

invertebrate fauna reflects the diversity of the habitat and includes many notable species, including dragonflies, grasshoppers and snails.

Although derived from a large chalk catchment, within the SSSI the River Avon flows over acidic sands and clays. Here the chalk river water is supplemented by acid streams draining mainly from the New Forest heaths. The Avon's aquatic flora contains plants adapted to a range of conditions. Sixty-six species of aquatic plant are known to occur in the river channels and associated dykes. The river has a very diverse fish fauna with at least 27 species of non-salmonid fish known to be present as well as important populations of Atlantic salmon *Salma salar*, migratory and brown trout *Salma trutta*. Molluscs are particularly abundant including the rare water snail *Valvata macrostoma* and the pea mussel *Pisidium tenuilineatum*. Although locally modified by dredging and other engineering activities significant stretches of the river survive which exhibit classic sluggish lowland river features such as meanders, ox-bows, river cliffs, gravel shallows and backwaters. This diversity of riverine habitat supports populations of rare and threatened plants such as mudwort *Limosella aquatica* and frogbit *Hydrocharis morsus-ranae*. A wide range of dragonflies are known from the river and dykes, including the nationally rare species the scarce chaser *Libellula fulva*.

The flood plain contains extensive areas of agriculturally unimproved grassland, much of it managed traditionally to produce hay. These grasslands support a rich and varied flora and represent one of the largest expanses of unimproved flood plain grassland in England. Unlike other chalk rivers the Avon displays wide fluctuations in river level. The flora of the flood plain grasslands is influenced by the fluctuations in ground water table which this produces. In areas regularly inundated with the lime-rich river water, the grasslands are dominated by grasses such as Yorkshire fog *Holcus lanatus*, the fescues *Festuca pratensis* and *Festuca arundinacea*, rye-grass *Lolium perenne* and its fescue hybrids \times *Festulolium loliaceum*. These grasslands contain an abundance of fen species such as meadowsweet *Filipendula ulmaria*, water avens *Geum rivale*, marsh marigold *Caltha palustris*, common milkwort *Polygala vulgaris* and meadow rue *Thalictrum flavum*. In slightly higher ground, where the river water has less influence, a more acidic flora has developed containing species such as devil's-bit scabious *Succisa pratensis*, bog pimpernel *Anagallis tenella*, purple-moor grass *Molinia caerulea* and, on the most acid soils, heather *Calluna vulgaris* and cross-leaved heath *Erica tetralix*. In the driest areas, sand sedge *Carex arenaria* is the dominant species of a remarkable sand dune flora associated with islands and ridges of sand deposited in the flood plain. A remarkable feature of the Avon Valley grasslands is the way in which the diversity of grassland types merge one into another often within a relatively small area creating some extremely species-rich grasslands containing species indicative of widely different soil conditions.

The sand and gravel river terraces, principally along the eastern edge of the flood plain, support areas of acidic grassland and heathland. Historically some of these areas have been used as common land. They support an extremely interesting and varied flora which includes many species more often associated with maritime acid sand dunes, and which are rare in inland Britain. In places sand sedge is the dominant species, helping to bind areas of shifting sand. Heather *Calluna vulgaris*,

bell heather *Erica cinerea* and sheep's-bit *Jasione montana* are all common in these areas. Where the sand and gravels have become stabilised, a dry open turf has developed which includes a number of nationally rare and scarce species of clover including knotted clover *Trifolium striatum*, subterranean clover *T. subterraneum* and bird's-foot clover *T. ornithipodioides*. These areas of dry grassland are varied by the presence of damp depressions supporting a heathland plant community composed of purple-moor grass, cross-leaved heath with devil's-bit scabious and lousewort *Pedicularis sylvatica*. On trackways, and other areas of exposed sand a flora adapted to periodic disturbance has developed which includes mossy stonecrop *Crassula tillaea* and lesser quaking-grass *Briza minor*. These species are restricted to a few localities in inland Britain and are in decline due to the loss of this particularly unusual habitat. The seasonally exposed muddy fringes of numerous ponds within the old commons provide yet another micro-habitat for rare and scarce plant species. These include the largest known British population of the endangered brown galingale *Cyperus fuscus*, a species afforded special protection under the Wildlife and Countryside Act, 1981.

On the western side of the valley a section of the river terraces is farmed under a traditional pastoral system. The localised poaching and dunging by farm stock, combined with the seasonally high water table, provides the habitat for one of the largest populations in Britain of the nationally rare small fleabane *Pulicaria vulgaris*. In 1990 it was estimated that 22% of the British population of this species was present in this location.

Small woodlands and thickets are found throughout the Avon Valley. These display a wide variety of structure and species composition in response to past management practices and soil conditions. On the dry, sandy soils, above the flood plain and on slightly elevated islands within the flood plain, pedunculate oak *Quercus robur* and birch *Betula* spp. dominate the woods. There are few shrubs in these woods and the ground flora is relatively impoverished, as is typical in woodlands on such acid soils. Where the flood plain and river terraces meet there are numerous springs, where alder woodland predominates. These woodlands tend to be of relatively recent origin and reflect a change in management (probably a reduction in grazing pressure), in the early part of this century. They display a rich flora containing many fern and mire species indicative of the habitat from which the woodland has developed, including bog myrtle *Myrica gale*, lesser pond sedge *Carex acutiformis* and marsh marigold. Numerous willow woods and thickets occur in the valley. Some are dominated by osier *Salix viminalis* and may have been derived from cultivated withy beds. Others contain an interesting range of willow species and their hybrids and include the uncommon purple willow *Salix purpurea*.

The lower Avon Valley grasslands and the Blashford Lakes are of national and international importance for migratory wildfowl and wading birds. The valley grasslands act as winter feeding grounds for large flocks of European white-fronted geese, Bewick's swans, wigeon, teal, shoveler, golden plover and black-tailed godwits, whilst the Blashford Lakes attract large numbers of wintering gadwall, coot, and mute swans and are used as a crucial roosting site for the flocks of wildfowl that feed in the valley. The Avon herd of 200 or more Bewick's swans

represents in excess of 1% of the species' world population and is considered to be of international importance. The valley regularly supports a winter flock of 400 or more European white-fronted geese. Although the numbers of this species wintering on the Avon have declined in recent years their numbers still constitute over 6% of the UK wintering population and are of national importance. The wintering flock of gadwall using the Blashford Lakes averages over 330 birds and is of international importance constituting nearly 3% of the north-west European population of this species. Numbers of wintering mute swan and coot in the Lakes are of national importance. In addition the flood plain within the SSSI may at times hold up to 8% of the European population of wintering black-tailed godwits, or approximately 400 birds, as well as large flocks of ducks, mainly wigeon (over 6000) and teal (over 300), especially when the valley is partially flooded.

In spring the valley provides a nationally important breeding ground for wading birds dependent on wet grasslands, including redshank, snipe and lapwing. The numbers of wading birds breeding in wet grasslands have declined dramatically throughout Europe as a result of land drainage and intensification of agricultural use. The Avon Valley is considered to be one of the eight most important areas of lowland wet grassland for breeding wading birds in Britain and Ireland. The diversity of wetland habitat within the SSSI, particularly the areas of wet woodland, willow thickets, reedbeds and exposed river gravels provides nesting sites for a nationally important assemblage of breeding wetland birds. This includes Cetti's warbler, kingfisher, yellow wagtail, sedge warbler, reed warbler, shelduck, and little ringed plover. Barn owl, buzzard and hobby are also known to breed in the valley.

The River Avon also supports a small population of otters *Lutra lutra*, the conservation of which depends on the maintenance of a diversity of river features, high water quality and, most importantly, control of disturbance.