

Tayside mesotrophic lochs:

An environmental improvement action plan



Background

- The conservation of mesotrophic lochs is a key responsibility for SEPA, and is driven by the UK, Scottish and local biodiversity action plan targets, the Water Framework Directive and responsibilities under the Nature Conservation (Scotland) Act 2004.
- The UK Lakes Habitat Action Plan Group has selected 32 mesotrophic lochs across Scotland that have a recorded presence of biodiversity species which are under threat or in decline and in need of conservation. These species include Slender naiad, Shetland pondweed, Pillwort, and some Stoneworts.
- The lochs face various anthropogenic pressures (eutrophication, fish stocking, invasive alien species etc) which threaten their ecology and water quality.
- Through partnership working, SEPA is pursuing local biodiversity projects to address these threats, to improve their ecological status and to safeguard the populations of priority native plant assemblages. Some of the pressures causing deterioration are within SEPA powers to control, but loch improvement and restoration is the responsibility of several organisations. Working in partnership is beneficial and a holistic catchment management approach can be adopted.

- The lochs are spread across seven regions (see list below) and included in three-year (2008–2011) environmental improvement action plans. SEPA develops these plans in order to deliver additional improvements which are complimentary to its role as a regulator. For example, they help secure resources for investigative monitoring work.
- SEPA's contribution in terms of partnership projects includes the analysis and provision of water chemistry data, aquatic macrophyte data, a review of discharges/consents etc, provision of advice and project co-ordination.

Objectives

- To work in partnership to pursue local biodiversity projects to address pressures, to improve the lochs ecological status and to safeguard the populations of priority native plant assemblages.
- To deliver UK lakes habitat action plan targets.
- To contribute to Water Framework Directive targets of achieving 'good' ecological status.

The Lochs

Fingask Loch (Tayside)	Tangy Loch (Argyll)
White Loch (Tayside)	Loch a Chlair (Argyll)
Loch Monzievaird (Tayside)	Loch Kindar (Dumfries)
Monk Myre (Tayside)	Loch Eye (Highland)
Loch of Lintrathen (Tayside)	Loch Flemington (Highland)
Loch of Butterstone (Tayside)	Loch of Asta (Shetland)
Loch of Craiglush (Tayside)	Loch of Tingwall (Shetland)
Loch of Drumellie (Tayside)	Loch Grogary lower (Western Isles)
Lindores Loch (Fife)	Loch Crogearraidh upper (Western Isles)
Moor Loch (Fife)	Loch Scaraidh (Western Isles)
Loch Skerrols (Argyll)	Loch nan Cnamh (Western Isles)
Loch Gorm (Argyll)	Loch a Mhadaidh (Western Isles)
Lower Glenastle Loch (Argyll)	Loch Gearraidh Mhic Iain (Western Isles)
Glenastle Loch (Argyll)	Loch Ussie (Western Isles)
Loch Lossit (Argyll)	Loch Runabhat (Western Isles)
Loch nan gad (Argyll)	(Loch an Nostaire-dropped, access difficult)

Plans for the Tayside region

The environmental improvement action plan for the Tayside region covers lochs Fingask, White, Monzievaird, Lintrathen and Monk Myre. It also includes the Lunan chain lochs (Butterstone, Craiglush, and Drumellie), which Scottish Natural Heritage are leading on through their Natural Care Scheme.

SEPA's involvement in the plan includes:

- collecting, analysing and presenting chemistry and macrophyte data on the lochs;
- engaging with external partners to initiate and undertake partnership projects;
- investigating the cause of eutrophication in the lochs and reviewing those factors which SEPA regulates (septic tanks, combined sewage overflows etc);
- preparing an annual status report on the lochs and raising awareness;
- annually revising and re-submitting the Tayside lochs regional plans.



Fingask Loch
Photo: Kate Baird



White Loch

Fingask and White loch

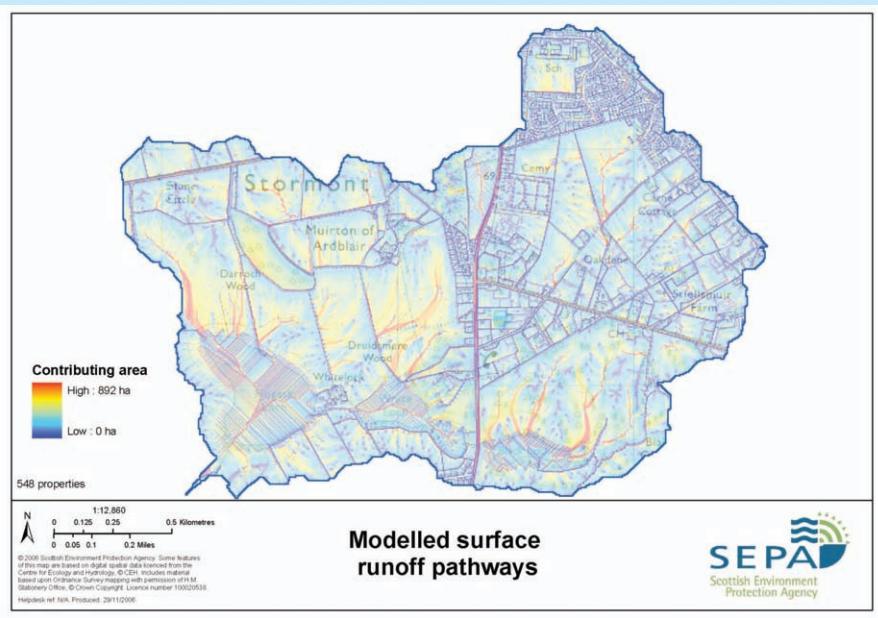
Fingask and White lochs are small linked lochs just south of Blairgowrie and south east of the Lunan Lochs chain. Both have a flora indicative of mesotrophic status, but lie in a high alkalinity catchment and so may be eutrophic by nature. Both lochs are prone to cyanobacterial blooms. Three biodiversity action plan priority species have previously been found in these lochs: Slender naiad (*Najas flexilis*), Pillwort (*Pilularia globulifera*), and Shetland pondweed (*Potamogeton rutilis*). Recent non-quantitative sampling at the site has shown that Shetland pondweed remains widespread,

however, the Pillwort and Slender naiad populations may be very small and declining. Rough stonewort (*Chara aspera*) and bristly stonewort (*C. hispida*) were also present in a 1999 survey. These are not biodiversity action plan species, but they are still of conservation interest and indicate recent reasonable water quality. Key threats and pressures include:

- diffuse pollution from agricultural run-off;
- the possibility of some urban run-off and some unlicensed septic tanks in the area;
- angling (Fingask is stocked with rainbow trout, and brown and blue trout in White).



Fingask Loch at jetty



Fingask and White loch partnership project

A funding package amounting to £21,000 for remediation measures at Fingask and White Lochs was secured from the Tayside Biodiversity Action Fund. The project, managed by the Farming and Wildlife Advisory Group (FWAG) included a diffuse pollution audit of farms in the catchment, nutrient budgets, and the creation of buffer strips around both lochs. SEPA's contribution as 'in kind' match funding to the project includes:

- monthly chemistry sampling at both lochs;
- a review of existing nutrient inputs in the catchment
 - septic tanks, slurry drainage and operation of a combined sewage overflow (CSO) upstream of White Loch

- Macrophyte surveys of Fingask and White lochs;
- assessing catchment pressures and contributing to loch conservation partnership projects to safeguard priority species and improve habitat;
- an annual report on loch status and progress with projects for SEPA and UK Lakes Habitat Action Plan.

As well as FWAG, project partners also include the Tayside Biodiversity Action Partnership, the Blairgowrie and District Angling Club, and the Rosemount Golf Club. A tea towel is currently being printed and will be circulated to the local community to raise awareness of the project. We hope the countryside ranger will also visit the local school to raise awareness of the project and lochs.



Slender Naiad (*Najas flexilis*)



Tea towel design

Other Lochs

We hope that similar partnership projects will be initiated through the Tayside Biodiversity Partnership for action at Loch Monzievaird, Monk Myre and Loch of Lintrathen. Partnership meetings have already been held, but further investigation is required to determine the best course of action for each loch.



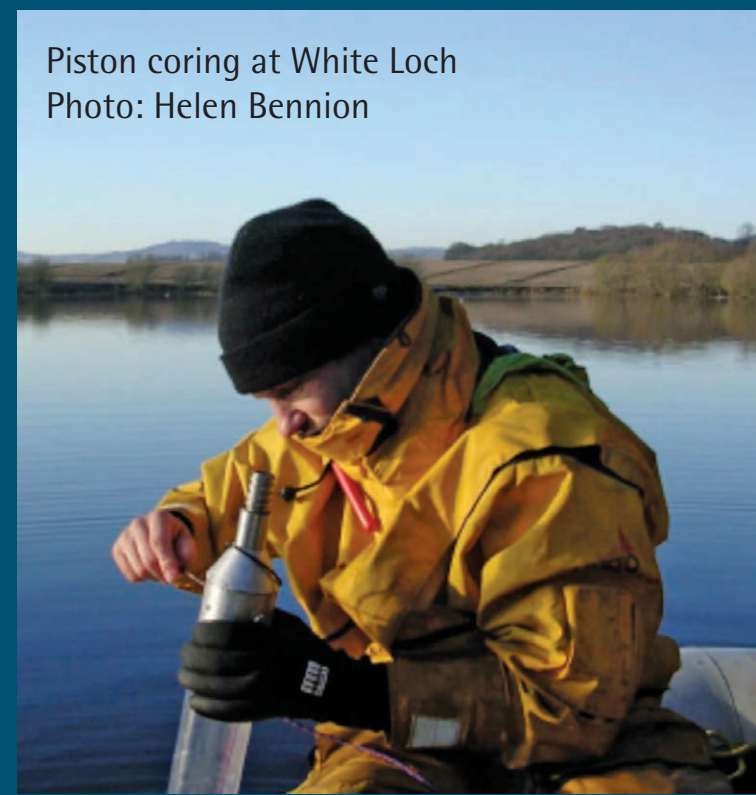
Loch of Lintrathen



Monk Myre



Loch Monzievaird



Piston coring at White Loch
Photo: Helen Bennion

Palaeoecology Study: Febraury 2009

White Loch was also included in a palaeolimnology project, which employed multi-proxy palaeoecological methods (diatoms, Cladocera, plant macrofossils) to define reference conditions and to assess ecological changes in the loch over the last 100 to 150 years. Results show that all of the biological elements experienced marked and synchronous changes over the period represented by the White Loch cores, indicative of nutrient enrichment. The data suggest that the present day plant community has few taxa in common with those observed in the reference assemblages, having experienced the loss of *Isoetes lacustris* and a reduction in charophytes, with elodeids becoming the dominant component of the aquatic vegetation.