



LOCH ERICHT

DEFINITION

The standing open water habitat includes not only the open water but also to some extent the associated habitat around the water's edge. This definition obviously provides considerable scope for overlap with other Habitat Action Plans such as Wet Woodland, Wet Grassland and Freshwater Reedbeds. These habitats are considered more fully in their own Habitat Action Plans and it is important to recognise the transitions between them and refer, where necessary, to the appropriate HAPs.

Standing open waters include natural systems such as lochs, lochans and pools, as well as man-made waters such as reservoirs, ponds and gravel pits. The open water zone lies beyond the limits of swamp vegetation, but may contain submerged, free-floating or floating-leaved plants.

The range of standing open water types within this broad category means that only a general overview of some of the issues is possible within this Action Plan, but a separate Plan has been developed for the key habitat of Mesotrophic Lochs and future Plans will be developed for habitats such as Eutrophic Lochs, and Ponds, Pools and Lochans.

KEY SITES

The vast range and diversity of standing open water in Tayside means that there are many candidates for key sites. Mesotrophic lochs are a UK priority habitat and these are discussed in detail in the Mesotrophic Lochs Action Plan. Some sites which represent excellent examples of their kind or have particularly notable features are detailed below.

Loch Laidon	A dystrophic peaty loch.
Loch Tay	A large oligotrophic loch and the largest loch in Tayside without any form of impoundment.
Loch Brandy	A high altitude oligotrophic loch with notable moss and liverwort populations and rare insects.
Loch Con	A high altitude oligotrophic loch supporting a diverse bird fauna, including rarities and with islands which demonstrate the sort of vegetation which may be expected at this altitude in the absence of grazing pressure.
Dunalastair Reservoir	A completely artificial shallow loch of considerable conservation value, including its plants and bird populations and some notable rarities.
Dun's Dish	A eutrophic loch with extensive surrounding swamp vegetation and notable ornithological interest.

Tayside Biodiversity Partnership

Loch Leven

Internationally important wintering and breeding wildfowl, diverse aquatic and riparian vegetation, invertebrate populations and an internationally famous trout fishery.

Carsebreck Lochs

Second only to Loch Leven in Tayside for their wintering wildfowl populations.

CURRENT STATUS AND EXTENT OF HABITAT

Scotland has a large number of standing waterbodies with an estimated 150,700 ponds, pools and lochs up to 2 hectares and 4,500 lochs greater than 2ha. Standing waters in Tayside cover a total of 134.66km² and reflect much of the diversity found nationally. They range from large oligotrophic lochs such as Loch Tay (27.3km²) and Loch Rannoch (18.96km²) to smaller waterbodies such as Butterstone Loch (0.44km²) and pools of a few metres across.

Water quality of Lochs in Scotland and Tayside

There are 150 lochs in Scotland with a surface area above 1 km² and 3,788 lochs over 0.04 km². Scottish Natural Heritage (SNH) has identified around 27,000 lochs large enough to feature on the Ordnance Survey 1:50,000 scale maps with a surface area greater than approximately 0.0001 km².

In 1995 SEPA's loch water quality classification scheme was applied to all 150 lochs over 1 km², together with 23 smaller lochs of particular local interest. The majority of lochs (143) were not significantly affected by human activity and were classified as 'excellent/good', but 27 were found to be significantly altered by human activity and classified as 'fair', whilst three were either 'poor' or 'seriously polluted'. Of those lochs classified as 'fair', twenty (53 km²) were affected by eutrophication and ten (57 km²) by acidification.

In Tayside, 20 lochs were classified: 15 (97.41km²) were 'excellent/good', and 5 (30.87km²) 'fair'. This was due to the effects of eutrophication on Loch Earn, Loch Leven, Loch of Lintrathen and Loch of the Lowes, and through acidification at Loch Laidon.

NATURE CONSERVATION IMPORTANCE

Standing waterbodies provide important and very rich habitats, particularly for aquatic invertebrates, wetland plants and amphibians. They are also used by a variety of mammals and birds. The importance of waterbodies and surrounding habitat in supporting rare species is underlined by several freshwater UK Biodiversity Action Plan (UK BAP) species. In Scotland these include: Great crested newt *Triturus cristatus*, Pillwort *Pillularia globulifera* and Slender naiad *Najas flexilis*. For other BAP species such as Water vole *Arvicola terrestris*, Otter *Lutra lutra*, Common scoter *Melanitta nigra*, Arctic charr *Salvelinus alpinus* and Brown trout *Salmo trutta* standing waterbodies may be a substantial component of the species' habitat. Within the broad range of standing water types naturally mesotrophic and eutrophic lochs are considered of key national importance for biodiversity.

Water vole

This species has suffered one the most catastrophic declines of any British mammal with a predicted loss of 98% of its entire population in recent years. In the past it was found from Lowland Perthshire and Angus to high altitude catchment areas such as Ben Lawers and Glen Lyon. Recent surveys on some of these sites have concluded that they are locally extinct throughout most of their former range.

Water voles will use most types of freshwater systems: lochs, ponds, slow-moving rivers, raised bogs, marshes and wetlands, lowland drainage ditches and headstreams up to 600m. They eat a variety of waterside vegetation such as rushes, sedges and grasses and in late autumn save food in underground chambers to eat during the winter months when frost and snow cover the ground for long periods.



ALLAN ROSS

Standing Open Water

WW3

KEY SPECIES

P = UK Priority species C = UK species of conservation concern

Mammals	Otter	<i>Lutra lutra</i>	P
	Water vole	<i>Arvicola terrestris</i>	P
	Daubenton's bat	<i>Myotis daubentoni</i>	C
Birds	Common scoter	<i>Melanitta nigra</i>	P
	Osprey	<i>Pandion haliaetus</i>	C
	Black-necked grebe	<i>Podiceps nigricollis</i>	C
	Whooper swan	<i>Cygnus cygnus</i>	C
	Wigeon	<i>Anas penelope</i>	C
	Gadwall	<i>Anas strepera</i>	C
	Pink-footed goose	<i>Anser brachyrhynchus</i>	C
	Greylag goose	<i>Anser anser</i>	C
	Pochard	<i>Aythya ferina</i>	C
	Goosander	<i>Mergus merganser</i>	C
	Red-breasted merganser	<i>Mergus serrator</i>	C
	Black-throated diver	<i>Gavia arctica</i>	C
	Shoveler	<i>Anas clypeata</i>	C
Amphibians and Reptiles	Great crested newt	<i>Triturus cristatus</i>	P
Fish	Atlantic salmon	<i>Salmo salar</i>	C
	Brown trout	<i>Salmo trutta</i>	C
	Arctic charr	<i>Salvelinus alpinus</i>	C
Invertebrates	Northern damselfly	<i>Coenagrion hastulatum</i>	C
	a diving beetle	<i>Hydroporus rufifrons</i>	P
Plants	Slender naiad	<i>Najas flexilis</i>	P
	Slender stonewort	<i>Nitella gracilis</i>	P
	Pillwort	<i>Pillularia globulifera</i>	P
	Hooker's liverwort	<i>Haplomitrium hookeri</i>	C

Standing open waters have an important visual and aesthetic value and can also have considerable amenity value. The amenity use of open waterbodies includes activities such as fishing, shooting, boating and other watersports.

NATIONAL BIODIVERSITY CONTEXT

There is a UK Broad Habitat statement for Standing Open Water. This gives the following conservation direction:

Maintain and improve the conservation interest of standing open waters, through the use of integrated management plans, and the sensitive management of adjacent land. Create new standing open waters, of maximum wildlife benefit, where possible.

In addition to the broad habitat statement for open standing waters, UK Habitat Action Plans exist for the key habitats of eutrophic and mesotrophic standing waters. A local Habitat Action Plan for Mesotrophic Lochs is included in this LBAP; a local Plan for Eutrophic Lochs will be developed at a later stage. Oligotrophic and Dystrophic Lochs and other types of standing open water do not yet have their own separate UK HAPs.

ECOLOGY AND MANAGEMENT

Standing waters are usually classified according to their nutrient status and this can change naturally over time. Three main types of standing waters are commonly recognised. These are oligotrophic (nutrient poor), mesotrophic (of intermediate nutrient status) and eutrophic (nutrient rich), although gradations between these types occur. Other types include dystrophic (highly acidic and occurring in peaty areas), marl lochs (rich in lime and containing low concentrations of phosphorus), brackish water (occurring in coastal areas), and temporary water bodies. The four main types of lochs occurring in Tayside are summarised below.

Type of Open water	Description	Local Examples
Dystrophic	Highly acidic in peaty areas. May contain restricted flora and fauna.	Lochs on Rannoch Moor
Oligotrophic	Nutrient poor. Usually clear water due to low plankton levels.	Loch Ericht, Loch Rannoch, Loch Tay
Mesotrophic	Intermediate nutrient status. Very high biodiversity. May contain outstanding plant communities. Frequently, but not exclusively, occurs at the boundaries of uplands and lowlands.	Loch of the Lowes, Loch Moraig, Black Loch of Cleish
Eutrophic	Nutrient rich. Support large plankton populations and may be prone to algal blooms. Rooted plant communities may largely be confined to shallow water due to poor light penetration. Typical of lowland areas.	Kinnordy Loch

Maintenance of nutrient status at or near natural levels is seen as a key issue in the management of standing waters and a number of lochs in Tayside have become degraded by excessive nutrient inputs. Loch Leven is a prime example, but most smaller lowland lochs and some of the larger oligotrophic lochs display signs of elevated nutrient status.

CURRENT FACTORS CAUSING LOSS OR DECLINE

There are many pressures upon the aquatic environment resulting from industry, including mining; agriculture; forestry; and other human activity, especially population pressure. These cause environmental impacts which in turn determine the quality of any particular part of the aquatic environment. The response of any given water body is unique, with some being relatively resistant to change whereas others are more sensitive. Factors that ultimately affect biodiversity may be of a physical, chemical or biological nature. Some of the factors that are significant to standing waters are detailed below. The factors may merge and the categories overlap.

Pressures affecting water quality

Pollution is a significant threat to standing open water biodiversity. In its 1999 State of the Environment Report SEPA listed the seven most important causes of polluted water in Scotland:

- Sewage effluent
- Agriculture - diffuse sources
- Acidification
- Urban drainage
- Mine drainage
- Agriculture - point sources
- Industrial effluent

From the SEPA survey of the 150 lochs in excess of 1 km² and the 23 smaller lochs the diffuse causes of pollution such as agriculture, acidification, and forestry affected over 80% of those classified as fair, poor or seriously polluted. Agriculture has, for example, contributed to the decline in the quality of Loch Leven. Acidification has affected Loch Laidon. Sewage effluent and freshwater fish farming were the most significant point source discharges. Forfar Loch has, for example, suffered pollution from sewage discharges, although recent remedial works have made significant improvements. Urban drainage, mine drainage and industrial effluent are not significant factors in Tayside for any of the larger lochs, but obviously have the potential to affect smaller waterbodies.

Probably the most significant threat to the water quality of standing waters in Tayside is the process of cultural eutrophication. This results from pollution caused by the release of nutrients from point or diffuse sources, for example sewage treatment works effluents, runoff from farmland and urban areas.

Eutrophication leads to increased algal growth but effects on other plant and animal life depends on the initial condition of the waterbody. In oligotrophic and mesotrophic waterbodies, eutrophication leads to loss of species dependent on low nutrient status, but in eutrophic waters increased enrichment can lead to complete elimination of submerged aquatic plants and consequent damage to a wide range of species through loss of habitat. Smaller lowland lochs such as Rescobie Loch tend to be most sensitive to eutrophication, but it may also affect larger waterbodies such as Loch Leven.

Pressures Affecting Water Quantity

Changes in hydrology, for example abstraction of surface or ground water, or drainage, can seriously affect the habitat and reduce biodiversity. Most of the major lochs in Tayside are impounded for drinking water or hydroelectric purposes. The impoundment may have created an entirely new loch such as Loch Errochty or altered the level of an existing loch such as Loch Ericht. It is, however, important to remember that impoundment has also created large numbers of smaller lochs and ponds many of which are of considerable conservation value. Dunalastair reservoir; Loch Moraig and Drumore Loch SSSIs are excellent examples. How the waterbody is subsequently managed following impoundment may be crucial to its biodiversity value. For instance, artificially fluctuating water levels due to drinking water or hydro-electric schemes such as those in Lochs Garry and Ericht can lead to the loss of relatively stable littoral zones - often the most diverse and productive zones of large, deep lochs. In other lochs such as Rannoch and Tummel more natural water levels are maintained, despite these being part of hydro-electric schemes.

Pressures Affecting the Physical Quality of the Habitat

Complete habitat loss is a major threat particularly to small open standing waters. The loss may be due to natural processes of siltation which may be more pronounced in shallow ponds. Waterbodies may also be lost to in-filling for industrial and urban development, neglect or deliberate draining.

Pressures from agriculture can lead to bank trampling and erosion and the loss of riparian zones because of cultivation right up to the water's edge. Similarly, urbanisation and road development can have similar effects.

Biological Pressures

Non-native plant species such as Canadian pondweed, Japanese knotweed and Giant hogweed are already firmly established in Tayside, but other less well-known invasive plants such as the Australian swamp stonecrop, Water pennywort and Water fern have the potential to cause serious habitat loss and damage to native species.

Many fish species present elsewhere in the UK such as the Ruffe would thrive in Tayside lochs to the detriment of the indigenous wildlife. For example, lochs on Rannoch Moor have been stocked with a variety of coarse fish and roach have become established in Loch Tay. Even fish already common in Tayside, such as pike and perch, can be spread inappropriately to lochs with subsequent harmful effects. Stocking with trout for fishing can alter the ecology of a loch or pond with possible detrimental affects.

Zebra mussels are an invertebrate species already firmly established in some Irish loughs with the potential to dominate loch faunas. American mink are well established in Tayside and represent a serious threat to many bird species and to Water voles. Canada geese can be very aggressive towards other waterfowl, threatening their breeding success. Their recent arrival on some lochs favoured by Black-throated divers may represent a threat to the latter. Artificially high numbers of Mallard released for shooting can cause serious degradation of standing waters because of the increased nutrient loading.

Invasion by alien species may represent one of the most significant long-term threats to standing waters because once established their elimination may prove impossible. In many cases the spread of alien species requires human intervention, for example the selling of invasive plants through garden centres or deliberate introduction of fish species. Lack of awareness is therefore a key issue.

Recreational Pressures

Increasing recreational pressures such as walking and dog walking, angling, boating and watersports, are likely to cause erosion to the banks of popularly visited lochs and ponds, as well as disturbance to particular species such as breeding wildfowl. Vehicular access to the water's edge may cause damage. Ponds used for fishing and shooting may not support high biodiversity if insensitively managed, but this need not necessarily be the case.

Climate Change

A potential threat, which may over-ride all others, is climate change. This may alter the character of water bodies by a rise in temperature or changes in throughput of fresh water. This could produce wide-ranging effects such as accelerated plant growth and colonisation by non-native species.



Otter

Regular surveys have shown that otters are making a comeback to areas where they were in decline previously. Glimpses of these charismatic animals are becoming a fairly common occurrence in some Tayside areas.

MAIN THREATS TO KEY SPECIES

<p>Otter</p>	<p>Nationally significant factors:</p> <ul style="list-style-type: none"> - Pollution of watercourses, especially by PCBs. - Insufficient prey associated with poor water quality. <p>Factors that may be locally important in Tayside:</p> <ul style="list-style-type: none"> - Impoverished bankside habitat features needed for breeding and resting. - Incidental mortality, primarily by road deaths and drowning in eel traps. <p>UK importance of Tayside population: Moderate</p>
<p>Water vole</p>	<ul style="list-style-type: none"> - Loss and fragmentation of habitats. - Disturbance of riparian habitats. - Predation by mink. - Pollution of watercourses and poisoning by rodenticides. <p>UK importance of Tayside population: Moderate</p>
<p>Common scoter</p>	<ul style="list-style-type: none"> - Eutrophication may affect food availability. - Fish stocking may have lead to increased competition for invertebrate food in some sites. - Predation by mink and foxes. - Afforestation and secondary effects such as sedimentation. - Illegal egg collecting. <p>UK importance of Tayside population: High</p>
<p>Great crested newt</p>	<ul style="list-style-type: none"> - Loss of suitable breeding ponds. - Loss and fragmentation of terrestrial habitat. - Pollution and toxic effects of agrochemicals. <p>UK importance of Tayside population: Moderate</p>

Grass wrack pondweed	<ul style="list-style-type: none"> - Eutrophication - Neglect and drying out of ditches. - Increased recreational use of watercourses, including boat use and associated disturbance and pollution. 	
	UK importance of Tayside population:	Probably extinct in Tayside
Slender naiad	<ul style="list-style-type: none"> - Restrictions on light penetration owing to heavy weed and algal growth and nutrient enrichment from point sources such as sewage works, fish farms and diffuse agricultural sources. 	
	UK importance of Tayside population:	High
Slender stonewort	Reasons for decline uncertain but the following are thought to be contributory factors: <ul style="list-style-type: none"> - Pollution from agricultural run off - Acidification associated with afforestation in some catchments. - Encroachment of scrub and other vegetation at some sites. 	
	UK importance of Tayside population:	High
Pillwort	<ul style="list-style-type: none"> - Nitrate/phosphate pollution and the associated increase in the growth of competitive species. - Abandonment of its main habitats, especially changes in grazing which lead to less disturbance. - Modification of water level regimes - Introduction of non-native competitive plants. 	
	UK importance of Tayside population:	High

OPPORTUNITIES AND CURRENT ACTION

Policy and Legal Status

Various statutory bodies have a role in the current actions to maintain and improve the status of standing open waters in Tayside. These include the Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH) Scottish Executive Environment Rural Affairs Department (SEERAD), Tay, Esk and Forth District Salmon Fisheries Boards (TDSFB, EDSFB, and FDSFB), Local Authority Planning Units, Scottish Water and the Forestry Commission (FC).

Many standing open waters in Tayside are designated under the various natural heritage conservation acts and the vast majority are controlled waters under the various pollution control acts.

Legislation and associated policy which can provide or encourage protection of waterbodies in Scotland includes:

- Natural heritage conservation legislation including the designation of Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).
- UK Biodiversity Action Plan.
- Planning legislation and policies.
- Pollution control legislation.
- Agri-environment schemes such as the Rural Stewardship Scheme.

Some of the acts that provide the framework for these functions are given below.

- Control of Pollution Act 1974
- Salmon and Freshwater Fisheries Act 1975
- EC Directive on the Conservation of Wild Birds (Directive 79/409/EEC)

- Wildlife and Countryside Act 1981
- Water Act 1989
- Environmental Protection Act 1990
- The Town and Country Planning (Scotland) Act 1997
- Natural Heritage (Scotland) Act 1991
- Wildlife and Countryside (Amendment) Act 1991
- EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (Directive 92/43/EEC)
- Conservation (Natural Habitats) Regulations 1994
- Environment Act 1995
- Scottish Office Circular 6/1995, Habitats and Birds Directives
- Urban Wastewater Treatment Directive
- The Flood Prevention and Land Drainage Act 1997

Case Study

Loch of the Lowes

The Loch of the Lowes is a wildlife reserve famous for its breeding ospreys and owned by the Scottish Wildlife Trust (SWT). The visitor centre and viewing hide have attracted over 1 million visitors since their opening in 1970, making a substantial contribution to tourism in Tayside. Local residents have always taken a keen interest in the loch and over 60 of them volunteer every year in the visitor centre and during the 'around the clock' osprey egg watch.



LORNE GILL/SNH

The SWT originally purchased the loch in 1969 because of its importance as the largest mesotrophic water body in the Perth and Kinross Council area and its associated highly diverse submerged aquatic flora. Eleven species of Pondweed *Potamogeton*, both Yellow and White water lilies *Nuphar lutea* & *Nymphaea alba* and the Red Data Book plant Slender naiad *Najas flexis* have been recorded. The loch's special status is reflected by a multitude of designations including SSSI, NCR, ESA and NSA. Most recently it has been included as a candidate SAC covering a chain of lochs linked by the Lunan Burn.

The mesotrophic state of the loch remains the prime management objective for Loch of the Lowes and the whole Lunan Loch chain. In the near future SWT hopes to work closely with SNH, SEPA and other partners towards a positive management of the catchment areas for the lochs. In particular, there are plans to develop the visitor centre to take on a wider educational role in support of the Lunan Loch cSAC, making the link between ospreys, the water of the lochs and positive water management.

Management, Research and Guidance

Most of the regulatory bodies, in addition to their core regulatory duties, are actively involved in management, research and guidance activities relating to standing open waters. Many other organisations, such as the Farming and Wildlife Advisory Group (FWAG), Scottish Agricultural College (SAC), Scottish Wildlife Trust (SWT), WWF in Scotland, and the Royal Society for the Protection of Birds (RSPB) not only conduct research and provide advice and guidance, but also manage significant numbers of standing waters for conservation purposes.

Many landowners and estates manage the resources under their control to enhance biodiversity.

Numerous individuals put in considerable amounts of time in voluntary work helping to manage or create important areas for conservation, recording wildlife or becoming acknowledged experts for various species.

Current Action

Typical examples of actions currently undertaken by various organisations include:

- Some open water sites are managed for nature conservation by SWT, e.g. Loch of the Lowes.
- A catchment management plan exists for Loch Leven and involves a partnership of organisations. It contains some very valuable lessons and gives a local example to promote the value of good practice.
- Environmental grants for farmers, such as those available under the Rural Stewardship Scheme, have encouraged and funded the modification of farming activities to help protect watercourses.
- SNH produce site management statements for SSSIs.
- SEPA monitors the water quality of all lochs with a surface area in excess of 1km² and a number of smaller lochs.
- North of Scotland Water Authority has completed an audit of existing information sources on land use and biodiversity for the Loch of Lintrathen and Backwater Reservoir, Angus.

Opportunities

In the UK Standing Open Water HAP measures to consider further include:

- Prepare water level management plans for the benefit of wildlife (particularly for key sites).
- Development and implementation of integrated catchment management plans.
- Use existing measures such as the Rural Stewardship Scheme Wetlands and Water Margins option to support the appropriate management of open waters and their habitats.
- Reduce acid emissions to reduce damage to open waters from acid rain.
- Carry out Environmental Assessments of developments that will have a significant impact on open waters and their associated habitats.

Together with other existing initiatives, the implementation of the Local Biodiversity Action Plan, the designation of Special Areas of Conservation, implementation of options under the Rural Stewardship Schemes and the introduction of the Water Framework Directive will all provide a stronger mechanism for the protection and enhancement of the biodiversity of standing open waters than has ever previously existed. New statutory objectives will exist for the ecological status of standing open waters putting responsibilities upon statutory bodies which have previously been outwith their remits. To achieve these objectives partnership approaches will be required and there is, for the first time, the very real prospect of integrated management for Tayside's standing waters.

OBJECTIVES AND TARGETS

Objectives		Targets
1	Maintain and protect standing open water habitats supporting semi-natural assemblages of animals and plants in both the 'open water' and surrounding habitat.	Establish and maintain an inventory of standing open waterbodies which provides information on environmental quality, biodiversity quality, impacts on biodiversity etc. By 2006. Ensure no net loss in area or reduction in quality of natural standing open water habitats.
2	Maintain and improve water quality standards according to Scottish Environment Protection Agency Classification System and implement sustainable urban drainage systems in new and re-developments to protect natural and semi-natural standing open water habitats.	Improve or maintain the water quality classification of all standing open water in the region.
3	Identify and improve, on a site-by-site basis, the factors impairing appropriate biodiversity, including the quality of the habitat, water quality, and the impact of non-native species.	Prepare Catchment Management Plans involving both statutory and non-statutory organisations. Seek to have these plans adopted by the Local Authority to inform planning decisions and provide a framework for integrated management. By 2011.
4	Increase public awareness of biodiversity, the wildlife value of standing open water habitats and their importance as an asset to the community.	Set up public awareness programme. Establish communications with residents groups, community councils, local environment groups, etc., to provide a forum for discussion and to understand their wishes for their local environment. By 2007.

Stakeholders

- Landowners, land managers and advisors, developers, angling clubs, tourists and local users.

ACTION FOR BIODIVERSITY

		Action - Standing Open Water	Deliverers		To take place by								Meets Objective No.
			Lead Partners	Partners	02	03	04	05	06	07	11	16	
LBAP Ref.	A	Policy and legislation											
WW3	1	Ensure that all statutory water quality and discharge standards are maintained and where necessary improved.	SEPA Scottish Water		#	#	#	#	#	#	#	#	2
WW3	2	Ensure that all standing open waters meet EU Directives in terms of designations for wildlife, importance and/or quality.	SEPA SNH	PKC DCC AC					#				2
WW3	3	Establish site-specific plans to achieve appropriate water quality, water resource use, fishery management for all important waterbodies, for example waterbodies which are under threat, vulnerable, have potential for nature conservation and/or restoration.	Angling Groups	SNH SEPA PKC DCC AC Landowners, DSFB					#				1, 2, 3

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WW3	4	Ensure that 'Total Phosphorus Water Quality for Scottish Freshwater Lochs' policy is followed when setting consent standards for discharges to lochs.	SEPA		# # # # # # # # #	1, 2
WW3	5	Following a survey of standing open waters designate important sites as 'Local Wildlife Sites' as appropriate and incorporate them into the planning system.	SWT	SEPA PKC DCC AC	#	1, 3
WW3	6	Seek to develop policies to control alien species and favour establishment of appropriate native species.	SEPA Angling Groups	SNH PKC DCC AC Landowners	#	1, 3
WW3	7	Contribute to the development of policies within land use development plans to safeguard standing open waters habitats and associated wildlife in the region, with no net loss of this habitat promoted.	PKC DCC AC SEPA	SNH Scottish Water TBP	# # # # # # # # #	1, 3
WW3	8	Ensure that adequate consultation takes place when developments are proposed in loch catchments.	PKC DCC AC	SEPA SNH	# # # # # # # # #	1
	B	Site safeguard and management				
WW3	1	Ensure that existing nature reserves and SSSIs which include standing open waters are managed appropriately.	SNH SWT RSPB	PKC DCC AC	# # # # # # # # #	1
WW3	2	Encourage appropriate management of standing open waters and their banks in existing developments in urban areas.	SEPA		# # # # # # # # #	3
WW3	3	In new developments, promote adoption of SUDS (Sustainable Urban Drainage Systems) principles such as swales, infiltration basins, detention/retention ponds, wetlands and reedbeds.	SEPA PKC DCC AC Scottish Water		# # # # # # # # #	2, 3
WW3	4	Encourage better management and protection of standing open water on farmland and forestry, such as buffer strips etc.	FWAG SAC	SEPA Forestry Commission	# # # # # # # # #	3
WW3	5	Encourage the full implementation of the Forestry Commission Water Guidelines i.e. buffer strips and the strategic planting of broadleaves.	Forestry Commission		#	1
	C	Advisory				
WW3	1	Provide advice for managers and users of standing open waters to promote the conservation of biodiversity of this habitat.	TBP		# # # # # # # # #	1, 2, 3
WW3	2	Promote best practice in farming and encourage preparation and implementation of Farm Waste Management Plans.	FWAG SAC	SEPA	# # # # # # #	1, 2, 3, 4
WW3	3	Develop guidelines for best practice in fishery management.	SEPA (HEI)		#	1, 3
	D	Research and monitoring				
WW3	1	Continue Site Condition Monitoring for SACs and SSSIs.	SNH			
WW3	2	Review current water quality to identify causes of downgrading, particularly where biodiversity priorities may be important.	SEPA		#	3
WW3	3	Continue to monitor the impact and extent of acidification in the area.	SEPA		#	3
WW3	4	Monitor impact of diffuse pollution, such as phosphates, nitrates etc.	SEPA		# # # # # # # # #	3
WW3	5	Survey waterbodies in the region and designate, where possible, important sites as 'Local Wildlife Sites' and incorporate them into the planning system.	SWT	SNH PKC DCC AC	#	3, 1

WW3	6	Establish a targeted programme of standing open water surveys, most specifically focussed on the nutrient enrichment of Dunkeld-Blairgowrie Lochs cSAC.	SNH SWT	SEPA	# # #	3
WW3	7	Review data on standing open waters as a precursor to the preparation of Catchment Management Plans and updating of existing CMPs as required by the Water Framework Directive.	SWT SEPA DSFBs	SNH Local Biological Records Centre	#	3, 1
WW3	8	Monitor the delivery of the action plan yearly and in detail every 5 years, starting in 2003.	TBP		# # # # # # #	
E Promotion and awareness-raising						
WW3	1	Provide a regular progress report to raise awareness and report good practice management for biodiversity in standing open water habitats.	TBP		# # #	4
WW3	2	Liaise with and compile a list of private landowners and local interest groups who would be receptive to participation in discussions about standing open waters.	TBP	SNH SWT SEPA FWAG	#	4
WW3	3	Compile an information resource of legislative, policy, management, guidance and research documents to be available for public consultation at key locations e.g. libraries, museums and council offices.	TBP	SNH SWT SEPA	#	4

Standing Open Water

This illustrative map shows a few key examples of the habitat. Please note that many sites of interest are privately owned and owners' permission should be sought for any access.

