauna or flora (path = *No*). (See note 3 for definition of marine).

A: EUNIS Habitat Classification: criteria for marine habitats to Level 2

Note that the key to Level 1 shows two pathways to reach habitat type A: these are recombined here. (number) refers to explanatory notes to the key.

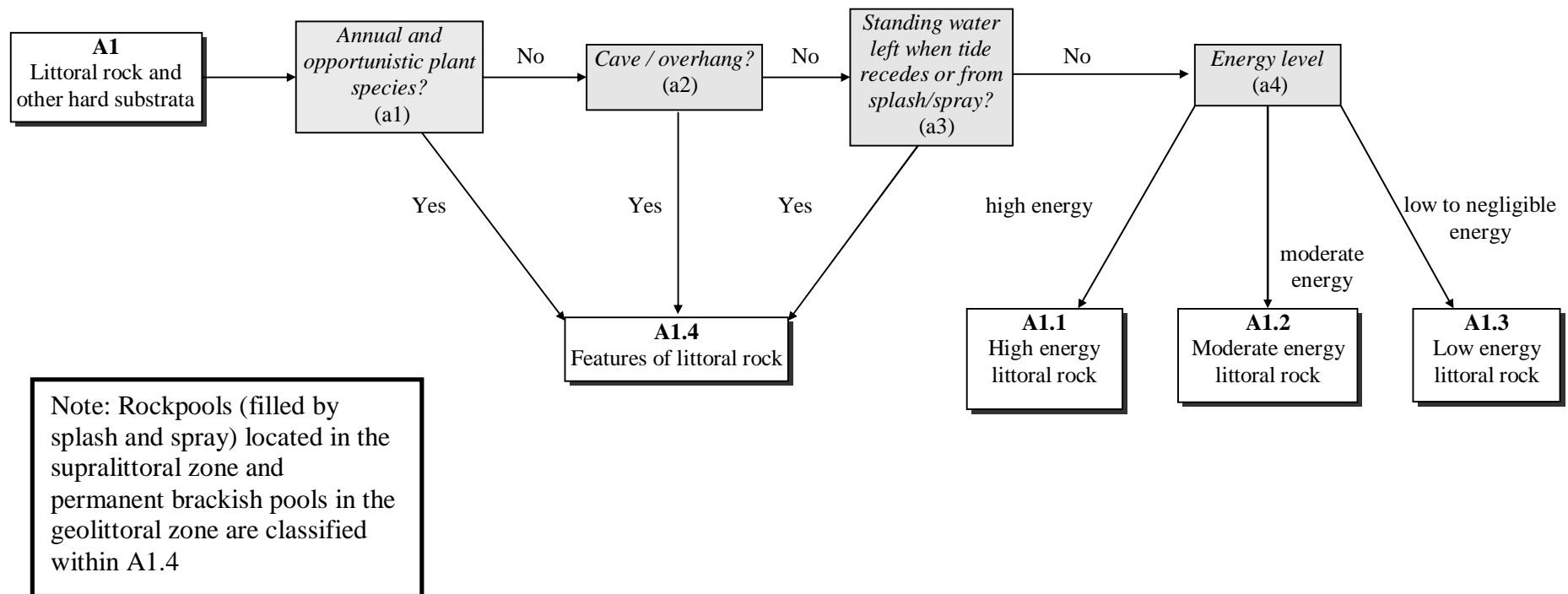


Explanatory notes to the key: Level 2, marine habitats

- Ai. The criterion distinguishes between strata: the *bed* of non-tidal, inter-tidal and sub-tidal waters; the *water column* of shallow or deep sea, or enclosed coastal waters; and ice or *ice-associated* marine habitats.
- Aii. Is the bed permanently covered by water (path = *Yes*), or either regularly exposed at some stage in the tidal cycle (littoral / inter-tidal), subjected to frequent non-tidal change in water level, or above the high water mark but with a high water table (path = *No*)? Note that under extreme conditions the uppermost fringe of the ‘permanently water-covered’ zone may be exposed. Note that saltmarsh pools, rockpools (filled by splash and spray) located in the supralittoral and permanent brackish pools affected by spray in the waterlogged Baltic geolittoral zone follow path = *No*.
- Aiii. *Non-mobile* substrates include continuous hard and soft bedrock and also non-mobile boulders, rocks and consolidated cobbles, non-mobile artificial substrates and compacted soft substrates such as clay and peat; *mobile* substrates include substrates such as mobile cobbles, pebbles, sand and mud. Non-mobile rock which is overlain by some deposited sediments follows path = *non-mobile*. Biogenic reefs on sediment follow path = *mobile*. Mosaics of mobile and non-mobile substrates should be considered as complex X31 comprising units from A2 and A1.
- Aiv. This criterion separates sublittoral zones of the shelf (including infralittoral and circalittoral zones) (path = *Yes*), from the deep seabed, beyond the shelf break (path = *No*). The shelf break occurs at variable depth, but is generally over 200 metres. The upper limit of the deep-sea zone is marked by the edge of the shelf. The Baltic Sea is a shelf sea and follows path = *Yes*. Areas of the Mediterranean Sea which are deeper than 200m follow path = *No*. Note that all sublittoral caves follow path = *Yes* irrespective of depth.
- Av. *Non-mobile* substrates include continuous hard and soft bedrock and also non-mobile boulders, rocks and consolidated cobbles, non-mobile artificial substrates and compacted soft substrates such as clay and peat; *mobile* substrates include substrates such as mobile cobbles, pebbles, sand and mud. Non-mobile rock which is overlain by some deposited sediments follows path = *non-mobile*. Biogenic reefs on sub-littoral sediment follow path = *mobile*. Sub-littoral mosaics of mobile and non-mobile substrates should be considered as complex X32 or X33 comprising units from A5 and A3 and/or A4.
- Avi. Infralittoral zones characterised by foliose or filamentous macro-algae, within the euphotic zone in relatively shallow sub-tidal or non-tidal water, are separated (path = *Yes*) from deeper animal-dominated circalittoral zones (path = *No*). Circalittoral zones are below deeper sub-tidal or non-tidal water with insufficient light penetration to allow algae to dominate; however encrusting algae and very sparse foliose or filamentous algae may be present in the upper circalittoral. Note that habitats in the euphotic zone, normally dominated by foliose or filamentous macro-algae but which as a result of storm damage or heavy grazing are characterised by encrusting algae, follow path = *Yes*. Note also that sublittoral caves or overhangs physically located within the infralittoral zone but where conditions are the same as at deeper levels of the seabed (i.e. total darkness, no hydrodynamic action and constant temperature) should follow path = *No*. Note: for mapping purposes it may be necessary to map combined A3/A4 where the presence of algae cannot be detected by the survey method.

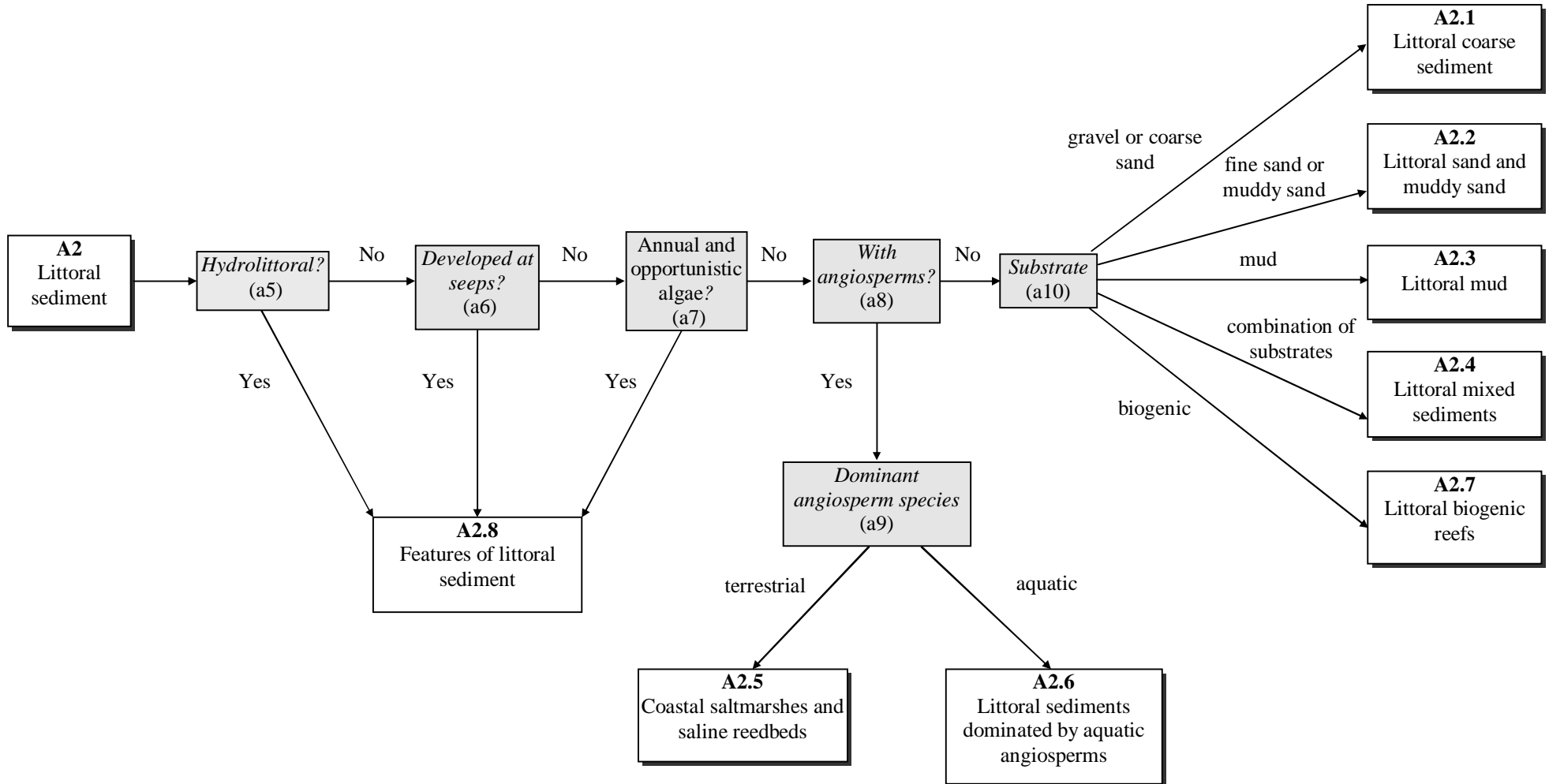
A1: EUNIS Habitat Classification: criteria for littoral rock and other hard substrata (A1) to Level 3

(number) refers to explanatory notes to the key



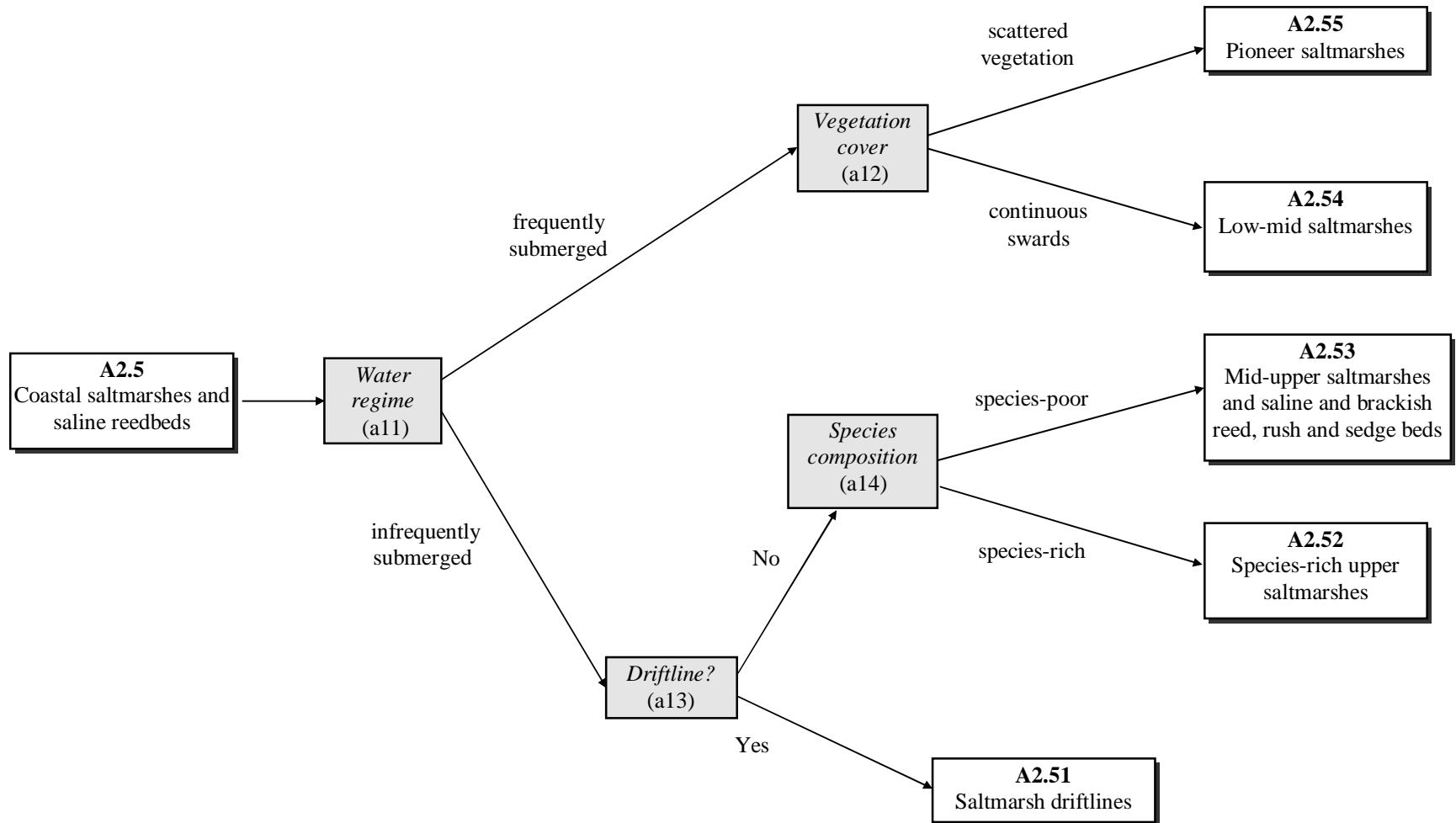
A2: EUNIS Habitat Classification: criteria for littoral sediment (A2) to Level 3

(number) refers to explanatory notes to the key



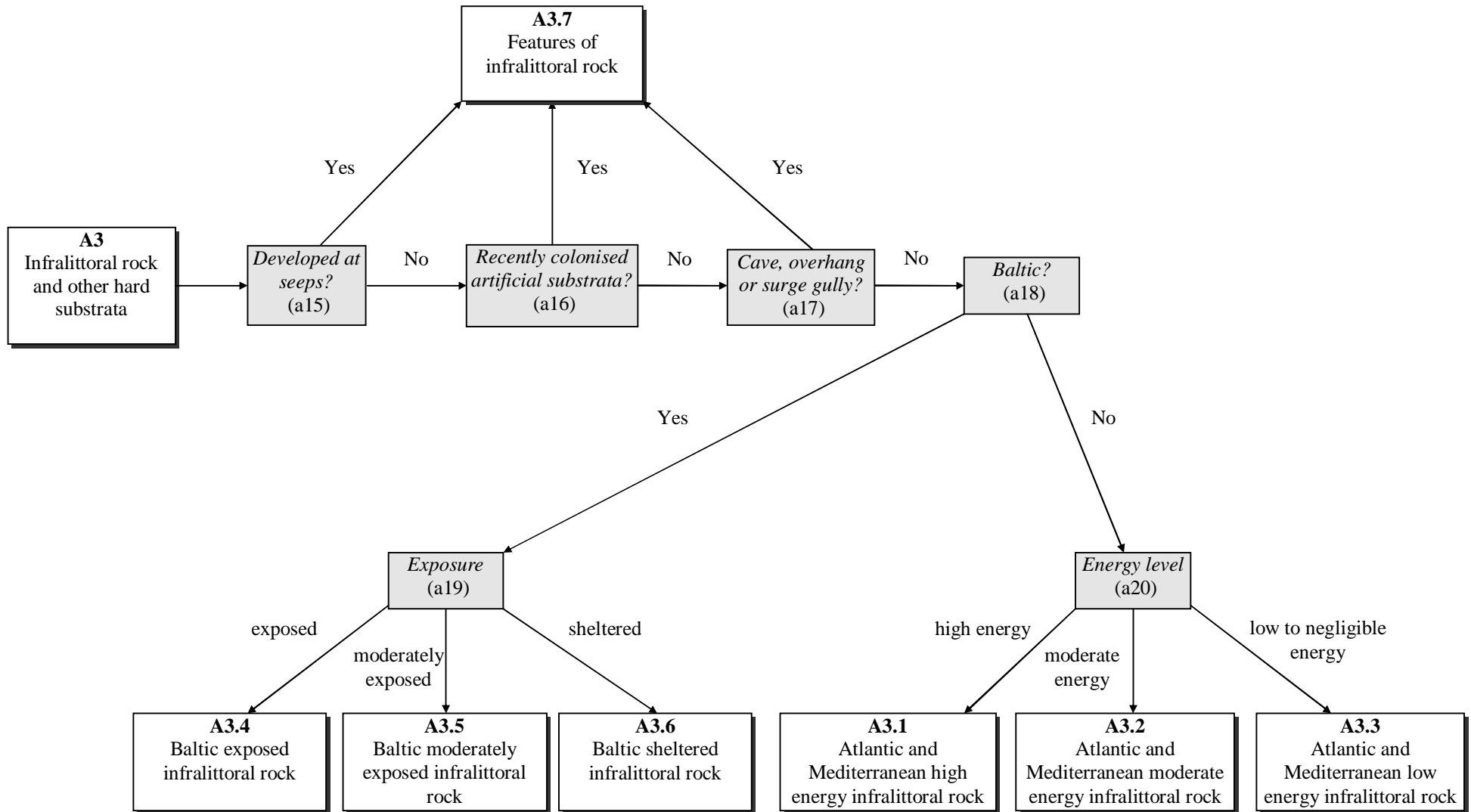
A2.5: EUNIS Habitat Classification: criteria for coastal saltmarshes and saline reedbeds (A2.5) to Level 4

(number) refers to explanatory notes to the key



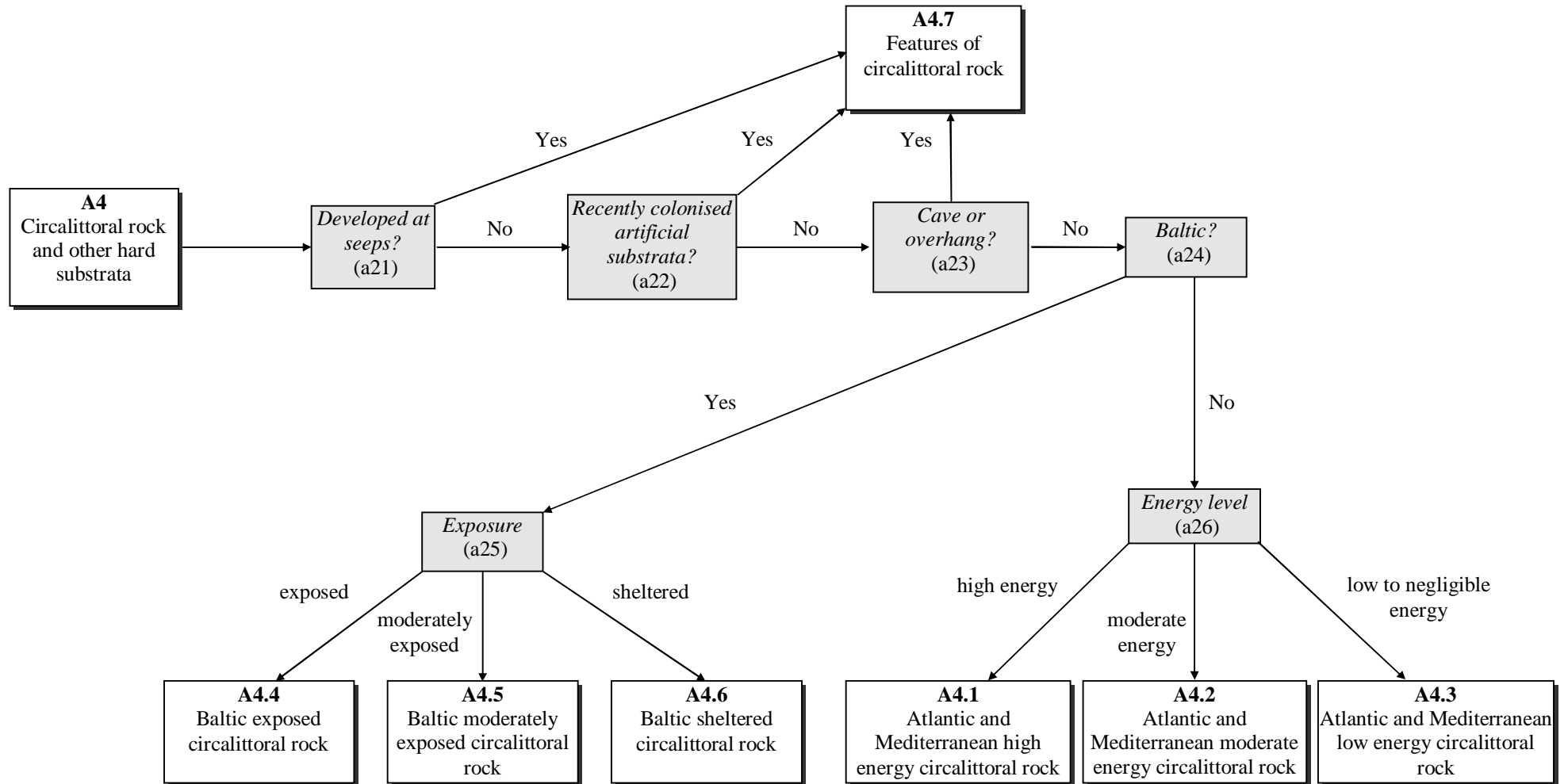
A3: EUNIS Habitat Classification: criteria for infralittoral rock and other hard substrata (A3) to Level 3

(number) refers to explanatory notes to the key



A4: EUNIS Habitat Classification: criteria for circalittoral rock and other hard substrata (A4) to Level 3

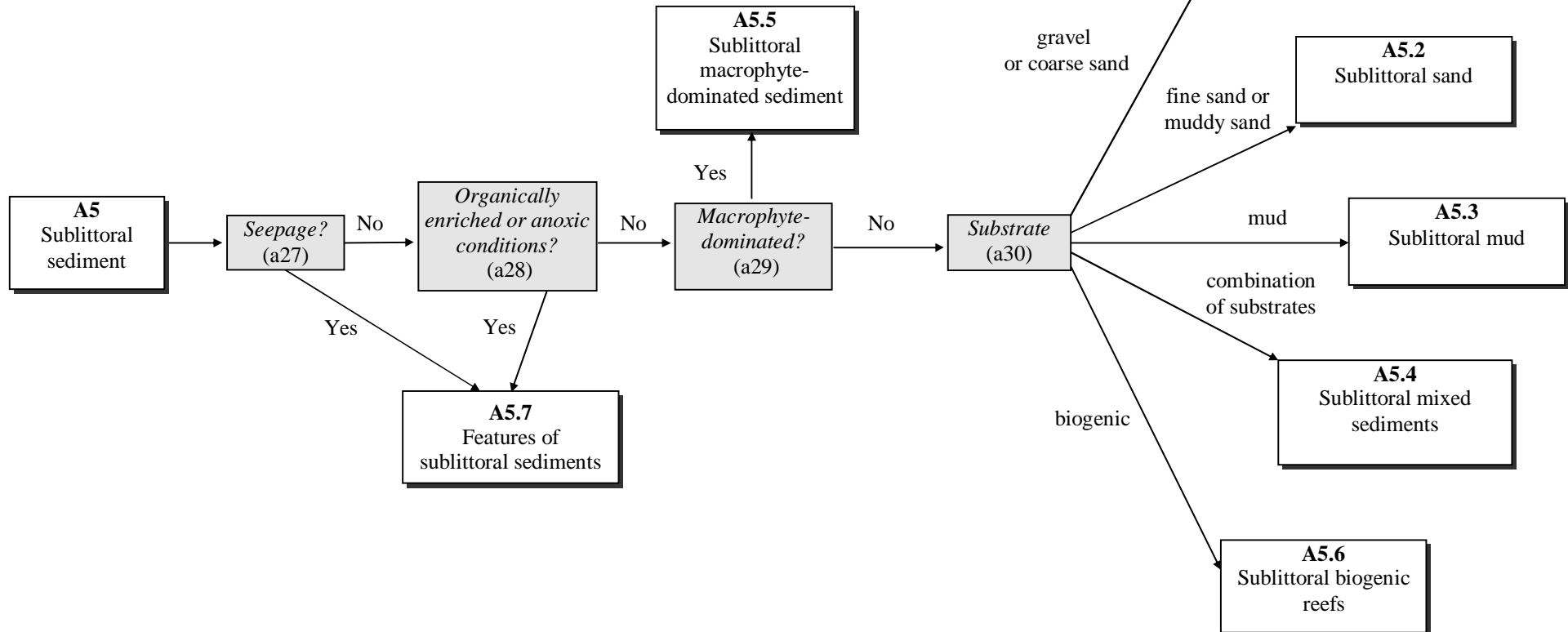
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A5: EUNIS Habitat Classification: criteria for sublittoral sediment (A5) to Level 3

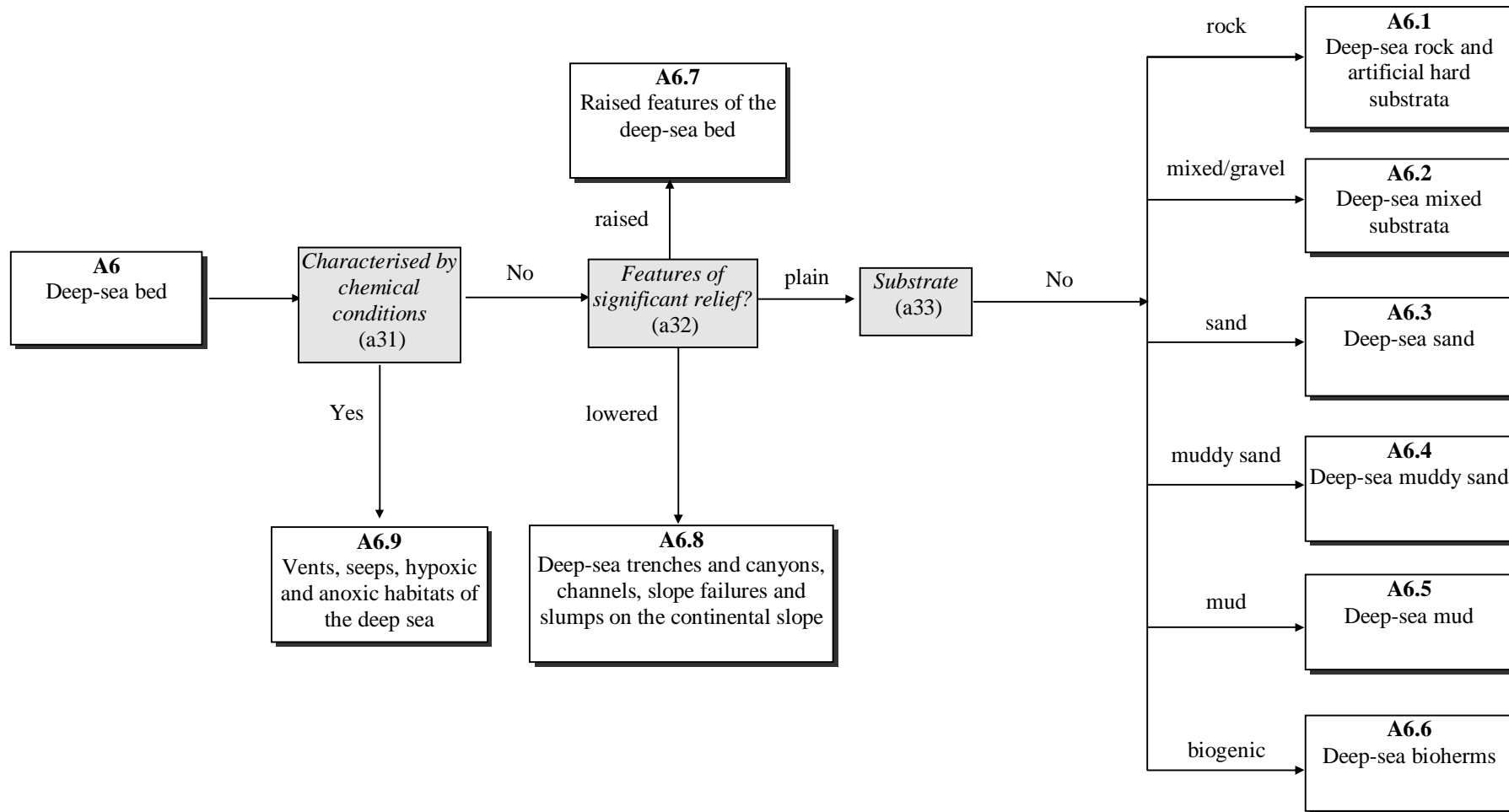
(number) refers to explanatory notes to the key

Note: In some marine areas a clear distinction can be made between infralittoral and circalittoral sediments, but this has proved difficult to formalise in this key as a consistent criterion applicable across the whole area covered by EUNIS. In A5.1 to A5.4, when it is possible to separate sediment habitats in shallower and deeper waters, this separation is at level 4.



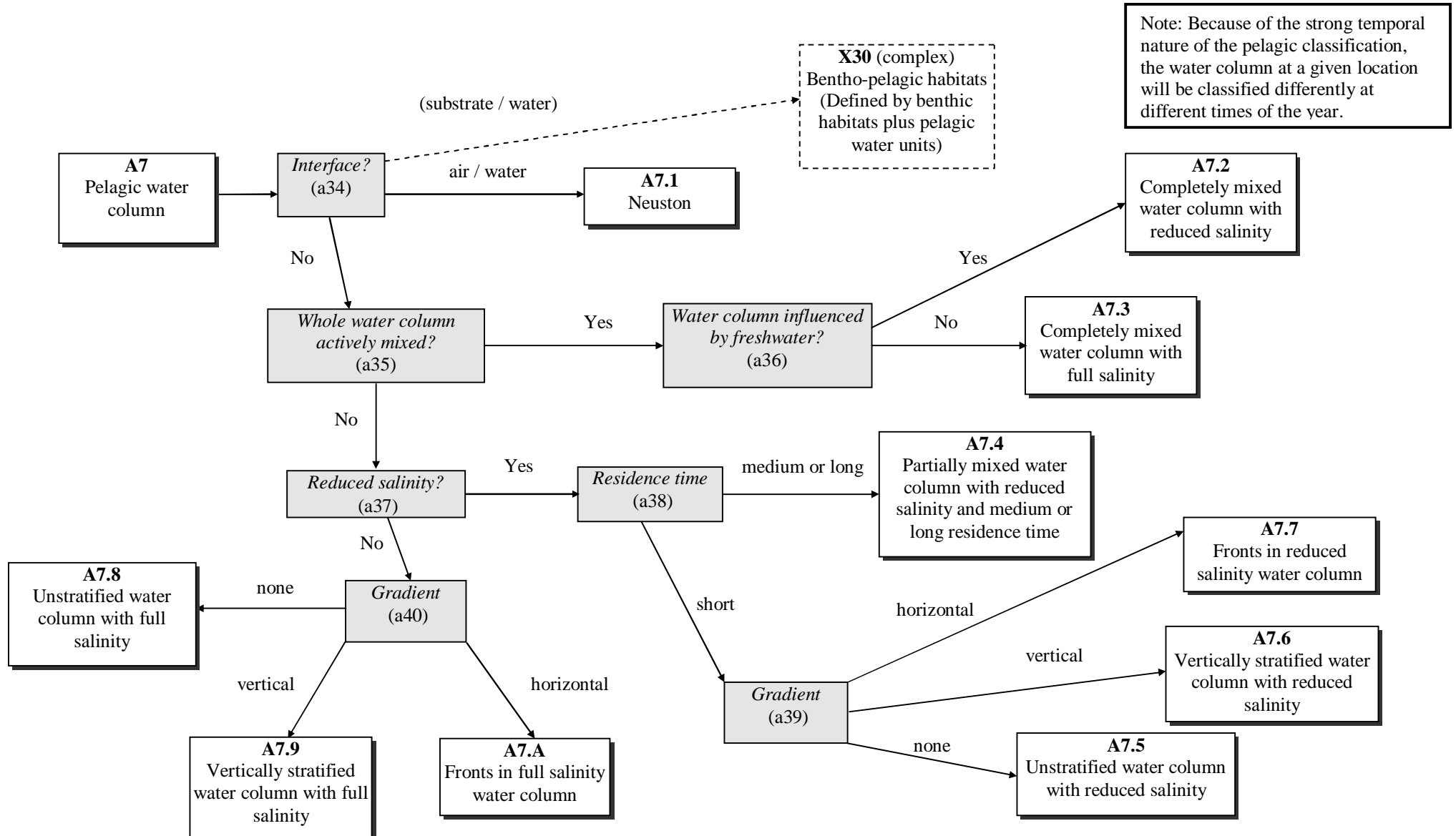
A6: EUNIS Habitat Classification: criteria for the deep-sea bed (A6) to Level 3

(number) refers to explanatory notes to the key



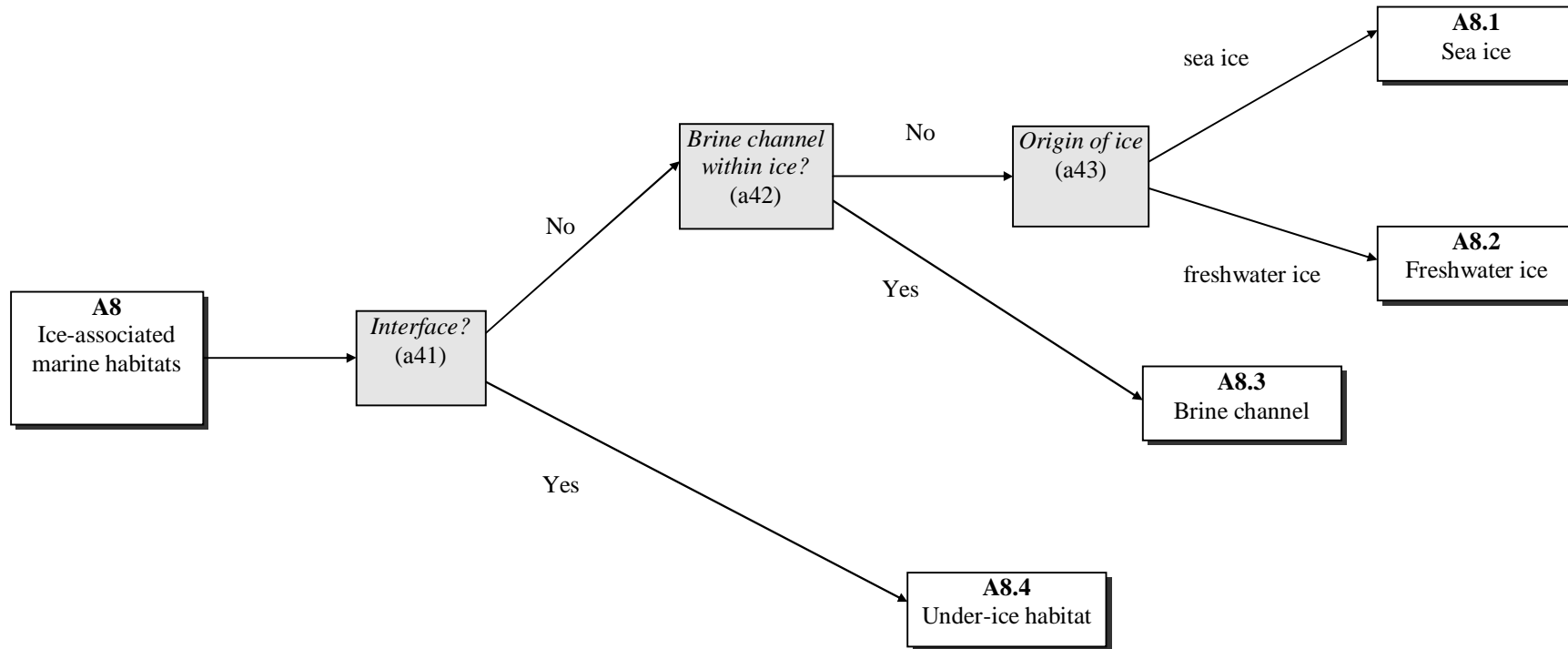
A7: EUNIS Habitat Classification: criteria for pelagic water column (A7) to Level 3

(number) refers to explanatory notes to the key



A8: EUNIS Habitat Classification: criteria for ice-associated marine habitats (A8) to Level 3

(number) refers to explanatory notes to the key



Explanatory notes to the key: Level 3 (Habitat type A)

- a1. Habitats subject to irregular disturbance and thus dominated by annual species (ephemeral or opportunistic algae such as *Enteromorpha* or annual vascular plants) are separated (path = *Yes*). ‘Irregular disturbance’ includes: irregularly fluctuating water levels in non-tidal water (e.g. Baltic hydrolittoral); considerable freshwater run-off; unstable rock; sand-scoured rock. Habitats with more perennial communities, for example where water levels fluctuate on a regular cycle (tidal littoral) follow path = *No*.
- a2. Habitats developed either in littoral rock caves or underneath overhangs are separated (path = *Yes*).
- a3. Rock pools (depressions filled by standing water left when tide recedes or by splash and spray, including those located in the supralittoral or geolittoral zone) (path = *Yes*) are distinguished from areas which are periodically submerged and drained.
- a4. The criterion separates out habitats which have *high energy* status caused by wave action, currents or tidal streams from those with *moderate energy* or *low to negligible energy*. The energy status is that impacting on the area concerned at the relevant scale. Thus there may be enclaves of different energy status caused by localised variation in relief (e.g. steeper rock in more moderately exposed or even sheltered areas). Note that ‘*high energy*’ includes wave exposure classes extremely exposed, very exposed or exposed OR tidal streams/currents classes very strong or strong; ‘*moderate energy*’ includes wave exposure class moderately exposed OR tidal streams/currents class moderately strong; and ‘*low to negligible energy*’ includes wave exposure classes sheltered, very sheltered, extremely sheltered or ultra sheltered OR tidal streams/currents classes weak or very weak or without any tidal stream or current. (See glossary.)
- a5. Sedimentary shores of non-tidal, reduced salinity waters which are below the mean water level and normally water-covered, but which are regularly or occasionally exposed by the action of wind (hydrolittoral zone in the Baltic) are separated (path = *Yes*) from littoral habitats below the high water mark in tidal water (path = *No*).
- a6. Littoral habitats characterised by the presence of gases or liquids bubbling or seeping through sediments are distinguished (path = *Yes*).
- a7. Areas which are characterised by pioneer or ephemeral red and green algae because of variations in salinity and/or siltation (path = *Yes*) are separated.
- a8. Habitats dominated by aquatic (e.g. *Zostera* spp.) or terrestrial (e.g. *Salicornia* spp.) angiosperms, (path = *Yes*) are distinguished from those dominated by algae or animal communities.
- a9. Angiosperm-dominated habitats are differentiated between those whose dominant species are entirely *aquatic* but which can tolerate occasional emersion (e.g. *Zostera* spp., *Ruppia* spp., *Posidonia*), and those which are primarily *terrestrial* but can tolerate varying amounts of immersion (e.g. *Salicornia* spp., *Spartina* spp.).
- a10. Habitats are divided on the basis of the dominating particle size of the substrate. *Gravel or coarse sand* > 1 mm grain size (including shingle and mobile cobbles); *fine sand or muddy sand* ≤ 1mm with ≤30% silt (less than 0.063 mm grain size); *mud* >30% less than 0.063mm grain size; *combination of substrates* – veneers or intimate mixtures of mobile substrates with different particle size; or *biogenic* structures on sediment (e.g. *Sabellaria* reefs and mussel beds). Note that mosaics of mobile and non-mobile substrates are considered as complex X31 comprising units from A2 and A1.
- a11. Saltmarsh habitats are separated according to the water regime (determined by the position on the shore), between those *frequently submerged*, with soil moisture and salinity relatively constant, and *infrequently submerged*, with soil moisture and salinity variable.

- a12. Habitats with pioneer vegetation dominated by annual or perennial species with <30% vegetation cover (path = *scattered vegetation*) are separated from those with more-or-less *continuous swards*.
- a13. Driftline vegetation of saltmarshes (the highest zone, characterised by annual nitrophiles) is separated (path = *Yes*).
- a14. *Species-poor* saltmarshes and reedbeds (pure stands or those dominated by a few species) are distinguished from those which are *species-rich*, with a wide range of communities, and a rich flora, not dominated by any one species.
- a15. Habitats in hard substrata in the infralittoral zone characterised by the presence of seeping or bubbling gases, oils or water are distinguished (path = *Yes*).
- a16. Recently colonised artificial hard substrata in the infralittoral zone are distinguished (path = *Yes*).
- a17. Habitats developed in rock caves, underneath wave or tide-disturbed overhangs in the infralittoral zone or in wave-scoured surge gullies are separated (path = *Yes*).
- a18. Infralittoral habitats in the Baltic Sea (as defined by the Helsinki Convention, from and including the Kattegat eastward to the Bothnian Bay, Gulf of Finland and Gulf of Riga) are separated (path = *Yes*) from other geographical sea areas. The Baltic Sea is effectively a vast estuary with sills, characterised by a stable reduced salinity gradient, lack of tides and reduced fetch energy.
- a19. The criterion separates out habitats in the Baltic infralittoral zone which are *exposed* to wave action, currents or ice scouring from those only *moderately exposed* or *sheltered*. The exposure status is that impacting on the area concerned at the relevant scale. Thus there may be enclaves of different exposure status caused by localised variation in relief (e.g. steeper rock in more moderately exposed or even sheltered areas). Note that '*exposed*' has an effective fetch of greater than 25km; '*moderately exposed*' has an effective fetch of 5 – 25km; and '*sheltered*' has an effective fetch less than 5km.
- a20. The criterion separates out habitats in the infralittoral which have *high energy* status caused by wave action, currents or tidal streams from those with *moderate energy* or *low to negligible energy*. The energy status is that impacting on the area concerned at the relevant scale. Thus there may be enclaves of different energy status caused by localised variation in relief (e.g. steeper rock in more moderately exposed or even sheltered areas). Note that '*high energy*' includes wave exposure classes extremely exposed, very exposed or exposed OR tidal streams/currents classes very strong or strong; '*moderate energy*' includes wave exposure class moderately exposed OR tidal streams/currents class moderately strong; and '*low to negligible energy*' includes wave exposure classes sheltered, very sheltered, extremely sheltered or ultra sheltered OR tidal streams/currents classes weak or very weak or without any tidal stream or current. (See glossary.)
- a21. Habitats in hard substrata in the circalittoral zone characterised by the presence of seeping or bubbling gases, oils or water are distinguished (path = *Yes*).
- a22. Recently colonised artificial hard substrata in the circalittoral zone are distinguished (path = *Yes*).
- a23. Habitats developed in rock caves or underneath overhangs in the circalittoral zone are separated (path = *Yes*).
- a24. Circalittoral habitats in the Baltic Sea (as defined by the Helsinki Convention, from and including the Kattegat eastward to the Bothnian Bay, Gulf of Finland and Gulf of Riga) are separated (path = *Yes*) from other geographical sea areas. The Baltic Sea is effectively a vast estuary with sills, characterised by a stable reduced salinity gradient, lack of tides and reduced fetch energy.
- a25. The criterion separates out habitats in the Baltic circalittoral zone which are *exposed* to wave action or currents from those only *moderately exposed* or *sheltered*. The exposure status is that impacting on the area concerned at the relevant scale. Thus there may be enclaves of different

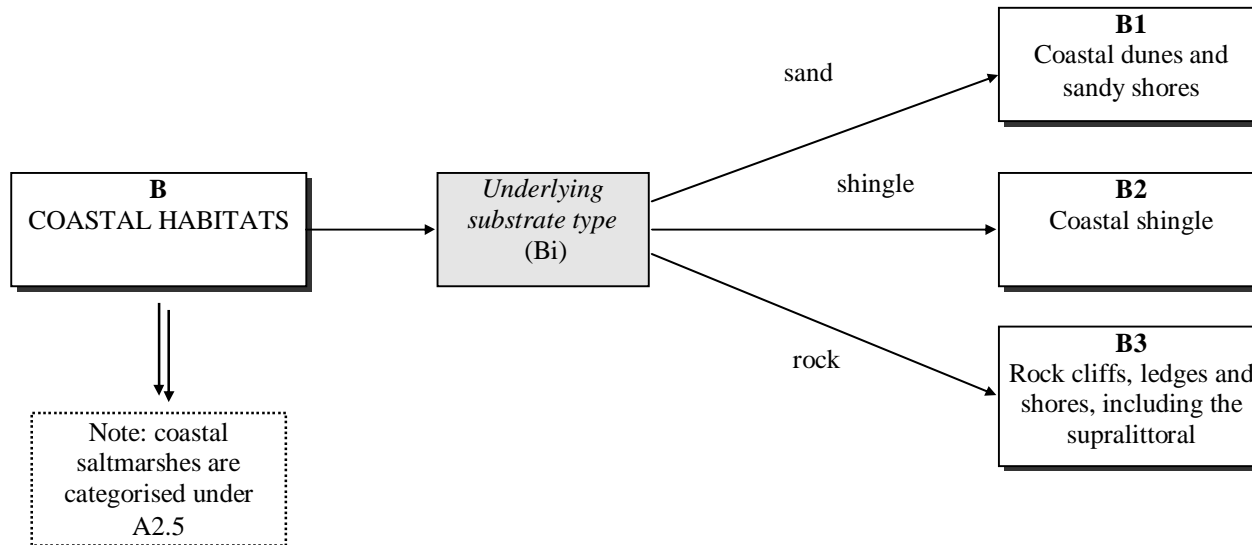
exposure status caused by localised variation in relief (e.g. steeper rock in more moderately exposed or even sheltered areas). Note that ‘exposed’ has an effective fetch of greater than 25km; ‘moderately exposed’ has an effective fetch of 5 – 25km; and ‘sheltered’ has an effective fetch less than 5km.

- a26. The criterion separates out habitats in the circalittoral which have *high energy* status caused by wave action, currents or tidal streams from those with *moderate energy* or *low to negligible energy*. The energy status is that impacting on the area concerned at the relevant scale. Thus there may be enclaves of different energy status caused by localised variation in relief (e.g. steeper rock in more moderately exposed or even sheltered areas). Note that ‘*high energy*’ includes wave exposure classes extremely exposed, very exposed or exposed OR tidal streams/currents classes very strong or strong; ‘*moderate energy*’ includes wave exposure class moderately exposed OR tidal streams/currents class moderately strong; and ‘*low to negligible energy*’ includes wave exposure classes sheltered, very sheltered, extremely sheltered or ultra sheltered OR tidal streams/currents classes weak or very weak or without any tidal stream or current. (See glossary.)
- a27. Sublittoral habitats characterised by the presence of gases or liquids bubbling or seeping through sediments are distinguished (path = *Yes*).
- a28. Sublittoral sediments which are organically-enriched or permanently or periodically anoxic are separated (path = *Yes*).
- a29. Habitats dominated by aquatic angiosperm or algal macrophytes (path = *Yes*) are distinguished from those dominated by animal communities, with or without algae.
- a30. Habitats are divided on the basis of the dominating particle size of the substrate. *Gravel or coarse sand* > 1mm grain size (including shingle and mobile cobbles); *fine sand or muddy sand* ≤ 1mm with ≤30% silt (less than 0.063 mm grain size); *mud* >30% less than 0.063mm grain size; *combination of substrates* - veneers or intimate mixtures of mobile substrates with different particle size; or *biogenic* structures on sediment. Note that sublittoral mosaics of mobile and non-mobile substrates are considered as complex X32 or X33 comprising units from A5 and A3 and/or A4.
- a31. Deep-sea habitats characterised by chemical conditions are separated (path = *Yes*): these include the presence of seeping or bubbling gases or liquids, hypoxic and/or anoxic conditions in the water column above and interface habitats on the deep-sea bed where reducing conditions exist, not generally associated with drastically elevated temperatures, including the carcasses of large cetaceans.
- a32. Habitats on the deep-sea bed are separated according to their relief: regions with significant elevation (>200m) in relation to their surroundings (path = *raised*); those significantly below the deep-sea bed (such as deep ocean trenches, often greater than 6000m depth with an active margin reduction zone) and downslope or along-slope channels on the deep-sea bed (path = *lowered*); and the deep-sea bed plain (path = *plain*).
- a33. Deep-sea benthic habitats are separated into those with substrates predominantly *rock* (or artificial hard substrates); of mixed particle size or predominantly gravel (*mixed/gravel*); *sand*; *muddy sand*; *mud*; or *biogenic* (e.g. coral reefs and sponge beds).
- a34. Is the habitat developed at the interface between *air / water*; or in the main water column (path = *No*)? Note that where the habitat is developed at the interface between the substrate and water it is best described as complex X30 - a combination of units from A1 to A6 with units from A7.
- a35. Is the water column completely and actively mixed, usually due to its relatively shallow nature, (Path = *Yes*), or is it unmixed or only partially mixed because the depth of the water body is greater than the depth of mixing (Path = *No*)?
- a36. Is the water column influenced by freshwater i.e. is the salinity reduced relative to the adjacent fully marine seawater (Path = *Yes*)? These units are usually found in relatively shallow, coastal situations, and are the result of river inflow or ice melt. Note that some discretion should be used in the interpretation of “adjacent”, for example in the Baltic Sea, “adjacent” fully marine seawater is reached only in the Kattegat.

- a37. Water columns which are not fully mixed and which have reduced salinity relative to the adjacent fully marine seawater are separated (Path = *Yes*). These units are usually found in deeper coastal water situations and are the result of river inflow or ice melt. Note that some discretion should be used in the interpretation of “adjacent”, for example in the Baltic Sea, “adjacent” fully marine seawater is reached only in the Kattegat.
- a38. Partially mixed reduced salinity waters with a *short* residence time are separated from those with *medium or long* residence times. Short residence time is defined as changing diurnally, medium residence time is greater than daily and up to about 14 days (based on the time required for the phytoplankton population to double) and long residence time lasting longer than 14 days.
- a39. Reduced salinity habitats with short residence time are distinguished by the type and degree of gradient: those with pronounced *vertical* stratification (e.g. caused by seasonal temperature changes, river discharge influence or ice-melt); *horizontal* gradients giving rise to fronts; and those with very weak gradients or *none*. Note that units with vertical stratification are separated at level 4 by the cause and degree of persistence of the gradient – e.g. seasonal temperature gradients or persistent salinity gradients etc. Units with horizontal stratification are separated at level 4 by the degree of persistence of the stratification.
- a40. Full salinity habitats characterised by the degree and direction of gradient are distinguished: those with pronounced *vertical* stratification (e.g. caused by atmospheric temperature); *horizontal* gradients giving rise to fronts; and those with very weak gradients or *none*. Note that units with horizontal stratification are separated at level 4 by the degree of persistence of the stratification – ephemeral such as eddies, gyres and upwellings; seasonal upwellings; or persistent water mass interfaces.
- a41. Is the habitat developed at the interface between the lower surface of the ice and the water column below (path = *Yes*), or is it on the upper surface of or within the ice itself (path = *No*)?
- a42. Is the habitat developed within the ice matrix in a three-dimensional network of tubes and channels containing brine solution, characterised by low light intensity, low temperature and high salinity (path = *Yes*)?
- a43. Is the ice of freshwater origin, originating from a glacier (path = *freshwater ice*), or is it frozen seawater (path = *sea ice*)?

B: EUNIS Habitat Classification: criteria for coastal habitats to Level 2

(number) refers to explanatory notes to the key

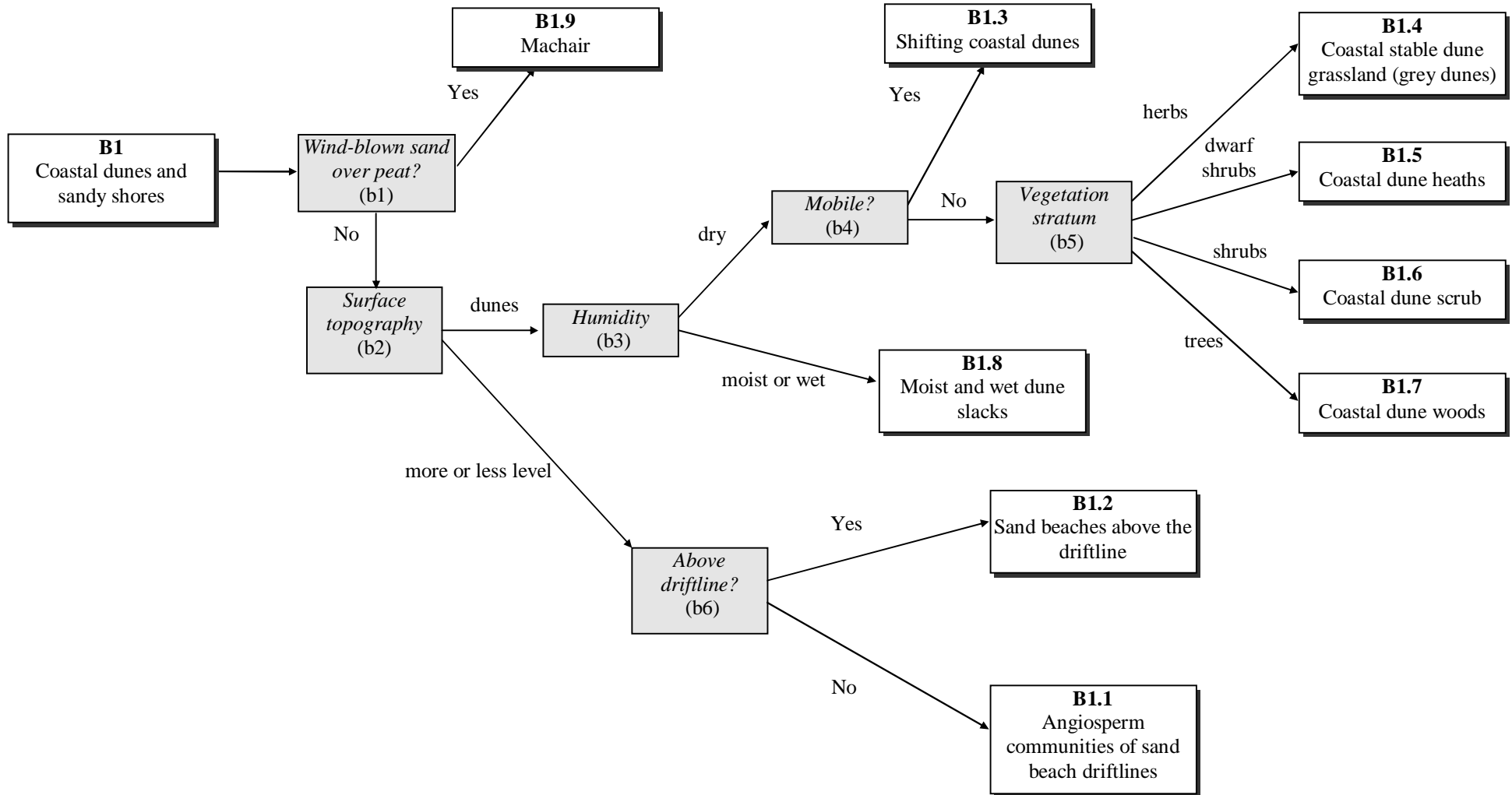


Explanatory notes to the key: Level 2, coastal habitats

- Bi. Coastal habitats are divided on the basis of underlying substrate (which may be overlain with superficial deposits): *sand* substrates form coastal dune and sand habitats; *shingle* substrates form mobile or stable shingle beaches and banks; *rock* substrates (which include non-mobile boulders) comprise sea and coastal lagoon cliffs and rocky sea shores including the supra-littoral spray zone. Note that dune-slack pools follow path = *sand*.

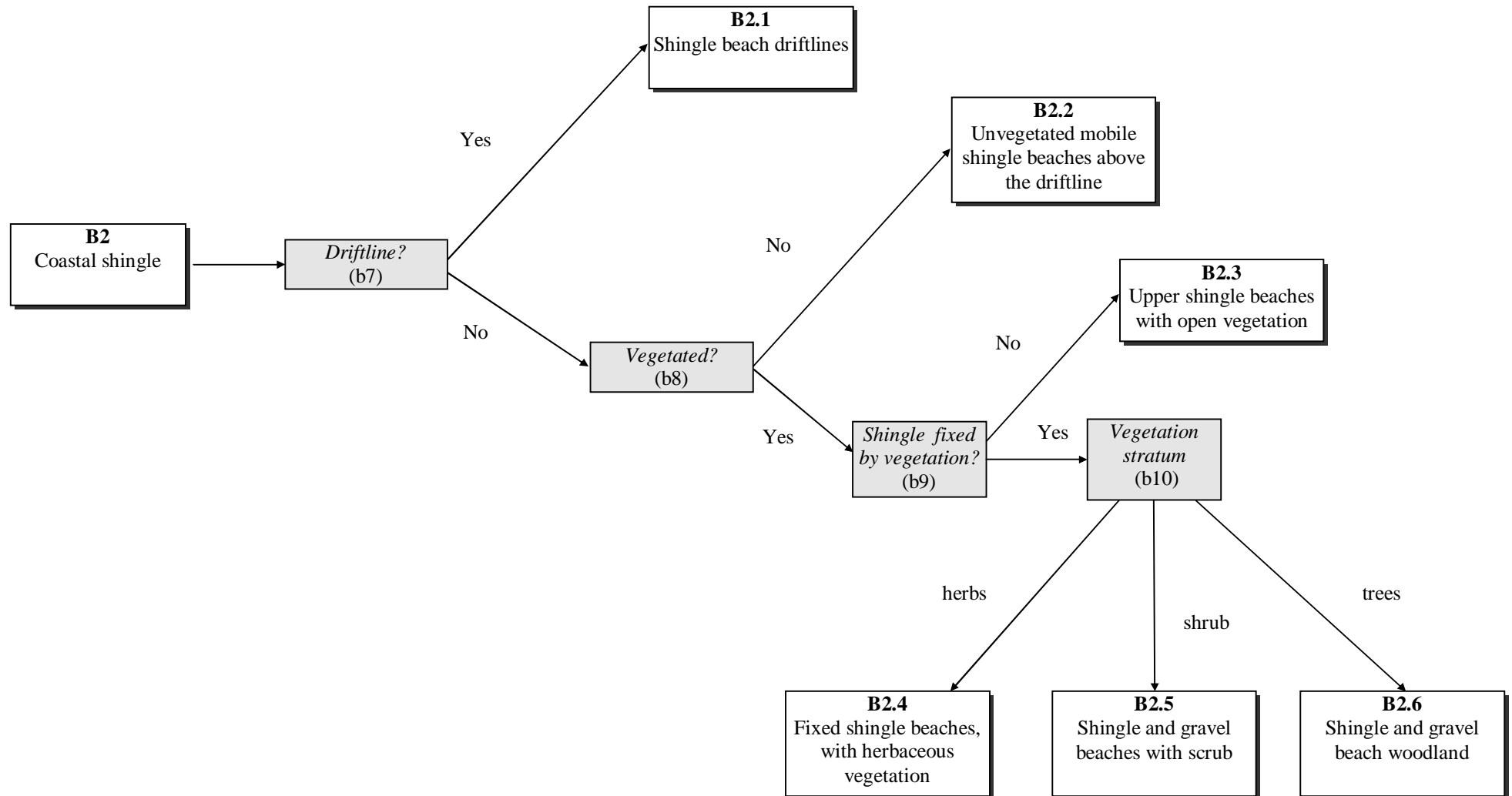
B1: EUNIS Habitat Classification: criteria for coastal dunes and sandy shores (B1) to Level 3

(number) refers to explanatory notes to the key



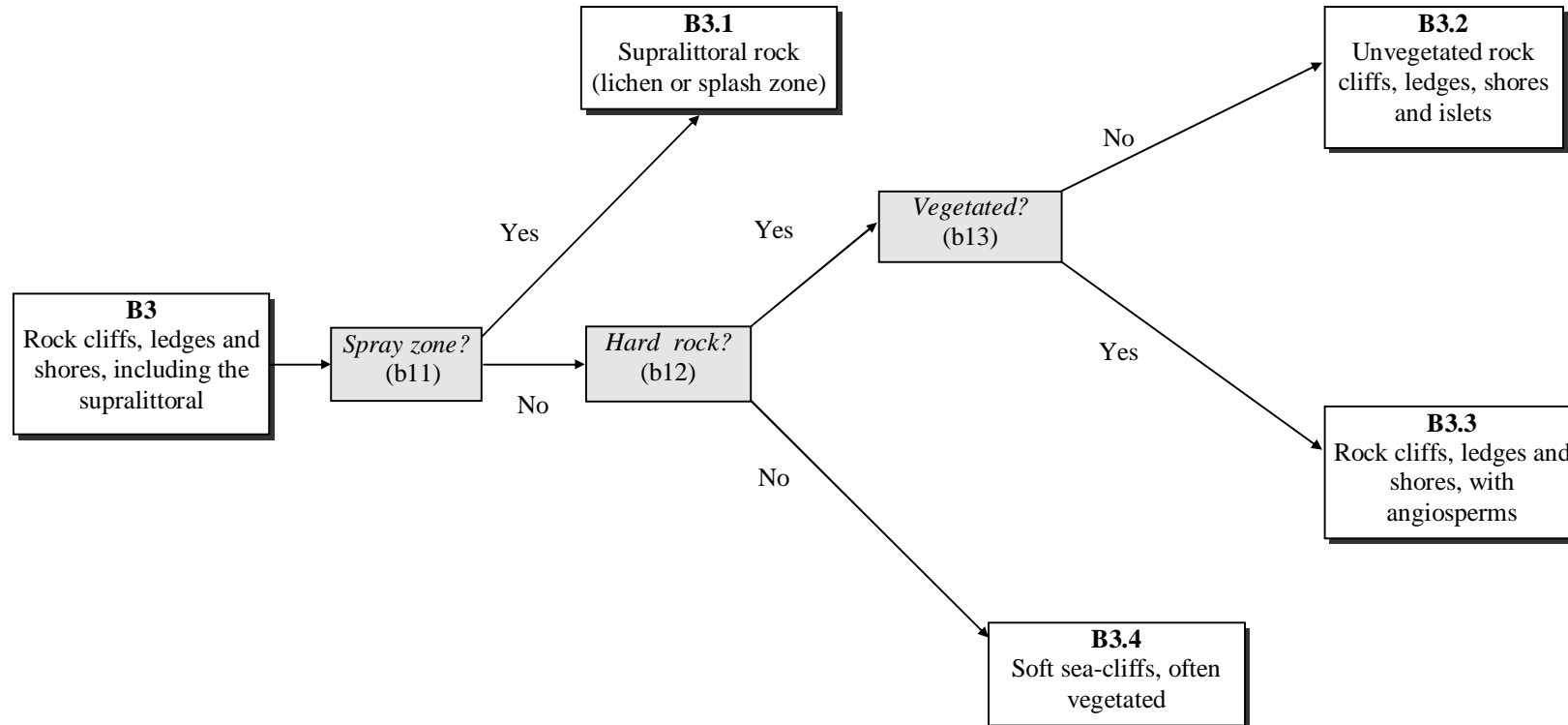
B2: EUNIS Habitat Classification: criteria for coastal shingle (B2) to Level 3

(number) refers to explanatory notes to the key



B3: EUNIS Habitat Classification: criteria for rock cliffs, ledges and shores, including the supralittoral (B3) to Level 3

(number) refers to explanatory notes to the key



Explanatory notes to the key: Level 3 (Habitat type B)

- b1. Machair (characterised by wind-blown calcareous sand with a predominance of shell fragments usually over peat, a low proportion of sand-binding vegetation and a long history of agricultural use) (path = *Yes*), is distinguished from other coastal sand habitats. Note that a machair complex is defined comprising units from B1, C and I.
- b2. The topography of the surface distinguishes the abrupt mounds and hollows of sand *dunes* from *more or less level* sand beach habitats.
- b3. *Dry* sand dunes are distinguished from *moist or wet* dune slacks including dune-slack pools.
- b4. Unvegetated mobile sand dunes (path = *Yes*) are separated from dunes which have become stabilised by vegetation.
- b5. Predominant vegetation type is used to distinguish between: dune grassland (*herbs*); dune heath (predominantly ericaceous *dwarf shrubs*); dune scrub (*shrubs*); and dune woodland (*trees*).
- b6. Driftline habitats characterised by lines of wave-deposited organic material colonised by annual angiosperms are distinguished (path = *No*) from mobile sand beaches above the driftline. Note that freshly deposited driftlines characterised by marine invertebrates and without annual vegetation are included in A2.
- b7. Driftline habitats characterised by lines of wave-deposited organic material are distinguished (path = *Yes*) from mobile or stabilised shingle beaches above the driftline.
- b8. Unvegetated mobile shingle beaches (path = *No*) are separated from more stable vegetated coastal shingle habitats.
- b9. Fixed shingle habitats with vegetation of grasses or heaths (path = *Yes*) are distinguished from more open communities dominated by other herbaceous species on substrates which may be more mobile.
- b10. Predominant vegetation type is used to distinguish between: shingle and gravel beach grassland, (*herbs*); shingle and gravel beach scrub (*shrubs*); and shingle and gravel beach woodland (*trees*).
- b11. The lichen or spray zone above the high tide mark (or above the mean water level where non-tidal) (path = *Yes*) is distinguished from rock habitats not regularly affected by spray. Note that rock pools in the supralittoral are classified in A with littoral rock pools.
- b12. Hard rock cliffs and ledges (path = *Yes*) are distinguished from cliffs of relatively soft, unconsolidated material.
- b13. Unvegetated coastal hard rock cliffs and ledges (path = *No*) are separated from rocky habitats with angiosperm vegetation (path = *Yes*).

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ANNEX 1. LIST OF PARTICIPANTS

Baltic Marine Habitats Workshop

Finnish Environment Institute, Mechelininkatu 34a, Helsinki, Finland

July 8-9th 2004

Cynthia Davies	Centre for Ecology and Hydrology, Dorset Winfrith Technology Centre Dorchester Dorset DT2 8ZD UK Tel: +44 (0) 1305 213533 www.ceh.ac.uk	cd@ceh.ac.uk
Dorian Moss	Dorian Ecological Information Ltd. 21 Stapleford Road Whissendine Oakham Rutland LE15 7HF UK Tel. +44 (0)1664 474629 http://www.dorianmoss.com	dor@dorianmoss.com
Heye Rumohr	Leibniz-Institut für Meereswissenschaften IfM-GEOMAR Forschungsbereich Marine Ökologie, EÖ2 Düsternbrooker Weg 20 D-24105 Kiel GERMANY Tel: +49 431 600 4524	hrumohr@ifm-geomar.de
Johnny Reker	Sea and Habitats Division The Danish Forest and Nature Agency Haraldsgade 53 2100 Copenhagen Ø DENMARK Tel: +45 39472915	jyr@sns.dk
Jouni Leinikki	Alleco Oy Luhdantie 11, FI03220 FINLAND http://www.alleco.fi Tel: +358-(0)9-2234094	jouni.leinikki@alleco.fi
Panu Oulasvirta	Alleco Oy Luotsikatu 8, FI00160 Helsinki FINLAND http://www.alleco.fi Tel: +358-(0)9-666604	panu.oulasvirta@alleco.fi
Hermann Backer	Alleco Oy FINLAND http://www.alleco.fi	hermanni.Backer@iki.fi
Jan Ekeboom	Senior Planning Officer, Marine Biology Metsähallitus, Natural Heritage Services, Central Unit P.O.Box 94, FIN-01301 Vantaa, FINLAND Tel: +358-(0)20564 4457	jan.ekeboom@metsa.fi

Tytti Kontula	Finnish Environment Institute (SYKE) Mechelininkatu 34a P.O. Box 140, FIN-00251 Helsinki. FINLAND	tytti.kontula@ymparisto.fi
Anita Mäkinen	WWF-Finland Lintulahdenkatu 10 00500 Helsinki FINLAND Tel: +358 (09) 7740 1034	Anita.Makinen@wwf.fi
Henna Piekäinen	Finnish Environment Institute (SYKE) Research Program for the Protection of the Baltic Sea Mechelininkatu 34a P.O. Box 140, FIN-00251 Helsinki. FINLAND Tel: +358 9 4030 262	htpiek@utu.fi
Anda Ikauniece	Institute of Aquatic Ecology University of Latvia Daugavgrivas 8 Riga LV-1048 LATVIA Tel: +371-7602301	anda@monit.lu.lv
Vadims Jermakovs	Institute of Aquatic Ecology University of Latvia Daugavgrivas 8 Riga LV-1048 LATVIA Tel: +371-7602301	vadims@monit.lu.lv
Leszek Leczynski	Institute of Oceanography Dept. Marine Geology University of Gdansk Piłsudskiego 46 Av. 81-378 Gdynia POLAND Tel. 48(58) 660 16 27	ocell@uni.v.gda.pl
Andrzej Osowiecki	Laboratory of Ecology Maritime Institute in Gdansk 80-307 Gdansk, Abrahama 1 St POLAND Tel. 48(58) 552 00 94	Andrzej.Osowiecki@im.gda.pl
Cecilia Lindblad	Swedish Environmental Protection Agency Natural resources department Aquatic environment section SWEDEN Tel: +46 (0)8-6981295	cecilia.lindblad@naturvardsverket.se
Annelie Mattisson	County Administrative Board of Stockholm Box 22067 104 22 Stockholm SWEDEN Tel: + 46 8 785 54 04	annelie.mattisson@ab.lst.se

ANNEX 2. EUNIS HABITAT CLASSIFICATION HIERARCHY ¹

EUNIS Habitat code	Scientific name
A	Marine habitats
A1	Littoral rock and other hard substrata
A1.1	High energy littoral rock
A1.11	Mussel and/or barnacle communities
A1.111	[<i>Mytilus edulis</i>] and barnacles on very exposed eulittoral rock
A1.112	[<i>Chthamalus</i>] spp. on exposed upper eulittoral rock
A1.1121	[<i>Chthamalus montagui</i>] and [<i>Chthamalus stellatus</i>] on exposed upper eulittoral rock
A1.1122	[<i>Chthamalus</i>] spp. and [<i>Lichina pygmaea</i>] on steep exposed upper eulittoral rock
A1.113	[<i>Semibalanus balanoides</i>] on exposed to moderately exposed or vertical sheltered eulittoral rock
A1.1131	[<i>Semibalanus balanoides</i>], [<i>Fucus vesiculosus</i>] and red seaweeds on exposed to moderately exposed eulittoral rock
A1.1132	[<i>Semibalanus balanoides</i>], [<i>Patella vulgata</i>] and [<i>Littorina</i>] spp. on exposed to moderately exposed or vertical sheltered eulittoral rock
A1.1133	[<i>Semibalanus balanoides</i>] and [<i>Littorina</i>] spp. on exposed to moderately exposed eulittoral boulders and cobbles
A1.12	Robust furoid and/or red seaweed communities
A1.121	[<i>Fucus distichus</i>] and [<i>Fucus spiralis</i>] f. [<i>nana</i>] on extremely exposed upper eulittoral rock
A1.122	[<i>Corallina officinalis</i>] on exposed to moderately exposed lower eulittoral rock
A1.1221	[<i>Corallina officinalis</i>] (dominant) on exposed to moderately exposed lower eulittoral rock
A1.1222	[<i>Corallina officinalis</i>], [<i>Himanthalia elongata</i>] and [<i>Patella ulyssiponensis</i>] on very exposed lower eulittoral rock
A1.123	[<i>Himanthalia elongata</i>] and red seaweeds on exposed lower eulittoral rock
A1.124	[<i>Palmaria palmata</i>] on very exposed to moderately exposed lower eulittoral rock
A1.125	[<i>Mastocarpus stellatus</i>] and [<i>Chondrus crispus</i>] on very exposed to moderately exposed lower eulittoral rock
A1.126	[<i>Osmundea pinnatifida</i>] on moderately exposed mid eulittoral rock
A1.127	[<i>Ceramium</i>] sp. and piddocks on eulittoral fossilised peat
A1.13	Mediterranean communities of the upper mediolittoral rock
A1.131	Association with [<i>Bangia atropurpurea</i>]
A1.132	Association with [<i>Porphyra leucosticta</i>]
A1.133	Association with [<i>Nemalion helminthoides</i>] and [<i>Rissoella verruculosa</i>]
A1.134	Association with [<i>Lithophyllum papillosum</i>] and [<i>Polysiphonia</i>] spp.
A1.14	Mediterranean communities of the lower mediolittoral rock very exposed to wave action
A1.141	Association with [<i>Lithophyllum lichenoides</i>] (entablature with <i>L. tortuosum</i>)
A1.142	Facies with [<i>Pollicipes cornucopiae</i>]
A1.143	Association with [<i>Lithophyllum byssoides</i>]

¹ While the scope of the EUNIS classification is to level 4 for marine units (A), it is limited to level 3 for coastal units and the remainder of the classification (units B-J). More detailed habitat units have been linked from other classifications and act as an indication of how the EUNIS habitat classification can combine other classifications into a common framework.

EUNIS Habitat code	Scientific name
A1.144	Association with [<i>Tenarea undulosa</i>]
A1.15	Fucoids in tide-swept conditions
A1.151	[<i>Ascophyllum nodosum</i>], sponges and ascidians on tide-swept mid eulittoral rock
A1.152	[<i>Fucus serratus</i>], sponges and ascidians on tide-swept lower eulittoral rock
A1.153	[<i>Fucus serratus</i>] with sponges, ascidians and red seaweeds on tide-swept lower eulittoral mixed substrata
A1.2	Moderate energy littoral rock
A1.21	Barnacles and fucoids on moderate energy shores
A1.211	[<i>Pelvetia canaliculata</i>] and barnacles on moderately exposed littoral fringe rock
A1.212	[<i>Fucus vesiculosus</i>] and barnacle mosaics on moderately exposed mid eulittoral rock
A1.213	[<i>Fucus serratus</i>] on moderately exposed lower eulittoral rock
A1.2131	[<i>Fucus serratus</i>] and red seaweeds on moderately exposed lower eulittoral rock
A1.2132	[<i>Fucus serratus</i>] and under-boulder fauna on lower eulittoral boulders
A1.2133	[<i>Fucus serratus</i>] and piddocks on lower eulittoral soft rock
A1.214	[<i>Rhodothamniella floridula</i>] on sand-scoured lower eulittoral rock
A1.215	[<i>Fucus spiralis</i>] on full salinity exposed to moderately exposed upper eulittoral rock
A1.22	Mussels and fucoids on moderate energy shores
A1.221	[<i>Mytilus edulis</i>] and [<i>Fucus vesiculosus</i>] on moderately exposed mid eulittoral rock
A1.222	[<i>Mytilus edulis</i>], [<i>Fucus serratus</i>] and red seaweeds on moderately exposed lower eulittoral rock
A1.223	[<i>Mytilus edulis</i>] beds and piddocks on eulittoral firm clay
A1.23	Mediterranean communities of the lower mediolittoral rock moderately exposed to wave action
A1.231	Association with [<i>Ceramium ciliatum</i>] and [<i>Corallina elongata</i>]
A1.232	[<i>Neogoniolithon brassica-florida</i>] concretion
A1.233	Association with [<i>Gelidium</i>] spp
A1.234	Pools and lagoons sometimes associated with [<i>Vermetus</i>] spp. (infralittoral enclave)
A1.3	Low energy littoral rock
A1.31	Dense fucoids on sheltered littoral fringe and eulittoral rock
A1.311	[<i>Pelvetia canaliculata</i>] on sheltered littoral fringe rock
A1.312	[<i>Fucus spiralis</i>] on moderately exposed to very sheltered upper eulittoral rock
A1.3121	[<i>Fucus spiralis</i>] on full salinity moderately exposed to very sheltered upper eulittoral rock
A1.3122	[<i>Fucus spiralis</i>] on full salinity upper eulittoral mixed substrata
A1.313	[<i>Fucus vesiculosus</i>] on moderately exposed to sheltered mid eulittoral rock
A1.3131	[<i>Fucus vesiculosus</i>] on full salinity moderately exposed to sheltered mid eulittoral rock
A1.3132	[<i>Fucus vesiculosus</i>] on mid eulittoral variable salinity boulders and stable mixed substrata
A1.314	[<i>Ascophyllum nodosum</i>] on very sheltered mid eulittoral rock
A1.3141	[<i>Ascophyllum nodosum</i>] on full salinity mid eulittoral rock
A1.3142	[<i>Ascophyllum nodosum</i>] on full salinity mid eulittoral mixed substrata
A1.315	[<i>Fucus serratus</i>] on sheltered lower eulittoral rock
A1.3151	Dense [<i>Fucus serratus</i>] on moderately exposed to very sheltered full salinity lower eulittoral rock
A1.3152	[<i>Fucus serratus</i>] on full salinity lower eulittoral mixed substrata

EUNIS Habitat code	Scientific name
A1.317	Association with [<i>Fucus virsoides</i>]
A1.32	Fucoids in variable salinity
A1.321	[<i>Pelvetia canaliculata</i>] on sheltered, variable salinity littoral fringe rock
A1.322	[<i>Fucus spiralis</i>] on sheltered variable salinity upper eulittoral rock
A1.323	[<i>Fucus vesiculosus</i>] on mid eulittoral variable salinity boulders and stable mixed substrata
A1.324	[<i>Ascophyllum nodosum</i>] and [<i>Fucus vesiculosus</i>] on variable salinity mid eulittoral rock
A1.325	[<i>Ascophyllum nodosum</i>] ecad. [<i>mackaii</i>] beds on extremely sheltered mid eulittoral mixed substrata
A1.326	[<i>Fucus serratus</i>] and large [<i>Mytilus edulis</i>] on variable salinity lower eulittoral rock
A1.327	[<i>Fucus ceranoides</i>] on reduced salinity eulittoral rock
A1.33	Red algal turf in lower eulittoral, sheltered from wave action
A1.34	Mediterranean communities of the lower mediolittoral rock sheltered from wave action
A1.341	Association with [<i>Enteromorpha compressa</i>]
A1.4	Features of littoral rock
A1.41	Communities of littoral rockpools
A1.411	[<i>Corallina officinalis</i>] and coralline crusts in shallow eulittoral rockpools
A1.4111	[<i>Corallina officinalis</i>] and coralline crusts in shallow eulittoral rockpools
A1.4112	Coralline crusts and [<i>Paracentrotus lividus</i>] in shallow eulittoral rockpools
A1.4113	[<i>Bifurcaria bifurcata</i>] in shallow eulittoral rockpools
A1.4114	[<i>Cystoseira</i>] spp. in shallow eulittoral rockpools
A1.412	Fucoids and kelp in deep eulittoral rockpools
A1.4121	[<i>Sargassum muticum</i>] in eulittoral rockpools
A1.413	Seaweeds in sediment-floored eulittoral rockpools
A1.414	Hydroids, ephemeral seaweeds and [<i>Littorina littorea</i>] in shallow eulittoral mixed substrata pools
A1.42	Communities of rockpools in the supralittoral zone
A1.421	Green seaweeds ([<i>Enteromorpha</i>] spp. and [<i>Cladophora</i>] spp.) in upper shore rockpools
A1.43	Brackish permanent pools in the geolittoral zone
A1.431	Eutrophic brackish permanent pools in the geolittoral zone
A1.432	Mesotrophic brackish permanent pools in the geolittoral zone
A1.433	Oligotrophic brackish permanent pools in the geolittoral zone
A1.44	Communities of littoral caves and overhangs
A1.441	Green algal films on upper and mid-shore cave walls and ceilings
A1.442	[<i>Audouinella purpurea</i>] and [<i>Pilinia maritima</i>] crusts on upper and mid-shore cave walls and ceilings
A1.443	[<i>Audouinella purpurea</i>] and [<i>Cladophora rupestris</i>] on upper to mid-shore cave walls
A1.444	[<i>Verrucaria mucosa</i>] and/or [<i>Hildenbrandia rubra</i>] on upper to mid shore cave walls
A1.445	Sponges and shade-tolerant red seaweeds on overhanging lower eulittoral bedrock and in cave entrances
A1.4451	Sponges, shade-tolerant red seaweeds and [<i>Dendrodoa grossularia</i>] on wave-surged overhanging lower eulittoral bedrock and caves
A1.446	Sponges, bryozoans and ascidians on deeply overhanging lower shore bedrock or caves

EUNIS Habitat code	Scientific name
A1.447	Faunal crusts on wave-surged littoral cave walls
A1.448	Sparse fauna (barnacles and spirorbids) on sand/pebble-scoured rock in upper littoral to lower shore caves
A1.449	Barren and/or boulder-scoured littoral cave walls and floors
A1.44A	Association with [<i>Phymatolithon lenormandii</i>] and [<i>Hildenbrandia rubra</i>]
A1.44B	Chrysophyceae and Haptophyceae on vertical upper littoral fringe soft rock
A1.45	Ephemeral green or red seaweeds (freshwater or sand-influenced) on non-mobile substrata
A1.451	[<i>Enteromorpha</i>] spp. on freshwater-influenced or unstable upper eulittoral rock
A1.452	[<i>Porphyra purpurea</i>] or [<i>Enteromorpha</i>] spp. on sand-scoured mid or lower eulittoral rock
A1.46	Hydrolittoral soft rock
A1.461	Hydrolittoral soft rock: level bottoms with little or no macrophyte vegetation
A1.462	Hydrolittoral soft rock: level bottoms dominated by macrophyte vegetation
A1.463	Hydrolittoral soft rock: reefs
A1.47	Hydrolittoral solid rock (bedrock)
A1.471	Hydrolittoral solid rock (bedrock): level bottoms with little or no macrophyte vegetation
A1.472	Hydrolittoral solid rock (bedrock): level bottoms dominated by macrophyte vegetation
A1.473	Hydrolittoral solid rock (bedrock): reefs
A1.48	Hydrolittoral hard clay
A1.481	Hydrolittoral hard clay: level bottoms with little or no macrophyte vegetation
A1.49	Hydrolittoral mussel beds
A1.491	Hydrolittoral mussel beds: with little or no macrophyte vegetation
A1.492	Hydrolittoral mussel beds: dominated by macrophyte vegetation
A1.4A	Hydrolittoral peat
A2	Littoral sediment
A2.1	Littoral coarse sediment
A2.11	Shingle (pebble) and gravel shores
A2.111	Barren shingle or gravel shores
A2.112	[<i>Pectenogammarus planicrurus</i>] in mid shore well-sorted gravel or coarse sand
A2.12	Estuarine coarse sediment shores
A2.13	Mediterranean communities of the mediolittoral coarse detritic bottoms
A2.131	Facies of banks of dead leaves of [<i>Posidonia oceanica</i>] and other phanerogams
A2.2	Littoral sand and muddy sand
A2.21	Strandline
A2.211	Talitrids on the upper shore and strand-line
A2.212	[<i>Mytilus edulis</i>] and [<i>Fabricia sabella</i>] in littoral mixed sediment
A2.22	Barren or amphipod-dominated mobile sand shores
A2.221	Barren littoral coarse sand
A2.222	Oligochaetes in littoral mobile sand
A2.2221	Oligochaetes in full salinity littoral mobile sand
A2.2222	Oligochaetes in variable salinity littoral mobile sand
A2.223	Amphipods and [<i>Scolecipis</i>] spp. in littoral medium-fine sand
A2.2231	[<i>Scolecipis</i>] spp. in littoral mobile sand

EUNIS Habitat code	Scientific name
A2.2232	[Eurydice pulchra] in littoral mobile sand
A2.2233	[Pontocrates arenarius] in littoral mobile sand
A2.23	Polychaete/amphipod-dominated fine sand shores
A2.231	Polychaetes in littoral fine sand
A2.2311	Polychaetes, including [Paraonis fulgens], in littoral fine sand
A2.2312	Polychaetes and [Angulus tenuis] in littoral fine sand
A2.2313	[Nephtys cirrosa] dominated littoral fine sand
A2.24	Polychaete/bivalve-dominated muddy sand shores
A2.241	[Macoma balthica] and [Arenicola marina] in muddy sand shores
A2.242	[Cerastoderma edule] and polychaetes in littoral muddy sand
A2.243	[Hediste diversicolor], [Macoma balthica] and [Eteone longa] in littoral muddy sand
A2.244	[Bathyporeia pilosa] and [Corophium arenarium] in littoral muddy sand
A2.245	[Lanice conchilega] in littoral sand
A2.25	Mediterranean communities of mediolittoral sands
A2.251	Facies with [Ophelia bicornis]
A2.3	Littoral mud
A2.31	Polychaete/bivalve-dominated mid estuarine mud shores
A2.311	[Nephtys hombergii], [Macoma balthica] and [Streblospio shrubsolii] in littoral sandy mud
A2.312	[Hediste diversicolor] and [Macoma balthica] in sandy mud shores
A2.313	[Hediste diversicolor], [Macoma balthica] and [Scrobicularia plana] in littoral sandy mud shores
A2.32	Polychaete/oligochaete-dominated upper estuarine mud shores
A2.321	[Nephtys hombergii] and [Streblospio shrubsolii] in littoral mud
A2.322	[Hediste diversicolor] in littoral mud
A2.3221	[Hediste diversicolor] and [Streblospio shrubsolii] in littoral sandy mud
A2.3222	[Hediste diversicolor] and [Corophium volutator] in littoral mud
A2.3223	[Hediste diversicolor] and oligochaetes in littoral mud
A2.323	[Tubificoides benedii] and other oligochaetes in littoral mud
A2.324	Saltmarsh pools
A2.325	Saltmarsh creeks
A2.3251	Erosion faces with [Carcinus maenas]
A2.33	Marine mud shores
A2.34	[Corophium] spp. in soft mud shores
A2.4	Littoral mixed sediments
A2.41	[Hediste diversicolor] dominated gravelly sandy mud shores
A2.411	[Hediste diversicolor] in littoral gravelly muddy sand and gravelly sandy mud
A2.4111	[Hediste diversicolor] and [Macoma balthica] in littoral gravelly mud
A2.4112	[Hediste diversicolor] and [Scrobicularia plana] in littoral gravelly mud
A2.4113	[Hediste diversicolor] and [Streblospio shrubsolii] in littoral gravelly sandy mud
A2.4114	[Hediste diversicolor], cirratulids and [Tubificoides] spp. in littoral gravelly sandy mud
A2.4115	[Hediste diversicolor] and [Corophium volutator] in littoral gravelly sandy mud
A2.412	[Hediste diversicolor] and [Scrobicularia plana] in variable salinity gravelly mud shores

EUNIS Habitat code	Scientific name
A2.413	[Hediste diversicolor] and [Streblospio shrubsolii] in variable salinity gravelly mud shores
A2.414	[Hediste diversicolor] and oligochaetes in reduced salinity muddy gravel shores
A2.415	[Hediste diversicolor] and [Macoma balthica] in poorly sorted mixed sediment shores
A2.42	Species-rich mixed sediment shores
A2.421	Cirratulids and [Cerastoderma edule] in littoral mixed sediment
A2.422	Syllid and cirratulid polychaetes in poorly sorted mixed sediment shores
A2.423	Syllid and cirratulid polychaetes in variable salinity muddy gravel shores
A2.43	Species-poor mixed sediment shores
A2.431	Barnacles and [Littorina] spp. on unstable eulittoral mixed substrata
A2.5	Coastal saltmarshes and saline reedbeds
A2.51	Saltmarsh driftlines
A2.511	Atlantic saltmarsh and drift rough grass communities
A2.512	Atlantic saltmarsh driftline annual communities
A2.513	Mediterranean saltmarsh driftlines
A2.514	[Elymus pycnanthus] with [Suaeda vera] or [Inula crithmoides] saltmarsh driftlines
A2.515	[Elymus repens] saltmarsh driftlines
A2.516	[Suaeda vera] saltmarsh driftlines
A2.517	[Suaeda vera] - [Limonium binervosum] saltmarsh driftlines
A2.518	[Spergularia marina] - [Puccinellia distans] saltmarsh driftlines
A2.519	[Frankenia laevis] - [Halimione portulacoides] saltmarsh driftlines
A2.51A	[Inula crithmoides] on saltmarshes
A2.51B	[Sagina maritima] ephemeral salt marsh in sand
A2.52	Upper saltmarshes
A2.521	Atlantic and Baltic brackish saltmarsh communities
A2.5211	Pearlwort-saltmarsh grass swards
A2.5212	Baltic [Carex paleacea] swards
A2.5213	Baltic [Carex mackenziei] swards
A2.5214	Baltic salt basin [Agrostis]-[Triglochin] swards
A2.5215	Baltic [Deschampsia bottnica] swards
A2.522	Mediterranean [Juncus maritimus] and [Juncus acutus] saltmarshes
A2.523	Mediterranean short [Juncus], [Carex], [Hordeum] and [Trifolium] saltmeadows
A2.524	Mediterranean [Elymus] or [Artemisia] stands
A2.525	Mediterranean [Juncus subulatus] beds
A2.526	Mediterranean saltmarsh scrubs
A2.5261	Creeping glasswort mats
A2.5262	Shrubby glasswort thickets
A2.5263	Glaucous glasswort thickets
A2.5264	Shrubby seablite thickets
A2.5265	Interior Iberian salt scrubs
A2.52651	Interior woody seablite scrubs
A2.52652	Interior glaucous glasswort scrubs
A2.52653	Interior creeping glasswort scrubs
A2.5266	Mediterranean sea-purslane-woody glasswort scrubs

EUNIS Habitat code	Scientific name
A2.5267	Mediterranean [<i>Halocnemum</i>] scrub
A2.527	Atlantic salt scrubs
A2.5271	Silver scrubs
A2.5272	Atlantic creeping glasswort mats
A2.5273	Atlantic shrubby seablite scrubs
A2.5274	Atlantic shrubby glasswort scrubs
A2.528	Mediterranean [<i>Limoniastrum</i>] scrubs
A2.529	Canarian saltmarsh scrubs
A2.53	Mid-upper saltmarshes and saline and brackish reed, rush and sedge beds
A2.531	Atlantic upper shore communities
A2.5311	Atlantic [<i>Juncus gerardii</i>] saltmeadows
A2.5312	Atlantic [<i>Plantago maritima</i>] saltmeadows
A2.5313	Atlantic [<i>Festuca rubra</i>]-[<i>Agrostis stolonifera</i>] swards
A2.5314	Atlantic thrift swards
A2.5315	Atlantic [<i>Carex distans</i>] beds
A2.5316	Atlantic [<i>Carex extensa</i>] saltmeadows
A2.5317	Atlantic sea lavender meadows
A2.5318	Atlantic [<i>Blysmus</i>] salt meadows
A2.5319	Atlantic [<i>Eleocharis</i>] salt meadows
A2.531A	Atlantic [<i>Juncus maritimus</i>] beds
A2.531B	Atlantic sea wormwood salt meadows
A2.531C	Atlantic [<i>Potentilla anserina</i>] carpets
A2.531D	Atlantic sea-heath communities
A2.531E	Atlantic upper schorre sea aster beds
A2.531F	Atlantic strawberry clover swards
A2.531G	Atlantic black sedge salt meadows
A2.531H	Scandinavian bogrush shore communities
A2.531I	Northern [<i>Agrostis-Festuca-Leontodon</i>] communities
A2.531J	Fenno-Scandian [<i>Calamagrostis stricta</i>]-sedge swards
A2.531K	Baltic [<i>Carex scandinavica</i>] swards
A2.532	Mediterranean halo-psammophile meadows
A2.533	Upper shore arctic salt meadows
A2.534	Sulphurous arctic salt meadows
A2.535	[<i>Juncus maritimus</i>] mid-upper saltmarshes
A2.536	[<i>Juncus maritimus</i>] mid-upper saltmarshes with [<i>Triglochin maritima</i>]
A2.537	[<i>Eleocharis uniglumis</i>] mid-upper saltmarshes
A2.538	[<i>Blysmus rufus</i>] mid-upper saltmarshes
A2.539	Mid-upper saltmarshes: [<i>Artemisia maritima</i>] with [<i>Festuca rubra</i>], or open canopy of [<i>Artemisia maritima</i>] and [<i>Halimione</i>]
A2.53A	[<i>Festuca rubra</i>] mid-upper saltmarshes
A2.53B	Mid-upper saltmarshes: sub-communities of [<i>Festuca rubra</i>] with [<i>Agrostis stolonifera</i>], [<i>Juncus gerardi</i>], [<i>Puccinellia maritima</i>], [<i>Glaux maritima</i>], [<i>Triglochin maritima</i>], [<i>Armeria maritima</i>] and [<i>Plantago maritima</i>]
A2.53C	Saline beds of [<i>Phragmites australis</i>]
A2.53D	Geolittoral wetlands and meadows: saline and brackish reed, rush and sedge stands

EUNIS Habitat code	Scientific name
A2.53D1	Geolittoral wetlands and meadows: saline and brackish reed, rush and sedge stands: natural stands
A2.53D2	Geolittoral wetlands and meadows: saline and brackish reed, rush and sedge stands: harvested stands
A2.54	Low-mid saltmarshes
A2.541	Atlantic saltmarsh grass lawns
A2.542	Atlantic lower shore communities
A2.5421	Sea purslane-saltmarsh grass meadows
A2.5422	Sea aster-saltmarsh grass meadows
A2.5423	Glasswort-saltmarsh grass meadows
A2.5424	Atlantic stalked orache beds
A2.5425	[Pelvetia]-saltmarsh grass meadows
A2.5426	[Catabrosa]-saltmarsh grass meadows
A2.5427	[Glaux]-saltmarsh grass meadows
A2.5428	[Plantago]-saltmarsh grass meadows
A2.5429	[Limonium]-saltmarsh grass meadows
A2.543	Mediterranean coastal-saltmarsh grass swards
A2.544	Lower shore arctic salt meadows
A2.545	[Halimione portulacoides] low-mid saltmarshes
A2.546	[Puccinellia maritima] low-mid saltmarshes
A2.547	Sub-communities of [Puccinellia maritima] saltmarsh with [Limonium vulgare] and [Armeria maritima]; [P. maritima] with [Glaux maritima] co-dominant in species-poor vegetation; [Puccinellia maritima] with [Plantago maritima] and/or [Armeria maritima]
A2.548	Annual [Salicornia], [Suaeda] and [Puccinellia maritima] low-mid saltmarshes
A2.55	Pioneer saltmarshes
A2.551	[Salicornia], [Suaeda] and [Salsola] pioneer saltmarshes
A2.5511	Biocenosis of beaches with slowly-drying wracks under glassworts
A2.5512	[Suaeda maritima] pioneer saltmarshes
A2.5513	[Salicornia] spp. pioneer saltmarshes
A2.5514	[Salicornia veneta] swards
A2.5515	Black Sea annual [Salicornia], [Suaeda] and [Salsola] saltmarshes
A2.5516	Low-shore Mediterranean glasswort swards
A2.552	Mediterranean coastal halo-nitrophilous pioneer communities
A2.553	Atlantic [Sagina maritima] communities
A2.554	Flat-leaved [Spartina] swards
A2.5541	[Spartina anglica] pioneer saltmarshes
A2.5542	[Spartina alterniflora] with [Spartina anglica], [Puccinellia maritima] and [Aster tripolium]
A2.5543	[Spartina maritima] pioneer saltmarshes
A2.555	[Spartina densiflora] swards
A2.556	Rayed [Aster tripolium] pioneer saltmarshes
A2.557	[Aster tripolium] var. [discoides] pioneer saltmarshes
A2.558	[Arthrocnemum perenne] pioneer saltmarshes, sometimes with [Halimione], [Puccinellia] and [Suaeda]
A2.6	Littoral sediments dominated by aquatic angiosperms

EUNIS Habitat code	Scientific name
A2.61	Seagrass beds on littoral sediments
A2.611	Mainland Atlantic [<i>Zostera noltii</i>] or [<i>Zostera angustifolia</i>] meadows
A2.6111	[<i>Zostera noltii</i>] beds in littoral muddy sand
A2.612	Macaronesian [<i>Zostera noltii</i>] meadows
A2.613	Mediterranean [<i>Zostera noltii</i>] beds
A2.614	Mediterranean [<i>Zostera hornemanniana</i>] beds
A2.615	Pontic [<i>Zostera marina</i>] and [<i>Zostera noltii</i>] meadows
A2.616	[<i>Ruppia maritima</i>] on lower shore sediment
A2.62	Marine [<i>Cyperaceae</i>] beds
A2.621	[<i>Eleocharis</i>] beds
A2.6211	[<i>Eleocharis parvula</i>] beds
A2.6212	Bothnian [<i>Eleocharis acicularis</i>] beds
A2.7	Littoral biogenic reefs
A2.71	Littoral [<i>Sabellaria</i>] honeycomb worm reefs
A2.711	[<i>Sabellaria alveolata</i>] reefs on sand-abraded eulittoral rock
A2.72	Mixed sediment shores with mussels
A2.721	[<i>Mytilus edulis</i>] beds on eulittoral mixed substrata
A2.7211	[<i>Mytilus edulis</i>] beds on littoral mixed substrata
A2.7212	[<i>Mytilus edulis</i>] beds on littoral sand
A2.7213	[<i>Mytilus edulis</i>] beds on littoral mud
A2.8	Features of littoral sediment
A2.81	Methane seeps in littoral sediments
A2.82	Ephemeral green or red seaweeds (freshwater or sand-influenced) on mobile substrata
A2.821	Ephemeral green and red seaweeds on variable salinity and/or disturbed eulittoral mixed substrata
A2.83	Hydrolittoral stony substrata
A2.831	Hydrolittoral stony substrata: level bottoms with little or no macrophyte vegetation
A2.832	Hydrolittoral stony substrata: level bottoms dominated by macrophyte vegetation
A2.833	Hydrolittoral stony substrata: reefs
A2.84	Hydrolittoral gravel substrata
A2.841	Hydrolittoral gravel substrata: level bottoms with little or no macrophyte vegetation
A2.842	Hydrolittoral gravel substrata: level bottoms dominated by macrophyte vegetation
A2.843	Hydrolittoral gravel substrata: banks
A2.85	Hydrolittoral sandy substrata
A2.851	Hydrolittoral sandy substrata: level bottoms with little or no macrophyte vegetation
A2.852	Hydrolittoral sandy substrata: level bottoms dominated by macrophyte vegetation
A2.853	Hydrolittoral sandy substrata: bars
A2.854	Hydrolittoral sandy substrata: banks
A2.86	Hydrolittoral muddy substrata
A2.861	Hydrolittoral muddy substrata: with little or no macrophyte vegetation
A2.862	Hydrolittoral muddy substrata: dominated by macrophyte vegetation
A2.87	Hydrolittoral mixed sediment substrata
A2.871	Hydrolittoral mixed sediment substrata: with little or no macrophyte vegetation
A2.872	Hydrolittoral mixed sediment substrata: dominated by macrophyte vegetation

EUNIS Habitat code	Scientific name
A3	Infralittoral rock and other hard substrata
A3.1	Atlantic and Mediterranean high energy infralittoral rock
A3.11	Kelp with cushion fauna, foliose red seaweeds or coralline crusts (high energy infralittoral rock)
A3.111	[<i>Alaria esculenta</i>] on sublittoral fringe bedrock
A3.1111	[<i>Alaria esculenta</i>], [<i>Mytilus edulis</i>] and coralline crusts on very exposed sublittoral fringe bedrock
A3.1112	[<i>Alaria esculenta</i>] and [<i>Laminaria digitata</i>] on exposed sublittoral fringe bedrock
A3.112	[<i>Alaria esculenta</i>] forest with dense anemones and crustose sponges on extremely exposed infralittoral bedrock
A3.113	[<i>Laminaria hyperborea</i>] forest with a faunal cushion (sponges and polyclinids) and foliose red seaweeds on very exposed infralittoral rock
A3.114	Sparse [<i>Laminaria hyperborea</i>] and dense [<i>Paracentrotus lividus</i>] on exposed infralittoral limestone rock
A3.115	[<i>Laminaria hyperborea</i>] with dense foliose red seaweeds on exposed infralittoral rock
A3.1151	[<i>Laminaria hyperborea</i>] forest with dense foliose red seaweeds on exposed upper infralittoral rock
A3.1152	[<i>Laminaria hyperborea</i>] park with dense foliose red seaweeds on exposed lower infralittoral rock
A3.1153	Mixed [<i>Laminaria hyperborea</i>] and [<i>Laminaria ochroleuca</i>] forest on exposed infralittoral rock
A3.116	Foliose red seaweeds on exposed or moderately exposed lower infralittoral rock
A3.1161	Foliose red seaweeds with dense [<i>Dictyota dichotoma</i>] and/or [<i>Dictyopteris membranacea</i>] on exposed lower infralittoral rock
A3.117	[<i>Laminaria hyperborea</i>] and red seaweeds on exposed vertical rock
A3.118	Turf of articulated [<i>Corallinaceae</i>] on exposed to sheltered infralittoral bedrock and boulders
A3.12	Sand or gravel-affected or disturbed kelp and seaweed communities
A3.121	[<i>Laminaria saccharina</i>] and/or [<i>Saccorhiza polyschides</i>] on exposed infralittoral rock
A3.122	[<i>Saccorhiza polyschides</i>] and other opportunistic kelps on disturbed upper infralittoral rock
A3.123	[<i>Laminaria saccharina</i>], [<i>Chorda filum</i>] and dense red seaweeds on shallow unstable infralittoral boulders and cobbles
A3.124	Dense [<i>Desmarestia</i>] spp. with filamentous red seaweeds on exposed infralittoral cobbles, pebbles and bedrock
A3.125	Mixed kelps with scour-tolerant and opportunistic foliose red seaweeds on scoured or sand-covered infralittoral rock
A3.126	[<i>Halidrys siliquosa</i>] and mixed kelps on tide-swept infralittoral rock with coarse sediment
A3.127	[<i>Polyides rotundus</i>], [<i>Ahnfeltia plicata</i>] and [<i>Chondrus crispus</i>] on sand-covered infralittoral rock
A3.13	Mediterranean communities of infralittoral algae very exposed to wave action
A3.131	Overgrazing facies with incrustant algae and sea urchins
A3.132	Association with [<i>Cystoseira amentacea</i>] (var. [<i>amentacea</i>], var. [<i>stricta</i>], var. [<i>spicata</i>])
A3.133	Facies with [<i>Vermetus</i>] spp.
A3.134	Facies with [<i>Mytilus galloprovincialis</i>]
A3.135	Association with [<i>Corallina elongata</i>] and [<i>Herposiphonia secunda</i>]

EUNIS Habitat code	Scientific name
A3.136	Association with [<i>Corallina officinalis</i>]
A3.137	Association with [<i>Schottera nicaeensis</i>]
A3.14	Encrusting algal communities
A3.15	Frondose algal communities (other than kelp)
A3.151	[<i>Cystoseira</i>] spp. on exposed infralittoral bedrock and boulders
A3.2	Atlantic and Mediterranean moderate energy infralittoral rock
A3.21	Kelp with red seaweeds (moderate energy infralittoral rock)
A3.211	[<i>Laminaria digitata</i>] on moderately exposed or tide-swept sublittoral fringe rock
A3.2111	[<i>Laminaria digitata</i>] on moderately exposed sublittoral fringe rock
A3.2112	[<i>Laminaria digitata</i>] and under-boulder fauna on sublittoral fringe boulders
A3.2113	[<i>Laminaria digitata</i>] and piddocks on sublittoral fringe soft rock
A3.212	[<i>Laminaria hyperborea</i>] forests and parks
A3.2121	[<i>Laminaria hyperborea</i>] forest, foliose red seaweeds and diverse fauna on tide-swept upper infralittoral rock
A3.2122	[<i>Laminaria hyperborea</i>] park with hydroids, bryozoans and sponges on tide-swept lower infralittoral rock
A3.213	[<i>Laminaria hyperborea</i>] on tide-swept, infralittoral mixed substrata
A3.2131	[<i>Laminaria hyperborea</i>] forest and foliose red seaweeds on tide-swept, upper infralittoral mixed substrata
A3.2132	[<i>Laminaria hyperborea</i>] park and foliose red seaweeds on tide-swept, lower infralittoral mixed substrata
A3.214	[<i>Laminaria hyperborea</i>] and foliose red seaweeds on moderately exposed infralittoral rock
A3.2141	[<i>Laminaria hyperborea</i>] forest and foliose red seaweeds on moderately exposed upper infralittoral rock
A3.2142	[<i>Laminaria hyperborea</i>] park and foliose red seaweeds on moderately exposed lower infralittoral rock
A3.2143	Grazed [<i>Laminaria hyperborea</i>] forest with coralline crusts on upper infralittoral rock
A3.2144	Grazed [<i>Laminaria hyperborea</i>] park with coralline crusts on lower infralittoral rock
A3.215	[<i>Sabellaria spinulosa</i>] with kelp and red seaweeds on sand-influenced infralittoral rock
A3.216	[<i>Laminaria hyperborea</i>] on moderately exposed vertical rock
A3.217	Dense foliose red seaweeds on moderately exposed, silted, stable infralittoral rock
A3.218	[<i>Hiatella arctica</i>] and seaweeds on vertical limestone / chalk
A3.22	Tide-swept kelp and seaweed communities (sheltered infralittoral rock)
A3.221	[<i>Laminaria digitata</i>], ascidians and bryozoans on tide-swept sublittoral fringe rock
A3.222	Mixed kelp with foliose red seaweeds, sponges and ascidians on sheltered, tide-swept infralittoral rock
A3.223	Mixed kelp and red seaweeds on infralittoral boulders, cobbles and gravel in tidal rapids
A3.224	[<i>Laminaria saccharina</i>], foliose red seaweeds, sponges and ascidians on tide-swept infralittoral rock
A3.225	Filamentous red seaweeds, sponges and [<i>Balanus crenatus</i>] on tide-swept variable-salinity infralittoral rock
A3.23	Mediterranean communities of infralittoral algae moderately exposed to wave action
A3.231	Association with [<i>Codium vermilara</i>] and [<i>Rhodymenia ardissoni</i>]
A3.232	Association with [<i>Dasycladus vermicularis</i>]
A3.233	Association with [<i>Alsidium helmenthochorton</i>]

EUNIS Habitat code	Scientific name
A3.234	Association with [<i>Cystoseira tamariscifolia</i>] and [<i>Saccorhiza polyschides</i>]
A3.235	Association with [<i>Gelidium spinosum</i> v. <i>hystrix</i>]
A3.236	Association with [<i>Lobophora variegata</i>]
A3.237	Association with [<i>Ceramium rubrum</i>]
A3.238	Facies with [<i>Cladocora caespitosa</i>]
A3.239	Association with [<i>Cystoseira brachycarpa</i>]
A3.23A	Association with [<i>Cystoseira crinita</i>]
A3.23B	Association with [<i>Cystoseira crinitophylla</i>]
A3.23C	Association with [<i>Cystoseira sauvageauana</i>]
A3.23D	Association with [<i>Cystoseira spinosa</i>]
A3.23E	Association with [<i>Sargassum vulgare</i>]
A3.23F	Association with [<i>Dictyopteris polypodioides</i>]
A3.23G	Association with [<i>Calpomenia sinuosa</i>]
A3.23H	Association with [<i>Rhodymenia ardissoni</i>] and [<i>Rhodophyllis divaricata</i>]
A3.23I	Facies with [<i>Astroides calycularis</i>]
A3.23J	Association with [<i>Flabellia petiolata</i>] and [<i>Peyssonnelia squamaria</i>]
A3.23K	Association with [<i>Halymenia floresia</i>] and [<i>Halarachnion ligatum</i>]
A3.23L	Association with [<i>Peyssonnelia rubra</i>] and [<i>Peyssonnelia</i>] spp.
A3.24	Faunal communities on moderate energy infralittoral rock
A3.241	[<i>Halopteris filicina</i>] with coralline crusts on moderately exposed infralittoral rock
A3.3	Atlantic and Mediterranean low energy infralittoral rock
A3.31	Silted kelp on low energy infralittoral rock with full salinity
A3.311	Mixed [<i>Laminaria hyperborea</i>] and [<i>Laminaria ochroleuca</i>] forest on moderately exposed or sheltered infralittoral rock
A3.312	Mixed [<i>Laminaria hyperborea</i>] and [<i>Laminaria saccharina</i>] on sheltered infralittoral rock
A3.3121	Mixed [<i>Laminaria hyperborea</i>] and [<i>Laminaria saccharina</i>] forest on sheltered upper infralittoral rock
A3.3122	Mixed [<i>Laminaria hyperborea</i>] and [<i>Laminaria saccharina</i>] park on sheltered lower infralittoral rock
A3.3123	Grazed, mixed [<i>Laminaria hyperborea</i>] and [<i>Laminaria saccharina</i>] on sheltered infralittoral rock
A3.313	[<i>Laminaria saccharina</i>] on very sheltered infralittoral rock
A3.3131	[<i>Laminaria saccharina</i>] and [<i>Laminaria digitata</i>] on sheltered sublittoral fringe rock
A3.3132	[<i>Laminaria saccharina</i>] forest on very sheltered upper infralittoral rock
A3.3133	[<i>Laminaria saccharina</i>] park on very sheltered lower infralittoral rock
A3.3134	Grazed [<i>Laminaria saccharina</i>] with [<i>Echinus</i>], brittlestars and coralline crusts on sheltered infralittoral rock
A3.314	Silted, cape-form [<i>Laminaria hyperborea</i>] on very sheltered, infralittoral rock
A3.315	[<i>Sargassum muticum</i>] on shallow slightly tide-swept infralittoral mixed substrata
A3.32	Kelp in variable salinity on low energy infralittoral rock
A3.321	[<i>Codium</i>] spp. with red seaweeds and sparse [<i>Laminaria saccharina</i>] on shallow, heavily-silted, very sheltered infralittoral rock
A3.322	[<i>Laminaria saccharina</i>] and [<i>Psammechinus miliaris</i>] on reduced salinity grazed infralittoral rock
A3.323	[<i>Laminaria saccharina</i>] and [<i>Phyllophora</i>] spp. and filamentous green seaweeds on reduced or low salinity infralittoral rock

EUNIS Habitat code	Scientific name
A3.33	Mediterranean submerged fucoids, green or red seaweeds on full salinity infralittoral rock
A3.331	Association with [<i>Stypocaulon scoparium</i>] (= [<i>Halopteris scoparia</i>])
A3.332	Association with [<i>Trichosolen myura</i>] and [<i>Liagora farinosa</i>]
A3.333	Association with [<i>Cystoseira compressa</i>]
A3.334	Association with [<i>Pterocladia capillacea</i>] and [<i>Ulva laetevirens</i>]
A3.335	Facies with large Hydrozoa
A3.336	Association with [<i>Pterothamnion crispum</i>] and [<i>Compsothamnion thuyoides</i>]
A3.34	Submerged fucoids, green and red seaweeds (lagoonal rock)
A3.341	Mixed fucoids, [<i>Chorda filum</i>] and green seaweeds on reduced salinity infralittoral rock
A3.342	[<i>Ascophyllum nodosum</i>] and epiphytic sponges and ascidians on variable salinity infralittoral rock
A3.343	[<i>Polyides rotundus</i>] and/or [<i>Furcellaria lumbricalis</i>] on reduced salinity infralittoral rock
A3.344	[<i>Fucus ceranoides</i>] and [<i>Enteromorpha</i>] spp. on low salinity infralittoral rock
A3.35	Faunal communities on low energy infralittoral rock
A3.351	[<i>Codium elisabethae</i>], [<i>Halopteris filicina</i>] and coralline crusts on sheltered infralittoral bedrock
A3.36	Estuarine faunal communities on shallow rock/mixed substrata
A3.361	[<i>Mytilus edulis</i>] beds on reduced salinity infralittoral rock
A3.362	[<i>Cordylophora caspia</i>] and [<i>Electra crustulenta</i>] on reduced salinity infralittoral rock
A3.363	[<i>Hartlaubella gelatinosa</i>] and [<i>Conopeum reticulum</i>] on low salinity infralittoral mixed substrata
A3.4	Baltic exposed infralittoral rock
A3.5	Baltic moderately exposed infralittoral rock
A3.6	Baltic sheltered infralittoral rock
A3.7	Features of infralittoral rock
A3.71	Robust faunal cushions and crusts in surge gullies and caves
A3.711	Foliose seaweeds and coralline crusts in surge gully entrances
A3.712	Anemones, including [<i>Corynactis viridis</i> ,] crustose sponges and colonial ascidians on very exposed or wave surged vertical infralittoral rock
A3.713	Crustose sponges and colonial ascidians with [<i>Dendrodoa grossularia</i>] or barnacles on wave-surged infralittoral rock
A3.7131	[<i>Dendrodoa grossularia</i>] and [<i>Clathrina coriacea</i>] on wave-surged vertical infralittoral rock
A3.714	Sponge crusts on extremely wave-surged infralittoral cave or gully walls
A3.715	Coralline crust in surge gullies and scoured infralittoral rock
A3.7151	[<i>Balanus crenatus</i>] and/or [<i>Pomatoceros triqueter</i>] with spirorbid worms and coralline crusts on severely scoured vertical infralittoral rock
A3.7152	Coralline crusts and crustaceans on mobile boulders in surge gullies
A3.72	Infralittoral fouling communities
A3.73	Vents and seeps in infralittoral rock
A4	Circalittoral rock and other hard substrata
A4.1	Atlantic and Mediterranean high energy circalittoral rock
A4.11	Very tide-swept faunal communities on circalittoral rock
A4.111	[<i>Balanus crenatus</i>] and [<i>Tubularia indivisa</i>] on extremely tide-swept circalittoral rock

EUNIS Habitat code	Scientific name
A4.112	[Tubularia indivisa] on tide-swept circalittoral rock
A4.1121	[Tubularia indivisa], sponges and other hydroids on tide-swept circalittoral bedrock
A4.1122	[Alcyonium digitatum] with dense [Tubularia indivisa] and anemones on strongly tide-swept circalittoral rock
A4.12	Sponge communities on deep circalittoral rock
A4.121	[Phakellia ventilabrum] and axinellid sponges on deep exposed circalittoral rock
A4.13	Mixed faunal turf communities on circalittoral rock
A4.131	Faunal crusts or short turfs (wave-exposed rock)
A4.1311	Mixed turf of bryozoans and erect sponges with [Dysidia fragilis] and [Actinothoe sphyrodeta] on tide-swept, wave-exposed circalittoral rock
A4.1312	[Eunicella verrucosa] and [Pentapora foliacea] on wave-exposed circalittoral rock
A4.1313	Mixed turf of bryozoans and erect sponges with [Sagartia elegans] on tide-swept circalittoral rock
A4.132	[Corynactis viridis] and a mixed turf of crisiids, [Bugula], [Scrupocellaria], and [Cellaria] on moderately tide-swept exposed circalittoral rock
A4.133	Mixed turf of hydroids and large ascidians with [Swiftia pallida] and [Caryophyllia smithii] on weakly tide-swept circalittoral rock
A4.134	[Flustra foliacea] and colonial ascidians on tide-swept moderately wave-exposed circalittoral rock
A4.1341	[Polyclinum aurantium] and [Flustra foliacea] on sand-scoured tide-swept moderately wave-exposed circalittoral rock
A4.1342	[Flustra foliacea], small solitary and colonial ascidians on tide-swept circalittoral bedrock or boulders
A4.1343	[Flustra foliacea] and colonial ascidians on tide-swept exposed circalittoral mixed substrata
A4.135	Sparse sponges, [Nemertesia] spp., and [Alcyonidium diaphanum] on circalittoral mixed substrata
A4.136	[Suberites] spp. with a mixed turf of crisiids and [Bugula] spp. on heavily silted, moderately wave-exposed, shallow circalittoral rock
A4.137	[Flustra foliacea] and [Haliclona oculata] with a rich faunal turf on tide-swept circalittoral mixed substrata
A4.138	[Molgula manhattensis] with a hydroid and bryozoan turf on tide-swept moderately wave-exposed circalittoral rock
A4.139	Sponges and anemones on vertical circalittoral bedrock
A4.2	Atlantic and Mediterranean moderate energy circalittoral rock
A4.21	Echinoderms and crustose communities on circalittoral rock
A4.211	Erect sponges and [Swiftia pallida] on slightly tide-swept moderately exposed circalittoral rock
A4.2111	[Caryophyllia smithii], [Swiftia pallida] and large solitary ascidians on exposed or moderately exposed circalittoral rock
A4.2112	[Caryophyllia smithii], [Swiftia pallida] and [Alcyonium glomeratum] on wave-sheltered circalittoral rock
A4.212	[Caryophyllia smithii], sponges and crustose communities on wave-exposed circalittoral rock
A4.2121	Brittlestar bed overlying coralline crusts, [Parasmittina trispinosa] and [Caryophyllia smithii] on wave-exposed circalittoral rock
A4.2122	[Caryophyllia smithii] and sponges with [Pentapora foliacea], [Porella compressa] and crustose communities on wave-exposed circalittoral rock

EUNIS Habitat code	Scientific name
A4.213	[Urticina felina] and sand-tolerant fauna on sand-scoured or covered circalittoral rock
A4.214	Faunal and algal crusts on exposed to moderately wave-exposed circalittoral rock
A4.2141	[Flustra foliacea] on slightly scoured silty circalittoral rock
A4.2142	[Alcyonium digitatum], [Pomatoceros triqueter], algal and bryozoan crusts on wave-exposed circalittoral rock
A4.2143	[Alcyonium digitatum] with [Securiflustra securifrons] on weakly tide-swept or scoured moderately exposed circalittoral rock
A4.2144	Brittlestar bed on faunal and algal encrusted, exposed to moderately wave-exposed circalittoral rock
A4.2145	Faunal and algal crusts with [Pomatoceros triqueter] and sparse [Alcyonium digitatum] on exposed to moderately wave-exposed circalittoral rock
A4.2146	[Caryophyllia smithii] with faunal and algal crusts on moderately wave-exposed circalittoral rock
A4.215	[Alcyonium digitatum] and faunal crust communities on vertical circalittoral bedrock
A4.22	[Sabellaria] reefs on circalittoral rock
A4.221	[Sabellaria spinulosa] with a bryozoan turf and barnacles on silty turbid circalittoral rock
A4.2211	[Sabellaria spinulosa] with a bryozoan turf and barnacles on silty turbid circalittoral rock
A4.2212	[Sabellaria spinulosa], didemnid and small ascidians on tide-swept moderately wave-exposed circalittoral rock
A4.23	Communities on soft circalittoral rock
A4.231	Piddocks with a sparse associated fauna in circalittoral very soft chalk or clay
A4.232	[Polydora] sp. tubes on upward-facing circalittoral soft rock
A4.233	[Hiatella]-bored vertical sublittoral limestone rock
A4.24	Mussel beds on circalittoral rock
A4.241	[Mytilus edulis] beds with hydroids and ascidians on tide-swept moderately exposed circalittoral rock
A4.242	[Musculus discors] beds on moderately exposed circalittoral rock
A4.25	Circalittoral faunal communities in variable salinity
A4.251	Cushion sponges, hydroids and ascidians on very tide-swept sheltered circalittoral rock
A4.2511	Cushion sponges, hydroids and ascidians on tide-swept, turbid, sheltered circalittoral rock
A4.2512	Cushion sponges and hydroids on tide-swept, turbid, variable salinity, sheltered circalittoral rock
A4.252	[Halichondria bowerbanki], [Eudendrium arbusculum] and [Eucratea loricata] on reduced salinity tide-swept circalittoral mixed substrata
A4.26	Mediterranean coralligenous communities moderately exposed to hydrodynamic action
A4.261	Association with [Cystoseira zosteroides]
A4.262	Association with [Cystoseira usneoides]
A4.263	Association with [Cystoseira dubia]
A4.264	Association with [Cystoseira corniculata]
A4.265	Association with [Sargassum] spp.
A4.266	Association with [Mesophyllum lichenoides]
A4.267	Algal bioconcretion with [Lithophyllum frondosum] and [Halimeda tuna]

EUNIS Habitat code	Scientific name
A4.268	Association with [<i>Laminaria ochroleuca</i>]
A4.269	Facies with [<i>Eunicella cavolinii</i>]
A4.26A	Facies with [<i>Eunicella singularis</i>]
A4.26B	Facies with [<i>Paramuricea clavata</i>]
A4.26C	Facies with [<i>Parazoanthus axinellae</i>]
A4.26D	Coralligenous platforms
A4.27	Faunal communities on deep moderate energy circalittoral rock
A4.3	Atlantic and Mediterranean low energy circalittoral rock
A4.31	Brachiopod and ascidian communities on circalittoral rock
A4.311	Solitary ascidians, including [<i>Ascidia mentula</i>] and [<i>Ciona intestinalis</i>], on wave-sheltered circalittoral rock
A4.3111	Dense brittlestars with sparse <i>Ascidia mentula</i> and <i>Ciona intestinalis</i> on sheltered circalittoral mixed substrata
A4.312	Large solitary ascidians and erect sponges on wave-sheltered circalittoral rock
A4.313	[<i>Antedon</i>] spp., solitary ascidians and fine hydroids on sheltered circalittoral rock
A4.314	[<i>Neocrania anomala</i>] and [<i>Protanthea simplex</i>] on low energy circalittoral rock
A4.3141	[<i>Neocrania anomala</i>] and [<i>Protanthea simplex</i>] on very wave-sheltered circalittoral rock
A4.3142	[<i>Neocrania anomala</i>], [<i>Dendrodoa grossularia</i>] and [<i>Sarcodictyon roseum</i>] on variable salinity circalittoral rock
A4.32	Mediterranean coralligenous communities sheltered from hydrodynamic action
A4.321	Association with [<i>Rodriguezella strafforelli</i>]
A4.322	Facies with [<i>Lophogorgia sarmentosa</i>]
A4.33	Faunal communities on deep low energy circalittoral rock
A4.4	Baltic exposed circalittoral rock
A4.5	Baltic moderately exposed circalittoral rock
A4.6	Baltic sheltered circalittoral rock
A4.7	Features of circalittoral rock
A4.71	Communities of circalittoral caves and overhangs
A4.711	Sponges, cup corals and anthozoans on shaded or overhanging circalittoral rock
A4.712	Facies with [<i>Parazoanthus axinellae</i>]
A4.713	Facies with [<i>Corallium rubrum</i>]
A4.714	Facies with [<i>Leptopsammia pruvoti</i>]
A4.715	Caves and ducts in total darkness (including caves without light or water movement at upper levels)
A4.72	Circalittoral fouling communities
A4.721	[<i>Alcyonium digitatum</i>] and [<i>Metridium senile</i>] on moderately wave-exposed steel wrecks
A4.722	[<i>Ascidiella aspersa</i>] fouling community on circalittoral artificial substrata
A4.73	Vents and seeps in circalittoral rock
A4.731	Freshwater seeps in sublittoral rock
A4.732	Oil seeps in sublittoral rock
A4.733	Vents in sublittoral rock
A4.74	Faunal communities on vertical circalittoral rock
A4.741	[<i>Antedon bifida</i>] and a bryozoan/hydroid turf on steep or vertical circalittoral rock
A4.742	[<i>Bugula</i>] spp. and other bryozoans on vertical moderately exposed circalittoral rock

EUNIS Habitat code	Scientific name
A5	Sublittoral sediment
A5.1	Sublittoral coarse sediment
A5.11	Infralittoral coarse sediment in reduced salinity
A5.111	Baltic level gravel bottoms of the infralittoral photic zone with little or no macrophyte vegetation
A5.112	Baltic gravel banks of the infralittoral photic zone
A5.113	Baltic shell gravel bottoms in the infralittoral photic zone
A5.12	Infralittoral coarse sediment
A5.121	[<i>Moerella</i>] spp., with venerid bivalves in infralittoral gravelly sand
A5.122	[<i>Hesionura elongata</i>] and [<i>Microphthalmus similis</i>] with other interstitial polychaetes in infralittoral mobile coarse sand
A5.123	[<i>Glycera lapidum</i>] in impoverished infralittoral mobile gravel and sand
A5.124	Cumaceans and [<i>Chaetozone setosa</i>] in infralittoral gravelly sand
A5.125	Dense [<i>Lanice conchilega</i>] and other polychaetes in tide-swept infralittoral sand and mixed gravelly sand
A5.126	Sparse fauna on highly mobile sublittoral shingle (cobbles and pebbles)
A5.127	[<i>Halocampa chrysanthellum</i>] and [<i>Edwardsia timida</i>] on sublittoral clean stone gravel
A5.128	Association with rhodolithes in coarse sands and fine gravels mixed by waves
A5.129	Facies with [<i>Gouania wildenowi</i>]
A5.12A	Greenland cockle [<i>Serripes</i>] in shallow coarse sand (influenced by warm low-salinity melt water) of the Arctic
A5.13	Circalittoral coarse sediment
A5.131	[<i>Mediomastus fragilis</i>], [<i>Lumbrineris</i>] spp. and venerid bivalves in circalittoral coarse sand or gravel
A5.132	[<i>Neopentadactyla mixta</i>] in circalittoral shell gravel or coarse sand
A5.133	[<i>Branchiostoma lanceolatum</i>] in circalittoral coarse sand with shell gravel
A5.134	[<i>Pomatoceros triqueter</i>] with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles
A5.135	[<i>Protodorvillea kefersteini</i>] and other polychaetes in impoverished circalittoral mixed gravelly sand
A5.136	Scallops on shell gravel and sand with some sand scour
A5.14	Deep circalittoral coarse sediment
A5.141	[<i>Glycera lapidum</i>], [<i>Thyasira</i>] spp. and [<i>Amythasides macroglossus</i>] in offshore gravelly sand
A5.142	[<i>Hesionura elongata</i>] and [<i>Protodorvillea kefersteini</i>] in offshore coarse sand
A5.143	Coarse sand, 100-120 m, with polychaetes [<i>Hesionura elongata</i>], [<i>Protodorvillea kefersteini</i>], [<i>Protomystides bidentata</i>] and molluscs [<i>Moerella pygmaea</i>]
A5.144	Baltic gravel bottoms of the aphotic zone
A5.145	Baltic shell gravel bottoms of the aphotic zone
A5.2	Sublittoral sand
A5.21	Sublittoral sand in low or reduced salinity
A5.211	Baltic level sandy bottoms of the infralittoral photic zone with little or no macrophyte vegetation
A5.212	Baltic sand bars of the infralittoral photic zone
A5.213	Baltic sand banks of the infralittoral photic zone
A5.214	[<i>Macoma balthica</i>] in brackish environment (seasonally ice-covered)
A5.22	Sublittoral sand in variable salinity (estuaries)

EUNIS Habitat code	Scientific name
A5.221	Infralittoral mobile sand in variable salinity (estuaries)
A5.222	[<i>Nephtys cirrosa</i>] and fluctuating salinity-tolerant fauna in reduced salinity infralittoral mobile sand
A5.223	[<i>Neomysis integer</i>] and [<i>Gammarus</i>] spp. in low salinity shallow-water mobile sand
A5.23	Infralittoral fine sand
A5.231	Sparse fauna in marine infralittoral mobile clean sand
A5.232	[<i>Nephtys cirrosa</i>] and [<i>Bathyporeia</i>] spp. in shallow-water sand
A5.233	Semi-permanent tube-building amphipods and polychaetes in sublittoral sand
A5.234	[<i>Sertularia cupressina</i>] and [<i>Hydrallmania falcata</i>] on tide-swept sublittoral sand with cobbles or pebbles
A5.235	Mediterranean communities of fine sands in very shallow waters
A5.2351	Facies with [<i>Lentidium mediterraneum</i>]
A5.236	Mediterranean communities of well sorted fine sands
A5.24	Infralittoral muddy sand
A5.241	[<i>Echinocardium cordatum</i>] and [<i>Ensis</i>] spp. in shallow sublittoral slightly muddy fine sand
A5.242	[<i>Fabulina fabula</i>] and [<i>Magelona mirabilis</i>] with venerid bivalves and amphipods in infralittoral compacted fine muddy sand
A5.243	[<i>Arenicola marina</i>] in infralittoral fine sand or muddy sand
A5.244	[<i>Spisula subtruncata</i>] and [<i>Nephtys hombergii</i>] in shallow muddy sand
A5.245	[<i>Turritella</i>] in muddy sands
A5.246	[<i>Ervillia castanea</i>] beds in infralittoral sand
A5.25	Circalittoral fine sand
A5.251	[<i>Echinocyamus pusillus</i>], [<i>Ophelia borealis</i>] and [<i>Abra prismatica</i>] in circalittoral fine sand
A5.252	[<i>Abra prismatica</i>], [<i>Bathyporeia elegans</i>] and polychaetes in circalittoral fine sand
A5.253	Medium to very fine sand, 100-120 m, with polychaetes [<i>Spiophanes kroyeri</i>], [<i>Amphipectene auricoma</i>], [<i>Myriochele</i>] sp., [<i>Aricidea wassi</i>] and amphipods [<i>Harpinia antennaria</i>]
A5.254	Fine sand >80 m with polychaetes [<i>Ophelina neglecta</i>], [<i>Travisia forbesii</i>], crustaceans [<i>Bathyporeia elegans</i>], [<i>Eudorellopsis deformis</i>] and molluscs [<i>Abra prismatica</i>]
A5.26	Circalittoral muddy sand
A5.261	[<i>Abra alba</i>] and [<i>Nucula nitidosa</i>] in circalittoral muddy sand or slightly mixed sediment
A5.262	[<i>Amphiura brachiata</i>] with [<i>Astropecten irregularis</i>] and other echinoderms in circalittoral muddy sand
A5.27	Deep circalittoral sand
A5.271	[<i>Maldanid</i> polychaetes] and [<i>Eudorellopsis deformis</i>] in offshore circalittoral sand or muddy sand
A5.272	[<i>Owenia fusiformis</i>] and [<i>Amphiura filiformis</i>] in offshore circalittoral sand or muddy sand
A5.273	Baltic sandy bottoms of the aphotic zone
A5.28	Mediterranean communities of superficial muddy sands in sheltered waters
A5.281	Facies with [<i>Callianassa tyrrhena</i>] and [<i>Kellia corbuloides</i>]
A5.282	Facies with fresh water resurgences with [<i>Cerastoderma glaucum</i>] and [<i>Cyathura carinata</i>]
A5.283	Facies with [<i>Loripes lacteus</i>], [<i>Tapes</i>] spp.

EUNIS Habitat code	Scientific name
A5.284	Association with [<i>Caulerpa prolifera</i>] on superficial muddy sands in sheltered waters
A5.285	Facies of hydrothermal oozes with [<i>Cyclope neritea</i>] and nematodes
A5.3	Sublittoral mud
A5.31	Sublittoral mud in low or reduced salinity (lagoons)
A5.311	Baltic brackish water sublittoral muddy biocenoses influenced by varying salinity
A5.3111	Baltic muds of the infralittoral photic zone with little or no macrophyte vegetation
A5.3122	Boreal Baltic narrow inlets with soft mud substrate
A5.32	Sublittoral mud in variable salinity (estuaries)
A5.321	[<i>Polydora ciliata</i>] and [<i>Corophium volutator</i>] in variable salinity infralittoral firm mud or clay
A5.322	[<i>Aphelocheata marioni</i>] and [<i>Tubificoides</i>] spp. in variable salinity infralittoral mud
A5.323	[<i>Nephtys hombergii</i>] and [<i>Tubificoides</i>] spp. in variable salinity infralittoral soft mud
A5.324	[<i>Capitella capitata</i>] and [<i>Tubificoides</i>] spp. in reduced salinity infralittoral muddy sediment
A5.325	Oligochaetes in variable or reduced salinity infralittoral muddy sediment
A5.326	[<i>Limnodrilus hoffmeisteri</i>], [<i>Tubifex tubifex</i>] and [<i>Gammarus</i>] spp. in low salinity infralittoral muddy sediment
A5.327	Infralittoral fluid mobile mud
A5.33	Infralittoral sandy mud
A5.331	[<i>Sagartiogeton undatus</i>] and [<i>Asciidiella aspersa</i>] on infralittoral sandy mud
A5.332	[<i>Melinna palmata</i>] with [<i>Magelona</i>] spp. and [<i>Thyasira</i>] spp. infralittoral muddy sand or sandy mud
A5.333	[<i>Mysella bidentata</i>] and [<i>Abra</i>] spp. in infralittoral sandy mud
A5.334	[<i>Nephtys hombergii</i>] and [<i>Macoma balthica</i>] in infralittoral muddy sand or sandy mud
A5.335	[<i>Ampelisca</i>] spp., [<i>Photis longicaudata</i>] and other tube-building amphipods and polychaetes in infralittoral muddy sand or sandy mud
A5.336	[<i>Capitella capitata</i>] in enriched sublittoral muddy sediments
A5.34	Infralittoral fine mud
A5.341	[<i>Cerastoderma edule</i>] with [<i>Abra nitida</i>] in infralittoral mud
A5.342	[<i>Arenicola marina</i>] in infralittoral mud
A5.343	[<i>Philine aperta</i>] and [<i>Virgularia mirabilis</i>] in soft stable infralittoral mud
A5.344	[<i>Ocnus planci</i>] aggregations on sheltered sublittoral muddy sediment
A5.345	[<i>Astarte crenata</i>] beneath high salinity cold polar water
A5.346	Oligochaetes in mobile mud
A5.35	Circalittoral sandy mud
A5.351	[<i>Amphiura filiformis</i>], [<i>Mysella bidentata</i>] and [<i>Abra nitida</i>] in circalittoral muddy sand or sandy mud
A5.352	[<i>Thyasira</i>] spp. and [<i>Nuculoma tenuis</i>] in circalittoral sandy mud
A5.353	[<i>Amphiura filiformis</i>] and [<i>Nuculoma tenuis</i>] in circalittoral and offshore muddy sand
A5.354	[<i>Virgularia mirabilis</i>] and [<i>Ophiura</i>] spp. with [<i>Pecten maximus</i>] on circalittoral sandy or shelly mud
A5.3541	[<i>Virgularia mirabilis</i>] and [<i>Ophiura</i>] spp. with [<i>Pecten maximus</i>], hydroids and ascidians on circalittoral sandy or shelly mud with shells or stones
A5.355	[<i>Lagis koreni</i>] and [<i>Phaxas pellucidus</i>] in circalittoral muddy sand or sandy mud
A5.36	Circalittoral fine mud
A5.361	Seapens and burrowing megafauna in circalittoral soft mud

EUNIS Habitat code	Scientific name
A5.3611	Seapens, including [<i>Funiculina quadrangularis</i>], and burrowing megafauna in undisturbed circalittoral soft mud
A5.362	[<i>Brissopsis lyrifera</i>] and [<i>Amphiura chiajei</i>] in circalittoral mud
A5.363	Burrowing megafauna and [<i>Maxmuelleria lankesteri</i>] in circalittoral mud
A5.364	Silty sediments > 140 m with polychaetes [<i>Lumbrineris fragilis</i>], [<i>Levinsenia gracilis</i>] and amphipods [<i>Eriopisa elongata</i>]
A5.365	[<i>Spiochaetopterus</i>] beneath high salinity Atlantic water
A5.366	[<i>Macoma calcarea</i>] in deep-water soft clayey mud
A5.37	Deep circalittoral mud
A5.371	[<i>Ampharete falcata</i>] turf with [<i>Parvicardium ovale</i>] on cohesive muddy sediment near margins of deep stratified seas
A5.372	Foraminiferans and [<i>Thyasira</i>] spp. in deep circalittoral soft mud
A5.373	[<i>Styela gelatinosa</i>], [<i>Pseudamussium septemradiatum</i>] and solitary ascidians on sheltered deep circalittoral muddy sediment
A5.374	[<i>Capitella capitata</i>] and [<i>Thyasira</i>] spp. in organically-enriched offshore circalittoral mud and sandy mud
A5.3741	[<i>Capitella capitata</i>], [<i>Thyasira</i>] spp. and [<i>Ophryotrocha dubia</i>] inorganically-enriched offshore circalittoral mud or sandy mud
A5.375	[<i>Levinsenia gracilis</i>] and [<i>Heteromastus filiformis</i>] in offshore circalittoral mud and sandy mud
A5.376	[<i>Paramphinome jeffreysii</i>], [<i>Thyasira</i>] spp. and [<i>Amphiura filiformis</i>] in offshore circalittoral muddy sand and sandy mud
A5.377	[<i>Myrtea spinifera</i>] and polychaetes in offshore circalittoral muddy sand and sandy mud
A5.378	Baltic muddy bottoms of the aphotic zone
A5.38	Mediterranean communities of the muddy detritic bottom
A5.381	Facies with [<i>Ophiothrix quinquemaculata</i>]
A5.39	Mediterranean communities of coastal terrigenous muds
A5.391	Facies of soft muds with [<i>Turritella tricarinata communis</i>]
A5.392	Facies of sticky muds with [<i>Virgularia mirabilis</i>] and [<i>Pennatula phosphorea</i>]
A5.393	Facies of sticky muds with [<i>Alcyonium palmatum</i>] and [<i>Stichopus regalis</i>]
A5.4	Sublittoral mixed sediments
A5.41	Sublittoral mixed sediment in low or reduced salinity (lagoons)
A5.411	Baltic level mixed sediment bottoms of the infralittoral photic zone with little or no macrophyte vegetation
A5.42	Sublittoral mixed sediment in variable salinity (estuaries)
A5.421	[<i>Aphelochaeta</i>] spp. and [<i>Polydora</i>] spp. in sandy gravely mud
A5.422	[<i>Crepidula fornicata</i>] and [<i>Mediomastus fragilis</i>] in variable salinity infralittoral mixed sediment
A5.43	Infralittoral mixed sediments
A5.431	[<i>Crepidula fornicata</i>] with ascidians and anemones on infralittoral coarse mixed sediment
A5.432	[<i>Venerupis senegalensis</i>], [<i>Amphipholis squamata</i>] and [<i>Apseudes latreilli</i>] in infralittoral mixed sediment
A5.433	[<i>Sabella pavonina</i>] with sponges and anemones on infralittoral mixed sediment
A5.434	[<i>Limaria hians</i>] beds in tide-swept sublittoral muddy mixed sediment
A5.435	[<i>Ostrea edulis</i>] beds on shallow sublittoral muddy sediment
A5.44	Circalittoral mixed sediments

EUNIS Habitat code	Scientific name
A5.441	[Flustra foliacea] and [Hydrallmania falcata] on tide-swept circalittoral cobbles and pebbles in sediment
A5.442	[Cerianthus lloydii] and other burrowing anemones in circalittoral muddy mixed sediment
A5.4421	[Cerianthus lloydii] with [Nemertesia] spp. and other hydroids in circalittoral muddy mixed sediment with cobbles and pebbles
A5.443	Sparse [Modiolus modiolus], dense [Cerianthus lloydii] and burrowing holothurians on sheltered circalittoral stones and mixed sediment
A5.444	[Mysella bidentata] and [Thyasira] spp. in circalittoral muddy mixed sediment
A5.445	[Ophiothrix fragilis] and/or [Ophiocomina nigra] brittlestar beds on sublittoral mixed sediment
A5.446	Sandy mixed sediment with [Alcyonidium diaphanum]
A5.447	[Ophiothrix fragilis] brittlestar beds with moderately strong tidal streams
A5.448	Crinoids [Leptometra celtica]
A5.45	Deep mixed sediments
A5.451	Polychaete-rich deep [Venus] community in offshore gravelly muddy sand
A5.452	Baltic mixed sediment bottoms of the aphotic zone
A5.46	Mediterranean communities of the coastal detritic bottom
A5.461	Association with rhodolithes on coastal detritic bottoms
A5.462	Association with [Peyssonnelia rosa-marina]
A5.463	Association with [Arthrocladia villosa]
A5.464	Association with [Osmundaria volubilis]
A5.465	Association with [Kallymenia patens]
A5.466	Association with [Laminaria rodriguezii]
A5.467	Facies with [Ophiura texturata]
A5.468	Facies with Synascidies
A5.469	Facies with large Bryozoa
A5.47	Mediterranean communities of shelf-edge detritic bottom
A5.471	Facies with [Neolampas rostellata]
A5.472	Facies with [Leptometra phalangium]
A5.5	Sublittoral macrophyte-dominated sediment
A5.51	Maerl beds
A5.511	[Phymatolithon calcareum] maerl beds in infralittoral clean gravel or coarse sand
A5.5111	[Phymatolithon calcareum] maerl beds with red seaweeds in shallow infralittoral clean gravel or coarse sand
A5.5112	[Phymatolithon calcareum] maerl beds with [Neopentadactyla mixta] and other echinoderms in deeper infralittoral clean gravel or coarse sand
A5.512	[Lithothamnion glaciale] maerl beds in tide-swept variable salinity infralittoral gravel
A5.513	[Lithophyllum fasciculatum] maerl beds on infralittoral sandy mud or mud
A5.514	[Lithothamnion corallioides] maerl beds on infralittoral muddy gravel
A5.515	Maerl facies ([Lithothamnion corallioides] and [Phymatolithon calcareum])
A5.516	Maerl facies (= Association with [Lithothamnion corallioides] and [Phymatolithon calcareum])
A5.517	Association with rhodolithes in coarse sands and fine gravels under the influence of bottom currents
A5.52	Kelp and seaweed communities on sublittoral sediment
A5.521	[Laminaria saccharina] and red seaweeds on infralittoral sediments

EUNIS Habitat code	Scientific name
A5.5211	Red seaweeds and kelps on tide-swept mobile infralittoral cobbles and pebbles
A5.5212	[<i>Laminaria saccharina</i>] and robust red algae on infralittoral gravel and pebble
A5.5213	[<i>Laminaria saccharina</i>] and filamentous red algae on infralittoral sand
A5.5214	[<i>Laminaria saccharina</i>] with red and brown seaweeds on lower infralittoral muddy mixed sediment
A5.522	[<i>Laminaria saccharina</i>] and [<i>Chorda filum</i>] on sheltered upper infralittoral muddy sediment
A5.523	[<i>Laminaria saccharina</i>], [<i>Gracilaria gracilis</i>] and brown seaweeds on full salinity infralittoral sediment
A5.524	[<i>Laminaria saccharina</i>] and [<i>Gracilaria gracilis</i>] with sponges and ascidians on variable salinity infralittoral sediment
A5.525	[<i>Laminaria saccharina</i>] with [<i>Psammechinus miliaris</i>] and/or [<i>Modiolus modiolus</i>] on variable salinity infralittoral sediment
A5.526	Mats of [<i>Trailiella</i>] on infralittoral muddy gravel
A5.527	Loose-lying mats of [<i>Phyllophora crispa</i>] on infralittoral muddy sediment
A5.528	Filamentous green seaweeds on low salinity infralittoral mixed sediment or rock
A5.529	Facies with [<i>Ficopomatus enigmaticus</i>]
A5.52A	Association with [<i>Gracilaria</i>] spp.
A5.52B	Association with [<i>Chaetomorpha linum</i>] and [<i>Valonia aegagropila</i>]
A5.52C	Association with [<i>Halopitys incurva</i>]
A5.52D	Association with [<i>Ulva laetevirens</i>] and [<i>Enteromorpha linza</i>]
A5.52E	Association with [<i>Cystoseira barbata</i>]
A5.52F	Association with [<i>Lamprothamnium papulosum</i>]
A5.52G	Association with [<i>Cladophora echinus</i>] and [<i>Rytiphloea tinctoria</i>]
A5.53	Sublittoral seagrass beds
A5.531	[<i>Cymodocea</i>] beds
A5.5311	Macaronesian [<i>Cymodocea</i>] beds
A5.5312	Lusitanian [<i>Cymodocea</i>] beds
A5.5313	Mediterranean [<i>Cymodocea</i>] beds
A5.53131	Association with [<i>Cymodocea nodosa</i>] on well sorted fine sands
A5.53132	Association with [<i>Cymodocea nodosa</i>] on superficial muddy sands in sheltered waters
A5.532	[<i>Halophila</i>] beds
A5.5321	Canarian [<i>Halophila</i>] beds
A5.5322	Mediterranean [<i>Halophila</i>] beds
A5.533	[<i>Zostera</i>] beds in full salinity infralittoral sediments
A5.5331	[<i>Zostera marina</i>]/[<i>angustifolia</i>] beds in sublittoral clean or muddy sand
A5.5332	Association with [<i>Zostera noltii</i>] in euryhaline and eurythermal environment
A5.5333	Association with [<i>Zostera marina</i>] in euryhaline and eurythermal environment
A5.5334	Association with [<i>Zostera noltii</i>] on superficial muddy sands in sheltered waters
A5.534	[<i>Ruppia</i>] and [<i>Zannichellia</i>] communities
A5.5341	Middle European [<i>Ruppia</i>] and [<i>Zannichellia</i>] communities
A5.5342	Tethyan marine [<i>Ruppia</i>] communities
A5.5343	[<i>Ruppia maritima</i>] in reduced salinity infralittoral muddy sand
A5.535	[<i>Posidonia</i>] beds
A5.5351	Ecomorphosis of striped [<i>Posidonia oceanica</i>] meadows

EUNIS Habitat code	Scientific name
A5.5352	Ecomorphosis of "barrier-reef" [<i>Posidonia oceanica</i>] meadows
A5.5353	Facies of dead "mattes" of [<i>Posidonia oceanica</i>] without much epiflora
A5.5354	Association with [<i>Caulerpa prolifera</i>] on [<i>Posidonia</i>] beds
A5.54	Angiosperm communities in reduced salinity
A5.541	Vegetation of brackish waters dominated by [<i>Phragmites australis</i>]
A5.542	Association with [<i>Potamogeton pectinatus</i>]
A5.543	Vegetation of brackish waters dominated by [<i>Ranunculus baudotii</i>]
A5.544	Vegetation of brackish waters dominated by [<i>Scirpus lacustris</i>] or [<i>Scirpus tabernaemontani</i>]
A5.545	[<i>Zostera</i>] beds in reduced salinity infralittoral sediments
A5.6	Sublittoral biogenic reefs
A5.61	Sublittoral polychaete reefs on sediment
A5.611	[<i>Sabellaria spinulosa</i>] on stable circalittoral mixed sediment
A5.612	[<i>Sabellaria alveolata</i>] on variable salinity sublittoral mixed sediment
A5.613	[<i>Serpula vermicularis</i>] reefs on very sheltered circalittoral muddy sand
A5.62	Sublittoral mussel beds on sediment
A5.621	[<i>Modiolus modiolus</i>] beds with hydroids and red seaweeds on tide-swept circalittoral mixed substrata
A5.622	[<i>Modiolus modiolus</i>] beds on open coast circalittoral mixed sediment
A5.623	[<i>Modiolus modiolus</i>] beds with fine hydroids and large solitary ascidians on very sheltered circalittoral mixed substrata
A5.624	[<i>Modiolus modiolus</i>] beds with [<i>Chlamys varia</i>], sponges, hydroids and bryozoans on slightly tide-swept very sheltered circalittoral mixed substrata
A5.625	[<i>Mytilus edulis</i>] beds on sublittoral sediment
A5.626	[<i>Hiatella arctica</i>] beds on silty clay with small pebbles and shells
A5.627	Baltic mussel beds in the infralittoral photic zone
A5.6271	Baltic mussel beds in the infralittoral photic zone with little or no macrophyte vegetation
A5.6272	Baltic mussel beds of the infralittoral photic zone dominated by macrophyte vegetation
A5.63	Circalittoral coral reefs
A5.631	Circalittoral [<i>Lophelia pertusa</i>] reefs
A5.7	Features of sublittoral sediments
A5.71	Seeps and vents in sublittoral sediments
A5.711	Bubbling reefs in the sublittoral euphotic zone
A5.7111	Bubbling reefs in the sublittoral euphotic zone with little or no macrophyte vegetation
A5.7112	Bubbling reefs in the sublittoral euphotic zone dominated by macrophyte vegetation
A5.712	Bubbling reefs in the aphotic zone
A5.713	Freshwater seeps in sublittoral sediments
A5.714	Methane seeps in sublittoral sediments
A5.715	Oil seeps in sublittoral sediments
A5.716	Vents in sublittoral sediments
A5.72	Organically-enriched or anoxic sublittoral habitats
A5.721	Periodically and permanently anoxic sublittoral muds
A5.7211	[<i>Beggiatoa</i>] spp. on anoxic sublittoral mud
A6	Deep-sea bed

EUNIS Habitat code	Scientific name
A6.1	Deep-sea rock and artificial hard substrata
A6.11	Deep-sea bedrock
A6.12	Deep-sea artificial hard substrata
A6.13	Deep-sea manganese nodules
A6.14	Boulders on the deep-sea bed
A6.2	Deep-sea mixed substrata
A6.21	Deep-sea lag deposits
A6.22	Deep-sea biogenic gravels (shells, coral debris)
A6.23	Deep-sea calcareous pavements
A6.24	Communities of allochthonous material
A6.241	Communities of macrophyte debris
A6.3	Deep-sea sand
A6.31	Communities of bathyal detritic sands with [<i>Grypheus vitreus</i>]
A6.4	Deep-sea muddy sand
A6.5	Deep-sea mud
A6.51	Mediterranean communities of bathyal muds
A6.511	Facies of sandy muds with [<i>Thenea muricata</i>]
A6.512	Facies of fluid muds with [<i>Brissopsis lyrifera</i>]
A6.513	Facies of soft muds with [<i>Funiculina quadrangularis</i>] and [<i>Apporhais seressianus</i>]
A6.514	Facies of compact muds with [<i>Isidella elongata</i>]
A6.52	Communities of abyssal muds
A6.6	Deep-sea bioherms
A6.61	Communities of deep-sea corals
A6.611	Deep-sea [<i>Lophelia pertusa</i>] reefs
A6.62	Deep-sea sponge aggregations
A6.621	Facies with [<i>Pheronema grayi</i>]
A6.7	Raised features of the deep-sea bed
A6.71	Permanently submerged flanks of oceanic islands
A6.72	Seamounts, knolls and banks
A6.721	Summit communities of seamount, knoll or bank within euphotic zone
A6.722	Summit communities of seamount, knoll or bank within the mesopelagic zone, i.e. interacting with diurnally migrating plankton
A6.723	Deep summit communities of seamount, knoll or bank (i.e. below mesopelagic zone)
A6.724	Flanks of seamount, knoll or bank
A6.725	Base of seamount, knoll or bank
A6.7251	Moat around base of seamount, knoll or bank
A6.73	Oceanic ridges
A6.731	Communities of ridge flanks
A6.732	Communities of ridge axial trough (i.e. non-vent fauna)
A6.733	Oceanic ridge without hydrothermal effects
A6.74	Abyssal hills
A6.75	Carbonate mounds
A6.8	Deep-sea trenches and canyons, channels, slope failures and slumps on the continental slope
A6.81	Canyons, channels, slope failures and slumps on the continental slope

EUNIS Habitat code	Scientific name
A6.811	Active downslope channels
A6.812	Inactive downslope channels
A6.813	Alongslope channels
A6.814	Turbidites and fans
A6.82	Deep-sea trenches
A6.9	Vents, seeps, hypoxic and anoxic habitats of the deep sea
A6.91	Deep-sea reducing habitats
A6.911	Seeps in the deep-sea bed
A6.9111	Cold seep benthic communities of hadal zone
A6.912	Gas hydrates in deep-sea
A6.913	Cetacean and other carcasses on the deep-sea bed
A6.92	Deep-sea bed influenced by hypoxic water column
A6.93	Isolated 'oceanic' features influenced by hypoxic water column
A6.94	Vents in the deep sea
A6.941	Active vent fields
A6.942	Inactive vent fields
A7	Pelagic water column
A7.1	Neuston
A7.11	Temporary neuston layer
A7.12	Permanent neuston layer
A7.2	Completely mixed water column with reduced salinity
A7.21	Completely mixed water column with reduced salinity and short residence time
A7.211	Baltic outer unenclosed seasonally stratified coastal water
A7.22	Completely mixed water column with reduced salinity and medium residence time
A7.221	Baltic inner unenclosed seasonally stratified coastal water
A7.23	Completely mixed water column with reduced salinity and long residence time
A7.231	Water body of Baltic eutrophic coastal lakes
A7.232	Water body of Baltic mesotrophic coastal lakes
A7.233	Water body of Baltic eutrophic glo-lakes
A7.234	Water body of Baltic mesotrophic glo-lakes
A7.3	Completely mixed water column with full salinity
A7.31	Completely mixed water column with full salinity and short residence time
A7.32	Completely mixed water column with full salinity and medium residence time
A7.33	Completely mixed water column with full salinity and long residence time
A7.4	Partially mixed water column with reduced salinity and medium or long residence time
A7.41	Partially mixed water column with reduced salinity and medium residence time
A7.42	Partially mixed water column with reduced salinity and long residence time
A7.5	Unstratified water column with reduced salinity
A7.51	Euphotic (epipelagic) zone in unstratified reduced salinity water
A7.52	Mesopelagic zone in unstratified reduced salinity water
A7.53	Bathypelagic zone in unstratified reduced salinity water
A7.54	Abyssopeagic zone in unstratified reduced salinity water
A7.6	Vertically stratified water column with reduced salinity
A7.61	Water column with ephemeral thermal stratification and reduced salinity

EUNIS Habitat code	Scientific name
A7.62	Water column with seasonal thermal stratification and reduced salinity
A7.63	Water column with permanent thermal stratification and reduced salinity
A7.64	Water column with ephemeral halocline and reduced salinity
A7.65	Water column with seasonal halocline and reduced salinity
A7.66	Water column with permanent halocline and reduced salinity
A7.661	Baltic offshore deep water above the halocline
A7.662	Baltic offshore deep water below the halocline
A7.67	Water column with ephemeral oxygen stratification and reduced salinity
A7.68	Water column with seasonal oxygen stratification and reduced salinity
A7.69	Water column with permanent oxygen stratification and reduced salinity
A7.7	Fronts in reduced salinity water column
A7.71	Ephemeral fronts in reduced salinity water column
A7.72	Seasonal fronts in reduced salinity water column
A7.73	Persistent fronts in reduced salinity water column
A7.8	Unstratified water column with full salinity
A7.81	Euphotic (epipelagic) zone in unstratified full salinity water
A7.82	Mesopelagic zone in unstratified full salinity water
A7.83	Bathypelagic zone in unstratified full salinity water
A7.84	Abyssopeagic zone in unstratified full salinity water
A7.9	Vertically stratified water column with full salinity
A7.91	Water column with ephemeral thermal stratification and full salinity
A7.92	Water column with seasonal thermal stratification and full salinity
A7.93	Water column with permanent thermal stratification and full salinity
A7.94	Water column with ephemeral halocline and full salinity
A7.95	Water column with seasonal halocline and full salinity
A7.96	Water column with permanent halocline and full salinity
A7.97	Water column with ephemeral oxygen stratification and full salinity
A7.98	Water column with seasonal oxygen stratification and full salinity
A7.99	Water column with permanent oxygen stratification and full salinity
A7.991	Anoxic water column in water with permanent oxygen stratification and full salinity
A7.A	Fronts in full salinity water column
A7.A1	Ephemeral fronts in full salinity water column
A7.A2	Seasonal fronts in full salinity water column
A7.A3	Persistent fronts in full salinity water column
A8	Ice-associated marine habitats
A8.1	Sea ice
A8.11	Seasonal pack-ice
A8.12	Permanent pack-ice
A8.13	Ice floes
A8.2	Freshwater ice
A8.21	Large tabular iceberg
A8.22	Medium iceberg
A8.23	Small iceberg
A8.24	Bergy bit
A8.25	Growler

EUNIS Habitat code	Scientific name
A8.3	Brine channels
A8.31	Brine channels in first year ice
A8.32	Brine channels in multi-year ice
A8.4	Under-ice habitat
A8.41	Under-ice habitat in first-year ice
A8.42	Under-ice habitat in multi-year ice
B	Coastal habitats
B1	Coastal dunes and sandy shores
B1.1	Angiosperm communities of sand beach driftlines
B1.11	Boreo-Arctic sand beach annual communities
B1.12	Middle European sand beach annual communities
B1.121	Baltic sand beach annual communities
B1.13	Tethyan sand beach driftline communities
B1.131	Western Tethyan sand beach annual communities
B1.132	Pontic sand beach annual communities
B1.133	Pontic sand beach perennial communities
B1.2	Sand beaches above the driftline
B1.21	Unvegetated sand beaches above the driftline
B1.211	Baltic unvegetated spits and bars above the driftline
B1.212	Baltic unvegetated sandy beaches above the driftline
B1.22	Biocenosis of supralittoral sands
B1.221	Facies of depressions with residual humidity
B1.222	Facies of quickly-drying wracks
B1.223	Facies of tree trunks which have been washed ashore
B1.224	Facies of phanerogams which have been washed ashore (upper part)
B1.23	Boreo-arctic sand beach perennial communities
B1.231	North Sea sand beach perennial communities
B1.232	Baltic sand beach perennial communities
B1.233	Boreo-Bothnian sand beach perennial communities
B1.234	Icelandic sand beach perennial communities
B1.235	Beach ridges consisting of algal or other plant material
B1.24	Sandy beach ridges with no or low vegetation
B1.25	Sandy beach ridges dominated by shrubs or trees
B1.3	Shifting coastal dunes
B1.31	Embryonic shifting dunes
B1.311	Atlantic embryonic dunes
B1.312	Western Tethyan embryonic dunes
B1.313	Pontic embryonic dunes
B1.314	Large migrating dunes with no or low vegetation
B1.32	White dunes
B1.321	Atlantic white dunes
B1.3211	Coastal dunes: white dunes (sensu strictu)
B1.3212	Coastal dunes: green dunes
B1.322	Western Tethyan white dunes
B1.323	Canario-Saharan white dunes

EUNIS Habitat code	Scientific name
B1.324	Pontic white dunes
B1.33	Young boreo-arctic dunes
B1.4	Coastal stable dune grassland (grey dunes)
B1.41	Northern fixed grey dunes
B1.411	Crested-hairgrass dune communities
B1.412	Grey-hairgrass dune communities
B1.413	Mouse-ear dune communities
B1.42	Biscay fixed grey dunes
B1.43	Mediterraneo-Atlantic fixed grey dunes
B1.44	East Mediterranean fixed grey dunes
B1.45	Atlantic dune [Mesobromion] grassland
B1.46	Atlantic dune thermophile fringes
B1.47	Dune fine-grass annual communities
B1.48	Tethyan dune deep sand therophyte communities
B1.49	Dune Mediterranean xeric grassland
B1.4A	Thermo-Atlantic succulent and semi-fixed dunes
B1.4B	Pontic fixed dunes
B1.4B1	Western Pontic fixed dunes
B1.4B11	Southwestern Pontic fixed dunes
B1.4B12	Northwestern Pontic fixed dunes
B1.4B2	Eastern Pontic fixed dunes
B1.4B3	Southern Pontic fixed dunes
B1.4C	Boreo-arctic grey dunes
B1.5	Coastal dune heaths
B1.51	[Empetrum] brown dunes
B1.52	[Calluna vulgaris] brown dunes
B1.521	East Anglian ling coastal dune heaths
B1.522	French ling coastal dune heaths
B1.523	British bell heather coastal dune heaths
B1.524	French bell heather coastal dune heaths
B1.525	French Dorset heath coastal dune heaths
B1.526	Iberian green heather coastal dune heaths
B1.527	Iberian Dorset heath coastal dune heaths
B1.528	Northern ling coastal dune heaths
B1.6	Coastal dune scrub
B1.61	Coastal dune thickets
B1.611	[Hippophae rhamnoides] dune thickets
B1.612	Western nemoral mixed dune thickets
B1.62	[Salix arenaria] mats
B1.63	Dune [Juniperus] thickets
B1.631	Dune prickly juniper thickets
B1.632	Lycian juniper thickets
B1.633	Rufescent juniper thickets
B1.634	Common juniper dune thickets
B1.64	Dune sclerophyllous scrubs and thickets

EUNIS Habitat code	Scientific name
B1.7	Coastal dune woods
B1.71	Coastal brown dunes covered with natural or almost natural coniferous forest, e.g. [<i>Pinus silvestris</i>]
B1.72	Coastal brown dunes covered with deciduous forest ([<i>Fagus</i>], [<i>Betula</i>], [<i>Quercus</i>])
B1.8	Moist and wet dune slacks
B1.81	Dune-slack pools
B1.82	Dune-slack pioneer swards
B1.83	Dune-slack fens
B1.84	Dune-slack grassland and heaths
B1.85	Dune-slack reedbeds, sedgebeds and canebeds
B1.86	Coastal dunes: wet dune slacks: dominated by shrubs or trees
B1.9	Machair
B2	Coastal shingle
B2.1	Shingle beach driftlines
B2.11	Boreo-arctic gravel beach annual communities
B2.12	Atlantic and Baltic shingle beach drift lines
B2.13	Gravel beach communities of the mediterranean region
B2.14	Biocenosis of slowly drying wracks
B2.2	Unvegetated mobile shingle beaches above the driftline
B2.3	Upper shingle beaches with open vegetation
B2.31	Baltic [<i>Crambe maritima</i>] communities
B2.32	Channel [<i>Crambe maritima</i>] communities
B2.33	Atlantic [<i>Crambe maritima</i>] communities
B2.4	Fixed shingle beaches, with herbaceous vegetation
B2.41	Euro-Siberian gravel bank grasslands
B2.5	Shingle and gravel beaches with scrub
B2.51	Euro-Siberian gravel bank heaths
B2.6	Shingle and gravel beach woodland
B3	Rock cliffs, ledges and shores, including the supralittoral
B3.1	Supralittoral rock (lichen or splash zone)
B3.11	Lichens or small green algae on supralittoral rock
B3.111	Yellow and grey lichens on supralittoral rock
B3.112	[<i>Prasiola stipitata</i>] on nitrate-enriched supralittoral or littoral fringe rock
B3.113	[<i>Verrucaria maura</i>] on littoral fringe rock
B3.1131	[<i>Verrucaria maura</i>] and sparse barnacles on exposed littoral fringe rock
B3.1132	[<i>Verrucaria maura</i>] on moderately exposed to very sheltered upper littoral fringe rock
B3.114	[<i>Blidingia</i>] spp. on vertical littoral fringe chalk
B3.115	[<i>Ulothrix flacca</i>] and [<i>Urospora</i>] spp. on freshwater-influenced vertical littoral fringe soft rock
B3.116	Association with [<i>Entophysalis deusta</i>] and [<i>Verrucaria amphibia</i>]
B3.12	Rock stacks and islets above high tide level in splash zone
B3.2	Unvegetated rock cliffs, ledges, shores and islets
B3.21	High Arctic sea-cliffs and rocky shores
B3.22	Atlantic low Arctic sea-cliffs and rocky shores
B3.23	Temperate Atlantic sea-cliffs and rocky shores

EUNIS Habitat code	Scientific name
B3.24	Unvegetated Baltic rocky shores and cliffs
B3.241	Baltic boulder beaches
B3.242	Baltic unvegetated gently sloping limestone rocky shores
B3.243	Baltic unvegetated gently sloping sandstone rocky shores
B3.244	Baltic unvegetated gently sloping crystalline bedrock shores
B3.245	Baltic unvegetated coastal limestone cliffs and caves
B3.246	Baltic unvegetated coastal sandstone cliffs and caves
B3.247	Baltic unvegetated coastal crystalline bedrock cliffs and caves
B3.25	Subtropical Atlantic sea-cliffs and rocky shores
B3.26	Mediterraneo-Pontic sea-cliffs and rocky shores
B3.27	Rock stacks and islets above splash zone
B3.3	Rock cliffs, ledges and shores, with angiosperms
B3.31	Atlantic sea-cliff communities
B3.32	Vegetated Baltic gently sloping rocky shores and cliffs
B3.321	Baltic gently sloping limestone rocky shores with low vegetation
B3.322	Baltic gently sloping limestone rocky shores dominated by shrubs or trees
B3.323	Baltic gently sloping sandstone rocky shores with low vegetation
B3.324	Baltic gently sloping sandstone rocky shores dominated by shrubs or trees
B3.325	Baltic gently sloping crystalline bedrock shores with low vegetation
B3.326	Baltic gently sloping crystalline bedrock shores dominated by shrubs or trees
B3.327	Baltic coastal limestone cliffs and caves with low vegetation
B3.328	Baltic coastal limestone cliffs and caves dominated by shrubs or trees
B3.329	Baltic coastal sandstone cliffs and caves with low vegetation
B3.32A	Baltic coastal sandstone cliffs and caves dominated by shrubs or trees
B3.32B	Baltic coastal crystalline bedrock cliffs and caves with low vegetation
B3.32C	Baltic coastal crystalline bedrock cliffs and caves dominated by shrubs or trees
B3.33	Tethyan sea-cliff communities
B3.331	Western Tethyan sea-cliff communities
B3.332	Pontic sea-cliff communities
B3.3321	Western Pontic herbaceous sea-cliff communities
B3.3322	Western Pontic sea-cliff [Ficus] thickets
B3.3323	Western Pontic low cliff communities
B3.3324	Eastern Pontic sea-cliff communities
B3.3325	Southern Pontic sea-cliff communities
B3.34	Canarian and Madeiran sea-cliff communities
B3.35	Azorean sea-cliff communities
B3.36	Coastal lagoon cliff communities
B3.361	Pantellerian lagoon cliff communities
B3.362	Pontic saline lagoon cliffs
B3.4	Soft sea-cliffs, often vegetated
B3.41	Baltic chalk and moraine cliffs
B3.411	Baltic unvegetated coastal chalk cliffs and caves
B3.412	Baltic coastal chalk cliffs and caves with low vegetation
B3.413	Baltic coastal chalk cliffs and caves dominated by shrubs or trees
B3.414	Baltic unvegetated coastal moraine cliffs and caves

EUNIS Habitat code	Scientific name
B3.415	Baltic unvegetated coastal moraine cliffs and caves with low vegetation
B3.416	Baltic unvegetated coastal moraine cliffs and caves dominated by shrubs or trees

ANNEX 3. EXTRACT FROM GLOSSARY OF TERMS ²

TERM	DEFINITION
abiotic factor	Physical, chemical and other non-living environmental factors. They are essential for living plants and animals of an ecosystem, providing the essential elements and nutrients that are necessary for growth. The abiotic elements also include the climatic and pedologic components of the ecosystem.
algae	A large assemblage of lower plants, formerly regarded as a single group, but now usually classified in eight separate divisions or phyla, including the blue-green algae (Cyanophyta), green algae (Chlorophyta), brown algae (Phaeophyta), red algae (Rhodophyta) and diatoms and their allies (Chrysophyta). Marine algae are commonly known as seaweeds.
allochthonous	Not indigenous; acquired. Applied to material which did not originate in its present position (e.g. plant material in a deposit, such as a lake or marine sediment, which did not grow at that location but was introduced by some process).
angiosperms	The class of seed plants that includes all the flowering plants, characterised by the possession of flowers. The ovules, which become seeds after fertilisation, are enclosed in ovaries. The xylem contains true vessels. The Angiospermae are divided into two subclasses: Monocotyledoneae and Dicotyledoneae.
anoxic	The condition of oxygen deficiency or absence of oxygen. Anoxic sediments and anoxic bottom waters are commonly produced where there is a deficiency of oxygen, owing to very high organic productivity, and a lack of oxygen replenishment to the water or sediment, as in the case of stagnation or stratification of the body of water.
aquatic	Growing or living in or near water.
aquatic habitat	Water-covered by either marine or fresh waters and including littoral zones.
aquatic plant	Plants adapted for a partially or completely submerged life.
artificial habitat	Primarily human settlements, industrial developments, transport or waste dump sites or highly artificial waters with wholly constructed beds or heavily contaminated water.
beach	The unconsolidated material that covers a gently sloping zone, typically with a concave profile, extending landward from the low-water line to the place where there is a definite change in material or physiographic from (such as a cliff), or to the line of permanent vegetation (usually the effective limit of the highest storm waves); a shore of body of water, formed and washed by waves or tides, usually covered by sand or gravel, and lacking a bare rocky surface.
bedrock	Unweathered rock. Includes very soft rock-types such as chalk and clay.
benthic zone	The lowermost region of a freshwater or marine profile in which the benthos resides. In bodies of deep water where little light penetrates to the bottom the zone is referred to as the benthic abyssal region and productivity is relatively low. In shallower (i.e. coastal) regions where the benthic zone is well lit, the

² The terms listed here are selected from those which apply to marine and coastal habitats. The full glossary of terms is available on the EEA website. The website includes the source of the definitions used.

TERM	DEFINITION
	zone is referred to as the benthic littoral region and it supports some of the world's most productive ecosystems.
benthos	Those organisms attached to, living on, in or near the sea bed, river bed or lake floor.
biocoenosis	A community or natural assemblage of organisms; often used as an alternative to ecosystem but strictly is the fauna/flora association excluding physical aspects of the environment.
biogenic	Resulting from the actions of living organisms.
biogenic reef	A structure formed by the aggregation or concretion of individuals or the development of colonies into a structure which is firm or solid and distinct from the surrounding seabed. The reef may be composed almost entirely of the reef building species and its tubes or shells, or it may be intermixed with sediments, stones and shells bound together by the reef building species. The reef provides a relatively stable surface upon which an epibiota community may develop.(c.f. Reef)
biogenic rock	An organic rock produced by the physiological activities of plant or animal organisms.
bioherm	A mound, dome, or reef-like mass of rock that is composed almost exclusively of the remains of sedentary marine organisms and is embedded in rock of different physical character .
biotic factor	The influence upon the environment of organisms owing to the presence and activities of other organisms (e.g. the casting of shade and competition), as distinct from a physical, abiotic environmental factor.
biotope	An area of relatively uniform environmental conditions, occupied by a given plant community and its associated animal community.
boulder	Mineral substrate with dominant particle size > 256mm. Very large boulders (>1024mm), large boulders (512-1024mm), small boulders (256-512mm). (Wentworth scale of particle sizes.)
brackish water	Water with a salt concentration between 5-18ppt (dividing point from Surface Water Directive (75/440/EEC) Annex II). (See also saline, oligohaline, mesohaline, euhaline, polyhaline)
bryophytes	A major grouping or phylum of green lower plants, comprising the mosses and liverworts.
calcareous	Applied to substances containing calcium carbonate.
cave / cavern	A natural cavity, chamber or recess which leads beneath the surface of the earth, generally in a horizontal or obliquely inclined direction. It may be in the form of a passage or a gallery, its shape depending in part on the joint pattern or structure of the rock and partly on the type of process involved in its excavation. Thus, caves worn by subterranean rivers may be different in character from, and of considerably greater extent than, a sea-cave eroded by marine waves. / A natural underground open space, generally with a connection to the surface and large enough for a person to enter. The most common type of cave is formed in a limestone by dissolution.
chasmophytic	Plants growing in crevices.
circalittoral	Sub-tidal or non-tidal water, with insufficient light penetration to allow algae to dominate. May have some wave action, and tidal currents may exert a strong influence. (see also littoral, infralittoral, supralittoral)
cliff	A steep rock face.
coarse sand	Mineral substrate with dominant particle size 1-4mm. (Wentworth scale of particle sizes.)

TERM	DEFINITION
cobble	Mineral substrate with dominant particle size 64-256mm. (Wentworth scale of particle sizes.)
continental shelf	The gently seaward-sloping seabed surface that extends between the shoreline and the top of the continental slope at about 150m depth. The average gradient of the shelf is between 1:500 and 1:1000 and, although it varies greatly, the average width is approximately 70km.
continental slope	The relatively steeply-sloping surface that extends from the outer edge of a continental shelf down to the continental rise. The total relief is substantial, ranging from 1 km to 10 km, but the slope is not precipitous and ranges from 10 to 150 of slope (average 40). Along many coasts of the world the slope is furrowed by deep submarine canyons, terminating as fan-shaped deposits at the base.
deep seabed	Generally over 200 metres in depth.
driftline	High tide line on the sea shore characterised by lines of wave-deposited organic material
dune	A hill or ridge of wind-blown sand, especially one barren of vegetation. Also called 'sand-dune'.
dune slack	A flat-bottomed, hollow zone within a sand-dune system that has developed over impervious strata. The slack may result from erosion or blow-out of the dune system, and the flat base level is therefore close to or at the permanent water-table level. Characteristically, dune slacks have a rich, marshy flora, with Salix species (willow) as typical woody colonisers.
euhaline	Water with a salt content of 30 to 40 ppt. (See also brackish, saline water, oligohaline, mesohaline, polyhaline)
euphotic zone	The upper, illuminated zone of aquatic ecosystems: it is above the compensation level and therefore the zone of effective photosynthesis. In marine ecosystems it is much thinner than the deeper aphotic zone (below the level of effective light penetration), typically reaching 30m in coastal waters but extending to 100-200m in open ocean waters.
exposed	Prevailing wind is onshore although there is a degree of shelter because of extensive shallow areas offshore, offshore obstructions, a restricted (>900) window to open water. Not generally exposed to strong or regular swell. Also refers to open coasts facing away from prevailing winds but where strong winds with a long fetch are frequent. (See also extremely exposed, very exposed, moderately exposed)
extremely exposed	Applied to the few open coastlines which face into prevailing wind and receive ocean swell without any offshore breaks (such as islands or shallows) for several thousand km and where deep water is close to the shore (50m depth contour within about 300m, e.g. Rockall). (See also very exposed, exposed, moderately exposed.)
extremely sheltered	Fully enclosed with a fetch no greater than about 3km. (See also sheltered, very sheltered, ultra sheltered)
fen	An area of wet peat that is typically alkaline in reaction, or sometimes neutral or only slightly acidic. Alkalinity is due to groundwater draining from surrounding calcareous rocks. Usually characterised by reeds.
fern	Any of a large number of vascular plants composing the division Polypodiophyta, without flowers and fruits.
fine sand	Mineral substrate with dominant particle size 0.063-0.25mm. (Wentworth scale of particle sizes.)
forb	A non-grassy, herbaceous species (e.g. legumes and composites). (See also herb)

TERM	DEFINITION
freshwater	Water with a salt concentration less than 5ppt.
geolittoral	The terrestrial part of the shore of the Baltic Sea that is flooded episodically.
glacier	Slow moving masses of ice which have accumulated either on mountains or in polar regions. They are found where warm, moist air or warm water meets cold air or water. They move, influenced by the force of gravity and the pressure of the ice, above the underlying slush layers and slide downhill, eventually melting at lower levels to form rivers or reaching sea-level, where they form ice shelves or fall into the water as icebergs.
gravel	Mineral substrate with dominant particle size 4-16mm. (Wentworth scale of particle sizes.)
habitat	Plant and animal communities as the characterising elements of the biotic environment, together with abiotic factors (soil, climate, water availability and quality, and others), operating together at a particular scale.
halophyte	A terrestrial plant that is adapted morphologically and / or physiologically to grow in salt-rich soils and salt-laden air (e.g. <i>Salicornia</i> spp, glassworts).
hydrolittoral	The shores of non-tidal waters which lie below the mean water level and which are regularly or occasionally exposed by the action of wind.
hypolimnion	The lower, cooler, non-circulating water in a thermally stratified lake or sea in summer. If, as often occurs, the thermocline is below the compensation level, the dissolved oxygen supply of the hypolimnion depletes gradually; replenishment by photosynthesis and by contact with the atmosphere is prevented. Re-oxygenation is possible only when the thermal stratification breaks down in autumn.
ice pack	Large areas of floating ice, usually occurring in polar seas, consisting of separate pieces that have become massed together.
infralittoral	Shallow sub-tidal or non-tidal water below the mean water level, wave disturbed or algal-dominated or within the euphotic zone (q.v.). (See also littoral, circalittoral, supralittoral).
infralittoral	Shallow sub-tidal or non-tidal water below the mean water level, wave disturbed or algal-dominated or within the euphotic zone (q.v.). (See also littoral, circalittoral, supralittoral).
intertidal zone	The area between land and sea which is regularly exposed to the air by the tidal movement of the sea. Marine organisms that inhabit the intertidal zones have to adapt to periods of exposure to air and to the waves created by wind, which makes it the most physically demanding of the marine habitats. / The shore zone between the highest and lowest tides.
lagoon	Enclosed coastal saline or brackish waters, without a permanent surface connection to the sea but either with intermittent surface or sub-surface connections.
littoral	The intertidal zone of the seashore.
littoral zone	1. Non-marine ecosystems: the area in and adjacent to shallow, fresh water, where light penetration extends to the bottom sediments, giving a zone colonised by rooted plants (helophytes). 2. Marine ecosystems: the shore area or intertidal zone, where periodic exposure and submersion by tides is normal, or in non-tidal marine ecosystems, habitats which are normally water-covered but intermittently exposed due to the action of wind or atmospheric pressure changes (see hydrolittoral). Since the precise physical limits of tidal range vary constantly, a biological definition of the zone, which essentially reflects typical physical conditions rather than more rarely experienced events, is generally more useful. Thus in Britain, for example, the littoral zone is defined as the region between the upper limit of species of the seaweed

TERM	DEFINITION
	<i>Laminaria</i> and the upper limit of <i>Littorina</i> (periwinkles) or of the lichen <i>Verrucaria</i> . (See also eulittoral, infralittoral, circalittoral, supralittoral).
machair	1. An area of low, undulating tracts, supporting stable, herb-rich grassland growing on shell sand, which has developed over a long period by the accumulation of blown sand behind coastal sand-dunes, occurring most typically in the Hebrides and along the north-west coast of Scotland. 2. Characterised by wind-blown calcareous sand with a predominance of shell fragments over peat, a low proportion of sand-binding vegetation and a long history of agricultural use.
macrophyte	A large plant, especially a large aquatic angiosperm, or alga such as kelp (variety of large brown seaweed which is a source of iodine and potash).
marine	Of, or pertaining to, the sea (the continuous body of water covering most of the earth's surface and surrounding its land masses). Marine waters may be fully saline, brackish or almost fresh.
marsh	A more or less permanently wet area of mineral soil, as opposed to a peaty area, e.g. around the edges of a lake or on a flood-plain of a river.
mediolittoral	Of, relating to or inhabiting the part of the depth gradient along the shore of a sea or ocean in which there is an alternance of immersion and emergence due to tides and waves.
medium sand	Mineral substrate with dominant particle size 0.25-1mm. (Wentworth scale of particle sizes.)
mesic	Applied to an environment that is neither extremely wet (hydric) nor extremely dry (xeric).
mesohaline	Water with a salt content of 5 to 18 ppt. (See also brackish, saline water, oligohaline, euhaline, polyhaline)
moderately exposed	Open coasts facing away from prevailing winds and without a long fetch but where strong winds can be frequent.(See also extremely exposed, very exposed, exposed.)
moderately strong	The maximum tidal stream/current strength affecting the habitat is 1-3 knots (0.5 - 1.5 m/sec). This may differ considerably from tidal streams present nearby
mud	Wet mineral sediment with dominant particle size .004 to .063 mm. (Wentworth scale of particle sizes.) (See also silt)
mud (sediment)	A mixture of clay and/or silt with water to form a plastic mass with a particle size preponderantly below 0.06 mm diameter. It is deposited in low-energy environments in lakes, estuaries and lagoons. It may also be deposited in deep-sea environments. / 1) An unconsolidated sediment consisting of clay and/or silt, together with material of other dimensions (such as sand), mixed with water, without connotation as to composition; e.g. a recently exposed lake-bottom clay in a soft, ooze-like condition. 2) A mixture of silt and clay; the silt-plus-clay portion of a sedimentary rock, such as the finely divided calcareous matrix of a limestone.
mud flat	A relatively level area of fine silt along a shore (as in a sheltered estuary) or around an island, alternately covered and uncovered by the tide, or covered by shallow water.
oligohaline	Water with a salt content of 0.05 to 5 ppt. (See also brackish, saline water, mesohaline, euhaline, polyhaline)
outcrop	Rock exposed at the earth's surface which is not in the form of a more or less vertical cliff or more or less horizontal pavement
peat	Unconsolidated soil material consisting largely of undecomposed or slightly decomposed organic matter accumulated under conditions of excessive

TERM	DEFINITION
	moisture.
peat bog	A bog in which peat has formed under conditions of acidity.
pebbles	Mineral substrate with dominant particle size 16-63mm. (Wentworth scale of particle sizes.)
pelagic water	The open-water environment, or water column, as distinct from the bed or shore, inhabited by swimming marine or freshwater organisms.
phytobenthos	Vascular plants, fungi and photosynthetic algae (including cyanobacteria) other than macrophytes living on or attached to the substrate or other organisms in surface waters. (cf phytoplankton; macrophyte.)
phytoplankton	Unicellular algae (e.g. diatoms and dinoflagellates) and cyanobacteria, both solitary and colonial, that live, at least for part of their lifecycle, drifting in the water (c.f. phytobenthos)
phytosociology	The study of vegetation, including the organisation, interdependence, development, geographical distribution and classification of plant communities.
plankton	Small organisms (animals, plants, or microbes) passively floating in water.
plant community	A recognisably distinct group of plants growing together in the same habitat and with some degree of interdependence.
polyhaline	Water with a salt content of 18 to 30 ppt. (See also brackish, saline water, oligohaline, mesohaline, euhaline)
reeds	Tall, firm-stemmed water or marsh grasses e.g. <i>Phragmites australis</i> (common reed), <i>Calamagrostis</i> spp., (small-reed) or <i>Phalaris</i> sp., (reed-grass).
reef	Submarine, or exposed at low tide, rocky substrates and biogenic concretions, which arise from the sea floor in the sublittoral zone but may extend into the littoral zone where there is an uninterrupted zonation of plant and animal communities. These reefs generally support a zonation of benthic communities of algae and animal species including concretions, encrustations and corallogenic concretions. In northern Baltic areas, the upper shallow water filamentous algal-zone with great annual succession is normally well developed on gently sloping shores. (c.f. Biogenic reef.)
rock	Any relatively hard naturally formed mass of mineral or petrified matter; stone; any naturally formed mass of mineral mass or aggregate that forms a significant part of the earth's crust. Includes continuous bedrock and also non-mobile boulders and rocks and artificial substrata.
rock pool	Standing water left when tide recedes.
saline soil	Soil that contains enough soluble salt to reduce its fertility. The lower limit is usually defined as 0.4 siemens per meter (4mmhos/cm).
saline water	Water with a salt concentration greater than 18ppt (see also brackish, oligohaline, mesohaline, euhaline, polyhaline)
salinity	A measure of the total quantity of dissolved solids in water, in parts per thousand (ppt) (per mille) by weight, when all organic matter has been completely oxidised, all carbonate has been converted to oxide, and bromide and iodide to chloride. The salinity of ocean water is in the range 33-38 ppt, with an average of 35 ppt.
salt meadow	A meadow subject to overflow by salt water.
salt water	Water of the seas, distinguished by high salinity.
saltmarsh	Vegetation often found on mud banks formed at river mouths, showing regular zonation reflecting the length of time different areas are inundated by tides. Sea water has a high salt content, which produces problems of osmotic pressure for the vegetation, so that only plants adapted to this environment

TERM	DEFINITION
	(halophytes) can survive. There are also inland marshes in arid areas where the water has a high salt level because of evaporation.
sand	Mineral sediment with dominant particle size 0.063 to 4 mm. (Wentworth scale of particle sizes.)
sand flat	A sandy tidal flat barren of vegetation. A tidal flat is an extensive, nearly horizontal, marshy or barren tract of land that is alternately covered and uncovered by the tide, and consisting of unconsolidated sediment (mostly mud and sand). It may form the top surface of a deltaic deposit.
sea	The continuous body of salt water covering most of the earth's surface.
sea bed	The floor of the sea or the ocean.
sea water	Aqueous solution of salts in more or less constant ratio, whose composition depends on several factors among which predominate living organisms, detrital sedimentation and the related chemical reactions. Sea-water accounts for more than 98% of the mass of the hydrosphere and covers just over 70% of the globe. Because of the composition and stability of the oceans, and the way they are controlled, they are of great importance to the climate, and great attention has been given to studying the effects of pollution. Man's activities are believed to be accelerating the change in the composition of sea-water. Although the effects are mainly obvious in estuaries and coastal regions, there are signs of the global consequences of pollution
seamount	An upward projection of the sea floor with an elevation of 1000m or more and having either a flat or peaked top; found in all the major ocean basins; generally formed in the earth's crust and in the centre of oceanic plates.
sediment	Any material transported by water which will ultimately settle to the bottom after the water loses its transporting power. Fine waterborne matter deposited or accumulated in beds. Includes mobile or soft substrates such as cobbles, pebbles, sand and mud.
seep	Places where gas (mainly methane) or liquid, including freshwater, bubble or pass slowly through fine pores or small openings in the substrate, often giving rise to the aggregation of sandstone by a carbonate cement resulting from microbial oxidation of gaseous emissions.
sheltered	Restricted fetch and/or open water window. Coasts can face prevailing wind but with a short fetch (say <20km) or extensive shallow areas offshore or may face away from prevailing winds. (See also very sheltered, extremely sheltered, ultra sheltered.)
silt	Mineral sediment with dominant particle size .004 to .063 mm. (Wentworth scale of particle sizes.) (See also mud)
sparsely vegetated	Less than 30% vegetation cover.
species-poor	Usually dominated by a single species, with very few associated species.
species-poor vegetation	Dominated by one or two plant species and with no associated lower herb layer.
species-rich	A variety of species present, although one or more species may dominate.
species-rich vegetation	A variety of plant species present, which may be dominated by a single species, but which also has associated layers of smaller herbaceous species.
strong current	The maximum tidal stream/current strength affecting the habitat is 3-6 knots (1.5 - 3 m/sec). This may differ considerably from tidal streams present nearby.
sublittoral	(Marine habitats) The sea-shore zone lying immediately below the littoral (inter-tidal) zone and extending to a depth of about 200 metres or the edge of the continental shelf. Red and brown algae are characteristic of this area.

TERM	DEFINITION
	Typical animals include sea anemones and corals on rocky shores, and shrimps, crabs and flounders on sandy shores. In non-tidal marine waters, the zone below the littoral, always covered by water.
subterranean	Situated or operating beneath the Earth's surface; underground. (Excluding caves beneath the ocean).
supralittoral	The seashore zone immediately above the littoral fringe and beyond the reach of tidal submergence, though affected by sea spray. (See also littoral, infralittoral, circalittoral)
surge gully	A narrow marine inlet on a small scale, usually formed by erosion of a rocky shoreline on exposed coasts. Their aspect, facing into waves, and their funnel effect, means that waves entering them become higher and of shorter wavelength, causing back-and-forth or multi-directional water movement of considerable force.
tectonic ridge	A ridge or rock structure directly attributable to earth movements involved in folding and faulting.
terrigenous deposit / sediment	An accumulation of sedimentary material derived from land erosion and deposited in shallow ocean areas.
thermocline	Generally, a gradient of temperature change, but applied more particularly to the zone of rapid temperature change between the warm surface waters (epilimnion) and cooler deep waters (hypolimnion) in a thermally stratified lake or sea in summer. In the oceans this zone of rapid temperature change starts 10-500m below the surface and can extend down to more than 1500m. In polar regions the thermocline is generally absent, because the oceans surface is covered with ice in winter and solar radiation is small in summer.
thermophile	Species that thrive in environments where the temperature is high, typically up to 60 deg C.
thermophilous	Warmth loving; characteristic of very high temperatures.
tidal cycle	The periodic rise and fall of the earth's oceans, caused by the relative gravitational attraction of the sun, moon and earth. During a tidal day (24 hours and 50 minutes) semi-diurnal tides have two high and two low waters and diurnal tides one high and one low water. The effect of the moon is about twice that of the sun, giving rise to the spring-neap cycle of tides. Spring tides are those of greater than the mean range; neap tides are of smaller range, i.e. 10-30% less than the mean tidal range. Variation in tides is caused by: a) changes in the relative positions of the sun, moon and earth; b) uneven distribution of water on the earth's surface; and c) variation in the seabed topography.
tidal stream/current	The maximum tidal stream or current strength at the surface affecting the habitat (see also Very strong tidal stream, strong tidal stream, moderately strong tidal stream, weak tidal stream, very weak tidal stream)
tidal water	Any water whose level changes periodically due to tidal action.
tide	The periodic rise and fall of the water resulting from gravitational interaction between the sun, moon and earth. In each lunar day of 24 hours and 49 minutes there are two high tides and two low tides.
tree	A woody plant with a single main stem (the trunk), that is unbranched near the ground; some trees (e.g. oak, (<i>Quercus</i>) and ash (<i>Fraxinus</i>)) have multi-trunked forms. At the end of each growing season there is no die-back of aerial parts, apart from the loss of foliage. Trees which are able to reach a height of 5m at maturity. (See also 'low trees')
ultra sheltered	With a fetch of a few tens or at most 100's of meters. (See also sheltered, very sheltered, extremely sheltered.)

TERM	DEFINITION
vegetation	The plants of an area considered in general or as communities, but not taxonomically; the total plant cover in a particular area or on the Earth as a whole. The total mass of plant life that occupies a given area.
vegetation cover	Amount of the ground surface in contact with, or directly beneath, vegetation.
very exposed	Applied to open coastlines which face into prevailing wind and receive ocean swell without any offshore breaks (such as islands or shallows) for several thousand km but where deep water is not close (>300m) to the shore. They can be adjacent to extremely exposed sites but face away from prevailing winds (here swell and wave action will refract towards these shores) or where, although facing away from prevailing winds, strong winds and swell often occur (e.g. the east coast of Fair Isle) (See also extremely exposed, exposed, moderately exposed.)
very sheltered	Unlikely to have a fetch greater than 20km, the exception being through a narrow (<300) open water window. They face away from prevailing wind or have obstructions, such as reefs, offshore. (See also sheltered, extremely sheltered, ultra sheltered.)
very strong current	The maximum tidal stream/current strength affecting the habitat is >6 knots (>3 m/sec). This may differ considerably from tidal streams present nearby
very weak current	The maximum tidal stream/current strength affecting the habitat is negligible. This may differ considerably from tidal streams present nearby
water column	The open-water environment, as distinct from the bed or shore, which may be inhabited by swimming marine or freshwater organisms.) (See 'pelagic water', waterbody)
waterbody	Also 'waters'. Landscape features comprising any body of water, standing or flowing, including the water column, littoral zones and bed, such as the sea, lakes, river or stream etc. (c.f. water column)
waterlogged	Saturated, with the water table at or above ground level for at least half of the year. (See also seasonally wet, seasonally dry)
weak current	The maximum tidal stream/current strength affecting the habitat is <1 knot (<0.5 m/sec). This may differ considerably from tidal streams present nearby