Raised Beach Platform

Definition

Erosion from periods of higher sea levels is responsible for these quite widespread features. Platforms and cliffs were cut into the coast in many parts of Ayrshire but over thousands of years, these features have been left stranded as sea levels have dropped. Within the area almost all raised beach platforms have been altered, almost beyond recognition, from their natural state. The main use of such areas include farming (notably growing potatoes) and the development of roads and golf courses. Even in these altered environments, some vestiges of semi-natural vegetation may remain although the less disturbed raised beach flora and fauna communities are now limited to a very few sites on Great Cumbrae and around Arran.

Nature Conservation Importance

As a grassland type which is under represented throughout Ayrshire, the importance of conserving the remaining local sites is of increased importance, even though raised beaches have not been highlighted as a national concern. The preservation ofthe remaining natural sites could be supported by sympathetic management of the “rough” on coastal golf courses.

Biodiversity Context

There is no UK Habitat Statement for this habitat at the time of writing.

Key Sites

- Great Cumbrae
- Dougarie and Lochranza on Arran

Key Species

Birds

- Oystercatcher (Haematopus ostralegus)
- Redshank (Tringa totanus)
- Golden plover (Pluvialis apricaria)
- Curlew (Numenius arquata)
- Twite (Carduelis flavirostris)
- Skylark (Alauda arvensis)

Vertebrates

- Slow worm (Anguis fragilis)
- Newt spp. (Triturus spp)

Higher Plants

- Greater butterfly orchid (Platanthera chlorantha)
- Lesser butterfly orchid (Platanthera bifolia)
- Fragrant orchid (Gymnadenia conopsea)
- Common twayblade (Listera ovata)
- Grass of Parnassus (Parnassia palustris)
- Ivy-leaved water crowfoot (Ranunculus sp.)
- Common sundew (Drosera rotundifolia)

Current factors affecting the habitat

As indicated by the definition, this habitat type has been affected by human use for many years. The nature of the soil has made it an attractive site for agriculture (particularly for potatoes in Ayrshire), the low lying coastal location making it ideal for golf courses, as well as representing good areas for roads along coastal routes. As a consequence of these factors, most of this habitat type has been altered beyond recognition throughout the area concerned, and it is unlikely that the natural state will be allowed to regenerate.

The few remaining sites are threatened by agricultural improvement and recreational use, as well as encroachment of *Rhododendron ponticum* in the areas defined.

Opportunities and Current Action

The main area for current opportunities other than management of the few remaining sites, lies within the possibility of encouraging development of wildlife habitat management within the many golf courses along the Ayrshire coastline.

Habitat Objectives

Main Objective

Maintain and enhance the quality and extent of raised beach habitat.

Target

Return suitable areas to natural state where possible.

Work Objectives

Objective 1

Establish extent and quality of raised beach habitat in Ayrshire.

Target

Complete baseline survey by 2003.

Objective 2

Achieve greater awareness and understanding of the habitat.

Target

Prepare list of educational facilities and materials by 2003.

ACTIONS Raised Beach Platform	TO BE ACTIONED BY		YEAR (TO BE COMPLETED OR IN PLACE BY					
	lead	partners	2001	2002	2003	2004	2005	2010
Policy and Legislation								
Designate raised beach sites not already covered by SSSI status as merited by their ecological value.	SNH ALA	SWT					•	
Ensure that in determination of planning applications, all aspects of coastal works are examined in their potential impact to “natural” raised beaches.	ALA	SNH SWT			•	•	•	•
Site Safeguard and Management								
Regulate and monitor activities which are detrimental to the structure and content of raised beaches.	SNH	UMBS ALA		•	•	•	•	•
Involve local communities in the formulation of management plans and proposed designations.	SNH ALA	SWT UMBS			•	•	•	•
Advisory								
Develop generic management programme for raised beach sites on agricultural and recreation sites for dissemination to land managers.	SNH	SGCWI FWAG			•			
Research and Monitoring								
Review biology of raised beach areas throughout Ayrshire and collate to centralised database.	SNH ALA	ABRC SWT		•	•	•		
Monitor delivery of this plan annually and review on five yearly basis.	ABG				•		•	•
Communications and Publicity								
Raise public awareness about importance of raised beach by involvement in management plans, availability of material and activities relating to this.	SNH ALA	RSPB SWT			•			

Key to partners - page 5

Maritime cliff and heath

Definition

Ayrshire's cliffs take many forms, from the high steep rock faces of Ailsa Craig to the gently sloping coastal stretches along the north of the LBAP area. These differences are due to variations in geological resistance to erosion. Combined with the changing drainage, aspect and exposure to salt spray, Ayrshire's cliff and coastal heaths support a great range of communities. In the most inhospitable circumstances, only limited patches of lichen survive. Elsewhere, reedbeds, bracken, scrub, heathland, grassland and woodland can thrive. Cliff communities unaffected by salt spray are not treated as coastal habitats here but are dealt with in their appropriate section. Above the cliffs, farmland is the most common habitat found.

Along the bottom of the majority of Ayrshire's cliffs are either beaches (of boulders, pebbles, sand or gravel) or inter-tidal wave cut platforms. These features are covered separately in the inter tidal sections of this plan. Elsewhere, the steeper cliffs of harder rock abut deeper water (covered in the open water section).

Of all the cliff and coastal heath species, cliff nesting birds rely most on the combination of land and sea for their livelihood, nesting on cliffs and feeding along adjacent coastlines or out at sea.

As well as modern-day cliffs, Ayrshire is also well endowed with the steep slopes that remain as evidence of shorelines from periods of higher sea level. A few remain close enough to the present day coast to be subjected to salt spray and have therefore retained characteristic coastal species.

This habitat type is of a mixed character, and is represented in an area of 65 hectares of SSSI throughout Ayrshire.

Current Status

In comparison to the rest of the west coast of Scotland, Ayrshire's coast is not heavily indented. Its total length is a relatively modest 451 km. The length of maritime cliff and heath in Ayrshire has not been specifically measured but 'cliffs' are marked on oil spill sensitivity maps for the Firth of Clyde (JNCC 1989) and are discernible from 1:50 000 maps for the remainder. According to these sources, cliffs along the Ayrshire coast occupy roughly 50 km, (around 17 km of the mainland coast, 27 km on Arran, 6 km on Holy Island, 2.5 km on Little Cumbrae and 2.4 km on Ailsa Craig).

Key Sites

- Portencross
- Ailsa Craig SPA
- Horse Island ASP
- Lady Isle ASP
- Culzean
- Heads of Ayr
- Girvan to Ballantrae (Bennane Head) SSSI
- Clauchlans Point to Corrygills SSSI
- Cumbrae (E. Coast)
- Meikle Craigs, Troon SSSI
- Ballochmartin Bay SSSI
- Ballantrae to Finnarts Bay

Key Species

Mammals

- Otter (Lutra lutra)
- Common seal (Phoca vitulina)

Birds

- Gannet (Morus bassanus)
- Fulmar (Fulmarus glacialis)
- Cormorant (Phalocrocorax carbo)
- Lesser whitethroat (Sylvia curruca)
- Twite (Carduelis flavirostris)
- Rock pipit (Anthus petrosus)
- Peregrine (Falco peregrinus)
- Raven (Corvus corax)
- Black guillemot (Cepphus grulle)
- Razorbill (Alca torda)

Reptiles and Amphibians

- Common lizard (Lacerta vivipara)
- Slow worm (Anguis fragilis)
- Adder (Vipera berus)

Invertebrates

- Grayling (Hipparchia semele)
- Northern brown argus (Aricia artaxerxes)
- Wall brown (Lasiomata magera)

Higher Plants

- Scottish scurvy grass (Cochlearia scotica)
- Butterfly orchid (Platanthera chlorata)

Various designations are already in place to protect Ayrshire's cliffs and heaths. These include a Marine Consultation Area around the Cumbraes, SSSIsand one existing SpecialProtection Area. Given that certain cliffs are relatively undisturbed because of their steep slopes, maritime cliffs in particular include some ofthe most natural environments left in Ayrshire.

Nature Conservation Importance

Ayrshire's coast has been fairly well studied so a relatively good understanding exists of species presence, distribution and importance. The key biodiversity features identified to date are as follows:

- Ayrshire maritime cliffs and slopes are important refuge areas for several rare plants and fragments of semi-natural woodland. These include old oak woods with holly and hard fern *(Blechnum spicant)*, a qualifying habitat under the Habitats Directive. The Barwin Point to Swallow Craigs section of the Maidens to Doonfoot SSSI supports some of the best coastal deciduous woodland in southern Scotland. Maritime woodland fragmentsare important for several nationally rare or scarce invertebrates;
- The fossil cliffs backing raised beaches in many places are also notable for their woodland interest. Some have also developed important mires along their bases. In terms of herptofauna, adders, slow worms and common lizards are all found inhabiting raised beaches in areas of short turf, scrub, coastal heath, rocks and scree;
- Ayrshire's cliffs include sites of international, national and regional importance for nesting seabirds. Ailsa Craig is the most important. Its gannetry is the fourth largest in the UK and of international significance for birds. Ailsa Craig is also nationallyimportant for lesser black-backed gulls and regionally important for guillemots, razorbills, shags, fulmars, kittiwakes and herring gulls. Puffins have previously bred here, and following the recent successful eradication of the rat population it is hoped they will return. Ayrshire's cliff faces also provide nesting sites for regionally important numbers of ravens, peregrines, black guillemot and razorbill. Cliff-top blackthorn scrub supports the relatively rare lesser whitethroat. Chough bred but became locally extinctduring the 1800s;

Habitat Objectives

Main Objective

Maintain and enhance the quality of the most important maritime cliff and heath habitat in Ayrshire.

Target

Establish monitoring programme for prioritised key sites.

Work Objectives

Objective 1

Promote more widespread appreciation and good management of maritime heath and cliff in Ayrshire.

Targets

On the basis of existing knowledge, identify requirements for widespread improvement of management by 2002. Secure sympathetic management of these habitats by 2004.

Lobby for appropriate provisions in the new agri-environment schemes for enhancement of maritime cliff and heath.

Objective 2

Determine in greater detail, the extent and condition of maritime heath and cliff in Ayrshire.

Targets

By identifying and filling information gaps, fully audit the status of maritime cliff and heath for priority species by 2004.

Identify best examples of maritime cliff and heath habitat by 2002.

Ensure no net loss in area or reduction in quality of best habitat by 2005.

Use the above audit to review and agree
nhancement by 2005.

ove habitat for key species at
g sympathetic management.

- For lower plants, the importance of Ayrshire's cliffs and heath is relatively low in comparison to coasts further north. The stretches of limestone cliffs are exceptions, being particularlyrich in lichens;
- Two nationally scare plants more typical of non-cliff habitats are present on the Ayrshire coast. Thes- -re- thyme broomrape *(Orobanche alba)* and Isle o cabbage *(Coincya monensis).*

Biodiversity Context

A UK Habitat Action Plan (Tranche 2, Vol 5) was produced for Maritime Cliff and Heath in 1999. The Plan's target is to increase the area of cliff-top semi-natural habitats by at least 500 ha over the next20 years and to improve, by appropriate management, the quality ofat least 30% ofthe maritime cliff and slope habitats(including cliff-top vegetation), by 2010. In addition to this, as much as possible should be improved before 2010.

The Action Plan includes the conservation objective of maintaining and managing hard and soft rock cliffsystemsin a natural state. While the need for essential coastal defence works is recognised, the free functioning of natural physical processes should be permitted wherever possible. Measures to be considered which may be applicable to Ayrshire include the evaluation of existing measures for conserving and managing the habitat, and protecting important areas from inappropriate uses.

Current factors affecting the habitat

In general, the intensification of agriculture has led to the reduction in semi-natural cliff-top vegetation as farmland has been extended right to the cliff edge wherever possible. Elsewhere there has been localised encroachment from housing, tourism and golf course expansion. Other activities that have had adverse impacts include losses to exotic tree plantations and infrastructure development.

Opportunities and Current Action

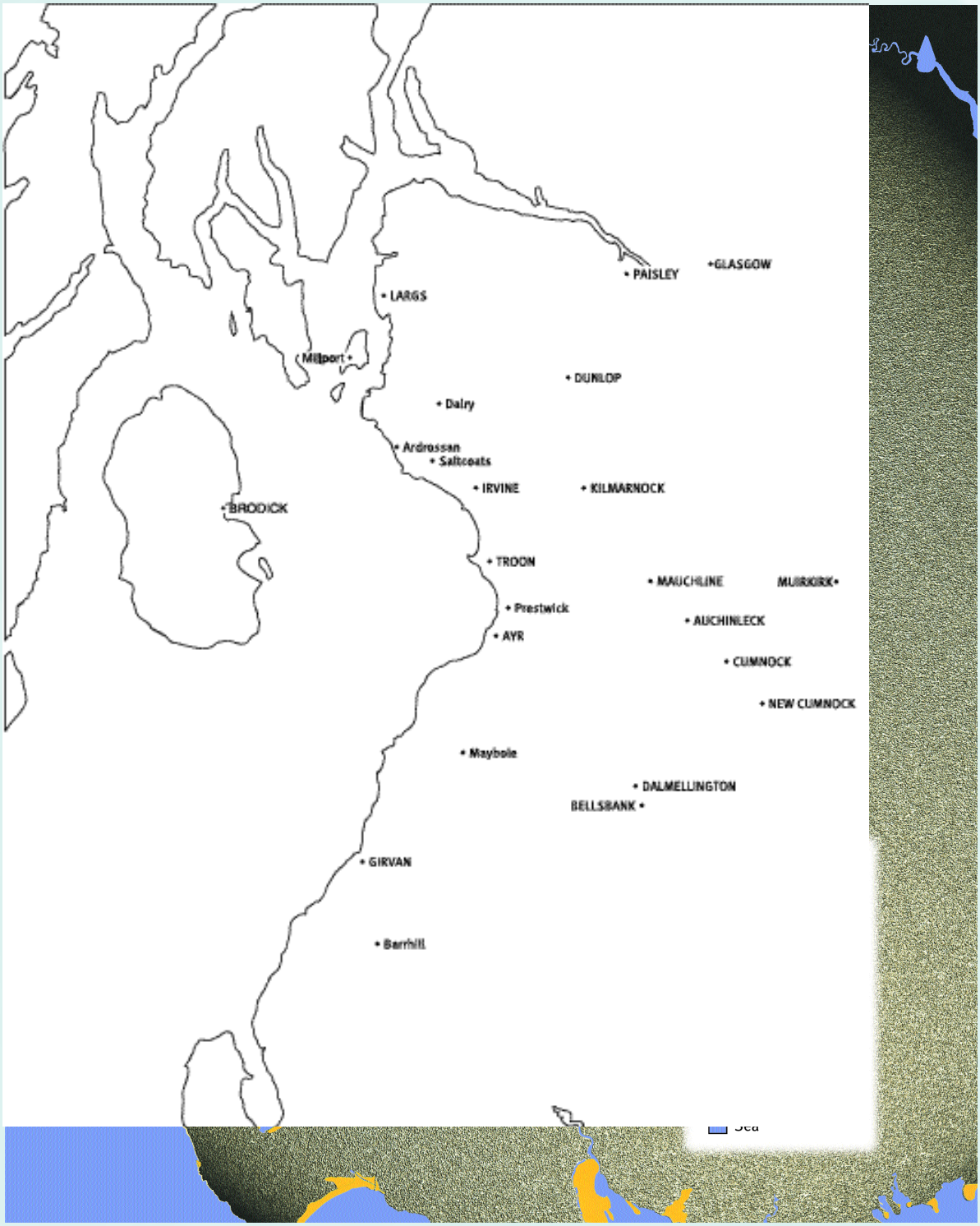
A range of initiatives are already in place that contribute to the protection and enhancement of this habitat. The Dunure to Culzean Millenium Forest Scheme is encouraging appropriate planting of coastal woodland. On-going law enforcement work aims to ensure protection of peregrine falcons using the coast. The Special Protection Area on Ailsa Craig includes some maritime cliff and heath. Opportunities exist to spread good practice in terms of habitat management. The National Trust for Scotland is leading an initiative encouraging land owners to manage cliff top habitats in an environmentally sensitive manner. Wider dissemination of other existing guidance can also be undertaken. For example, A Sea Cliff ManagementHandbook was jointlyproduced by the UniversityofLancaster, JNCC and the National Trust in 1991. In 1998 the National Trust also produced a report on Grazing Sea Cliffs and Dunes for Nature Conservation.

Further Information

Gordon Riddle, NTS Culzean Castle & Country Park.
Tel: 01655 760269.

ACTIONS Maritime Cliff and Heath	TO BE ACTIONED BY		YEAR (TO BE COMPLETED OR IN PLACE BY					
	lead	partners	2001	2002	2003	2004	2005	2010
Policy and Legislation								
Following survey of maritime cliff and heath, designation of areas as SSSIs / LNR / Natura 2000 / Wildlife Sites etc. where applicable to be underway or completed.	SNH RSPB NTS ALA SWT	CC ABRC					•	
Promote sea defence and coastal protection policies which encourage the free function of natural processes.	ALA					•	•	•
Ensure all development proposals are fully appraised for impact on biodiversity following NPPG 14, and appropriate consultation processes, to prevent net loss of habitat.	SNH ALA SWT RSPB	SWT RSPB			•	•	•	•
Site Safeguard and Management								
Within the planning context, safeguard against developments or proposed activities which would result in unacceptable impacts on this habitat.	ALA	SNH SWT			•	•	•	•
Promote. refine and implement appropriate management regimes for maritime cliff and heath habitats including the use of management agreements for key sites.	SNH	NTS				•	•	•
Advisory								
Produce literature on positive management of the habitat and disseminate through farming and landowners community.	SNH FWAG NFUS				•			
Produce codes of conduct for issues such as access.	SNH	Rambler's Assoc.			•			
Use as a demonstration site, work being done at Culzean Castle and other land managers to provide practical advise on best management and restoration practices for maritime cliff and heath.	NTS						•	
Promote use of economic incentives for good practice in habitat management.	SNH NFUS SERAD	SWT					•	
Research and Monitoring								
Carry out baseline botanical, entomological and ornithological surveys of the habitat.	SNH RSPB ALA SWT	ABRC NTS SOC				•		
Review surveys on a seven yearly basis.	SNH							•
Monitor delivery of this plan annually and review on five yearly basis.	ABG			•	•	•	•	•
Communications and Publicity								
Include the ecology of this habitat in programmes of guided walks run by Ranger Services throughout the region.	SWT NTS ALA CMRP			•	•	•	•	•
In appropriate areas of this habitat, erect interpretation boards.	ALA	NTS SWT SNH					•	

Key to partners - page 5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• TROON
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MUIRKIRK•
• Prestwick
• AUCHINLECK
• AYR
• CUMNOCK
• NEW CUMNOCK
• Maybole
• DALMELLINGTON
BELLSBANK •
• GIRVAN
• Barrhill

Wetland habitats

AYRSHIRE LOCAL BIODIVERSITY ACTION PLAN

Rivers and streams

Fen, carr, marsh, swamp and reedbed

Raised bog

Standing open water

Coastal and floodplain grazing marsh

BIODIVERSITY in AYRSHIRE

Introduction

The natural character and biodiversity potential of Ayrshire's rivers and wetlands is, as elsewhere, ultimately
l climatic factors which
aphy, water chemistry,
orphology. Within the
range of habitattypes can
from the steep rocky
eadwaters in the Southern
olands to the deeper,
uggish and biologically
cher waters of the
wlands. No rivers in
yrshire have yet been
oposed as Special Areas
ases such as the Pinbain Burn, aquatic biodiversity contributes to the overall interest of a SSSI.

Ayrshire's river invertebrate communities tend to be diverse, reflecting the generally high water quality. All the major rivers (Garnock, Irvine, Ayr, Doon, Girvan and Stinchar) support Atlantic salmon and sea trout and other members of riverine fish communities. All four species of mammal commonly associated with UK rivers (water shrew, water vole, otter and mink) are present in Ayrshire.

Although rivers in the area are probably generallyhealthier now than at any time over the past fifty years, their biodiversity continues to be threatened by a number of factors. The upper Girvan, Stinchar and particularly the Doon catchments are sensitive to acidification for geological reasons, and this problem has been aggravated by extensive coniferous afforestation. The discharge of ferruginous minewater from abandoned deep coal mines has visibly affected river quality in areas such as around Muirkirkand Dailly. Current opencast methods give rise to concerns about watercourse diversion and changing groundwater levels.

In addition, highly polluting agricultural wastes such as cattle slurry and sheep dip can cause chronic local watercourse pollution with significant effects on invertebrate and fish populations.

Despite these threats, Ayrshire's wetland habitats provide a wonderful biodiversity resource which can enhance the quality of all our lives.

Rivers and Streams

Definition

Rivers and streams are of great value to both wildlife and human recreation. In their natural state, watercourses are dynamic environments, creating a range of physical habitat which are determined by factors such as slope, discharge, water velocity, and substratum. Each natural river or stream will therefore comprise a variety of physical habita such as gravel bars, eroding earth cliffs, silt deposits, cobb riffles etc. and these in turn will support a wide range of plants and animals. In general terms, the more diverse th range of physical habitats which exist, the more biological diversity there will be.

Current Status

The principalrivers of Ayrshire are the Garnock, Irvine, Ayr, Doon, Water of Girvan, Nith and Stinchar. Even in Scottish terms, these are not large rivers with the longest being the Ayr which is 63km from source to mouth. There are a number of tributaries which feed these rivers and there are a number of smaller rivers which drain directly into the Firth of Clyde such as the Noddesdale, Gogo, Pow, Pinbain and the Milton Burn.

The rivers and streams of Ayrshire have varying habitats due to differing geological and climatic factors which influence catchment topography, water chemistry, hydrology and channel morphology. Watercourses are constantly changing environmentswhich create a range ofphysical habitatswhich will be determined by factors such as slope, discharge, water velocity, and substratum. Even within the limited geographical area of Ayrshire, a range of habitat types can be found, from the steep, rocky and relatively unproductive waters of the southern uplands to the deeper, meandering, biologicallyricher waters of the lowlands.

Nature Conservation Importance

The diverse features found in and around rivers and streams encourage a wide range of plants and animals. Within Ayrshire, the aquatic invertebrate communities tend to be diverse which indicates that water quality is generally high. The invertebrate groups commonly found include stoneflies, mayflies, caddis flies, beetles, etc.

Many small streamsin the south of Ayrshire and south Arran flow over ultrabasic rock. Some streamson Arran support rare beetles such as *Hydraena pygmaea* which is a Red Data Book species. In the Water ofGirvan there have been unconfirmed reportsthatthe rare river jelly lichen is present.

Key Sites

- River Ayr
- River Irvine
- Water of Girvan
- River Doon
- River Garnock
- River Stinchar
- River Nith
- Isle of Arran Rivers

Key Species

Mammals

- Water shrew (Neomys fodiens)
- Water vole (Arvicola terrestris)
- European otter (Lutra lutra)
- Natterer's bat (Myotis nattereri)
- Daubenton's bat (Myotis daubentoni)
- Banded Pipistrelle bat (Pipistrellus pipistrellus)
- Brown Pipistrelle bat (Pipistrellus pygmaeus)

Birds

- Kingfisher (Alcedo atthis)
- Sand martin (Riparia riparia)
- Dipper (Cinclus cinclus)
- Goosander (Mergus merganser)

Fish

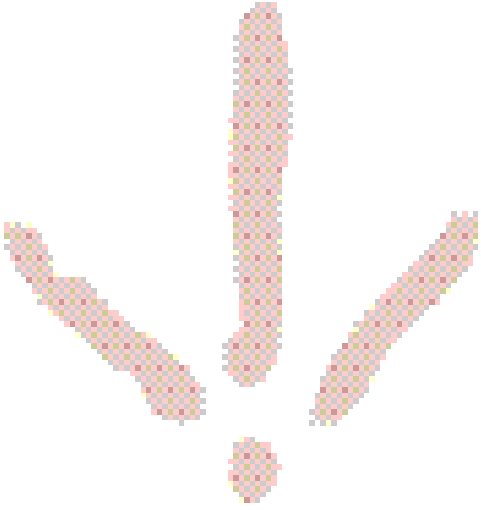
- Atlantic salmon (Salmo salar)
- Brown trout (Salmo trutta)

Invertebrates

- Saucer bug (Aphelocheirus aestivalis)
- Mayfly (Heptagenia fuscogrisea)
- Higher Plants
- Alternate flowered water milfoil (Myriophyllum alterniflorum)
- Water crowfoot (Ranunculus aquatilis)

Lower Plants

- Killarney fern (Trichomanes speciosum)
- River jelly lichen (Collema dichotomum)



All the main rivers support atlantic salmon and sea trout as well as brown trout, eels, sticklebacks, minnows and stoneloaches also being very common. Introduced species like grayling have also become well established in the River Ayr catchment.

Many of the rivers in Ayrshire have been designated as salmonid rivers as defined in the Freshwaters Fisheries Directive.

Biodiversity Context

There is a UKBroad HabitatStatement for rivers and streams. This gives the following conservation direction:

"Maintain and improve the quality, state and structure of all UK rivers and streams and their associated floodplains. Restore degraded river systems taking account of water quality and quantity, structure and hydraulic connection with the floodplain".

Measures to be considered further include:

- Implement integrated catchment management plans similar to those being developed elsewhere in Scotland;
- Use existing measures such as the Countryside Premium Scheme Water Margin option to support the appropriate management of rivers and streams and their associated habitats, in particular floodplains;
- Reduce acid emissions to reduce damage from acid rain;
- Review the powers and duties of water management institutions to manage water for nature conservation objectives.

Current factors affecting the habitat

The Ayrshire rivers are subject to a wide range of potentially damaging activities.

In some areas of Ayrshire such as Arran, upper reaches ofthe Girvan, Stinchar and Doon catchments, acidification is a problem. In these areas, sensitive invertebrate groups (including mayflies, molluscs and shrimps) are declining in number and diversity.

Habitat Objectives

Main Objective

To maintain and enhance the quality and extent of biodiversity of rivers and streams in Ayrshire.

Work Objectives

Objective 1

Seek to protect and improve water quality in Ayrshire.

Target

Identify key areas of catchment for improvement by 2002.

Reduce discharges and tipping incidences in key localities by 50% by 2005.

Objective 2

Seek to develop integrated management plans for all main watercourses in Ayrshire.

Target

Develop outline proposals by 2005.

Objective 3

Seek to increase public awareness in importance of habitat protection.

Target

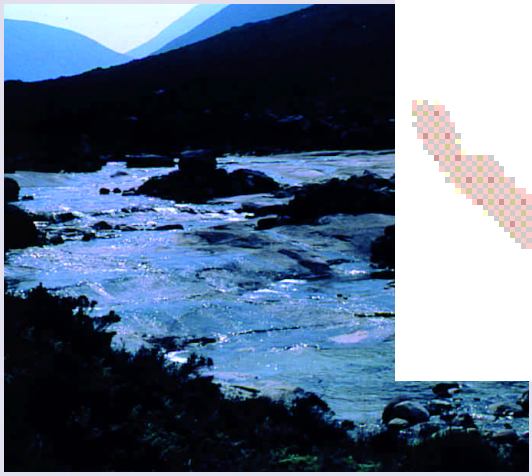
Identify and open dialogue with key communities by 2002.

The area is heavily farmed resulting in various sources of pollution. Dairy farming practices can generate highlypolluting organic waste which can cause potentially lethal problems.

Sheep farming, which is common in the areas around the Girvan and Stinchar catchments can also cause problemsdue to the use of chemicals used to dip sheep. These dips can have devastating effects on aquatic life if they come into contact with the river. Other farming practices, such as the increased use of fertilisers also cause pollution. Rivers and streams are susceptible to diffuse pollution due to agricultural run-off from the land.

Discharges from wastewater treatment works can also have a detrimental effect on fish life with West of Scotland Water being unable to treat some chemicals which enter their treatment works.

Deep mining was a major industry in Ayrshire, but although opencast methods are now employed throughout the area, the rivers and streams of Ayrshire still receive discharges of ferruginous minewater from the abandoned deep mines. New techniques used in opencast mining have also caused concern because watercourses have been occasionally diverted. The effects of pumping on groundwater levels and subsequentlyon the river flow have also caused concern.



On Arran and in the upper reaches ofthe Girvan, Stinchar and Doon, the natural geology ofthese areas have increased their sensitivity to acid rain. The great degree of coniferous afforrestation in these areas has also aggravated the problems of acidification. Interception of air pollution by coniferous plantations can also exacerbate the acidity of rivers in these areas.

Opportunities and Current Action

Management

River management schemes such as West Galloway Fisheries Trust carry out work on the Girvan, Stinchar & Doon. The new HabitatEnhancementInitiative led by SEPA has also considerable scope for partnership action in key catchment areas.

Existing organisations and their responsibilities

River Doon Fishery Board have initiated several surveys using electrofishing to obtain fish density information. The fishery boards covering the Girvan and the Stinchar have also instigated similar surveys.

West Galloway Fisheries Trust (WGFT) provides advice to the fisheries boards ofthe Girvan, Stinchar and Doon.

SEPA and WoSW are furthering the conservation duties of their predecessor organisations. Both organisations have statutory responsibilities for pollution control.

Pollution control

SEPA and WoSW will reduce pollution in watercourses through regulation of discharges and effective treatment of effluent respectively.

Research and monitoring

Water quality monitoring and hydrological recording is undertaken by SEPA.

Throughout Ayrshire, river habitat surveys have been undertaken on many tributaries ofthe main rivers. The WGFT also collect water quality information.

Some rivers within Ayrshire are covered by the Wetlands Bird Survey which involves collation of the monthly winter wildfowl/wader counts. This information is co-ordinated by the Scottish Ornithologist's Club.

Policy and legislation

SSSI designations have been applied to important river and stream habitats in Ayrshire such as the Pinbain Burn which flows directly into the Clyde, and Penwhapple Burn, a tributary of the Girvan.

In the imminent future, the European Water Framework Directive will be implemented and may require integrated catchment management to be adopted.

ACTIONS Rivers and Streams	TO BE ACTIONED BY		YEAR (TO BE COMPLETED OR IN PLACE BY					
	lead	partners	2001	2002	2003	2004	2005	2010
Policy and Legislation								
Ensure that all statutory water quality and discharge standards are maintained.	SEPA	WoSW	•	•	•	•	•	•
Ensure that development plans and policies take full account of effects of development on rivers and streams and associated wildlife in the region, and promote no net loss of this habitat.	ALA WoSW	SEPA SNH SWT	•	•	•	•	•	•
Ensure that adequate consultation takes place when developments are proposed in river catchment systems	ALA SEPA SWT	All	•	•	•	•	•	•
Promote the adoption of SUDS (sustainable urban drainage schemes) where surface water quality problems are evident.	ALA SEPA		•	•	•	•	•	•
Ensure that pressure is brought to bear on relevant organisations conducting activities within and outwith the region but which impact on river systems (eg industrial emissions, acidification).	SEPA	All	•	•	•	•	•	•
Develop and implement Catchment Management Plans as directed in the Water Framework Directive.	WoSW	All		•	•	•	•	•
Site Safeguard and Management								
Within the planning context, ensure that full consideration is given to the value of the habitat when considering proposed developments which threaten loss or damage to the habitat. Where development is liable to proceed, endeavour to minimise any adverse effects through the use of planning conditions or agreements.	ALA	SWT SEPA SNH	•	•	•	•	•	•
Encourage fisheries interests to establish management which enhances populations of important fish species in the region eg fish passes.	Angling WGFT DSFB		•	•	•	•	•	•
Ensure these management actions are included in catchment plans (see above). Any management practices should not have a detrimental impact on other aquatic groups.	SEPA			•	•	•	•	•
Halt the practise of culverting streams and rivers through urban and other areas where possible by encouraging the use of alternative management by designers and developers.	ALA	SNH SEPA	•	•	•	•	•	•
Encourage appropriate management of rivers and their banks in existing developments in urban areas.	ALA SEPA		•	•	•	•	•	•
Encourage habitat restoration through the Habitat Enhancement Initiative e.g. on open cast mine sites.	SEPA		•	•	•	•	•	•
Encourage the full implementation of the Forestry Commission Water Guidelines i.e. buffer strips around water courses and the strategic planting of broadleaves along the water course.	SEPA		•	•	•	•	•	•
Advisory								
Promote practices that encourage improvement of biodiversity value of river catchments and the riparian zone as part of all environmental improvement programmes (eg farm plans, CPS/RSS, planting schemes).	All		•	•	•	•	•	•
Advise farmers that overstocking in the uplands will lead to erosion which may affect water quality.	FWAG NFUS	SAC SWT	•	•	•	•	•	•
Encourage farmers not to allowing grazing up to edge of water course because this may damage riparian habitats and cause erosion.	FWAG NFUS	SAC SWT	•	•	•	•	•	•
Use of agri-environment scheme such as the RSS to improve riparian habitats.	FWAG	SAC NFUS	•	•	•	•	•	•
Research and Monitoring								
Continue to monitor the impact and extent of acidification of rivers and streams in the region.	SEPA		•	•	•	•	•	•
Survey rivers and streams in Ayrshire and designate, where possible, important sites as Wildlife Sites and incorporate them into the planning system.	SNH ALA	SWT	•	•	•	•	•	•
Continue programme of river habitat surveys throughout Ayrshire.	SEPA		•	•	•	•	•	•
Develop a Geographical Information System (GIS) to hold data about biodiversity and other information about rivers in the region. Make this system compatible with Biological Record Centre (see below).	WGFT							•
Monitor the delivery of this plan yearly and in detail every five years, starting in 2002.	ABG			•	•	•	•	•
Support Biological Record Centre for Ayrshire and ensure that all data collected for this plan is sent to them.	ABRC		•	•	•	•	•	•
Communications and Publicity								
Raise public awareness of the importance of local river and stream habitats through the press, publications, and environmental education opportunities	ALA SNH SWT		•	•	•	•	•	•

Key to partners - page 5

Fen, Carr, Marsh, Swamp and Reedbed

Definition

Fens are peatlands which receive water and nutrients from a ground source as wel from precipitation.

Carr habitat is generally swampy woodland and is often found associated with fens and marshes.

Marsh is a difficult habitat to define, it refers to vegetation occurring on mineral so which has the water table close to the surface for most of the year

Swamps usually have less vegetation variety than fens. The formation of swamps is dependant on water-table levels. The levels should be on or at that of the vegetation most of the year

Reedbeds are fens or swamps dominated Phragmites australis.

Current Status

In Ayrshire, fen, carr, swamp, marsh and reedbed are thought to be widespread however the habitatsare localised and cover a small geographicalarea. Atthe majorityof sites, a combination of fen, carr, swamp, marsh and reedbed can be found.

Nature Conservation Importance

- Fens, carr, swamp, marsh and reedbeds are all important habitats in terms of biodiversity;
- Fens and swamps support a good variety of vegetation, invertebrates, mammal and bird life;
- The willow carr habitat covers a relatively small area but it is important for willow tit and as a feeding site for swallows, hen harrier, short-eared owl and reed bunting. The sites in Ayrshire are: Belston Loch; Tranew Flushes and Kerse Loch;
- Ayrshire has significant populations of UK breeding water rail with perhaps 100 pairs in the area. Bird counts have been recorded at Garnock Floods and Knockshinnoch Lagoons;
- Several of the key sites have been designated as sites of special scientific interest (SSSI). These include Bogton Loch, Martnaham Loch, Dalmellington Moss, Knockdaw Marsh and Barlosh Moss;

Key Sites

- Darleith
- South Auchenmade Wildlife Site
- Shewalton Moss
- Doon Valley Wetlands Moss SSSI
- New Cumnock Wetlands
- Martnaham Loch SSSI
- Kerse Loch
- Tranew Flushes
- Belston Loch
- Knockdaw Marsh SSSI
- Gailes Marshes
- East Holmes Wetlands
- Drumlamford Loch
- Garnock Floods
- Kilbirnie Loch
- Munnoch Reservoir
- Barlosh Moss SSSI
- Heart Loch

Key Species

Mammals

- Water Shrew (Neomys fodiens)
- Water Vole (Arvicola terrestris)
- European otter (Lutra lutra)

Birds

- Whooper swan (Cygnus cygnus)
- Garganey (Anas querquedula)
- Shoveler (Anas clypeata)
- Hen harrier (Circus cyaneus)
- Spotted crake (Porzana porzana)
- Water rail (aquaticus)
- Snipe (Gallinago gallinago)
- Curlew (Numenius arquata)
- Short eared owl (Asio flammeus)
- Swallow (Hirundo rustica)
- Grasshopper Warbler (Locustella naevia)
- Sedge warbler(Acrocephalus schoenobaenus)
- Willow tit (Parus montanus)
- Reed bunting (Emberiza schoeniclus)

Reptiles and Amphibians

- Common Frog (Rana temporaria)
- Common Toad (Bufo bufo)
- Palmate Newt (Triturus helveticus)
- Smooth Newt (Triturus vulgaris)
- Adder (Vipera berus)

Invertebrates

- Beetle (Acilius canaliculatus)

- Bogton Loch has been designated as a SSSI for peatland habitat and ornithological interest. The surrounding habitats are a mix of marshy grassland, fen, and willow carr. This rich vegetation includes the narrow small-reed *(Calamagrostis stricta)* which is uncommon in Ayrshire. The site is also important for wetland breeding birds;
- Similarly, Barlosh Moss is also a SSSI for its peatland habitat. The area has developed on the site of a former loch and now contains a varietyof habitats such as birch-willow carr, marshy grassland, reedswamp, fen and raised bog. The locally rare bog rosemary has been recorded there;
- Martnaham Loch has been designated as a SSSI for its open water habitat. The site is one of the most botanically diverse areas in Ayrshire. The area surrounding the the loch includes extensive emergent reedswamps, willow and alder carr, and a small area of fen. The site is dominated by large patches of common reeds *(Phragmites australis)* and also contains the some more unusual plants such as the greater spearwort *(Ranunculus lingua)* which is rare in Scotland.

Biodiversity Context

There is a UKHabitat Action Plan for Fen. This has the following objectives:

- Identify priority fen sites in criticalneed of rehabilitation and initiative by the year 2005. All rich fen and other sites with rare communities should be considered;
- Ensure appropriate water quality and quantity for the continued existence ofall SSSI fens by 2005.

There is a UK Habitat Action Plan for reedbed. This has the following objectives:

- 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 1200 ha of new reedbed on land of low nature conservation interest by 2010.

Current factors affecting the habitat

- Excessive water abstraction, drainage and conversion to agricultural land are all factors which lead to a loss ofarea through drying;
- Lack of or inappropriate management of existing habitats can lead to drying, scrub encroachment and succession to woodland;
- Some of the habitat (e.g. Fens) are particularly susceptible to agriculturalrun-offand afforestation within the catchment.

Opportunities and Current Action

Management

Over the years, the Scottish Wildlife Trust have initiated several surveys of these habitats. Atpresent, SWT are creating new habitatsat SWT reserves around the town of Irvine. SWT reserves are managed at Garnock Floods, Knockshinnoch Lagoons, Dalmellington, Shewalton Moss and Bogton Loch.

Management of peatland SACs and creation of fen habitat at surrounding raised mires.

Higher Plants

- Water Sedge (Carex aquatilis)
- Cowbane (Cicuta virosa)
- Marestail (Hippuris vulgaris)
- Reed sweet grass (Glyceria maxima)
- Rush (Juncus sp.)
- Reed (Phragmites sp.)
- Bottle Sedge (Carex rostrata)
- Bog Rosemary (Andromeda polifolia)
- Narrow small reed (Calamagrostris stricta)

Lower plants

- Sphagnum (Sphagnum sp.)

Habitat Objectives

Main Objective

To maintain and enhance the ecological quality of fen,,carr marsh, swamp and reedbed habitats in Ayrshire.

Work Objectives

Objective 1

To restore and enhance degraded habitat through appropriate management.

Targets

Identify key sites capable of improvement by 2002.

Develop 10 new sites through sustainable urban drainage schemes by 200

The 3 lochs project which includes Kilbirnie Loch. This project is currently being co-ordinated by Clyde Muirshiel Regional Park. The project will involve the development of a management strategy for Kilbirnie in terms of economic, environmental and social benefits to the area, its inhabitants and visitors.

Opportunities for wetland creation may arise from the restoration of opencast coalmining in East Ayrshire.

Research and monitoring

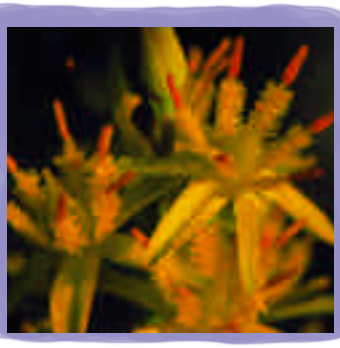
SWT has a programme of monitoring and assessing sites in Ayrshire.

Designations

Several of the sites have been designated as SSSI, these include Martnaham Loch, Dalmellington Moss, Bogton Loch, Ashgrove Loch and Knockdaw Hill/Marsh and Barlosh Moss.

ACTIONS Fen, Carr, Marsh, Swamp and Reedbed	TO BE ACTIONED BY		YEAR (TO BE COMPLETED OR IN PLACE BY					
	lead	partners	2001	2002	2003	2004	2005	
Policy and Legislation								
Ensure water quality is maintained at high standards on all sites containing this habitat type.	SEPA	SNH	•	•	•	•	•	
Include objectives and prescriptions for positive management of fen, carr, marsh, swamp and reedbed in agri-environment schemes such as CPS/RSS and ESA.	SNH	FWAG SAC RSPB	•	•	•	•	•	
Following a survey of fen, carr, marsh, swamp and reedbed designate important sites as 'Local Wildlife Sites' as appropriate and incorporate them into the planning system.	SWT SNH ALA	SEPA		•				
Site Safeguard and Management								
Within the planning context, ensure that full consideration is given to the value of the habitat when considering proposed developments which threaten loss or damage to the habitat. Where development is liable to proceed, endeavour to minimise any adverse effects through the use of planning conditions and agreements.	ALA	SNH SWT	•	•	•	•	•	
Restore and enhance fen habitat through management agreements with land owners, on all SSSI sites and if possible across all Ayrshire sites.	SNH	FWAG RSPB SAC			•	•		
Encourage restoration of opencast coal mines to wetland habitat where appropriate.	RSPB Mineral Co				•	•	•	
Write and implement catchment actions which will maintain and enhance the biodiversity of fen, carr, marsh, swamp and reedbed in the region.		All			•	•	•	
Advisory								
Train agricultural advisors (FWAG, SAC) to promote the biological importance of this suite of habitats, with specific reference to the disastrous effects of agricultural pollution and drainage.	SAC FWAG		•	•	•	•	•	
Research and Monitoring								
Carry out an audit of all current available data on these habitats and assess the full list of species for the region which are supported by fen, carr, marsh, swamp or reedbed habitat.	SNH	RSPB SOC		•				
Initiate a regional fen/swamp database, which can feed into a Biological Record Centre database (see below).	ABRC				•			
Carry out specialist invertebrate surveys of key and or larger sites, or more sites as resources dictate.	ABRC	ABG		•				
Monitor at regular intervals the status and distribution of key species associated with these habitat types.	SNH	SWT	•	•	•	•	•	
Continue WeBS counts at larger water bodies and carry out five yearly breeding bird surveys at SSSI sites.	SNH RSPB	SOC	•	•	•	•	•	
Monitor the delivery of this plan yearly and in detail every five years, starting in 2002.	ABG			•	•	•	•	
Support Biological Record Centre for Ayrshire and ensure that all data collected for this plan is sent to them.	ALA ABRC		•	•	•	•	•	
Communications and Publicity								
Raise public awareness of the importance of marsh and reedbed habitats through the press, publications, and environmental education opportunities.	All		•	•	•	•	•	

Raised Bog



Definition

Raised Bogs are typically found in the lowlands and are characterised as isolated domes of peat in an otherwise non-peat landscape. This differentiates them from blanket bogs, which a found in the uplands. A complicating factor which is particularly releva to Ayrshire is the transition zone between raised and blanket bogs. Sites such as Airds Moss have been termed intermediate bogs because they ha characteristics of both raised and blanket bogs. Although technically cor this definition is problematic as it is not recognised by the European Un and therefore would fall outside of any site designation. For the purpose this LBAP, all intermediate bogs are included within the blanket bog sect

Water filled hollows studded the land after the retreat of the glaciers, te thousand years ago. Many of these began to slowly infill with vegetation forming 'eutrophic' fens. As marginal plants soaked up the nutrients at edges, the centre of the fens became more nutrient poor, waterlogged an acidic. These conditions deter most plants but are ideal for the growth c Sphagnum mosses. The steady upward growth of carpets of Sphagnum isolated the surface from the nutrient rich groundwater resulting in an e more nutrient poor system and the growth of Sphagnum maintained aci waterlogged conditions. The fen has now turned into an 'ombrotrophic' raised bog, receiving all its nutrients from precipitation alone.

The acid, waterlogged conditions deter the usual processes of decay so t bog continues to grow upwards. Plants living on the surface of the bog fi thousand years ago now reside five metres down. This undecomposed pl material is known as peat. Raised bogs can form up to ten metres of pea but on average range from four to seven metres thick.

The hydrological integrity of a site is key to its long-term future. T maintain active Sphagnum growth and peat formation, the water table should be at or near the surface for the majority of the year. Surfaces wh ch have not been cut for peat extraction are known as primary, those that have been cut are classified as secondary. Where peat is still being forme , sites are classified as being active, where this is not the case they are degraded. Depending on their history and condition sites can be any combination of the above, the best being primary active and the worst being secondary degraded.

Key Sites

- Dalmellington Moss SSSI
- Cockinhead Moss SSSI/candidate SAC
- Low Moss
- Bloak Moss
- Auchentiber Moss
- Dykeneuk Moss SSSI/candidate SAC
- Bankhead Moss SSSI/candidate SAC

Key Species

Birds

- Curlew (Numenius arquata)
- Snipe (Gallinago gallinago)
- Short-eared owl(Asio flammeus)
- Stonechat (Saxicola torquata)

Reptiles and Amphibians

- Common Frog (Rana temporaria)
- Common lizard (Lacerta vivipara)
- Adder(Vipera berus)

Invertebrates

- Black darter dragonfly (Sympetrum danae)
- Large heath butterfly (Coenonympha tullia)

Higher Plants

- Bog rosemary (Andromeda polifolia)
- Bottle sedge (Carex rostrata)
- Large-leaved sundew (Drosera anglica)
- Bog asphodel (Narthecium ossifragum)
- White-beaked sedge (Rhynchospora alba)
- Cranberry (Vaccinium oxycoccus)

Lower plants

- Moss (Sphagnum magellanicum, Sphagnum fuscum)

Current Status

It is estimated that raised bogs once covered 69 663 ha in the UK. Mostly due to peat extraction and conversion to agriculture the current extent is approximately 19 000 ha or 27% of the original resource. Of this remainder only 5 404 ha spread across 55 sites are classified as being 'primary active'. This represents approximately 8% of the original resource. The majority of the remaining areas are classified as 'degraded'.

Approximately 1 500 ha of raised bog remain in Ayrshire. Areas of primary surface still exist on twenty individual sites.

Over half of the raised bog resource in Ayrshire has been lost to agricultural reclamation in the last century and a further 25% has been lost to development and afforestation.

Habitat Objectives

Main Objective

To maintain and enhance the quality and extent of raised bogs in North, South and East Ayrshire.

Work Objectives

Objective 1

Seek to increase the current area of active raised bogs in Ayrshire through positive conservation management.

Targets

Seek to ensure no net loss in area or reduction in quality of the habitat by 2005.

Restore 250ha of degraded bog to active bog by 2010.

Objective 2

Where necessary produce, review and implement conservation management plans for all recognised statutory and non-statutory raised bogs.

Targets

Produce conservation management plans for statutory and non-statutory sites by 2002. Implement conservation management plans for above sites by 2003.

Nature Conservation Importance

Primary and secondary lowland raised bogs are recognised by the EU as being of significant conservation importance. In a regional context sites in Ayrshire fall within two distinct bioclimatic zones, the humid northern temperate zone (typical of raised bog) and the very humid northern temperate zone (typical of transition to blanket bog). Raised bogs in Ayrshire support species restricted to raised bogs such as cranberry, round-leaved and oblong-leaved sundew and the nationally rare *Sphagnum fuscum* and bog rosemary *Andromeda polifolia.*

Biodiversity Context

There is a UK Habitat Action Plan for raised bogs (Tranche 2 Vol 6) which has the following objectives:

- Maintain the current distribution and extent (c 6000 ha) of primary near-natural lowland raised peat bog in the UK, and ensure that the condition of this resource is maintained where favourable or enhanced through appropriate management;
- Establish by 2005 appropriate hydrological and management regimes at those areas which have been damaged but still retain nature conservation interest (i.e. primary degraded and drained; 7000 ha) and aim to achieve favourable condition of these areas by 2015;
- By 2002 identify areas, timescales and targets for restoration or improvementof significantlyaltered raised bog areas, including those used for agriculture, peat workings and woodlands;
- Initiate by 2005 improvement or restoration management on areas which have been identified (above) according to the agreed timescales.

Current factors affecting the habitat

- Mineral extraction, principally for coal by open-cast methods;
- Continual degradation of sites resulting from historical drainage, extraction, forestry and agriculturalpractices;
- Inappropriate burning.

Opportunities and Current Action

Designation

Statutory designations such as SSSI have been applied to three sites but there are no sites with NNR status.

The UK Government has put forward Cockinhead Moss, Bankhead Moss and DykeneukMoss as candidate Special Areas of Conservation.

SWT are currently surveying sites in Ayrshire, any raised bog supporting representative bog or heathland species will qualify for Wildlife Site status. The Wildlife Site system is a voluntary, non-statutory system designed to identify sites of nature conservation value in the wider countryside. Sites proposed for local designation should be identified in the context of LocalPlans.

Policy Actions

The NCC Peat Policy was issued in 1990 and carried forward by SNH. This promotes the use of sustainable growing media based on recycled organic materials in place ofpeat.

SEPA have statutory responsibilities for pollution control and are developing policies and guidance for conservation of wetland areas.

Forestry Peat Guidelines are being developed by the Forestry Commission and SNH to restrict tree planting on important peatland sites.

The National Planning Policy Guidelines NPPG14, Natural Heritage outlines a number of areas, which are relevant to sites of wildlife importance. Although not mentioned specifically as a habitat, raised bogs perform important functions within a hydrological catchment and are therefore covered within para. 55-57 pertaining to lochs, ponds, watercourses and wetlands.

Policy Actions

Planning authorities are advised to seekthe advice ofSNH on sites which they propose to designate as wildlife sites.

Research and Monitoring

An inventory oflowland raised bogs has been published by SNH (Lindsay and Immerzi, 1996) and a GIS database containing survey data of raised bogs is currently in development.

SWT, in collaboration with the EU, SNH and RSPB produced the Bog Management Handbook (Brooks and Stoneman, 1997) to provide technical guidance for peatland managers.

Development of restoration techniques

Plans should be developed to restore sites with primary surfaces currently under commercial forestry plantations.

ACTIONS Raised Bog	TO BE ACTIONED BY		YEAR (TO BE COMPLETED OR IN PLACE BY					
	lead	partners	2001	2002	2003	2004	2005	2010
Policy and Legislation								
Ensure strategic planning at all levels is equipped to implement positive policies which take account of the international importance of raised bogs.	All						•	
Ensure that the policies of all partners will result in no further deliberate reduction in the area or quality of raised bogs in Ayrshire.	All		•					
Complete SAC consultation process and subsequent EU designation for all raised bogs on the current list for North, East and South Ayrshire.	SNH		•					
Ensure that planning documents take full account of raised bogs.	ALA SWT	All	•					
Define local application of WGS guidelines with regard to new planting and restocking of raised bogs.	FC	SNH		•				
Phase out the use and sale of peat-based composts and mulches by all partners and try to ensure that any plants purchased have been grown in peat free composts. Encourage other users to do likewise.	ALA SWT	All			•			
Following survey programme by SWT designate raised bog Wildlife Sites and incorporate into Local Plans.	SNH SWT ALA			•				
Site Safeguard and Management								
Within the planning context, ensure that full consideration is given to the value of the habitat when considering developments which threaten loss or damage to the habitat. Where development is liable to proceed, endeavour to minimise any adverse effects through the use of planning conditions and agreements.	All						•	•
Utilise the raised bog option within the RSS agri-environment scheme to fund management work on raised bogs on farms.	FWAG	SWT		•				
Prepare management plans for raised bog Wildlife Sites.	SWT			•				
Implement management plans for raised bog Wildlife Sites.	SWT	SNH			•	•	•	•
Ensure Forest Design Plans identify areas of raised bog which have been planted on and take action to restore these sites where appropriate.	FE	RSPB SNH			•			
Advisory								
Use demonstration sites to promote best conservation management practise.	SNH SWT FWAG			•	•	•	•	•
Research and Monitoring								
Complete any surveys to at least phase 2, digitise all boundaries and compartments.	SNH SWT	ALA		•				
Identify raised bogs currently under forestry plantations and develop plans for their restoration after harvesting.	FE					•		
Instigate a programme of strategic botanical and hydrological monitoring across selected representative sites and repeat every five years.	SNH	ABG SWT		•				
Set up a Local Biological Record Centre.	ABRC	ABG		•				
Monitor the delivery of this plan and review every five years.	ABG						•	•
Communications and Publicity								
Promote the use of peat alternatives to amateur and professional horticulturists.	SWT RSPB NTS	Business		•	•	•	•	•
Raise public awareness of raised bogs through guided walks, National Bog Day, the press and environmental education initiatives.	SNH SWT RSPB NTS ALA			•	•	•	•	•
Raise awareness of the conservation value of raised bogs with farmers and land managers.	FWAG SWT RSPB	SNH		•	•	•	•	•

Standing Open Water

Definition

Standing open water includes natural systems such as lochs, meres and pools, as well as man-made waters such as reservoirs. The habitat is the open water and the associated vegetation around the water's edge or in t water. Standing waters are usually classified according to their nutrient status and this can change naturally over time.

Current Status

Within Ayrshire, standing open water habitat include large lochs such as Loch Doon, Ashgrove, Kilbirnie and Glenbuck and several reservoirs including Riecawr, Bradan and Finlas Loch.

Nature Conservation Importance

There are three main types of standing waters, oligotrophic, eutrophic and mesotrophic and a definition for each follows below:

Oligotrophic lochs are poor in plant nutrients. The water is often clear because plankton is sparse, examples in Ayrshire include Loch Doon, Macaterick and Riecawr.

Eutrophic lochs are naturally rich in plant nutrients. These waters support large amountsof vegetation and a wide varietyofinvertebrates.

Mesotrophic lochs are an intermediate state between oligotrophic and eutrophic and potentially have the highest biodiversity of any loch type. Some examples of mesotrophic lochs in Ayrshire are Haylie reservoir, Martnaham loch, Penwhapple reservoir and Belston loch. Overall, although the nutrient status of any standing open water body can change over time, mesotrophic lochs are thought to support the greatest biodiversity. Oligotrophic and eutrophic lochs do however, support characteristic and rare species.

Several of the lochs in Ayrshire have been designated as sites of special scientific interest (SSSI).

Loch Doon has been designated as a SSSI for fish. It is the only site in Ayrshire which has a viable population of Arctic charr *(Salvelinus alpinus)*. It is thought that the population is now genetically distinct from other populations in Scotland.

Habitat Objectives

Main Objective

To maintain and enhance the ecological quality of standing waters in Ayrshire

Target

Identify key locations by 2003

Key Sites

- Loch Doon SSSI
- Bogton loch SSSI
- Martnaham loch SSSI
- Ashgrove loch SSSI
- Glenbuck loch SSSI
- Kilbirnie loch
- Loch Bradan
- Fergus loch
- Tarbolton loch
- Lochlea loch
- Riecawr loch
- Macaterick loch
- Finlas loch
- Haylie reservoir
- Penwhapple reservoir
- Belston loch

Key Species

Mammals

- Daubenton's bat (Myotis daubentoni)
- Natterer's bat (Myotis nattereri)
- Noctule bat (Nyctalus noctula)
- Banded Pipistrelle bat (Pipistrellus pipistrellus)
- Brown Pipstrelle bat (Pipistrellus pygmaeus)
- Otter (Lutra lutra)

Birds

- Red-throated diver (Gavia stellata)
- Black-throated diver (Gavia arctica)
- Great crested grebe (Podiceps cristatus)
- Whooper swan (Cygnus cygnus)
- Greylag goose (Anser anser)
- Common scoter (Melanitta nigra)
- Goosander (Mergus merganser)
- Pochard (Aythya ferina)
- Goldeneye (Bucephala clangula)
- Osprey (Pandion haliaetus)
- Reed bunting (Emberiza schoeniclus)

Fish

- Arctic charr (Salvelinus alpinus - important species in oligotrophic lochs.)

Higher Plants

- Bladderwort (Utricularia vulgaris)
- Tufted loosestrife (Lysimachia thyrsiflora)
- Water lobelia (Lobelia dortmanna)
- Water whorl-grass (Catabrosa aquatica)
- Reed sweet grass (Glyceria maxima)
- Gypsywort (Lycopus europaeus)
- Cowbane (Cicuta virosa)
- Mare's tail (Hippuris vulgaris)
- Water sedge (Carex aquatilis)
- Lesser pond sedge (Carex acutiformis)
- Purple loosestrife (Lythrum salicaria)
- Greater spearwort (Ranunculus lingua)
- Common club-rush (Schoenoplectus lacustris)