

Alkaline Fens & the Importance of the Lye Valley SSSI Fens within Oxfordshire and Nationally/Internationally

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The Lye Valley fens (2 remaining parts) are already a Site of Special Scientific Interest (SSSI) which means they are of National Importance for conservation.

National Context: See JNCC (Joint Nature Conservation Committee) information on SAC (Special Area of Conservation, a European importance level designation) fens of this type.

<http://jncc.defra.gov.uk/pdf/Article17/FCS2007-H7230-audit-Final.pdf> - Map on page 2 shows 4 yellow dots in Oxon, one of which will possibly be the Lye Valley, others Cothill and possibly Sydlings copse. There are plenty of other alkaline fen sites in Oxon that have degraded vegetation (gone over to reed monoculture or scrub or wet woodland therefore have lost the key features for such a designation).

There have been huge losses of this type of fen nationally, especially in the Norfolk fens SAC. I regularly visit and study the Anglesey SAC alkaline fens on holiday where they are still in good condition – a big eye opener! Losses of M13b habitat have been the most extreme. The recent evidence is:

‘Tratt, R., Parnell, M., Eades, P. & Shaw, S. (2013) *Development of Inventories for Annex 1 habitats ‘Alkaline Fens’ and ‘Transition Mires & Quaking Bogs’ in England.* Final draft report to Natural England.’

The data from the recent **Alkaline Fen Inventory for England** shows that there are 40 ha of National Vegetation Classification (NVC) designated fen types M13 and M13-related vegetation in England. The M13-related vegetation includes vegetation intermediate between M13 and other NVC types including M10, M22, M9 and M24. It also includes ‘recovering’ previously damaged M13. Of this total of 40 ha, **vegetation unambiguously referable to M13 covers 19.1 ha**. The stands of M13 and related vegetation captured in the project are believed to represent most, if not all, known examples in England.

Lye Valley North fen has 1 hectare of the above 19.1ha of M13 vegetation, M13b’ specifically

Under these circumstances, targets for this important habitat in the Lye Valley need to be:

- **remediate scrubbed up tufa fen areas around the SSSI, restore short fen habitat and then extend the SSSI limits to cover them**
- **push for the Lye Valley alkaline fens to be included in the SAC designation which currently covers only the Cothill fens (this is the informal view of national fen experts who have visited the site)**

European Context: There are massive losses of this priority Alkaline Fen habitat in Europe – see:

http://ec.europa.eu/environment/nature/natura2000/management/habitats/pdf/7230_Alkaline_fens.pdf

This has led to Alkaline Fens being a Priority habitat for conservation in Europe as a whole, and the reason that all remaining good examples in the UK should have special protection and be included within a SAC

Specialness and Importance of the Oxon Alkaline Fens

Oxon has **valley-head spring-fens** that have a very high pH and form **tufa** (lime or calcium carbonate deposits). Associated with this pH and tufa-formation are a range of specific plants and invertebrates, some very rare. These fens can also be called ‘brown moss fens’ because of the range of specific scarce brownish moss species that are a feature. The most important type of alkaline fens are the ones that have been managed (cutting, grazing) to retain the short turf, floristically diverse, vegetation that has the ‘brown mosses’ and stonewort algae (charophytes) in pools plus flowering plants like marsh helleborine, marsh lousewort, grass of Parnassus, marsh pennywort, parsley water dropwort, bog pimpernel, marsh valerian, cotton grasses, blunt flowered rush, marsh arrowgrass, yellow sedge, tawny sedge, distant sedge (**Cothill fens, Lye valley, Frilford Heath – these are the only 3 fens left in the whole of Oxon that still have all these**).

There is only one fen officially designated SAC standard in Oxon which is **Cothill Fen SSSI/SAC (a complex of Cothill NNR, Parsonage Moor and Lashford Lane fen)**. Nearby is tiny **Frilford Heath Fen** (part of SSSI) which is improving and **Dry Sandford Pit SSSI proto-fen** which is also good but does not yet have the full range of rare plants in the ancient fens. But these SAC/SSSI fens are threatened by lack of sufficient management, hydrological changes caused by sand extraction nearby and by eutrophication from agrochemical run-off to springs.

Look at the Ashmolean Natural History Society of Oxon publication – Fritillary, **Vol 3, ‘The Unique Ecosystems of the Oxfordshire Valley-head Fens’** for much more detail (see <http://www.fritillary.org.uk/>).

Near to Oxford, **Sydling's Copse SSSI** has a tufa-forming alkaline fen similar to that in the Lye Valley and this is recovering from a dense reed/scrub phase occasioned by cessation of grazing and lack of management. Grazing by ponies has been re-introduced by BBOWT but in the meantime it has lost a lot of its special plants (gone are e.g. marsh helleborine, grass of Parnassus black bog-rush, marsh lousewort) but retains bog pimpernel and one special brown moss. Luckily, remediation was started by Oxford City Council early enough in the Lye Valley to retain a large number of important species – **22 plants rare in Oxon, 14 on the**

England Vascular Plants Red List and many important invertebrates (soldierflies, crane flies and beetles, glow-worms etc.).

The Lye Valley fens actually retain one plant (the small **Few-flowered spike rush** *Eleocharis quinqueflora*), which has been lost from **every other Oxon fen**. It is the only County site to retain bog bean *Menyanthes trifoliata*, in the south fen and has the biggest surviving county population of tiny **Dioecious sedge** *Carex dioica*, only otherwise found **only** in one tiny relic amount at Frilford Heath Fen. Lye Valley has lost butterwort and sundew in 1994 and 1964 respectively. Butterwort remains only in Parsonage Moor and the Frilford heath fen has just lost its last plant of this in 2013. Butterwort could be re-introduced from Parsonage Moor now the Lye Valley vegetation has been returned to suitable condition.

The Lye Valley SSSI is a crucial site within Oxon because it retains some plants (and insects) which could be used to re-populate other SSSI alkaline fens within the county when their management again has brought them back to a more appropriate condition. No SSSI Oxon fens are currently in 'Favourable' condition but this return to 'Favourable Condition' is a **key Natural England target for all the Oxon alkaline fens by 2020**.

In addition to the SSSI sites, Local Wildlife Sites (LWS) are currently being targeted. Remediation to higher quality short fen habitat has started for three small tufa-forming fens within Oxford City Council's care in the **Wild Oxford Project** which is grant funded and led by **BBOWT**. The **Lye valley non-SSSI fen areas, Chilswell Fen and Rivermead Fen in Iffley** are the target sites which are being returned from wet woodland, scrub and monoculture reed to diverse short fen.

Healthy, wet fens are natural carbon accumulators (carbon sinks) through the accumulation and non-decay of dead plant leaves and roots. This is another extremely important role. Drying out fens become carbon emitters due to oxidation carbon in the peat.

Wetlands live or die by their water supply, which means water volume and water chemistry. The biggest issue for the Lye Valley SSSI alkaline fens is urban development in the rainwater catchment of the springs. Building over the catchment of a fen is as bad as abstracting water from a borehole from the aquifer that supplies it. Building over the catchment of a fen blocks recharge of the aquifer. The effect on the springs is not immediate, because of the time delay from water entering the soil and passing through the aquifer to the springs. Whilst there may be some effect seen quickly, there might be a 10-20 year delay between building on the catchment and the full reduction in spring flow being seen. With such a time delay, linking cause and effect is difficult (info from hydrologist Curt Lamberth). Maintaining the pure water chemistry of the springs (high pH, high calcium, low nitrate, low phosphate) is another absolutely critical factor.