How was EUNIS habitats constructed? How were the original divisions made and levels decided?

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This document has been written to provide some answers to questions raised by Doug Evans and Lubos Halada, trying to understand what criteria have been used in EUNIS to decide what level the various units should be. There seems to be little written describing the process for this. If we are going to have a system in 2006 for accepting new units we also have to have some way of deciding at what level they should be incorporated into the classification.

The need for a European habitat classification was recognised at an international workshop on the CORINE Biotopes sites database and habitat classification to discuss *the goals for a reorientated Nature Database and the requirements of a common habitat classification*, in the framework of the European Workshop on CORINE Biotopes Sites Database and Habitat Classification, which was convened by the European Environment Agency European Topic Centre on Nature Conservation in Paris, 5-6 October, 1995. The workshop was attended by 76 people drawn from a wide range of expertise and from 24 countries. Although it was not initially planned that detailed discussion of the habitat classification would also covered by the Workshop on the Biotopes sites database, in view of their close linkage and common origins it was later decided to devote one day of the Workshop to the habitat classification (see MN2.5 Report to ETC/NC by D. Moss & D.B. Roy (ITE), November 1995). The following paragraphs are copied from that Report:

> **Initial technical advice to the European Environment Agency for the implementation of the conclusions of the 1995 workshop**
>
> While the CORINE Biotopes project was in operation in the European Union, the Habitat classification had a clear institutional status and validation process: it was prepared for the CORINE Biotopes team by one of its members. The review and adoption process was entrusted to the Biotopes team. This mechanism no longer exists and a new framework must now be conceived.
>
> Four functions must be organized. They concern validation and acceptance of the typology, monitoring of changes necessitated by improved perception, improving the utility of the classification through implementation of a parameterisation system, and authorship of descriptions and arrangements.
>
> **Validation and monitoring**
>
> This can best be achieved by establishment of a review panel similar to the CORINE Biotopes team. Its tasks would be:
>
> - to review and validate the existing habitat classification in the light of the conclusions of the CORINE Workshop;
> - to examine changes and additions to the list proposed in the course of its geographical extension or its increasing depth in descriptive power;
> - to propose improvements to the list.

Parameterisation of the classification

The Nordic experience demonstrates the utility of developing the habitat classification in a multi-faceted approach allowing the description of habitat units through a number of other parameters than the vegetation alone. A first step towards this parameterisation has been demonstrated in the Interpretation Manual on Annex I habitats, (European Commission, 1995) and the full parameterisation following the guidelines suggested in Section 5 of this report should be undertaken, beginning with Annex I priority habitat types. An immediate priority in the parameterisation is the identification of habitat lists at national and possibly also at biogeographical region level, for practical use by nature conservation managers in each Member State who wish to use the most up-to-date classification tools but for whom the full classification is unnecessarily complex, since it contains many habitat types not found in their country. Such users could also make their own decisions as to what level of detail they wish to work with.

Authorship and Ownership

Record of the source of the first characterisation of each unit and of its first hierarchical subdivision, as well as of subsequent substantial amendments to either the characterisation or the subdivision, needs to be kept, so that individual researchers do not hesitate to contribute to the improvement of the database and so that the documenting references provided from the literature are not confused with an authority responsible for the arrangement chosen. The evolution of the classification through the new arrangements proposed here would require careful monitoring to ensure continuity in the classification, and also that any changes can be traced reliably.

Ownership of the classification should be vested in the collective team responsible for its validation and evolution. In view of the long-term nature of the task and the value of a coherent and widely applicable habitat classification at the European level, the work of this team should be underwritten by the European Environment Agency through its European Topic Centre on Nature Conservation. There would also require to be a single home base responsible for maintaining the definitive habitats database and with sole power for updating it (following the recommendations of the whole team) and distributing it to team members and its users.

Continuity with previous work would be ensured by securing contribution to the panel by those members of the CORINE Biotopes team who were most involved in the development of the typology. They should be joined by persons familiar with other systems of habitat description currently operative in geographical areas covered by the typology, and by experts who are representatives of the Scientific Working Committee of the Habitats Directive. However, harmonious operation will probably best be achieved if, like the former Biotopes team, the panel functions as a single, independent unit rather than as a collection of representatives of other entities.

Development work in 1996-1998

In the ETC/NC work programme for 1996, ITE was entrusted with the development of a European habitat classification, which became part of the developing European Nature Information System (EUNIS). The task was seen as the restructuring of the Palaearctic

classification in response to weaknesses identified at the 1995 workshop. The October 1995 meeting was followed up by a smaller experts' meeting held on 30 January 1996 (minutes are lost). In a document dated 5 February 1996 Dorian Moss replied to comments which had been made by Axel Ssymank, one of the participants in the earlier meetings. One particular comment relates to the present question "how were the equivalent levels determined"?

> We must be aware that scientists from different backgrounds will have different views on the "comparable degree of distinction" between units at particular levels of the hierarchy. In my experience I have seen days wasted while individuals battle for recognition of their own particular study types as being of high-level importance. Some compromises will inevitably be required.

During 1996 and 1997 several meetings were held either of a small working group or larger groups, beginning with an international workshop in June 1996 attended by c. 40 people held at Monks Wood. The next 24 months were the main period when the terrestrial classification was developed by a small group led by Cynthia Davies & Dorian Moss (ITE). The main participants were John Rodwell, John Hopkins, Axel Ssymank, Lars Påhlsson, Sandro Pignatti, François Boillot, Dominique Richard & Ulla Pinborg. During these meetings the principles of the classification were developed, and these have remained unchanged ever since. The parameter framework was also agreed, although in practice this was not implemented until a few years later. There were debates about the extent to which the Palaearctic classification should be adopted as the basis for EUNIS or a new start made.

The following paragraphs are extracted from the minutes of a planning meeting held in Copenhagen on 22-23 October 1996:

> François Boillot reminded the group that one of the conclusions of the two previous meetings (October 1995 and June 1996) was that the classification to be used by ETC/NC required external validation through a wide consultation process. He thought that since the Palaearctic classification had not been validated, it should not be used as a basis. However others pointed out that we have to start somewhere, and that the Palaearctic classification has the widest geographical and thematic coverage of the possibilities. Ulla Pinborg stated that it was an EEA decision that the Palaearctic classification should be the basis of future work: it required additions and some restructuring to make improvements.
>
> Pierre Devillers reminded the group of the previous principle that the two digits before the decimal point in the classification had remained unchanged for nearly twenty years. There was no reason why these could not be altered now, but a new consensus should be sought with the aim that the revisions could stand for the next twenty years. John Hopkins pointed out that its usefulness should be the key to any revision, and all agreed that there must be one-to-one links with the existing system to respect its users' needs.
>
> The checking and validation phase will be essential, and those asked to participate should be selected carefully and furnished with adequate information about the existing (Palaearctic) classification: merely sending the list of codes and titles published by the Council of Europe would be counter-productive. A key set of questions must be prepared: for example, should each 2-digit unit be split, aggregated with another unit or retained with the present contents?

At the next meeting of the group in Copenhagen on 13 December 1996 the following was reported:

> A start had been made by ITE on renumbering levels 1-3 of the classification following the suggestions made prior to and at the workshop at Monks Wood in June. Dorian Moss presented the first outline of this exercise but asked that it be kept within the group at present until more work had been done on this topic. So as to avoid any confusion in use, the first digit of the Palaearctic code had been replaced by a letter: other changes at level 1 involved splitting marine and coastal habitats, merging non-marine waters with other freshwater habitats, and splitting agricultural from artificial habitats.
> Eladio Fernandez Galiano expressed worries about a further change in the classification which had been published by the Council of Europe in 1996 and stressed that the classification should not be changed for change's sake. It would be impossible to justify this to the many users of the classification.
> All agreed that a one-one correspondence with the Palaearctic classification must be maintained, and the rationale for restructuring the classification must be written down clearly.

The rationale for the classification and the first definitive classification list was completed in January 1997, consisting of 8 level 1 units, divided into 51 level 2 units. This first draft is reproduced in Annex 1. Several changes from the Palaearctic classification had been made in hierarchical level to meet the need for a classification which can be used at a particular hierarchical level, and criticisms that units at a given level are not equivalent in importance. For example, phryganas and caves at level 2 were grouped in new subgroups at level 3, and the original level 3 units moved to level 4; raised and blanket bogs were similarly moved from level 2 to 3; several marine types were moved to higher levels in the new section A.

A meeting of a small group in Paris on 19-20 June 1997 agreed the list of 10 level 1 units which have been unchanged since that date (although some of their components have moved between them in line with the development of criteria). That meeting also discussed the first draft criteria which had been prepared by ITE:

> There was considerable discussion concerning the very first division, the placement of man-made or semi-natural/naturalised habitat types, and it was agreed that unless the habitat was entirely man-made, the split should be made at a lower level in the classification. This change would make a break from the treatment of "man-made" habitats in the Palaearctic/CORINE systems. A better agreement with Landcover would be reached, and habitats would be more naturally grouped. There would be fewer difficulties in deciding what degree of naturalness was required to include some habitats with their natural counterparts.

The final meeting in 1997, in Copenhagen on 12-14 November, discussed draft criteria which had by then been completed by ITE as far as level 3. The meeting was structured so that each level 1 unit could be considered by working sessions looking at the existing components of each unit and agreeing how they should be re-grouped to fit with logical criteria. A further meeting of experts held at ITE Monks Wood in June 1998 addressed a number of questions where further clarification by the experts was necessary to enable ITE to complete the criteria.

From 1998 onwards a series of meetings concentrated on marine habitats, leading to three workshops in 1999-2001 on marine habitat classification under the joint auspices of ICES,

OSPAR and EEA. At the initial meetings the marine experts put forward the view that marine habitats, covering a greater part of the earth's surface than terrestrial habitats, should have a similar number of level 1 units and not be confined to a single level 1 unit – i.e. the present marine level 2 units should be upgraded to level 1. After considerable debate and bargaining with the marine specialists, it was agree that EUNIS would regard level 4 as the lowest validated level while level 3 would be the limit for terrestrial habitats. This distinction has remained during the past few years.

A similar discussion unfolded at the workshop for Baltic experts in July 2004, when it was clear that the Baltic Sea habitats were significantly different from other seas due in particular to salinity and water exchange characteristics. New 'pigeon holes' were therefore required – but at what level? Possibilities ranged between a new level 1 Baltic marine habitat and a number of level 3 units. After about an hour's discussion, it was agreed that in fact the unique Baltic habitats were in sublittoral rock, and could be accommodated at level 3 in A3 and A4. Three units were added, corresponding to different exposure levels (which are different from those in open oceanic seas). It was agreed that sediment substrates were not different from those in other seas.

Annex 2 lists each habitat type at level 1 or 2 now or at some time in the past, showing how these have changed during development of the classification.

Annex 1 Draft EUNIS Habitat classification – 21 January 1997

First level

A MARINE HABITATS	B COASTAL, SALINE AND HALOPHYTIC HABITATS	C FRESHWATER WETLANDS	D GRASSLAND, HEATH, AND SCRUB excluding RIVERINE AND SWAMP SCRUB	E NATURAL AND SEMI-NATURAL WOODLAND AND FOREST	F INLAND UNVEGETATED OR SPARSELY VEGETATED HABITATS	G AGRICULTURAL LAND AND INTENSIVE GRASSLAND OR FORESTRY	H ARTIFICIAL AND URBAN LANDSCAPES

Second level

A1 Littoral rock / A2 Littoral (intertidal) sediments / A3 Sublittoral rock (to 200m depth) / A4 Sublittoral sediments / A5 Pelagic water body / A6 Deep seabed (over 200m depth) / A7 Communities of littoral and sublittoral zones

B1 Estuaries / B2 Saline coastal lagoons / B3 Standing brackish and saline lakes, ponds and pools not connected to the sea / B4 Saltmarshes and halophytic habitats / B5 Coastal dunes, sand beaches and machair / B6 Coastal shingle beaches / B7 Hard-rock cliffs, ledges and shores, above the supralittoral

C1 Freshwater lakes, ponds and pools / C2 Rivers, streams and associated riverbed and riparian features / C3 Raised and blanket bogs / C4 Beds of water-fringe emergent macrophytes, including reed beds and sedge beds / C5 Springs, flushes, marshes and tall-herb fens

D1 Heaths / D2 Cool temperate and montane scrub / D3 Sclerophyllous scrub / D4 Phrygana / D5 Dry calcareous grassland, heavy-metal grassland and vegetated rock debris / D6 Dry acid and neutral grassland, including annual grassland / D7 Seasonally-wet, wet or peaty grassland and tall-herb grassland / D8 Mesotrophic and eutrophic grassland / D9 Alpine and sub-alpine grassland and snow patches / DA Tundra

E1 Natural and semi-natural broadleaved deciduous woodland / E2 Natural and semi-natural coniferous woodland / E3 Riverine woodland and wooded swamps and bogs / E4 Broad-leaved evergreen forests

F1 Screes / F2 Inland cliffs and exposed rocks, including limestone pavements / F3 Eternal snow and ice / F4 Inland sand dunes / F5 Natural caves, cave systems and underground waters / F6 Volcanic features

G1 Agriculturally-improved grassland, reseeded and heavily fertilised / G2 Arable land, market gardens and watercress beds / G3 Orchards, groves and tree plantations, including intensive commercial forests / G4 Tree lines, hedges and isolated small woods / G5 Fallow land, waste places and set-aside / G6 Parklands and pasture woods

H1 Towns and villages, archaeological sites / H2 Industrial sites / H3 Transport networks and sites / H4 Canals and very artificial man-made waters such as industrial lagoons / H5 Urban parks, allotments and large gardens / H6 Underground mines and passages

Annex 2 EUNIS level 1 and 2 habitat codes and names from 1997 to 2004

Note: a blank against a date indicates that the habitat type was not included in the classification at that date.

200410:	**A**	**Marine habitats**
199701:	A	Marine habitats
199712:	A	Marine habitats
199810:	A	Marine habitats
199811:	A	Marine habitats
199910:	A	Marine habitats
200202:	A	Marine habitats
200311:	A	Marine habitats

200410:	**A1**	**Littoral rock and other hard substrata**
199701:	A1	Littoral rock
199712:	A1	Littoral rock
199810:	A1	Littoral rock
199811:	A1	Littoral rock and other hard substrata
199910:	A1	Littoral rock and other hard substrata
200202:	A1	Littoral rock and other hard substrata
200311:	A1	Littoral rock and other hard substrata

200410:	**A2**	**Littoral sediment**
199701:	A2	Littoral (intertidal) sediments
199712:	A2	Littoral (inter-tidal) sediments
199810:	A2	Littoral sediments
199811:	A2	Littoral sediments
199910:	A2	Littoral sediments
200202:	A2	Littoral sediments
200311:	A2	Littoral sediments

200410:	**A3**	**Infralittoral rock and other hard substrata**
199701:	A3.1	Infralittoral (shallow subtidal) rock
199712:	A3	Infralittoral (shallow sub-tidal) rock
199810:	A4	Infralittoral (shallow sub-tidal or non-tidal) rock
199811: (part of	A3	Sublittoral rock and other hard substrata)
199910: (part of	A3	Sublittoral rock and other hard substrata)
200202: (part of	A3	Sublittoral rock and other hard substrata)
200311: (part of	A3	Sublittoral rock and other hard substrata)

200410:	**A4**	**Circalittoral rock and other hard substrata**
199701:	A3.2	Circalittoral (deep subtidal) rock
199712:	A5	Circalittoral (deep sub-tidal) rock
199810:	A6	Circalittoral (deep sub-tidal or non-tidal) rock
199811: (part of	A3	Sublittoral rock and other hard substrata)
199910: (part of	A3	Sublittoral rock and other hard substrata)
200202: (part of	A3	Sublittoral rock and other hard substrata)
200311: (part of	A3	Sublittoral rock and other hard substrata)

200410:	**A5**	**Sublittoral sediment**
199701:	A4	Sublittoral sediments
199712:	X16	Sublittoral sediments
199810:	X16	Sublittoral sediments
199811:	A4	Sublittoral sediments
199910:	A4	Sublittoral sediments
200202:	A4	Sublittoral sediments
200311:	A4	Sublittoral sediments

200410:	**A6**	**Deep-sea bed**
199701:	A6	Deep seabed (over 200 m depth)
199712:	A7	Deep seabed (over 200 m depth)
199810:	A8	Deep seabed (over 200m depth)

199811:	A5	Deep seabed (over 200m depth)
199910:	A5	Bathyal zone
200202:	A5	Deep-sea bed
200311:	A5	Deep-sea bed

200410: A7 Pelagic water column

199701:	A5	Pelagic water body
199712:	A8	Pelagic water body
199810:	A9	Pelagic water column
199811:	A6	Pelagic water column
199910:	A7	Pelagic water column
200202:	A7	Pelagic water column
200311:	A7	Pelagic water column

200410: A8 Ice-associated marine habitats

199701:		
199712:		
199810:		
199811:		
199910:	A7.9	Ice-dominated marine habitats
200202:	A8	Ice-associated marine habitats
200311:	A8	Ice-associated marine habitats

200410: B Coastal habitats

199701:	B	Coastal, saline and halophytic habitats
199712:	B	Coastal and halophytic habitats
199810:	B	Coastal habitats
199811:	B	Coastal habitats
199910:	B	Coastal habitats
200202:	B	Coastal habitats
200311:	B	Coastal habitats

200410: B1 Coastal dunes and sandy shores

199701:	B5	Coastal dunes, sand beaches and machair
199712:	B5	Coastal dune and sand habitats
199810:	B1	Coastal dune and sand habitats
199811:	B1	Coastal dune and sand habitats
199910:	B1	Coastal dune and sand habitats
200202:	B1	Coastal dune and sand habitats
200311:	B1	Coastal dune and sand habitats

200410: B2 Coastal shingle

199701:	B6	Coastal shingle beaches
199712:	B6	Coastal shingle habitats
199810:	B2	Coastal shingle habitats
199811:	B2	Coastal shingle habitats
199910:	B2	Coastal shingle habitats
200202:	B2	Coastal shingle habitats
200311:	B2	Coastal shingle habitats

200410: B3 Rock cliffs, ledges and shores, including the supralittoral

199701:	B7	Hard-rock cliffs, ledges and shores, above the supralittoral
199712:	B7	Rock cliffs, ledges and shores, above the supralittoral
199810:	B3	Rock cliffs, ledges and shores, including the supralittoral
199811:	B3	Rock cliffs, ledges and shores, including the supralittoral
199910:	B3	Rock cliffs, ledges and shores, including the supralittoral
200202:	B3	Rock cliffs, ledges and shores, including the supralittoral
200311:	B3	Rock cliffs, ledges and shores, including the supralittoral

200410: C Inland surface waters

199701:	C	Freshwater wetlands
199712:	C	Freshwater aquatic habitats
199810:	C	Inland surface water habitats
199811:	C	Inland surface water habitats
199910:	C	Inland surface water habitats

200202:	C	Inland surface water habitats
200311:	C	Inland surface water habitats

200410: C1 Surface standing waters

199701:	C1	Freshwater lakes, ponds and pools
199712:	C1	Surface standing waters
199810:	C1	Surface standing waters
199811:	C1	Surface standing waters
199910:	C1	Surface standing waters
200202:	C1	Surface standing waters
200311:	C1	Surface standing waters

200410: C2 Surface running waters

199701:	C2	Rivers, streams and associated riverbed and riparian features
199712:	C2	Surface running waters
199810:	C2	Surface running waters
199811:	C2	Surface running waters
199910:	C2	Surface running waters
200202:	C2	Surface running waters
200311:	C2	Surface running waters

200410: C3 Littoral zone of inland surface waterbodies

199701:	C4	Beds of water-fringe emergent macrophytes, including reed beds and sedge
199712:	C3	Water-fringing vegetation including sedges and reeds
199810:	C3	Littoral zone of inland surface water bodies
199811:	C3	Littoral zone of inland surface water bodies
199910:	C3	Littoral zone of inland surface waterbodies
200202:	C3	Littoral zone of inland surface waterbodies
200311:	C3	Littoral zone of inland surface waterbodies

200410: D Mires, bogs and fens

199701:	(C)	(Freshwater wetlands)
199712:	D	Wetland habitats
199810:	D	Mire, bog and fen habitats
199811:	D	Mire, bog and fen habitats
199910:	D	Mire, bog and fen habitats
200202:	D	Mire, bog and fen habitats
200311:	D	Mire, bog and fen habitats

200410: D1 Raised and blanket bogs

199701:	C3	Raised and blanket bogs
199712:	D1	Raised and blanket bogs
199810:	D1	Raised and blanket bogs
199811:	D1	Raised and blanket bogs
199910:	D1	Raised and blanket bogs
200202:	D1	Raised and blanket bogs
200311:	D1	Raised and blanket bogs

200410: D2 Valley mires, poor fens and transition mires

199701:		
199712:	D2	Acid fens and valley bogs
199810:	D2	Valley bogs, poor fens and transition mires
199811:	D2	Valley bogs, poor fens and transition mires
199910:	D2	Valley mires, poor fens and transition mires
200202:	D2	Valley mires, poor fens and transition mires
200311:	D2	Valley mires, poor fens and transition mires

200410: D3 Aapa, palsa and polygon mires

199701:		
199712:	X05, X06, X07	
199810:	D3	Aapa, palsa and polygon mires
199811:	D3	Aapa, palsa and polygon mires
199910:	D3	Aapa, palsa and polygon mires
200202:	D3	Aapa, palsa and polygon mires
200311:	D3	Aapa, palsa and polygon mires

200410:	**D4**	**Base-rich fens and calcareous spring mires**
199701:	C5	Springs, flushes, marshes and tall-herb fens
199712:	D4	Rich fens
199810:	D4	Base-rich fens
199811:	D4	Base-rich fens
199910:	D4	Base-rich fens
200202:	D4	Base-rich fens
200311:	D4	Base-rich fens

200410:	**D5**	**Sedge and reedbeds, normally without free-standing water**
199701:	(C4)	(Beds of water-fringe emergent macrophytes, including reed beds and sedge beds)
199712:	D5	Extensive species-poor sedge and reed beds, normally without free-standing
199810:	D5	Sedge and reedbeds, normally without free-standing water
199811:	D5	Sedge and reedbeds, normally without free-standing water
199910:	D5	Sedge and reedbeds, normally without free-standing water
200202:	D5	Sedge and reedbeds, normally without free-standing water
200311:	D5	Sedge and reedbeds, normally without free-standing water

200410:	**D6**	**Inland saline and brackish marshes and reedbeds**
199701:		
199712:	B4	Inland saltmarshes, halophytic and gypsophytic habitats
199810:	D6	Inland saline and brackish marshes and reedbeds
199811:	D6	Inland saline and brackish marshes and reedbeds
199910:	D6	Inland saline and brackish marshes and reedbeds
200202:	D6	Inland saline and brackish marshes and reedbeds
200311:	D6	Inland saline and brackish marshes and reedbeds

200410:	**E**	**Grasslands and lands dominated by forbs, mosses or lichens**
199701:	D	Grassland, heath and scrub, excluding riverine and swamp scrub
199712:	E	Grassland habitats
199810:	E	Grassland habitats
199811:	E	Grassland habitats
199910:	E	Grassland and tall forb habitats
200202:	E	Grassland and tall forb habitats
200311:	E	Grassland and tall forb habitats

200410:	**E1**	**Dry grasslands**
199701:		
199712:	E1	Dry grasslands
199810:	E1	Dry grasslands
199811:	E1	Dry grasslands
199910:	E1	Dry grasslands
200202:	E1	Dry grasslands
200311:	E1	Dry grasslands

200410:	**E2**	**Mesic grasslands**
199701:	D8	Mesotrophic and eutrophic grassland
199712:	E3	Mesotrophic and eutrophic grasslands
199810:	E2	Mesic grasslands
199811:	E2	Mesic grasslands
199910:	E2	Mesic grasslands
200202:	E2	Mesic grasslands
200311:	E2	Mesic grasslands

200410:	**E3**	**Seasonally wet and wet grasslands**
199701:	D7	Seasonally-wet, wet or peaty grassland and tall-herb grassland
199712:	E2	Seasonally wet and wet grasslands
199810:	E3	Seasonally wet and wet grasslands
199811:	E3	Seasonally wet and wet grasslands
199910:	E3	Seasonally wet and wet grasslands
200202:	E3	Seasonally wet and wet grasslands
200311:	E3	Seasonally wet and wet grasslands

200410:	**E4**	**Alpine and subalpine grasslands**
199701:	D9	Alpine and subalpine grassland and snow-patches

199712:	E4	Alpine and subalpine grasslands
199810:	E4	Alpine and subalpine grasslands, tall herbs and ferns
199811:	E4	Alpine and subalpine grasslands, tall herbs and ferns
199910:	E4	Alpine and subalpine grasslands
200202:	E4	Alpine and subalpine grasslands
200311:	E4	Alpine and subalpine grasslands

200410: E5 Woodland fringes and clearings and tall forb stands

199701:		
199712:		
199810:		
199811:		
199910:	E5	Woodland fringes and clearings and tall forb habitats
200202:	E5	Woodland fringes and clearings and tall forb habitats
200311:	E5	Woodland fringes and clearings and tall forb habitats

200410: E6 Inland salt steppes

199701:		
199712:		
199810:	E6	Inland saline grasslands
199811:	E6	Inland saline grasslands
199910:	E6	Inland saline grass and herb-dominated habitats
200202:	E6	Inland saline grass and herb-dominated habitats
200311:	E6	Inland saline grass and herb-dominated habitats

200410: E7 Sparsely wooded grasslands

199701:		
199712:		
199810:		
199811:		
199910:		
200202:	E7	Sparsely wooded grasslands
200311:	E7	Sparsely wooded grasslands

200410: F Heathland, scrub and tundra

199701:	(E)	(Grassland, heath and scrub, excluding riverine and swamp scrub)
199712:	F	Heathland and scrub habitats
199810:	F	Heathland and scrub habitats
199811:	F	Heathland and scrub habitats
199910:	F	Heathland, scrub and tundra habitats
200202:	F	Heathland, scrub and tundra habitats
200311:	F	Heathland, scrub and tundra habitats

200410: F1 Tundra

199701:	DA	Tundra
199712:	X06	Tundra
199810:	X04	Tundra
199811:	X05	Tundra
199910:	F1	Tundra
200202:	F1	Tundra
200311:	F1	Tundra

200410: F2 Arctic, alpine and subalpine scrub

199701:		
199712:	F3	Arctic and alpine dwarf-shrub habitats
199810:	F3	Arctic, alpine and subalpine dwarf-shrub habitats
199811:	F3	Arctic, alpine and subalpine dwarf-shrub habitats
199910:	F2	Arctic, alpine and subalpine scrub habitats
200202:	F2	Arctic, alpine and subalpine scrub habitats
200311:	F2	Arctic, alpine and subalpine scrub habitats

200410: F3 Temperate and mediterranean-montane scrub

199701:	D2	Cool temperate and montane scrub
199712:	F1	Non-sclerophyllous scrub habitats
199810:	F1	Arctic and temperate scrub habitats

199811:	F1	Arctic and temperate scrub habitats
199910:	F3	Temperate and mediterraneo-montane scrub habitats
200202:	F3	Temperate and mediterraneo-montane scrub habitats
200311:	F3	Temperate and mediterraneo-montane scrub habitats

200410: F4 Temperate shrub heathland

199701:	D1	Heaths
199712:	F4	Temperate heath habitats
199810:	F4	Temperate heathland
199811:	F4	Temperate heathland
199910:	F4	Temperate shrub heathland
200202:	F4	Temperate shrub heathland
200311:	F4	Temperate shrub heathland

200410: F5 Maquis, arborescent matorral and thermo-Mediterranean brushes

199701:		
199712:		
199810:	F2	Maquis, matorral and sub-mediterranean deciduous thickets
199811:	F2	Maquis, matorral and sub-mediterranean deciduous thickets
199910:	F5	Maquis, matorral and thermo-Mediterranean brushes
200202:	F5	Maquis, matorral and thermo-Mediterranean brushes
200311:	F5	Maquis, matorral and thermo-Mediterranean brushes

200410: F6 Garrigue

199701:		
199712:		
199810:	F5	Garrigues
199811:	F5	Garrigues
199910:	F6	Garrigue
200202:	F6	Garrigue
200311:	F6	Garrigue

200410: F7 Spiny Mediterranean heaths (phrygana, hedgehog-heaths and related coastal cliff vegetation)

199701:	D4	Phrygana
199712:	F5	Non-ericaceous dwarf-shrub habitats (phrygana and hedgehog-heaths)
199810:	F6	Spiny Mediterranean heaths (phrygana and hedgehog-heaths)
199811:	F6	Spiny Mediterranean heaths (phrygana and hedgehog-heaths)
199910:	F7	Spiny Mediterranean heaths (phrygana, hedgehog-heaths and related coastal cliff vegetation
200202:	F7	Spiny Mediterranean heaths (phrygana, hedgehog-heaths and related coastal cliff vegetation
200311:	F7	Spiny Mediterranean heaths (phrygana, hedgehog-heaths and related coastal cliff vegetation

200410: F8 Thermo-Atlantic xerophytic scrub

199701:	D3.8	Thermo-Atlantic xerophytic communities
199712:	F2.8	Thermo-Atlantic xerophytic communities
199810:	F7	Thermo-atlantic xerophytic habitats
199811:	F7	Thermo-atlantic xerophytic habitats
199910:	F8	Thermo-Atlantic xerophytic habitats
200202:	F8	Thermo-Atlantic xerophytic habitats
200311:	F8	Thermo-Atlantic xerophytic habitats

200410: F9 Riverine and fen scrubs

199701:		
199712:		
199810:		
199811:		
199910:	F9	Riverine and fen scrubs
200202:	F9	Riverine and fen scrubs
200311:	F9	Riverine and fen scrubs

200410: FA Hedgerows

199701:	G4.2	Hedgerows

199712:	F1.3	Hedgerows
199810:	F8	Hedgerows
199811:	F8	Hedgerows
199910:	FA	Hedgerows
200202:	FA	Hedgerows
200311:	FA	Hedgerows

200410:	**FB**	**Shrub plantations**
199701:	G3.2	Fields of fruit- or nut-bearing shrubs, vineyards and orchards of espaliers
199712:	F1.4	Shrub orchards, vineyards and tea plantations
199810:	F9	Shrub plantations
199811:	F9	Shrub plantations
199910:	FB	Shrub plantations
200202:	FB	Shrub plantations
200311:	FB	Shrub plantations

200410:	**G**	**Woodland, forest and other wooded land**
199701:	E	Natural and semi-natural woodland and forest
199712:	G	Woodland and forest habitats and other wooded land
199810:	G	Woodland and forest habitats and other wooded land
199811:	G	Woodland and forest habitats and other wooded land
199910:	G	Woodland and forest habitats and other wooded land
200202:	G	Woodland and forest habitats and other wooded land
200311:	G	Woodland and forest habitats and other wooded land

200410:	**G1**	**Broadleaved deciduous woodland**
199701:	E1	Natural and semi-natural broadleaved deciduous woodland
199712:	G1	Broadleaved deciduous and mixed woodland
199810:	G1	Broadleaved deciduous and mixed woodland
199811:	G1	Broadleaved deciduous and mixed woodland
199910:	G1	Broadleaved deciduous woodland
200202:	G1	Broadleaved deciduous woodland
200311:	G1	Broadleaved deciduous woodland

200410:	**G2**	**Broadleaved evergreen woodland**
199701:	E4	Broad-leaved evergreen forests
199712:	G2	Broadleaved evergreen woodland
199810:	G2	Broadleaved evergreen woodland
199811:	G2	Broadleaved evergreen woodland
199910:	G2	Broadleaved evergreen woodland
200202:	G2	Broadleaved evergreen woodland
200311:	G2	Broadleaved evergreen woodland

200410:	**G3**	**Coniferous woodland**
199701:	E2	Natural and semi-natural coniferous woodland
199712:	G3	Coniferous woodland
199810:	G3	Coniferous woodland
199811:	G3	Coniferous woodland
199910:	G3	Coniferous woodland
200202:	G3	Coniferous woodland
200311:	G3	Coniferous woodland

200410:	**G4**	**Mixed deciduous and coniferous woodland**
199701:		
199712:	G1.I	Mixed deciduous and coniferous woodland
199810:	G1.C	Mixed deciduous and coniferous woodland
199811:	G1.C	Mixed deciduous and coniferous woodland
199910:	G4	Mixed deciduous and coniferous woodland
200202:	G4	Mixed deciduous and coniferous woodland
200311:	G4	Mixed deciduous and coniferous woodland

200410:	**G5**	**Lines of trees, small anthropogenic woodlands, recently felled woodland, early-stage woodland and coppice**
199701:	G4.1	Tree lines
199712:	G4	Tree-lines and sparsely wooded land

199810:	G4	Lines of trees, sparsely wooded land, early-stage woodland and coppice
199811:	G4	Lines of trees, sparsely wooded land, early-stage woodland and coppice
199910:	G5	Lines of trees, small anthropogenic woodlands, recently felled woodland, early-stage woodland and coppice
200202:	G5	Lines of trees, small anthropogenic woodlands, recently felled woodland, early-stage woodland and coppice
200311:	G5	Lines of trees, small anthropogenic woodlands, recently felled woodland, early-stage woodland and coppice

200410: H Inland unvegetated or sparsely vegetated habitats

199701:	F	Inland unvegetated or sparsely vegetated habitats
199712:	H	Inland sparsely vegetated or unvegetated habitats
199810:	H	Inland sparsely vegetated or unvegetated habitats
199811:	H	Inland sparsely vegetated or unvegetated habitats
199910:	H	Inland unvegetated or sparsely vegetated habitats
200202:	H	Inland unvegetated or sparsely vegetated habitats
200311:	H	Inland unvegetated or sparsely vegetated habitats

200410: H1 Terrestrial underground caves, cave systems, passages and waterbodies

199701:	F5	Natural caves, cave systems and underground waters
199712:	H1	Terrestrial underground caves, cave systems and water bodies
199810:	H1	Terrestrial underground caves, cave systems and water bodies
199811:	H1	Terrestrial underground caves, cave systems and water bodies
199910:	H1	Terrestrial underground caves, cave systems, passages and waterbodies
200202:	H1	Terrestrial underground caves, cave systems, passages and waterbodies
200311:	H1	Terrestrial underground caves, cave systems, passages and waterbodies

200410: H2 Screes

199701:	F1	Screes
199712:	H2	Screes
199810:	H2	Screes
199811:	H2	Screes
199910:	H2	Screes
200202:	H2	Screes
200311:	H2	Screes

200410: H3 Inland cliffs, rock pavements and outcrops

199701:	F2	Inland cliffs and exposed rocks, including limestone pavements
199712:	H3	Inland cliffs and exposed rock habitats
199810:	H3	Inland cliffs and exposed rock habitats
199811:	H3	Inland cliffs and exposed rock habitats
199910:	H3	Inland cliffs, rock pavements and outcrops
200202:	H3	Inland cliffs, rock pavements and outcrops
200311:	H3	Inland cliffs, rock pavements and outcrops

200410: H4 Snow or ice-dominated habitats

199701:	F3	Eternal snow and ice
199712:	H4	Frost or ice-dominated habitats
199810:	H4	Frost or ice-dominated habitats
199811:	H4	Frost or ice-dominated habitats
199910:	H4	Snow or ice-dominated habitats
200202:	H4	Snow or ice-dominated habitats
200311:	H4	Snow or ice-dominated habitats

200410: H5 Miscellaneous inland habitats with very sparse or no vegetation

199701:	F4	Inland sand dunes
199712:	H5	Unvegetated inland mud, sand gravel and organic substrate habitats
199810:	H5	Inland sedimentary and organic habitats with very sparse or no vegetation
199811:	H5	Inland sedimentary and organic habitats with very sparse or no vegetation
199910:	H5	Miscellaneous inland habitats with very sparse or no vegetation
200202:	H5	Miscellaneous inland habitats with very sparse or no vegetation
200311:	H5	Miscellaneous inland habitats with very sparse or no vegetation

200410: H6 Recent volcanic features

199701:	F6	Volcanic features

199712:	H6	Volcanic features
199810:	H6	Volcanic features
199811:	H6	Volcanic features
199910:	H6	Recent volcanic features
200202:	H6	Recent volcanic features
200311:	H6	Recent volcanic features

200410: I Regularly or recently cultivated agricultural, horticultural and domestic habitats

199701:	G	Agricultural land and intensive grassland or forestry
199712:	I	Regularly or recently cultivated habitats, and gardens
199810:	I	Regularly or recently cultivated habitats, and gardens
199811:	I	Regularly or recently cultivated habitats, and gardens
199910:	I	Regularly or recently cultivated agricultural, horticultural and domestic habitats
200202:	I	Regularly or recently cultivated agricultural, horticultural and domestic habitats
200311:	I	Regularly or recently cultivated agricultural, horticultural and domestic habitats

200410: I1 Arable land and market gardens

199701:	G2	Arable land, market gardens and watercress beds
199712:	I1	Arable land and market gardens
199810:	I1	Arable land and market gardens
199811:	I1	Arable land and market gardens
199910:	I1	Arable land and market gardens
200202:	I1	Arable land and market gardens
200311:	I1	Arable land and market gardens

200410: I2 Cultivated areas of gardens and parks

199701:		
199712:		
199810:	I2	Gardens
199811:	I2	Gardens
199910:	I2	Cultivated areas of gardens and parks
200202:	I2	Cultivated areas of gardens and parks
200311:	I2	Cultivated areas of gardens and parks

200410: J Constructed, industrial and other artificial habitats

199701:	H	Artificial and urban landscapes
199712:	J	Constructed, industrial and other artificial habitats
199810:	J	Constructed, industrial and other artificial habitats
199811:	J	Constructed, industrial and other artificial habitats
199910:	J	Constructed, industrial and other artificial habitats
200202:	J	Constructed, industrial and other artificial habitats
200311:	J	Constructed, industrial and other artificial habitats

200410: J1 Buildings of cities, towns and villages

199701:	H1	Towns and villages, archaeological sites
199712:	J1	Buildings of towns and villages, and archaeological sites
199810:	J1	Buildings of cities, towns and villages
199811:	J1	Buildings of cities, towns and villages
199910:	J1	Buildings of cities, towns and villages
200202:	J1	Buildings of cities, towns and villages
200311:	J1	Buildings of cities, towns and villages

200410: J2 Low density buildings

199701:	H2	Industrial sites
199712:	J2	Industrial and commercial sites and agricultural buildings
199810:	J2	Low density buildings
199811:	J2	Low density buildings
199910:	J2	Low density buildings
200202:	J2	Low density buildings
200311:	J2	Low density buildings

200410: J3 Extractive industrial sites

199701:		
199712:		

199810:	J3	Extractive industrial sites
199811:	J3	Extractive industrial sites
199910:	J3	Extractive industrial sites
200202:	J3	Extractive industrial sites
200311:	J3	Extractive industrial sites

200410:	**J4**	**Transport networks and other constructed hard-surfaced areas**
199701:	H3	Transport networks and sites
199712:	J3	Transport networks
199810:	J4	Transport networks
199811:	J4	Transport networks
199910:	J4	Transport networks and other constructed hard-surfaced areas
200202:	J4	Transport networks and other constructed hard-surfaced areas
200311:	J4	Transport networks and other constructed hard-surfaced areas

200410:	**J5**	**Highly artificial man-made waters and associated structures**
199701:	H4	Canals and very artificial man-made waters such as industrial lagoons
199712:	J4	Very artificial man-made waters
199810:	J5	Highly artificial man-made waters and associated structures
199811:	J5	Highly artificial man-made waters and associated structures
199910:	J5	Highly artificial man-made waters and associated structures
200202:	J5	Highly artificial man-made waters and associated structures
200311:	J5	Highly artificial man-made waters and associated structures

200410:	**J6**	**Waste deposits**
199701:		
199712:	J5	Waste organic material
199810:	J6	Waste deposits
199811:	J6	Waste deposits
199910:	J6	Waste deposits
200202:	J6	Waste deposits
200311:	J6	Waste deposits

200410: No longer current habitats (200410 row shows where these habitats are included now)

199701:	A7	Communities of littoral and sublittoral zones
199712:		
199810:		
199811:		
199910:		
200202:		
200311:		
200410:	Distributed amongst A1 – A6	

199701:	E3	Riverine woodland and wooded swamps and bogs
199712:		
199810:		
199811:		
199910:		
200202:		
200311:		
200410:	F9 Riverine and fen scrubs; G1.1 Riparian and gallery woodland, with dominant [Alnus], [Betula], [Populus] or [Salix]	

199701:	G3	Orchards, groves and tree plantations, including intensive commercial forests
199712:		
199810:		
199811:		
199910:		
200202:		
200311:		
200410:	FB Shrub plantations; G1.C Highly artificial broadleaved deciduous forestry plantations; G1.D Fruit and nut tree orchards; etc.	

199701:	G6	Parklands and pasture woods
199712:		
199810:		

199811:
199910:
200202:
200311:
200410: E7 Sparsely wooded grasslands; X09 Pasture woods (with a tree layer overlying pasture); etc.

199701: H4 Canals and very artificial man-made waters such as industrial lagoons
199712:
199810:
199811:
199910:
200202:
200311:
200410: J5.3 Highly artificial non-saline standing waters; J5.4 Highly artificial non-saline running waters

199701: B3 Standing brackish and saline lakes, ponds and pools not connected to the sea
199712: B2 Inland standing saline and brackish waters
199810:
199811:
199910:
200202:
200311:
200410: C1.5 Permanent inland saline and brackish lakes, ponds and pools; J5.1 Highly artificial saline and brackish standing waters

199701: D5 Dry calcareous grassland, heavy-metal grassland and vegetated rock debris
199712: E1.1 Dry calcareous and basic siliceous grassland
199810:
199811:
199910:
200202:
200311:
200410: E1.1 Inland sand and rock with open vegetation; E1.2 Perennial calcareous grassland and basic steppes; E1.B Heavy-metal grassland; etc.

199701: D6 Dry acid and neutral grassland, including annual grassland
199712: E1.2 Dry acid and neutral grassland, including annual grassland
199810:
199811:
199910:
200202:
200311:
200410: E1.6 Subnitrophilous annual grassland; E1.7 Non-Mediterranean dry acid and neutral closed grassland; E1.8 Mediterranean dry acid and neutral closed grassland

199701: D3 Sclerophyllous scrub
199712: F2 Sclerophyllous scrub habitats
199810:
199811:
199910:
200202:
200311:
200410: F5 Maquis, arborescent matorral and thermo-Mediterranean brushes; F6 Garrigue

199701: A4.2 Circalittoral (deep subtidal) sediments
199712: A6 Circalittoral (deep sub-tidal) sediments
199810: A7 Circalittoral (deep sub-tidal or non-tidal) sediments
199811:
199910:
200202:
200311:
200410: A5.13 Circalittoral coarse sediment; A5.14Deep circalittoral coarse sediment; A5.25 Circalittoral fine sand; A5.26 Circalittoral muddy sand; A5.27 Deep circalittoral sand; A5.35 Circalittoral sandy mud; etc.

199701:
199712:
199810: AA Anoxic marine habitats

199811:
199910:
200202:
200311:
200410: A5.72 Organically-enriched or anoxic sublittoral habitats; A6.9 Vents, seeps, hypoxic and anoxic habitats of the deep sea; A7.991 Anoxic water column in water with permanent oxygen stratification and full salinity

199701:
199712: E5 Moss and lichen dominated habitats
199810: E5 Moss and lichen dominated habitats
199811: E5 Moss and lichen dominated habitats
199910:
200202:
200311:
200410: E4.2 Moss and lichen dominated mountain summits, ridges and exposed slopes; F1.2 Moss and lichen tundra