

HABITATS AND BIODIVERSITY

Problem

Loss or deterioration in the quality of farmland habitats through the intensification of agriculture in all sectors.

Impact

Loss from farmland, or population declines, of plant and animal species associated with these habitats.

Direct effects:

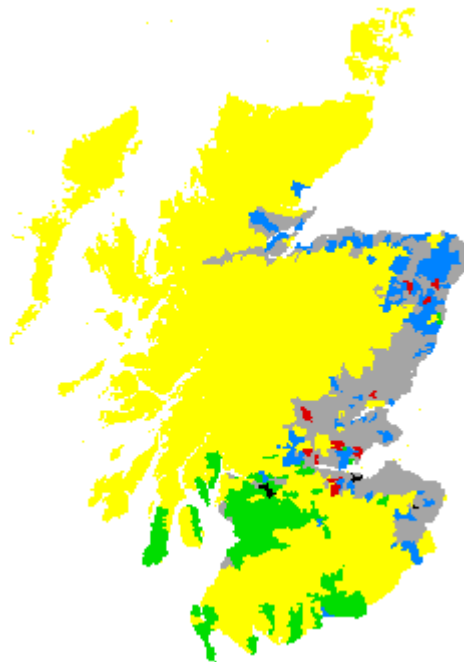
- Drainage of wetland and removal of woodland remnants
- Removal of boundary features (hedgerows and stone walls)
- Drainage, ploughing and reseeded of upland indigenous grasslands and moorlands
- Intensification of management of arable and pastoral land (loss of mixed, rotational farming systems, shift to autumn tillage, winter grazing of heaths)
- Pesticide effects on non-target plants and invertebrates of managed land

Indirect effects:

- Nutrient enrichment of waterside and boundary or remnant habitats adjacent to fertilized cultivated or grazed land (encourages pernicious weeds)
- Insect and plant mortality from pesticide drift into adjacent remnant and boundary habitats
- Removal of plant and insect food supply of farmland bird and mammal species by changes in cultivation and grazing practices

Areas at Risk

Landform, climate and soil character and fertility determine farming systems. Habitat losses have occurred predominantly in lowland, fertile areas dominated by intensive arable farming. Decline in habitat quality has been a major factor in marginal, grazed upland and north-western areas.



Distribution of Main Farm Types

Farm Type	Areas at Risk		
	Localised	Regional	Universal
General Cropping			Loss of habitats and species
Mixed		Loss of habitat Decline in habitat quality	
Dairy	Loss of habitat		
Pigs and Poultry	Loss of habitat		
Cattle and Sheep			Decline in habitat quality

Practical Actions

The emphasis has been on habitat conservation and restoration on farmland because most associated species will directly benefit from the increase in the area and distribution of such habitats. Strategies for nature conservation have been developed by different agencies with four major motivations:

- Protection of rare and endangered habitats and species
- Conservation of wild game bird populations
- Augmentation of natural enemies and pollinators on farmland
- Conservation and enhancement of biodiversity in the agricultural landscape

These have led to the implementation of a range of practical solutions:

- **Designation** of valuable (small, vulnerable) habitats and sites supporting rare plant or animal species as nature reserves. Many sites are vulnerable to Potentially Damaging Operations and overspill effects from adjacent agricultural land use (SNH).
- **Prescription-based management agreements** targeted at farms within defined areas of natural heritage value (Environmentally Sensitive Areas)(SEERAD).
- Development of "**conservation headlands**" or "extended field margins" provide benefits for farmland birds, butterflies, pollinators and natural enemies of arable crop pests and the maintenance of game bird populations (Game Conservancy Trust). Field-edge management is also included in Government agri-environment schemes (SEERAD - CPS and RSS, promoted by GCT, SAC and FWAG). Extended Field Margins are diversified by promoting the development of sown grassland or wild flower strips in field margins.
- **Beetle banks** are sown grassland strips added between tramlines and not connected to existing field boundaries. These are designed to augment natural enemies on arable land, particularly by providing overwintering refugia for predatory beetles (GCT and DEFRA).



- The initial rotational **Set Aside Scheme** was modified to capitalise on the environmental opportunities. The lack of weed leaves and invertebrates associated with winter stubbles is held responsible for the population declines in bird populations. Permanent set aside options allowed the development of weedy stubbles or sown grass mixtures. The later inclusion of a game cover option, a mixture of sown cereals and brassica species has also increased the benefits of this scheme to farmland birds and gamebirds.
- The **Farm Woodland Premium Scheme** and **Native Pinewood Scheme** have encouraged the conversion of arable and pasture land (FWPS) and heathland or semi-natural grassland (NPWS) to woodland.
- **Wetland and flooded meadow restoration** have also been funded through the CPS and RSS incentive payments or by SNH, RSPB or WWT partnerships with private landowners. These schemes also accommodate the planting of new hedgerows and the buffering of riparian vegetation (re: pollution section).
- RSPB have taken direct action by purchasing farms to manage the land with regard to the resource requirements of farmland birds.

Linkages

New habitats are often located on poor quality agricultural land rather than strategically placed to maximise wildlife benefits. The types of habitat or linear features must be considered in relation to the cultural history of an area. They have consequences for the visual landscape. Priority habitats from Scottish Local Government Habitat Action Plans are now included in prescriptions for Rural Stewardship Schemes for particular regions. There is however a lack of co-ordination of priorities. For example, the lack of implementation of adequate controls on nitrogen fertilizer inputs means that riparian zones are often too enriched to restore natural riparian or field boundary vegetation.

Research Gaps

Whilst changes in grazing management can be achieved quickly, the restoration of upland vegetation is a much slower process. Previous drainage and liming may have altered site structure, moisture and nutrient status and a different dominant plant species commonly prevents the favoured restoration, e.g., bracken or rush. Restoration of native grassland is therefore impossible without major intervention. There is still little understanding of the soil and community processes that control these dynamics.

Contact Dr P Dennis, Macaulay Institute, Craigiebuckler, Aberdeen, AB15 8QH.