



Martnaham Loch is probably one of the most botanically diverse lochs in Ayrshire and supports good numbers of wintering and breeding waterfowl. It has been designated as a SSSI for its open water habitat. The loch has extensive emergent reeds and rushes. Amongst the more unusual plants is the Greater spearwort (*Ranunculus lingua*) which is rare in Ayrshire.

Ashgrove Loch is also a SSSI for its open water habitat although now only a small area of open water remains. The edges of the loch support a variety of locally rare and nationally uncommon species including tufted loosestrife (*Lysimachia thyrsoiflora*), cowbane (*Cicuta virosa*), bladderwort (*Utricularia vulgaris*) and water sedge (*Carex aquatilis*). This range of vegetation also provides breeding habitat for a variety of birds.

Biodiversity Context

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

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

Measures to consider further include:

- Prepare water level management plans for the benefit of wildlife (particularly for key species);
- Develop integrated catchment management plans. These are not yet statutory but have been developed voluntarily in a number of areas, e.g. River Almond and Loch Lomond;
- Use existing measures such as the RSS and Wetlands and Water Margins options, to support the appropriate management of open waters and their habitats;
- Reduce acid emissions (to reduce acid rain damage);
- Carry out Environmental Assessments of developments which will have a significant impact on open waters and their associated habitats.

There is also a UK Habitat Action Plan for mesotrophic lochs.

This has the following objectives:

- Maintain the characteristic plant and animal communities of current mesotrophic lochs;
- Identify and implement effective remedial action to address nutrient-enrichment and pollution in mesotrophic lochs by 2010.

Current factors affecting the habitat

Catchment Management

Poor management of water bodies is a problem, and the holistic overview to management of the resource is not always considered. Frequently, a range of activities occur in the same area but are not appropriately managed. In several lochs in Ayrshire, (e.g. Kilbirnie, Bogton Loch) introduced species (rainbow trout, dace, minck) are causing problems with predation to the natural fish stocks.

Change in hydrology

Lowering of water levels caused by over abstraction of surface water or by drainage.

Pollution

Eutrophication is a principal factor affecting standing open water. It is caused primarily by nitrates or phosphates in sewage or fertiliser run-off. Over the last few years, Kilbirnie Loch has been degraded due to the input of nutrients. Within Ayrshire, due to the natural geology and high concentration of coniferous afforestation, some areas are sensitive to acidification.

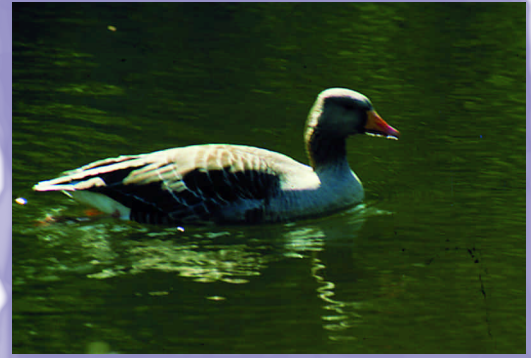
Opportunities and Current Action

Interested parties are currently investigating the feasibility of an integrated catchment management plan referred to as the Three Lochs project. In conjunction with work outside Ayrshire this will involve the development of a management strategy for Kilbirnie Loch to bring about economic, environmental and social benefits to the area, its inhabitants and visitors.

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

WoSW owns and extracts water from Lochs Bradan, Riecawr and Finlas and it plans to develop a catchment monitoring programme for all catchments in its area.





| ACTIONS Standing Open Water | 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 | | • | • | • | • | • | • |
| Ensure that all mesotrophic lochs meet EU Directives in terms of designations for wildlife, importance and or quality. | SEPA | SNH | | | | | • | • |
| Ensure that 'Total Phosphorus Water Quality Standards for Scottish Freshwater Lochs' policy is followed when setting consent standards for discharges to lochs. | SEPA | | • | • | • | • | • | • |
| Following a survey of mesotrophic lochs designate important sites as ' Wildlife Sites' as appropriate and incorporate them into the planning system. | 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 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 | SEPA RSPB SNH SWT | • | • | • | • | • | • |
| Write and implement catchment actions which take full account of biodiversity and aim to restore the mesotrophic nutrient status for all formally mesotrophic lochs in the region. | | All | | | | | • | |
| Control power boating and watersports on Loch Doon. | FE SHE | | • | • | • | • | • | • |
| Adoption of Habitat Enhancement Initiative to create new area of standing water e.g as part of opencast restoration. | SEPA | All | • | • | • | • | • | • |
| Enhance habitat features to benefit breeding birds. | RSPB | SEPA FE | • | • | • | • | • | • |
| Prevent drainage of small lochs e.g. Lochlea and Tarbolton Lochs | SNH | SEPA | • | • | • | • | • | • |
| Advisory | | | | | | | | |
| Develop appropriate advice concerning developments which may have detrimental effects on the biodiversity of loch systems and habitats. | ALA | SEPA SNH | • | • | • | • | • | • |
| Promote practices that encourage improvement of biodiversity value of mesotrophic lochs as part of all environmental improvement programmes eg farm plans, CPS/ESA, planting schemes). | SNH | All | • | • | • | • | • | • |
| Research and Monitoring | | | | | | | | |
| Carry out a survey to identify which lochs in Ayrshire are currently mesotrophic. | SEPA | SNH | | | • | | | |
| 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 standing water habitats through the press, publications, and environmental education opportunities | All | | • | • | • | • | • | • |

Coastal and Floodplain Grazing Marsh

Definition

Grazing marsh is defined as periodically inundated pasture, or meadow with ditches which maintain surface water levels and contain brackish fresh water. The marsh is rich in plants and invertebrates and is almost always grazed but is sometime cut for silage or hay. Sites may contain seasonal or permanent ponds with emergent swamp communities. These ponds may also be found adjacent to fen or reed swamp communities.

Current Status

In Ayrshire, the exact amount of coastal floodplain and grazing marsh has not been assessed. In the UK, it has been estimated that the total coverage is 300 000 ha. However, only a small proportion of this grassland is semi-natural supporting a high diversity of native plant species (5 000 ha in UK, half of which is found in England).

Nature Conservation Importance

Grazing marshes are important for a number of breeding wading birds such as snipe, lapwing and curlew. Other farmland birds such as skylark, linnet, grey partridge and redshank are also associated with this habitat. Also in Ayrshire, wintering waterfowl like whooper swan and greylag goose are important visitors.

Biodiversity Context

There is a UK Habitat Action Plan for Coastal and Floodplain Grazing Marsh. This has the following objectives:

- Maintain the existing habitat extent (300 000 ha) and quality;
- Rehabilitate 10 000 ha of grazing marsh habitat which has become too dry, or is intensively managed, by the year 2000. This would comprise 5 000 ha already targeted in ESAs, with an additional 5 000 ha;
- Begin creating 2 500 ha of grazing marsh from arable land in targeted areas, in addition to that which will be achieved by existing ESA schemes, with the aim of completing as much as possible by the year 2002.

Current factors affecting the habitat

The coastal and floodplain grazing marsh habitats are affected by the following: destruction of land for agriculture through drainage, ploughing etc., implementation of flood defences which are not sensitive to the habitat, golf course development, nutrient loading i.e. application of fertilisers to land adjacent to habitat and salt water flooding due to sea level rise.

Key Sites

- Bogside Flats
- New Cumnock Wetlands and Floodplain
- House of Water, New Cumnock
- Kilbirnie Loch
- Blairbowie Flushes
- Lochlea
- Water of Girvan
- Waterside, Patna
- East Holmes Marshes
- Airds Moss, Cronberry
- Ballantrae SSSI
- South Gailes, Irvine SSSI
- Hunterston SSSI
- Garnock Floods, Wildlife Site
- River Ayr Floodplain, Muirkirk
- Nith Floodplain

Key Species

Birds

- Whooper swan (*Cygnus cygnus*)
- Greylag goose (*Anser anser*)
- Hen harrier (*Circus cyaneus*)
- Short-eared owl (*Asio flammeus*)
- Redshank (*Tringa totanus*)
- Snipe (*Gallinago gallinago*)
- Curlew (*Numenius arquata*)
- Lapwing (*Vanellus vanellus*)
- Golden plover (*Pluvialis apricaria*)
- Grey partridge (*Perdix perdix*)
- Teal (*Anas crecca*)
- Reed bunting (*Emberiza schoeniclus*)
- Skylark (*Alauda arvensis*)
- Twite (*Carduelis flavirostris*)
- Linnet (*Carduelis cannabina*)
- Stonechat (*Saxicola torquata*)



Habitat Objectives

Main Objective.

To maintain the quality and extent of the currently identified habitat

Work Objectives.

Objective 1.

To establish the location, extent and quality of existing and potential areas of coastal and floodplain grazing marsh in Ayrshire.

Target.

Identify key locations for action by 2003

Objective 2.

To rehabilitate inappropriately managed areas of habitat

Target.

Prepare outline management scheme with owners, with 50% under agreement by 2005

Key Contacts

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Further Information

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Scottish Wildlife Trust
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Further reading

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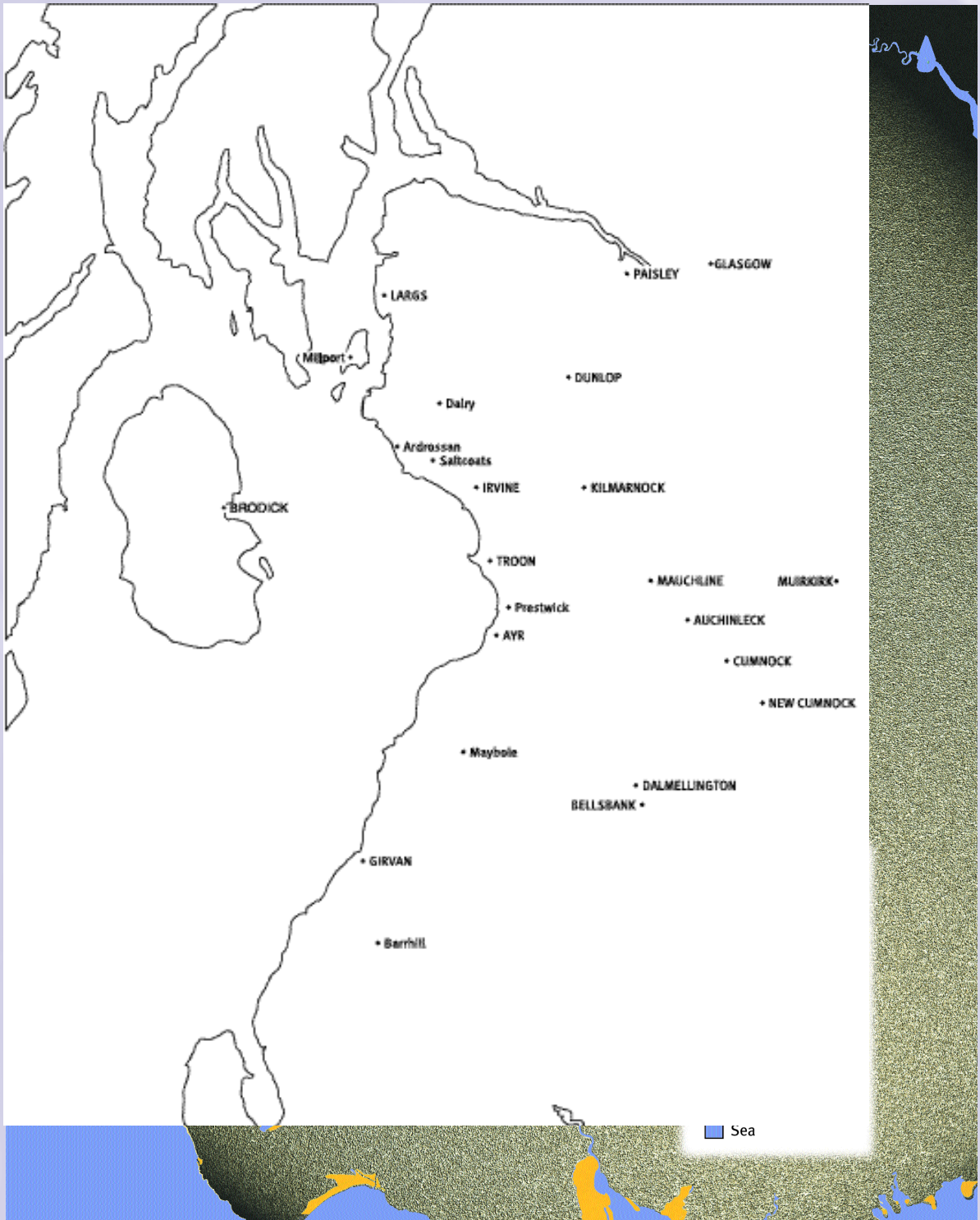
Opportunities and Current Action

SEPA has taken over the conservation duties of the predecessor organisations. It has statutory responsibilities for pollution control.



| ACTIONS Coastal and Floodplain Grazing Marsh | TO BE ACTIONED BY | | YEAR (TO BE COMPLETED OR IN PLACE BY) | | | | | |
|---|-------------------|-------------|---------------------------------------|------|------|------|------|------|
| | lead | partners | 2001 | 2002 | 2003 | 2004 | 2005 | 2010 |
| Policy and Legislation | | | | | | | | |
| Complete Special Area of Conservation (SAC) consultation process and subsequent designation for all grazing marshes on current Ayrshire list. | SNH | SWT | • | • | • | • | • | • |
| Ensure all Ayrshire planning documents take full account of grazing marshes as an internationally and nationally important habitat. | SWT All | All | • | • | • | • | • | • |
| Survey grazing marsh and designate important sites as Wildlife Sites as appropriate and incorporate them into the planning system. | SNH ALA SWT | | | | • | • | • | • |
| 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. | ALA | SNH All | • | • | • | • | • | • |
| Encourage extensive management and restoration of coastal and floodplain grazing marsh through whole farm plans and prescriptions for incentives schemes such as RSS. | FWAG NFUS | SNH | • | • | • | • | • | • |
| Write and implement catchment actions which will maintain and enhance the biodiversity of coastal and floodplain grazing marsh in the region. | SEPA | All | | • | • | • | • | • |
| Advisory | | | | | | | | |
| Visit all landowners who have examples of coastal and floodplain grazing marsh. Advise them about management which could be carried out to maintain and enhance this habitat. | SWT | FWAG SNH | | • | • | • | • | • |
| Research and Monitoring | | | | | | | | |
| Survey coastal and flood plain grazing marsh areas in the region and use the data obtained to identify areas where restoration is possible and to act as a baseline for a monitoring programme for grazing marsh to be conducted every five years. | SWT ALA | RSPB | | | • | • | • | • |
| Support Biological Record Centre for Ayrshire and ensure that all data collected for this plan are held there. | ABRC | All | • | • | • | • | • | • |
| Communications and Publicity | | | | | | | | |
| Raise public awareness of the importance of floodplain and grazing marsh habitats through the press, publications, and environmental education opportunities. | All | | • | • | • | • | • | • |

Key to partners - page 5





Farmland habitats

AYRSHIRE LOCAL BIODIVERSITY ACTION PLAN



Introduction

Virtually all of the Ayrshire landscape has been shaped by agriculture in some way including many of the habitats which are generally thought of as semi-natural.

On Arran the situation is rather different with a large proportion of upland and marginal land but even here the west part of the island in particular has a long history. The most appropriate management of this land is a continuation, or a modification, of traditional farming practices. With an

agricultural industry which has become more and more intensive it is becoming increasingly important that all land managers are aware of the potential impact of their everyday activities.

Land and biodiversity have co-existed for many centuries and one of the aims of this plan is to ensure that this successful partnership is maintained.

Although so much of Ayrshire's biodiversity is dependant on agriculture in one way or another, this chapter will focus on the land which is intensively managed and which is concentrated in the lower, more fertile areas. Here the challenge is to maintain viable levels of production without jeopardising the natural environment and to seek ways in which this environment can be enhanced.



Definition

Ayrshire is made up of a mosaic of many habitats ranging from the sea shore to the tops of the hills including productive, rolling grassland and the rugged mountain tops of Arran. Detailed Action Plans for many of these habitats can be found in this document and most will rely to some extent on agriculture for their success. However, the intensively managed farmland of the lowlands is not a homogeneous grass sward. It comprises a diverse mixture including arable land and a range of generally small or linear features which add variety to the landscape and which are vital to the health and well-being of the countryside.

This mixture includes:

- Improved grassland, for both silage, hay and pasture/grazing;
- Arable land including the crops and the stubble;
- Marshy grassland/Rush pasture;
- Shelter belts;
- Scrub;
- Ponds;
- Single trees;
- Farm buildings.

Boundary habitats:

- Hedges;
- Hedgerow trees;
- Grass headlands;
- Grass margins/beetlebanks;
- Cereal field margins;
- Dry stone dykes;
- Water margins;
- Road verges.

Key Sites

All farms with ESA/CPS/RSS plans in operation.

Key Species

Mammals

- Brown hare (*Lepus europaeus*)
- Water vole (*Arvicola terrestris*)
- Brown long-eared bat (*Plecotus auritus*)
- Banded Pipstrelle bat (*Pipistrellus pipistrellus*)
- Brown Pipstrelle bat (*Pipistrellus pygmaeus*)

Birds

- Snipe (*Gallinago gallinago*)
- Curlew (*Numenius arquata*)
- Grey partridge (*Perdix perdix*)
- Linnet (*Carduelis cannabina*)
- Yellowhammer (*Emberiza citrinella*)
- Corncrake (*Crex crex*)
- Skylark (*Alauda arvensis*)
- Reed bunting (*Emberiza schoeniclus*)
- Tree sparrow (*Passer montanus*)
- Barn owl (*Tyto alba*)
- Lapwing (*Vanellus vanellus*)
- Redshank (*Tringa totanus*)

Invertebrates

- Orange tip butterfly (*Anthocharis cardamines*)

Plants

- Whorled caraway (*Carum verticillatum*)
- Cornflower (*Centaurea cyanea*)



Current Status

Farmland, as defined in this section, occupies around 35% of Ayrshire with the vast majority of it being improved grassland. About a third of the total grass area is cut for silage while the remainder is grazed.

| Crop | 1998 (ha) |
|-----------------|---------------|
| Grass (mowing) | 32709 |
| Grass (grazing) | 76752 |
| Cereal | 9036 |
| Other | 1768 |
| Total | 120265 |

Grass growth is favoured by the frequent and reliable rainfall and heavy soils which characterise Ayrshire and the lowland areas are particularly suitable to dairying. 77 000 dairy cattle which eat the grass comprise over 20% of the Scottish total making Ayrshire the second most important dairy area of



Scotland after Dumfries and Galloway (Economic Report on Scottish Agriculture 1998). The intensive dairy industry places particular demands upon farmland. With silage being cut two and frequently three times a year and the slurry resulting from the overwintering cattle having to be spread on the ground the nutrient input is very high. In an area of high rainfall it is often difficult to get on to the land and there is a higher risk of runoff affecting water courses.

The limited areas of arable farming are concentrated around the coast on the lighter, better drained soils where the climate is milder and drier and crops are better able to ripen.

Parts of the former Western and Central Southern Uplands ESAs lie in the south of Ayrshire. The ESA scheme has now closed to new entrants although existing schemes will continue until the agreement (normally 10 years) comes to an end. The Countryside Premium Scheme has now been running for 3 years and has been picked up enthusiastically by farmers.

Habitat Objectives

Main Objective

Maintain and enhance the diversity and extent of Ayrshire farm wildlife habitats.

Work Objectives

Objective 1

Establish the extent of the current biodiversity value of farmland in Ayrshire.

Targets

Gather baseline information on features of interest on farmland (eg hedgerows);

Monitor the uptake of agri-environment schemes in terms of the number of farms involved, the number/area of habitats in management and the likely impact on key species.

Objective 2

Create/Raise awareness within the farming community of the crucial role of agriculture in maintaining and enhancing the biodiversity of Ayrshire.

Targets

Use the widest possible range of channels of communication to promote the central role of agriculture in conservation management;

Ensure all Ayrshire farms recognise and implement biodiversity enhancing actions;

Publicise successful farmland conservation initiatives in Ayrshire and elsewhere.

Objective 3

Encourage positive conservation measures through Habitat and Species Action Plans.

Targets

Promote and implement agri-environment schemes;

Promote whole farm management wherever possible;

Implement the agreed measures in the Habitat and Species Action Plans.

The following figures relate to Ayrshire and Arran with a very small number from Bute (figures from SERAD Office, Ayr).

| Year | Applications | Approvals | % Success |
|------|--------------|-----------|-----------|
| 1997 | 53 | 31 | 58.5 |
| 1998 | 53 | 20 | 37.7 |
| 1999 | 67 | 32 | 47.8 |

The relatively low success rate is a consequence of the scheme being cash limited which has led to the relatively low number of approvals. However the scheme has resulted in over 80 farms in the area receiving support for positive conservation measures designed to enhance their biodiversity.

Nature Conservation Importance

Most intensively farmed land supports a relatively low level of biodiversity, particularly in terms of vascular plants and vertebrates, although a number of species occur preferentially on agricultural land. While it could be said that to some extent intensive agriculture is harmful to a rich and diverse variety of wildlife the size of the area of land involved means that there are many opportunities to increase the biodiversity.



Possibly the most interesting habitats and the ones with most potential for improvement are those occurring around the margins of the farmland. These include hedges, field margins, roadside verges and water margins. The current extent of these is difficult to determine since no systematic surveys have been carried out but the patchwork nature of the Ayrshire landscape suggests that the resource is large. However the biodiversity value of the hedges is probably not very high at present since most of them are relatively recent and consist of a single species (hawthorn) and are managed

more for tidiness than wildlife. Also grass margins are not at present managed for wildlife although recent research suggests that there is considerable scope for such an initiative.

Another important habitat is the small patches of wetland and rush pasture which are common in an area of high rainfall and heavy soils. In many cases these areas have previously been drained, frequently with the assistance of government grants. Where these drainage schemes are no longer functioning efficiently the feasibility of the improvement or reinstatement of the drains is now questionable. Consequently many hollows and patches of low lying land have been getting wetter in recent years creating a network of sites which are important for plants, birds and invertebrates.

Biodiversity Context

Within the UK Biodiversity Action Plan there are Habitat Action Plans for ancient and/or species-rich hedges and cereal field margins. Habitat Statements exist for boundary features (hedges, roadside verges, and dykes) and improved grassland. These have the following objectives:

UK Habitat Action Plans

Ancient and/or species-rich hedgerows

Halt the net loss of species-rich hedgerows through neglect by year 2000, and all loss of hedgerows which are both ancient and species-rich by 2005;

Achieve favourable management of 25% of species-rich and ancient hedges by the year 2000 and 50% by 2005;

Maintain overall numbers of hedgerow trees within each county or district at least at current levels, through ensuring a balanced age structure.

Cereal field margins

Maintain, improve and restore by management the biodiversity of some 15 000 ha of cereal field margins on appropriate soil types in the UK by 2010.

UK Habitat Statements

Boundary features

Maintain quality and quantity of boundary features such as hedgerows, roadside verges and drystone dykes protecting features of conservation value and bringing derelict features into appropriate management.

Improved grassland

Enhance areas of improved grassland which are important for wildlife and restore semi-natural vegetation on sites where this would enhance their value for wildlife.

Current factors affecting the habitat

Policy and Economics

The agenda for farming since the last war has largely been set by the subsidysystem and latterlythis has been driven by the Common Agricultural Policy (CAP). Traditionally this has been geared to supporting production with, until recently, relatively little attention being paid to the impact of ever more intensive agriculture on the environment. The introduction of the agri-environment programme signalled a move towards subsidising habitatimprovementand species enhancement. For several years this was largelythrough the ESA scheme and then expanded by the introduction of the Countryside Premium Scheme in 1997. The merger of these schemes has now ensured that all farmers in Scotland are eligible to apply for the same scheme.

Changes in Farm Practice

Modern farming techniques have tended to reduce the diversity on farms in terms of both the habitats and species present. Farms have become more specialised and the traditionalmixed farm has become something of a rarity although most of the dairy farms in Ayrshire will still grow one or two fields of cereals. Perhaps the main change in the nature of farming in the west of Scotland in the past 30 years has been the change from hay to silage as feed for stock with a consequentlyhigher inputof fertiliser and a reduction in the species and structural diversity of the sward. In addition traditional cropping practices have changed with silage being cutseveral times a year in many cases and often not allowing time for birds to breed successfully. On arable land there has been a shift towards autumn sown crops with a loss of winter stubbles which were vital to many seed eating birds.

Although machinery has become larger and more complex, as in other partsofBritain, there has notbeen a similar move towards greatly increasing field size. This means that fewer hedges have been removed although the cutting regimes and hedgerow maintenance are not generally carried out with biodiversityin mind.

The future trends in agriculture are difficult to predict with accuracyatthe moment. Under the CAP there were signs that extensification was beginning to become more widespread, carrying with it the possibility of environmental benefits.

However the Agenda 2000 proposals look likely to reverse this trend. On the other hand cross-compliance is likely to be an overarching principle which will ensure that environmentally damaging activities are less likely to occur. In this uncertain climate it will be all the more necessary for positive decisions to be made to determine the way forward for biodiversityin an agricultural environment.

Pollution

As part of the drive for higher productivitythere has been an increased use of inorganic fertiliser, slurry and pesticides. Where these have been sprayed into field margins and



hedges they have reduced the biodiversity of some of the most valuable habitats left on intensively managed farms. Enriched nutrient run-off as well as effluent leakages from silage or slurry has also affected watercourses and wetlands.

Recent changes in legislation have placed a much greater responsibility on farmers to ensure that they do not cause pollution. SEPA and SAC are promoting the adoption of waste management plans as a way of reducing both point sources of pollution and of diffuse pollution which has become increasingly significant as single incidents have declined. The introduction ofthe voluntary code ofpractice (Prevention of Environmental Pollution From Agricultural Activity) has given farmers guidance on best practice

Opportunities and Current Action

Opportunities to improve the wildlife value of farmsare many and varied and are increasingly supported by incentive schemes and advice from a range of differentproviders:

- Financial assistance is offered through the government's agri-environment programme, in particular the Countryside Premium Scheme which has recently been renamed the Rural Stewardship Scheme. Farmers can

seek to enter the CPS/RSS for a period of 10 years in return for agreeing to safeguard and enhance habitats and species. The priorities within the CPS/RSS are linked to the UK and Local Biodiversity Action Plans and are an important vehicle for achieving the objectives of these plans;

- Advice is available from several sources but the two organisations principally involved are FWAG and SAC. Both organisations are well aware of the need to maintain a viable business at the same time as carrying out positive conservation work and both are keen to encourage farmers to take a whole farm approach to conservation and environmental enhancement;
- There are a variety of other initiatives which can contribute to more sensitive management on farms. These include the Organic Aid Scheme, TIBRE (Targeted Inputs for a Better Rural Environment) which is run by Scottish Natural Heritage, various woodland grant schemes administered by the Forestry Commission, the PEPFAA Code mentioned previously and various diversification initiatives;
- The Agriculture Working Group of the Scottish Biodiversity Group have produced a series of leaflets promoting 'low cost, no cost' options for farmers who wish to enhance their farms. These are modifications to current farming practice which are either free or inexpensive. Following these guidelines could make a dramatic difference to farmland and can be undertaken by farmers whether they are in a scheme such as CPS/RSS or not.

Actions for Farmland

As has been mentioned previously agriculture affects virtually all habitats in Ayrshire either directly or indirectly. Consequently the actions proposed for many of the other sections of this document should be considered to see the full range of options which are available to farmers. However even within the strict definition of farmland in this section there are many actions which can be taken to enhance the biodiversity. Some of the current research that relates to biodiversity includes:

Optimising the management of fertile swards for insectivorous birds

This SAC project is concerned with assessing the importance of farm management and wider environmental characteristics in determining the abundance of leatherjackets and earthworms in grassland fields and the availability of these to farmland birds. Sites are drawn from all over Scotland and include commercial farms in Ayrshire. The project is funded

by SERAD and is scheduled to run from 1998-2001.

Headlands for Wildlife and Game Project (Scottish Agricultural College and Game Conservancy Trust)

This research and demonstration project involves three farms in south-west Scotland plus SAC's Crichton Royal Farm at Dumfries and aims to produce management recommendations which can be incorporated into future agricultural grant schemes. New management techniques for grass headlands are being developed to improve their habitat value for wildlife and game birds, thereby increasing the biodiversity of farmed land. Funding comes from Dumfries and Galloway European Partnership, SERAD and Game Conservancy Trust.

Conservation Advice for Farmers

The principal providers of conservation advice to farmers are SAC's Conservation Service and the Farming and Wildlife Advisory Group. Both employ advisers who work with farmers to integrate biodiversity and landscape conservation with farming. Advice is given on good practice and assistance is given with grant applications.

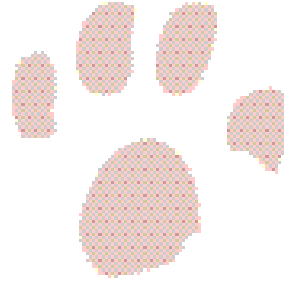
Farmland Wildlife Research Projects (SAC and Glasgow University 1995-98 SERAD and SAC 1998-2001)

Commercial farms in Ayrshire have been studied as part of research programmes assessing how farm management and wider environmental factors determine which plants, invertebrates and birds occur in these areas. This type of research gives valuable information about the conservation importance of the area's farms and how food availability affects the species found there.





of the good practice which farmers would be expected to follow in their normal farm management and which any adviser would seek to promote. The LocalBiodiversity Action Plan seeks to go beyond this 'standard' advice and identify particular projects which can act as a focus for action. It is proposed that two features are identified for special attention in Ayrshire and that measurable targets are set for the first two years of the Ayrshire LBAP.



Farmland Action Plans

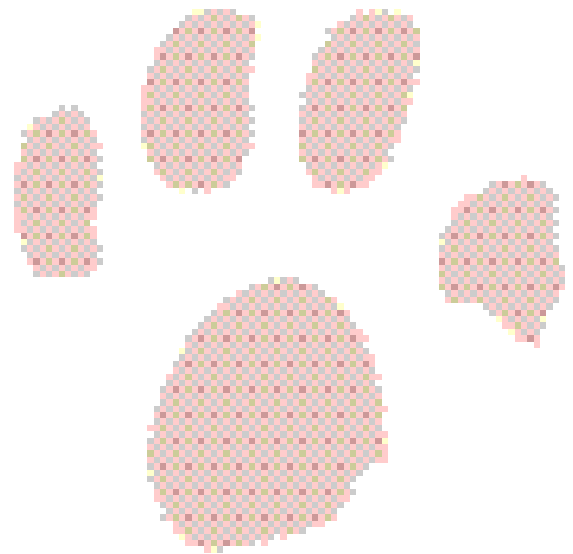
As a result of the huge area of farmland in Ayrshire there are many actions which could be taken which would promote biodiversity and many of these actions are listed in the full table of actions. In many cases these actions would be a part

FEATURE 1 - Hedgerows and Hedgerow Trees

| Management practice | Target | Action | Funding | Monitoring | UK BAP HAP/HS | UK Priority Species (short and medium) | Local Priority Species |
|--|---|---|---|--------------------------------------|---|---|------------------------|
| Reduce frequency of cutting (by cutting alternate sides in successive years) | Increase proportion of species-rich hedges | Active promotion by SAC and FWAG advisers, NFUS, Newsletters Hedge Contractors | Not required. (May save money by less frequent cutting) | Questionnaire to a sample of farmers | Ancient and/or species-rich hedgerows HAP Boundary features Habitat Statement | Bats, grey partridge, yellowhammer linnet, tree sparrow | |
| Encourage the planting and reinstatement of hedges | To be set following examination of CPS figures for past 3 years | Active promotion by SAC and FWAG advisers | Rural Stewardship Scheme | Acceptances into RSS | Ancient and/or species-rich hedgerows HAP Boundary features Habitat Statement | Bats, grey partridge, yellowhammer linnet, tree sparrow | |
| Planting of hedgerow trees | Planting 3000 hedgerow trees over 3 years | Active promotion by SAC and FWAG advisers, press release and promotion through papers | Donation of trees from tree nursery? | Number of trees given out | Ancient and/or species-rich hedgerows HAP Boundary features Habitat Statement | Bats, grey partridge, yellowhammer linnet, tree sparrow Corn bunting | |

FEATURE 2 - Marshy Grassland/Rush Pasture

| Feature | Target | Action | Funding | Monitoring | UK BAP HAP/HS | UK Priority Species (short and medium) | Local Priority Species |
|------------------------------|---|--|--|---|---|--|--|
| Wet hollows | Ensure all farmers are aware of the importance of a mosaic of wet hollows (including marsh, rushes and carr) in Ayrshire. | Publicise importance of mosaic of wet hollows through advisory newsletters (SAC and FWAG), other newsletters (NFUS). | Nil. Part of ongoing advisory budgets. | Questionnaire to farmers re the existence of, and their management of wet hollows | Fens, carr, marsh, swamp and reedbed Habitat Statement. | Reed bunting, skylark, bats. | Redshank, lapwing, orange tip butterfly whorled caraway, barn owl. |
| Avoid damage to wet hollows. | Prevent damage by overgrazing, drainage or nutrient enrichment | Produce guidelines on the management of wet hollows by way of newsletters and a leaflet. | Newsletters - nil. | See above questionnaire | Fens, carr, marsh, swamp and reedbed Habitat Statement. | Reed bunting, skylark, bats. | Redshank, lapwing, orange tip butterfly whorled caraway, barn owl. |



| ACTIONS Farmland | TO BE ACTIONED BY | | YEAR (TO BE COMPLETED OR IN PLACE BY | | | | | |
|--|--------------------------------------|------------------------------|---|------|------|------|------|------|
| | lead | partners | 2001 | 2002 | 2003 | 2004 | 2005 | 2010 |
| Policy and Legislation | | | | | | | | |
| Promote agri-environment schemes | All | | • | • | • | • | • | • |
| Seek to influence future format of agri-environment schemes | SAC NFU SNH NGOs | SERAD | • | • | • | • | • | • |
| Site Safeguard and Management | | | | | | | | |
| Implement the measures agreed in the Habitat and Species Action Plans. Contribute to UK Aim of creating 15 000 ha of field margins | All | | | • | • | • | • | • |
| 1. Objectives relating to Habitat Action Plans | | | | | | | | |
| Ancient/Species rich hedges | | | | | | | | |
| Establish register of ancient and species-rich hedges | SNH SERAD | | • | | | | | |
| Promote agricultural practices that help to safeguard hedges (correct spraying, conservation headlands etc) | Land Mangrs. SAC FWAG SERA | NFUS | • | • | • | • | • | • |
| Promote the uptake of positive hedgerow management within agri-environment schemes | Land Mangrs. SAC FWAG SERAD | NFUS | • | • | • | • | • | • |
| Promote favourable hedgerow management practices, particularly cutting | Land Mangrs. SAC FWAG SWT | SERAD NFUS | • | • | • | • | • | • |
| Evaluate the opportunities for providing training for contractors and farmers | Lantra | SAC FWAG SERAD NFUS | | • | | | | |
| Establish targets for the amount of hedgerow in favourable management (to follow analysis of CPS figures for 1997-1999) | SERAD | SAC FWAG | | • | | | | |
| Create permanent grass margins alongside hedges | FWAG | SWT | | | | | | |
| For hedgerow trees, maintain register and set targets for maintenance and renewal | FWAG | SWT | | | | | | |
| Cereal Field Margins | | | | | | | | |
| Encourage sympathetic management of cereal field margins | Land Mangrs. SAC FWAG SERAD | NFUS | • | • | • | • | • | • |
| Monitor the uptake of the cereal field margin option in agri-environment schemes | SERAD | SAC FWAG | • | • | • | • | | |
| Improved Grassland | | | | | | | | |
| Improve potential for wildlife by promoting results of Headlands for Wildlife project | SAC GCT FWAG | SERAD NFUS | • | • | • | • | • | • |
| Where appropriate encourage less intensive management of grassland | Land Mangrs. SAC FWAG | SERAD NFUS | • | • | • | • | • | • |
| Marshy Grassland | | | | | | | | |
| Discourage new drainage and review need for restoring drainage in wet areas | Land Mangrs. SAC FWAG | SERAD NFUS RSPB | • | • | • | • | • | • |
| Water Margins | | | | | | | | |
| Promote environmentally-friendly ditch clearance | Land Mangrs. SAC FWAG SEPA | SERAD NFUS | • | • | • | • | • | • |
| Promote the principles of river corridor management developed by the WWF Wild Rivers Initiative | Land Mangrs. SAC FWAG SEPA | WWF SERAD NFUS | • | • | • | • | • | • |
| Raise awareness of role of grazing in water margin management | Land Mangrs. SAC FWAG | SERAD NFUS | • | • | • | • | • | • |

| ACTIONS Farmland | TO BE ACTIONED BY | | YEAR (TO BE COMPLETED OR IN PLACE BY | | | | | |
|--|----------------------|-----------------|---|------|------|------|------|------|
| | lead | partners | 2001 | 2002 | 2003 | 2004 | 2005 | 2010 |
| Drystone Dykes | | | | | | | | |
| Safeguard and maintain existing dykes | Land Mangrs. | SERAD NFUS | • | • | • | • | • | • |
| Shelter belts | | | | | | | | |
| Raise awareness of shelter belts for farming and conservation | SAC FWA | SERAD NFUS, FC | • | • | • | • | • | • |
| Promote management of existing shelter belts to ensure continuity | SAC FWAG FC | SERAD NFUS | • | • | • | • | • | • |
| Encourage a more diverse species mix in new shelter belts | SAC FWAG | SERAD NFUS, FC | • | • | • | • | • | • |
| Scrub | | | | | | | | |
| Raise awareness of value of scrub | SAC FWA | SERAD NFUS SNH | • | • | • | • | • | • |
| Promote better scrub management through agri-environment schemes | SAC FWAG SERAD | NFU | • | • | • | • | • | • |
| Advisory | | | | | | | | |
| Promote the idea of whole farm plans, including biodiversity-related work, outwith the agri-environment schemes | SAC FWAG | SERAD NFUS SNH | • | • | • | • | • | • |
| Ensure agri-environment schemes are well publicised | SAC FWAG | SERAD NFUS RSPB | • | • | • | • | • | • |
| Provide adequate training and education to enable farmers to carry out conservation work | SAC | Lantra FWAG | • | • | • | • | • | • |
| Research and Monitoring | | | | | | | | |
| Commission and carry out Phase 1 or other surveys to gather relevant data, including for monitoring purposes | SNH ABRC | SWT SAC FWAG | | • | • | | | |
| Collate information on length and type of hedgerow from Phase 1 surveys | SNH | SWT | | • | | | | |
| Monitor features, habitats and species which are entered into agri-environment schemes | SERAD | SAC FWAG | • | • | • | • | • | • |
| Collate information on number and location of conservation boundary features from agri-environment schemes and from other sources (eg SAC, FWAG) | SERAD SAC FWAG ABRC | | • | • | • | • | • | • |
| Communications and Publicity | | | | | | | | |
| Publicise examples of good practice in Ayrshire and elsewhere | SAC FWAG | SERAD NFUS RSPB | • | • | • | • | • | • |
| Raise awareness of threats facing farmland birds and ways of wildlife-friendly farming to counter those. | RSPB | SAC FWAG | • | • | • | • | • | • |
| Actively seek to publicise the central role of agriculture in conservation (should include leaflets, meetings, farm visits, articles and broadcasts) | NFUS SAC FWAG RSPB | SERAD | • | • | • | • | • | • |

Key to partners - page 5

Key Contacts

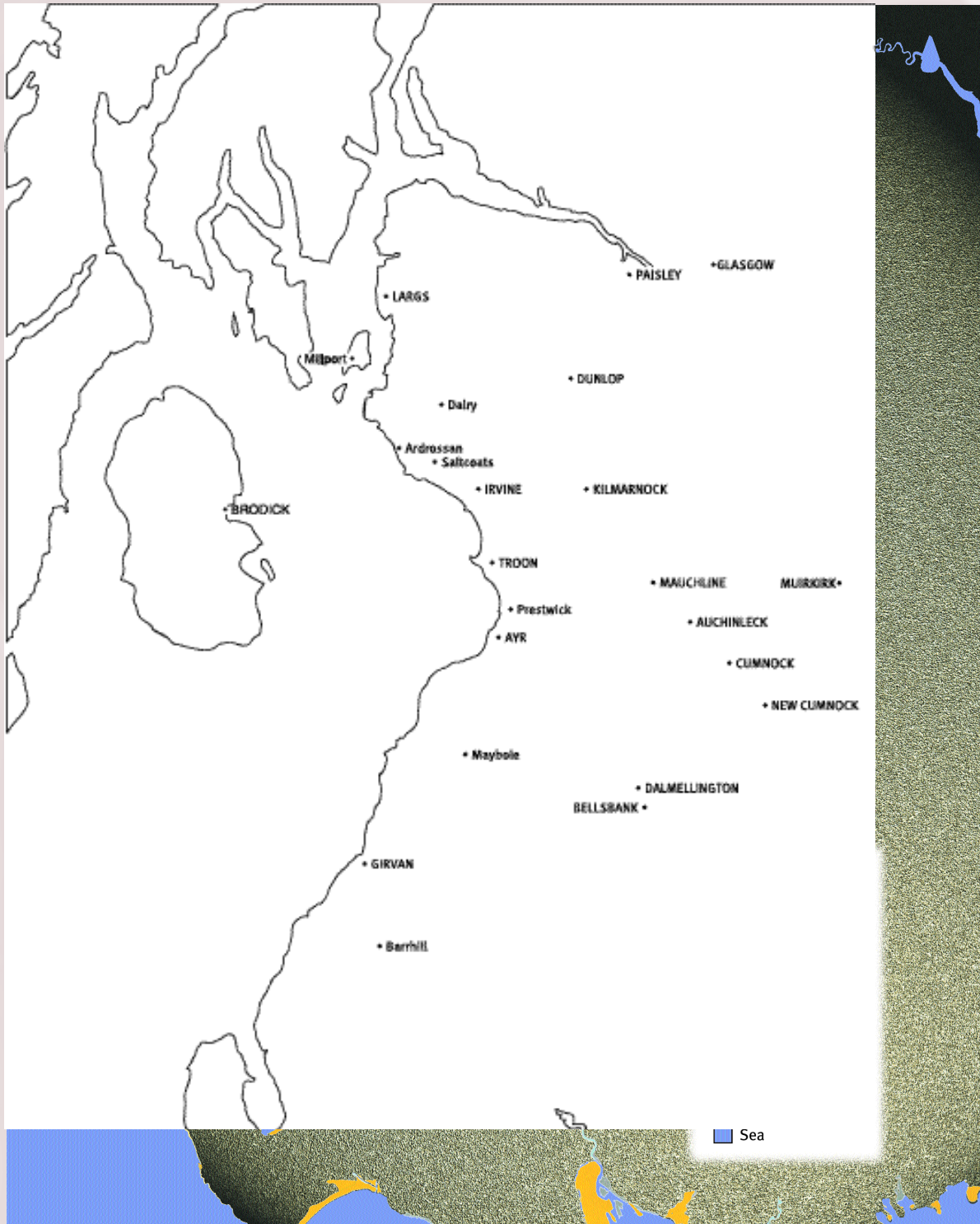
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Further Information

SNH Ayr 01292 261392
FWAG Ayrshire 01292 290065

Further reading

Andrews, J. & Rebane, M. (1994)
Farming and Wildlife: A Practical Handbook. RSPB.





Grassland habitats

AYRSHIRE LOCAL BIODIVERSITY ACTION PLAN

Acid grassland

Purple moor grass and rush pasture

Base-rich grassland

Unimproved neutral grassland



Introduction

Areas of grass dominated herbaceous vegetation are widespread in Ayrshire, in upland and lowland areas, across

so in an urban setting. This Action Plan for Ayrshire is for grasslands i.e. those which are used for high production pasture, for example. Although grazing is intrinsic to the maintenance of most grasslands, it was felt that these types of habitat merited a separate section from that of upland. They are known to be under threat and there are many in Ayrshire. The grasslands

Grassland habitats

AYRSHIRE BIODIVERSITY ACTION PLAN

on golf courses, post industrial sites, gardens, churchyards, roadsides and railways are mentioned below but are dealt with in detail in the urban section of this plan. Similarly, coastal grasslands, which are important in Ayrshire, are examined within the coastal chapter.

Grasslands rich in wildflowers are of high nature conservation status. A long history of grazing or cutting, coupled with a combination of particular soil type, underlying geology, hydrology and climate, has produced swards of high plant diversity. Most of the species-rich grasslands in Ayrshire occur on neutral or base-rich soils. The nutrient status of these floristically rich grasslands is usually impoverished. Grazing or cutting prevents vigorous grass growth and the build up of nutrients. A combination of these factors results in competitive plants being suppressed, allowing a great many other species to thrive.

Changes in agriculture this century, such as fertiliser use, herbicide application, reseeding and drainage have led to the loss of many of the richest grasslands. Britain as a whole has lost about 95% of its wildlife rich grasslands since the 1940's. There is no figure available for Ayrshire but it is sufficient to say that the area of species-rich grassland has fallen significantly and now survives as isolated fragments.

Grasslands also support a range of animals and fungi. Butterflies are often associated with species-rich areas or have particular food plants found in unimproved pasture. Animal diversity is not, however, always directly connected to plant richness. For example, a dense thatch of tussocky vegetation is attractive to small mammals and hibernating invertebrates; rush pasture is important to breeding wading birds. Therefore, account needs to be taken of all unimproved grassland.