Tayside Biodiversity Partnership

BIODIVERSITY
THE VARIETY OF LIFE

Tayside Biodiversity Action Plan

2nd Edition Consultative Draft 2015-2025

1 Water And Wetland Ecosystems

Consultative Draft

Background

Tayside has a rich heritage of water and wetland habitats and their associated species. This diversity is due in large part to a complex geology and varied landscape. The division of the area by the Highland Boundary Fault is one feature which gives rise to some of the most valuable habitats in the region. Tayside is dominated by the River Tay catchment which drains the largest area of any river in Scotland. It has the largest mean average annual flow of any river in the UK in terms of volume at nearly 200 cubic metres per second.

The rivers and burns in Tayside tend to be fast flowing and nutrient poor and hold a wealth of habitats and rare wildlife. As important wildlife corridors, they enable dispersion and migration of species, interconnecting fragmented populations. They are particularly valuable in Tayside with a total length of over 5,000km not only making them essential to wildlife but also a familiar and important part of everyone's environment. Nine of these important waterways have been labelled "Freshwater Fish Protected Areas" under the Water Framework Directive.

Associated with these river networks are a large number of standing waters from the very large, deep highland lochs to small ponds and lochans and flood plain habitats such as wet woodlands, swamp and marshes, flood meadows and reedbeds. Wetlands, and particularly running waters, contribute to valuable habitat mosaics with thousands of kilometres of burns linking wildlife corridors between other terrestrial habitats. The margins of rivers and standing waters form the transitional zone between the aquatic and terrestrial environment.

Objectives

1. **Endeavour to reduce the direct pressures on water and wetland ecosystems by implementing projects to protect and restore ecosystem health.**
2. **Safeguard water and wetland ecosystem species and genetic diversity by enhancing connectivity and where possible preventing their decline.**
3. **Mainstream biodiversity conservation action by raising awareness and the enjoyment of water and wetland ecosystems.**

Priority habitats

- Rivers and Burns
- Lochs and Standing Water
- Ponds
- Wetlands

Key Sites

Rivers and burns

- North Esk
- River Tay (SAC)
- South Esk (SAC)
- Craighall Gorge (SSSI)
- The Den of Airlie (SSSI)
- The Lunan Burn system (SAC, SSSI)
- Meikleour (SSSI)
- Shingle Islands (SAC)
- Montrose Basin (SPA, RAMSAR, SSSI)

Lochs and Standing Open Water

- Loch Laidon
- Loch Tay
- Loch Brandy
- Carsebreck Lochs
- Loch Con
- Dunalastair Water
- Dun's Dish

Mesotrophic Lochs

- Loch Moraig (SSSI)
- Black Loch, Cleish (SSSI)
- Loch of Craiglush
- Loch of Lowes (SPA,SSSI)
- Butterstone Loch (SPA,SSSI)
- Loch Clunie (SPA,SSSI)
- Loch of Drumellie or Marlee (SPA,SSSI)
- Loch of Lintrathen (SSSI)
- Long Loch of Lundie (SSSI)
- Crombie Reservoir
- Loch Monzievaird
- Drumore Loch (SSSI)
- Laird's Loch (SSSI)
- Loch Leven (SSSI, SPA,SSSI, SPA)
- Rescobie Loch (SSSI)
- Balgavies Loch (SSSI)
- White Loch
- Fingask Loch
- Monk Myre
- Loch Kinnordy

Ponds

- Lochindores (SSSI)
- Kingoodie Quarry Ponds
- Vane Farm Ponds
- Bloody Inches / Meiklour (SSSI)
- Barry Mill Ponds
- Barrie Buddon Ponds
- Pitmedden Forest

Wetlands (all are part/whole SSSIs)

- Carsebreck Lochs
- Dunalistair Reservoir
- Dun's Dish
- Loch Leven
- Loch of Craiglush
- Loch of the Lowes
- Butterstone Loch
- Loch Clunie
- Loch of Drumelli or Marlee
- Loch Moraig
- Laird's Loch
- Rescobie Loch
- Balgavies Loch
- Meikleour Area
- Monk Myre
- Loch of Kinnordy
- Lochindores

Key Species

- Salmonid species
- Riparian mammals
- Wading and diving birds
- Freshwater invertebrates
- Riparian plants

Ecosystem Services & Ecosystem Scale Projects

Ecosystem Services

- Flood management and natural attenuation
- Regulation and improvement of water quality
- Carbon sequestration (wetlands, bogs and tree planting)
- Water for irrigation
- Water and wetland-based recreation and tourism
- Climate regulation
- Health and wellbeing
- Renewal energy

Ecosystem Scale Projects

- River South Esk Catchment Partnership INNS Project – managing invasive plant species throughout the catchment
- Glen Clova Contour Planting Project – managing river peak flow through natural flood management
- Tayside Lochs Project - an environmental improvement project improving the water quality of Tayside Mesotrophic lochs
- Tayside SUDS and Ponds Initiative – increasing wetland habitat connections within urban and rural areas by managing SUDS and ponds for amphibians and other species
- Tayside Mink Initiative - local organisations assuming responsibility for mink control in order to enable the long term sustainability of mink management.
- Tayside Amphibians in Drains - developing wildlife-friendly road systems e.g. wildlife kerbs, amphibian ladders species migration/hotspots maps for the amphibians and small mammals that encounter hazards on Tayside roads.
- River Basin Management Plans - protecting and improving Tayside's water environment in a way which balances costs and benefits to the environment, society and economy.

Pressures

Acidification

Acidification happens in areas where there is little underlying alkaline bedrock (such as limestone) to neutralise acids. Unnatural causes include acid rain from dissolved sulphuric and nitric acid, livestock waste and nitrogen fertilisers. Natural causes include coniferous forests close to a water body or acid rain caused from CO2 dissolving.

Toxic or organic pollution

These types of pollutants can be point source or from diffuse sources. Organic pollution can increase the concentration of nutrients within a water body, often leading to eutrophication and algal blooms which can remove the oxygen in a water system; Slender Naiad, *Najas flexilis* is particularly susceptible to changes in nutrient levels.

Dredging

Human dredging activities can change the fluvial properties of water courses and surrounding habitat, forcing out key species.

Abstraction of water

Removing large amounts of water from a river or water body for use in arable farming and renewable energy schemes can endanger many protected and priority species.

Sedimentation

As a natural phenomenon, sedimentation decreases the carrying capacity of rivers. However, unnatural levels can occur after activities such as river works which can de-stabilise banks. This can have a negative effect on the riparian zone particularly fish spawning habitat and Freshwater Pearl Mussels *Margaritifera margaritifera.*

Climate change

Changing patterns in weather will have far-reaching adverse effects on our wetlands. Countering this is a high priority.

Invasive non-native species (INNS)

INNS pose a growing serious threat as they can out-compete native species, resulting in serious changes and imbalance in ecosystem processes

Integrated Catchment Management in Practice

CASE STUDY 1

The River South Esk Catchment Partnership

The River South Esk Catchment Partnership leads in the delivery of ecosystem scale environmental improvement initiatives in the Angus area. One of only a handful of river catchment partnerships in Scotland, the partnership has implemented innovative work in this relatively new strategic partnership approach.

Main areas of success have been improving community access to the river (an SAC for Atlantic salmon and Freshwater pearl mussels and an SPA and RAMSAR site for migratory birds) and the control of the spread of invasive non native species including Japanese knotweed, Giant hogweed, Himalayan balsam and American mink.

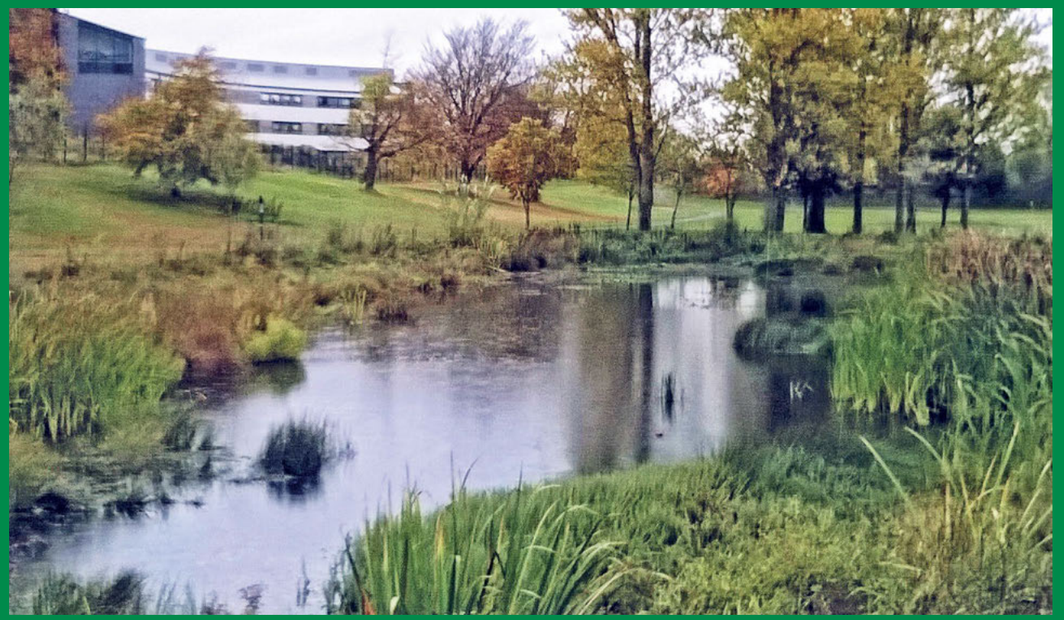
River restoration projects to aid in flood mitigation for affected towns such as Brechin, economic audits allowing sustainable development of the ecosystem services we derive from the catchment, landscape scale planning to mitigate the effects of climate change: all have played an important part in the success of the partnership.

The partnership carries out its objectives through the dedication of its stakeholders and increasing levels of community participation, local and national PR and awareness raising, sharing good practice, citizen science and community volunteering raise the profile of the important species and habitats in the catchment. The work of few improves and the quality of the Angus environment for all of its residents.

Rottal Burn © C A G Lloyd

CASE STUDY 2

SUDS and Biodiversity



SUDS pond at the North Inch Community Campus in Perth (c) D Williamson

SUDS, or Sustainable Urban Drainage Systems, are legally required for new developments and assist in the active mitigation of flooding, erosion and pollution without compromising the downstream water quality. Swales, detention basins, wetlands and ponds, as well as rain gardens, are the more visible aspect of urban drainage management and can be easily designed to enhance biodiversity, as well as safeguarding existing populations. Other drainage includes manufactured permeable surfaces, filter strips and underground storage.

SUDS, swales, wetlands and ponds can create an oasis for wildlife in the middle of an urban or development area. They are regularly populated by amphibians, including toads, frogs and newts, and can support a high abundance of invertebrates. These mini-ecosystems can therefore also support birds and bats, making them an important haven for wildlife and a vital aspect in creating landscape-scale green corridors.

The SUDS allow for a natural drainage system that can also reduce the amount of roadside gullypots which need to be created, kept and maintained. These gullypots are natural traps for amphibians and other wildlife which are attracted to water. A Tayside study has shown that thousands of animals are entrapped over the course of a year. Whilst active mitigation in the study area helps where gullypots are present (in the form of wildlife kerbs and the experimental amphibian ladders), in just one local authority area there is still an estimated loss of 44,000 animals (mostly amphibians) from drain entrapment.

Water & Wetlands Actions Schedule

Key for timescale Short: 1-3 yrs **Medium**: 4-6yrs **Long**: 7-10

The following actions are only proposals at this stage - (i) if your organisation is listed, please confirm you are happy for the inclusion of the action; (ii) please make suggestions for new actions in the Consultative Questionnaire.

Maintaining & Improving habitats

Action	Action breakdown	Who needs to take the action	Timescale
Support the creation, restoration or enhancement of ponds across Tayside to provide connectivity of this habitat across the region.	Collate SUDS audits, mapping of ponds/SUDS within 1km of roads. Pond Doctor Community projects: create, restore and enhance 3 ponds or wetlands per year from 2015. Map amphibian migration routes and hotspots to ensure wildlife kerb, dropped kerb/amphibian ladder installation is mainstreamed. Pooling our Ponds – see action in Education/Awareness-raising section.	Tayside Biodiversity Partnership Perth & Kinross Council Angus Council Scottish Green Infrastructure Group	Short and medium
Reduce nutrient enrichment and pollution.	Improve or maintain the water quality classification of all lochs in Tayside.	Scottish Environment Protection Agency Scottish Water Perth & Kinross Council Angus Council Landowners and land managers; developers; angling clubs.	Long
Promote adoption of biodiversity-managed SUDS in new developments.	Increase terrestrial habitat for amphibian species. Decrease eutrophication and point source pollution. Provide habitats for other wildlife.	Scottish Water Perth & Kinross Council Angus Council Scottish Environment Protection Agency Tayside Biodiversity Partnership Scottish Green Infrastructure Group	Long
Minimise pollution of watercourses from toxic substances and organic enrichment from poor farming practice.	Priority Catchment work – best practice advice via website.	Scottish Environment Protection Agency Scottish Government Rural Payments and Inspections Directorate	Long

Maintaining & Improving habitats

Action	Action breakdown	Who needs to take the action	Timescale
Encourage better biodiversity management and protection of watercourses on farmland and forestry.	Continue the Pearls in Peril LIFE Project (Freshwater Pearl Mussel) within Tayside. Expand the UK Green Shoots initiative into Tayside. Priority Catchment work – best practice advice via website.	Scottish Natural Heritage British Association for Shooting and Conservation Scottish Environment Protection Agency Scottish Rural University College Forestry Commission Scotland	Long
Maintain current mesotrophic lochs in Tayside.	Continue the Tayside Lochs Project, including the Lintrathen Loch Enhancement Project Survey.	Scottish Environment Protection Agency Tayside Biodiversity Partnership Tayside Lochs Partnership Scottish Natural Heritage	Medium
Support flood alleviation schemes that improve habitat connectivity through natural landscaping or native tree planting.	Encourage strategic planting of broadleaf trees along watercourses to assist with flood attenuation and the creation of habitat corridors. Support ongoing projects e.g. Glen Clova Contour Planting Scheme Brechin Flood Prevention Scheme Almondbank Flood Prevention Scheme Safeguard existing Scoter nesting sites in coastal woodlands. Where appropriate, favour broadleaf against Pine to reduce acidification of watercourses to safeguard Stonefly and Freshwater pearl mussel.	Forestry Commission Scotland Angus Council Perth & Kinross Council UK Scoter Steering Group Landowners and land managers	Medium
Minimise detrimental impacts of hydro-power schemes.	Protect riverine habitats and species, especially Freshwater Pearl Mussel, salmonid species, Otters, Water voles and River Jelly Lichen. Where appropriate, provide fish ladders to allow migration of salmon. Ensure sufficient flows remain downstream of dams and use freshets to mimic natural spates.	Scottish Environment Protection Agency Southern & Electric Scotland District Salmon Fishery Boards	Medium/ long

Maintaining & Improving habitats

Action	Action breakdown	Who needs to take the action	Timescale
Restore and enhance watercourse biodiversity.	Safeguard existing riparian habitats and enhance wherever possible. Reduce overfishing of river stocks. Encourage the removal of weirs to aid fish migration. Encourage restoration of watercourses by enhancing urban water quality through community engagement (especially the Perth Lade and the Dighty Burn). Identify and facilitate ongoing opportunities for riparian planting, biodiversity improvements as part of all Tayside Flood Prevention Schemes. Support the setting up of the Tay Western Catchment Project.	Angus Council Perth & Kinross Council River South Esk Catchment Partnership Tay Western Catchment Partnership Scottish Environment Protection Agency Scottish Natural Heritage Perth Lade Group Broughty Ferry Environmental Project	Long
Protect shingle-bank habitats.	Safeguard Priority Species from INNS. Control aggregate removal from rivers changing sedimentation.	Scottish Wildlife Trust Scottish Natural Heritage Scottish Environment Protection Agency	Short / medium
Working in partnership, explore the implications of Eurasian Beaver *Castor fiber* in river catchments.	Research the potential for riparian planting grants to mitigate for any beaver damage or the species entering crop fields and Traditional or Community Orchards. Work with Fisheries Boards and Catchment Initiatives to incorporate flood attenuation into management plans. Encourage studies into added biodiversity value from beavers, especially dragonflies and damselflies, amphibians, otter and water vole, wetland and riparian birds.	Forestry Commission Scotland Scottish Wild Beaver Group Tay Landscape Partnership Fisheries Boards Amphibian and Reptile Conservation Mammal Society International Otter Survival Fund British Dragonfly Society British Trust for Ornithology	Medium / long

Surveying & Monitoring

Action	Action breakdown	Who needs to take the action	Timescale
Survey and monitor the Tayside Water vole population.	**Water Vole GIS Survey (Tayside)** Collate the water vole data from SSE to share nationally (NBN and SNH) and locally (local authority GIS). **Loch Leven Water Vole Survey** Continue regular surveys to ascertain status of water vole in/around Loch Leven. **Tay Landscape Partnership Riparian Mammals Survey** Undertake Mink control throughout TLP area. Ongoing Coppice management and scrub clearance to increase light onto riverbanks. Control Himalayan balsam to improve favourable habitat. Ensure sympathetic pow and ditch management with biodiversity in mind. Create additional wetland habitat. Consider Water vole reintroduction and land management for natural reintroduction. Re-survey medium and low priority survey sites by 2025. Investigate further the water vole population in Glen Clova and support actions to protect and enhance habitat for the population.	Scottish Natural Heritage Scottish Southern Energy Angus Council Perth & Kinross Council Scottish Natural Heritage Tay Landscape Partnership Angus Council Tayside Biodiversity Partnership	Medium
Distribute national information to pond creation groups.	**Pooling our Ponds** Support the setting up of a Tayside School Ponds Project. Encourage 50 x community surveyors to undertake quarterly pond surveys and expand the project by 2020. Undertake regular Amphibian and Dragonfly surveys of Tayside ponds.	Tayside Biodiversity Partnership North East Scotland Biodiversity Partnership North East of Scotland Biological Recording Centre Tayside Amphibian and Reptile Group British Dragonfly Society	Medium
Surveying for Unknowns in Tayside Rivers – eDNA national Research.	Undertake research to ascertain population status of Shad in Tayside rivers.	tbc	Short

Maintaining & Improving habitats

Action	Action breakdown	Who needs to take the action	Timescale
Research status of Lamprey in Tayside.	Research potential for Lamprey Pow Burn Project.	District Salmon Fishery Boards Tayside Biodiversity Partnership Scottish Natural Heritage	Medium
Mainstream mitigation to safeguard amphibian populations across Tayside.	Conserve and enhance amphibian populations by raising awareness of mitigation measures including amphibian ladders, wildlife kerbs, modified drains, etc.	Tayside Biodiversity Partnership Tayside Amphibian and Reptile Group Friends of Angus Herpetofauna Perth & Kinross Council Angus Council Amphibian & Reptile Conservation	Long

Invasive Non Native Species

Action	Action breakdown	Who needs to take the action	Timescale
Reduce the direct threat on catchment biodiversity and ecosystem health from INNS.	Encourage control and eradication of INNS throughout Tayside: Continue the River South Esk INNS Project. Continue the Montrose basin INNS project. Expand the River Earn INNS projects. Monitor and remove crayfish from the Pow Burn. Reduce the introduction of new INNS. Encourage the use of Plant-Tracker and river watch schemes to detect and monitor INNS.	Esk Rivers and Fisheries Trust Scottish Wildlife Trust River South Esk Catchment Partnership Cairngorms National Park Authority Angus Council Perth & Kinross Council Loch Lomond and the Trossachs Park	Long
Secure multiple adjacent river catchments as breeding mink-free areas to protect significant populations of water vole, salmonids, ground nesting birds and other native riparian biodiversity.	**Scottish Mink Initiative** Continue to recruit and support volunteers who monitor for and subsequently trap American mink. Raise awareness of the negative impact American mink have on the environment. Survey and record native wildlife returning to previously unoccupied areas.	Rivers And Fisheries Trusts of Scotland Scottish Natural Heritage Cairngorms National Park Authority Scottish Wildlife Trust University of Aberdeen Tay Landscape Partnership	Medium

Education & Awareness Raising

Action	Action breakdown	Who needs to take the action	Timescale
Increase public awareness of water and wetland habitats and species.	Engage the local community, including residents groups, community councils, local environment groups, etc. in catchment scale projects. **Perth Lade Project** Update Management Plan. With the community, prepare Site Biodiversity Action Plan. Undertake conservation tasks to enhance the Perth Lade. **Wildlife Ways Project** Enhance the landscapes where the rivers Tay and Earn meet. Reconnect residents and visitors with the natural, built and cultural heritage within the Tay Landscape Partnership area. Discuss future Pow Management with the Pow Commission. Undertake interpretation and habitat improvement along Perth Lade. Provide training opportunities for volunteers to enhance riparian habitat for priority species. **Dighty Connect** Continue and expand community biodiversity projects along the Dighty.	Tayside Biodiversity Partnership Amphibian and Reptile Conservation Froglife Buglife Scotland Plantlife Scotland Tay landscape Partnership Broughty Ferry Environmental Project Perth Lade Group	Medium / long
Raise awareness about freshwater ecology and the role of the freshwater fishery in the local economy.	**Salmon in the Classroom** Continue programme to 2-4 local schools per annum. Expand the project to include Angus schools.	Scottish Natural Heritage Perth & Kinross Council Angus Council District Salmon Fishery Boards – school field visits (electro-fishing) and provision of eggs, SSE (advice only) Ranger Services, including Atholl Ranger Service	Medium