ROAD VERGE SURVEY

PROJECT REPORT

ANGELA SCOTT BSc

MANX NATURE CONSERVATION TRUST

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Angela Scott
Road Verge Survey Project Officer

Contents

List of Figures

Appendix

1 Executive Summary

The Isle of Man has approximately 600-700 miles of rural and suburban road verge (including both sides of the road). This equates to a immense resource, supporting important **habitats** and **species**, that make a significant contribution to the total **biodiversity** of the Island.

In 1996 funding from the **Department of Transport** enabled the **Manx Nature Conservation Trust** to complete its Road Verge Survey Project. The MNCT employed a full time project officer to complete the survey work and produce the final report.

Over 30,000 plant records were collected at 368 sites, covering the majority of the Islands rural roadside verges. This information has been entered on a biological database (RECORDER).

The project has resulted in the setting up of roadside nature reserves similar to those in many counties throughout the UK. Designations fall into two categories **Conservation Verges** and **Sensitive verges**. Approximately 20km of road verge has been designated at various sites throughout the Island, each one is marked out with signposts.

Verge Wardens have been appointed to make observations and survey the Conservation Verges and in some cases the Sensitive verges. They will be able to help with a monitoring programme aimed at measuring the success of the project.

In addition to special management for the most important verges, general advice for hedge cutting and the management of verges in the Isle of Man is included in this report.

2 Introduction to the MNCT and The Wildlife Trusts

The Manx Nature Conservation Trust was founded in March 1973 to protect Manx wildlife habitats through management and the prevention of destruction. It is a registered charity on the Isle of Man (No. 225) and a member of The Wildlife Trusts (see below).

The MNCT is run mainly by volunteers and now has over 830 members. It currently owns and manages 17 nature reserves, totalling nearly 220 acres, and has two visitor centres: Ayres and Scarlett both having nature trails and education packs. The Trust's HQ is the Nature Conservation Centre, Tynwald Mills, St Johns, Isle of Man, Tel: (01624) 801985.

The Wildlife Trusts are a nation-wide network of 47 Wildlife Trusts which work to protect wildlife in town and country. Every county in England, Scotland and Wales together with Guernsey, Ulster and the Isle of Man is represented by a Wildlife Trust. Sharing this goal and making a vital contribution to its attainment are the junior branch Wildlife Watch and the 48 urban wildlife groups around the British Isles.

Through their care of over 2,200 nature reserves, The Wildlife Trusts are dedicated to the achievement of a countryside richer in wildlife, managed on sustainable principles.

Using their specialist skills in the fields of conservation and education, The Wildlife Trusts strive to win public recognition that the achievement of their aims is essential to a healthy environment and continued human existence.

3 Introduction

3.1 Background

It is estimated that the UK has approximately **207,000 hectares (ha)** of highway verges (Cure 1993). This equates to a massive area of mixed grassland and woodland, which as a wildlife resource cannot be ignored. (*Roadside Verge Report 1995, The Wildlife Trusts*).

Wildlife in roadside verges and hedges and their conservation has been for years a topic of concern for many naturalists and conservationists. In 1969 the Nature Conservancy held a symposium on "Road Verges, their Function and Management" (May 1969). In 1974 Richard Mabey published *The Roadside Wildlife Book*, in which he described the importance of roadside habitats. He also highlighted the importance of conservation and how verges can be set up as nature reserves, with their own conservation management.

The growth of interest in roadside conservation has resulted in many of the Wildlife Trusts across Britain setting up their own conservation projects. These have ranged from projects like our own to simply giving their highway department general advice on the management of verges. In 1995 the Wildlife Trusts produced the Roadside Verge Report. In this they found that 75% of the UK Trusts are involved in roadside conservation.

3.2 A New Approach to Road Verge Management

In 1991 the Department of Transport (DoT) recognised an increased awareness towards conservation and set up the HEDGE (Highways Edge Discussion Group on Ecology) committee. The committee consists of representatives from DoT, MNCT, Farming and Wildlife Advisory group (FWAG), Department of Agriculture, Forestry and Fisheries (DAFF), Manx Natural Heritage and the Society for the Protection of the Manx Countryside and Environment (SPMC & E). With the help of H.E.D.G.E the Department has identified five aspects to consider in planning the successful management of roadside verges for wildlife. These include safety, conservation, appearance, economics and communication.

3.2.1 Safety of all road users

Safety must always be the DoT's first concern and receive priority over any other consideration. Safety dictates frequent, close, and in some cases early trimming of verges such as those on the TT course, those on corners, and a narrow safety strip for pedestrians along the margins of most roads.

3.2.2 Conservation of wildlife habitats

Roadside verges and hedge banks provide habitats rich in wildlife. Many people are concerned about the inappropriate management which can have a damaging effect on the plants and animals that thrive in this environment. Thus management for conservation will be part of the new integrated approach.

3.2.3 Appearance of road verges

Verges managed for conservation have a wilder appearance, which many people appreciate. However many people would prefer to see a 'tidy', garden-like countryside, achieved only at the expense of wildlife. These two conflicting points of view require a degree of compromise with respect to specific sites.

3.2.4 Economics

Limited manpower and financial resources restrict the amount of roadside management that can be achieved each year.

3.2.5 Communication

It is important that the Department's aims, and the reasons for any changes to verges, are clearly explained to the community.

3.2.6 Surveying Manx verges

One of the main outcomes of discussion was that to manage verges successfully they needed to be mapped in respect of their wildlife value. The MNCT began to carry out verge surveys in 1991, this was a slow process being carried out by enthusiastic volunteers. After five years 150km of road verge had been successfully surveyed, a rate which would take the project many more years to complete.

In 1996 the DoT funded the MNCT to carry out the road verge survey project. This enabled the MNCT to employ a temporary Project Officer. As a result the Islands verges and hedges could be surveyed in one season. Using the information from the survey, verges requiring special management to conserve their wildlife interest were identified. To do this, roadside nature reserves where set up in the form of Conservation and Sensitive Verges.

4 Manx Verge Ecology

4.1 Why conserve roadside verges and hedges?

Over the last 50 years the Manx countryside has changed due to agricultural intensification and development. This means that many species and habitats have declined, while some species have disappeared altogether. Often roadside verges have become havens for the wildlife squeezed out of the surrounding land. Manx roadside verges and hedges thus form an immense wildlife resource.

Over the past 15-20 years there have been changes in the way that the verges and hedges are being managed and the techniques being used. Changes include the use of herbicides, flail mowers instead of hay mowers and a reduction in frequency of cutting, resulting in widespread changes in the composition and structure of species. Coarse species such as false oat grass (*Arrhenatherum elatius*), Alexanders (*Smyrnium olusatrum*) and hogweed (*Heracleum sphondylium*) have increased at the expense of species-rich swards.

4.2 Biodiversity

The wildlife resource that exists on our roadsides contributes to the total biodiversity of the Island. The word 'biodiversity' refers to the variety within the living world. Article 2 of the Biodiversity Convention (Department of the Environment, 1994) defines biodiversity to mean:

'The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.'

The UK government, as part of the commitment it made at the Rio Earth Summit, has published a Biodiversity Action Plan (*Biodiversity: the UK steering group report*, Department of the Environment 1994). in which verges are considered:

'these features contain a large part of the biodiversity in the countryside and provide opportunities for some species to disperse within otherwise inhospitable countryside'.

Although the Isle of Man government did not sign up to the Convention, they recognise its importance and hope to "accede to the Rio Convention on Biodiversity" (*Annual Review of Policies and Programmes*, Isle of Man Government 1996).

Roadside verge management is a habitat resource that should be included in the Manx Biodiversity Action Plan (MNCT in prep).

4.3 Habitats

Manx roadside verges and hedge banks support a variety of important semi-natural habitats and species that have escaped intensification. Semi-natural habitats occur where land has not been planted and its management allows species that are of little economic value to persist. Semi-natural habitats tend to have a long history of traditional management which is usually less intensive than on artificial habitats.

This low intensity of management encourages certain types of vegetation and certain species to survive, which are unable to survive in more intensively managed land. As the area of semi-natural habitat on the Isle of Man declines so do the animals and plants that thrive in the countryside.

Habitats that occur on verges and hedge banks are difficult to categorise as they can consist of mosaics of different habitats which overlap, creating a varied structure and a range of plants not typical of one habitat type. However several different habitat types exist on the Island and can be categorised as follows:

4.3.1 Grassland

Unimproved grasslands are semi-natural. These are rare, especially in the lowlands. They may be rank and neglected, mown or grazed. They may have been treated with low levels of farmland manure, but should not have been intensively managed. Species diversity is often high, with species characteristic of the area and the soils and with a very low percentage of agricultural species. Unimproved and semi-improved grassland on the Isle of Man is either neutral or acid.

Many of the verges and sod hedges support neutral unimproved grassland, that used to be present in the meadows of adjacent fields. Some verges support early spring flowers, normally associated with woodland such as bluebell (*Hyacinthoides non-scripta*), wood sorrel (*Oxalis acetosella*) primrose (*Primula vulgaris*), common dog violets (*Viola riviniana*), wood sanicle (*Sanicula europaea*) and wood anemone (*Anemone nemorosa*). Other verges support late summer species such as yellow rattle (*Rhinanthus minor*), knapweed (*Centaurea nigra*) and orchid species.

Acid grassland, unenclosed hill grazing land, occurs mainly on the mountain roads. This type of grassland is relatively species poor when compared to unimproved neutral grassland. It often grades into wet or dry heath although there is always less than 25% dwarf shrub cover. The following species are indicative of acid conditions; wavy hair grass (*Deschampsia flexuosa*), mat grass (*Nardus stricta*), heath rush (*Juncus squarrosus*), sheep's sorrel (*Rumex acetosella*), heath bedstraw (*Galium saxatile*) and heath grass (*Danthonia decumbens*). Verges with acid grassland are normally contiguous with the rest of the open moor.

Many of the coastal verges are colonised by maritime species such as spring squill (*Scilla verna*), common scurvygrass (*Cochlearia maritima*), sea plantain (*Plantago maritima*) and buck's-horn plantain (*Plantago coronopus*).

Improved grasslands occurs on verges where they have been affected by the application of fertilisers, resulting in a reduction of species diversity. Very few verges support improved grassland; the majority tend to be poor semi-improved which still retains some ecological interest. Semi-improved grassland is a transitional category and is made up of grasslands which have been modified in some way and consequently have a range of species that is less diverse than unimproved grassland.

4.3.2 Woodland and scrub

A few verges have developed on the edge of semi-natural broadleaved woodland, and examples can be found at Narradale and Glen Roy. Some verges are located adjacent to plantations (planted woodland), but this has very little influence on the species composition.

Curragh is dense scrub dominated by grey willow (*Salix cinerea* Ssp. *oleifolia*) often including bramble (*Rubus fruticosa*), sycamore (*Acer pseudoplatanus*) and birch (*Betula pendula* x *pubescens*). Ground flora includes water horsetail (*Equisetum fluviatile*), bogbean (*Menyanthes trifoliata*), devil's-bit scabious (*Succisa pratensis*), marsh pennywort (*Hydrocotyle vulgaris*), marsh cinquefoil (*Potentilla palustris*) and purple-loosestrife (*Lythrum salicaria*).

4.3.3 Heathland

The majority of heathland found on verges in the Isle of Man is dry dwarf shrub heath, vegetation with a cover of greater than 25% of ericoids or small gorse species in relatively dry situations. The flora includes common heather (*Calluna vulgaris*), bell heather (*Erica cinerea*), billberry (*Vaccinium myrtillus*), and western gorse (*Ulex gallii*). Other species include heath rush (*Juncus squarrosus*), heath grass (*Danthonia decumbens*), mat grass (*Nardus stricta*), heath bedstraw (*Galium saxatile*) and tormentil (*Potentilla erecta*).

Wet heath occurs on very few verges; this vegetation type has 25% or more eriocoids and small gorse species and is also dominated by purple moor-grass (*Molinia caerulea*) with some *Sphagnum* spp. Other species include cross-leaved heath (*Erica tetralix*), common cottongrass (*Eriophorum angustifolium*), heath rush (*Juncus squarrosus*) and bog asphodel (*Narthecium ossifragum*).

4.3.4 Ditches

Most verges have a narrow drainage ditch which is maintained by the DoT. Aquatic plants such as water-

cress (*Rorippa nasturtium-aquaticum*), fools water cress (*Apium nodiflorum),* brooklime (*Veronica beccabunga*) and lesser spearwort (*Ranunculus flammula*) grow in the ditches. Other species such as meadowsweet (*Filipendula ulmaria*) and cuckoo flower (*Cardamine pratensis*) also take advantage of the wet conditions. Ditches are also important for numerous aquatic invertebrates, and breeding frogs.

4.3.5 Hedgerow

The Isle of Man does not have many of the traditional hedgerows found in much of lowland Britain. However many woody shrubs colonise the verges and hedge banks providing important nesting sites and food sources for birds. The commonest woody shrubs include hawthorn (*Crataegus mongyna*), blackthorn (*Prunus spinosa*), bramble (*Rubus fruticosa* agg.) and dog rose (*Rosa canina*). Common tree species that quite often line the verges are sycamore (*Acer pseudoplanatus*), ash (*Fraxinus excelsior*), wych elm (*Ulmus glabra*) and grey willow (*Salix cinerea* Ssp. *oleifolia).*

4.3.6 Walls

Some of the roadside dry-stone walls are approx. 100 years old. Many of these old walls support important populations of lichens and mosses. Other species, particularly ferns also grow on walls, including maidenhair spleenwort (*Asplenium trichomanes*), common polypody (*Polypodium vulgare*), rustyback fern (*Ceterach officinarum*), together with herbaceous plants such as wall pennywort (*Umbilicus rupestris*). Invertebrates, particularly spiders and wood lice live in the cracks and crevices of walls.

4.3.7 Exotic species

Verges and hedges in the Isle of Man also support a number of introduced plants and exotic shrubs that many people see as characteristic of the Island. Montbretia (*Crocosmia* x *crocosmiflora*), Fuchsia (*Fuschia magellanica)*, New Zealand holly (*Olearia macrodonta*) and Escallonia (*Escallonia macrantha*) are the commonest exotic hedging shrubs. Montbretia has been particularly successful and can be seen almost everywhere along with herbs such as Alexander's (*Smyrnium olusatrum*) and red valerian (*Centranthus rubra*).

4.4 Fauna

4.4.1 Invertebrates

Many of the foodplants necessary for several species of butterfly grow in Manx verges. The Orange Tip which is common throughout the Island depends mainly on the presence of cuckooflower (*Cardamine pratensis*) on which it lays its eggs. Green Veined White also feeds on various crucifers such as cuckoo flower. Peacock, Small Tortoiseshell and Red Admiral lay their eggs on nettles. Other less common species such as the Holly Blue, Dark Green Fritillary and Small Copper are also found on road verges and hedges. Soldier beetles, bees, hoverflies and a variety of other insects feed on roadside vegetation, especially hogweed (*Heracleum sphondylium*), ragwort (*Senecio jacobaea*) and thistles. Little is known about other invertebrates and roadside habitats.

4.4.2 Birds

Birds utilise the verges and hedge banks for food and use the woody shrubs for nesting. They includes common species such as the blackbird, blue tit, goldfinch and song thrush. Birds of prey such as kestrels sparrow hawks, barn owls and hen harriers also use the verges and hedges for hunting, as the tall grassland supports good numbers of small mammals.

Laursen (1981) noted that the most important function of the roadside habitat was as a nesting place and that different birds species favoured different parts of the verges although a preference was observed for nesting in the ditch or back edge of the verge. Summer mowing of verges can potentially destroy nests but there were no significant changes in distribution between mown and unmown areas of verge.

4.4.3 Mammals

Verges are home to our commonest mammals including the pygmy shrew, field mouse, hedgehog and polecat. The Isle of Man has six known species of bat, the Pipistrelle being the most common. Verges and hedges are extremely important for bats. As well as providing thousand of insects for them to feed on, bats also use them for navigation.

4.5 Road Casualties

Mammals, birds and invertebrates live and feed in the verges, as well as using them as dispersal corridors. This means that many individuals are killed on our roads each year. The busier and wider the road, the more it is effective as a barrier to movements. Some species cannot or rarely, cross such obstacles whilst others venturing onto the road risk vehicle collision, (English Nature 1994).

Hedgehogs, rabbits, rats and polecats are often killed on Manx roads along with mice, shrews and bats. The number of hedgehogs killed on British roads is high, Reeve (1994) recorded a figure of 100,000. Road kills would appear to be the most important cause of death in hedgehogs.

The increase in traffic on Britain's roads has been highlighted as the major factor for the decrease in the barn owl population. The UK estimate for annual barn owl road casualties is 5,000, (Hawk and Owl Trust 1995).

Roadside verges are one possible reason for the death of so many barn owls on our roads. The owls use the tall grass verges for hunting small mammals. Also the corridors appear to provide a route for dispersal for the juveniles between September and November.

The Isle of Man supports only a small population of barn owls and road deaths are a major threat to their population. A dead barn was recovered on one the verge surveys in 1996.

4.6 Wildlife Corridors

Road side verges and all their associated habitats can be described as linear, such a resource is important as a wildlife corridor. Plants and animals travel along these 'corridors' for dispersal and recolonisation. They are also important in connecting fragmented pieces of semi-natural habitat or biologically rich areas.

5 History of road verges

The verges of many of the roads date back hundreds of years, along routes which often follow the same pathways and tracks used by people in historic times. Crofters when short of grass for their animals, herded them in the 'long acre', i.e. the wide roadside verges (*Manx farming and country life,* Manx National Heritage,1991).

Manx sod hedges were constructed as early as the establishment of the Norse Kingdom. The main function of the earliest sod hedges was to prevent animals from straying onto the summer hay and grain crops. In the absence of trees, fences were made out of soil and stones.

The seeds of gorse were often sown on top of the new hedges to give additional height. In some cases these banks were ineffective in enclosing and excluding animals. Farmers put hobbles, known locally as 'lankets' on the animals' legs to prevent them from climbing the hedges, (Manx National Heritage, 1991).

6 Threats to verges

The UK Biodiversity Action Plan (Department of Environment, 1994) states that 'boundary features, including verges are adversely affected by both destruction and lack of management. The Action Plan identifies the following current factors affecting the habitat; direct destruction, lack of management, disturbance due to laying and maintaining services, fertiliser run-off and road widening and alignment.

6.1 Pollution and roadside verges

Of all the traffic related pollutants salt is likely to cause the most damage to vegetation. Application of salt during freezing weather conditions is vital for the safety of traffic on our roads. Salt is transferred to verges by runoff and by spray from passing vehicles.

Salt affects plant growth by altering soil structure and damaging the photosynthetic tissue. Apart from a few species most plant species are intolerant of salt and will be killed or damaged by the salinity. Most salt spray is deposited close to the edge of the road so effects are local and minimal

There is some evidence for the spread of maritime, salt tolerant species along road verges due to the application of salt. Scott (1985) suggested that the invasion of salted roads originates from nearby coastal sites, the seeds being carried on vehicles. However D.E. Coombe (1994) found that the source of each species had to be considered separately, (D. E. Coombe, 'Maritime' plants of roads in Cambridgeshire, reprinted from *Nature in Cambridgeshire*, No. 36, 1994).

Roadside habitats are also subjected to pollution from exhaust fumes. There has been much research on the effects of lead and heavy metal contamination of verges. There is little evidence of acute toxic effects in plants, and amongst animals, no differences in species abundance have been recorded which correlate with air pollution levels within the vicinity of road edges (*The significance of secondary effects from roads and road transport on nature conservation,* English Nature Research Report No.178, 1994)

6.2 Adjacent land

Spray drift from fertilisers and herbicides used by adjacent landowners may be a threat to the species composition of a number of verges. Landowners should be encouraged to consider this when carrying out work adjacent to the verge or hedge bank. An unsprayed headland adjacent to the verge is one possible solution

6.3 Engineering Work

All work carried out on roadside verges should have minimal environmental impact. Any particularly sensitive sites should be marked off to prevent them being damaged.

Road widening schemes can destroy verges. Mitigation in the form of habitat creation can be carried out where possible verges of high nature conservation interest should be avoided.

6.4 Ditch Clearance

Ditch clearance is necessary but if the spoil is dumped on the verge it will encourage the growth of ruderal species such as docks, thistle and nettles. Alternative sites for the disposal of spoil must be arranged for important sites.

Cuttings fall into ditches and contribute towards blocking the flow of water, ditches silting up as well as smothering ditch flora and adding nutrients. Cuttings should be removed from designated verges and others where possible.

When clearing ditches using a machine care should be taken not to widen the ditch and disturb stones in the sod hedge where present.

6.5 Disturbance

Disturbance from vehicles by unofficial parking driving on the verges can cause erosion, deep rutting or compacting of the soil. Verges are also disturbed by gardening and tidying from adjacent landowners, who plant bulbs, shrubs and other garden plants, common introduced species on the Isle of Man include pink sorrel (*Oxalis articulata*), daffodil (*Narcissus* sp.) and red valerian (*Centranthus rubra*).

6.6 Chemicals

The use of chemicals in the form of herbicides and pesticides reduce the species diversity of the verge. The DoT however only use chemicals as a last resort for example to control injurious weeds and to prevent vegetation from encroaching onto the road surface.

The spraying of herbicides on verges and hedge banks by landowners and tenants should be discouraged. There is an increased likelihood of this occurring if the DoT does not continue to manage the hedge banks.

7 Management for wildlife

The correct management for verges is crucial in conserving species diversity. Several factors influence the species composition of any grassland, including road verges, and include, timing of trimming, frequency, method of trimming, and whether herbicides and pesticides are used.

As well as inappropriate management, lack of management can also be degrading to the roadside habitats. This will result in coarse species establishing themselves that will eventually be replaced by scrub. Along woodland verges, gaps and open space will provide habitat diversity which should be retained. Conversely along an open grassland verge, trees and shrubs create diversity whether scattered or in groups.

In many cases the roadside verge and hedge bank support a greater diversity of flowering plants because they are cut once a year. In general field hedge banks are fenced to keep livestock in and the bank is frequently dominated by shrubs (In particular European gorse (*Ulex europeas*) along with hawthorn (*Crataegus monogyna*) and bramble (*Rubus fruticosa*), which provide little opportunity for herbaceous plants, especially the meadow species, to survive although a limited range of woodland flora may exist.

7.1 Time of trimming

Wildflowers set seed at various times of year; many species flower early while others bloom late in the summer. It is crucial that the verges are cut after the species of concern have flowered and set seed.

7.2 Severity of trimming

The height of the cut can be adjusted so that the vegetation is not 'shaved' off where this is unnecessarily destructive.

7.3 Removal of cuttings

Cuttings left to rot down on verges have two detrimental effects; firstly they tend to smother the vegetation not allowing any of the more delicate species to establish themselves, secondly they can cause a build up of nutrients. Nutrient enrichment on the verge will encourage nutrient demanding species such as docks, nettles, thistles and hogweed to become established thus reducing species diversity.

Cutting should therefore be removed from verges of most importance. Unless a type of forage harvester can be adapted and safely used on the roads, this can only be done by hand, thus limiting this management practice to the most sensitive of verges.

7.4 Herbicides and pesticides

Chemicals will reduce the diversity of species on the verge. The use of any growth retardant should be restricted to injurious weeds (Weeds Act 1956) or where vegetation is likely to cause damage by encroaching onto the road surface.

7.5 Ditch clearance

It is necessary to maintain ditches to ensure the roads and surrounding land do not become flooded. Clearance every 3 to 8 years is probably sufficient for most sections of road, and the clearance of short sections at a time will allow recolonisation to occur.

8 Road Verge Survey Project

8.1 Survey Methodology

To carry out the survey each road (A,B,C,D and U roads) was divided into workable sections approximately 1km long, using obvious landmarks to distinguish where the sections begin and end. Each section of verge was also given a central grid reference to enable records to be entered onto the MNCT's biological database RECORDER.

Verges were surveyed at the best time of year for the species present. For example verges supporting mainly flowering plants of spring early summer were surveyed at the beginning of the survey season. Both sides of the road were surveyed, at a rate of 6-8 km per day, depending on the type of verge.

Survey recording forms were used on all surveys, these enabled obvious feature to be described as well as a tick list of species (see appendix).

When recording plants it is useful to give an indication of the amount present. In this survey the D.A.F.O.R scale was applied to each verge. D.A.F.O.R represents the following categories; D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare. Each individual species recorded was given a category depending upon its abundance.

8.2 Limitations of Survey

The following limitations should be noted. The survey concentrated on the recording of habitats and plant species. Other groups such as Bryophytes (mosses and liverworts), lichens, invertebrates, birds and mammals were not recorded other than casual observations. The plant list may not be fully complete for one or more of the following reasons:

- seasonal effects, for example, spring and autumn flowers not being visible at the time of survey.
- speed of survey, less of the Islands road verges would have been covered if more time was taken over each verge. This is an ongoing project with additional records being collected and added to the database. Any new important findings can be designated as either Conservation or Sensitive verges in the future (see section 10.0).
- a dormant seed bank - providing additional species periodically or when exposed by disturbance.
- impenetrability of areas of scrub, or busy roads possibly allowing plants to be missed.
- inconspicuousness of certain plant species which can be easily overlooked.
- the effect of the vegetation having recently been cut and grazed. Verges cut early for reasons of safety, such as the TT course were not surveyed therefore they have been omitted from the database. The TT course is cut early on in the year for safety reasons which means that surveying the TT verges was not a priority.
- several of the surveys have been carried out by volunteers previous to the 1996 survey. The majority of these records are reliable, however some verges need to be resurveyed as some of the records date back to 1991-1992. Also the level of identification skills by the volunteers in many cases does not include grasses and some of the more difficult plant groups.
- some verges have not been surveyed at all, as they were seen as being low priority and of little obvious conservation interest. These verges were left to be surveyed at the end of the season, in a few cases time ran out and they had to be omitted from the survey.

9 Results of Survey and Discussion

9.1 Coverage of survey

Fig 1 shows all sites surveyed during the project. Apart from the TT course (including the mountain road) the road network has been covered comprehensively.

Fig 1 Road verge survey sites (1990 - 1996)

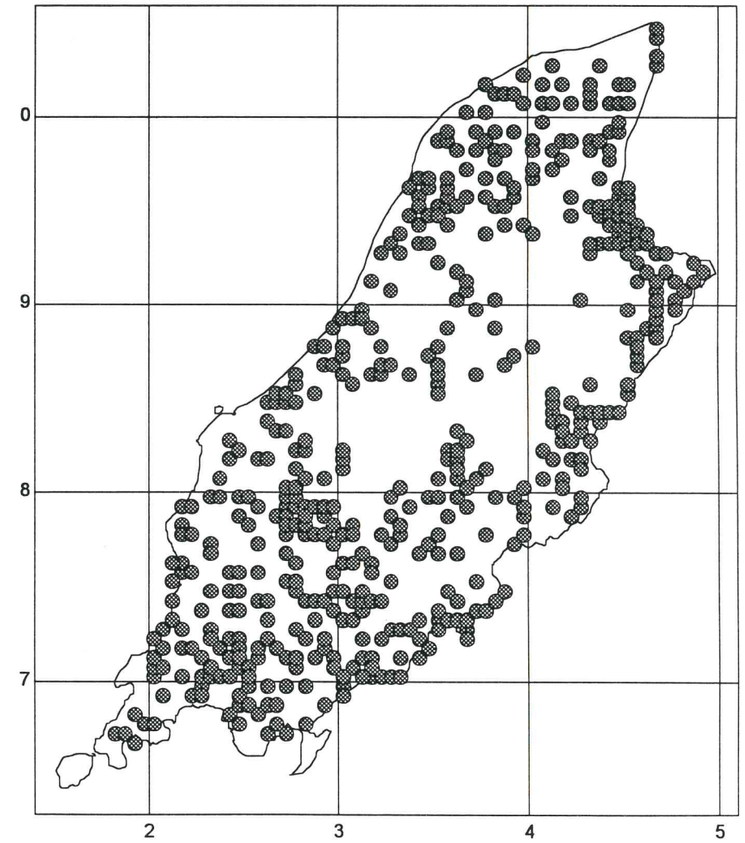
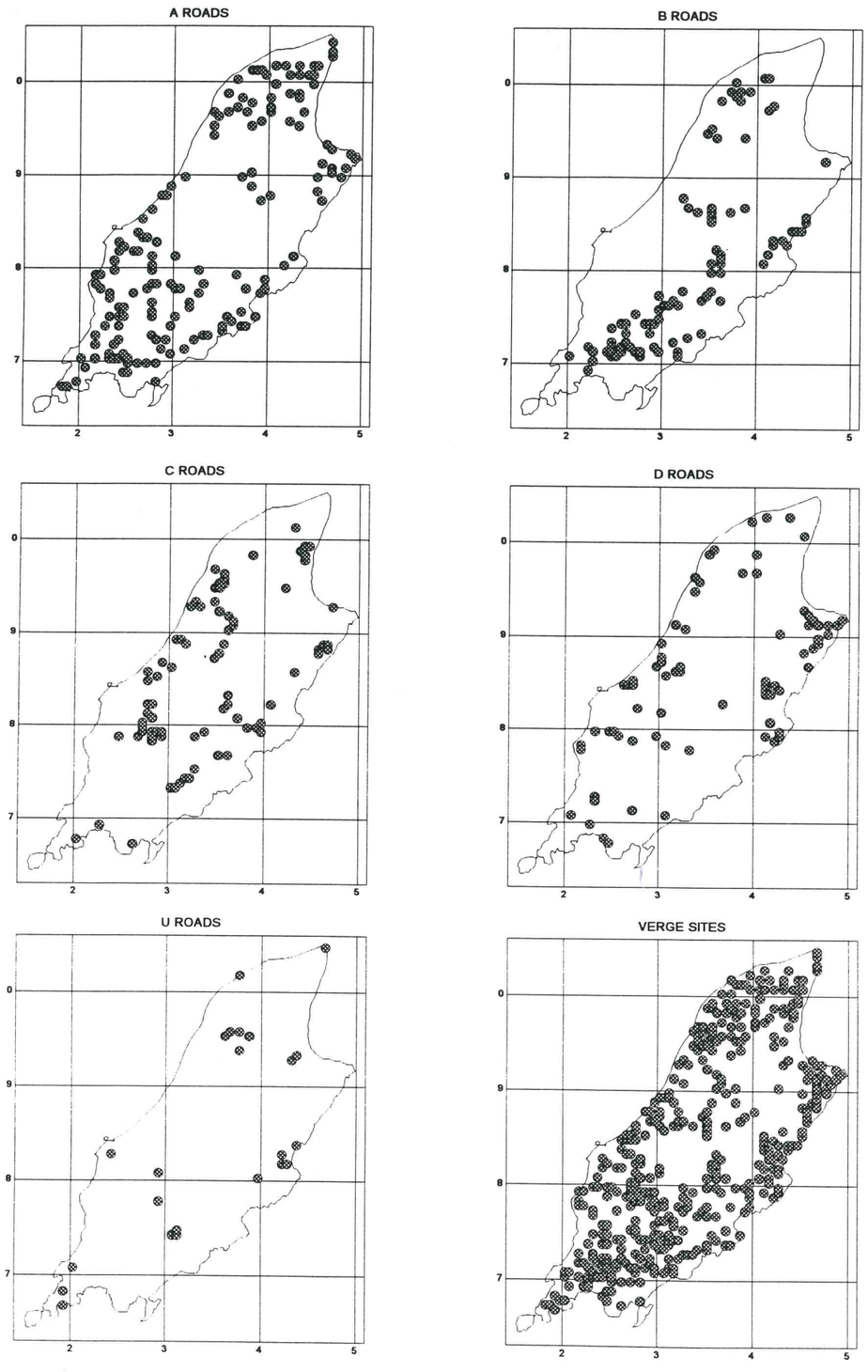


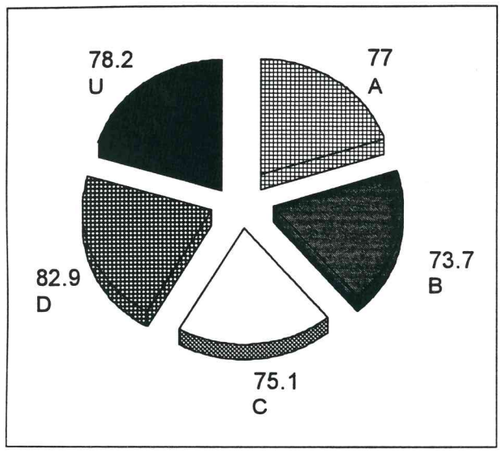
Fig 2 Coverage of verge surveys 1990-1996 in the Isle of Man



9.2 Species

Over 30,000 plant records were collected at 368 sites over the 1996 survey season and the previous five years. In total 584 different vascular plant species were recorded. All records have been entered onto the MNCT's biological database (RECORDER).

Fig 3 Mean number of species recorded on Manx verges and hedge banks according to road classification.



There is no significant difference between mean species number and classification of roads (Fig3). This is surprising as A roads, being main trunk roads would be anticipated as being less species rich than the lower classification of road. On average 73 plant species were recorded at verge sites (see fig 4).

Several species were found at almost every survey site. The commonest grass species recorded at over 300 sites were red fescue (*Festuca rubra*), false oat grass (*Arrhenatherum elatius*), Yorkshire fog (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum)* and perennial rye-grass (*Lolium perenne*). Other species, again recorded at 300 or more sites are dandelion (*Taraxacum officinalis* agg.), bramble (*Rubus fructicosa*), ribwort plantain (*Plantago lanceolata*), stinging nettle (*Urtica dioica*), hogweed (*Heracleum sphondylium*), common sorrel (*Rumex acetosa*), wood sage (*Teucrum scorodonia*), bracken (*Pteridium aquilinum*) and common cat's-ear (*Hypochaeris radicata*).

Many of the species recorded have restricted distributions. Several species have coastal distributions, notably alexanders (*Smyrnium olusatrum*) which has an obvious north westerly distribution (from all verges surveyed). Spring squill (*Scilla verna*), buck's-horn plantain (*Plantago coronopus*), sea plantain (*Plantago maritima*) and common scurvy grass (*Cochlearia officinalis*) also show coastal distributions (see fig 5,6 and 7).

Other species show different patterns (see fig 8,9 and 10), those associated with dry and wet dwarf heath and acid grassland habitats confined to the verges on the hills, mainly in the central areas of the Island. Obvious species are ericoids such as bell heather (*Erica cinerea*), common heather (*Calluna vulgaris*), and western gorse (*Ulex europeas*). Other species indicative of acid grassland conditions include heath rush (*Juncus squarrosus*), mat grass (*Nardus stricta*), billberry (*Vaccinium myrtillus*) and heath grass (*Danthonia decumbens*).

Woodland species (Ancient Woodland Indicators) show a concentrated distribution around the valleys of East and West Baldwin Valley, Laxey, Glen Maye and Port Cornaa (fig. 11).

Fig 4 Number of species recorded at verge sites

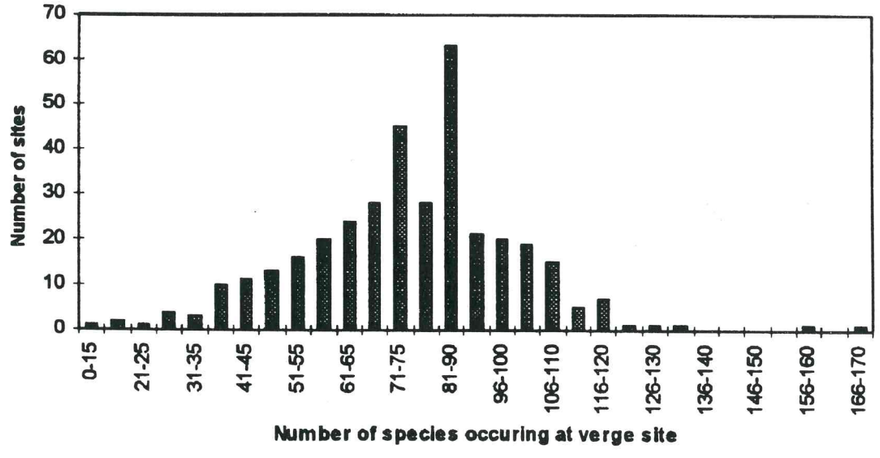
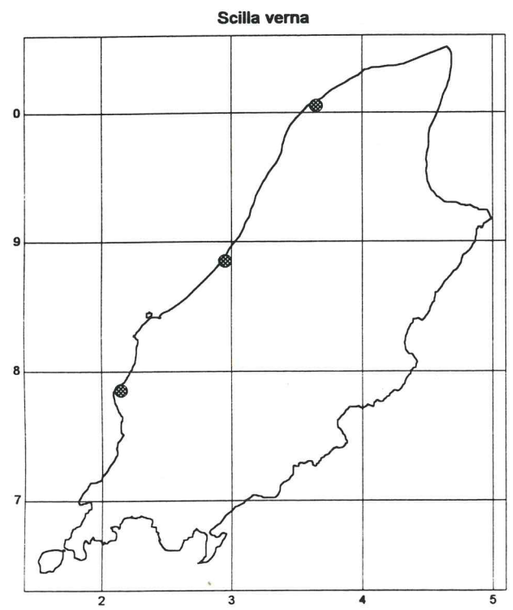


Fig 5 Distribution maps for spring squill (*Scilla verna*) and buck's-horn plantain (*Plantago coronopus*) recorded at verge sites.



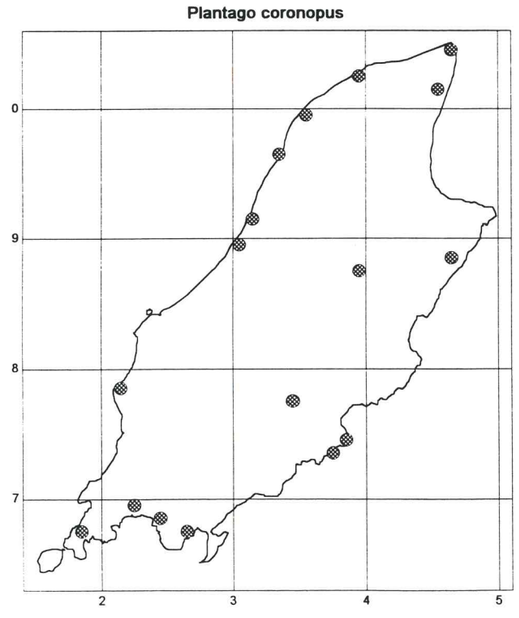
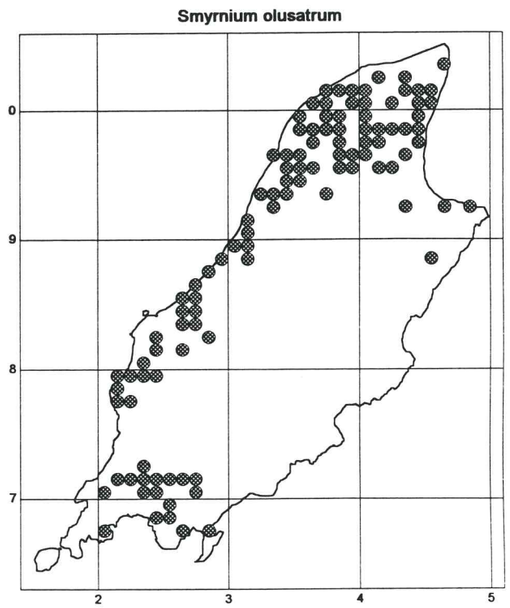


Fig 6 Distribution maps for Alexanders (*Smyrnium olusatrum*) and common scurvy grass (*Cochlearia officinalis*) recorded at verge sites.



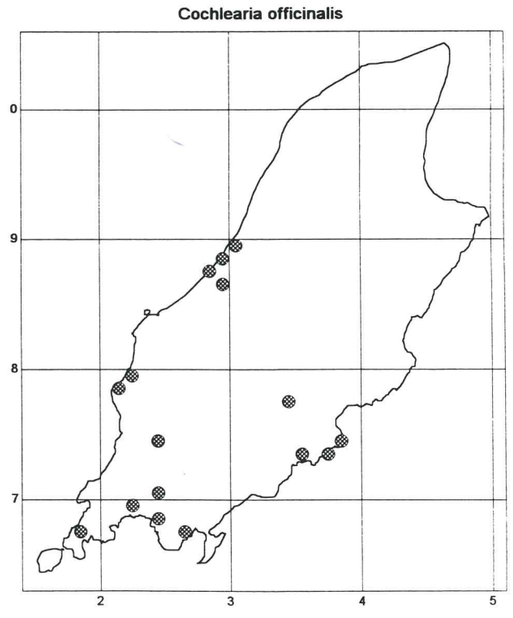
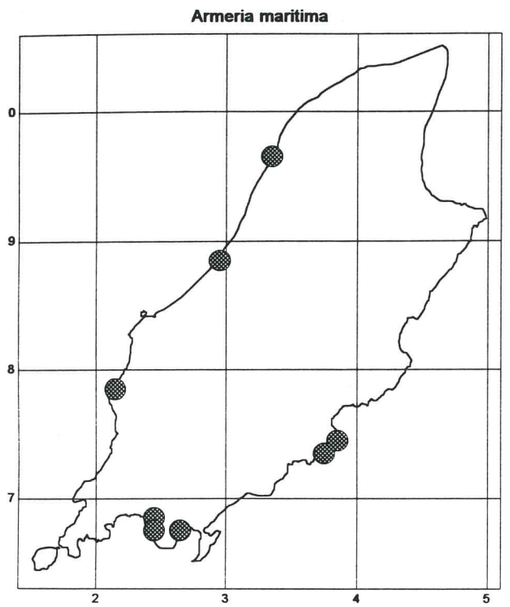


Fig 7 Distribution maps for thrift (*Armeria maritima*) and sea plantain (*Plantago maritima*) recorded at verge sites.



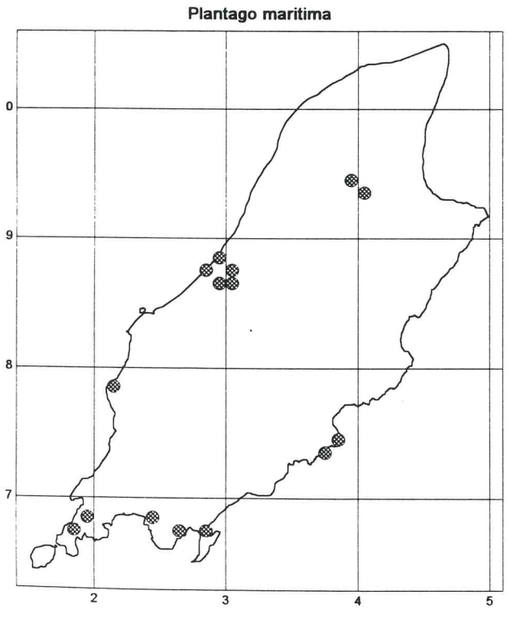
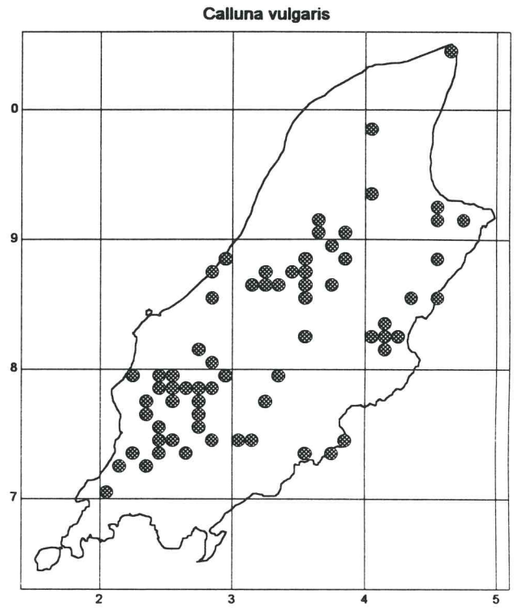


Fig 8 Distribution maps showing heather (*Calluna vulgaris*) and bell heather (*Erica cinerea*) recorded at verge sites.



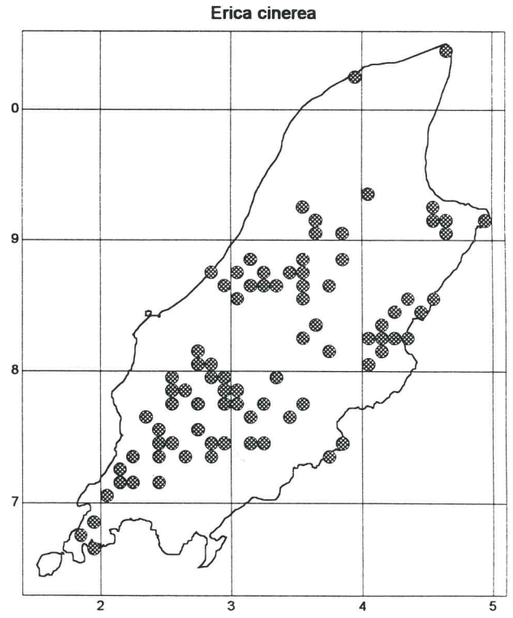
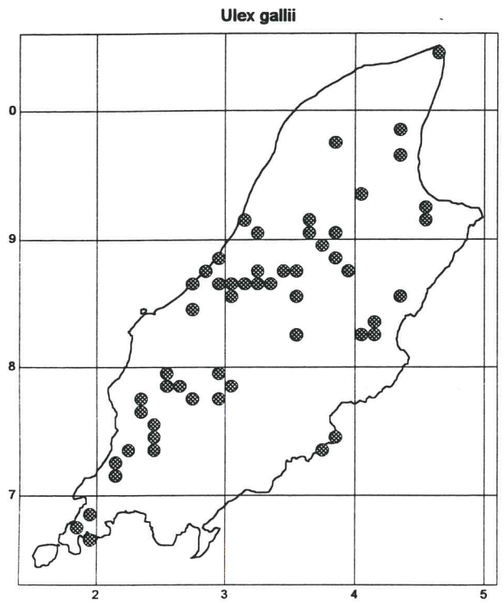


Fig 9 Distribution maps showing western gorse (*Ulex gallii*) and heath rush (*Juncus squarrosus*) recorded at verge sites



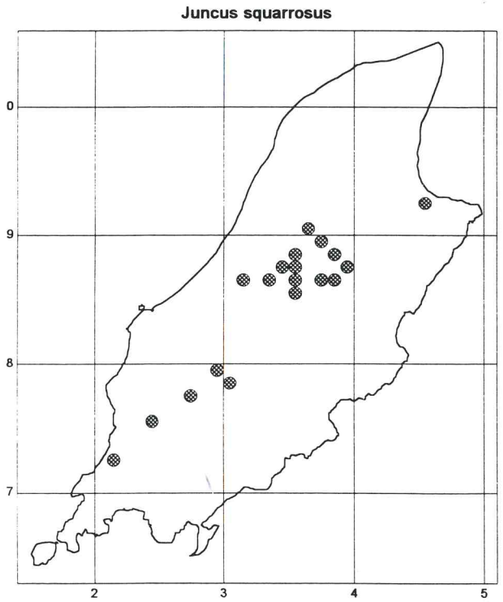
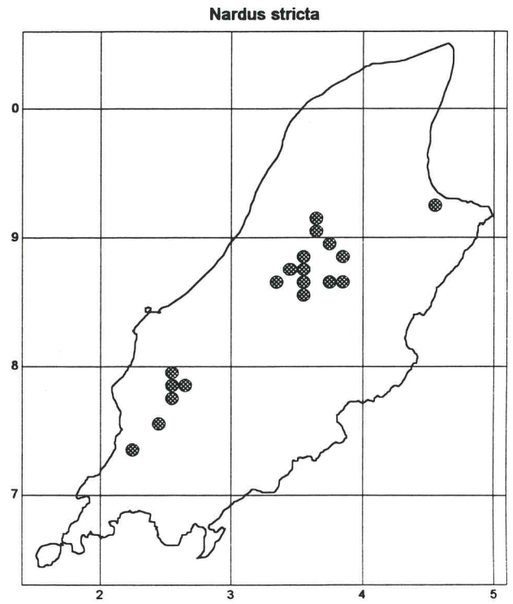
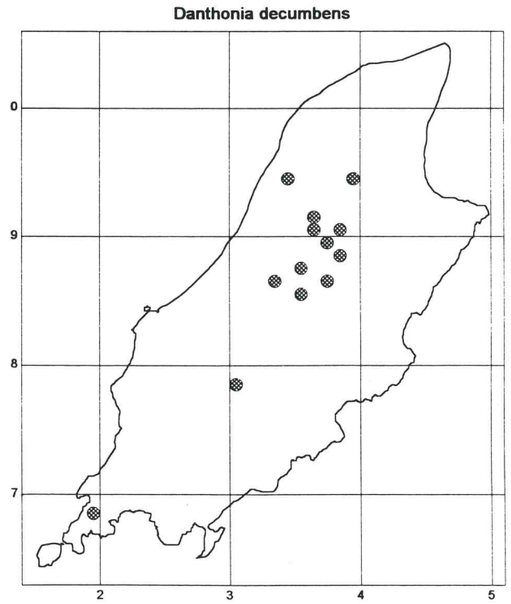


Fig 10 Distribution maps showing mat grass (*Nardus stricta*) and heath rush (*Danthonia decumbens*) recorded at verge sites.





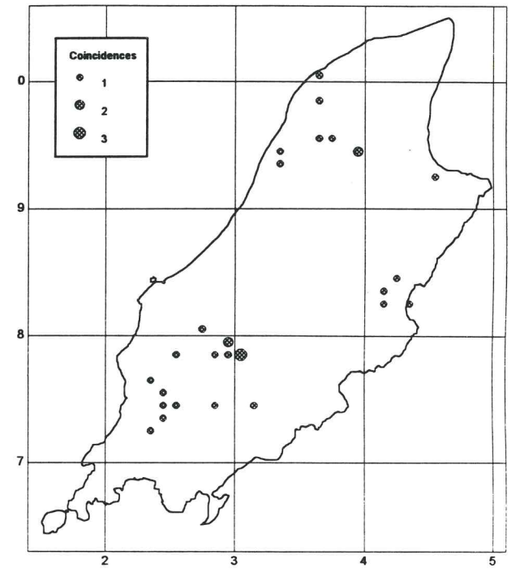
9.3 Status of species

9.3.1 Legally protected species

Six plant species recorded on verges are legally protected under schedule 7 of the Manx Wildlife Act (1990), i.e. Isle of Man cabbage (*Coincya monesis*), shepherds cress (*Teesdalia nudicaulis*), heath spotted orchid (*Dactylorhiza maculata*), northern marsh orchid (*Dactylorhiza purpurella*), common spotted orchid (*Dactylorhiza fuschii*) and common twayblade (*Listera ovata*).

The distribution of these species is shown in fig. 12. The Isle of Man cabbage and shepherd's cress were each recorded on one site only.

Fig 12 Showing the distribution of legally protected plant species recorded at verge sites.



9.3.2 Nationally Scarce Species

Nationally Scarce Plants are those occurring in only 16-100 10km squares in Britain and the Isle of Man (*Scarce Plants in Britain, JNCC, 1994*). Three species found on Manx verges fall into this category (see fig.13), Isle of Man cabbage (*Coincya monesis*), smooth cat's-ear (*Hypocharis glabra*) and white ramping fumitory (*Fumaria capreolata*).

9.3.3 Species of local importance

Species recorded in 15km squares or less are considered important on a local scale. These species will be included in the Manx Red Data Book, as yet unpublished.

Fig 11 Showing number of woodland species occurring at verge survey sites.

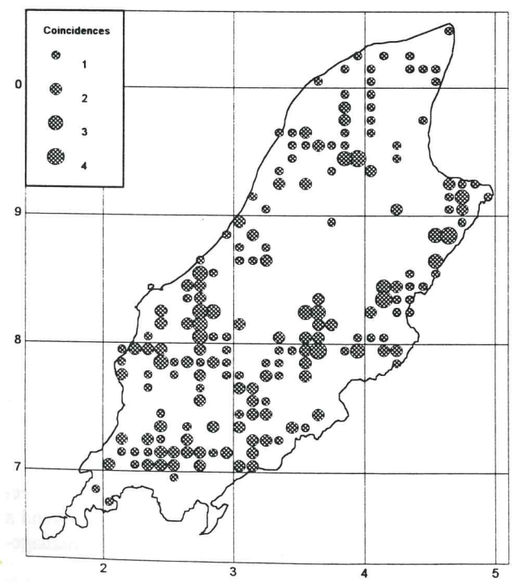
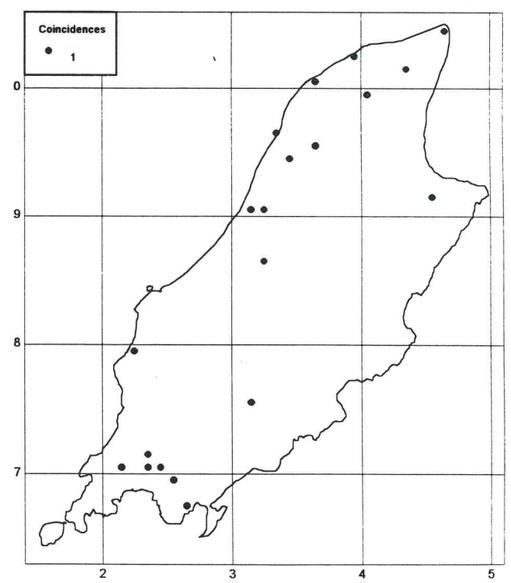


Fig 13 Distribution of Nationally Scarce Species recorded at verge survey sites.



10.0 Designation of verges of High Conservation Interest

As already discussed in section 4, the main reasoning behind carrying out verge surveys is to identify those verges of highest nature conservation interest. to do this a system of verge selection criteria and a notable species list has been devised.

Criteria for the selection of verges are not static, there is scope for criteria to change and develop as the systems of site selection are updated or amended in light of new research and current thinking. In particular changes may occur due to the implementation of a Manx Wildlife Sites System, (MNCT in prep) and the production of a Manx Red Data Book (MRDB).

10.1 Verge Selection Criteria

Selection criteria are used to enable sites to be evaluated against a structured framework and demonstrate clearly to users why some sites are designated are some are not. Often a verge will be selected because it meets several of the criteria.

The selection for any wildlife site should ideally be based on diversity, rarity, naturalness and typicalness in conjunction with potential value, position in ecological unit, fragility at both the habitat and species level, and educational and amenity value.

The selection criteria for conservation and sensitive road verges is designed so that it is consistent with the Manx Wildlife Sites System. The term 'Wildlife Site' has been adopted by the MNCT to describe sites of wildlife importance in the Isle of Man, a designation which is non statutory. The Manx Wildlife Sites System will aim to conserve and enhance such sites by three mechanisms; advising landowners, through the planning system, and through grants for positive management.

Conservation and sensitive verges must fit into one or more of the following criteria. The criteria are very strict so to only include the verges with the most valuable species and habitats.

10.2 Criteria for selection of Conservation and Sensitive Verges

Sites satisfying one or more of the following criteria should be selected as conservation or sensitive verges:

- Sites supporting populations of those species which are protected in European Directives, the Convention on Biological Diversity, the Wildlife Act 1990, UK Red Data Books and/or Scarce Plants in Britain;

- Additional sites supporting populations of those species and/or habitats which are scarce or in danger of extinction on the Isle of Man, and which would qualify for inclusion in a Manx Red Data Book, including:

- Sites supporting 5 or more verge notables (MNCT 1997, see appendix).

- Site with **abundant** populations of a verge notable with local importance (e.g. field scabious (*Knautia arvensis)* on Fishers Hill)

- Verges supporting semi-natural habitats listed in the Manx Wildlife Sites selection criteria (MNCT 1997).

- Verges passing through, or alongside sites designated as NNR's or ASSI's under the Wildlife Act (1990).

- Semi-natural verges next to land managed as nature reserves e.g. Dalby Mountain, Curragh Feeagh and Close Umpson. Such verges effectively form part of the nature reserve, hence it is appropriate that they receive appropriate sympathetic management.

10.3 Verge Notables

Verge Notables (VNs) are selected for their importance in the context of roadside verges in the Isle of Man. Without verge notables the number of designated verges would be greatly reduced, and many important sites would be omitted from the selection procedure. These species are used in conjunction with legally protected species, Nationally Scarce Species. The VNs were selected using the following criteria:

- those species that are habitat indicators and do not fit into any other criteria;

- those species with local distributions, and thought to be important verge species.

10.4 Selection

A verge qualifying for selection must have a least five verge notables, if the verge contains a MRDB, UKRDB or protected species then this automatically receives 5 points. ***No section of roadside habitat can be designated if it consists of hedge bank alone***. The DoT does not own hedge banks, they are the property of adjacent landowners. They will only be cut by the DoT for safety reasons. The minimum length for a designated verge is 50m. Verge sites must also support a sufficient abundance of species to receive designation.

Verges are designated as either Conservation or Sensitive depending on the required management. Sensitive verges only require a specified time of trimming. This is crucial to ensure that the plant or plants of conservation concern have set seed before they are cut. The DoT will manage these verges in with their general cutting programme. Conservation verges require a more complicated management regime, such as removing the cuttings or working around a notable plant. The DoT have contracted out the management of these verges to the MNCT.

Notable species occur at many sites (Fig 14), however the number of sites that have five notables, and above is relatively few. Some of the sites have up to 17 notables such as the Curragh road,

Fig 14 Showing numbers of all 'notable species' recorded at verge sites.

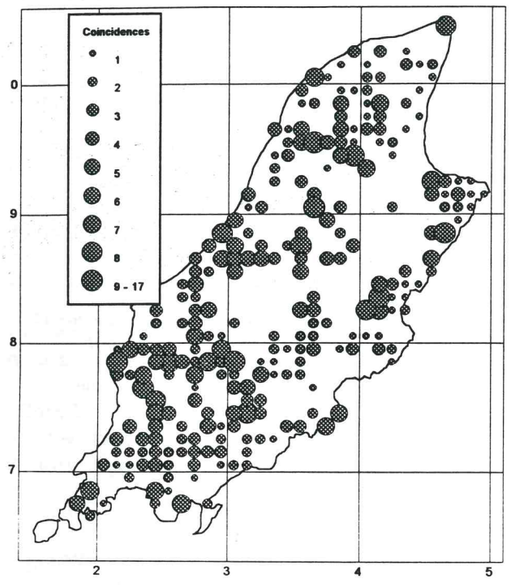


Fig 15 Conservation and Sensitive Verges

Verge	Status	Description	Location	Management
A27 Slieau Mooar, Dalby Mountain	C	Meadow Flora	SC233765	Both sides cut at the end of August. Remove cuttings. No spraying.
B5 Ballavarran	C	Meadow Flora	SC360980	Both sides of the road cut at the end of July. Remove cuttings. No spraying.
C5 Cronk y Voddy	C	Meadow Flora	SC300860	Both sides cut at the end of July. No spraying.
C20 Ballacorris	C	Meadow flora	SC315740	South side only cut at the end of August. Remove cuttings. No spraying.
D7 West Craig Loop Road	C	Meadow Flora	SC388967	Cut at the end of August. Remove cuttings. No spraying.
D11 Narradale Road	C	Meadow Flora	SC396943	Both sides of the road cut at the end of August. Remove cuttings. No spraying.

continued

Fig 15 Conservation and Sensitive Verges *continued*

Verge	Status	Description	Location	Management
D19 Little London	C	Meadow Flora	SC305857	South side only cut at the end of August. Remove cuttings. No spraying.
D55 Ballacurry	C	Meadow Flora	SC295792	Both sides cut at the end of August. Remove cuttings. No spraying.
D66 Archallagan Plantation	C	Meadow Flora	SC305783	Both sides cut at the end of August/early September. Remove cuttings. Control willows and scrub on the plantation side of the road. No spraying.
U7 Curragh Road	C	Curragh Flora	SC360952	Both sides of the road cut before the TT along with a late cut in September. No spraying.
U7 The Rule	C	Curragh Flora	SC375958	Both sides of the road cut before the TT along with a late cut in September.
D51 Earystane	C	Meadow Flora	SC234718	Both sides cut at the end of August. Remove cuttings. No spraying.
D13 Broughjairg	S	Meadow Flora	SC333937	Both sides cut at the end of July. No spraying.
B8 Sulby Claddagh	S	Woodland Flora	SC388942	Cut at end of July. Work required to control the Japanese Knotweed and Giant Hogweed.
C37 Druidale Cairn	S	Neutral grassland/Mire	SC353879	No management.
A5 Fishers Hill	S	*Knautia arvensis*	SC245687	Both sides cut after mid-September.
A13 Jurby Road	S	*Genista tinctoria*	SC420955	Both sides cut after mid-September.
C27 Cornaa Shore	S	Woodland Species	SC361901	Both sides cut after mid-July. No spraying.
A26 St Marks	S	*Knautia arvensis*	SC296735	East side cut after mid-September.
D48 Niarbyl Road	S	Maritime species	SC215780	South side cut late August - September.
A27 Glen Rushen	S	Heath/Acid Grassland	SC240759	Trim back only when needed, every 3 years.
U62 Ballnahowe Road	S	Heathland	SC190680	No cut.
C40 Arrasey/Old mines	S	Heathland	SC254780	No Management, grazed.
A16 Point of Ayre	S	Coastal Heath/SSSI	NX465042	No cut.
D28 Gooseneck	S	Meadow Flora	SC453925	Both sides cut at the end of August. (NB sections of this verge are left uncut)
D11 Narradale	S	Meadow Flora	SC401987	Both sides cut at the end of August.

11. General management for non-designated verges

Where possible the following recommendations should be incorporated into the DoT's cutting programme for roadside verges and hedge banks.

Non-designated verges are still considered to be important from a wildlife point of view, many of these important habitats will be lost without sympathetic management. The appropriate management system for verges depends upon the habitats and species present, Fig.16 summaries management prescription for habitats on verges in the Isle of Man.

In the guidelines the DoT consider verges wider than 1m and those less than 1m separately. ***Operatives should use their own initiative in avoiding the unnecessary destruction of wildflowers.***

Verges that are wider than 1m (see fig 17), can be separated into four zones;

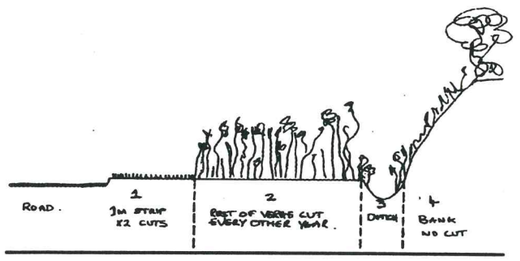
- Zone 1 consists of a one metre safety strip that can be cut twice a year;

- Zone 2: cut every other year (usually with the second cut of the safety strip) allowing taller grasses and wildflowers to thrive. If this section is left uncut scrub and competitive species such as docks, nettle and thistle will replace the wildflowers resulting in the loss of the grassland habitat;

- Zone 3: the ditch will be cleared every 3-5 years as required by the DoT;

- Zone 4: hedge bank, this is not the responsibility of the DoT and will not be cut.

Fig 17 Ideal cutting regime for verges over 1m



Verges under 1m in width should will receive different management (see fig18). These verges usually consist of hedge banks alone with a verge small section of verge. The Dot does not "own" the hedges next to the road, they are only cut on safety grounds. The DoT require the hedge bank to be cut to prevent growth intruding onto the highway, this will receive up to two cuts per year depending on the locality.

Fig 18 Cutting regime for verges under 1m in width

Fig 16 Management Systems for verges in the Isle of Man

Code	Verge Type	First Cut	Second Cut	Other Comments
1	Coarse Grassland	No restrictions on cutting or spraying		
2	Species-rich meadow flora	After Mid-August		Ideally remove cuttings
3	Curragh Flora	Before TT, 20 May	Late September	Ideally remove cuttings
4	Heath and Upland Grassland	No Cut	No Cut	
5	Woodland Flora	Cut after mid-July		
6	Coarse Grassland with late summer flowers May October	May	October	
7	Sensitive Verge management	See individual management prescriptions		
8	Conservation Verge management	See individual management prescriptions		

11.1 Introduced Species

Verges and hedge banks in the Isle of Man support many introduced species. These are often relics of previous cultivation but some are so well established that they can be considered naturalised. The most obvious examples are Montbretia (*Crocosmia* x *crosmofolia*) and Buddleja (*Buddleja davidii*). Other introductions, not so common include, sweet violet (*Viola odorata*) confined mainly to the north, and greater celandine (*Chelidonium majus*).

New species should not be introduced onto verges and hedge banks, this includes the ubiquitous garden daffodil. Daffodils are fine in gardens or urban settings but are out of place in the countryside. The increase of this species over recent years should be of some concern, the short lived splash of colour in early spring along a great number of verges and hedge banks may be beautiful to the majority of people, but surely we would all prefer to see our native wildflowers. Early flowering native species such as primrose (*Primula vulgaris*), common dog violet (*Viola riviana*) and lesser celandine (*Ranunculus ficara*) should not be threatened by competition from exotic introductions.

11.2 New Verges and Hedge banks

When there is the need for the creation of new hedge banks the DoT have their own policy to ensure that the new structures retain the characteristic features of banks on the Island. Examples of newly constructed banks can be seen at Cronk ny Mona. Using a steel mesh, lined with turf then filled with hard core and earth the banks soon take shape and are quickly established.

11.3 Habitat Creation.

The widening of roads and other engineering works provide opportunities or creating wildlife habitats on former areas of low nature conservation interest. Much literature has been produced on habitat creation, several general issues must be considered, for further information refer to; chapter 2, habitat creation, in *The Good Roads Guide* and *The Wildflower Handbook*)

- Always ensure that native species are used for replanting and reseeding. Advice can be sought on this from the MNCT. Cuttings from the Conservation and Sensitive verges can be used as a source of local Manx seed, otherwise seed must be of certified origin.

- Choose potential sites carefully, selecting the right kind of conditions for each habitat. Observe the surrounding landuse, in many cases conditions adjacent to the desired area give an indication of the kind of habitat that can be most successfully created.

- Aftercare is an important factor that should be considered, any site needs to be easily maintained once it has been established.

- Trees and shrubs should also be native. Native species that grow naturally in the area are likely to be most suitable, and will benefit wildlife most. Only plant trees and shrubs on verges of low conservation interest, it would be inappropriate to plant on species rich meadow verges, wetland verges or heathland verges.

Examples of native shrubs and trees suitable for planting on verges, where appropriate:

Grey willow	*Salix cinerea*
Downy birch	*Betula pubescens*
Silver birch	*Betula pendula*
Blackthorn	*Prunus spinosa*
Hawthorn	*Crataegus mongyna*
Dog rose	*Rosa canina*
Rowan	*Sorbus aucuparia*
Holly	*Ilex aquifolium*

- Suitable soil conditions are necessary for wild flower swards. In particular soil should be of low fertility. Highly fertile soils are not usually suitable for establishing wildflowers because they result in coarse grasses and other species dominating the sward, suppressing the more delicate species. For this reason subsoil is often used instead of topsoil to provide a suitable seedbed.

12 Monitoring

Changes in the diversity of species growing on designated verges must be detected early so that action can be introduced to safeguard the resource. Any changes can be detected through a monitoring programme which must be designed carefully so that it is sensitive to any changes.

Monitoring of Conservation and Sensitive Verges, will also determine how successful special management for each verge is proving to be. Surveys of the verges can be carried out by wardens (see section 13) and volunteers as well as MNCT staff. Fixed point photography will also be extremely useful in demonstrating any changes in species composition and habitat structure.

The level of monitoring needed for each verge depends on the complexity of the site. Some verges, particularly those which have just one or two species of concern easily monitored with simple surveys and maybe photographs. More complex sites however need more extensive surveys.

For each verge:

1 Carry out botanical survey (with D.A.F.O.R) using verge survey sheets.
2 Conduct quadrat surveys to identify finer changes in species composition.
3 Carry out fixed point photography.
4 Survey other groups e.g. butterflies and birds.

10.2 Future Work

This project will be ongoing. All designated verges and management prescriptions should be reassessed in **five years time**. This can be carried out by MNCT staff and may simply be a case of looking at the data collected through the monitoring programme and comments from verge wardens.

New verges may be discovered as being of nature conservation importance, with the identification of rarities previously unknown. Continued liaison with the DoT will enable any new verges to be designated.

Verge surveys will continue to be carried out by MNCT volunteers and staff.

13 Verge wardens

Voluntary verge wardens have been used successfully in UK counties, a similar system is to be implemented in the Isle of Man. The appointment is essential if the system of designated verges is to succeed. Verge wardens will be alert for any potentially damaging operations which might otherwise escape detection until it was to late. Their work in monitoring the success of management prescriptions will also be valuable.

Ideally verge wardens should live near to the verge of interest, or travel regularly past the verge e.g. on the way to work.

Each warden will be given an information pack containing, site description, species list, management prescriptions and recording sheets.

13.1 Verge Warden Duties

1 Visit the site at least twice a month to ensure that any damaging operations can be stopped.

2 Monitor the verge to the best of their ability, recording plants, invertebrates, frogs, lizards, birds and invertebrates.

3 Carry out fixed point photography, a useful visual technique of monitoring verges.

4 Carry out small maintenance tasks, e.g. clearing vegetation back from footpaths and signs.

13.2 Problems verge wardens may face

13.2.1 Litter

Depending on the scale of the problem wardens can either, deal with the problem themselves or contact the MNCT if the problem is on a large scale. Litter does not directly effect vegetation, but keeping verges free of litter and rubbish gives the impression that the verge is being looked after. Large amounts of tipping however, probably unlikely to happen on the Island, may smother vegetation. The same applies to any cutting or top soil left on the verge.

13.2.2 Management

All verge wardens will be provided with management prescriptions for their verge. If for some reason the verge is not being managed within the specifications, or the ditch needs clearing then again they should contact the MNCT.

13.2.3 Road Works, Pipes, Cables etc.

Wardens should act quickly if any kind of engineering work is to be carried out on or adjacent to the verge, by informing the MNCT. The Trust contact the DoT to ensure as much care as possible will be taken.

13.2.4 Effects from adjacent land

In many cases the adjacent land will be farmland. Although unlikely, several problems may occur from the dumping of agricultural waste to spray drift or run-off from agricultural work. Wardens may feel confident enough to approach the landowner themselves to explain the situation, but if not the MNCT will make the necessary approach.

The Farming and Wildlife Advisory Group (FWAG) and the DoT may also be able to offer assistance.

14 Conclusion

Recent research carried out by the Wildlife Trusts found that roadside verges are already home to many species and habitats that are locally regional or nationally important (*Roadside Verge Report, 1995*). These findings have been reflected in this report, showing that Manx verges and hedge banks support habitats and species conservation concern.

At present the Department of Transport has no statutory duty to further nature conservation on roadside verges. Any conservation measures carried out are due to the enthusiasm of individuals who have recognised their importance for wildlife. By carrying out this project we have undertaken the first step in solving the problems associated with verge management by identifying verges worthy of conservation. If the management prescriptions in this report are followed the Islands road verges will be conserved for many years to come.

It must be remembered however that, the remaining 100's of km of non-designated verges must be managed sympathetically for conservation. The DoT's new approach to management, with revised cutting practices is one step nearer that goal.

15 Prescriptions for verges

D51 Earystane Road

Conservation verge with species-rich unimproved neutral grassland and wetland flora associated with roadside ditch.

Location, geology and surrounding landuse
The Earystane road is located approximately 1.5km north of Colby in the parish of Arbory, central grid reference SC233722. Underlying geology consists of glacial deposits. Surrounding landuse consists mainly of arable and improved grassland, however on the west side of the road the verge runs adjacent to the curragh and scrub vegetation of the Earystane Nature Reserve.

Site description
The verge is approximately 3ft wide with a ditch, hedge and earth bank. The grassland supports numerous grass species including Sweet Vernal Grass (*Anthoxanthum odoratum*), False Oat Grass (*Arrhenatherum elatius*), Crested Dog's Tail (*Cynosurus cristatus*), Red Fescue (*Festuca rubra*), Smooth meadow Grass (*Poa pratensis*) and Yorkshire Fog (*Holcus lanatus*). Soft rush (*Juncus effusus*), Sharp Flowered Rush (*Juncus acutiflorus*) and Jointed rush (*Juncus articulatus*) are occasional.

Abundant herb species grow throughout the sward, including cuckoo flower (*Cardamine pratensis*), meadow vetchling (*Lathyrus pratensis*), common mousear (*Cerastium fontanum*), knapweed (*Centuarea nigra*), meadow buttercup (*Ranunculus acris*), creeping buttercup (*Ranunculus repens*), red campion (*Silene dioica*) and bush vetch (*Vicia sepium*). Heath spotted orchids (*Dactylorhiza maculata*) are locally frequent.

Management
1 Both sides of the verge to be cut after mid-August.
2 Remove cuttings.
3 No spraying.
4 Cut back scrub as needed.
5 Control injurious weeds as necessary.
6 Clean section of ditch every five years (DoT).

U7 Curragh Road
Conservation verge with curragh vegetation

Location, geology and surrounding landuse
The Curragh Road (SC360952) is located approximately 1.5km north east of the village of Ballaugh, in the parish of Ballaugh, cutting through Ballaugh Curragh (boggy woodland). Underlying geology consists of recent alluvium.

Site description
Vegetation on both sides of the road consists of many wetland species typical of Manx curragh vegetation including, bogbean (*Menyanthes trifoliata*), water horsetail (*Equisetum fluviatile*), devil's-bit scabious (*Succisa pratensis*), marsh pennywort (*Hydrocotyle vulgaris*), marsh cinqufoil (*Potentilla palustris*), cuckooflower (*Cardamine pratensis*), water mint (*Mentha aquatica*) and purple-loosestrife (*Lythrum salicaria*) are locally frequent. Royal fern (*Osmunda regalis*) and common twayblade (*Listera ovata*) are rare.

Grey willows (*Salix cinerea* ssp. *oleifolia*), brambles (*Rubus fructicosa*) and holly (*Ilex aquifolium*) along with occasional ash (*Fraxinus excelsior*) and sycamore (*Acer pseudoplatanus*) standards grow on the verge generally beyond a ditch which runs along both sides of the verge.

Numerous butterfly species have been recorded along the verge including holly blue (*Celastrina argiolus*), orange tip (*Anthocharis cardamines*), painted lady (*Cynthia cardui*), green veined white (*Pieris napi*) and wall (*Lasiommata megera*).

Management
1 Both sides of the verge cut before TT week along with a late cut in September.
2 Remove cuttings.
3 No spraying.
4 Ditches on both sides are prone to silting up and need to be cleared as required by the DoT.
5 Control injurious weeds as necessary.

U7 Curragh Road, The Rule

Conservation verge with Curragh flora

Location, geology and surrounding landuse
The Rule conservation verge is located 1.5km north of Ballaugh in the parish of Ballaugh, cutting through Ballaugh Curragh (boggy woodland). Underlying geology consists of recent alluvium deposits. Adjacent fields support greater butterfly orchid (*Plantanthera chlorantha*). It is possible with the implementation of the sympathetic management regime proposed that the orchid may appear on the verge in the future.

Site Description
The verge has a ditch running along both sides of the road. Frequent grey willows (*Salix* ssp. oleifolia), hawthorn (*Crataegous mongyna*), gorse (*Ulex europaeus*), brambles (*Rubus fruticosus*) and dog rose (*Rosa canina*) grow along the verge.

The ground flora supports numerous grass species including common bent (*Agrostis capillaris*), crested dog's-tail (*Cynosurus cristatus*), meadow foxtail (*Alopecurus pratensis*), sweet vernal grass (*Anthoxanthum odoratum*) and squirrel tail fescue (*Vulpia bromoides*). Water horsetail (*Equisetum fluviatile*) and soft rush (*Juncus effusus*) are also frequent. Throughout the sward common herb species include wood sage (*Teucrium scorodonia*), tormentil (*Potentilla erecta*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*), meadow buttercup (*Ranunculus acris*), meadow vetchling (*Lathyrus pratensis*) and heath bedstraw (*Galium saxatile*). Wild angelica (*Angelica sylvestris*), pignut (*Conopodum majus*), purple loosestrife (*Lythrum salicara*), meadowsweet (*Filipendula ulmaria*), common knapweed (*Centaurea nigra*) and heath spotted orchids (*Dactylorhiza maculata*) are occasional. Royal fern (*Osmunda regalis*) is rare.

Management
1 Both sides of the road cut before the TT along with a late cut in September.
2 No spraying.
3 Clear ditches as required by DoT.
4 Control injurious weeds as necessary.

D66 Archallagan plantation

Conservation verge with species-rich unimproved neutral grassland and mire vegetation.

Location, geology and surrounding landuse
Archallagan Plantation (SC305783) is approx. 1km of road verge adjacent to the Archallagan Plantation, north east of Eairy. To the south east the adjacent landuse consists of arable and improved pasture. Underlying geology consists of Manx Slates and boulder drift.

Site description
The verge on either side of the road is of unequal width. The verge to the south east being only 1m to 2m in width. The verge on the plantation side of the road however is up to 5m wide.

The southern end of the verge consists of species-rich unimproved neutral grassland. The species-rich sword supports numerous grasses including sweet vernal grass (*Anthoxanthum odoratum*), smooth meadow grass (*Poa pratensis*), creeping soft grass (*Holcus mollis*), timothy (*Phleum pratense*) and crested dog's-tail (*Cynosurus cristatus*).

Frequent herb species found throughout the sword include yellow rattle (*Rhinanthus minor*), eyebright (*Euphrasia officinalis agg.*), meadow vetchling (*Lathyrus pratensis*), common knapweed (*Centaurea nigra*), common mousear (*Cerastium fontanum*), greater bird's-foot trefoil (*Lotus pedunculatus*), selfheal (*Prunella vulgaris*), meadow buttercup (*Ranunculus acris*), pignut (*Conopodium majus*) and creeping cinquefoil (*Potentilla reptans*).

Heath spotted orchid (*Dactylorhiza maculata*), northern marsh orchid (*Dactylorhiza purpurella*) and common spotted orchid (*Dactylorhiza fuchsii*) are also frequent especially in the southern half of the verge.

Further north as the road slopes down the hill the vegetation changes. Here a mosaic of marshy grassland, and mire has developed. The wettest areas are dominated with bryophytes, predominantly *Sphagnum* spp. Other areas are dominated with purple moor grass (*Molinia caerulea*) with abundant bog asphodel (*Narthecium ossifragum*), cross-leaved heath (*Erica tetralix*), star sedge (*Carex echinata*), common cottongrass (*Eriophorum angustifolium*), devil's-bit scabious (*Succisa pratensis*), fairy flax (*Linum catharticum*), heath rush (*Danthonia decumbens*) and sharp flowered rush (*Juncus acutiflorus*).

Grey willow (*Salix cinerea* ssp *oleifolia*) and European gorse (*Ulex europaeus*) is particularly invasive throughout the site.

Management
1 Both sides cut at the end of August/early September. Sections lower down the hill were the grassland be comes marshy and is dominated mainly by low grow ing species, there is no need for an annual cut (Only adjacent to the road).
2 Remove cuttings.
3 Control invasive willows and gorse on the plantation side especially.
4 No spraying.

A27 Slieau Mooar (Dalby Mountain)

Conservation verge with species-rich unimproved neutral grassland.

Location, geology and surrounding landuse
Slieau Mooar (SC 233765), 1km of roadside verge is located approx. 2km south east of Dalby. The site is located adjacent to Dalby Peat Bog Trust Nature Reserve. This is an area of wet and dry dwarf shrub heath and marshy grassland managed by the MNCT for conservation. The underlying geology consists of Manx slate.

Site Description
Dalby mountain conservation verge consists of species-rich neutral grassland adjacent to heathland. Consequently species consists of those typical of neutral grassland, heathland and mire communities. Grass species are dominated by red fescue (*Festuca rubra*), false oat grass (*Arrhenatherum elatius*), common bent (*Agrostis capillaris*), Yorkshire fog (*Holcus lanatus*) sweet vernal grass (*Anthoxanthum odoratum*) and smooth meadow grass (*Poa pratensis*). Timothy (*Phleum pratense*) and crested dog's-tail (*Cynosurus cristatus*) are less common.

Herb species include frequent devil's-bit scabious (*Succisa pratensis*), sneezewort (*Achillea ptarmica*), eyebright (*Euphrasia officinalis*), common knapweed (*Centaurea nigra*), bush vetch (*Vicia sepium*), tormentil (*Potentilla erecta*) and heath milkwort (*Polygala serpyllifolia*). Bog asphodel (*Narthecium ossifragum*), lousewort (*Pedicularis sylvatica*), heath violet (*Viola canina*) are occasional. Adder's-tongue fern (*Ophioglossum vulgare*) and heath-spotted orchid (*Dactylorhiza maculata*) are rare.

The verge also supports heathland species including cross-leaved heath (*Erica tetralix*), western gorse (*Ulex gallii*), and purple moor grass (*Molinia caerulea*).

Management
1 Both sides to be cut at the end of August.
2 Remove cuttings.
3 No spraying.
4 Control injurious weeds as necessary.

B5 Ballavarran

Conservation verge with species-rich semi-improved grassland and abundant orchid population.

Location, geology, and surrounding landuse
Ballavarran (SC 360980) is located approx. 1km west of Sandygate in the parish of Jurby, the site includes both sides of the road and is 0.5km in length. Surrounding landuse consists of semi-improved grassland of the Jurby airfield to the north and arable and improved grassland to the south. The underlying geology is composed of glacial sand and gravels.

Site Description
Ballavarran conservation verge has an abundant population of common spotted orchids (*Dactylorhiza fuchsii*), northern marsh orchids (*Dactylorhriza purpurella*) and heath spotted orchids (*Dactylorhiza maculata*).

The verge supports grass species such as sweet vernal grass (*Anthoxanthum odoratum*), crested dog's-tail (*Cynosurus cristatus*), Yorkshire fog (*Holcus lanatus*), cock's-foot (*Dactylis glomerata*) and perennial rye grass (*Lolium perenne*). Common herbs include yellow rattle (*Rhinanthus minor*), meadow vetchling (*Lathyrus pratensis*), autumnal hawkbit (*Leontodon autumnalis*), common dog violet (*Viola riviniana*), common knapweed (*Centaurea nigra*), creeping buttercup (*Ranunculus repens*) and tormentil (*Potentilla erecta*).

Shrubs species recorded include dog rose (*Rosa canina agg.*) and hawthorn (*Crataegus monogyna*).

Management
1 Verge cut by adjacent landowner mid-July.
2 Remove cuttings.
3 No spraying.
4 Control injurious weeds as necessary.

B8 Sulby Claddagh

Sensitive verge with woodland flora including two Manx Red Data Book species* wood speedwell (*Veronica montana*) and three-nerved sandwort (*Moehringia trinervia*).

Location, geology and surrounding landuse
Sulby Claddagh conservation verge is located approx. 0.5km south of Sulby in the parish of Leyzare. The conservation verges runs for 100m adjacent to the river. Surrounding landuse consists of amenity grassland and residential gardens. Underlying geology consists of late glacial sands and gravels, and recent alluvium.

Site Description
This is a narrow riverside with woodland flora, species including sanicle (*Sanicula europaea*), wood speedwell (*Veronica montana*), three-nerved sandwort (*Moehringia trinervia*) and bluebell (*Hyacinthoides non-scripta*).

Other common species include bush vetch (*Vicia sepium*), common dog violet (*Viola riviniana*), tormentil (*Potentilla erecta*). woodsage (*Teucrum scorodonia*), wood avens (*Geum urbanum*) and dove's foot crane's-bill (*Geranium molle*).

The verge also supports numerous shrubs and trees, including sycamore (*Acer psuedoplanatus*), hazel (*Corylus avellana*), bramble (*Rubus fruticosus*), elder (*Sambucus nigra*), gorse (*Ulex europaeus*), hawthorn (*Crataegus monogyna*), dog rose (*Rosa canina*), cotoneaster (*Cotoneaster* sp.) and garden privet (*Ligustrum* sp.).

Giant hogweed (*Heracleum mantegazzianum*) and Japanese knotweed (*Fallopia japonica*) are locally abundant.

Management

1 Cut at the end of July, riverside only
2 Work required to control Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzianum*).

C5 Cronk y Voddy

Conservation verge with meadow flora and scrub.

Location, geology and surrounding landuse
Cronk y Voddy conservation verge (SC300860) is located 0.25km west of the TT course. The verge is adjacent to Curragh Feeagh Nature Reserve, managed for nature conservation by the MNCT. To the north the surrounding landuse consists of semi-improved grassland and scrub. The underlying geology consists of glacial boulder drift and recent alluvium.

Site Description
This is a particularly wide section of verge much of which is dominated by grey willows (*Salix cinerea* ssp. *oleifolia*) along with blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*) and bramble (*Rubus fruticosus*).

Grass species are dominated by crested dog's-tail (*Cynosurus cristatus*), sweet vernal grass (*Anthoxanthum odoratum*), Yorkshire fog (*Holcus lanatus*), smooth meadow grass (*Poa pratensis*) and rough meadow grass (*Poa trivialis*). Marsh foxtail (*Alopecurus geniculatus*), soft brome (*Bromus mollis*) and perennial rye grass (*Lolium perenne*) are present. Sharp flowered rush (*Juncus articulatus*) and oval sedge (*Carex ovalis*) are occasional.

Common broadleaved herbs include yellow rattle (*Rhinanthus minor*), lesser stitchwort (*Stellaria graminea*), knapweed (*Centaurea nigra*), common cat's-ear (*Hypochaeris radicata*), bush vetch (*Vicia sepium*), meadow buttercup (*Ranunculus acris*), red clover (*Trifolium pratensis*), pignut (*Conopodium majus*) and tormentil (*Potentilla erecta*).

Management

1 Both sides cut at the end of July
2 No spraying.
3 Control injurious weeds as necessary.

C20 Ballacorris

Conservation verge with neutral species-rich unimproved grassland.

Location, geology and surrounding landuse

The Ballacorris conservation verge (SC315740) is located approx. 3km west of St Marks in the parish of Santon. The designated area runs along the south side of the road only for approx. 1km. Underlying geology consists of boulder drift. Adjacent land consists of scrub and small areas of unimproved neutral grassland. The remainder of the landuse is improved grassland.

Site Description

The vegetation along the verge is fairly uniform with a 1m wide verge with a ditch and a bank running along the whole section of the road. The verge supports species typical of neutral grassland here on the Isle of Man.

Grass species are dominated by common bent (*Agrostis capillaris*), sweet vernal grass (*Anthoxanthum odoratum*), false oat grass (*Arrhenatherum elatius*) and Yorkshire fog (*Holcus lanatus*) with frequent meadow-fox tail (*Alopecurus pratensis*), red fescue (*Festuca rubra*) and wood false brome (*Brachypodium sylvaticum*).

Other common species include yellow rattle (*Rhinanthus minor*), tormentil (*Potentilla erecta*), meadow buttercup (*Ranunculus acris*), creeping buttercup (*Ranunculus repens*), wood sage (*Teucrium scorodonia*), red clover (*Trifolium pratense*), lesser celandine (*Ranunculus ficaria*) and primrose (*Primula vulgaris*). devil's-bit scabious (*Succisa pratensis*), common valerian (*Valerianella officinalis*), bugle (*Ajuga reptans*) are less frequent along with the occasional common spotted orchid (*Dactylorhiza fuchsii*).

Occasional woody species are also recorded including hawthorn (*Crataegus monogyna*), bramble (*Rubus fruticosus* agg.) and dog rose (*Rosa canina* agg.).

Management

1 South side only cut at the end of August.
2 Remove cuttings.
3 No spraying.
4 Control injurious weeds as necessary.
5 Clear ditches as required by DoT.

D7 West Craig Loop Road

Conservation verge with species-rich neutral unimproved grassland

Location, geology and surrounding landuse

West Craig Loop Road conservation verge (SC388967) is located approx 0.25km west of St Judes. The underlying geology consists of glacial drift. Surrounding landuse consists of arable and improved pasture.

Site Description

Numerous grass species can be found throughout the sword including sweet vernal grass (*Anthoxanthum odoratum*), crested dog's-tail (*Cynosurus cristatus*), Yorkshire fog (*Holcus lanatus*), smooth meadow grass (*Poa pratensis*), red fescue (*Festuca rubra*), false oat grass (*Arrhenatherum elatius*) and tall fescue (*Festuca arundinacea*).

Other common species include ladies bedstraw (*Galium verum*), wild carrot (*Daucus carota*), meadow vetchling (*Lathyrus pratensis*), common cat's-ear (*Hypochaeris radicata*), tormentil (*Potentilla erecta*), greater bird's-foot trefoil (*Lotus pedunculatus*), wood sage (*Teucrium scorodonia*) and creeping buttercup (*Ranunculus repens*). Notably purple loosestrife (*Lythrum salicaria*), sneezewort (*Achillea ptarmica*) and red bartsia (*Odontites verna*) are also recorded.

Management

1 Cut at the end of August.
2. Remove cuttings.
3. No spraying.
4 Control injurious weeds as necessary.
5 Clear ditch as required by DoT.

D13 Broughjairg Road

Sensitive verge with meadow flora and the legally protected species under the Wildlife Act (Species Shepherds Cress (*Teesdalia nudicaulis*).

Location, geology and surrounding landuse

Broughjairg sensitive verge (SC333937) is located approx. 1km west of Ballaugh in the parish of Ballaugh. The underlying geology consists of glacial sands and gravels. Surrounding landuse is improved to the west, semi-improved grassland with scattered conifers to the east.

Site Description

Road verge with typical verge species, grasses include sweet vernal grass (*Anthoxanthum odoratum*), meadow foxtail (*Alopecurus pratensis*), Yorkshire fog (*Holcus lanatus*), Ccommon bent (*Agrostis capillaris*), smooth meadow grass (*Poa pratensis*), rough meadow grass (*Poa trivialis*), cock's-foot (*Dactylis glomerata*) and false oat grass (*Arrhenatherum elatius*).

Other common species occurring throughout the sword include bush vetch (*Vicia sepium*) white clover (*Trifolium repens*), wood sage (*Teucrium scorodonia*), meadow vetchling (Lathyrus pratensis), red campion (*Silene dioica*), tormentil (*Potentilla erecta*), greater bird's-foot trefoil (*Lotus pedunculatus*), common cat's-ear (*Hypochaeris radicata*) and pignut (*Conopodium majus*). Shepherds cress (*Teesdalia nudicaulis*) is occasional.

Management

1 Both sides cut at the end of July
2 No spraying.

D11 Narradale Road

Conservation verge with meadow flora.

Location, geology and surrounding Landuse

Narradale Road conservation verge (SC396943) is located approx. 1km south east of Sulby. The underlying geology consists of Manx slates and glacial boulder drift. Surrounding landuse consists of improved grassland.

Site Description

The verge supports numerous grass species including crested dog's-tail (*Cynosurus cristatus*), sweet vernal grass (*Anthoxanthum odoratum*), false oat grass (*Arrhenatherum elatius*), red fescue (*Festuca rubra*), timothy (*Phleum pratense*), common bent (*Agrostis capillaris*), creeping bent (*Agrostis stolonifera*), smooth meadow grass (*Poa pratensis*), rough meadow grass (*Poa trivialis*) and Yorkshire fog (*Holcus lanatus*). Pale sedge (*Carex pallescens*), oval sedge (*Carex ovalis*) and common sedge (*Carex nigra*) are also frequent.

Frequent herb species include knapweed (*Centaurea nigra*), meadow vetchling (*Lathyrus pratensis*), tormentil (*Potentilla erecta*), yellow rattle (*Rhinanthus minor*), meadow buttercup (*Ranunculus acris*), creeping buttercup (*Ranunculus repens*), greater stitchwort (*Stellaria holostea*), cuckoo flower (*Cardamine pratensis*), eyebright (*Euphrasia officinalis*), red clover (*Trifolium pratense*) and white clover (*Trifolium repens*). Occasional species include sneezewort (*Achillea ptarmica*), devil's-bit scabious (*Succisa pratensis*), wood anemone (*Anemone nemorosa*), fairy flax (*Linum catharticum*), bugle (*Ajuga repens*), heath spotted orchid (*Dactylorhiza maculata*) and common spotted orchid (*Dactylorhiza fuchsii*).

Management

1 Cut both sides of verge end of August.
2 Remove cuttings.
3 Control injurious weeds as necessary.
4 DoT to clear ditches as necessary.
5 No spraying.

D28 Gooseneck

Sensitive verge with meadow flora and marshy grassland.

Location, geology and surrounding landuse
The Gooseneck sensitive verge (SC453925) is located approx. 1km south of Ramsey. To the south surrounding landuse is mainly marshy grassland and to the north, the Ballure conifer plantation. The underlying geology consists of Manx Slates.

Site Description
The wettest areas are dominated by rushes, soft rush (*Juncus effusus*), sharp flowered rush (*Juncus acutiflorus*), jointed rush (*Juncus articulatus*) and purple moor grass (*Molinia caerulea*). Elsewhere frequent grass species include wavy hair grass (*Deschampsia flexuosa*), red fescue (*Festuca rubra*), rough meadow grass (*Poa trivialis*), mat grass (*Nardus stricta*), crested dog's-tail (*Cynosurus cristatus*), false oat grass (*Arrhenatherum elatius*) and Yorkshire fog (*Holcus lanatus*).

Frequent herb species growing throughout the sward lousewort (*Pedicularis sylvatica*), heath bedstraw (*Galium saxatile*), devil's-bit scabious (*Succisa pratensis*), greater bird's-foot trefoil (*Lotus pedunculatus*), lesser spearwort (*Ranunculus flammula*), eyebright (*Euphrasia officinalis*), cuckoo flower (*Cardamine pratensis*), tormentil (*Potentilla erecta*) and wood sage (*Teucrium scorodonia*).

Occasional species include bog pimpernel (*Anagallis tenella*), marsh thistle (*Cirsium palustre*) and red bartsia (*Odontites verna*). Heath spotted orchids (*Dactylorhiza maculata*) are rare.

Management
1 Cut at the end of August
2. No spraying.

D19 Little London conservation verge

Conservation verge with meadow flora and associated ditch flora.

Location, geology and surrounding landuse
Little London conservation verge is located south-east of the TT course at the Cronk-y-Voddy road junction. Underlying geology consists of glacial boulder drift and recent alluvium. Surrounding landuse on both sides of the road is improved pasture.

Site description
The verge supports numerous grass species including crested dog's-tail (*Cynosurus cristatus*), common bent (*Agrostis capillaris*), sweet vernal grass (*Anthoxanthum odoratum*), false oat grass (*Arrhenatherum elatius*), red fescue (*Festuca rubra*), smooth meadow grass (*Poa pratensis*), rough meadow grass (*Poa trivialis*) and occasional tufted hair grass (*Deschampsia cespitosa*).

Frequent herb species include yellow rattle (*Rhinanthus minor*), cuckoo flower (*Cardamine pratensis*), knapweed (*Centaurea nigra*), pignut (*Conopodium majus*), devil's-bit scabious (*Succisa pratensis*), greater bird's-foot trefoil (*Lotus pedunculatus*), tormentil (*Potentilla erecta*), meadow buttercup (*Ranunculus acris*) and creeping buttercup (*Ranunculus repens*). Other occasional species include red bartsia (*Odontites verna*), water horsetail (*Equisetum fluviatile*) and wild angelica (*Angelica sylvestris*).

Management
1 Both side cut at the end of August
2 Remove cuttings
3 No spraying
4 Control injurious weeds as necessary
5 Clear ditches as required by DoT.

C37 Druidale Cairn

Sensitive verge with acid grassland and wet heath communities

Location, geology and surrounding landuse
The Druidale Cairn sensitive verge (SC353879) is located approx. 6km south of Ravensdale in the parish of Ballaugh. The underlying geology consists of Manx Slates and glacial drift. The verge is contiguous with the open moor which is a dry heath/acid grassland mosaic.

Site Description
The verge is mainly dominated with acid grassland species with areas of blanket bog, bare ground and a ditch. Commonest grass species include mat grass (*Nardus stricta*), red fescue (*Festuca rubra*), heath grass (*Danthonia decumbens*), sweet vernal grass (*Anthoxanthum odoratum*) and Yorkshire fog (*Holcus lanatus*). Occasional purple moor grass (*Molinia caerulea*), crested dog's-tail (*Cynosurus cristatus*) and common bent (*Agrostis capillaris*) are also recorded. Green ribbed sedge (*Carex binervis*) and oval sedge (*Carex ovalis*) are common along with soft rush (*Juncus effusus*) and jointed rush (*Juncus articulatus*).

Common herb species include eyebright (*Euphrasia officinalis*), Common knapweed (*Centaurea nigra*), heath bedstraw (*Galium saxatile*), devil's-bit scabious (*Succisa pratensis*), autumnal hawkbit (*Leontodon autumnalis*), greater bird's-foot trefoil (*Lotus pedunculatus*), bog asphodel (*Narthecium ossifragum*) and lousewort (*Pedicularis sylvatica*).

Areas of exposed peat, particularly next the ditch support many lower plants including sphagnum spp. Round leaved sundew (*Drosera rotundifolia*) is occasional.

Ditches are known to provide breeding site for frogs (Rana temporaria) which is protected under schedule 5 of the Wildlife Act (1990).

Management
1 No cut (only necessary if vegetation encroaches on to to highway).
2 Ditches to be cleared as required by DoT.

A5 Fishers Hill

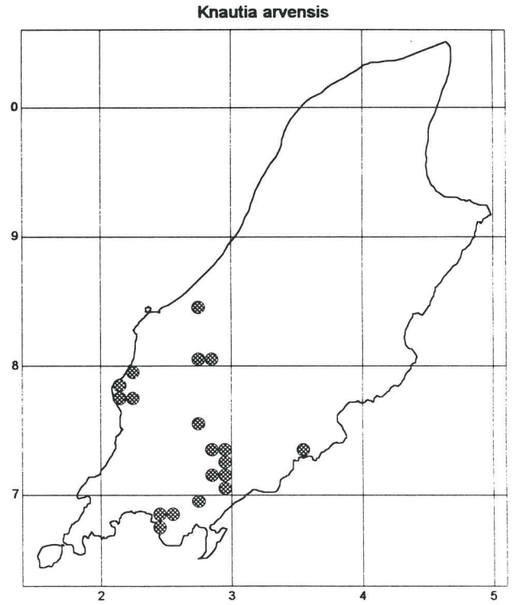
Sensitive verge with abundant field scabious (*Knautia arvensis*)

Location
The A5 is the main trunk road running from Douglas, through Castletown to Port Erin. Fishers Hill sensitive verge (SC245687) is located approx. 2km south of Ballabeg in the parish of Arbory.

Site Description
Bank and verge with abundant field scabious (Knautia arvensis). This species is restricted to the south of the Island.

Management
1 Cut both sides after mid-September.

Fig.19 Distribution of Field Scabious (*Knautia arvensis*) on road verges in the Isle of Man



A13 Jurby Road

Sensitive verge supporting dyer's greenweed (*Genista tinctoria*).

Location geology and surrounding landuse
Jurby Road sensitive verge (SC420955) is located 2km west of Ramsey in the parish of Lonan. The underlying geology consists of glacial sand and gravel. Surrounding landuse consists of arable and improved grassland.

Site description
Road verge with dyer's greenweed (*Genista tinctoria*). This species has a very local distribution on the Island mostly limited to this area.

Management
1 Cut north side after mid-September.

C27 Cornaa Shore

SC420882

Sensitive verge with woodland flora.

Location, geology and surrounding Landuse
Cornaa Shore sensitive verge (SC361901) is located at the shore end of the road which starts at Ballig in the parish of Maughold. Underlying geology consists of glacial sand and gravels. Surrounding landuse is semi-improved grassland to the north and plantation to the south.

Site Description
Road verge with early flowering woodland species such as wood sanicle (*Sanicula europaea*), bluebell (*Hyacinthoides non-scripta*), primrose (*Primula vulgaris*), ramsons (*Allium ursinum*). The verge also supports species typical of Manx verges including sheep's-bit (*Jasione montana*), common cat's-ear (*Hypochaeris radicata*), common dog violet (*Viola riviniana*), common knapweed (*Centaurea montana*) and meadow vetchling (*Lathyrus montana*).

Management
1 Both sides cut mid-July.

A26 St Marks

Sensitive verge with abundant field scabious (*Knautia arvensis*)

Location, geology and surrounding landuse
St Marks sensitive verge (SC296735) is located along the A26 approximately 1km south of St Marks. The underlying geology consists of glacial drift. Surrounding landuse consists of improved agricultural land.

Site description
Verge with abundant field scabious *(Knautia arvensis)*, this species has a restricted distribution on the Isle of Man (see fig 19)

Management
1 East side cut after mid-September.

A27 Glen Rushen

Sensitive verge with Heathland and acid grassland mosaic

Location, geology and surrounding landuse
The Glen Rushen sensitve verge (SC240759) is located approx 6km for Dalby in the parish of Patrick. The verge is adjacent to the Glen Rushen conifer plantation to the North and the Mooar Plantation to the south. The remainder of the verge is adjacent to mosaic of dry dwarf shrub heath, wet dwarf shrub heath and blanket bog. The underlying geology consists of glacial boulder drift.

Site Description
This verge is dominated by a bank of dwarf shrubs mainly billberry (*Vaccinium myrtillus*), along with heather (*Calluna vulgaris*), bell heather (*Erica cinerea*), cross-leaved heath (*Erica tetralix*), Gorse (*Ulex europaeus*) and western gorse (*Ulex gallii*). Other areas consist of grassland species dominated by red fescue (*Festuca rubra*), sweet vernal grass (*Anthoxanthum odoratum*), Yorkshire fog (*Holcus lanatus*), common bent (*Agrostis capillaris*) and cock's-foot (*Dactylis glomerata*). Common herb species include devil's-bit scabious (*Succisa pratensis*), tormentil (*Potentilla erecta*), common cat's-ear (*Hypochaeris radicata*), heath bedstraw (*Galium saxatile*), common bird's-foot trefoil (*Lotus corniculatus*), creeping buttercup (*Ranunculus repens*) and meadow buttercup (*Ranunculus acris*). Sneezewort (*Achillea ptarmica*), lousewort (*Pedicularis sylvatica*) and heath spotted orchid (*Dactylorhiza maculata*) are occasional.

Management
1 Trim back shrubs only when necessary (every 3-5 years).
2 The verge is a popular site for billberry picking (*Vaccinium myrtillus*), any cutting should be after the bilberries have fruited, this is usually mid-October.

D48 Niarbyl Road

Sensitive verge with maritime species.

Location, geology and surrounding landuse
Niarbyl sensitive verge (SC215780) is located south west of Dalby in the parish of Patrick. Underlying geology consists of glacial boulder clay. Surrounding landuse consists of improved pasture, with semi-improved grassland at the shore end of the road.

Site Description
The verge supports many grass species including meadow foxtail (*Alopecurus pratensis*), crested dog's-tail (*Cynosurus cristatus*), cock's-foot (*Dactylis glomerata*), false oat grass (*Arrhenatherum elatius*), Yorkshire fog (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*) and perennial rye grass (*Lolium perenne*).

Other frequent species include wild carrot (*Daucus carota*), meadowsweet *(Filipendula ulmaria*), ladies bedstraw (*Galium verum*), common cat's-ear (*Hypochaeris radicata*), sheep's-bit (*Jasione montana*), meadow vetchling (*Lathyrus pratensis*), meadow buttercup (*Ranunculus acris*) and common scurvy grass (*Cochlearia officinalis).* Occasional eyebright (*Euphrasia officinalis*), field scabious *(Knautia arvensis*), and common valerian (*Valerianella officinalis*) have also been recorded. Northern marsh orchid (*Dactylorhiza purpurea*) is rare.

The shore end of the road has been colonised by many coastal species including common scurvy grass (*Cochlearia officinalis*), sea plantain (*Plantago maritima*), buck's-horn plantain (*Plantago coronopus*), spring squill (*Scilla verna*), wild thyme (*Thymus polytrichus*), sea campion (*Silene uniflora*) and sea fern grass *(Catapodium marinum*).

Management
1 Cut at the end of August.
2 No spraying.
3 Control injurious weeds as necessary.

U62 Ballnahowe Road

Sensitive verge with heathland species.

Location, geology and surrounding Landuse
The Ballnahowe sensitive verge (SC190680) is located 2km of Port Erin in the parish of Rushen. Underlying geology consists of Agneash and other Grits of the Manx Slate System. The verge is contiguous with the rest of the dry dwarf shrub heath.

Site Description
The verge consists of a closely grazed turf with frequent dwarf shrubs. Common heather (*Calluna vulgaris*), bell heather (*Erica cinerea*) and western gorse (*Ulex gallii)* are frequent. The short turf supports numerous grass species dominated by common bent (*Agrostis capillaris*), sweet vernal grass (*Anthoxanthum odoratum*), false oat grass (*Arrhenatherum elatius*), red fescue (*Festuca rubra*) and Yorkshire fog (*Holcus lanatus*). Timothy (*Phleum pratensis*), crested dog's-tail (*Cynosurus cristatus*) and heath grass (*Danthonia decumbens*) are occasional.

Green ribbed sedge (*Carex binervis*) and oval sedge (*Carex ovalis*) are common along with occasional soft rush (*Juncus effusus*), jointed rush (*Juncus articulatus*) and sharp-flowered rush (*Juncus acutiflorus*).

Other common species growing throughout the sword include yarrow (*Achillea millefolium*), common mousear (*Cerastium fontanum*), tormentil (*Potentilla erecta*), pignut (*Conopodium majus*), smooth hawk's-beard (*Crepis capillaris*), Eyebright (*Euphrasia officinalis* agg.), wild thyme (*Thymus praecox*) heath bedstraw (Galium saxatile) and ladies bedstraw (*Galium verum*). Lousewort (*Pedicularis sylvatica*), common milkwort (*Polygala vulgaris*), sheep'-bit (*Jasione montana*) and autumnal hawkbit (*Leontodon autumnalis*) are less common.

Management
1 No cut (unless vegetation encroaches on to highway).
2 No spraying.

A16 Point of Ayre

Sensitive verge with coastal heath flora running through ASSI.

Location, geology and surrounding landuse
The Point of Ayre sensitive verge (NX465042) is located at the northern most tip of the Island and passes through the Ayres ASSI. The surrounding landuse consists of dune lichen heath. The area is underlain by a raised beach.

Site Description
This verge begins on the A16 NX465040 an continues along the U1 until the shore. The verge is contiguous with the rest of the heath. Along the A16 grass species are dominated by red fescue (*Festuca rubra*), sweet vernal grass (*Anthoxanthum odoratum*), false oat grass (*Arrhenatherum elatius*), wavy hair grass (*Deschampsia flexuosa*) and perennial rye grass *(Lolium perenne*). Occasional soft brome (*Bromus mollis*), Yorkshire fog (*Holcus lanatus*) and silvery hair grass (*Aira caryophyllea*) are also recorded.

Frequent herb species include wild carrot (*Daucus carota*), common mousear (*Cerastium fontanum*), common knapweed (*Centaurea nigra*), ladies bedstraw (*Galium verum*), sheep's-bit (*Jasione montana*), yellow rattle (*Rhinanthus minor*), common dog violet (*Viola riviniana),* white clover (*Trifolium repens*) and wood sage (*Teucrium scorodonia*). Other occasional species include common restharrow (*Ononis repens*), wild thyme (*Thymus polytrichus*), common stork's-bill (*Erodium cicutarium*), buck's-horn plantain (*Plantago coronopus*), smooth cat's-ear (*Hypochaeris glabra*), and common centuary (*Centaurum erythraea*).

Dwarf shrubs include bell heather (*Erica cinerea*), common *heather (Calluna vulgaris*), western gorse (*Ulex gallii*) and European gorse (*Ulex europaeus*). Brambles (*Rubus fruticosus*) and hawthorn (*Crataegus monogyna*) are also frequent.

Management
1 No cut.
2 No spraying.

C40 Old Mines/Arrassey Plantation

Sensitive verge with heathland flora.

Location, geology and surrounding landuse
The Arrassey Plantation senstive verge (SC245789) is located south east of Glen Maye in the parish of Patrick. Surrounding landuse consists of dry dwarf shrub heath, conifer plantation and improved grassland. The underlying geology consists of Manx slates.

Site description
From the junction with the D47 down to the plantation the road passes through the dry dwarf shrub heath and is contiguous with the open moor. Here the vegetation is dominated by ericoids, heather (*Calluna vulgaris*), bell heather (*Erica cinerea*), and cross leaved heath (*Erica tetralix*). Billberry (*Vaccinium myrtillus*), western gorse (*Ulex gallii*) and European gorse (*Ulex europaeus*) are also frequent.

Frequent grass species include crested dog's-tail (*Cynosurus cristatus*), rough meadow grass (*Poa trivialis*), mat grass (*Nardus stricta*), sweet vernal grass (*Anthoxanthum odoratum*), timothy (*Phleum pratense*) and common cotton grass (*Eriophorum angustifolium*).

Other frequent species include eyebright (*Euphrasia officinalis*), heath bedstraw (*Galium saxatile*), pignut (*Conopodium majus*), lousewort (*Pedicularis sylvatica*), Bog stitchwort (*Stellaria uliginosa*), common valerian (*Valerianella officinalis*), common knapweed (*Centaurea nigra*), sheep's-bit (*Jasione montana*), deergrass (*Scirpus cespitosa*) and the occasional heath spotted orchid (*Dactylorhiza maculata*).

As the verge passes through Arrassey Plantation and down to the end of the road the vegetation changes. This grassy bank supports numerous grasses including sweet vernal grass (*Anthoxanthum odoratum*), Yorkshire fog (*Holcus lanatus*), wood false brome (*Brachypodium sylvaticum*), smooth meadow grass (*Poa pratensis*) and rough meadow grass (*Poa trivialis*).

The shaded bank supports numerous species associated with woodland such as wood anemone (*Anemone nemorosa*), primrose (*Primula vulgaris*), bluebell (*Hyacinthoides non-scripta*). Other frequent herb species include bugle (*Ajuga repens*), wood sorrel (*Oxalis acetosella*), lesser celandine (*Ranunculus ficara*), common knapweed (*Centaurea nigra*), heath bedstraw (*Galium saxatile*), sheep's-bit (*Jasione montana*), wood avens (*Geum urbanum*), eyebright (*Euphrasia officinalis*), meadow buttercup (*Ranunculus acris*), and yellow pimpernel (*Lysimachia nemorum*).

Management
1 The DoT does not cut the verges supporting heathland vegetation.
2 The verges on the lower sections of the road are cut periodically to allow access.
3 No spraying.

D 11 Narradale Road

Sensitive verge with meadow flora.

SC401937

Location, geology and surrounding landuse

Narradale sensitive verge (SC401987) is located approximately 1 km south east of Sulby. The underlying geology consists of Manx slates and the surrounding landuse is mainly improved grassland.

Site Description

Frequent grass species include crested dog's-tail (*Cynosurus cristatus*), sweet vernal grass (*Anthoxanthum odoratum*), false oat grass (*Arrhenatherum elatius*), timothy (*Phleum pratense*), smooth meadow grass (*Poa pratensis*), rough meadow grass (*Poa trivialis*), red fescue (*Festuca rubra*), creeping soft grass (*Holcus mollis*) and cock's foot (*Dactylis glomerata*).

Frequent herb species growing throughout the sward include yellow rattle (*Rhinanthus minor*), pignut (*Conopodium majus*), sheep's-bit (*Jasione montana*), tormentil (*Potentilla erecta*), meadow buttercup (*Ranunculus acris*), common cat's ear (*Hypochaeris radicata*), knapweed (*Centaurea nigra*), common mousear (*Cerastium fontanum*), heath bedstraw (*Galium saxatile*) and eyebright (*Euphrasia officinalis*). Other less common species include sea plantain (*Plantago maritima*), primrose (*Primula vulgaris*) and bluebell (*Hyacinthoides non-scripta*).

Management

1 Cut at end of August.

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Appendix

Notable species and status

Achillea ptarmica, Sneezewort	M,MG
Anagallis tenella, Bog Pimpernel	M
Anemone nemorosa, Wood anemone	AWI
Armeria maritima, Thrift	VN, C
Carex binervis, Green Ribbed Sedge	H
Carex echinata, Star sedge	M
Carex hostiana, Tawny Sedge	M,
Carex pallescens, Pale Sedge	RM
Coincya monesis, Isle of Man cabbage	NSS, Sch. 7
Dactylorhiza fuschii, Common spotted orchid	Sch. 7, MG,M
Dactylorhiza maculata, Heath spotted orchid	Sch. 7,M,H
Dactylorhiza purpurella, Northern marsh orchid	Sch. 7,MG,M
Drosera rotundifolia, Round-leaved sundew	M
Empetrum nigrum, Crowberry	H
Equisetum sylvaticum, Wood horsetail	AWI
Erica tetralix, Cross-leaved heath	M,H
Eriophorum angustifolium, Common cotton grass	M
Euphrasia officinalis agg., Eyebright	
Fumaria bastardii, Tall ramping fumitory	RM
Fumaria capreolata, White ramping fumitory	NSS
Genista tinctoria, Dyer's Greenweed	RM
Hyancinthoides non-scripta, Bluebell	AWI,B
Hydrocotyle vulgaris, Marsh pennywort	M
Hypochaeris glabra, Smooth cat's-ear	NSS,
Iris pseudacorus, Yellow-flag iris	M
Knautia arvensis, Field scabious	VN
Lathyrus linifolius, Bitter vetch	RM
Listera ovata, Common twayblade	Sch. 7
Luzula pilosa, Hairy wood-rush	AWI
Luzula sylvatica, Great Woodrush	AWI
Lysimachia nemorum, Yellow pimpernel	AWI
Lysimachia vulgaris, Yellow loosestrife	M
Lythrum salicaria, Purple loosestrife	M
Medicago arabica, Spotted medick	RM
Mentha aquatica, Water mint	M
Menyanthes trifoliata, Bogbean	M
Moehringia trinervia, Three-veined sandwort	RM
Myrica gale, Bog myrtle	M
Narthecium ossifragum, Bog asphodel	M
Odontites verna, Red bartsia	MG
Ophioglossum vulgatum, Adder's-tongue fern	RM, M
Orobanche minor, Common broomrape	RM
Osmunda regalis, Royal fern	VN
Pedicularis sylvatica, Lousewort	H
Plantago maritima, Sea plantain	VN,C
Polygala serpyllifolia, Heath milkwort	H,M
Potentilla palustris, Marsh cinquefoil	M
Primula vulgaris, Primrose	AWI
Pulicaria dysentria, Fleabane	M,MG
Pyrola minor, Common wintergreen	RM
Ranunculus flammula, Lesser spearwort	M
Rhinanthus minor, Yellow rattle	M
Sagina subulata, Heath pearlwort	RM
Salix repens, Creeping willow	M,H
Sanicula europea, Wood sanicle	AW
Scilla verna, Spring squill	H,C
Scirpus cespitosus, Deer grass	M,H
Succisa pratensis, Devil's-bit scabious	M
Teesdalia nudicalis, Shepherds cress	RM, Sch. 7
Thymus praecox, Wild thyme	H,M,C
Ulex gallii, Western gorse	H, B
Veronica montana, Wood speedwell	RM, AWI

Key

AWI	Ancient Woodland Indicator
RM	Locally important, Manx Red Data Book MRDB occur in 15 or less 1km squares
Sch. 7	protected under schedule 7 of the Wildlife Act 1990
NSS	Nationally Scarce Species
H	Heathland
M	Mire
C	Coastal
MG	Neutral Grassland
B	Biodiversity Action Plan species Key species listed in Annex F of Biodiversity: The U.K steering group report
VN	Verge notable

MNCT VERGE SURVEY

GR Start _____
GR Finish _____
Parish

Name of Road	Road No

Description of Verge (A)	Description of Verge (B)
Width	Width
Bank (Y/N)	Bank (Y/N)
Height	Height
Profile of Bank	**Profile of Bank**
Features	**Features**
Rarities	**Rarities**
Visual Appeal	**Visual Appeal**
Simplified Habitat Codes	**Simplified Habitat Codes**
Date(s) when cut etc	**Date(s) when cut etc**

Observer's Name

Date of Visit

NOTES