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Woodland Ecosystems

Glen Lednock, Perthshire © CAG Lloyd

Background

Tayside is home to a rich variety of native woodland types and is also the 'cradle of Scottish forestry' as larch, spruce and Douglas fir were first introduced here. Europe's oldest tree is our renowned Fortingall Yew, which is between 3,000 and 5,000 years old. Tayside's woodlands are a major asset: biodiversity, recreation, tourism and carbon sequestration, as well as the economic value of wood fuel and timber extraction. There are, however, serious threats to individual woodlands, including Ash Dieback and the invasive non-native *Rhododendron ponticum*. In the SNH Biodiversity Indicators 15 of the 23 woodland bird species have increased by 10%. These include Great-spotted woodpecker, Chiffchaff and Blackcap. Many woodland birds are reliant on tree seeds as a source of food.

Tayside has 16% tree coverage, some 127,000 hectares of which 38,925 ha (2013 FCS Woodland Survey) is occupied by native and Ancient Woodland. In Perth & Kinross only 36% of native woodland is in good health, whereas it is 51% in Angus. Ancient Woods - land continually wooded since 1750 - are an important and irreplaceable national resource. They preserve the soil's ecological processes and associated biodiversity. Woodlands, hedgerows and individual trees (especially notable and veteran trees) are vital both culturally and for biodiversity.

The outlook for native Pinewoods is the best it has been for 300 years, not only providing habitat, but also for its aesthetic and cultural contribution to the Scottish landscape. Wet Woodlands tend to be transient, colonising relatively inaccessible ground, often survivors of larger woods which have been felled and converted to other uses. In the Tayside landscape, the role of Wet Woodlands lies in their water quality and flood management benefits.

Lowland Mixed Broadleaved Woodland, on the other hand, is the most diminished Tayside woodland type. A very large proportion has been cleared for agriculture or in urban expansion and its use as pasture has died out. Its ecological condition has been compromised, especially in producing hardwood timber, supporting game species, or recreational use. Ash-Wych elm woodlands are today confined to the most fertile soils. With a renewed interest in traditional woodland skills in managing coppice and hedgerows (hedgelaying, etc.), there is an urgent need to source local materials. Coupled with a greater interest in planting broadleaves by community groups and in urban fringe woodlands, now is the time to review our management of this woodland type.

Birchwoods often form part of a complex mosaic, grading into other woodland types depending on



soil fertility, exposure and soil moisture. These are often interspersed with open areas of heath and bog. The ecosystem is especially dynamic as birchwood boundaries 'alter' over time. In the Angus Glens with continual selective removal there are losses of natural seed-sources. Over-grazing by sheep and deer has resulted in a lack of regeneration; climate change may affect their longevity and affect the ground flora beneath.

Some 80% of our woodlands are introduced conifer forests; these are amongst the longest established in the British Isles. Biodiversity benefits include greater species diversity and long-term retention, as well as their micro-climatic effects, carbon and oxygen exchange, soil stabilisation and regulation of water run-off. Forest rides, wayleave routes, roads, quarries and wetlands - and land where trees have failed to grow - make a valuable contribution to their overall biodiversity value.

As with other woodland types, the disappearance of traditional orchards in Tayside has been driven by economic and development pressures. Since the Historic Orchards of the Carse of Gowrie Survey, remaining orchards have been re-planted and the loss of skills addressed. The Perth800 celebrations resulted in hundreds of fruit trees planted; in Angus there are now 60 school orchards. The community

orchard in Cultybraggan, Comrie, is proof that top fruit yields more than just community spirit - the economic benefit links the Slow Food movement and local food production.

Objectives

- 1 Endeavour to reduce the direct pressures on woodland biodiversity by implementing projects to enhance ecosystem health.**
- 2 Safeguard woodland ecosystems, species and genetic diversity by enhancing connectivity and where possible preventing its decline.**
- 3 Mainstream biodiversity conservation action by raising awareness and the enjoyment of woodland ecosystems within local communities.**
- 4 Recognise the important of ancient woodland in Tayside by protecting the existing resource and restoring and reconnecting ancient woodland remnants.**

Priority Habitats

- Native conifers: Scottish Pinewoods, Yew and Juniper
- Upland Birchwoods
- Wet Woodlands
- Upland Oakwoods
- Upland Mixed Ashwoods
- Lowland Mixed Broadleaf (Deciduous) Woodlands
- Aspen
- Traditional Orchards
- Planted Coniferous Woodlands (especially the woodland edge/glades)



Scot's pine © SNH

Key Sites

Black Wood of Rannoch:
Caledonian Pinewood

Glenartney: Juniper Woodland

Crossbog Pinewood, Angus

Den of Airlie

Birks of Aberfeldy

Upper Farrochil and Strath

Tummel: Upland Birchwood

Methven Woods: Lower Mixed
Broadleaf

Drummond Hill: Planted
Coniferous Woodland

Strathtay Estate: Upland Mixed
Ashwood

Megginch Castle: Traditional
Orchard

Loch Clunie: Wet Woodland

Key Species

- Woodland mammals, including Red squirrel and Pine marten
- Scottish crossbill and Nightjar
- Woodland invertebrates, inc. Scottish wood ant and moths
- Woodland plants, inc. Juniper, Blaeberry, Small Cow-wheat, Coral-root orchid and Twinflower
- Woodland lower plants and fungi

| Native woodland type | PKC area ha. | AC area ha. | Total Tayside ha. |
|-----------------------|--------------|-------------|-------------------|
| Wet woodland | 3675 ha | 928 | 4603 |
| Native pinewoods | 7032 | 1065 | 8097 |
| Upland birchwoods | 7292 | 1713 | 9005 |
| Upland mixed ashwoods | 1659 | 184 | 1843 |
| Upland oakwoods | 2235 | 174 | 2409 |
| Juniper scrub | 93 | - | 93 |



Red squirrel © SNH



Black grouse © Doug Shapley

Perthshire Black Grouse Study Group

This Group has been monitoring the Black grouse population in an area centred on Loch Tummel since 1990. Each year 25-30 volunteers count black grouse within seven 10 km squares. The group includes staff and volunteers from the RSPB, Game & Wildlife Conservancy Trust, Forestry Commission Scotland and SNH, as well as

stalkers, gamekeepers and rangers. At least two visits are made to known lek sites between mid-March and mid-May and the numbers of blackcock present on leks counted between one hour before and one hour after sunrise. Other suitable habitat is also visited to search for new leks or displaying birds.

Despite national declines during the 1990s the Perthshire population has long been a stronghold for this species. The long-term data has been used in several peer-reviewed papers and the complete coverage and annual nature of the data means it can be used to analyse the importance of land management changes on the population over the long-term.

Glen Clova Contour Planting Project

Forestry Commission Scotland's work is driven by the Water Framework Directive, the Scottish Forestry Strategy, and the need to improve natural flood management. It is actively promoting responsible woodland management with landowners and tenant farmers in the River South Esk catchment to improve natural flood management opportunities, mitigate diffuse pollution, and improve habitats. Contour tree planting work being carried out in Glen Clova is being funded through project partner contribution and has been designed to ensure no loss of agricultural production or farm income. The increase of targeted woodland cover above 400m contours will contribute to greater soil permeability which, in the long term will result in

a reduction in peak water flow during flood events. Not only will the project provide opportunities for employment in rural areas and create business opportunities from woodland management, the increase in trees could create shelter for livestock. Connections between important habitats will be improved, increasing the resilience of local biodiversity.



Ecosystem Services & Ecosystem Scale Projects

Ecosystem Services

- Carbon sequestration
- Photosynthesis and oxygen production
- Renewable energy
- Recreation and leisure
- Health and wellbeing, including medicines
- Tourism
- Wild food provision
- Timber and wood fuel
- Flood protection
- Climate regulation

Ecosystem Scale Projects

- Natural flood management processes
- Tayside Red Squirrel Conservation
- Tay Landscape Partnership Orchard Initiative
- Riparian Catchment Woodland Planting projects
- Wild Harvest projects
- Tayside Orchard projects
- Coppice woodland management
- Upper Strathearn Oakwoods Project



Pear orchard, Megginch by Errol
© CAG Lloyd

Pressures

Invasive non-native species and diseases

Himalayan Balsam, Japanese Knotweed and Giant Hogweed all suppress the natural ground flora. As oak is a strong light demander, regeneration of oak under oak canopy is difficult with invasion of Rhododendron and Sycamore *Acer pseudoplatanus*; Rhododendron shades out native shrubs, young trees and ground flora, including lichens and bryophytes. Although a native plant, the spread of Bracken *Pteridium aquilinum* can seriously limit young growth.

Many tree pathogens are present in Britain - and spreading so research/ treatment is urgent and ongoing, especially where Ash Dieback and *Phytophthora ramorum* are concerned.

Climate Change

Many bird species are likely to be affected by climate change in the future, including Black grouse, Scottish crossbill and Pied flycatcher.

Silvicultural Systems

The cessation of coppicing and increased grazing pressure from domestic animals and browsing by wild animals has contributed towards a decrease in the structural diversity of Upland Oakwoods. Removal of large amounts of timber in the early 20th century significantly changed the composition and structure of Tayside's upland oakwoods. The replacement of native woodlands with crops of non-native species, notably Douglas fir in Tayside, is now largely historical, but its effects are ongoing.

Afforestation

Inappropriate afforestation and encroachment by scrub, trees and bracken in priority non-woodland habitats and key sites leads to impoverished habitats. Short-rotation coppice for biofuel also needs to be carefully located so that it does not damage priority upland or existing woodland habitats.

Fragmentation of Habitat

Felling and conversion of woodlands to intensive agriculture or development including housing, other infrastructure developments, golf courses and quarrying are key issues. Trees enclosed by new development risk being felled to abate an alleged nuisance and there is not a robust Tree Preservation Order system to safeguard them. Adjacent woodland areas are vulnerable to further encroachment or degrading owing to spray drift or run-off from agricultural land. Connecting features such as hedgerows and old wood banks can also be lost. In developing landscape-scale woodland planting projects, the development of forest habitat networks or urban greenspace networks must also take into consideration other priority habitats.

Lack of Management

Historical under-planting of oakwoods with coniferous species has contributed to the decline of about 40% of oakwoods across Scotland. Lack of management and adjacent land use changes (including new roads, quarrying and recreational access) have led to a limited

age structure within many woods. Unsympathetic management for wildlife in Planted Coniferous Woodland can occur if there is a limited range of tree species and minimal areas of open space. Such woodland can also be vulnerable to fire, wind-throw and major forest pests and diseases.

Grazing Issues

Changes in woodland structure can occur if sites are over-grazed by both domestic

animals and deer, leading to degradation of ground flora and lack of regeneration. Overstocking of sheep and deer inhibits regeneration of montane scrub and woodland. Sycamore and Beech can survive the effects of over-grazing to take over any gaps created in the Ashwood canopy; this hinders potential expansion of the original woodland type. Conversely, wood pasture can be under-grazed or converted to intensive grassland and veteran

trees removed or severely pollarded.

Abstraction of Water

In wet woodland, agricultural drainage coupled with excessive grazing results in poached soils, changes in the woodland structure and ground flora, and regeneration issues. Increased water abstraction, eutrophication and other forms of pollution also take their toll.

Increasing Recreational Use

Visitor presence in woodlands has been shown to affect the number of birds, badgers and deer owing to increased disturbance. This may be worsened around breeding or hibernation time where bat species are concerned. Destruction or over-managed woodland ground cover for footpaths, orienteering or mountain bike routes can result in the loss of invertebrates which affects the wildlife that feed upon them. Careful path management can mitigate against this.



Juniper © SNH

The Hunt for Juniper

There are three native conifers in Scotland – the Scots Pine, Yew and Juniper. All can be long-lived if they are able to reproduce. Juniper was once a widespread species in Scotland and Perthshire is still a key area for it. It is, however, in trouble, with many veteran junipers left in the landscape, over-grazed and not able to regenerate. It is in serious decline and Scottish Natural Heritage is keen to find

out where Juniper is growing in Perthshire. Stands of 50+ mature juniper bushes are needed to be self-sustaining and this is now rare in the landscape.

The loss of juniper will affect wildlife such as Black grouse, Snipe and Woodcock who benefit from the dense ground cover provided by juniper. Its evergreen leaves are often the

only grazing available to sheep and deer during snowy winters. Farm livestock also use the shelter juniper affords. Most juniper berries for gin production in the UK are imported from Eastern Europe, although there is a Southern Uplands project underway. Scottish juniper was often used by illicit whisky distillers because of its smokeless wood.

Woodland Ecosystems Actions Schedule

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

Actions will be input into the UK Biodiversity Action System (UKBARS) where Lead Partners will be outlined

| Maintaining & Improving Habitats | | | |
|--|---|---|-----------|
| Action | Action breakdown | Who needs to take the action | Timescale |
| 1 Protect and expand Tayside's forests and woodlands, increasing their value to society and the environment. | Set targets for new and existing native tree cover, taking into consideration the Scottish Forestry Strategy's vision for woodland expansion to around 25% of Scotland's land area. | Forestry Commission Scotland Scottish Natural Heritage Cairngorms National Park Authority Angus Council Perth & Kinross Council Tayside Biodiversity Partnership River South Esk Catchment Partnership | Short |
| 2 Maintain existing native woodland and Traditional Orchard areas and prevent net loss or reduction in their quality. | Protect native woodland resources through planning policy, conditions and Tree Preservation Orders. Protect, restore and enhance ancient woodland. | Forestry Commission Scotland Cairngorms National Park Authority Angus Council Perth & Kinross Council | Long |
| 3 Investigate and support projects and policies which create more planting of native woodland species and forest cover in Tayside. | Expand the establishment of Scots Pine and native Oak plantings where appropriate within Tayside, or extend existing native woodland where there has been continuous cover of some kind for 500 years or more. Expand the establishment of mixed broadleaves, birchwoods and wet woodland plantings where appropriate within Tayside, or extend such existing native woodland where there has been continuous cover of some kind for 500 years or more. Identify Planted Ancient Woodland Sites (PAWS) and encourage landowners and managers to incorporate PAWS restoration in management plans. | Forestry Commission Scotland Cairngorms National Park Authority Angus Council Woodland Trust Perth & Kinross Council River South Esk Catchment Partnership Landowners and managers | Long |
| 4 Improve the environmental value of woods and forests throughout Tayside. | Deliver new grants, including work in open space and non-woodland habitat within the woodland or forest area. Develop forest habitat networks. | Forestry Commission Scotland Cairngorms National Park Authority Angus Council Perth & Kinross Council River South Esk Catchment Partnership Community Woodlands Association Landowners and managers Community groups | Long |

Maintaining & Improving Habitats

| Action | Action breakdown | Who needs to take the action | Timescale |
|--|---|--|-----------|
| 5 Encourage natural flood management through the planting of trees. | Where appropriate, support catchment-led tree planting initiatives that encourage natural flood management and mitigate against the impacts of climate change. | Forestry Commission Scotland Cairngorms National Park Authority North East Green Network Angus Council Perth & Kinross Council Scottish Natural Heritage Tayside Biodiversity Partnership River South Esk Catchment Partnership Woodland Trust Tay Foundation Esk Rivers & Fisheries Trust | Long |
| 6 Extend and enhance Upland Oakwoods, bringing them under management to increase their biodiversity and conservation value. | Encourage the application for funds within the Scottish Rural Development Plan and Forestry Grant Schemes (or their successors) to raise awareness of the importance of Upland Oakwoods to woodland owners through examples of good practice, workshops, publicity and other events. Develop Forest Habitat Networks as detailed in the Scottish Forestry Strategy and Indicative Forestry Strategies. | Forestry Commission Scotland Cairngorms National Park Authority Angus Council Perth & Kinross Council River South Esk Catchment Partnership Landowners and managers Community groups | Medium |
| 7 Maintain, improve and increase the habitat quality of Coniferous Plantations where Scottish Biodiversity List species are present. | Safeguard and enhance existing and potential habitat features in all plantations. Protect and suitably manage Great Crested Newt ponds to increase population. Restructure first rotation conifer plantations. | Forestry Commission Scotland Cairngorms National Park Authority River South Esk Catchment Partnership Landowners and managers Community groups Fife Amphibian & Reptile Group (Fife ARG) Tayside Amphibian & Reptile Group (TayARG) | Long |

Maintaining & Improving Habitats

| Action | Action breakdown | Who needs to take the action | Timescale |
|--|--|--|-----------|
| 8 Maintain, restore and improve existing Wet Woodlands in Tayside and expand them where appropriate. | Safeguard and enhance existing habitat features in all Wet Woodlands, especially those in SAC and SSSI designated sites. | Scottish Natural Heritage Forestry Commission Scotland Cairngorms National Park Authority Angus Council Perth & Kinross Council River South Esk Catchment Partnership Landowners and managers Community groups | Long |
| 9 Halt further loss of Traditional Orchards in Tayside. | Protect Traditional Orchard resources through planning conditions and Tree Preservation Orders. Undertake a survey of all Tayside orchards. Undertake a variety of biodiversity studies/surveys across Tayside to ascertain the biodiversity value of old orchards, and publicise the findings to a wide audience. Encourage the setting up of a fruit tree grafting programme to safeguard existing local fruit varieties and to make available local varieties to projects throughout Tayside. Disseminate the booklet 'Traditional Orchards in Tayside – a Guide to Wildlife and Management' as widely as possible. | Angus Council Perth & Kinross Council Tayside Biodiversity Partnership Tay Landscape Partnership Scottish Orchard Collective Plants with Purpose/Appletreeman Carse of Gowrie Group Landowners and managers Community groups | Medium |
| 10 Restore and enhance Traditional Orchards in Tayside. | By 2025 restore 12 acres of Traditional Orchards in Perth & Kinross. By 2025 restore 8 acres of Traditional Orchards in Angus. | Scottish Orchard Collective Tayside Biodiversity Partnership Tay Landscape Partnership Carse of Gowrie Group | Long |

Maintaining & Improving Habitats

| Action | Action breakdown | Who needs to take the action | Timescale |
|--|---|---|-----------|
| 11 Promote the biodiversity importance of Traditional Orchards, enhance orchard management and encourage their sustainable economic use. | <p>Promote and publicise Traditional Orchards as part of the culture and landscape.</p> <p>Support groups such as the Carse of Gowrie Historic Orchards Forum.</p> <p>Support community events and training workshops throughout the year.</p> <p>Support an annual Tayside Orchard Festival and local community Apple, Pear or Orchard Days.</p> | <p>Scottish Natural Heritage</p> <p>Tayside Biodiversity Partnership</p> <p>Tay Landscape Partnership</p> <p>Carse of Gowrie Group</p> <p>Scottish Orchard Collective</p> <p>Landowners</p> <p>Community groups</p> | Medium |
| 12 Restore woodland plant species populations and genetic diversity and enhance species connectivity. | <p>Support existing and new projects which identify and safeguard threatened species.</p> | <p>Scottish Natural Heritage</p> <p>Cairngorms National Park Authority</p> <p>Plantlife Scotland</p> <p>Botanical Society of the British Isles</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Landowners</p> <p>River South Esk Catchment Partnership</p> | Long |
| 13 Promote the sustainable development of Tayside's woodland types through increased policy integration. | <p>Ensure TAYplan (Strategic Development Plan), Angus Local Development Plan, Perth & Kinross Council, Development Plan and Indicative Forestry Strategies take into account sustainable development.</p> <p>Annually produce updates for Local Authority Climate Change Declaration reporting.</p> <p>Produce updates for Local Authority statutory biodiversity reporting against the 2020 Challenge.</p> | <p>Scottish Natural Heritage</p> <p>Forestry Commission Scotland</p> <p>Cairngorms National Park Authority</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Tayside Biodiversity Partnership</p> <p>River South Esk Catchment Partnership</p> | Long |
| 14 Reduce the direct pressures on woodland biodiversity by enhancing ecosystem health. | <p>Tackle littering and invasive non-native species at problem sites.</p> <p>Encourage measures which reverse habitat fragmentation.</p> <p>Safeguard alluvial forests and bog woodlands.</p> <p>Develop and promote ongoing beneficial deer management.</p> <p>Introduce biosecurity measures where necessary at outbreaks of notifiable tree diseases.</p> | <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Scottish Natural Heritage</p> <p>Forestry Commission Scotland</p> <p>Tayside Biodiversity Partnership</p> <p>Landowners and Land managers</p> | Long |

Maintaining & Improving Habitats

| Action | Action breakdown | Who needs to take the action | Timescale |
|--|--|--|-----------|
| 15 Ensure the long-term future of woodland habitat by showcasing best practice land management techniques. | <p>Maintain species richness within the different woodland types.</p> <p>Reduce grazing pressure from deer and livestock ensuring a more collaborative management approach of roe and fallow deer to help promote more tree regeneration in existing woodlands.</p> <p>Protect woodlands and woodland strips from inappropriate development, disturbance and damage (including recreation).</p> <p>Promote demonstration sites and advise on good woodland management practices.</p> <p>Encourage sympathetic management of woodlands for wildlife, structural diversity and rich lower plant communities, including the natural turn-over of leaf litter and wood by invertebrates and fungi.</p> | <p>Forestry Commission Scotland</p> <p>Scottish Natural Heritage</p> <p>Cairngorms National Park Authority</p> <p>North East Green Network</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Landowners and Land Managers</p> <p>Royal Society for the Protection of Birds</p> <p>British Lichen Society</p> <p>Plantlife Scotland</p> <p>National Farmers Union Scotland</p> <p>Scottish Land & Estates</p> <p>Tayside Biodiversity Partnership</p> <p>Tay Landscape Partnership</p> | Long |
| 16 Promote the safeguarding and management of veteran trees. | <p>Support measures to protect and manage veteran trees across Tayside.</p> <p>Encourage the widening of the Ancient Tree Hunt surveys across Tayside.</p> <p>Support groups such as the Ancient Tree Forum and Perth & Kinross Tree Wardens' Network in raising awareness on veteran tree management.</p> <p>Support the setting up of a National Register of Scotland's Trees of Special Interest.</p> <p>Support community events and training workshops throughout the year.</p> | <p>Forestry Commission Scotland</p> <p>Woodland Trust</p> <p>Ancient Tree Forum</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Tayside Biodiversity Partnership</p> <p>Perth & Kinross Tree Wardens Network</p> | Long |
| 17 Promote the importance of urban trees. | <p>Protect urban trees in accordance with BS5837.</p> <p>Renew the street tree resource across Tayside.</p> <p>Encourage the need to renew the resource through new development opportunities with planners and developers.</p> <p>Raise awareness of the importance of urban trees with planners and developers through regular training events.</p> <p>Support the planting and management of community orchards, school orchards and fruit tree plantings in the urban setting.</p> | <p>Scottish Natural Heritage</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Forestry Commission Scotland</p> <p>Woodland Trust</p> <p>Tayside Biodiversity Partnership</p> <p>Perth & Kinross Tree Wardens Network</p> <p>Developers</p> <p>Tay Landscape Partnership</p> | Medium |

Maintaining & Improving Habitats

| Action | Action breakdown | Who needs to take the action | Timescale |
|--|--|--|-----------|
| 18 Promote restoration projects and species management programmes. | <p>Set up Green Habitat Network to create stepping stones for key species.</p> <p>Identify woodlands with the greatest potential for Red squirrel conservation and encourage the use of funding through the Scottish Rural Development Programme and Forestry Grant Scheme to support habitat management for Red squirrels.</p> <p>Investigate ways of managing upland forest ground to increase its value as a wildlife habitat.</p> <p>Explore options for fencing to protect sensitive habitats from disturbance.</p> <p>Where Juniper is present (>50 plants), enhance management by controlling grazing levels and timing, protecting bushes from burning and removing encroaching vegetation.</p> <p>Safeguard small and vulnerable populations of Juniper.</p> <p>Encourage natural regeneration of Aspen.</p> <p>Identify woodlands with the greatest potential for Bat species conservation.</p> <p>Remove invasive plants such as Japanese Knotweed, Himalayan Balsam and Giant Hogweed.</p> <p>Encourage the setting up of a Tayside Woodland Butterfly Project.</p> | <p>Forestry Commission Scotland</p> <p>Scottish Natural Heritage</p> <p>Scottish Wildlife Trust</p> <p>Plantlife Scotland</p> <p>Cairngorms National Park Authority</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>River South Esk Catchment Partnership</p> <p>Butterfly Conservation Scotland</p> <p>Bat Conservation Trust</p> <p>Landowners and managers</p> <p>Community groups</p> | Medium |
| 19 Support the Aspen 2020 Project | <p>Encourage the gathering and sharing of information about Aspen to enable landowners and managers to safeguard and expand existing Aspen woodlands and plant new ones.</p> <p>Support the increased availability of local origin Aspen for planting.</p> | <p>Cairngorms National Park Authority</p> <p>Scottish Natural Heritage</p> <p>Landowners and managers</p> | Long |

Maintaining & Improving Habitats

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|--|---|--|-----------|
| 20 Encourage collaborative regional working for green networks. | <p>Identify and promote “cross-boundary” opportunities to join up woodlands and woodland strips between local authorities, Biodiversity Partnerships and other geographically based organisations.</p> <p>In collaboration with partners, share and promote good practice to other land users.</p> <p>Encourage or co-ordinate regional-scale projects and surveys and advise on funding.</p> <p>Investigate the potential for a partnership project to promote connectivity, management and expansion of ancient semi-natural woodlands around woodland SSSIs - consider the introduction of a pilot Upper Strathearn Oakwoods Project.</p> <p>Highlight projects being developed and create opportunities of scale and collaboration.</p> <p>Encourage landowners and land managers to consider how best to develop woodland in order to maximise benefits for wildlife through improving habitat connectivity.</p> <p>Support the setting up of a Scottish Coppice Association to raise awareness of sustainable coppice management for woodland products and biodiversity.</p> <p>Work in partnership to establish an overview audit of relict and existing coppice woodland in Tayside, its current status, and the potential to plant new coppice coupes.</p> | <p>Forestry Commission Scotland</p> <p>Scottish Natural Heritage</p> <p>North East Green Network</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Perth & Kinross Countryside Trust</p> <p>Cairngorms National Park Authority</p> <p>River South Esk Catchment Partnership</p> <p>Tayside Biodiversity Partnership</p> <p>Scottish Crannog Centre</p> <p>Reforestation Scotland</p> <p>Tay Landscape Partnership</p> <p>Landowners and land managers</p> | Long |
| 21 Protect, restore and enhance ancient woodlands as identified in the SNH Ancient Woodland Inventory. | <p>Protect ancient woodlands through planning policy and conditions, forestry applications, awareness-raising with planners and landowners of their irreplaceability and encouraging restoration.</p> <p>Raise awareness of the National Woodland Survey of Scotland and the Ancient Woodland Inventory.</p> | <p>Scottish Natural Heritage</p> <p>Forestry Commission Scotland</p> <p>Cairngorms National Park Authority</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Tayside Biodiversity Partnership</p> <p>River South Esk Catchment Partnership</p> <p>Ancient Tree Forum</p> | Long |

Surveying & Monitoring

| Action | Action breakdown | Who needs to take the action | Timescale |
|--|---|---|-----------|
| 22 Investigate the effects of climate change on the movement of woodland species through regular surveying and monitoring. | <p>Generate records of woodland wildlife by facilitating biological surveys in woodlands around Tayside.</p> <p>Raise awareness of woodland species and conservation amongst the wider community.</p> <p>Continue the Black Grouse Project.</p> | <p>Scottish Natural Heritage</p> <p>Scottish Wildlife Trust</p> <p>Royal Society for the Protection of Birds</p> <p>Butterfly Conservation Scotland</p> <p>British Trust for Ornithology</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Tayside Biodiversity Partnership</p> <p>River South Esk Catchment Partnership</p> <p>Tayside Recorders' Forum</p> <p>Cairngorms National Park Authority</p> <p>Woodland Trust</p> <p>Botanical Society of Britain and Ireland</p> | Long |
| 23 Investigate woodland bird spatial and temporal distribution patterns in Tayside. | Encourage the continuation of Scottish Woodland Breeding Bird Surveys to improve information about woodland birds. | British Trust for Ornithology | Medium |
| 24 Conserve genetic diversity by discovering and promoting the diversity of fruit varieties grown in Tayside. | <p>Undertake varietal surveys throughout Tayside and widely share the information.</p> <p>Survey other key fruit such as plum varieties.</p> <p>Support growing of local and rare fruit varieties.</p> | <p>Scottish Orchard Collective</p> <p>Tay Landscape Partnership</p> <p>Carse of Gowrie Group</p> <p>Tayside Biodiversity Partnership</p> | Medium |

Surveying & Monitoring

| Action | Action breakdown | Who needs to take the action | Timescale |
|--|---|--|-----------|
| 25 Raise awareness of endangered woodland butterflies and moths and encourage community participation in conservation. | <p>Analyse collected, verified data annually and develop adaptive management strategy to develop surveying and monitoring protocol.</p> <p>Investigate the connectivity of woodland populations.</p> <p>Provide survey training for recorders.</p> <p>Produce and reprint postcards and posters to publicise ongoing projects.</p> <p>Expand the project to include the North East Scotland Biodiversity Partnership area.</p> <p>Annually prepare and circulate updates on survey work, publicity and volunteers.</p> <p>Make all survey links available on the Partnership website.</p> <p>Encourage the undertaking of a Black Wood of Rannoch Moth Project.</p> | <p>Butterfly Conservation Scotland</p> <p>Tayside Biodiversity Partnership</p> <p>North East Scotland Biodiversity Partnership</p> <p>Landowners and land managers</p> <p>Community</p> | Long |
| 26 Promote local recorders, clubs and biodiversity open days. | <p>Maintain an up to date database of local recorders and specialist clubs on the TBP website.</p> <p>Utilise the skills of local recorders and clubs to target specific projects.</p> <p>Encourage local open days and promote to the partnership's extended network.</p> | <p>Tayside Biodiversity Partnership</p> <p>Tayside Recorders' Forum</p> <p>North East Scotland Biological Recording Centre</p> <p>Scottish Wildlife Trust</p> <p>Butterfly Conservation Scotland</p> <p>Scottish Natural Heritage</p> <p>Scottish Land & Estates</p> | Medium |

Education & Awareness Raising

| Action | Action breakdown | Who needs to take the action | Timescale |
|--|---|--|-----------|
| 27 Increase awareness of woodland species in Tayside and facilitate community participation in data recording. | <p>Determine current status and distribution, and monitor populations of Pine marten, bats, woodland birds and woodland butterflies in Tayside.</p> <p>Encourage the setting up of a community-based Migratory Birds Project to study populations of Pied flycatcher, Wood warbler, Redstart and Tree pipit. As part of the project, consider a targeted nestbox scheme in pilot areas (including Highland Perthshire) before widening out across Tayside.</p> <p>Focus on awareness-raising through local and national press, specialist publications, tree and woodland trails, and events.</p> <p>Develop web and social media presence focussing on media used by local communities and tourists e.g. VisitScotland, CNPA, and Angus Ahead website.</p> <p>Support Nightjar surveys and the species' safeguarding in Angus woodlands.</p> | <p>Cairngorms National Park Authority</p> <p>North East Scotland Biological Recording Centre</p> <p>Tayside Biodiversity Partnership</p> <p>River South Esk Catchment Partnership</p> <p>Community</p> <p>Butterfly Conservation (Scotland)</p> <p>British Trust for Ornithology</p> <p>Royal Society for the Protection of Birds</p> <p>Perth & Kinross Countryside Trust</p> <p>Dundee & Angus Bird Club</p> <p>Bat Conservation Trust</p> <p>Woodland Trust</p> <p>Perth & Kinross Tree Wardens Network</p> | Long |
| 28 Encourage community outreach, development and training. | <p>Raise awareness of woodland management measures to community groups and voluntary organisations in Tayside to encourage woodland purchase, management and hardwood timber marketing.</p> <p>Encourage sharing good practice and training in woodland and orchard management and conservation, including sustainable coppice, veteran tree and hedgerow management (including hedgelaying).</p> | <p>Forestry Commission Scotland</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Tayside Biodiversity Partnership</p> <p>Scottish Community Woodlands</p> <p>Native Woodlands</p> <p>Small Woods Association</p> <p>Perth & Kinross Tree Wardens Network</p> | Long |

Education & Awareness Raising

| Action | Action breakdown | Who needs to take the action | Timescale |
|---|--|--|-----------|
| 29 Raise awareness of woodland types to Local Authorities, Community Planning Partners and the wider stakeholder network. | <p>Report regularly to community planning thematic partnerships on project contributions to local and national Single Outcome Agreement objectives.</p> <p>Regularly provide biodiversity seminars and workshops to local authority staff on relevant legislation and good practice.</p> <p>Use social media and targeted websites to promote woodland issues to as wide an audience as possible.</p> | <p>Cairngorms National Park Authority</p> <p>Scottish Natural Heritage</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Tayside Biodiversity Partnership</p> | Long |
| 30 Encourage school age participation in projects relating to woodland and orchard issues. | <p>Support new projects, including the Tayside Wildlife Trees Initiative, which identify woodland ecosystem, habitat and species issues.</p> <p>Support new Branching Out projects in Tayside, including expansion of the Tayside Woods for Health initiative.</p> <p>Expand the Schools into Woods Project to encourage schools to use nearby Woodland Trust sites for outdoor learning.</p> <p>Increase opportunities for learning outdoors via Outdoor & Woodland Learning Scotland (OWL Scotland).</p> <p>Encourage the expansion of Forest School, Forest Kindergarten and Skills for Work (rural skills and vocational training) facilities across Tayside.</p> <p>Develop educational resources to support the understanding of issues affecting woodlands, orchards and trees.</p> | <p>Tayside Biodiversity Partnership</p> <p>Forestry Commission Scotland</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Scottish Wildlife Trust</p> <p>Butterfly Conservation Scotland</p> <p>OWL Scotland</p> <p>Cairngorms National Park Authority</p> <p>Tay Landscape Partnership</p> | Medium |
| 31 Encourage responsible interactions to minimise disturbance in woodlands. | <p>Support new projects which identify good practice to minimise human disturbance in woodlands. Encourage community events to publicise cleaning up after dogs, e.g. Hounds on the Hill at Moncrieffe.</p> <p>Where there are high visitor numbers or recreational, educational or sporting activities that are detrimental to species within the woodland or sensitive areas, special zoning of areas, path re-routing or appropriate restrictions should be considered.</p> | <p>Forestry Commission Scotland</p> <p>Scottish Natural Heritage</p> <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Woodland Trust</p> <p>VisitScotland</p> <p>Tayside Biodiversity Partnership</p> | Long |

Invasive Non-Native Species

| Action | Action breakdown | Who needs to take the action | Timescale |
|--|---|--|-----------|
| 32 Reduce the direct pressures on woodland biodiversity and ecosystem health from invasive non-native species. | <p>Produce a map highlighting key areas threatened by invasive non-native species.</p> <p>Limit the spread of the invasive non-native species such as Himalayan balsam and Giant hogweed.</p> <p>Raise awareness of invasive non-native species and demonstrate the impact that can be achieved by labour-intensive control.</p> <p>Facilitate work party days with volunteer input to carry out control.</p> <p>Showcase good practice control effort.</p> | <p>Angus Council</p> <p>Perth & Kinross Council</p> <p>Scottish Wildlife Trust</p> <p>Tayside Biodiversity Partnership</p> <p>Voluntary Action Angus</p> <p>Scottish Natural Heritage</p> <p>River South Esk Catchment Partnership</p> <p>Scottish Mink Initiative</p> <p>Esk Rivers and Fisheries Trust</p> <p>Scottish Environment Protection Agency</p> | Long |