

County: Cumbria

Site Name: Esthwaite Water

District: South Lakeland

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act, 1981.

Local Planning Authority: Lake District Special Planning Board

National Grid Reference: SD 361962 **Area:** 152.8 (ha) 377.6 (ac)

Ordnance Survey Sheet 1:50,000: 97 **1:10,000:** SD 39 NE, SE

Date Notified (Under 1949 Act): 1965 **Date of Last Revision:** 1975

Date Notified (Under 1981 Act): 1987 **Date of Last Revision:** 1987

Other Information:

1. The site is listed in 'A Nature Conservation Review', edited by D. A. Ratcliffe, 1977, published by Cambridge University Press.
2. The site includes North Fen National Nature Reserve (area 2 ha), declared in 1955, under Section 16 of the National Parks and Access to the Countryside Act, 1949.
3. The site boundary has been revised by extensions and deletions at renotification.
4. The site name has been changed from Esthwaite to Esthwaite Water.
5. The site is located within the Lake District National Park.

Description and Reasons for Notification:

Esthwaite Water is situated in a glacial alley between Lake Windermere and Coniston Water, 8 km south-west of Ambleside. It is 2.5 km long, about 0.5 km wide and has a mean depth of 6.4m. It is an example of a moderately nutrient rich (mesotrophic) lake, the most productive of the larger lakes in the Lake District and despite the fact that the waters are artificially nutrient enriched by sewage, it is one of the best examples of its kind in England and Wales. It has been studied intensively by the Freshwater Biological Association for over 45 years and the fen at its northern end adjacent to the inflow, North Fen National Nature Reserve, is famous for long term studies on plant community succession on lake margins (the hydrosere). The site includes the tarns of Priest Pot and Out Dubs.

The complex of open water, fen and grassland communities within the site support a characteristic flora including examples of nationally rare and local species and have a range of breeding birds typical of these habitats.

The microscopic life of the lake consists of the free-floating plant community (phytoplankton) dominated by diatoms, blue-green algae and the flagellate *Ceratium*. Common animals (zooplankton) present include *Diatomus gracilis*, *Bosmina longirostris*, *B. coregoni* and *Daphnia hyalina*.

Larger invertebrates are well represented and over 120 species from a wide range of groups have been recorded. These include water boatmen such as *Sigara scotti*, *S. distincta* and the uncommon *S. semistriata*; the local caddisfly species *Cyrtus flavidus*, *Oecetis furva*, and *Polycentropus kingi*; the rare water flea *Alonella exigua*; and *Bdellocephala punctata*, an

uncommon flatworm. In addition, almost a third of the British mayflies are known from the site.

The lake supports beds of stonewort *Chara* spp., Canadian pondweed *Elodea canadensis* and the moss *Fontinalis antipyretica* as well as a number of species of pondweed *Potamogeton*, including the blunt-leaved *P. obtusifolius*, various-leaved *P. gramineus*, small *P. berchtoldii* and lesser *P. pusillus*. The only known locality in England and Wales for the slender naiad *Najas flexilis*, a national rarity, is at Esthwaite. Towards the lake shore water lobelia *Lobelia dortmanna* grows amongst carpets of shoreweed *Littorella uniflora*.

Yellow and white water-lilies *Nuphar lutea* and *Nymphaea alba* are present along the lake edge, often adjacent to reeds *Phragmites australis*. At North Fen the hydrosere is well developed. Greater spearwort *Ranunculus lingua* grows on the outer edge of a wide reed bed. This progressively gives way to a bottle sedge *Carex rostrata* and reed community and then carr woodland dominated by common sallow *Salix cinerea* and alder *Alnus glutinosa* with lesser amounts of purple and crack willow *S. purpurea* and *S. fragilis*, and scattered birch and ash. Tufted sedge *Carex elata*, lesser pond-sedge *C. acutiformis*, common sedge *C. nigra*, greater tussock-sedge *C. paniculata*, reed canary-grass *Phalaris arundinacea* and meadowsweet *Filipendula ulmaria* are the most frequent species in the field layer. The nationally scarce elongated sedge *Carex elongata* has also been recorded here.

Similar hydroseres have developed at Priest Pot, and at Out Dubs Tarn the sequence continues to dry birch woodland and marshy grassland. The latter is characterised by star, glaucous, common and pale sedge, *Carex echinata*, *C. flacca*, *C. nigra* and *C. panicea* with mat-grass *Nardus stricta*, creeping bent *Agrostis stolonifera*, lousewort *Pedicularis sylvatica*, marsh pennywort *Hydrocotyle vulgaris*, devil's-bit scabious *Succisa pratensis* and meadowsweet *Filipendula ulmaria*. Damp pastures and hay meadows separated by ditches and drains are present to the north of Priest Pot. In the main these have been improved and are included for water catchment reasons. However, in places a marshy grassland community has developed characterised by sweet vernal-grass *Anthoxanthum odoratum*, Yorkshire fog *Holcus lanatus*, soft rush *Juncus effusus* and star sedge, and it also includes marsh marigold *Caltha palustris*, marsh cinquefoil *Potentilla palustris*, marsh lousewort *Pedicularis palustris* and sneezewort *Achillea ptarmica*.

Elsewhere, such as adjacent to the Cunsey Beck below Out Dubs, and to the west of Black Beck adjacent to Priest Pot, taller swards dominated by purple moor-grass *Molinia caerulea* and a fen community with reed canary-grass contain typical marshland species such as common valerian *Valeriana officinalis*, wild angelica *Angelica sylvestris*, sneezewort, ragged robin *Lychnis flos-cuculi*, water horsetail *Equisetum fluviatile*, great burnet *Sanguisorba officinalis*, purple loosestrife *Lythrum salicaria*, hemp-agrimony *Eupatorium cannabinum* and narrow buckler-fern *Dryopteris carthusiana*.

In addition to its botanical interest Esthwaite Water is of local importance for breeding birds. Great crested grebe, teal, tufted duck, red breasted merganser, pochard and sedge warbler all regularly breed within the site.