Priority Habitat Definition Statement
Chalk Rivers

1. Introduction

1.1 General description

Chalk rivers are watercourses dominated by groundwater discharge from chalk geology. There are approximately 35 chalk rivers and major tributaries ranging from 20 to 90 kilometres in length. They are located in south and east England, from the Frome in Dorset to the Hull in Humberside.

1.2 Summary of existing information

The influence of the source rock strata gives rise to the characteristic water chemistry and flow regime. Chalk rivers can therefore be defined by use of geological maps without a need for further information on water chemistry or plant communities derived from surveys. The influence may also extend to the lower reaches where a chalk river running over non-chalk bedrock still maintains the qualities of a chalk river.

A preliminary list of chalk rivers has been drawn up for the UK Biodiversity Steering Group for the chalk rivers Habitat Action Plan (Mainstone, 1999). The identified rivers are located on and downstream of outcrops of chalk in southern and eastern England, from the Frome in Dorset to the Hull in Humberside. A number of chalk rivers have been designated as Sites of Special Scientific Interest by English Nature.

1.3 Key issues with mapping and discriminating from other habitats

The influence of the source rock strata gives rise to the recognised characteristics of chalk rivers. They may therefore be defined by use of geological maps without a need for further information on water chemistry or plant communities derived from surveys. The influence may also extend to the lower reaches where a chalk river running over non-chalk bedrock still maintains the qualities of a chalk river. There may be no ecologically meaningful criteria for when the influence of the chalk is too weak for the river to be included in this category and therefore there is some debate over which rivers actually qualify.
Although chalk rivers are often closely associated with other habitats such as wet woodland and grassland it is proposed to map chalk rivers to the bank tops, thus using a physical definition not one defined by vegetation limits.

2. Physio-graphical description

2.1 Structural/physical components

Chalk rivers are found generally but not exclusively, running over chalk bedrock. They also include watercourses that flow over a range of non-chalk surface geologies at various points along their length, particularly in the lower reaches but where the major water source is groundwater in chalk aquifers. The chalk influence produces a distinctive hydrochemistry and flow regime, giving rise to characteristic communities of plants and animals. Many chalk rivers have ‘winterbourne’ stretches in their headwaters. These often run dry, or partially

dry, in late summer because of a short-term lack of rainfall to recharge the aquifer.

2.2 Applicability of aerial photos and other remote sensing technologies

Aerial photographs may not be of sufficient resolution to map chalk rivers, especially in the upper reaches and may not convey enough information to determine the underlying geology.

3. Altitudinal limits

Altitude is not directly relevant to this priority habitat, although exposed chalk is generally not found above ?m in England.

4. Habitat classification

CLASSIFICATION and version date	CODE	DESCRIPTION	RELATIONSHIP *	COMMENTS
BAP priority habitat (1995)		Chalk rivers		
BAP broad habitat (1998)		Rivers and streams	>	
Phase 1 (1990)	G22	Mesotrophic running water	>	
NVC (1991)	A17 A20	*Ranunculus penicillatus* ssp. *pseudofluitans* community *Ranunculus peltatus* community	< <	
EUNIS	C2.19 C2.26 C2.3		<	
Palaearctic	N/a			
CORINE (1991)	24.4 24.42	Floating vegetation of Ranunculus of plain and submountainous rivers Lime-rich oligotrophic river vegetation		
Habitats Directive Annex 1 (1997)	3260**			
Habitats Directive Annex 1 (later version)				

*** relationship of classification type to priority habitat:**
= equal, < narrower, > wider, # overlap, ? not determined

****as listed in the Recorder 2000 biotopes dictionary**

5. Species composition

5.1 Flora

Chalk rivers have a characteristic plant community, often dominated in mid-channel by river water crowfoot *Ranunculus penicillatus* var *pseudofluitans* and starworts *Callitriche obtusangula* and *C. platycarpa* and along the edges by watercress *Rorippa nasturtium-aquaticum* and lesser water-parsnip *Berula erecta*.

5.2 Fauna

They support a rich diversity of invertebrate life and important game fisheries, notably for brown trout *Salmo trutta*. Brook lamprey *Lampetra planeri,* salmon *Salmo salar,* crayfish *Austropotamobius pallipes* and otter *Lutra lutra* are among the species listed on Annex II of the EC Habitats Directive which chalk rivers support.

A characteristic range of invertebrates and brook water crowfoot *Ranunculus peltatus* are found in the 'winterbourne' stretches of the headwaters of chalk rivers. These are stretches that often run dry, or partially dry, in late summer because of lack of rainfall recharging the aquifer.

A list of priority species associated with this habitat is included as ***Appendix 2*** (from Biodiversity - Making the Links, English Nature Biodiversity series).

6. Geographical restrictions

6.1 Geographical coverage and restrictions in the UK

Due to the requirement for water sources to arise on or near chalk this priority habitat is restricted to the southern and eastern parts of England where this is located. This stretches from Dorset in the south-west to Yorkshire at the north-eastern extreme of the distribution.

6.2 Climate requirements

Due to the requirement for water sources to arise on or near chalk this priority habitat is

7. Geology and soils

Chalk rivers are found generally but not exclusively, running over chalk outcrops. They also include watercourses that flow over a range of non-chalk surface geologies at various points along their length, particularly in the lower reaches.

8. Hydrology

The main water source is from slow percolation into the chalk aquifer and subsequent discharge via springs, producing clear waters and a generally stable flow and temperature regime. The slow release of water from the aquifer greatly attenuates the sporadic nature of rainfall, providing a relatively stable hydrological regime with a characteristic annual cycle. Most chalk rivers have 'winterbourne' stretches in their headwaters. These often run dry, or

partially dry, in late summer because of lack of rainfall recharging the aquifer.

9. Relationship with other habitats

	Chalk rivers

10. Management

Where the river corridor (approximately 50m either side of the river) is not affected by intensive agriculture, fisheries or urban development, rich fen vegetation may develop. This is either maintained by extensive cattle grazing or naturally progresses to carr woodland in the absence of grazing.

11. Size of mappable units

Minimum length: 100 metres

The mapping of channels narrower than 5m will be done as a linear feature with zero widht, as there is no practical advantage to be gained from using polygons.

12. Regional differences

There is no information available for regional differences in chalk rivers in the UK

Appendix 1
Information Sources

English Nature (1999) Biodiversity : making the links. English Nature

Jackson, D.L. (2000). Guidance on the interpretation of the Biodiversity Broad Habitat Classification (terrestrial and freshwater types): Definitions and the relationship with other habitat classifications. JNCC Report, No. 307

NCC (1990). Handbook for Phase 1 habitat survey: a technique for environmental audit field manual NCC, Peterborough

Mainstone, C.P., 1999. Chalk Rivers Nature Conservation and Management, Water Research Centre

UK Biodiversity Steering Group, 1995. Biodiversity, The UK Steering Group Report, English Nature

Appendix 2
BAP priority species associated with chalk rivers

(From "Biodiversity - Making the Links" - 28 June 2000 version)

Scientific name	Common name	Taxon	Priority list	Importance of habitat to the species *
Austropotamobius pallipes	White-clawed crayfish	Crustacean	SAP	P
Pipistrellus pipistrellus	Pipistrelle bat	Mammal	SAP	P
Vertigo moulinsiana	Desmoulin's whorl snail	Mollusc	SAP	P
Coenagrion mercuriale	Southern damselfly	Damselfly	SAP	S
Emberiza schoeniclus	Reed bunting	Bird	SAP	S
Pisidium tenuilineatum	Freshwater pea mussel	Mollusc	SAP	S
Arvicola terrestris	Water vole	Mammal	SAP	x
Barbastella barbastellus	Barbastelle bat	Mammal	SAP	x
Lutra lutra	Otter	Mammal	SAP	x
Nitella tenuissima	Dwarf stonewort	Stonewort	SAP	x
Rhinolophus hipposideros	Lesser horseshoe bat	Mammal	SAP	x
Tolypella intricata	Tassel stonewort	Stonewort	SAP	x
Tolypella prolifera	Great tassel stonewort	Stonewort	SAP	x

*** (P) primary, (S) secondary or (x) less**