

NOTIFIED TO THE SECRETARY OF STATE ON 9 JULY 1999

COUNTY: DORSET SITE NAME: MOORS RIVER SYSTEM

DISTRICT: EAST DORSET, CHRISTCHURCH

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981, as amended. Section 17 of the Water Resources Act 1991 and Section 4 of the Water Industry Act 1991

Environment Agency Area: South Wessex Water Company: Wessex Water plc
Local Planning Authorities: DORSET COUNTY COUNCIL, East Dorset District Council, Christchurch Borough Council

National Grid Reference: SU 057133 to SZ 131959

Length of River SSSI: 32.3 km Area: 296.57 (ha.)

Ordnance Survey Sheets 1:50,000: 195

Date notified (under 1949 Act): 1954 (part), 1977 (part)

Date notified (under 1981 and 1991 Acts): 1986 (part), 1987 (part), 1999

Other Information:

The Moors River is part of a national series of river SSSI's and is a Nature Conservation Review site. This notification includes boundary extensions covering the River Crane and Leaden Stour, incorporates parts of Hurn Common SSSI and amends the list of operations likely to damage the features of special interest.

The site is adjacent to several areas of heathland SSSI. Some areas are managed as nature reserves by the Dorset Wildlife Trust and part lies in the Moors Valley Country Park.

Description and reasons for notification:

Key Features and General Character

The Moors River is a small lowland river which supports an exceptional diversity of aquatic and wetland plants. The vegetation varies from a type characteristic of mixed geology, low gradient rivers in the middle reaches to a type more typical of chalk streams towards the confluence with the River Stour. On the upper reaches, the River Crane exemplifies a small chalk stream with a diverse and substantially natural habitat structure. This part of the river system supports species rich assemblages of aquatic invertebrates, including several rare and uncommon river species. Downstream, the Moors River and associated water features are notable for an outstanding dragonfly fauna. The river system also supports several fish, bird and aquatic mammal species of conservation importance.

The Moors River rises as a winterbourne on the chalk of the South Wessex Downs and is at first known as the River Crane. Below Cranborne, at the head of the river

SSSI, the Crane grades into a perennial chalk stream as the flow is augmented by springs and other chalk headwaters. The stream then drains through an area of clays comprising the Reading Beds and London Clay, and near Verwood enters a geology of sands, gravels and clays, and is joined by several tributaries which drain extensive areas of acidic heathland and conifer plantation. With these changes in geology there is a major transition in the river's character from a chalk stream to a sluggish, low gradient watercourse, and the name changes to the Moors River. Finally, near Hurn, the river returns to the faster flowing, gravelly nature of a chalk stream.

This geological diversity is unusual for a small lowland river and gives rise to a large range in water chemistry along the river's length. The headwaters, being fed from the chalk, are strongly calcareous, naturally quite rich in nutrients and have a high water quality. The alkalinity then declines downstream through the progressive influence of lower alkalinity tributaries and, on the Moors River, drops markedly on receiving the base poor flow of the Uddens Water. The mixed geology also creates different flow regimes, the chalk stream on the Crane having a relatively high base flow from groundwater and the Moors River having a tendency to rise and fall rapidly from flashy drainage in the lower catchment, accentuated by runoff from several urban settlements.

Locally the watercourses have been modified over the centuries to provide water heads for mills, small lakes and, on the headwater, places for the cultivation of watercress. Some lengths of the Moors River below Verwood have also been hydraulically improved or realigned for agricultural and urban flood drainage, and until recently there was regular cutting of the river vegetation along the middle reaches to improve drainage conditions. Despite this history of management, much of the river system is characterised by habitat features indicative of a substantially natural channel and this is well exemplified on the chalk stream lengths. The channel substrate is also very diverse, varying from a dominance of gravels and sands along the Crane to mostly clays and silts on the sluggish parts of the Moors River.

Although the character of riparian land along the river system has been extensively modified through conversion to improved grassland, there is a more widespread presence of semi-natural wetland than on many small rivers in lowland situations. The wetland includes habitats such as swamp, tall-herb fen and fen woodland. These often occur in a diverse mosaic with wet, rushy pasture (fen meadow) and partly improved neutral grassland, usually with a network of ditches. The mosaics are extensive for Dorset, locally occupying the entire valley bottom on the Crane and the narrow flood plain on the lower reaches of the Moors River. Some of the vegetation types in these areas are species rich.

Flora of the River and Adjoining Habitats

The river system supports a succession of plant communities along its length, with changes that are more marked than is normal for lowland rivers and particularly for a relatively small river channel.

The River Crane supports a typical assemblage of chalk stream plants, but the vegetation differs from many other chalk streams in the dominance of bank edge trees, especially alder *Alnus glutinosa*. These commonly create root and brash tangles which

are important habitat features in a natural stream ecosystem. Further habitat diversity is provided by a varied and, on some sections, a species rich bankside vegetation. Wooded banks with a wet understorey contain yellow iris *Iris pseudacorus*, sedge *Carex* species and opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium*, canopy gaps are characterised by species of tall-herb fen such as purple-loosestrife *Lythrum salicaria*, and open channel margins support stands of branched bur-reed *Sparganium erectum*. The aquatic vegetation is solely dominated by brook water-crowfoot *Ranunculus penicillatus* subsp. *pseudofluitans*, often in a typical chalk stream association with water-starwort *Callitriche* species, lesser water-parsnip *Berula erecta* and marginal fringes containing fool's water-cress *Apium nodiflorum*, brooklime *Veronica beccabunga* and blue water-speedwell *V. anagallis-aquatica*.

Passing downstream the river vegetation changes towards a lowland, mixed geology community, with species of a sluggish flow such as broad-leaved pondweed *Potamogeton natans* and unbranched bur-reed *Sparganium emersum* becoming frequent. Below the confluence with the Uddens Water this community is species rich and luxuriant, and is markedly different from the vegetation on the Crane. Many of the chalk stream plants persist, but additional aquatic species including yellow water-lily *Nuphar lutea* and shining pondweed *Potamogeton lucens* gain dominance. These occur with other additional river plants, notably opposite-leaved pondweed *Groenlandia densa* and river water-dropwort *Oenanthe fluviatilis* which are uncommon and declining aquatic species.

Near Hurn there is a further major change in the river vegetation. The high diversity of habitat features found on the River Crane re-appears and there is a species rich assemblage of characteristic chalk stream plants. These occur with most of the plants found in the lowland, mixed geology community upstream, forming a very diverse river vegetation. The number of aquatic and wetland plant species is among the highest recorded from any section of lowland river in England, and is very exceptional for the relatively small size of the river channel.

The plant diversity is exemplified by the range of narrow and broad-leaved aquatics, floating leaved plants, narrow-leaved emergents, reeds and sedges, marginal species and bankside tall-herbs. This section of the Moors River is also unusual in supporting both brook and river water-crowfoot *Ranunculus fluitans* together with river water-dropwort as a common component of the aquatic vegetation.

The fen habitats adjoining the river system contain a wide range of plant communities, and these differ with the soil water environment, water levels and management regime. Unmanaged areas with permanent waterlogging and frequent flooding, often located immediately alongside the river and ditches, support swamp communities of, for example, sedge species and common reed *Phragmites australis*. These give way to tall-herb fen communities where the land is seasonally waterlogged and is mostly ungrazed. Areas with a dominance of reed canary-grass *Phalaris arundinacea* are frequent along the Crane valley. Downstream on the flood plain of the Moors River there are very different communities containing more species rich swards with meadowsweet *Filipendula ulmaria*, marsh valerian *Valeriana dioica* and common meadow-rue *Thalictrum flavum*.

Other areas of wetland have developed naturally, through the invasion of scrub, to types of fen woodland dominated by alder and willow *Salix* species. Some support an understorey rich in wetland plants such as water avens *Geum rivale*, yellow pimpernel *Lysimachia nemorum* and various sedges including greater tussock-sedge *Carex paniculata*. Further examples occur along the edge of the Moors River flood plain where drainage from adjacent heathland and conifer plantation is impeded. These areas are of note for a diverse sedge flora, which includes locally uncommon species such as white sedge *Carex curta* and bladder-sedge *C. vesicaria* and the nationally scarce elongated sedge *C. elongata*, and pools containing the insectivorous bladderwort *Utricularia australis*.

Where there is hay cutting or relatively light livestock grazing and the land is not well drained, the fen vegetation forms various types of fen meadow. This habitat is well represented in the Crane valley where groundwater seeps out over clays on the lower slopes. The plant communities are characterised by mixes of sharp-flowered rush *Juncus acutiflorus*, purple moor-grass *Molinia caerulea*, yellow iris and meadowsweet, and are often species rich. Locally uncommon plants include corky-fruited water-dropwort *Oenanthe pimpinelloides*, heath spotted-orchid *Dactylorhiza maculata* and tawny sedge *Carex hostiana*. Along the Moors valley some areas of fen meadow and tall-herb fen contain a heath flora component, such as cross-leaved heath *Erica tetralix*, bog myrtle *Myrica gale*, and also marsh gentian *Gentiana pneumonanthe* which is nationally scarce. These provide evidence of past ecological connections with the heaths on adjacent valley slopes and, in places, there remain unbroken transitions from fen habitats to heathland in adjoining SSSI's.

The fen meadow in the Crane valley commonly grades into types of neutral grassland on the better drained slopes. These grasslands have mostly been subject to some agricultural improvement, but some species rich swards occur containing, for example, pepper-saxifrage *Silaum silaus* and quaking grass *Briza media*.

Further areas of relatively little improved neutral grassland occur along the lower reaches of the Moors River, especially where the flood plain merges with that of the River Stour. Here a flood meadow system supports grassland communities containing many species that have declined widely elsewhere through agricultural improvements. These include cowslip *Primula veris*, tubular water-dropwort *Oenanthe fistulosa*, yellow-rattle *Rhinanthus minor* and, on open wet ground, mousetail *Myosurus minimus* which is uncommon.

Invertebrates

The Moors River has long been noted for an outstanding dragonfly fauna. Historically, at least 32 species have been recorded, including orange-spotted emerald *Oxygastra curtisii*, which is now extinct in Britain following the loss of the last known breeding population on the lower reaches of the river. Although some other species have also been lost, probably as a consequence of past water pollution and a decline in habitat conditions, the river system and associated water features continue to support breeding populations of many of Britain's dragonfly and damselfly species.

The chalk stream section of the River Crane is widely frequented by a few species, such as golden-ringed dragonfly *Cordulegaster boltonii* and the local banded demoiselle *Calopteryx splendens*.

Further downstream, especially below the confluence with the Uddens Water, the dragonfly fauna is species rich. In addition to the river, the flood plain contains other important dragonfly habitats, for example ditches and pools with different water chemistries and, adjacent to the lower reaches, an artificial leat system fed from the River Stour. The range of breeding species includes the local white-legged damselfly *Platycnemis pennipes*, the nationally scarce hairy dragonfly *Brachytron pratense* and a strong population of scarce chaser *Libellula fulva*, a nationally rare dragonfly. Where pools and wet ditches are filled by base poor drainage from adjacent heathland and conifer plantation, there is a diverse mix of both river species and typical heathland species, such as keeled skimmer *Orthetrum coerulescens* and small red damselfly *Ceriagrion tenellum*, which is nationally scarce.

The aquatic invertebrates are also of significant interest, particularly on the upper reaches above the confluence with the Uddens Water. On these reaches the instream invertebrate fauna has been found to be rich in species and species groups, with nearly all sampled sites supporting an assemblage of above average species richness compared with sites on other lowland rivers in England with the same type of invertebrate fauna. Some sites are especially rich, holding over 100 species and species groups, indicating a high diversity and quality of instream habitats. The assemblages also differ in species composition at different sites, ranging from types characteristic of small streams to, more commonly, types characteristic of lowland streams and rivers.

The more notable components of the invertebrate fauna include a wide range of trichoptera (caddisflies), ephemeroptera (mayflies), coleoptera (beetles) and gastropoda (snails). There are many local species and some which are nationally scarce, such as the whirligig beetle *Gyrinus urinator* and the crane fly *Thaumastoptera calceata*. On the Crane, near the head of the river SSSI, the invertebrate assemblage is more different, containing some specialized species typically associated with winterbournes. These include the local and rapidly declining watersnail *Aplexa hypnorum* which has a tolerance to occasional dry conditions, and the nationally rare mayfly *Paraleptophlebia weneri* which relies on resistant eggs to overcome a dry period.

The invertebrate fauna supported by the river edge and fen habitats is less well studied. However, the high diversity of wetland features provided by these habitats and records of several local species from a few studied locations indicate the likely presence of a significant interest for several insect groups.

Fish and Other Wildlife

The river system supports a limited diversity of fish, but a high proportion of those recorded from recent surveys are considered native to the catchment. On the Moors River the assemblage is dominated by coarse species including chub *Leuciscus cephalus*, gudgeon *Gobio gobio*, pike *Esox lucius* and, notably, very high densities of dace *L. leuciscus* compared with neighbouring river systems.

In contrast, the River Crane is dominated by brown trout *Salmo trutta*, with the chalk stream habitat supporting one of the principal spawning grounds for this species in the wider Stour catchment area. The population is substantially a wild stock and comprises a high proportion of the anadromous sea trout (marine fish which spawn in rivers). Bullhead *Cottus gobio*¹, a species of conservation concern in a European context, and eel *Anguilla anguilla* occur extensively along these headwaters, and brook lamprey *Lampetra planeri*¹ is also found.

The assemblage of breeding birds is typical of a small chalk river, being limited to water-edge species such as grey wagtail *Motacilla cinerea* and kingfisher *Alcedo atthis*, and some open water species such as little grebe *Tachybaptus ruficollis*. Areas of adjacent swamp, fen and fen meadow provide valuable breeding habitat for further species including reed warbler *Acrocephalus scirpaceus*, grasshopper warbler *Locustella naevia*, and reed bunting *Emberiza schoeniclus*, the latter two being of conservation concern owing to their decline in Britain. In winter, the lower reaches of the Moors River and flooding on the adjacent meadows attracts waterfowl and waders, particularly teal *Anas crecca* and common snipe *Gallinago gallinago*.

The Moors was formerly noted for breeding otter *Lutra lutra*² which, after some years of absence in common with a severe population loss throughout central, southern England, has now re-established a presence. Britain's two other species of aquatic mammal – water vole *Arvicola terrestris* and water shrew *Neomys fodiens* – also occur, especially on the River Crane.

¹Species of European interest listed in Annex II of the EC Habitats and Species Directive.

²Species of European interest listed in Annex IV of the EC Habitats and Species Directive and listed in Schedule 2 of the Habitats Regulations for special protection.