



CONSULTATION DRAFT: 2<sup>ND</sup> TRANCHE  
COASTS AND ESTUARIES - CE4

**TAYSIDE BIODIVERSITY PARTNERSHIP**

**ESTUARINE REEDBEDS**  
**ACTION PLAN**

**HABITAT DEFINITION**

Reedbeds are fens or swamps dominated by the common reed *Phragmites australis* where the water table is at or above ground level for most of the year. Estuarine reedbeds form a highly productive habitat which develops along sheltered coasts with soft shallow shores, providing protection from strong wave action. Almost all reedbeds are found within estuaries. They represent a transition from sand and mudflat areas on the lower marsh, where vegetation is often flooded by the tide, to upper areas of drier ground where plant communities are less frequently flooded and for a shorter duration.

**Sites/ Site Distribution**

There are several small areas of estuarine reedbeds in Tayside within river-mouths, but the largest and most significant area is found in the Tay Estuary where there is 410 ha. (360 ha. within Tayside).

**CURRENT STATUS AND EXTENT OF HABITAT**

It is estimated that there are about 5,000 hectares of reedbeds in the UK, of which around 900 or so sites contribute to this total, and of these sites only about 50 are greater than 20 ha. These sites contribute a large area to the national total, with the rest made up of small isolated fragments of reedbed of varying quality.

The Tay reedbeds extend to some 410 ha, which provides the largest continuous area of reed in Britain. The inner Tay Estuary has a SSSI designation, is Local Nature Reserve and is also listed as a Special Protection Area.

The reedbed area needs to be monitored and quantified to see the rate at which, if any, it has expanded and where - aerial photographs and gauges on the riverside edge will help assess the full extent of reedbed on the Tay.

Key Species		
Mammals	Otter	<i>Lutra lutra</i>
	Water vole	<i>Arvicola terrestris</i>
Birds	Bittern – UKSAP	<i>Botaurus stellaris</i>
	Reed bunting – UKSAP	<i>Emberiza schoeniclus</i>
	Bearded tit	<i>Panurus biarmicus</i>
	Marsh harrier	<i>Circus aeruginosus</i>
	Water rail	<i>Rallus aquaticus</i>
	Sedge warbler	<i>Acrocephalus schoenobaenus</i>

	Swallow	<i>Hirundo rustica</i>
	Sand martin	<i>Riparia riparia</i>
	Pied wagtail	<i>Motacilla alba</i>
	Starling	<i>Sturnus vulgaris</i>
	Redshank	<i>Tringa totanus</i>
	Snipe	<i>Gallinago gallinago</i>
<b>Amphibians</b>	Common Frog	<i>Rana temporaria</i>
<b>Invertebrates</b>	The invertebrate communities found within the Tay reedbeds are rich and varied with many notable and Red data species recorded to date.	
Examples of key species are:		
Spider	<i>Porrhoma campbelli</i>	
Flies	<i>Platycephala planifrons</i>	
	<i>Limonia (Dicranomyia) complicata</i>	
	<i>Platycephala planifrons</i>	
	<i>Platypalpus rapidus</i>	
Hover fly	<i>Sphaerophoria loewi</i>	
	<i>Chalco syrphus nemorum</i>	
	<i>Tropidia scita</i>	
Moth	<i>Chilo phragmitellus</i>	
<b>Higher plants</b>	Common Reed	<i>Phragmites australis</i>
	Marsh Marigold	<i>Caltha palustris</i>

## NATURE CONSERVATION IMPORTANCE

The Tay Reedbeds comprise mainly of *Phragmites*, and is the most extensive area of reed in Britain. There is a high commercial interest in the reedbeds with roughly 25% of the 410 ha being harvested. The Tay Reed Company harvest around two thirds of the individual beds annually, and this produces around a fifth of all UK thatching reed. It is recognised that through the active management of the Tay reedbeds and the regular flooding by the tide, this maintains the overall pure stands of *Phragmites* and the high conservation value of the site. This, in conjunction with areas of poor quality and uncut strips, maintains the mosaic of different stages within the reedbed which gives wide wildlife value.

The reedbeds are naturally managed by the influence of the high tides and commercially managed by the removal of the reed litter. If this were not the case the period of reed dominance would change in some areas and become drier. The reed litter often accumulates and does not get washed out. This does not appear to encourage succession and offers some invertebrate species ideal conditions. This in fresh water reedbeds would allow colonisation for other vegetation types to become established.

### Mammals

The reedbeds provide good grazing for Roe deer after the winter harvest as during the spring the new shoots have a high sugar content that provides good feeding for them. Otters are occasionally sighted in or near the reedbeds and are probably breeding. Small mammals such as Wood mouse, Common shrew and potentially Water shrew also use the reedbeds to forage for food.

### Bearded tit *Panurus biarmicus*

The Bearded tit is not actually a true tit, although its behaviour is very similar. Although often very difficult to see, these beautiful birds are very sociable and skilful climbers.

The Bearded tit is exclusively a bird of large reedbeds. They have a fluttery flight which is slow and usually low over the reeds. Their food mainly consists of insects, which they find as they forage among the reed stems during the summer months. In the winter their diet changes to the vast quantities of reed seeds produced from each individual seed head (panicle).

The Bearded tit was first seen in the Tay reedbeds in 1992. Through the monitoring efforts of the Tay Ringing Group, the significance of the Tay reedbed has become apparent as it supports a large percentage of the UK population.

## Birds

There are four species of birds which are classed as being very dependent on reedbeds for their survival: - Bearded tit, Marsh harrier, Bittern and the Reed warbler. There are many other species that use reedbeds - most notably Reed bunting and Sedge warbler. Reedbeds are important pre-migration roosts, especially for the hirundines and they also act as winter roost sites for birds such as Pied wagtails and Starlings.

There are estimated breeding populations in the Tay Estuary reedbeds of

- 300 - 450 pairs of Reed bunting
- 600 - 700 pairs of Sedge warbler
- 126 pairs of Water rail
- 5 pairs of Marsh harrier
- Reed warbler could be potentially breeding, but not proven as yet.

## Amphibians

There is a healthy population of Common frogs which occurs in a variety of habitats associated with the reedbeds. The species is not particularly choosy about spawning sites which can range from small puddles to ditches.

## Invertebrates

Reedbeds are known to support specialised and richly varied invertebrate communities, with some species feeding on Phragmites and others are predators or parasites of invertebrate living in the reedbed. There are invertebrates dependent on the reed stems with some preferring old or young stands. Many invertebrates also require the thatch or litter layer in which to survive. Reedbeds overall provide an important type of vegetation structure to which some invertebrates have adapted. The larger areas of unmanaged reedbed act as a reservoir for many of the invertebrates, where they survive and seasonally re-colonise areas which have been harvested. The Invertebrate life within the Tay estuary reedbeds is complex owing to the effects of the sea and its tides. This provides both brackish and freshwater habitat within the reedbeds which can offer a variety of niches for specific adaptable species.

## Higher plants

The Tay reedbeds comprise largely of Common reed *Phragmites australis* which occurs in large pure stands and is a perennial flood tolerant grass. As well as providing an invaluable wetland wildlife habitat, it is a profitable commercial resource.

The harvesting of the reed in winter allows a golden carpet of Marsh Marigold to appear in early spring, almost like a crop, in the freshwater areas of the estuarine reedbed.

## NATIONAL BIODIVERSITY CONTEXT

There is a UK Habitat Costed Action Plan for Reedbeds and a UK Action Plan for Coastal Saltmarsh. Both have relevance for Estuarine Reedbeds as follows:

### Marsh Harrier *Circus aeruginosus*

This spectacular bird of prey is associated with open country and is especially attracted to wetlands such as large reedbeds where it breeds among tall reeds. The Marsh harrier hunts over the reedbeds and the surrounding farmland. Their prey includes rats, coot, moorhen and duck. They hunt slowly and with purpose, trying to surprise their potential prey.

During the 1960s it was realised that the use of organochlorine pesticides (DDT aldrin and dieldrin) was having a major impact on bird of prey populations. The effects of these compounds caused thin egg shells and subsequent failed breeding. This caused the UK population of Marsh harrier to decline with devastating effect.

Although Marsh harriers have summered at other sites in Scotland, the Tay breeding population remains the national stronghold.

### Water Rail *Rallus aquaticus*

The Water rail is a very attractive shy and elusive bird of wetland margins and reedbeds. It is a bird which is more often heard calling than seen. Its call emanating from a dense stand of reed, sounds like a young pig squealing. The call is also known as 'sharming'; both male and female will regularly reply to each other.

The Water rail when seen is easily identified with its long red bill and its slate grey underparts which is barred with black on its flanks. The Water rail also has long legs and toes and a very narrow body which is ideal for its secret life among the stands of reed. The bird feeds among the reed on worms, snails, aquatic insects, tadpoles and sometimes fish, small mammals and young birds.

They nest among the reeds - building a cup of dead vegetation which they conceal by pulling down reed stems to form a canopy. The Tay reedbeds hold what is probably the largest population of Water rail in Britain.

### Reedbeds

- *Identify and rehabilitate by the year 2000 the priority areas of existing reedbed (targeting those of 2 ha. or more) and maintain this thereafter by active management*
- *Create 1,200 ha. of new reedbed on land of low nature conservation interest by 2010.*
- *Any establishment of new reedbeds should be in blocks of at least 20 ha. where possible near to existing areas of habitat and linking up if possible*

### Coastal saltmarsh

- *To offset the current losses due to coastal squeeze and erosion to maintain the existing extent of [the] habitat.*
- *Maintain the quality of the existing resource in terms of community and species diversity and, where necessary, restore the nature conservation interest through appropriate management. It will be desirable for some managed realignment sites to develop the full range of saltmarsh zonation.*

## ECOLOGY AND MANAGEMENT

The Tay Reed Company began to harvest and manage the tidally influenced reedbeds of the Tay in 1976. It is thought that prisoners of war established the reedbeds during the Napoleonic campaign to protect the extensive mudflats from erosion. Another opinion suggests that the reed is not native to the Tay and it may have been present in one of the interglacial periods. Reed planting began about 500 years ago, possibly started by monks and has continued to be carried out by landowners since then. It is managed on a single whale cut, meaning the same areas are cut once a year. The reed is cut from December to April, weather and tide dependent, with each season being influenced by these factors. Approximately 40 – 60% of the beds are cut, which equates to about 25% of the whole reedbed area on the Tay. Before cutting commences debris brought in by high tides is cleared from the reedbeds that could potentially damage the Seiga harvesting machine. The commercial harvesting of the reeds has maintained a high quality reed and this has had little detrimental effect on the bird populations. In some cases the harvesting operations have increased the number of breeding birds.

A conservation agreement with SNH is in place under which a 10m wide swathe along the landward edge is left uncut. Strips along drainage channels and poor quality reed are also left uncut, as well as areas where there are potential obstacles or hazards. Research has shown, particularly in relation to Water Rail, the importance of management of the 10m uncut strips, especially along the river as this provide ideal foraging areas for young birds. These uncut areas also provide ideal nest sites for Bearded tit, Sedge warbler and, in smaller numbers, Reed bunting.

SNH encourages the practice of rolling on a rotation of 2 - 3 areas of reed from a total of 15 each year at Cairnie pier which provides suitable habitat for birds and invertebrates. The aim of rolling a swathe through the reed is to create more edge effect and flight ways of approximately 2m. for the benefit of the bird population

At Powgavie the former practice of light grazing a small area of estuarine saltmarsh needs to be re-implemented with a certain amount of urgency as *Phragmites* is becoming well established at the expense of the saltmarsh habitat which is disappearing altogether. This is important given that there are relatively few examples of saltmarsh on the east coast of Scotland. A notable site where grazing is helping maintain a mosaic of grassland, marsh and saltmarsh within the reedbed system is at Monorgan and Burnside of Monorgan.

## **CURRENT FACTORS CAUSING LOSS OR DECLINE**

### **Small area**

Small total area of the habitat and the critically small population sizes of several key species dependent on the habitat. Where these areas of salt marsh are found within the reedbed system, surveys and a species audit would benefit in deciding future management options.

### **Sea level rise**

Climate change leading to relative sea level rise is predicted to lead to the loss of significant areas of habitat. Erosion of the seaward edge occurs widely in high-energy locations of larger estuaries. There is evidence that this process is exacerbated by sea level rise. Inappropriate flood defence works could potentially be a threat to the Tay reedbed.

### **Pollution**

Pollution of freshwater supplies to the reedbeds: agricultural run off and sewage outflows can increase nutrient levels; siltation may lead to drying; toxic chemicals may lead to loss of fish and amphibian prey for key species; accumulation of poisons in the food chain and eutrophication may cause reed death.

### **Sediment dynamics**

Local sediment budgets may be affected by coastal protection works, or by changes in estuary morphology caused by land claim, dredging of shipping channels and the impacts of flood defence works over the years.

### **Rubbish**

Where it occurs along the entire landward edge of the reedbeds the dumping of rubbish can damage vegetation and visually detracts from the site's beauty. This also continues to encourage further dumping and encroachment on to the reedbed.

### **Lack of management**

Overall the reedbeds appear to have been increasing and have expanded, but the quality of the habitat in some areas has deteriorated through lack of management. For example, lack of grazing at Powgavie, where Snipe benefited and also on Mugdrum Island, where the highest number of breeding Redshank recorded in Tayside has decreased significantly since grazing ceased in the past two years.

Areas harvested in the past could, if possible, be brought back into the cutting regime to improve the habitat. This will provide further suitable reed especially for Bearded tit and other reedbed wildlife.

Inappropriate management such as burning cut or standing reed, if carried out insensitively, can be detrimental to the site's overall ecology, especially the invertebrate communities. This management practice, if necessary, should be done in a controlled way on a reasonable scale creating the desired effect with minimal damage to reedbed wildlife.

### **Pests and invasive species**

Rats are thriving where farmers leave or burn waste grain and potato supplies above and adjacent to the reedbed bank. This was revealed in certain areas when numerous rats were caught in Water Rail traps during the Water Rail survey.

Other mammalian predators, which forage in or near the reedbeds include Mink and Fox.

Starlings, although considered not to be a major problem, can have a localised effect on the reedbed when they roost. No areas have been identified in particular - they roost throughout reedbed.

Giant hogweed, Reed sweet grass and Japanese knotweed occur in places throughout the reedbeds with the potential to spread. It is important that this should be monitored and controlled where necessary.

## MAIN THREATS TO KEY SPECIES

### *Water Vole*

There are no recent records of this species in the reedbeds, but future tributary management and habitat enhancement schemes could potentially benefit Water Vole.

UK importance of Tayside population: **moderate**

This is a UKBAP priority species

### *Bittern*

Threats affecting species may include the potential effects of pesticides and heavy metals. Other threats include habitat management such as ditch management, due to lack of reed cutting and succession.

UK Importance of Tayside population: **low**

- the species has been an occasional winter visitor.

- there may be potential for habitat creation projects which may consider the Bittern's requirements in the future.

### *Reed bunting*

Threats include changes in farming practices such as switching from spring to autumn sown crops. In wetlands a deterioration of habitat is also thought to have contributed to the decline.

UK Importance of Tayside population: **high**

- the national population has been in serious decline by 40% in 25 years

### *Marsh harrier*

Threats include the deliberate disturbance of nest sites, egg collection and predation from foxes. Accidental disturbance could affect breeding success.

UK Importance of Tayside population: **high**

- the Tay reedbeds are the stronghold of the breeding population in Scotland.

### *Bearded tit*

The Tay reedbeds support a significant large percentage of the UK population.

UK Importance of Tayside population: **high**

- National population 350-450 pairs, Tayside population 95 pairs in 2000.

### *Water rail*

The population within the Tay reedbeds is probably the largest in the UK

UK importance of Tayside population: **high**

-the Tay reedbeds holds nationally important numbers (estimated at 126 pairs minimum).

### *Sedge warbler*

There appears to be a healthy population in the Tay reedbeds, although this species has undergone a recent decline

UK importance of Tayside population: **moderate**

### *Swallow*

Large numbers of hirundines roost in reedbed with post breeding birds travelling north to the Tay estuary before their main migration south.

UK importance of Tayside population: **high**

### *Sand martin*

Large numbers use the reedbed to roost on migration.

UK importance of Tayside population: **high**

### *Pied wagtail*

This species has shown a decline in recent years. The cause may be habitat related. The species is vulnerable to cold winters but can recover if the following years are mild.

UK importance of Tayside population: **unknown**

### *Starling*

Although this bird is considered by some to be universally common, over the last few decades there has been a notable decline throughout Europe  
UK importance of Tayside population: **unknown**

### *Redshank*

Changes or lack of management have affected the breeding population within the salt marsh areas due to reed colonisation.  
.UK importance of Tayside population: **high**

### *Snipe*

This species has undergone a national decline and has suffered a similar trend to the Redshank within the reedbeds owing to lack of habitat management  
UK importance of Tayside population: **unknown**

### *Invertebrate spp.*

An overall assessment of the reedbeds and their management should be carried out with the habitat requirements of invertebrate communities and priority species identified. A survey carried out in 1994 indicated the range of species present within the Tay reedbeds. A further detailed survey could determine species numbers and raise the profile of this ecologically important but often overlooked group.

## OPPORTUNITIES AND CURRENT ACTION

- Management plan for designated site to be kept current.
- Site Condition Monitoring programme being carried out by SNH monitors all SSSI notified interests on a six-yearly basis. This could be supplemented in between by other work (potentially by others).
- Tay Estuary Forum and overall plan for Integrated Coastal Zone Management.

## ACTION PLAN OBJECTIVES

- 1 It is intended to maintain and encourage good conservation management practice of the Tay reedbeds through the commercial interests of the Tay Reed Company and all private landowners the company liases with during the annual harvest.
- 2 It is essential to establish links with landowners who influence the larger areas of the reedbeds which are not commercially managed.

***Target: All relevant landowners to be included in the LBAP process by 2002***

3. The importance of the Tay reedbeds is significant both nationally and UK wide because of its wildlife value. This significance needs to be more widely recognised and supported.

***Target: All parties involved with Tay reedbeds to raise the profile of this nationally important site.***

4. Where possible, when land is purchased for nature conservation consideration should be given to any future projects with the potential for habitat creation on land adjacent to or within the reedbeds. This could possibly focus on UKBAP priority species such as Bittern and Water vole, for example.

***Target: Link with the Lead Partners of the appropriate UK Species Action Plans. Establish priority species status in reedbeds and other wetland sites in Tayside***

5. Determine in detail the area, extent and condition of estuarine reedbed habitat and associated saltmarsh in Tayside

*Target: Complete survey of all estuarine reedbed habitat by 2003.*

6. Maintain and protect the quality and integrity of designated sites. Ensure that the current set of management plans is completed and that monitoring of sites goes ahead.

*Target: Keep up-to-date management plans for all designated areas.*

7. Set up a five-year programme to raise awareness of biodiversity and its importance, the fragility of the coast and the need for its conservation in Tayside. Include Tay reedbeds in this programme.

*Targets: Set up a public awareness programme by 2002. Run public awareness programme until 2006.*

#### Stakeholders

Landowners, land managers, statutory bodies, advisors, businesses, species interest and species research groups, local users, general public.

#### REFERENCES:

- CJ Hawke & PV Jose *Reedbed Management for Wildlife & Commercial Interests*. RSPB
- Batten, Bibby, Clement, Elliot & Porter *Red Data Birds in Britain* NCC RSPB
- Dr WJ Peach. *Minimum breeding population of Bearded Tits on the Tay reedbeds* 2000 TRG
- Paul Whalley *Insects A comprehensive illustrated guide to insects of Britain & Europe*. Hamlyn
- Kenneth R Watt. *The Invertebrates of the Phragmites Reed Beds of the River Tay Estuary* 1994
- Perth & Kinross Council *Inner Tay Estuary Local Nature Reserve Draft Management Plan* 1999-2003



**PROPOSED ACTION FOR BIODIVERSITY**

<b>Proposal for Action – Tay Estuarine Reedbeds</b>	<b>Potential deliverers</b>		<b>To take place by</b>							<b>Meets obj. no.</b>
	<b>Lead</b>	<b>Partners</b>	<b>02</b>	<b>03</b>	<b>04</b>	<b>05</b>	<b>06</b>	<b>07</b>		
<b>A. Policy and legislation</b>										
1. Complete designations under SPA and SAC process under European Directives	SE EU	SNH	X	X						3,6
2. Tay Estuary SSSI and LNR: continue its role within local planning system. Ensure local planning documents take full account of UK priority status of reedbeds	PKC	SNH	X	X	X	X	X	X		3,6,7
<b>B. Site safeguard and management</b>										
1. Review and update the 20 year old SNH conservation agreement	SNH Tay Reed Co.		X	X	X	X	X	X		1,2,3
2. Encourage Tay Reed Company to manage sensitively and leave strips and islands of reed to an agreed size to encourage and maintain overall wildlife value. Act on any other management practices agreed in the review.	SNH	Tay Reed Company		X						1
3. All landowners who own part of the reedbeds to be involved in the biodiversity process and be invited to comment on this HAP.	SNH TBP	Landowners	X							
4. Establish good partnership with all relevant landowners in order to implement this plan.	SNH TBP		X							1,2,4
5. Consider implementing grazing projects where appropriate to encourage a mosaic of habitats within the reedbed/ saltmarsh.	SNH TBP	Landowners		X						2,5
6. Oppose any developments which threaten loss or damage of Tay reedbeds	SNH PKC DCC SEPA		X	X	X	X	X	X		3,6
7. Liase with Scottish Water and SEPA on any works involving waste water if it has a potential damaging effect to the reedbed habitat.	SNH SEPA Scottish Water		X	X	X	X	X	X		6
<b>C. Species management and protection</b>										
1. Implement and prepare an up to date invertebrate survey, identifying priority and key species within invertebrate communities and their habitat requirements.	SNH	Local Biological Records Centre	X							5,6
2. Monitor and control where necessary identified pest or invasive species.	SEPA SNH	Landowners	X	X	X	X	X	X		6

3. Consider habitat enhancement schemes that include tributary management, local ditch creation and pond creation within the reedbeds.	SNH SEPA (HEI)	Tay Reed Company Landowners	X	X	X	X	X	X	4
<b>D. Advisory</b>									
1. Continue to encourage the Tay Reed Co. in best practice management of reedbeds with regular guidance from ongoing research.	SNH	Tay Reed Company	X	X	X	X	X	X	5,6
2. (i) Ensure all relevant bodies are aware of this type of habitat, its importance and management for its conservation value. (ii) Consider setting up a demonstration site for occasional training of site management and best practice.	TBP SNH	SEPA		X					1,2,3,4
<b>E. Research and monitoring</b>									
1. Ensure suitable monitoring of reedbed condition continues annually.	SNH		X	X	X	X	X	X	6
2. The Tay Ringing Group to continue to research and report on important bird populations within the Tay reedbeds, especially highlighting the Bearded tit population.	Tay Ringing Group	Local Biological Records Centre	2						3,6
3. Tay Estuarine Reedbed Habitat Action Plan review process - ensure this Plan is being delivered annually and review fully after 5 years	TBP		X					X	All
<b>F. Promotion and awareness-raising</b>									
1. Put a programme in place to raise public awareness of reedbeds, promoting their wildlife and commercial interests e.g. Open Day/ guided walks, etc.	SNH TBP	Tay Reed Company	X	X	X	X	X	X	3,7
2. Produce a leaflet on the Tay reedbeds highlighting their unique biodiversity, their management and commercial interests	SNH TBP	Tay Reed Company		X					3,7
3. Where there is public access, provide suitable on-site interpretation to highlight the inter-relation between wildlife management and commercial interests.	SNH	TBP		X					3,7



CONSULTATION DRAFT: 2<sup>ND</sup> TRANCHE  
URBAN AND BUILT ENVIRONMENT – UBE4

**TAYSIDE BIODIVERSITY PARTNERSHIP**

**HOSPITALS, SHELTERED HOUSING**  
**AND RESIDENTIAL COMPLEXES**  
**ACTION PLAN**

**INTRODUCTION/ DEFINITION**

Biodiversity and health care go hand in hand. It has been found that a view of nature from a hospital bed speeds up recovery from operations. It also improves the surroundings for anxious visitors and enhances the workplace for staff, clients and suppliers alike.

*Modern Health Care and Plant Use*

Out of the 150 commonest prescription drugs used in the USA, 80% are based on compounds derived from natural resources. Foxgloves and hawthorn, for instance, are widely used in heart medicines and many wild plants are currently being screened in the search of cures for cancer, AIDS and other diseases. Chemicals from jellyfish are now being used in the study of cancer. The medicinal leech – long used in historical times - is a UK BAP priority species and still used in modern healthcare. There is, however, a fine line between utilising the natural resources around us to exploiting them and in recent years concerns have been raised that some species, especially wild plants, are not being harvested sustainably.

Throughout Tayside hospitals, sheltered housing and residential complexes cover many hundreds of hectares (insert statistics). Most of these have a wide variety of landscaped or maintained grounds; some encourage visitors and residents to use them. Such surroundings are not only visually important, they add to the economic value of the properties. If managed to benefit the diversity of wildlife already using the area, it will also be possible to encourage active participation of many of the staff, residents, their families and the surrounding community.

Phased improvement in the management of these important green spaces usually results in a reduction of maintenance costs; for example, the introduction of a grass management regime invariably results in less cutting required.

***MAP***

Location map showing hospitals, sheltered housing and nursing homes. Possibly include unused hospitals or those whose use is being changed.

**CURRENT STATUS AND EXTENT OF URBAN HABITATS**

Throughout Tayside there are (insert statistics) hospitals/residential/nursing homes and sheltered housing complexes, with (insert statistics) patients, residents or clients.

Areas Within Tayside	Hospitals	Residential / Nursing Homes	Sheltered Housing Complexes
Angus	7	36	47
Dundee	5	?	?
Perth & Kinross	1?	?	?
Total		?	?

## NATURE CONSERVATION IMPORTANCE (to add)

### KEY SPECIES

Mammals	Bats / Squirrels / Hedgehogs
Birds	Tawny owl / Goldfinch / Greenfinch / Dunnock / Blue Tit / Chaffinch / Song Thrush / Starling / Blackbird / Wren / Robin / Swift / Swallow / House Martin
Amphibians	Common Frog / Common Toad / Slow-worm
Invertebrates	Butterflies and moths; bumble bees; damselflies, grasshoppers and beetles
Plants	Native Trees (inc. ash, oak, elder, hazel, willow, hawthorn, bird cherry, holly, rowan) / Ox-eye daisy / cowslip / wall rue
Lichens and fungi spp.	

### NATIONAL BIODIVERSITY CONTEXT

There is a UK broad habitat statement for urban areas, which has the following objective:

- *Maintain the existing diversity and extent of wildlife in all urban areas, expanding the range and distribution of rare and common species and enabling the resource to be utilised as an educational tool.*

National measures relevant to this Action Plan:

- Incorporate the conservation and enhancement of wildlife into the design and management of urban greenspace.
- Encourage community and individual action to survey, plan for and manage wildlife habitats.
- Promote wild space in urban areas as an educational resource to inform communities about local wildlife in the context of the wider environment.

### ECOLOGY AND MANAGEMENT

Better management of the green spaces around hospitals, nursing homes, sheltered housing complexes and medical centres will improve the biodiversity of these areas. Each site will have different opportunities but the current overall landscape should be taken into consideration before improvement or enhancement works are proposed.

Hospital grounds, such as Ashludie, which has large green spaces within its grounds, provide more opportunities to increase the habitat value.

### CURRENT FACTORS CAUSING LOSS OR DECLINE

The increasing expansion of residential and commercial buildings is resulting in the loss of many green spaces. Where older buildings are utilised for health-care use, the need to keep maintenance costs as low as possible invariably means the destruction of the original surroundings, especially walled orchards, old hedgerows, mature trees and traditional herbaceous borders. New buildings and extensions to existing properties are invariably designed so that their surroundings are as maintenance-free as possible. With staff costs at a maximum, designed gardens and green spaces are perceived as optional extras in many cases.

### OPPORTUNITIES AND CURRENT ACTION

Dedicated areas around regularly used places such as hospitals, sheltered housing, nursing homes and medical centres can be specifically managed with local wildlife needs in mind with the benefit that they greatly enhance the surroundings for residents and staff alike.

- Encourage the use of raised beds close to building entrances so that they can act as sensory or low allergen gardens. People of all ages, but particularly the elderly or disabled, can easily see the plants at close range to appreciate their colour and scent. In many instances residents, staff or the local community can be encouraged to maintain the raised beds themselves.
- Such areas can be utilised as summer waiting areas or rest areas for the residents or patients.
- Areas of planting can draw the eye away from less attractive buildings or industrial areas nearby and create a local haven for wildlife; they can even be sited to improve a stark thoroughfare between buildings.
- Many of these areas encourage wider community use which better integrate the residents or patients. Local schools and colleges can take part in new plantings or making bird tables and nestboxes. The area can be enhanced by locally made sculpture and used for serving refreshments regularly or on Open Days. Local craftspeople can purchase specially grown bamboo sticks or willow withies; they can even offer their teaching skills for winter events.
- Local children – within scouts or brownie clubs, natural history groups or from schools, can be encouraged to undertake simple surveys of the wildlife visiting the gardens. This can be followed by the making of nestboxes and bird tables to help wildlife cope with the loss of habitat or having difficulty accessing food. There are opportunities for year-long involvement with the residents or patients in learning together and projects introduced to encourage people of all ages to identify and care for the wildlife seen from the window.
- In Angus there are 90 establishments which could get involved in different biodiversity projects.
- Ensure information is available so that advice on what to include in the garden is readily available, i.e. native flowers good for nectar; berry- or fruit-bearing trees and shrubs to provide winter food for birds; bird and bat boxes, including hedgehog, toad or ladybird hibernation boxes; bird table and bird bath. This can be arranged via the Tayside Local Patch Project and the SNH Gardening for Life scheme.
- To appropriately site bird tables/feeders through the difficult winter months.
- To appropriately site bird/bat boxes in the spring.
- To enhance the residents/clients appreciation of the environment.

#### **ANGUS CASE STUDY**

##### **and proposals to take project Tayside-wide**

Bird tables/feeding stations are being sited in a number of Angus sheltered housing complexes during the winter/spring period. This will potentially give the common garden bird population much needed sustenance and shelter during the winter but it is hoped that suitable nest sites can be made available during the breeding season. The increased use of the surrounding garden areas by a wide variety of birds should give great pleasure to the residents/clients of housing complexes.

It is intended to:

- Involve the managers and residents/clients of the housing complexes at as early a stage as possible.
- Access funding not only for construction materials for the bird tables (and nestboxes), but also bird food, binoculars and identification books.
- Funding will also be considered for environmental enhancement to the existing grounds where appropriate, i.e. tree planting or provision of berry-bearing shrubs
- Identify potential labour sources to include a wide range of age groups, e.g. Ranger Services, Scout/Guide Groups, Princes Trust, Scottish Wildlife Trust, Royal Society for the Protection of Birds.
- Take cognisance of future maintenance requirements.

## OBJECTIVES AND TARGETS

### *Aims:*

- Encourage management to introduce/implement grassland management schemes that will improve the surrounding biodiversity.
- Encourage management to consider tree-planting schemes that will benefit the natural environment and increase biodiversity.
- Utilise sites where no or little environmental/conservation action is taking place to the benefit of the more common species of garden bird, mammals and invertebrates such as butterflies and moths.
- Raise people's awareness of biodiversity (in particular, the older age group) and engender an appreciation and concern for the environment.
- Enable older citizens, who perhaps are now less mobile, the opportunity to enjoy both the common and possibly rarer wildlife that may frequent such green space.
- Encourage simple data recording and ownership of each project.

### *Main Objectives:*

- To demonstrate to both management and residents within hospitals (both Health Board and private), residential/nursing homes, sheltered housing complexes and medical centres that they can have a positive influence on the environment around them.
- Liase with the relevant local authority Property Services, Social Work and Housing Departments, planners, private owners, architects and developers on a landscape level regarding maintenance, new build/renovation, and community projects
- To establish contacts and implement a variety of projects throughout Tayside.
- To encourage ownership of the individual projects to give sustainability a chance.
- To provide meaningful survey data as a result of implementing the projects.

### *Main Targets*

- In Angus implement a Sheltered Housing/Nursing Home Bird Feeding Biodiversity Project in 5 Angus Burghs by end 2002
- In Dundee City, implement a similar Sheltered Housing/ Nursing Home project in x no. of establishments by end 2004
- In Perth and Kinross, implement a similar Sheltered Housing/ Nursing Home project in x no. of burghs by end 2004
- In Angus implement a Hospital Biodiversity Project in 1 hospital by end of 2003.
- In Angus 2004-2006 advance the project to other similar establishments.
- In Perth & Kinross implement the project in x no. of establishments by 2005.
- In Dundee City Council implement the project in x no. of establishments by 2005.
- Encourage local youth and community groups to become involved during the first phase and thereafter.
- In 2003 – 2004, produce a newsletter for circulation for those involved in the project and to be used as a stimulus for others to become involved.
- In Angus implement wider biodiversity-based projects in Sheltered Housing complexes or Nursing Homes where appropriate (to include, for example, window box or pot plantings, native tree and shrub planting, wildflower meadows, hedges, etc.) in x no. of Angus Burghs by 2005
- In Dundee City, implement similar Sheltered Housing/ Nursing Home projects in x no. of establishments by end 2005
- In Perth and Kinross, implement similar Sheltered Housing/ Nursing Home projects in x no. of burghs by end 2005.

### *Work Objectives*

- Set up area co-leaders and teams to commence achieving main targets listed above.
- Ensure that appropriate design/construction materials are readily available.
- Ensure appropriate tools required for construction are readily available.
- Health and Safety issues to be acknowledged.
- In Angus rangers to be allocated responsibility for initial project.
- In Angus establish project in each of the burghs in first year.

- In Angus extend project to hospital grounds in year 2003.
- In Angus extend project to more than 1 project per burgh in years 2 and 3.
- In Angus rangers to progress and establish project.
- In Angus X to encourage wider environmental projects in the health sector
- In Perth & Kinross?
- In Dundee City Council?

#### STAKEHOLDERS

- Health Board / NHS
- Privately-owned hospitals/clinics
- Local authority services, including Property section, Planning, Social Work and Housing Departments
- Ranger Services
- Statutory bodies
- Private sheltered housing architects and developers
- Housing Associations and local site managers
- Local residents/clients.
- Local scout/youth/school groups
- Local conservation volunteers (of all ages)
- Local environment groups (such as RSPB, SWT, NTS)

#### PROPOSED ACTION FOR BIODIVERSITY

LBAP Ref.	Proposal for Action – <u>Hospitals, Sheltered Housing and Residential Complexes</u>	Potential deliverers		To take place by								Meets Objective No.	
		Lead Partner(s)	Partners	02	03	04	05	06	07	11	16		
	<b>Policy and legislation</b>												
	1. Discuss project with relevant council departments.	TBP SNH	AC PKC DCC										
	<b>Site and species safeguard/ management</b>												
	Set up Bird Feeding Biodiversity Project: i) Implement Project at 5 Sites in AC by 2002 ii) Implement Project at x no. of sites in PKC and DCC by 2003 iii) Advance Project to other AC sites by 2004 iv) Advance Project to other sites (PKC and DCC) by 2005	AC PKC DCC Site managers	Target Selected Sites										
	i) Implement Project in Hospital Grounds, AC by 2003 ii) Implement Project in Hospital Grounds PKC by 2004 iii) Implement Project in Hospital Grounds DCC by 2005	TPB NHS											

	<ul style="list-style-type: none"> <li>i) Implement wider biodiversity-based projects in Sheltered Housing complexes or Nursing Homes where appropriate in x no. of Angus Burghs by 2005</li> <li>ii) In Dundee City implement similar Sheltered Housing/ Nursing Home projects in x no. of establishments by end 2005</li> <li>iii) In Perth and Kinross, implement similar Sheltered Housing / Nursing Home projects in x no. of burghs by end 2005.</li> </ul>																		
<b>Advisory</b>																			
	1. Collate examples of best practice and design.	TBP RSPB SWT	AC PKC DCC NHS																
<b>Research and monitoring</b>																			
	1. Introduce simple monitoring (inc. Local Patch Project) that can be carried out by the residents/clients.	TBP AC PKC DCC	Residents RSPB SWT																
<b>Promotion and awareness-raising</b>																			
	<ul style="list-style-type: none"> <li>1. Raise public awareness of project through the local press and the LBAP</li> <li>2. Produce a regular biodiversity newsletter to circulate to hospitals, sheltered housing complexes and nursing homes</li> </ul>	AC PKC DCC TBP																	
<b>Plan Monitoring</b>																			
	1. Monitor and review this plan on an annual basis and in detail every 5 years	TBP																	





CONSULTATION DRAFT: 2<sup>ND</sup> TRANCHE  
WATER AND WETLANDS – WW4

**TAYSIDE BIODIVERSITY PARTNERSHIP**

**PONDS AND POOLS**  
**ACTION PLAN**

**DEFINITION**

For the purpose of this Action Plan ponds and pools are “man-made or natural bodies of freshwater between 1m<sup>2</sup> and 2 hectares in area which hold water for all or part of the year”. Pond ecology also includes the vegetation and wildlife that depends on the pond such as the associated terrestrial or marginal habitat and dependent visiting mammals, birds, amphibians and invertebrates.

**MAP - Sites/Site Distribution**

Trottick Mill Ponds LNR, Dundee.	Barry Mill Ponds
Lochindores SSSI	Barrie Buddon Ponds
Kingoodie Quarry ponds	Ardler SUDS ponds
Vane Farm Ponds	Pitmedden
Bloody Inches/ Meikleour SSSI	

**CURRENT STATUS AND EXTENT OF HABITAT**

Scotland has many small waterbodies – estimated at 150,000. This represents about half the ponds in Britain. While some are created by natural processes, considerable numbers of ponds in Tayside were created during the 18<sup>th</sup> and 19<sup>th</sup> centuries. Their water was used to power waterwheels, process textile fibres and for steam power. Other ponds were created for landscape and agricultural reasons, or by hard rock excavation.

The loss of ponds is common across Europe. In Britain, since their peak in the nineteenth century, the numbers of ponds has been falling and only about one third remain. Ponds have been:

- Lost to silting and succession
- Removed by development
- In filled in landfill
- Drained for agriculture

It is believed that pond loss has been the major specific factor in the decline of amphibian populations.

## Habitat Quality

The man-made ponds that have survived into the 21<sup>st</sup> century are of significant value as a wildlife resource:

- The water feeding ponds is often less polluted as mills have closed and legislation has been introduced
- The habitats in and around ponds have been allowed to develop
- The loss of many ponds add rarity value to those remaining

From studying Ordnance Survey (1:25,000) maps, Dundee has 15 ponds greater than 150m<sup>2</sup>. Dundee City Council's Frog Spawn Survey 2000 identified a further 37 smaller ponds, mainly in gardens. There are many other ponds in private gardens, school nature areas and farmland. (Tayside-wide data to be inserted)

## Water Quality

(Tayside data to be inserted)

## **NATURE CONSERVATION IMPORTANCE**

Ponds are very rich habitats as compared to lochs and rivers, supporting a wider variety of species. The importance of ponds, pools and surrounding habitat in supporting rare species is underlined by the number of freshwater UK Biodiversity Action Plan (BAP) Species.

Key Species	P = UK Priority species CC = UK species of conservation concern
Mammals	Water vole <i>Arvicola terrestris</i> (P) Otter <i>Lutra lutra</i> (P) Pipistrelle bat <i>Pipistrellus pipistrellus</i> (P) Daubenton's bat <i>Myotis daubentonii</i> (CC)
Birds	Goosander <i>Mergus merganser</i> (CC) Kingfisher <i>Alcedo atthis</i> (CC) Red necked phalarope <i>Phalaropus lobatus</i> (CC) Black necked grebe <i>Podiceps nigricollis</i> (CC) Red-breasted merganser - <i>Mergus serrator</i> (CC) Goosander <i>Mergus merganser</i> (CC) Gadwall <i>Anas strepera</i> (CC) Pochard <i>Aythya ferina</i> (CC) Reed bunting <i>Emberiza schoeniclus</i> (CC)
Amphibians and Reptiles	Great crested newt <i>Triturus cristatus</i> (P) Natterjack toad (P)
Invertebrates	a diving beetle <i>Hydroporus rufifrons</i> (P) a reed beetle <i>Donacia aquatica</i> (P) Medicinal Leech (P)
Plants	Pillwort (P) Slender Naiad (P) Marsh Clubmoss (P) Shetland Pondweed (P) Slender stonewort (P) Baltic club-moss (P) Sea bryum (P) Violet crystalwort (P)

## **NATIONAL BIODIVERSITY CONTEXT**

There is a UK Broad Habitat Statement for Standing Open Water which includes Ponds and Pools. 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.*

UK priority species and others of conservation concern are detailed under Key Species.

## ECOLOGY AND MANAGEMENT

The ecology and management of Ponds and Pools can vary significantly depending on water supply, water nutrients, acidity and seasonal water variation.

Pond Description	Typical Ecological Issues
Lowland man-made ponds e.g. farm or mill ponds	Often polluted, they only support wildlife able to survive high nitrate levels and algal blooms
Flood plain ponds	Ecology relies on river water quality. Naturally supports fish.
Man-made or natural peat pools, dubh-lochans, upland pools or lochans	Often highly acidic and not supporting large variety of wildlife until plant life well established
Temporary ponds	Often shallow with important plant populations
Dune slack ponds	May be slightly alkaline
Ponds in semi natural woodland	Often shaded, high in nitrates from decayed leaves and low in oxygen.
New forestry plantation ponds	As for semi natural woodland but at greater risk from soil additives
Sustainable Urban Drainage System (SUDS) ponds	Maybe polluted with contaminated surface run off. May suffer from invasive alien plants.

## CURRENT FACTORS CAUSING LOSS OR DECLINE

There is renewed interest in ponds. In urban Tayside an increasing proportion of householders have garden ground in which to own a pond. Garden ponds have been made more popular through gardening television programmes. Materials to create and maintain garden ponds are more readily available at DIY stores and garden centres.

In flood prevention Sustainable Urban Drainage Systems, including designed flood plains and ponds, are becoming more common. These can become valuable wildlife habitats if managed appropriately.

Ponds have long been of interest to farmers for flight ponds, water storage and wildlife interest. Grants are available for new ponds and the restoration of existing ponds. However information from BASC and FWAG indicate grants funds such as the Rural Stewardship Scheme are underfunded compared to grants previously available from the Nature Conservancy Council.

### Factors Affecting Water Quality - Pollution

Pollution is a significant threat to the biodiversity of Ponds and Pools. SEPA detailed in its 1999 State of the Environment Report the seven most important causes of polluted water in Scotland. These were:

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

Mine drainage is not a significant factor in Tayside. However each of the other causes of pollution are known to affect ponds and pools.

A significant threat to the water quality of ponds and pools is eutrophication – an increase in nutrient levels. This increase is from a variety of sources: mainly sewage treatment and run off from agricultural land. Eutrophication may occur by natural processes. However, when as a direct result of human activity (cultural eutrophication) it leads to a significant loss of species dependent on reduced nutrient status. There often follows problematic algal growth (generally blue/green algae or green filamentous algae). These algal blooms cause:

- Rapid and extreme diurnal variations in oxygen which kills wildlife
- Death of submerged plants by blocking sunlight affecting organisms higher up food chain
- Release of toxins from blue/green algae blooms
- Unightly appearance which is invariably foul-smelling

Locally ponds may also suffer eutrophication from significant roosting bird populations or where fish or bird food is added excessively. (Tayside data to be inserted)

### Factors Affecting Water Quantity

Changes in hydrology, for example abstraction of surface or ground water, or drainage, can seriously affect the habitat and reduce biodiversity.

Groundwater abstraction via boreholes has increased dramatically in Scotland in the last two decades. Groundwater abstractions in Tayside predominantly take place for agricultural purposes in the lowland areas. In the absence of a comprehensive scheme for controlling abstractions from groundwater there are no means of ensuring that aquifer fed rivers are guaranteed protection.

### Physical habitat destruction and simplification

Complete habitat loss is a major threat to ponds and pools. The loss may be due to natural processes of siltation, which may be more pronounced in shallow ponds. Waterbodies may also be lost due to in-filling for industrial and urban development, neglect or deliberate draining. Temporary ponds are at particular risk from draining while flood plain ponds will suffer from inappropriate river flood prevention.

Pressures from agriculture can lead to bank trampling and erosion and the loss of riparian zones due to cultivation right up to the pond edges. Similarly, urbanisation, road development, etc. can have similar effects.

Inappropriate management including unnecessary excavation, emptying and vegetation clearance etc. will reduce habitat variety and quality. Many species rely on shallow water and the different types of associated vegetation. A water only pond (such as a boating pond for example at Stobswell, Dundee) has little conservation value.

### Biological Pressures

Non-native plant species such as Canadian pondweed are already firmly established in Tayside but other less well-known invasive plants including Australian Swamp Stonecrop, Water Pennywort and Water Fern have the potential to cause serious habitat loss and damage to native species. (add Tayside figures/examples). Even fish already common in Tayside, such as pike and perch, can be spread inappropriately to ponds with subsequent harmful effects. Stocking with trout for fishing can alter the ecology of a loch or pond, with possible detrimental affects. American Mink are firmly established in Tayside and represent a serious threat to many bird species and to water voles. Artificially high numbers of mallard, released for shooting, can cause serious degradation of standing waters.

Invasion by alien species may represent one of the most significant long term threats to ponds because, once established, elimination of such species may prove impossible. In many cases, the spread of alien species requires human intervention. This may involve:

- the selling of invasive plants through garden centres
- the deliberate introduction of fish species.

Increasing awareness is a key issue in prevention of alien introduction.

## Recreational Pressures

This is a broad category that can act in a number of different ways. Increasing recreational pressures, such as walking and dog walking, angling and boating are likely to cause erosion to the banks of popularly visited ponds, as well as disturbance to particular species such as breeding wildfowl. Vehicle access to the water's edge may cause particular damage. Ponds used for fishing and shooting may not support high biodiversity if insensitively managed, but this need not necessarily be the case. Feeding of duck in shooting ponds and fish in fishing ponds also attracts rats and mink, predators of birds and Water Vole.

## Climate Change

A potential and significant threat is climate change. Changing temperatures and rainfall will alter the character of rivers. For example a reduction in rainfall would lead to ponds drying up. Or an increase in temperature may lead to accelerated plant growth and colonisation by non-native species. Changes in flooding patterns may lead to pressures for increased flood defences and loss of seasonal inundation of riparian habitats.

## MAIN THREATS TO KEY SPECIES

### ***Otter***

Pollution of watercourses, especially by PCBs. - identified on the UK SAP for this species as a significant factor nationally, but probably not significant in Tayside.

Insufficient prey associated with poor water quality - identified on the UK SAP for this species as a significant factor nationally, but probably not significant in Tayside.

Impoverished bankside habitat features needed for breeding and resting - may be locally important in Tayside.

Incidental mortality, primarily by road deaths and drowning in eel traps.

**UK importance of Tayside population:** Moderate

**National Lead Partner:** SNH, British Mammal Society

### ***Water vole***

Loss and fragmentation of habitats.

Disturbance of riparian habitats.

Predation by mink.

Pollution of watercourses and poisoning by rodenticides.

**UK importance of Tayside population:** Moderate

**National Lead Partner:** SNH, British Mammal Society

### ***Pipistrelle Bat***

Reduction in insect prey abundance owing to high intensity farming practice and inappropriate riparian management.

Loss of insect-rich feeding habitats and flyways owing to loss of wetlands, hedgerows and other suitable prey habitats.

Loss of winter roosting sites in buildings and trees.

Disturbance and destruction of roosts, including the loss of maternity roosts owing to the use of toxic timber treatment chemicals.

**UK importance of Tayside population:** Moderate

**National lead partner:** Bat Conservation Trust

### ***Great Crested Newt***

Loss of suitable breeding ponds.

Loss and fragmentation of terrestrial habitat.

Pollution and toxic effects of agrochemicals.

**UK importance of Tayside population:** Moderate

**National lead partner:** Herpetofauna Groups of Britain and Ireland, SNH

### ***A water beetle - *Hydroporus rufifrons****

Loss of unimproved pasture

Damage to waterside marginal pool complexes

Inundation through impoundment for reservoirs

**UK importance of Tayside population:** uncertain

**National lead partner:** SNH?

***A stonefly - Brachyptera putata***

Acidification in headwaters and upland lochs

Agricultural pollution from modern insecticides used in sheep and cattle farming.

Decline in water quality due to eutrophication from sewage and agricultural run-off.

**UK importance of Tayside population:** uncertain, historic records for Rannoch area

**National lead partner:** SNH?

***Pillwort***

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

**National lead partner:** SNH or Plantlife ?

**Opportunities and Current Action****Current Action**

- New water quality legislation is ensuring that rivers and burns are being improved by way of sewage treatment and monitoring.
- Ponds are included within protected areas such as Nature Reserves. One example, Trottick Mill Ponds, was declared a Local Nature Reserve in 2001.
- There is a renewed interest in garden ponds and the necessary products are readily available. Presumably more garden ponds are being created (statistics required).
- Better information and research provides greater opportunities for getting appropriate protection, development and management for natural, old and new ponds.
- With grant initiatives such as the Rural Stewardship Scheme, farmers are encouraged to develop integrated farm plans which may include ponds.

**Policy and Legal Status**

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

- 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 which provide the framework for these functions are given below.

- Control of Pollution Act 1974
- Control of Pollution (Amendment) Act 1989
- EC Directive on the Conservation of Wild Birds (Directive 79/409/EEC)
- Wildlife and Countryside Act 1981
- Water Act 1989
- The Town and Country Planning (Scotland) Act 1997
- Environmental Protection Act 1990
- The Flood Prevention and Land Drainage 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

### 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. 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 some also manage Ponds and Pools for conservation purposes.

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

Many 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.

Typical examples of actions currently undertaken by various organisations include:

- Environmental grants for farmers, such as those available under the Rural Stewardship Scheme have encouraged and funded the modification of farming activities, including creation and restoration of ponds.
- SNH produce site management statements for SSSIs.
- Some wildlife reserves include ponds.
- FWAG and SAC have undertaken 20 Farming and Water Management Plans in Tayside.
- Flood Appraisal Groups promote environmentally sensitive flood alleviation schemes.

#### Case Study - Trottick Ponds Local Nature Reserve, Dundee

**Trottick Ponds in Dundee** were built with water channels and weirs to provide water to the Claverhouse Bleach Works in the 18<sup>th</sup> and 19<sup>th</sup> centuries. Long after the linen and jute industries departed, the ponds and surroundings are now a recognised wildlife area with active community involvement. They are fed by the Dighty Water which suffers high nitrate levels from agricultural run off. The ponds and surrounding woodland and meadow were declared a Local Nature Reserve in 2001 and benefit from a management plan and considerable local community support. Dundee City Council Countryside Ranger Service organise educational and community events throughout the year. Plans have been prepared for sensitive excavation of areas of silt and a grant application submitted to Scottish Natural Heritage. The Countryside Ranger Service is experimenting with different methods to try to reduce filamentous algal bloom.

A considerable amount of accessible literature exists, including guidance leaflets and more detailed documents from all the organisations listed. Selected documents and guidance notes are listed under references. These only represent a small amount of the available literature. Further information is frequently available direct from organisations, or via their web sites, some of which are listed below.

Scottish Natural Heritage  
 Scottish Environment Protection Agency  
 SEERAD  
 SEERAD Freshwater Fisheries Laboratory  
 Farming and Wildlife Advisory Group

[www.snh.gov.uk](http://www.snh.gov.uk)  
[www.sepa.org.uk](http://www.sepa.org.uk)  
[www.scotland.gov.uk](http://www.scotland.gov.uk)  
[www.marlab.ac.uk](http://www.marlab.ac.uk)  
[www.fwag.org.uk](http://www.fwag.org.uk)

Scottish Agricultural Colleges  
Forestry Commission Scotland  
WWF in Scotland  
Froglife  
Herpetological Conservation Trust

[www.sac.ac.uk](http://www.sac.ac.uk)  
[www.forestry.gov.uk](http://www.forestry.gov.uk)  
[www.wwf-uk.org](http://www.wwf-uk.org)  
[www.froglife.org.uk](http://www.froglife.org.uk)  
[www.hcontrst.f9.co.uk](http://www.hcontrst.f9.co.uk)

### Opportunities

In the UK habitat statement for Standing Open Water, measures to consider further include:

- Development and implementation of integrated catchment management plans.
- Use existing measures such as the previous Countryside Premium Scheme and the current Rural Stewardship Scheme Water Margin option to support appropriate management
- Review the powers and duties of water management institutions to manage water for nature conservation objectives.

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 Scheme and the introduction of the Water Framework Directive will provide a stronger mechanism for the protection and enhancement of rivers and streams than has ever previously existed.

### **ACTION PLAN OBJECTIVES AND TARGETS**

#### **Objectives**

1. Maintain and protect pond and pool habitats supporting semi-natural assemblages of animals and plants in both the 'open water' and surrounding habitat.
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 pond and pool habitats and at risk species.
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.
4. Increase public awareness of biodiversity, the wildlife value of Ponds and Pools and their importance as an asset to the community.

#### **Targets**

1. Improve or maintain the water quality classification of all ponds and pools in the region.
2. Ensure no net loss in area or reduction in quality of natural pond or pool habitats.
3. Establish and maintain an inventory of Ponds and Pools which provides information on environmental quality, biodiversity quality, impacts on biodiversity, etc.
4. Prepare Catchments Management Plans involving both statutory and non-statutory organisations. Seek to have these plans adopted by the local authorities to inform planning decisions and provide a framework for integrated management.
5. Set up public awareness programme. Set up a Tayside Frog Spawn Survey to develop comparable data to that collected by Dundee City Council in 2000, and encourage participation in pond projects.



## REFERENCES

- *The Natural Heritage Handbook and Information Annex*. SEPA .
- *Ponds, Pools and Lochans: Guidance on good practice in the management and creation of small waterbodies in Scotland*. SEPA, 2000. Habitat Enhancement Initiative. ISBN 1-901322-16-5
- *Improving Scotland's Water Environment. State of the Environment Report* - SEPA 1999 ISBN 1-901322-11-3
- *1998 Environmental Strategy* - SEPA 1998
- *Policy no. 4 the Consent Conditions Manual* - SEPA
- *Policy No. 15 Regulation on urban drainage* - SEPA
- *leaflets and documents covering most aspects of aquatic pollution* - SEPA
- *Sustainable Urban Drainage Systems: design manual for Scotland and Northern Ireland* - CIRIA, SUDS, Scottish Working Party (2000). CIRIA, London. ISBN 0 86017 5219
- *Forest and Water Guidelines* - Forestry Commission 1993
- *Safety at Inland Water Sites* - RoSPA
- *BTCV Waterways and Wetlands – a practical handbook*. - ISBN 0-9501643-8-0
- *The Green Code - code of good practice for the safe use of pesticides on farms and holdings* - MAFF 1998 PB3528
- *Frog Spawn Survey, 2000* - Dundee City Council, 2000
- *The Pond Book: A Guide to the Management and Creation of Ponds*, 1999 – The Ponds Conservation Trust

### Abbreviation List

RSPB	Royal Society for the Protection of Birds
SEPA	Scottish Environmental Protection Agency
SNH	Scottish Natural Heritage
SAC	Scottish Agricultural College
SWT	Scottish Wildlife Trust
NTS	National Trust for Scotland
FRS	Fisheries Research Services, Freshwater Laboratory
FWAG	Farming and Wildlife Advisory Group
LBAP	Local Biodiversity Action Plan
DSFB	District Salmon Fisheries Board
SUDS	Sustainable Urban Drainage Systems
SEERAD	Scottish Executive Environment and Rural affairs
CMP	Catchment Management Plan

## PROPOSED ACTION FOR BIODIVERSITY

LBAP Ref.	Proposal for Action – Ponds & Pools HAP	Potential deliverers		To take place by								Meets Objective No.
		Lead Partner(s)	Partners	02	03	04	05	06	07	11	16	
	<b>Policy and legislation</b>											
	1. Ensure that all statutory water quality and discharge standards are maintained and where necessary improved.	SEPA Scottish Water		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	2. Develop policies to control alien species and favour establishment of appropriate native species.	SEPA SNH	PKC DCC AC Garden Centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	3. Develop and implement Catchment Management Plans as directed in the Water Framework Directive, which take into account and restore the natural nutrient status of the waterbody.	SEPA	SNH, PKC DCC AC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	4. Promote the adoption of SUDS (sustainable urban drainage schemes) where possible.	PKC AC DCC SEPA	TBP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	5. 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.	PKC AC DCC SEPA SNH	Angling bodies, Landowners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	6. Ensure that pressure is brought to bear on relevant organisations conducting activities within and outwith the region but which impact on standing open water (e.g. industrial emissions, acidification).	SEPA	SNH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	7. Ensure that development plans do not adversely affect ponds and pools and associated wildlife in the region, and promote no net loss of this habitat.	PKC DCC AC		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<b>Site safeguard and management</b>											
	1. Oppose development or other proposed activities which threaten loss or damage to this habitat or associated species.	PKC DCC AC SNH		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	2. Ensure that existing nature reserves and SSSIs which include ponds are managed appropriately.	SNH	RSPB SWT PKC DCC AC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	3. Maintain or introduce appropriate fishery management. Encourage fisheries interests to establish management schemes which enhance populations of important local fish species but not to the detriment of biodiversity.	FRS DSFB	Angling Groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	4. Ensure that all local planning mechanisms, such as Local Plans, take into account the wildlife interest of pond and pools.	PKC DCC AC SNH SEPA		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

5. Encourage appropriate management of ponds and surrounding habitats in existing developments in urban areas.	PKC DCC AC Scottish Executive		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Promote adoption of SUDS (Sustainable Urban Drainage Systems) principles, such as swales, infiltration basins, detention/retention ponds, wetlands, reedbeds) in new developments.	SEPA PKC DCC AC	Developers architects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Encourage habitat restoration, identify list of demonstration sites with management plans.	SEPA SNH TBP	FWAG SAC SWT RSPB NTS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Encourage better management and protection of ponds on farmland and forestry.	FWAG SAC Forestry Commission	SLF NFUS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Encourage the full implementation of the Forestry Commission Water Guidelines i.e. buffer strips and the strategic planting of broadleaves.	Forestry Commission	FWAG SAC Scottish Native Woods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Species management and protection</b>											
1. Complete Species Action Plans (SAPs) for all Priority Species	TBP		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Implement SAPs	TBP	Special interest groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Use national campaign to highlight species importance at local levels	TBP	PKC DCC AC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Advisory</b>											
1. Provide advice for managers and users of ponds, to promote the conservation of biodiversity of this habitat	SNH	PKC DCC AC RSPB SEPA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Promote best practice in farming and encourage landowners and farmers to prepare and implement Farm Waste Management Plans and Nutrient Budget Plans	SEPA SEERAD	FWAG SAC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Develop guidelines for best practice in fishery management	SEPA Scottish Executive	SNH FRS DSFB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Promote practices that encourage improvement of the biodiversity value of ponds and surrounding habitat as part of all environmental improvement programmes (e.g. farm plans, forestry & planting schemes etc.).	SNH	FWAG SAC PKC DCC AC SEERAD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Research and monitoring													
1. Survey of waterbodies in area: Collection of accredited data such as Riparian biodiversity data (mammals, birds, invertebrates, plants), Alien plant data	SWT	Local Biological Recording Centre BASC, RSPB, SEPA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Review current water quality to identify causes of down grading, particularly where biodiversity priorities may be important.	SEPA		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Continue to monitor the impact and extent of acidification in the region.	SEPA		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Monitor impact of diffuse pollution, such as phosphates, nitrates etc.	SEPA		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Survey ponds and pools in the region and designate, where possible, important sites as 'Local Wildlife Sites' and incorporate them into the planning system.	SWT	Local Biological Record Centre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Establish a regular programme of standing open water surveys which will include ponds and pools.	SEPA SNH		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Review data on standing open waters as a precursor to the preparation of Catchment Management Plans and updating of existing CMPs.	SEPA	Local Biological Records Centre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Monitor the delivery of the action plan yearly and in detail every five years, starting in 2003.	TBP		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Support the setting up of a Tayside Biological Record Centre to ensure all data collected for this Action Plan is collated.	SNH SEPA PKC DCC AC	Local Biological Records Centre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Promotion and awareness-raising													
1. Provide a newsletter, progress report or leaflet to raise awareness and report good practice management for biodiversity in pond and pool habitats.	TBP		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Compile a directory of private landowners and local interest groups, who would be receptive to participation in discussions about local ponds and pools, organise initial meetings and community talks.	TBP	PKC AC DCC SNH SEPA BASC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Compile an information resource of key legislative, policy, management, guidance and research documents to be available for public consultation at key locations e.g. libraries, museums, council offices.	TBP	PKC DCC AC SNH SWT SEPA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Set up public participation activity - Tayside Frog Spawn Survey based on Dundee 2000 survey	TBP PKC DCC AC	SWT RHS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



CONSULTATION DRAFT: 2<sup>ND</sup> TRANCHE  
WOODLAND – W3

**TAYSIDE BIODIVERSITY PARTNERSHIP**  
**PLANTED CONIFEROUS WOODLAND**  
**ACTION PLAN**

**INTRODUCTION**

The management of all woodland in the UK, including coniferous woodlands, is regulated by the government through the Forestry Commission (FC). The Commission also encourages forestry expansion and management of existing woodland through the payment of grants where it is in accordance with forestry and conservation policies. Policies are informed by both national and international priorities and these are set out in a series of publications that provide the framework for environmental regulations and incentives.

The UK Forestry Standard defines and applies government commitments to sustainability and biodiversity and this is augmented by a series of environmental guidelines on conservation, landscape, water, etc. In Tayside these policies will help ensure that new and existing conifer forests are diverse and that biodiversity aspects are properly addressed. This will take place throughout the UK. Therefore, this Action Plan will concentrate on proposed actions on important local issues and opportunities that arise from the distinctive character of the region's extensive forest resource. An important feature of this resource is that some 35% of the woodland area is state owned and managed by Forest Enterprise. The large contiguous holdings, which include additional extensive open ground, offer particular scope for exemplary management with respect to government biodiversity aims.

**HABITAT DEFINITION AND BACKGROUND**

This Action Plan will concentrate on woods composed wholly or mainly of conifer species, both native and introduced.

Tayside - particularly Highland Perthshire - has a unique place in British forest history and development as the site of many of the original introductions of trees from overseas. Additionally there has been a strong tradition of active forest management and tree planting amongst the traditional estates of which Atholl, Breadalbane, and Scone are perhaps the outstanding examples.

Original specimen introductions of larch, Douglas fir and other conifers can still be found illustrating the biological potential of these trees in this country as well as their biodiversity potential which inevitably becomes enhanced with age.

Early forestry management in the 18<sup>th</sup>, 19<sup>th</sup> and early 20<sup>th</sup> centuries could best be summed up in the following words: 'In my opinion Planting ought to be carried on for Beauty, Effect and Profit' wrote 'Planter John', the Fourth Duke of Atholl (1755 – 1830) writing in his Forestry Journal and putting profit third. Accordingly long-established conifer woodlands tend to be more diverse and of significant biodiversity interest, which perhaps helps explain the success of the early 19<sup>th</sup> century re-introductions after their local extinction and disappearance, of capercaillie and red squirrel to the woodlands on Drummond Hill.

Forestry practices after WWII were arguably less enlightened and focussed heavily on timber production and economic returns. Consequently many of the new conifer woodlands established in the 1950's, '60's, '70's, and early '80's tended to be heavily weighted in favour of single species, predominantly Sitka spruce, and single age monocultures. Whilst there were a number of notable exceptions to this approach, especially amongst the traditional estates, such an approach to afforestation and management of existing semi-natural woodlands brought forestry into conflict with conservation interests and a perception that productive forestry for timber production was inimical to conservation and habitat interests.

The challenge to forest managers in Tayside is to demonstrate that this need not be the case. There are many outstanding examples already where modern multi-purpose forest management in predominantly coniferous woodlands can co-exist with conservation interests and may even enhance those interests as current initiatives with red squirrels and capercaillie and other species seek to demonstrate. Conifer forests are home to a variety of habitats and are themselves potentially important habitats when sympathetically managed.

Recent developments in forest management, the requirements of the UK Forestry Standard, and the financial incentives available through the FC's woodland grant incentives all serve as huge opportunities to enhance the status of conifer woodland as a major contributor to Tayside's biodiversity wealth.

#### **KEY SITES/SITE DISTRIBUTION**

There are extensive areas of planted coniferous woodland in the region. There are no SSSIs designated for the habitat but small areas planted over or adjacent to other habitats are included in SSSIs.

#### **CURRENT STATUS**

There are approximately 75,000 hectares of planted coniferous woodland in Tayside which is approximately 5 % of the UK total for all conifer woodland. One-third of Tayside's conifer woodland is publicly owned and managed by the Forest Enterprise.

#### **NATURE CONSERVATION IMPORTANCE**

The potential importance of large UK plantations is often underestimated and should not be over-looked. This recognition has prompted many second rotation forests to be planned to take account of nature conservation needs through creating internal forest diversity in tree and stand age. Much of this is now enshrined in the UK Forestry Standard which requires forest managers to comply with its various standards when undertaking forest operations when seeking FC approval or financial aid.

Woodland rides and glades can be important for vascular plants and invertebrates. Old stands with dead and dying trees, understorey vegetation and open canopies are also important for a variety of species. There are stands of conifer in Tayside which have the only known records of invertebrate species either regionally or nationally (add data). In some instances, it may be possible to recreate former habitats to some extent, although this is heavily dependent on productive ground being available elsewhere. There is also increasing evidence of the adaptation of important species to new forest habitats, for example barn owl, short-eared owl, goshawk and merlin using forest edge nest sites. Conifer forest also provides some unique habitats for important and threatened species such as red squirrel, nightjar and a range of woodland birds. In addition, conifer forest provides special habitats for lichens, mosses, ferns and fungi.

Many planted forests have displaced other habitats which had significant biodiversity value as open ground such as raised bogs or native woodland habitats. There is potential for restoration of these habitats in some cases. In addition, many of the region's forests were planted over a relatively short period and lack age and species diversity, which, if in place, would encourage biodiversity associated with old trees. This post WWII planting was dominated by Sitka spruce because the climate and soils of Tayside provide excellent growing conditions for this tree, giving optimum timber production.

Current practice as outlined in the Standard requires a more rigorous approach to biodiversity, species variety and forest management.

#### KEY SPECIES

##### Mammals

Badger	Meles meles (CC)
Roe deer	Capreolus capreolus (CC)
Red deer	Cervus elaphus (CC )
Fallow deer	Dama dama (CC)
Pine marten	Martes martes (CC)
Red squirrel	Sciurus vulgaris (P)
Brown long-eared bat	Plecotus auritus (CC)

##### Birds

Goshawk	Accipiter gentilis (CC )
Sparrow hawk	Accipter nisus (CC )
Buzzard	Falco columbarius (CZZ )
Woodcock	Scolopax ruticola (CC)
Green woodpecker	Picus viridis (CC)
Black grouse	Tetrao tetrix (P)
Barn owl	Tyto alba (CC)
Long-eared owl	Asio otus (CC)
Short-eared owl	Asio flammeus (CC )
Nightjar	Caprimulgus europaeus (P)
Tawny owl	Strix aluco (CC)
Tree pipit	Anthus trivialis (CC)
Redstart	Phoenicurus phoenicurus (CC)
Goldcrest	Regulus regulus (CC )
Grasshopper warbler	Locustella naevia (CC)
Common crossbill	Loxia curvirostra (CC)
Siskin	Carduelis spinus (CC)

Add – invertebrate spp.; higher plants; lower plants.

#### Key Species Management

Conifer woodlands support species which are of importance both nationally and locally. The development of Local Species Action Plans is required to focus attention on these. Species to consider for action include:

**Red deer** The encroachment of sika deer threatens the genetic integrity of the Tayside herd of red deer through hybridisation.

**Red squirrel** Tayside has a high proportion of coniferous woodland which offer significant opportunity in terms of the conservation of this species. The possibility of a 'core reserve' could be further considered.

**Bat species** All species of bat in Tayside use coniferous woodland. Provision of additional roost sites (boxes) and feeding habitats could greatly increase populations.

**Barn owl** Practical conservation measures within conifer forests have resulted in dramatic improvements in the number and prospects of barn owl.

**Capercaillie** Although under threat across its Scottish habitat the Tayside outliers of the remaining capercaillie make extensive use of conifer woodlands.

**Black grouse.** Tayside has many woodland and woodland edge habitats which can offer potential for the foraging of this species.

**Nightjar** Tayside holds the majority of the Scottish population of this species in forest clearings.

#### NATIONAL BIODIVERSITY CONTEXT

There is a UK Broad Habitat Statement for planted coniferous woodland, which gives the following conservation direction:

- *Maintain and enhance the wildlife potential of the existing conifer resource through continued restructuring and diversification.*

Measures to be considered further include:

- Implementation of the UK Forestry Standard which embraces the Resolution for the Conservation of Biodiversity of European Forests as agreed in Helsinki (1993).
- Continue to direct the expansion of conifer woodland of introduced species to land of low conservation value (e.g. derelict industrial, low grade arable, improved pasture and other such habitats) ensuring habitats of high nature conservation value are not displaced using Indicative Forest Strategies (FC Woodland Grant Scheme consultation procedures).
- Promote forestry management which enhances conservation value through restructuring and diversification.
- Develop systems of monitoring the biodiversity conservation value of planted coniferous woodlands, for example by assessing critical habitat features and selecting key or indicator species.

#### CURRENT FACTORS AFFECTING THE HABITAT

There is no particular threat to the conifer resource as a whole although some factors could either reduce the existing wildlife interest of plantations or mean that potential improvements are not realised.

These include:

- Catastrophic wind damage and fires (particularly started through vandalism).
- Insect damage from imported pests can devastate the forests.
- Prospect of shorter rotations as timber processing becomes more efficient and timber markets change.
- Perpetuating uniform age and species composition of forests

#### **TAYSIDE FOREST BIRDS INITIATIVE**

*The Tayside Forest Birds Initiative was established in 1991 as a forum where foresters, conservation organisations and local ornithologists could work together for birds in the Tay Forest Park. Central to the project has been the gathering of good quality survey data and using it to inform the planning of future forests.*

#### MAIN THREATS TO KEY SPECIES

Add section



## OPPORTUNITIES AND CURRENT ACTION

The existing or potential importance for biodiversity of large UK plantations should not be overlooked, especially since the rotation of forest felling can be planned to take account of nature conservation needs and thus help create forest diversity in tree and stand age.

### Age Class Diversity

The UK Forestry Standard gives guidance on increasing age class diversity by restructuring age classes, retaining forest cover in some areas (continuous cover silvicultural systems) and the identification of long term retentions to encourage old trees to flourish with all their associated biodiversity benefits.

### Tree Species Diversity

UK policy now addresses the question of single species monoculture as perhaps best exemplified by the large plantations of post-WWII Sitka spruce (though SS itself is a useful tree with important biodiversity potential in its own right when managed appropriately). Now a minimum proportion of minor conifer species is included together with open space and broadleaves. These elements are likely to comprise 20 - 30% of new and second rotation forests which gives good potential to achieve biodiversity aims and to improve environmental aspects of conifer forests in general. Important local species should be considered and plans developed for them to inform forest management.

## OPPORTUNITIES ARISING FROM FOREST PRODUCTION

- Appropriately placed profitable forestry may generate income to support important conservation projects, for example, the Barn Owl Project under taken by Forest Enterprise in Tayside
- Felling of woodland areas (often helped by wind and fire damage) can open up clearings in forests and encourage biodiversity associated with the catastrophic events that occur in natural ecosystems.

## OBJECTIVES AND TARGETS

### Objective 1

- Increase the habitat diversity of coniferous woodlands in Tayside.

#### Targets:

Incorporate objectives for increasing habitat diversity in all new forest design plans and all those under review with immediate effect.

### Objective 2

- Increase the tree species diversity of coniferous woodlands.

#### Targets:

Incorporate objectives and prescriptions for increasing tree species variation in all new forest design plans and all those under review with immediate effect.

### Objective 3

- Increase the diversity of the forest structure by retaining stands to biological maturity, introducing age class diversity, and establishing areas of long-term forest structure managed by continuous cover systems where possible.

#### Target:

Include biodiversity objectives into forest design plans for at least 30% of the afforested area of the region by 2005

#### Objective 4

- Identify habitats and species which are of importance within and around coniferous woodlands, develop Action Plans for these and ensure these actions are taken into account in forest planning at all levels.

##### **Targets:**

Compile and complete an audit of the biodiversity of at least 50% of the coniferous woodlands in Tayside by 2005. Incorporate prescriptions for important habitats and species identified by this audit in all forest design plans by 2010.

#### Objective 5

- Restore, where possible, habitats of biodiversity importance within the forest holding.

##### **Target:**

Include targets for restoration in all forest design plans with reference to the following local Biodiversity Action Plans by 2005:

- Native Woodlands
- Wood and Scrub Pasture
- Lowland Raised Bogs
- Blanket Bogs
- Rivers and Burns
- Upland Heath
- Wet Grassland
- Acid Grasslands
- Sand Dunes

#### Objective 6

- Target new woodlands towards areas which will result in a net gain for biodiversity such as the expansion out from existing native woodlands and avoid open habitats of a recognised and agreed high conservation importance.

##### **Target:**

Ensure that the Indicative Forestry Strategies consult the local Biodiversity Action Plan to ensure biodiversity is used as criteria for directing new woodland establishment 2002. (NB IFS's in Angus and Perth & Kinross need to be revised to take account of the new circumstances and developments in forestry.)

**STAKEHOLDERS** – to add

**REFERENCES** – to add

**PROPOSED ACTION FOR BIODIVERSITY**

Proposal for Action – <u>Planted Coniferous Woodland</u>	Potential deliverers		To take place by							Meets obj. no.
	Lead	Partners	02	03	04	05	06	07		
<b>A. Policy and legislation</b>										
1. Ensure that restructuring policies applied increase habitat diversity, landscape character, tree species diversity and age class diversity of coniferous woodlands in the region (e.g.UK Forest Standards).	FC PKC DCC AC									
2. Ensure that biodiversity objectives from this and other relevant plans (Native Woodlands, Wood and Scrub Pasture, Raised Bogs, Rivers and Burns, Upland Heath, Wet Grassland, important acid grasslands, and Sand Dunes) are fully incorporated in the design, of new and second rotation forests.	SNH FC SEPA	PKC, DCC, AC NGOs								
3. Include objectives and actions for priority forest species and habitats in all forest design plans, owners, and FE conservation plans. Encourage this approach in private forest areas.	FC FE SNH	NGOs								
4. Review the IFS's for Angus and P&K local authority areas which incorporate objectives for biodiversity and help define the criteria to be used in deciding on the location for new conifer woodlands.	FC PKC AC									
<b>B. Site safeguard and management</b>										
1. Ensure site safeguard and management takes account of the recommendations of the agreed Forestry Subject Plan.	FC TBP									
2. Retain old conifer stands to biological maturity on sites where opportunities exist.	FC FE Private Foresters									
3. Develop Action Plans for key species associated with coniferous woodlands in the region.	FE, SNH, FC, RSPB, SWT	TBP								
<b>C. Advisory</b>										
1. Ensure that all forest managers receive advice about biodiversity within their holdings and the potential for enhancing this.	FC	TBP								
<b>D. Research and monitoring</b>										
1. Carry out necessary audits of priority habitats forest and species for incorporation into Plans. (see Policy and Legislation above).	FC, FE SNH	Wood-land owners NGOs								
2. Set up research projects to investigate the potential and the methods for restoring areas of important open ground habitats and native woodland, which have formerly been planted	FC FE SNH	TBP								

with conifers. Using information collected in the auditing process as a baseline (see Research and Monitoring above), monitor the effects of restructuring and species management on species and habitats of coniferous woodlands.									
3. Set up a Biological Record Centre for Woodlands in Tayside and ensure that all working data collected for this plan is held there.	SNH TBP								
4. Habitat Action Plan review process - ensure this Plan is being delivered annually and review fully after 5 years	TBP								
<b>E. Promotion and awareness-raising</b>									