REF.	ACTIONS	PARTNERS (lead partners in bold)
35.1	**Continue to promote and implement SNH's management plan for Loch Davan.**	**SNH** / SEPA / NFUS MI / Farmers / Land owners / FWAG / RSPB / SAC / SGRPID / DDSFB / CASS
35.1.1	Carry out instream habitat improvement works on the Logie burn, including rock emplacements, restoration of meanders and extension of reed beds.	DDSFB / CASS / SNH
35.2	**Reduce input of nutrients from agricultural sources.**	SEPA / **NFUS** / **Farmers** / **Land owners** / **SGRPID** / LEAF / SAC / FWAG / **SRPBA**
35.2.1	Encourage nutrient budgeting in consultation with farmers and implement recommendations.	SEPA / NFUS / Farmers / Land owners / SGRPID / LEAF
35.2.2	Co-ordinate applications for grants to create buffer strips and restore/create riparian habitats in order to reduce nutrient and sediment run off (ongoing)	SGRPID / SAC / FWAG / Land owners
35.2.3	Encourage the uptake of Land Management Contracts.	**SGRPID** / **NFUS** / **SRPBA** / FWAG / SAC
35.2.4	Lobby the Scottish Government for additional funding from sources other than RDR budget (and lobby for an increased budget and a limit to the budget per farm).	NFUS / SRPBA
35.3	**Improve felling and timber storage practices in the catchment**	**FCS / FES / Forest managers**
35.4	**Implement measures to reduce run-off of contaminated water from public roads.**	**AC**
35.5	**Improve the handling and disposal of domestic waste water, especially from septic tanks within the parish of Logie Coldstone.**	**AC** / **SEPA** / SW
35.6	**Undertake monitoring to identify remaining causes of degradation and demonstrate any improvement.**	**SEPA** / DDSFB / **RDT** / **MI**
35.6.1	Continue to monitor water quality in the Loch Davan catchment.	**SEPA**
35.6.2	Monitor effects of habitat improvement works on macroinvertebrate and fish populations.	DDSFB / **RDT** / **MI**
35.7	**Continue to communicate progress to the local community.**	DCP / AC / **MI** / SEPA / SNH / SW / AU / NFUS
35.7.1	Maintain up to date information on Dee CMP and 3DV partner websites. Seek new opportunities for communication e.g. community/NFUS meetings, newsletters etc.	**DCP** / AC / **MI** / SEPA / SNH / SW / AU / NFUS

Acronyms are listed in the centre of this Action Card

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loch davan 35 SUB CATCHMENTS

OBJECTIVE 35. Improve water and habitat quality in the Loch Davan catchment.

BACKGROUND

The Loch Davan sub-catchment lies approximately 50km west of Aberdeen. The sub-catchment covers an area of 3556ha of which the loch itself occupies 31.1ha. Loch Kinord (area 79.0ha) is oligotrophic whereas Loch Davan (31.1ha) is mesotrophic with recent research suggesting a transition towards eutrophication. The difference in trophic status reflects the higher proportion of agricultural land use in the Davan catchment.

Loch Davan and the adjacent Loch Kinord are situated in an area of the River Dee catchment known as the Muir of Dinnet (2287ha). The Muir forms the south-western corner of the Howe of Cromar, a wide saucer shaped plain at the foot of the Grampian Mountains.

The landscape surrounding Loch Davan has a complex geological history and is composed of various glacial landforms shaped mainly by erosion and deposition during periods of glaciation. The landscape of the area was moulded by gravel and meltwater in the post-glacial era, and Lochs Kinord and Davan are kettleholes (ice depressions) surrounded by fluvio-glacial hummocks, ridges and hollows.

The Davan catchment is part of a complex area of glacial topography and granite hills, containing fine examples of nutrient-poor lochs, reed beds and basin mires, birch and pine woodland, and species-rich heath; there are few areas of comparable habitat diversity in northern Scotland. These habitats support a wide range of nationally and internationally important species including Atlantic salmon, otter, greylag geese, capercaillie, black grouse and occasional golden eagles and osprey.

The number of nature conservation designations for the area reflects its important status. As well as being part of the River Dee Special Area of Conservation (SAC) the following designated nature conservation sites are found partly within the boundaries of the Davan sub-catchment:

- Muir of Dinnet National Nature Reserve - designated because of its value as a habitat for flora and fauna, and important geomorphological features.
- Muir of Dinnet Site of Special Scientific Interest (SSSI) - notified for a range of habitats, species and geological interests including nutrient-poor lochs, reedbeds and basin mires, birch and pine woodland and species-rich heath.
- Muir of Dinnet Special Area of Conservation (SAC) - designated for its nutrient-poor lochs with associated characteristic flora (including Loch Davan) and also its heathland, bogland and otter population.
- Muir of Dinnet Special Protection Area (SPA) and Ramsar site - designated for its internationally important autumn passage and wintering populations of migratory wildfowl, especially Icelandic greylag geese.
- Morven & Mullachdubh SSSI - notified for its habitats including its heaths, mires, grasslands and bogs, its geological features, and its ornithological features such as golden eagle, buzzard, merlin, peregrine, hen harrier and short-eared owl, all of which regularly hunt over the area.

The loch's catchment has two distinct geographical areas, an upland area to the west and north dominated by heather moorland and forestry, and a lower lying area dominated by agriculture. Loch Davan is fed from the north by the Logie Burn, which rises on the edge of the hills, running down first through commercial forestry and then through a mixture of grassland and arable farmland. Although the Logie Burn is fairly typical of many in the catchment, the characteristic problems of the adjacent land-uses are more obvious on this burn because of the influence it has on the loch which it feeds.

ISSUES

- A study of Loch Davan in 1997 showed it to be undergoing a change in trophic status from mesotrophic (containing moderate levels of nutrients) to eutrophic

WHO IS INVOLVED?

Aberdeenshire Council

Aberdeen University

Conservation of Atlantic Salmon in Scotland (LIFE-Nature project)

Dee District Salmon Fishery Board

Dee Catchment Partnership

Forestry Commission Scotland

Forest Enterprise Scotland

Forestry Managers

Farming & Wildlife Advisory Group

Landowners

Land managers

Linking Environment and Farming

Macaulay Institute

National Farmers' Union Scotland

River Dee Trust

Royal Society for the Protection of Birds

Scottish Agricultural College

Scottish Environment Protection Agency

Scottish Government Rural Payments & Inspections Directorate

Scottish Natural Heritage

Scottish Rural Property & Business Association

Scottish Water

Further copies can be downloaded at www.theriverdee.org. For further information contact the Dee Catchment Officer c/o The Macaulay Institute, Craigiebuckler, Aberdeen AB15 8QH Telephone: 01224 498200 email: info@theriverdee.org

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(containing high levels of nutrients). This process of nutrient enrichment of the water, called eutrophication, could threaten the loch's nature conservation value by changing the make-up of the plant life and by causing algal blooms. Algal blooms consume excessive oxygen and block out light, and consequently can result in the loss of submerged vegetation. This in turn can affect invertebrates, fish, birds and mammals, such as otters and ospreys, which feed on aquatic flora and fauna.

- Recent analysis under the WFD classification scheme suggests that Loch Davan appears to be at 'Good' status. A degree of impact (nutrient enrichment) is indicated but this would not normally trigger inclusion in a Programme of Measures, although the Loch's additional conservation status would be taken into consideration.
- Factors contributing to the enrichment of Loch Davan include: increased run-off of sediment and nutrient inputs from agriculture and forestry management, poor standards of private septic tank maintenance in some instances and increased nutrient inputs from the droppings of roosting geese, upland management and changes in the loch's characteristics.
- The Logie Burn has been canalised in the past, and this has reduced habitats for freshwater wildlife within the stream. It also makes it less able to filter out sediment being transported downstream, leading to an overall increase in sediment entering Loch Davan.
- Loch Davan is subject to increased rates of sedimentation. The mean depth of Loch Davan is slowly decreasing, and there has been about a 30% loss of open water in the past 100 years. This is thought to be faster than should naturally be the case, and may be due to high rates of sediment deposition from the Logie Burn.
- In addition to carrying nutrients such as phosphorus high sedimentation rates can create cloudy water, which threatens the survival of young fish and reduces the light reaching vegetation. As sediments settle plants can be smothered and fish spawning habitat can be lost. The loss of salmon redds from the Logie burn, and the potential impact this is having on salmon recruitment, is of particular concern.

EXISTING / RECENT INITIATIVES

- SNH commissioned a report on the eutrophication of Loch Davan and drew up a management plan in 2003.
- As part of a wider European project, partners in the 3-Dee Vision project worked with the people of the Loch Davan catchment to improve their awareness of a range of issues relating to local water quality. Actions included:
  - Raising the awareness of farmers and foresters within the sub-catchment of the impacts of their activities on the water quality and habitat of the Logie burn and Loch Davan.
  - Promoting and demonstrating best practice in farming and forestry activities, including nutrient budgeting, management of farm and forest water run-off, best practise timber harvesting, farm and forest roads, soil management and manure spreading.
  - Reducing the number of cattle having access to the Logie Burn and its tributaries; providing alternative watering facilities, in order to reduce trampling pressure and erosion on watercourse banks.
  - Initiating plans to reinstate old meanders on the lowest stretch of the Logie Burn.
- The Conservation of Atlantic Salmon in Scotland (CASS) initiative has recreated a more natural substrate to the Logie burn by placing rocks on the stream bed, thus varying the rate of flow in the stream, creating new niches for instream invertebrates and fish, and increasing oxygenation of the water.
- Other relevant initiatives include:
  - Rural Development Contracts under the Scottish Rural Development Programme (SRDP)
  - Scottish Government Guidelines for farmers in Nitrate Vulnerable Zones (NVZs)
  - Ythan CD-rom
- Lochs Davan and Kinord are Environmental Change Network monitoring sites.





Before (left) and after (right) the creation of a watering to prevent cattle from accessing the burn in the Loch Davan Catchment. this work was done as part of the 3-Dee Vision Project. (3-Dee Vision)

ACTIONS REQUIRED

- Further instream rock emplacements, restoration of meanders on the Logie Burn and extension of reed beds in this area of Loch Davan.
- Improvement of felling and timber storage practice.
- Measures to reduce run-off of contaminated water from public roads.
- Measures to reduce run-off of nutrient from agricultural activities.
- Improvements in handling and disposal of domestic waste water. especially from septic tanks management within the parish of Logie Coldstone.
- The Logie Burn is fairly typical of many in the eastern part of the Dee catchment and therefore management techniques adopted to remediate pressures on the Logie Burn could be applied to burns elsewhere in the Dee catchment.

LEGISLATION

See Action Pack Annex for information sources

- WEWS and Regulations
- The Conservation (Natural Habitats and Species) Regulations 1994
- Water Framework Directive

GUIDELINES AND INFORMATION

See Action Pack Annex for information sources

- Scottish Government Rural Payments & Inspections Directorate (SGRPID) Good Agricultural & Environmental Conditions (GAEC)
- SGRPID Single Farm Payment Scheme Information Leaflet 7 : Cross Compliance
- Forests and Water Guidelines 4th edition (Forestry Commission)
- UKWAS (UK Forest and Water Assurance Scheme)
- Forestry Stewardship Council (FSC) standards of forestry practice
- 3-Dee Vision Rainfall questionnaire: www.3deevision.org
- Environmental Change Network : www.ecn.ac.uk
- Prevention of Environmental Pollution from Agricultural Activity (PEPFAA) Code
- PEPFAA Dos and DONTs Guide



Loch Davan

35 SUB CATCHMENTS

RELATED ACTION CARDS

1. Diffuse agricultural pollution
15. Effects of land management on river flow
16. Flood alleviation
17. Channel and bankside engineering works
20. Lowland wetlands
21. Upland wetlands