

CCW BAP INFORMATION AND MONITORING TASK FORCE

HABITAT CLASSIFICATIONS

Background

Habitat classifications play a pivotal role in nature conservation programmes, but have not always been given the critical attention they deserve. In Britain and Europe, there has been a history of developing classifications to meet specific requirements, sometimes with little consideration of pre-existing classifications and/or with poor definition of the constituent divisions. This instability has led to a proliferation of British and European habitat classifications, with concomitant problems of cross-referencing.

Within CCW, there are eleven different habitat classification systems relevant to terrestrial and freshwater habitats; marine habitats are considered in a separate paper. These may be grouped into classifications used in habitat surveys (Phase I, the National Vegetation Classification, and classifications used in the Saltmarsh Survey of Great Britain, the Wales Lowland Peatland Survey, the ITE classification of woodlands, and the Ratcliffe & Birks classification of upland habitats), and those used in operational conservation programmes (Features/Land Agency Databases, Tir Gofal, Tir Cymen), those required for reporting purposes (BAP and HSD). Some attributes of the relevant classifications are summarised in Annex 1. In addition, CCW will need to be able to relate its habitat data to the developing EUNIS classification of European habitats (which will shortly replace the CORINE and Palaeartic classifications currently in use).

Current position

A programme of work is clearly required to cross-reference the different classifications systems in use by CCW. This is a complex task, and effort by NSG specialists has been focused on cross-referencing the operational Features Database and Tir Gofal classifications to the Phase I, NVC and Ratcliffe & Birks survey classifications, and to the BAP reporting classification. Further work is currently in progress in JNCC to relate the Habitat & Species Directive (HSD) classification to BAP, Phase I and NVC.

Three tables showing the correspondence between some of the key classification systems are attached as Annexes 2-4. Each table is provisional at this stage pending further refinement to BAP habitat definitions by JNCC. It should also be noted that a revision of the list of BAP priority habitats will be carried out in late 1998. Tables cross-referencing the Ratcliffe & Birks and Tir Gofal classifications are also available.

Annex 2 shows the BAP habitat classification. This is a hierarchy of two levels. The broad habitats are comprehensive and correspond well with Phase I habitats. The priority habitats cover only a selected range of habitats. Relationships between the priority habitats and NVC communities are shown in the table; there are numerous examples of cross-cutting (i.e. >many-to-many= relationships).

Annex 3 shows the classification forming the basis of the forthcoming Tir Gofal scheme. This is a two-level hierarchy. The major categories correspond reasonably well with Phase I categories (and therefore with BAP broad habitats), although there are a number of instances of >many-to-

many= relationships. The sub-habitats include all currently recognised terrestrial priority habitats, and their relationships with NVC communities are shown.

Annex 4 shows the Features Database classification. The same system is used in the Land Agency Database. The classification is based closely on the Phase I system, and the correspondence with BAP broad habitats is relatively straightforward. In relation to the BAP priority habitats, there are many instances of >many-to-many= relationships.

Work required

There is clearly a need to build on the work completed to date and develop a robust and user-friendly cross-referencing system to enable rapid and accurate translation between the major classification systems currently in use in CCW. It is recommended that this is taken forward by a contract to a recognised expert in this field and developed in an appropriate software application.

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ANNEX 1. HABITAT CLASSIFICATIONS IN CCW

Classification system	Definitions	Significance	Currency
<i>Survey classifications</i>			
Phase I	Well-documented in JNCC publication	Used in comprehensive NCC/CCW habitat survey of Welsh lowlands (1987-97)	Widespread use by UK country agencies
NVC	Well-defined in <i>British Plant Communities</i>	Used in all major Phase II terrestrial vegetation surveys by the country agencies since 1987	Widespread use by UK country agencies
Ratcliffe & Birks	Reasonably well-defined for most vegetation types	Used in major NCC/CCW survey of Welsh uplands (1979-89)	Largely superseded by Phase I and NVC
Wales Wetland Survey	Reasonably well-defined for most vegetation types	Used in major survey of Welsh lowland peatlands (1977-87)	Mostly superseded by NVC
Saltmarsh Survey	Well-defined	Used in major survey of Welsh saltmarshes (1978-87)	Superseded by NVC
ITE woodland classification	Reasonably well-defined	Used in survey of north Wales woodlands (1985)	Superseded by NVC
<i>Operational classifications</i>			
Features/Land Agency Databases	Based on Phase I classification	Underpins corporate database of habitats on statutory sites	Active in CCW
Tir Gofal	Defined in NSG/AFG documentation	Underpins new agri-environment scheme in Wales	Becoming active
Tir Cymen	Poorly defined	Provided basis for Tir Cymen scheme	Becoming redundant
<i>Reporting classifications</i>			
UK BAP	Definitions still being developed	Underpins UK BAP reporting	Becoming active
Habitat & Species Directive	Defined in terms of NVC	Provides basis for HSD work	Active across Europe

ANNEX 2. CCW HABITAT CLASSIFICATIONS: RELATIONSHIP BETWEEN THE BROAD HABITAT TYPES AND THE PHASE 1 HABITAT CLASSIFICATION, TOGETHER WITH THE PRIORITY HABITATS OCCURRING WITHIN WALES AND THEIR NVC EQUIVALENTS

NB. THE LIST OF UK PRIORITY HABITATS WILL BE REVISED DURING 2001

	BAP BROAD HABITAT TYPES	PHASE 1	BAP PRIORITY HABITATS IN WALES	PRINCIPAL NVC COMMUNITIES FOR PRIORITY HABITATS
1	Broadleaved, mixed and yew woodland	A1.1 Broad leaved woodland A1.3 Mixed woodland A2.1 Continuous scrub	Upland oak woodland	W11 & 17 (both pro parte) W10e & 16b
			Lowland beech	W12-15
			Upland mixed ash woodland	W8 (pro parte) W9
			Wet woodlands	W4 (pro parte) W1-3 & 5-7
			Lowland wood pastures and parkland*	Various woodland and grassland communities
2	Coniferous woodland	A1.2 Coniferous woodland	-	-
3	Boundary and linear features	J2 Boundaries	Ancient and/or species rich hedgerows	N/A
4	Arable and horticulture	J1.1 Arable features	Cereal field margins	OV1-17
5	Improved grassland	B4 Improved grassland	Coastal and floodplain grazing marsh*	Various grassland and wetland communities
6	Neutral grassland	B2 Unimproved and semi-improved neutral grassland	Lowland hay meadow	MG4, 5 & 8
7	Calcareous grassland	B3 Calcareous grassland (unimproved and semi-improved)	Lowland calcareous grassland	CG1 (pro parte) CG2, 3, 6 & 7
			Upland calcareous grassland	CG10, 12 & 14
8	Acid grassland	B1 Acid grassland (unimproved and semi-improved) D5 Dry heath/acid grassland mosaic <i>pro parte</i> D6 Wet heath/acid grassland mosaic <i>pro parte</i>	Lowland dry acid grassland	U1, 2, 3 & 4 (all pro parte)
9	Bracken	C1.1 Continuous bracken	-	-
10	Dwarf-shrub heath	D1 Dry dwarf shrub heath D2 Wet dwarf shrub heath D5 Dry heath/acid grassland mosaic <i>pro parte</i> D6 Wet heath/acid grassland mosaic <i>pro parte</i> H8.5 Coastal heath	Lowland heathland	H4, 8-10, 12, M15 & 16 (all pro parte) H7 & 11
			Upland heathland	H4, 8-10, 12, M15 & 16 (all pro parte) H18 & 21

11	Fen, marsh, and swamp	B5 Marshy grassland <i>E3</i> Fen <i>E2</i> Flushes and springs F1 Swamp F2 Inundation vegetation	Purple moor grass and rush pastures	M22-26 (all pro parte)
			Fens	M1-4, 15, 22-25 & S1-3, 5, 7 & 28 (all pro parte) M5-6, 8-10, 13, 21, 27-30, 35-37, S24-27
			Reedbeds	S4
12	Bogs	E1.6.1 Blanket bog E1.6.2 Raised bog <i>E.1.7</i> Dry modified bog <i>E.1.8</i> Wet modified bog	Lowland raised bog	M1-3, 18, 20 & 25 (all pro parte)
			Blanket bog	M1-3, 15, 18, 20 & 25 (all pro parte) M3, 17 & 19
13	Standing open water and canals	G1 Standing open water	Mesotrophic standing waters Eutrophic standing waters Aquifer fed naturally fluctuating water bodies <i>Saline lagoons</i>	Various aquatic and swamp communities
14	Rivers and streams	G2 Running water	-	-
15	Montane habitats	<i>D3 & D4</i> Lichen/bryophyte and montane heath/dwarf herb	-	-
16	Inland rock	I Rock exposure and waste	Limestone pavements	Various calcareous grassland, scrub and woodland communities
17	Built up areas and gardens.	J2 Built up areas	-	-
18	Supralittoral rock	H4 Boulders/rocks above high tide mark H8.1-4 Maritime cliffs and slopes (including coastal grassland but not heathland)	Maritime cliff and slopes	MC1, 3-12 & CG1f
19	Supralittoral sediment	H3 Shingle/gravel above high tide mark H5 Strandline vegetation H6 Sand dunes	Coastal sand dunes	SD4-19 & H11
			Coastal vegetated shingle	SD1
20	Littoral rock	H1 Intertidal <i>pro parte</i>	-	-
21	Littoral sediment	H1 Intertidal <i>pro parte</i> H2 Saltmarsh	Saltmarsh	SM2-3, 6-20, 22, 24, 26-28, MG11-12

* Priority habitats which are habitat complexes and may comprises of areas of other Broad Habitat Types in addition to the one that they have been assigned to.

Italics = differences from JNCC table of broad habitats for UKBG.

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ANNEX 3. CCW HABITAT CLASSIFICATIONS: TIR GOFAL HABITAT CLASSIFICATION SHOWING UK BIODIVERSITY ACTION PLAN (BAP) PRIORITY HABITATS AND CORRESPONDENCE WITH PHASE I HABITATS AND NATIONAL VEGETATION CLASSIFICATION (NVC) COMMUNITIES

NB. THE LIST OF UK PRIORITY HABITATS WILL BE REVISED TOWARDS THE END OF 1998/99

Habitat group	Tir Gofal major habitat	Corresponding Phase I habitat and code*	Tir Gofal sub-habitat# (BAP priority habitats shown in italics)	Corresponding major NVC communities and sub-communities
Woodland, scrub and bracken	Semi-natural broadleaved woodland	Broad-leaved woodland (A1.1) (except orchards), mixed woodland (A1.3) up to 50% conifers, and scrub (A2) dominated by willow	<i>Upland oakwoods</i>	W11 & 17 (both part) W10e & 16b
			<i>Lowland beechwoods</i>	W12-15
			<i>Upland mixed ashwoods</i>	W8 (part) W9
			<i>Wet woods</i>	W4 (part) W1-3 & 5-7
			Upland birch woods	W4, 11 & 17 (all part)
			Lowland mixed broadleaved woods	W8 (part) W10a-d & 16a
	Scrub	Scrub (A2) except willow	Scrub	W21-24
	Orchards and parkland	Orchards (part of A1.1) and parkland (A3)	Orchards	N/A
			<i>Parkland</i>	Various woodland and grassland communities
	[Coniferous and mixed woodland]	Coniferous woodland plantation (A1.2.2) and mixed woodland (A1.3) (over 50% conifers)	[Coniferous and mixed woodland]	N/A
Bracken	Bracken (C1)	Bracken	U20 & W25	
Heathland	High mountain heath	Montane heath (D4)	High mountain heath	U7, 10, H14, 15 & 19
	Upland heath	Dry heath (D1 & D3) (part) and wet heath (D2) (part)	<i>Upland heath</i>	H4, 8-10, 12, M15 & 16 (all part) H18 & 21
	Lowland and coastal heath	Dry heath (D1 & D3) (part), wet heath (D2) (part) and coastal heath (H8.5)	<i>Lowland heath</i> ¹	H4, 8-10, 12, M15 & 16 (all part) H11
			<i>Coastal heath</i> ¹	H7 & 8d
Grassland	Unimproved dry acid grassland	Unimproved acidic grassland (B1.1)	<i>Lowland unimproved acid grassland</i> ³	U1, 2, 3 & 4 (all part)
			Upland acid grassland	U1, 2, 3 & 4 (all part) U5 & 6
	Unimproved neutral grassland	Unimproved neutral grassland (B2.1)	<i>Unimproved neutral grassland</i>	MG4, 5 & 8
Habitat group	Tir Gofal major habitat	Corresponding Phase I habitat and code*	Tir Gofal sub-habitat# (BAP priority habitats	Corresponding major NVC communities and

			shown in italics)	sub-communities
Grassland contd	Unimproved limestone grassland	Unimproved limestone grassland (B3.1) and limestone pavement (I1.3)	<i>Lowland unimproved limestone grassland</i> ⁴	CG1& 2 (both part) CG3, 6 & 7
			<i>Upland limestone grassland</i>	CG10, 12 & 14
			<i>Limestone pavement</i>	Various calcareous grassland, scrub and woodland communities
	Semi-improved grasslands	Semi-improved acidic grassland (B1.2), semi-improved limestone grassland (B3.2), and semi-improved neutral grassland (B2.2)	<i>Lowland semi-improved acid grassland</i> ³	U4b (part)
			Upland semi-improved acid grassland	U4b (part)
			<i>Lowland semi-improved limestone grassland</i> ⁴	CG2 (part)
			Semi-improved neutral grassland	MG6 (part) MG1, 9, 10 & 13
	Improved grassland	Improved grassland (B4)	Improved grassland	MG6 (part) MG7
	Marshy grassland	Marshy grassland (B5)	<i>Lowland purple moorgrass and rush pasture</i>	M22-26 (all part)
			Other lowland marshy grassland	M27 & 28 (both part)
Upland marshy grassland			M23 & 25 (both part)	
Peatland and wetland	Acid peatland	Blanket bog (E1.1), wet modified bog (E1.7) (part) and dry modified bog (E1.8)	<i>Blanket bog</i>	M1-3, 15, 18, 20 & 25 (all part) M17 & 19
		Lowland raised bog (E1.2) and wet modified bog (E1.7) (part)	<i>Lowland raised bog</i>	M1-3, 18, 20 & 25 (all part)
	Reedbeds, swamps and fens	Fen (valley, basin and floodplain mire) (E3)	<i>Lowland fen</i> ²	M1-5, 8, 9, 15, 21-25 & 27-29, S1-3, 5, 7 & 28 (all part); S24-27
			Upland fen	M1, 2, 4, 5, 8, 21, 25, 27, 28 & 29 (all part)
		Flush and spring (E2)	<i>Lowland flush</i> ²	M6, 10, 13, 29, 30 & 35-37 (all part)
			Upland flush	M6, 10, 29-32, 35 & 37 (all part); M11
		Swamp, marginal and inundation vegetation (F)	<i>Reedbeds</i>	S4
			Other swamp	S6, 8-14 & 17-23 S1-3, 5, 7 & 28 (all part)
	Coastal grazing marsh and floodplain grassland	Various grassland and wetland habitats	<i>Coastal grazing marsh and floodplain grassland</i>	Various grassland and wetland communities
	Habitat group	Tir Gofal major habitat	Corresponding Phase I	Tir Gofal sub-habitat# (BAP priority habitats)

		habitat and code*	shown in italics)	sub-communities
Open water	[Ponds, lakes, streams and field ditches]	Standing water (G1) and running water (G2)	[<i>Middle nutrient status lakes</i> <i>Nutrient-rich lakes</i> <i>Nutrient-poor lakes</i> <i>Seasonal lakes</i> <i>Saline lagoons</i>]	Various aquatic and swamp communities
Coastland	Coastal grassland and cliff	Coastal grassland and cliff (H8.1-4)	<i>Coastal grassland and cliff</i>	MC1, 3-12 & CG1f
	Saltmarsh	Saltmarsh (H2)	<i>Saltmarsh</i>	SM2-3, 6-20, 22, 24, 26-28, MG11-12
	Sand dune	Sand dune (H6)	<i>Sand dune</i>	SD4-19 & H11
Rock etc	Cliff, rock and scree	Cliff, rock and scree (except limestone pavement) (I1.1-2&4), upland spp-rich ledges (C2) and non-ruderal tall herb and fern (C3.2)	Cliff, rock and scree	U16, 17, 19, 21, OV37, 38, 39 & 40
	Shingle banks	Coastal shingle (H3) and other rock exposures (I4) (part)	<i>Coastal shingle</i>	SD1
			River shingle	N/A
Cultivated and boundaries	Arable	Arable (J1.1)	<i>Cereal field margins</i> Other arable	OV1-17
	Hedgerows	Hedges (J2.1-3)	<i>Ancient and/or species-rich hedgerows</i> Other hedgerows	N/A
	Stone walls, slate fences, stone-faced and other earth banks	Other field boundaries (J2.4-8) (part)	Stone walls, slate fences, stone-faced and other earth banks	N/A

* Definitions for Phase I habitats follow NCC=s (1990) *Handbook for Phase I habitat survey*; corresponding codes are given in parentheses. Grazing marshes and floodplain grasslands are landscape units which include a range of Phase I habitats; this category is defined according to the published Habitat Action Plan (HAP). Heath - grassland mosaic mapping classes (D5 and D6) are also relevant to the heath and grassland habitats, but are omitted from the table for clarity.

BAP priority habitat names: unimproved neutral grassland = lowland hay meadow and neutral pasture; coastal grassland and cliff = maritime cliff and slope; seasonal lakes = aquifer fed naturally fluctuating water bodies; middle nutrient status lakes = mesotrophic lakes; nutrient-rich lakes = eutrophic lakes; nutrient-poor lakes = oligotrophic lakes.

¹ Lowland heath and coastal heath are components of the lowland heathland HAP.

² Lowland fen and flush are components of the fen HAP.

³ Lowland unimproved acid grassland and semi-improved acid grassland are components of the lowland acid grassland HAP.

⁴ Lowland unimproved limestone grassland and semi-improved limestone grassland are components of the lowland calcareous grassland HAP.

[] = habitat not eligible for Tir Gofal management agreement.

NSG

16 September 1998

ANNEX 4. CCW HABITAT CLASSIFICATIONS: RELATIONSHIP BETWEEN THE FEATURES AND LAND AGENCY DATABASE CLASSIFICATIONS AND THE UK BIODIVERSITY BROAD AND PRIORITY HABITAT CLASSIFICATIONS

NB. THE LIST OF UK PRIORITY HABITATS WILL BE REVISED TOWARDS THE END OF 1998/99

BAP BROAD HABITAT TYPES	FEATURES/LAND AGENCY DATABASE (WITH CORRESPONDING PHASE I CODES)	BAP PRIORITY HABITATS
Broadleaved, mixed and yew woodland	Semi-natural broadleaved woodland (A1.1.1)	Upland oak woodland <i>pro parte</i>
		Lowland beech <i>pro parte</i>
		Upland mixed ash woodland <i>pro parte</i>
		Wet woodlands <i>pro parte</i>
	Mixed woodland (A1.3.1)	Upland oak woodland <i>pro parte</i>
		Lowland beech <i>pro parte</i>
		Upland mixed ash woodland <i>pro parte</i>
		Wet woodlands <i>pro parte</i>
	Scrub (A.2)	Wet woodlands <i>pro parte</i>
	Parkland (A.3)	Lowland wood pastures and parkland*
Coniferous woodland	-	-
Bracken	Bracken (C.1)	-
Acid grassland	Acid grassland (B.1)	Lowland dry acid grassland
Neutral grassland	Neutral grassland (B.2)	Lowland hay meadow
Calcareous grassland	Calcareous grassland (B.3)	Lowland calcareous grassland
		Upland calcareous grassland
Improved grassland	-	Coastal and floodplain grazing marsh*
Fen, marsh, and swamp	Marshy grassland (B.5)#	Purple moor grass and rush pastures
	Flush and spring (soligenous mire) (E.2)	Fen
	Fen (topogenous mires in valleys, basins and flood plains) (E.3)	
	Swamp (F.1)	
	Marginal and inundation (F.2)	
Bogs	Lowland raised bog (ombrogenous) (E.1.6.2)	Lowland raised bog <i>pro parte</i>
	Blanket bog (other ombrogenous mire) (E.1.6.1)	Blanket bog <i>pro parte</i>
	Wet modified bog (E.1.7)#	Lowland raised bog <i>pro parte</i>
		Blanket bog <i>pro parte</i>
Dry modified bog (E.1.8)	Lowland raised bog <i>pro parte</i>	

		Blanket bog <i>pro parte</i>
Dwarf-shrub heath	Dry heath (except coastal) (D.1)	Lowland heathland <i>pro parte</i> Upland heathland <i>pro parte</i>
	Coastal heathland (H.8.5)	Lowland heathland <i>pro parte</i>
	Wet heath (D.2)	Lowland heathland <i>pro parte</i> Upland heathland <i>pro parte</i>
Standing open water and canals	Standing water (G1.1-5)	Mesotrophic standing waters Eutrophic standing waters Aquifer fed naturally fluctuating water bodies
	Coastal lagoon (G.1.6)	Saline lagoon
Rivers and streams	Running water (G.2)	-
Montane habitats	Lichen/bryophyte & montane heath (D.3 & D.4)	-
Inland rock	Natural inland rock exposures, screes & upland ledges (I.1 & C.2)	Limestone pavements
	Artificial exposures and waste (I.2)	-
	River shingle (I.1.4)	-
Supralittoral rock	Shingle/boulders above high water mark (H.3 & H.4) <i>pro parte</i>	-
	Maritime cliff & associated ledges & crevices (H.8.1-3)	Maritime cliff and slopes
	Coastal grassland (H.8.4)	
Supralittoral sediment	Sand-dune (H.6)	Coastal sand dunes
	Shingle/boulders above high water mark (H.3 & H.4) <i>pro parte</i>	Coastal vegetated shingle
Littoral rock	Inter-tidal (H.1)	-
Littoral sediment	Saltmarsh (H.2)	Saltmarsh
Boundary and linear features	Boundary and other linear features (J.2)	Ancient and/or species rich hedgerows
Built up areas and gardens	-	-
Arable and horticulture	Arable weed community (J.1)	Cereal field margins

* Priority habitats which are habitat complexes and may comprises of areas of other Broad Habitat Types and Features/Land Agency Database categories in addition to the one that they have been assigned to.

In the absence of information on peat depth, almost all *Molinia*-dominated vegetation on upland sites has been assigned to marshy grassland rather than wet modified bog.

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16 September 1998