PLAN-GNÌOMHA GNÈ A' MHOGAIRLEAN BACHLACH BÀN

IRISH LADY'S-TRESSES ORCHID SPECIES ACTION PLAN

WESTERN ISLES LOCAL BIODIVERSITY ACTION PLAN

PLANA-GNÌOMHA BITH-IOMADACHD IONADAIL NAN EILEAN SIAR

1. SPECIES PROFILE

Common Name:

Irish Lady's-tresses orchid.

Scientific Name:

Spiranthes romanzoffiana.

UK Biodiversity Status:

UK Priority Species.

Statutory Protection:

Within the Western Isles (WI) none of the populations of this orchid are on NNRs or RSPB reserves. One population of 2 plants, last seen in 1994, was located on an SSSI. Nationally Scarce. Formerly British Red Data Book species but now found in 17 10 x 10 squares in Britain, (16 of which are in the West of Scotland), hence change of status.

Associated Habitat and Species:

Irish Lady's-tresses occurs in several habitats, for example in the transition zone between machair, a priority habitat, and hill land especially where the soil is damp and sand content is still high. It can be found on the lightly vegetated shores of lochs e.g. on Benbecula i.e. margins of standing open water and canals (a broad habitat). The wide range of habitat types occupied has the result that few species with a biodiversity status are universally associated with this orchid; however the habitat often has Snipe *Gallinago gallinago* (a species of conservation concern) present. Some sites are grazed by Greenland White-fronted Geese *Anser albifrons* and Barnacle Geese *Branta leucopsis* in the winter and Greylag Geese *Anser anser* all the year round. All three are species of conservation concern.

2. OBJECTIVES AND TARGETS

	Objective	Target
1	Promote via agri-environment schemes detailed management practices which a) preserve populations or b) optimise possibilities of locating existing but as yet undetected populations.	Ensure continuing survival of a set of populations.
2	Promote the relationship between traditional crofting practice and the conservation of the orchid, especially where there are still considerable numbers of out-wintered cattle feeding in concentrated groups. This will demonstrate the heritage and conservation importance of some traditional practices.	Create an exhibition by 2006.
3	Show the nature and importance of orchids in the Western Isles.	Provide an orchid & biodiversity day school by 2006.
4	Collate all existing records of the orchid in the Western Isles, including herbarium specimens.	Produce a dossier by 2006.
5	Gain knowledge of variation of numbers above ground and percentage flowering in the population.	Monitor at least one summer grazed and one non summer grazed population for population stability and balance of flowering, vegetative and underground forms. Post information (non site specific) on the web.
6	Understand more fully the nature of the inter-relation with animal activities especially grazing.	Manipulate two established well grazed populations 1) by excluding summer grazing, 2) by creating increased winter trampling. Ideally combine 1) and 2) for a third population. Post information (non site specific) on the web.
7	Assess whether some populations have become extinct.	Visit former sites of the orchid. Numbers of detectable plants in bloom on one visit are unlikely to accurately indicate population size.
8	Assess balance between newly discovered populations and possible local extinctions in known broad geographic areas. Examine suitable areas/ islands (e.g. North Uist) with no records.	Search appropriate habitats 1) in the environs of known populations, 2) the broad areas round locations with old records, and 3) new potentially suitable areas; for previously unknown populations.
9	The identification of sites which are buffered against possible future land use changes.	Identify sites a) with very low soil fertility or b) by lochs where the composition of the sward is not or is minimally affected by the presence/ absence/intensity of grazing.
10	Understand the nature of the species and the relationship with its environment.	Liaise with other organisations nationally and locally on 2 joint research projects.

This orchid appears to tolerate a range of grazing intensities and there is scope for combining its conservation with that of rare breeds. Furthermore any site which is newly provided with a summer grazing break (Section 2.6) is likely to provide a nectar and pollen source for machair bumblebees.

Right: The flower head of an Irish Lady's-tresses orchid growing on a loch shore on Benbecula.
Deas: Dìthean Mogairlean Bachlach Bàn a' fàs aig oir loch ann am Beinn na Faoghla

1. CUNNTAS GNÈ

Ainm Cumanta:

Mogairlean Bachlach Bàn.

Ainm Saidheansail:

Spiranthes romanzoffiana.

Inbhe Bith-iomadachd na RA:

Prìomh Ghnè na RA.

Dìon Reachdail:

Anns na h-Eileanan Siar (WI) chan eil gin de na buidhnean den mhogairlean seo air NNRan no tèarmannan RSPB. Bha aon bhuidheann le 2 lus, nach deach fhaicinn bho 1994, air SSSI. Gann gu Nàiseanta. Roimhe aon de na gnèithean ann an Red Data Book Bhreatainn ach a-nis air fhaighinn ann an 17 10 x 10 ceàrnagan am Breatann, (16 dhiubh air Taobh Siar na h-Alba), agus sin ag adhbharachadh atharrachadh inbhe.

Àrainnean agus Gnèithean Co-cheangailte ris:

Tha am Mogairlean Bachlach Bàn ann an grunn àrainnean, mar eisimpleir anns an sòn tar-ghluasaid eadar machair, prìomh àrainn, agus monadh gu h-àraidh far a bheil an ùir tais agus mòran gainmhich ann fhathast. Gheibhear e air oirean lochan far a bheil beagan lusan m.e. am Beinn na Faoghla i.e. air oirean uisge seasamh fosgailte agus canàlaichean (àrainn fharsaing). Mar thoradh air na diofar sheòrsaichean àrainn sa bheil iad 's e beagan ghnèithean le inbhe bith-iomadachd aig a bheil ceangal coitcheann ris a' mhogairlean seo; ach gu tric tha an Naosg *Gallinago gallinago* (gnè le cudrom glèidhteachais) san aon àrainn. Tha Geòidh bhlàr *Anser albifrons* agus Cathain *Branta leucopsis* a' biathadh air cuid de làraichean anns a' gheamhradh agus Geòidh-ghlas *Anser anser* fad na bliadhna. Tha cudrom glèidhteachais aig na trì gnèithean.

Tha coltas gum fuiling am mogairlean seo caochladh ìrean ionaltraidh agus 's dòcha gum faodar an dìon aige a chur còmhla ri gnèithean gann eile. A thuilleadh air sin dh'fhaodadh gum faigh seilleanan-mòra na machrach neactar agus poilean bho àite sam bith air nach robh ionaltradh samhraidh o chionn ghoirid (Earrann 2.6).

2. AMASAN AGUS CUIMSEAN

	Amas	Cuimse
1	Sgeamaichean àiteachais-àrainneachd adhartachadh dhòighean rianachd mionaideach a bhios a) a' dìon àireamhan no b) a' brosnachadh cothroman air buidhnean a tha ann ach nach eil air an lorg fhathast.	Dèanamh cinnteach gun cùm seata de tro bhuidhnean a' dol.
2	An dàimh eadar obair croitearachd traidiseanta agus glèidhteachas a' mhogairlein adhartachadh, gu h-àraidh far a bheil mòran chruidh air an geamhrachadh a-muigh fhathast ag ionaltradh còmhla. Cuidichidh seo a' sealltainn cudrom dualchais agus glèidhteachas cuid de chleachdaidhean traidiseanta.	Taisbeanadh a chruthachadh ro 2006.
3	Nàdar agus cudrom mhogairlein anns na h-Eileanan Siar a shealltainn a chur air dòigh ro 2006.	Sgoil-latha mhogairlean bith-iomadachd a chur air dòigh ro 2006.
4	A h-uile clàradh den mhogairlean anns na h-Eileanan. a chur còmhla, a' gabhail a-steach sampaill herbarium.	Leabhran fiosrachaidh fhoillseachadh ro 2006.
5	Fiosrachadh fhaighinn mun eadar-dhealachadh ann an àireamhan air uachdar na talmhainn agus an àireamh sa cheud fo bhlàth anns an àrainn.	Aon àrainn air an robh ionaltradh samhraidh agus aon gun ionaltradh samhraidh aig a' char as lugha a sgrùdadh airson seasmhachd àireamhan agus tomhas cothromach air flùraichean fo bhlàth, feadhainn fhàsmhor agus feadhainn fon talamh. Fiosrachadh (chan ann mu làrach sònraichte) a chur air an eadar- lìon.
6	Barrachd tuigse fhaighinn air an t-seòrsa ceangail a tha eadar cleachdaidhean bheathaichean gu h-àraidh ionaltradh.	Dà àrainn stèidhichte air am mòr-ionaltradh ullachadh 1) le stad a chur air ionaltradh samhraidh, 2) le barrachd stampadh geamhraidh a chruthachadh. Bhiodh e iomchaidh 1) agus 2) a chur còmhla airson treas àrainn. Fiosrachadh (chan ann mu làrach sònraichte) a chur air an eadar-lìon.
7	Measadh a bheil cuid de ghnèithean air a dhol à bith.	Tadhal air làraichean san robh am mogairlean roimhe. Chan eil sùil gun toir àireamhan de lusan a chithear fo bhlàth air aon turas dealbh fìor air meud na h-àrainn.
8	Measadh cothromachd eadar buidhnean a chaidh an lorg às ùr agus feadhainn a dh'fhaodadh a bhith air bàsachadh a-mach gu h-ionadail ann an sgìrean anns an robh iad. Rannsachadh air ceàrnaidhean/eileanan freagarrach (m.e. Uibhist a Tuath) gun chlàradh sam bith.	Rannsachadh ann an àrainnean freagarrach 1) timcheall air àrainnean aithnichte, 2) na ceàrnaidhean timcheall air àiteachan le seann chlàradh, agus 3) ceàrnaidhean ùra a dh'fhaodadh a bhith freagarrach; airson buidhnean air nach robh lorg roimhe.
9	Làraichean a chomharrachadh a tha air an dìon bho atharrachaidhean a dh'fhaodadh a thighinn ann an cleachdadh fearainn.	Làraichean a chomharrachadh a) le torrachas ùire fìor ìosal no b) ri taobh lochan far nach eil an ìre ionaltraidh a' toirt mòran buaidh air an talamh.
10	Tuigse fhaighinn air nàdar na gnè agus an ceangal aice ris an àrainneachd.	Co-obrachadh le buidhnean eile aig ìre nàiseanta agus ionadail air 2 phròiseact rannsachaidh.

3. CURRENT STATUS

Research carried out by Scottish Natural Heritage indicated that the orchid was in decline in Scotland, (UK Biodiversity Action Group, 1999). However, numbers detected in study populations have increased over the 2 or 3 year periods of investigation, (Gulliver *et al.*, 2003). The plant can occur in three states, flowering (F) vegetative (V) and underground (U). Estimates of population size and local extinction are hard to obtain because of the difficulty in detecting grazed flowering plants and vegetative plants. New sites are still being found, as on Tiree in 2002 (Bowler 2003) often a result of increased search effort.

The distribution map for Britain and Ireland, Figure 1, shows a main centre of population in the Hebrides and the adjacent Scottish Mainland with records in two date classes. In England there is one site, at which the plant was last recorded in 1993.

In the Western Isles the orchid is known to occur on Barra, Vatersay, South Uist and Benbecula, but may have a wider distribution.

4. ECOLOGY AND MANAGEMENT

Irish Lady's-tresses produces an inflorescence of white flowers in August, occasionally in July. There are no known records of mature (full-sized) capsules (as occurs in the related species Autumn Lady's-tresses) in Irish Lady's-tresses in Scotland. A large number of plants on Colonsay, Coll and Barra have been examined over several years. Bees are often seen near the plants but very rarely land on the blooms. Orchids have a special kind of plant/fungus association (mycorrhiza) via which the fungal partner supplies the orchid with food reserves e.g. sugars, as well as plant nutrients. Such a process may well continue during the underground phase, which, research by Dr Robarts on Barra has shown, can last up to six years. This additional food resource may mean that the orchid (in either the flowering or vegetative states) can withstand grazing impacts better than many other species.

Most sites in Scotland are grazed by sheep and/or cattle. Plants are also grazed by wild herbivores and by invertebrates, especially slugs. Survival in a lightly and a heavily grazed population over a four year period was good (Gulliver *et al.* 2003, plus 2004 results). Recent changes in the ratio of sheep to cattle may affect this orchid in the long term; but this is not easy to study. The site with the largest known population in Scotland is grazed with periodic breaks, mainly by sheep, with some cattle. Excluding stock in summer has resulted in high numbers of plants flowering each year at two sites on Colonsay which are otherwise heavily winter grazed sites (Gulliver *et al.* 2004a, in press). There are at least four critical aspects to grazing 1) type of stock, 2) intensity of grazing, 3) variation of grazing in time and 4) in space.

Observations in Scotland suggest there is currently a) an absence of sexual reproduction or b) that it is rare and c) if present may only involve small quantities of seed. However the inference from molecular genetic studies is that sexual reproduction is a very important process in maintaining populations on Coll, Barra and Vatersay; Forrest (2001) and Forrest *et al.* (2004). Thus there is an urgent need for further research on the role of reproduction in the species across its range.

Surviving underground for up to 6 years, it is possible that roots broken by the hooves of stock can give rise to fresh shoots. New plants arising from the tips of unbroken roots have been noted in some American species of Lady's-tresses orchids (*Spiranthes*). If root tip to plant conversion occurs in Irish Lady's-tresses it could be a means of both multiplication and dispersal.

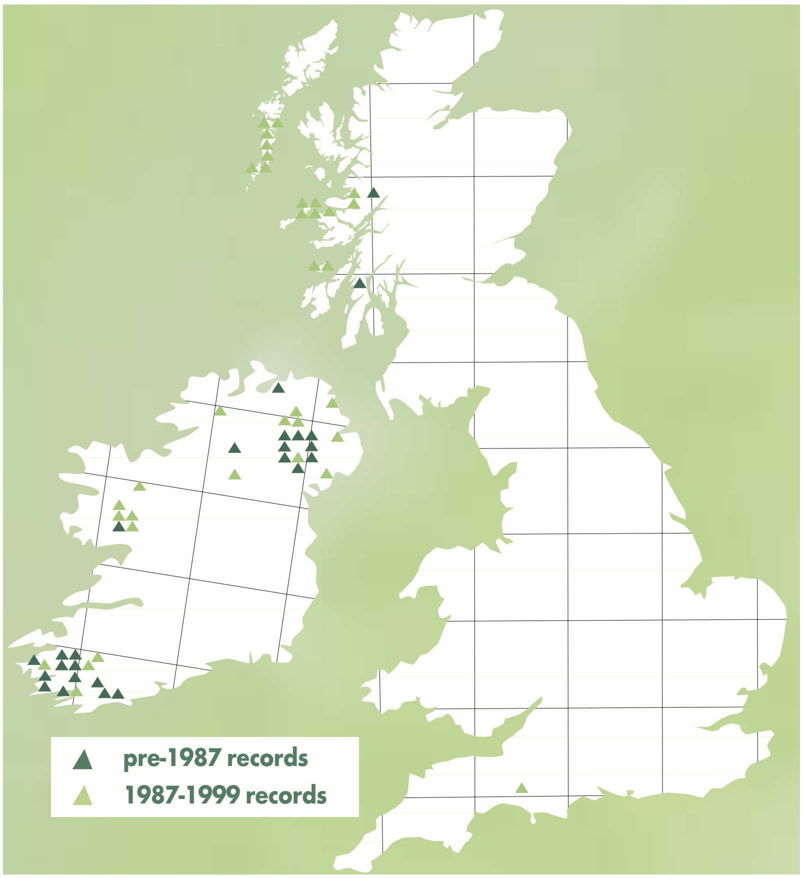

Figure 1: Distribution of Irish Lady's-tresses orchid in Britain and Ireland

(Data from Preston et al., 2002).
The map grid represents 100km squares. Map prepared by Mr A. Forrest. Reprinted by permission from Heredity (Forrest, A.D. et al.), copyright (2004) MacMillan Publishers Ltd.

Dealbh 1: Sgaoileadh a' Mhogairlean Bachlach Bàn am Breatann agus Èirinn

Tha an cliath-mapa a' riochdachadh ceàrnagan 100km. Mapa air ullachadh le Mgr A. Forrest. Lethbhreac le cead bho Heredity (Forrest, A.D. et al.), dlighe-sgrìobhaidh (2004) MacMillan Publishers Ltd.

3. INBHE LÀTHAIREACH

Chomharraich rannsachadh a rinn Dualchas Nàdair na h-Alba gu robh àireamhan a' mhogairlean a' dol sìos an Alba, (Buidheann-gnìomha Bith-iomadachd na RA, 1999). Ach, tha na h-àireamhan a chaidh an lorg ann an àrainnean sgrùdaidh air a dhol suas thar nan 2 no 3 bliadhna a bha an rannsachadh a' dol, (Gulliver et al., 2003). Faodaidh an lus a bhith ann an trì ìrean, fo bhlàth (F) fàsmhor (V) agus fon talamh (U). Tha e doirbh tuairmse fhaighinn air meud nam buidhnean agus mar a tha iad a' bàsachadh a-mach aig ìre ionadail leis an duilgheadas a tha ann lusan fo bhlàth agus lusan fàsmhor a lorg air talamh air ionaltradh. Thathar a' faighinn lorg air làraichean ùra fhathast, mar an Tiriodh ann an 2002 (Bowler 2003) gu tric mar thoradh air barrachd oidhirp airson an lorg.

Tha mapa an sgaoilidh airson Breatann agus Èirinn, Dealbh 1, a' sealltainn prìomh ionad nan àireamhan an Innse Gall agus Tìr-mòr na h-Alba mu choinneimh le cunntasan ann an dà chlas ama. Ann an Sasann tha aon làrach, far an robh an clàradh mu dheireadh den lus ann an 1993.

Anns na h-Eileanan Siar tha fios gu bheil am mogairlean am Barraigh, Bhatarsaigh, Uibhist a Deas agus Beinn na Faoghla, ach dh'fhaodadh gu bheil sgaoileadh nas motha aige.

4. EAG-EÒLAS AGUS RIANACHD

Tha am Mogairlean Bachlach Bàn a' tighinn fo bhlàth le flùraichean geala san Lùnastal, uaireannan san Iuchair. Chan eil lorg air clàradh sam bith de chochaill abaich (làn-mheud) (mar sa ghnè Mogairlean foghair co-cheangailte ris) ann am Mogairlean Bachlach Bàn an Alba. Chaidh mòran lusan a sgrùdadh an Colasaigh, Colla agus Barraigh thar grunn bhliadhnachan. Tha seilleanan air am faicinn gu tric faisg air na lusan ach 's ann ainneamh a stadas iad air na flùraichean. Tha ceangal (mycorrhiza) lus/fungais sònraichte aig a' mhogairlean tro bheil am fungais com-pàirteachaidh a' toirt stòrasan bidhe don mhogairlean m.e. siùcar, còmhla ri beathachadh. Dh'fhaodadh e a bhith gum bi an obair sin a' cumail a' dol fhad 's a tha iad fon talamh, a dh'fhaodas, a rèir rannsachaidh a rinn Dr Robarts air Barraigh, mairsinn suas ri sia bliadhna. Dh'fhaodadh gu bheil an stòras bidhe a bharrachd seo a' ciallachadh gu bheil am mogairlean (ann an staid fo bhlàth no fàsmhor) nas fulangaiche air buaidhean ionaltraidh na tha iomadh gnè eile.

Tha a' chuid as motha de làraichean an Alba air an ionaltradh le caoraich agus/no crodh. Tha lusan air an ionaltradh cuideachd le lus-itheadairean fiadhaich agus le neo-dhruim-altachain, gu h-àraidh seilcheagan. Bha an ìre a mhair ann an àrainn le beagan ionaltraidh agus le mòran ionaltraidh thar ceithir bliadhna math (Gulliver *et al.* 2003, còmhla ri toraidhean 2004). 'S dòcha gun toir atharrachaidhean o chionn ghoirid anns a' cho-mheas de chaoraich ri crodh buaidh air a' mhogairlean seo san ùine fhada; ach chan eil seo furasta a sgrùdadh. 'S ann air ionaltradh a thathar a' stad bho àm gu àm, mar as trice le caoraich, agus beagan crodh, a tha an làrach leis na h-àireamhan as motha air a bheil lorg an Alba. Tha cumail a-mach stuic as t-samhradh air leantainn gu àireamhan àrda de lusan a' tighinn fo bhlàth gach bliadhna air dà làrach an Colasaigh is àbhaist a bhith air am mòr ionaltradh sa gheamhradh (Gulliver *et al.* 2004a, sna meadhanan). Tha co-dhiù a ceithir pàirtean cudromach ann an ionaltradh 1) seòrsa stuic, 2) dèine ionaltraidh, 3) eadar-dhealachadh ann an ionaltradh a thaobh àm agus 4) àite.

Tha coltas bho sgrùdaidhean an Alba a) nach eil gintinn ghnèithean sam bith ann no b) gur ann ainneamh a thachras e agus c) ma tha e ann gur e beagan sìl a tha ann. Ach 's e an co-dhùnadh bho sgrùdaidhean ginteachd moileciuileach gu bheil gintinn ghnèithean fìor chudromach ann an cumail suas àireamhan an Colla, Barraigh agus Bhatarsaigh; Forrest (2001) agus Forrest *et al.* (2004). Mar sin bu chòir tuilleadh rannsachaidh a dhèanamh gun dàil air gintinn anns a' ghnè air feadh an raoin aige.

Ma tha e beò fon talamh airson suas ri 6 bliadhna, dh'fhaodadh gun dèan freumhan air am briseadh suas le crodhanan stuic failleanan ùra. Bha cunntas de lusan ùra a' tighinn bho bhàrr fhreumhan nach deach am briseadh ann an cuid den ghnè Amaireaganach den Mhogairlean *(Spiranthes)*. Ma dh'atharraicheas am Mogairlean Bachlach Bàn bho bhàrr freumha gu lus 's dòcha gum bi e na dhòigh air leudachadh agus sgaoileadh.

Left top: Grazing by cattle at certain times of the year can benefit the species.
Left: One of the habitats of the orchid.
Gu h-àrd clì: Faodaidh ionaltradh le crodh aig amannan sònraichte dhan bhliadhna piseach a' thoirt air a ghnè.
Clì: Àite-còmhnaidh a' mhogairlean.

5.BIODIVERSITY CONTEXT

In Europe the orchid only occurs in Scotland, Ireland and England, see Figure 1. It is widespread in northern North America.

The geographic locations from which the orchid was first recorded in chronological sequence were 1) south west Ireland, 2) north of Ireland 3) Hebrides 4) Scottish Mainland. This led Perring (1965) to conclude that this was a sequence of colonisation of the plant starting with the first record in County Cork in 1810, but this is now considered unlikely.

The special features of the lifestyle of this orchid e.g. presence of an underground phase, presence of an orchid mycorrhiza, apparent extinction at some sites, the continuous process of discovering new sites; all serve to add a special fascination to the species in the Western Isles.

A further intriguing and still unresolved issue is that of whether the species in the Hebrides survived the last ice age e.g. in ice-free areas, or whether it colonised/ recolonised after the ice retreated.

There are three suggestions as to how the plant may have recolonised from North America. The idea that seeds or plant fragments were carried by geese from N. America to Greenland, and then from Greenland to western Europe is complicated by the fact that Irish Lady's-tresses has not been recorded from Greenland. The seeds are tiny and lightweight so might have been blown across the Atlantic from N. America, or they could have been transported on the feet or feathers of rare American waders blown off course on migration.

The UK Action Plan for Irish Lady's-tresses orchid (*Spiranthes romanzoffiana*) was published in 1999 and will be rewritten in 2005. It can be viewed at

www.ukbap.org.uk

UK Biodiversity Group (1999) Tranche 2 Plans, Volume III - Plants and fungi, p. 339.

Recent research papers on this orchid are given in Section 9.

In Europe the orchid only occurs in Scotland, Ireland and England

5. SUIDHEACHADH BITH-IOMADACHD

Anns an Roinn Eòrpa chan eil am mogairlean ach an Alba, Èirinn agus Sasann, faic Dealbh 1. Tha mòran dhiubh ann an ceann a tuath Amaireagaidh.

B' e na h-àiteachan san robh am mogairlean air a chlàradh an toiseach ann an òrdugh eachdraidheil 1) iar-dheas na h-Èireann, 2) ceann a tuath na h-Èireann 3) Innse Gall 4) Tìr-mòr na h-Alba. Thug seo air Perring (1965) co-dhùnadh gur e seo òrdugh planntachaidh an luis a' tòiseachadh leis a' chiad chlàradh ann an Siorrachd Corcaigh an 1810, ach tha beachdan air atharrachadh mun seo a-nis.

Tha feartan sònraichte beatha a' mhogairlean seo m.e. ùine fon talamh, mycorrhiza a' mhogairlein, coltas dol à bith air cuid de làraichean, fhathast a' lorg làraichean ùra; uile a' cuideachadh a' cur ris an ùidh shònraichte sa ghnè anns na h-Eileanan Siar.

'S e ceist iongantach eile agus a tha gun a fuasgladh fhathast an do mhair a' ghnè beò an Innse Gall tron linn deighe mu dheireadh m.e. ann an àiteachan gun deigh, no an phlanntaich/ath-phlanntaich e an dèidh don deigh falbh.

Tha trì dòighean air an togail anns am faodadh an lus a bhith air tilleadh bho Cheann a Tuath Amaireagaidh. Tha teagamh mun bheachd gu robh sìol no pìosan lusan air an giùlan le geòidh bho Cheann a Tuath Amaireagaidh don Ghraonlainn, agus an uair sin bhon Ghraonlainn gu taobh siar na h-Eòrpa oir cha robh am Mogairlean Bachlach Bàn air a chlàradh sa Ghraonlainn. Tha an sìol cho beag agus cho aotrom 's gum faodadh iad a bhith air an sèideadh tarsainn air a' Chuan a Tuath bho Cheann a Tuath Amaireagaidh, no dh'fhaodadh iad a bhith air an giùlan air casan no itean eòin-grunnachaidh ghann Amaireaganach a chuir a' ghaoth bhon chùrsa nuair a bha iad ag imrich.

Bha Plana-gnìomha na RA airson a' Mhogairlean Bachlach Bàn *(Spiranthes romanzoffiana)* air fhoillseachadh ann an 1999 agus bidh e air ath-sgrìobhadh ann an 2005. Chithear e aig

www.ukbap.org.uk

Planaichean Buidheann Bith-iomadachd na RA (1999) Cuibhreann 2, Leabhar III - Lusan agus fungais, t.d. 339.

Tha pàipearan rannsachaidh ùra mun mhogairlean seo air an toirt ann an Earrann 9.

Anns an Roinn Eòrpa chan eil am mogairlean ach an Alba, Èirinn agus Sasann

Photos (left to right):
Some sites are grazed by Barnacle geese in the winter; Twin plants of Irish Lady's-tresses orchid, one with 7 and one with 4 flowers; Snipe are often present in the habitat where the orchid occurs.
Dealbhan (clì gu deas):
Tha cathain a' biathadh air cuid de làraich anns a' gheamhradh; Paidhir de Mogairlean Bachlach Bàn, aon le 7 dithean agus aon le 4; Tha an naosg tric an làthair ann an àrainneachd far a bheil morgairlean a fàs.

6.CURRENT FACTORS AFFECTING THE SPECIES

Much research work has been undertaken. However, the special features of individuals and populations make the production of a definitive list of factors affecting this orchid impossible at the current time.

- The beneficial presence of a summer grazing break. If this were abandoned at some sites where it currently occurs (by mutual agreement of the farmers and crofters) the occurrence of flowering would be greatly reduced.
- Light continuous grazing. This will remove flowering stems and hence eliminate the possibility of seed production which may take place only very rarely. If so the absence of grazing in the critical year is very important. Light grazing may also be associated with long term changes in vegetation structure which may be detrimental to the species. Light grazing and little trampling will result in fewer bare spaces.
- Moderate levels of disturbance are likely to be a very important feature of the plant's habitat. Many of the ungrazed or very lightly grazed sites in Ireland are on, or near, loch shores where wave action during the winter helps to create habitat disturbance.
- Absence of grazing resulting in major changes in the sward especially an increasing abundance and biomass of 'bulky' vigorous plant specie e.g. purple moor grass, soft rush, jointed rush and common sedge.
- Continuous heavy grazing may have long term adverse effects but none have been detected in a four year period at a study site on wind blown sand.
- Change in the balance of sheep compared with cattle in the Hebrides in recent decades may affect this orchid in the long term.
- Use of chemical fertiliser resulting in more productive swards. Where fertility has been increased, species with a rapid growth rate are favoured. Such species are strong competitors and tend to out-compete plants with slower growth rates, many of which do not show big responses to applied fertilisers.
- Use of total herbicides. (As the orchid is a monocotyledonous plant i.e. in the same group as the grasses, use of a selective herbicide against broad leaved plants should in theory not affect the orchid).
- Changes in soil conditions which are unfavourable to the fungal associate.
- Uprooting of orchid plants by plant collectors. Two cases are thought to have occurred with Irish Lady's-tresses in Scotland. As a greater number of people become aware of the identification and rarity of the orchid the risk is likely to increase.
- Response to climate change. Grazing tolerance in some plants may be a more important ecological attribute than enhanced response to higher temperatures. Hence swards may remain dominated by grazing tolerant plant species. In ungrazed habitats there may be a much bigger change in the mix of plant species as temperature rises. The presence of high ground on Barra and South Uist allows the possibility of 'altitudinal migration' - i.e. future colonisation by plants of higher ground with a temperature regime comparable to that of existing sites in the present day. Slug grazing is already an important factor. Warmer, wetter seasons may lead to higher slug populations.

Light continuous grazing will remove flowering stems and hence eliminate the possibility of seed production...

6. NITHEAN A THA A' TOIRT BUAIDH AIR A' GHNÈ

Tha mòran obair rannsachaidh air a dhèanamh. Ach, tha feartan sònraichte flùraichean fa leth agus buidhnean dhiubh a' ciallachadh nach eil e comasach liosta chinnteach a dhèanamh an-dràsta de nithean a tha a' toirt buaidh air a' mhogairlean seo.

- Stad air ionaltradh samhraidh na bhuannachd. Nam biodh seo air a stad air cuid de na làraichean sa bheil e a' tachairt an-dràsta (le co-aonta an tuathanaich agus nan croitearan) bhiodh lùghdachadh mòr anns na flùraichean fo bhlàth.
- Beag-ionaltradh aotrom leantainneach. Falbhaidh seo le gasan air am biodh flùraichean agus mar sin leis a' chothrom air sìol a dhèanamh is dòcha nach eil a' tachairt ach glè ainneamh. Ma dh'fhalbhas tha e fìor chudromach nach bi ionaltradh ann air a' bhliadhna riatanach. 'S dòcha cuideachd gu bheil ceangal aig beag-ionaltradh ri atharrachaidhean fad-ùine ann an structar lusan a dh'fhaodas a bhith na chall don ghnè. Leanaidh beag-ionaltradh agus beagan stampaidh gu nas lugha de àiteachan lom.
- Dh'fhaodadh gum bi ìrean beaga atharrachaidh nam pàirt fìor chudromach de àrainn an luis. Tha mòran de na làraichean gun ionaltradh idir no le glè bheag ionaltraidh an Èirinn aig, no faisg air, oirean lochan far a bheil gluasad nan tonn tron gheamhradh a' cuideachadh ag atharrachadh na h-àrainn.
- Cion ionaltraidh a' leantainn gu atharrachaidhean mòra san chaoin gu h-àraidh barrachd pailteas agus bith-thomad de ghnèithean lusan làidir 'tomadach' m.e. fianach, luachair bhog, lachan nan damh agus gainnisg.
- Dh'fhaodadh droch bhuaidh fad-ùine a bhith aig mòr-ionaltradh leantainneach ach cha deach gin a lorg thar ceithir bliadhna aig làrach sgrùdaidh air gainmhich a chaidh a shèideadh leis a' ghaoith.
- Dh'fhaodadh atharrachadh san tomhas de chaoraich an coimeas ri crodh an Innse Gall sna deicheadan mu dheireadh buaidh a thoirt air a' mhogairlean seo san ùine fhada.
- Cleachdadh todhar ceimigeach a' leantainn gu talamh nas torraiche. Far a bheil torrachas air meudachadh, 's e gnèithean a dh'fhàsas luath as fheàrr. Tha na gnèithean sin glè fharpaiseach agus tha iad buailteach dèanamh nas fheàrr na lusan le ìrean fàis nas slaodaiche, mòran dhiubh nach dèan mòran nas fheàrr le todhar a chur orra.
- Cleachdadh puinnseanan-lusan iomlan. (Leis gur e lus monocotyledonous a tha sa mhogairlean i.e. san aon bhuidheann ris na feuran, thathar an dùil nach bu chòir gun toireadh puinnse an-lusan sònraichte airson lusan mòr-dhuilleagach buaidh air a' mhogairlean).
- Atharrachaidhean ann an staid na h-ùire nach eil freagarrach don phàirtiche fungais.
- Daoine a bhios a' tional lusan a' spìonadh a' mhogairlein. Thathar a' smaoineachadh gun do thachair seo don Mhogairlean Bachlach Bàn an dà àite an Alba. Mar a tha barrachd dhaoine comasach air a' mhogairlein aithneachadh agus mothachail air cho gann 's a tha e 's dòcha gum bi barrachd cunnairt ann.
- Dèiligeadh ri atharrachadh clìomaid. Dh'fhaodadh gu bheil e nas cudromaiche a thaobh eag-eòlais gum fuiling cuid de lusan atharrachadh ann an ionaltradh na tha e fulang teòthachdan nas àirde. Mar sin 's dòcha gur e gnèithean lusan a tha fulangach a thaobh ionaltraidh as motha a gheibhear air a' chaoin. Ann an àrainnean gun ionaltradh 's dòcha gum bi atharrachadh mòran nas motha anns a' mheasgachadh de ghnèithean lusan mar a thèid an teòthachd suas. Tha talamh àrd am Barraigh agus Uibhist a Deas a' toirt cothrom air 'imrich gu àirde' - i.e. planntachadh ri teachd le lusan air talamh nas àirde le teòthachd coltach ri na làraichean a tha ann an-diugh. Tha ionaltradh le seilcheagan cudromach mar-thà. Dh'fhaodadh ràithean nas blàithe agus nas fliuiche leantainn gu barrachd sheilcheagan.

Photos (left to right):
Seeds or plant fragments could have been carried by geese across the Atlantic from North America; The management of grazing intensity appears to be critical to the orchid.

Dealbhan (clì gu deas):
Dh'fhaodadh gun robh sìol no pìosan lusan air an giùlan le geòidh tarsainn air a' Chuan a Tuath bho cheann a Tuath Ameireagaidh; Tha coltas gu bheil rianachd truimead ionaltraidh air leth cudromach don mhorgailean.

7.OPPORTUNITIES AND CURRENT ACTION

- Several populations on Barra are currently being studied by Dr J Robarts. Much important information has been obtained e.g. on the variation in percentage of plants in bloom at sites ungrazed by stock in the summer.
- Three experimental exclosures to prevent summer grazing have been established on Barra to determine the survival or local extinction of plants last recorded in 1990. One has been established around two plants first found in 2002 to see if the population is larger. All four were monitored 2003-2004.
- Management changes at many sites carry with them the possibility of revealing previously unknown populations.
- The management of grazing intensity over closely defined areas often appears to be critical. Tools potentially available are a) the rotation of groups of large numbers of stock to ensure periodic heavy grazing; b) fenced subdivision of holdings to ensure periodic heavy grazing c) use of temporary fencing d) use of tethered stock. Regular rotation of winter feeding stations for groups of cattle is one form of category a). Ideally discussions should be held with SEERAD to see if these objectives can be incorporated into agri-environment schemes. (See section 6 - light continuous grazing)
- Current management of some of the common grazings involves a summer grazing break which is beneficial to the orchid. However stock grazing levels in winter should be high and this may not always be the case.
- Funded schemes for corncrake management need to be examined carefully. Removal of stock from some areas for bird management can result in potential Irish Lady's-tresses sites being grazed in the summer months. Other fields may be in use for silage production and therefore unavailable for stock grazing.
- Opportunity to support those traditionally managed, sometimes organic, crofts at which stock management involves periodic heavy grazing.
- Irish Lady's-tresses is one of the few plants in Britain and Ireland which mainly occurs in the areas occupied by Gaelic speaking people. As such it integrates the themes of both natural and human heritage and deserves the highest possible level of care and custodianship.

Irish Lady's-tresses is one of the few plants in Britain and Ireland which mainly occurs in the areas occupied by Gaelic speaking people.

7. COTHROMAN AGUS GNÌOMHAN LÀTHAIREACH

- Tha grunn àrainnean am Barraigh gan sgrùdadh aig an àm seo le Dr J Robarts. Thathar air mòran fiosrachaidh cudromach fhaighinn m.e. air eadar-dhealachadh ann an àireamh sa cheud de lusan fo bhlàth air làraichean nach eil air an ionaltradh le stoc as t-samhradh.
- Tha trì ceàrnaidhean pròbhail airson bacadh a chur air ionaltradh samhraidh air an stèidheachadh am Barraigh gus dearbhadh a bheil na lusan a chaidh an clàradh mu dheireadh ann an 1990 fhathast beò no air a dhol à bith gu h-ionadail. Tha aon cheàrnaidh air a stèidheachadh timcheall air dà lus a chaidh an lorg an toiseach ann an 2002 gus faicinn a bheil na h-àireamhan air a dhol suas. Bha na ceithir air an sgrùdadh 2003-2004.
- Dh'fhaodadh atharrachaidhean rianachd an iomadh làrach cothrom a thoirt air buidhnean air nach robh lorg roimhe a thoirt gu follais.
- Gu tric tha coltas gu bheil e ro-chudromach gum bi rianachd dèine ionaltraidh thar àiteachan deimhinnte. 'S e na dòighean a dh'fhaodadh cleachdadh a) cuairteachadh air àireamhan mòra stuic gus am bi mòr-ionaltradh ann bho àm gu àm; b) feansadh dheth fearainn gus am bi mòr-ionaltradh ann bho àm gu àm c) cleachdadh feansadh car ùine d) cleachdadh stuic ceangailte air feist. 'S e cuairteachadh air stèiseanan biadhadh geamhraidh gu cunbhalach airson buidhnean de chrodh aon dòigh airson roinn a). Bhiodh e feumail bruidhinn ri SEERAD gus faicinn an gabh na h-amasan sin fhilleadh a-steach do sgeamaichean àiteachais-àrainneachd. (Faic earrann 6 - beag ionaltradh leantainneach)
- Tha rianachd cuid den ionaltradh choitcheann an-dràsta a' gabhail a-steach stad ann an ionaltradh samhraidh a tha buannachdail don mhogairlean. Ach bu chòir gum biodh ìrean ionaltradh stuic anns a' gheamhradh àrd agus 's dòcha nach bi e mar seo sa h-uile suidheachadh.
- Feumar sgrùdadh cùramach a dhèanamh air sgeamaichean maoinichte airson rianachd an traoin. Dh'fhaodadh toirt air falbh stuic à cuid de cheàrnaidhean airson rianachd eun leantainn gu làraichean Mogairlean Bachlach Bàn a bhith air an ionaltradh ann am mìosan an t-samhraidh. 'S dòcha gum bi achaidhean eile gan cleachdadh airson feur-tìoraidh a dhèanamh agus mar sin chan fhaighear air stoc a chur orra.
- Cothrom air taic a thoirt do na croitean a tha air an rianachd san dòigh thraidiseanta, uaireannan fàs-bheairteach, far a bheil rianachd stuic a' gabhail a-steach mòr-ionaltradh bho àm gu àm.
- 'S e am Mogairlean Bachlach Bàn aon de na beagan lusan am Breatann agus Èirinn a tha mar as trice anns na ceàrnaidhean sa bheil luchd-labhairt Gàidhlig. Mar sin tha e a' filleadh a-steach dualchas nàdair agus an t-sluaigh agus tha e airidh air an ìre as àirde a ghabhas de chùram is dìon.

'S e am Mogairlean Bachlach Bàn aon de na beagan lusan am Breatann agus Èirinn a tha mar as trice anns na ceàrnaidhean sa bheil luchd-labhairt Gàidhlig.

Photos (left to right):
Current management of some common grazings involves a summer grazing break, which is beneficial to the orchid; Some sites are grazed by Greylag geese all the year round; Funded schemes for corncrake management need to be examined carefully.
Dealbhan (clì gu deas):
Tha rianachd cuid den ionaltradh choitcheann an dràsta a' gabhail a-steach fois ann an ionaltradh samhraidh a tha buannachdail don mhogairlean; Tha geòidh-ghlas a' biathadh air cuid de làraich fad na bliadhna; Feumar sgrùdadh cùramach a dhèanamh air sgeamaichean maoineachaidh rianachd an traoin.

8. ACTIONS

	Action	Lead	Priority	Timescale	Partners	Objective
1	Policy and Legislation					
1.1	Use of the Rural Stewardship Scheme (RSS) and other incentives to land managers to promote farming and crofting involving periodic heavy grazing by cattle, particularly in the winter.	SAC	High	Medium	SEERAD, CnES, SNH, RSPB	1, 2
1.2	Liaison with SEERAD and RSPB on corncrake friendly farming schemes to try to ensure that incentives do not negatively impact on known or possible Irish Lady's-tresses sites. See Appendix 1.	SNH SEERAD RSPB, SAC	High	Medium	CnES	1, 2
2	Site Safeguard and Management					
2.1	Ensure farmers and crofters are aware of the benefits to the orchid of a) summer grazing breaks b) grazing by cattle c) periodic very heavy grazing especially through the winter months. Links to 3.1. Features a), b) and c) are potentially beneficial at sites where the orchid may exist but is, as yet, undetected.	SCF, SNH	High	Long-term	SAC, RSPB, SEERAD, CC, CnES	1, 2
3	Advisory and Awareness Raising					
3.1	Ensure all agricultural and environmental advisors have a copy of this Action Plan and that they have access to specialist advice. See Appendix 1.	SNH, CnES	High	Long-term	SAC, SEERAD, RSPB	1, 2
3.2	Develop an 'orchids and biodiversity' course on all types of orchid in the Western Isles for farmers, crofters and all other interested parties.	SNH, CnES	High	Medium	Curracag, RSPB, PL, SCF, SEERAD, SAC, SIAT, BSBI	3
3.3	Arrange circulation of exhibition on links between traditional farming and crofting in relation to the conservation of Irish Lady's-tresses orchid.	SNH, CnES	Medium	Short	SNH, SEERAD, SAC, RSPB, SCF	2, 3
4	Monitoring and Research					
4.1	Maintain a dossier/database of Irish lady's-tresses orchid records in the Western Isles. The information is sensitive and access should be restricted, see Section 6.	SNH, CnES	High	Long	Curracag, BSBI SIAT, PL, BRISC	4
4.2	Monitor at least one summer grazed and one non summer grazed population for population stability and balance of flowering, vegetative and underground forms.	SNH	High	Short - medium	SEERAD, SAC, CnES	5
4.3	Manipulate two established well grazed populations 1) by excluding summer grazing, 2) by creating increased winter trampling. Ideally combine a) and b) for a third population.	SNH	High	Short - medium	SEERAD, SAC, CnES	6
4.4	Visit former sites of the orchid. Numbers of detectable plants in bloom on one visit are unlikely to indicate population size. Activity could be by contractors, volunteers or a mix e.g. with contractor showing features of vegetative plants.	SNH	Medium	Medium	Curracag, BSBI, PL, SIAT, BRISC, SEERAD, SAC, CnES	7
4.5	Search suitable habitats at locations with no records, especially on North Uist. Activity could be by contractors or volunteers.	SNH	Medium	Medium	Curracag, BSBI, SIAT, PL, BRISC, CnES	8
4.6	Search areas for newly appearing plants where soil has been disturbed (e.g. by the laying of pipelines) in the first and second year following the event.	Curracag	Medium-low	Long	BSBI, SIAT, PL, SNH, CnES	8
4.7	Identify sites a) with very low soil fertility or b) by lochs, where the composition of the sward is not or minimally affected by presence/absence/intensity of grazing.	SNH	Medium	Short -medium	SEERAD,SAC, CnES	9
4.8	Liaise with other organisations nationally and locally on 2 joint research projects 1) to examine presence/absence and details of the sexual reproduction system and 2) ability or otherwise of root fragments to grow into plants.	SNH	Medium	Short -medium	SAC, CnES, PL	10

ABBREVIATIONS:

BRISC	Biological Recording in Scotland
BSBI	Botanical Society of the British Isles
CC	Crofters Commission
CnES	Comhairle nan Eilean Siar
Curracag	Western Isles Natural History Society
PL	Plantlife
RSPB	Royal Society for the Protection of Birds
SAC	Scottish Agricultural College
SCF	Scottish Crofting Foundation
SEERAD	Scottish Executive Environment & Rural Affairs Department
SIAT	Southern Isles Amenity Trust
SNH	Scottish Natural Heritage
SWT	Scottish Wildlife Trust

8. GNÌOMHAN AIR AM MOLADH

	Gnìomh	Stiùireadh	Prìomhachas	Ùine	Com-pàirtichean	Amasan
1	Poileasaidh agus Reachdas					
1.1	Cleachdadh na Sgeama Stiùbhartachd Dùthchail (RSS) agus iomairtean eile airson manaidsearan fearainn gus tuathanachas agus croitearachd adhartachadh anns a bheil mòr-ionaltradh bho àm gu àm le crodh, gu sònraichte sa gheamhradh.	SAC	Àrd	Meadhanach	SEERAD, CnES, SNH, RSPB	1,2
1.2	Co-obrachadh le SEERAD agus RSPB air sgeamaichean tuathanachais traon-chàirdeil gus feuchainn ri dèanamh cinnteach nach bi iomairtean a' toirt droch bhuaidh air làraich far a bheil am Mogairlean Bachlach Bàn no far am faodadh e a bhith. Faic Pàipear-taice 1.	SNH SEERAD RSPB, SAC	Àrd	Meadhanach	CnES	1,2
2	Dìon agus Rianachd Làraich					
2.1	Dèanamh cinnteach gu bheil tuathanaich agus croitearan mothachail air na buannachdan don mhogairlean bho a) stad air ionaltradh samhraidh b) ionaltradh le crodh c) ionaltradh fìor throm gu h-àraidh tro mhìosan a' gheamhraidh. Ceanglaichean ri 3.1. Dh'fhaodadh gu bheil a), b) agus c feumail air làraich far am faod am mogairlean a bhith ach, far nach eil lorg air fhathast.	SCF, SNH	Àrd	Fad-ùine	SAC, RSPB, SEERAD, CC, CnES	1,2
3	Comhairleachadh agus Leudachadh Mothachaidh					
3.1	Dèanamh cinnteach gu bheil lethbhreac aig a h-uile comhairleach àiteachais agus àrainneachd den Phlana-gnìomha seo agus gu bheil cothrom aca air comhairle speisealaiche. Faic Pàipear-taice 1.	SNH CnES	Àrd	Fad-ùine	SAC, SEERAD, RSPB	1,2
3.2	A' cur air dòigh cùrsa 'mogairlean agus bith-iomadachd' mun h-uile seòrsa mogairlean anns na h-Eileanan Siar do thuathanaich, croitearan agus a h-uile duine le com-pàirt sa chùis.	SNH CnES	Meadhanach	Meadhanach	Curracag, RSPB, PL, SCF, SEERAD, SAC, SIAT, BSBI	3
3.3	Ullachadh taisbeanadh air ceanglaichean eadar tuathanachas agus croitearachd traidiseanta an co-cheangal ri gleidheadh a' Mhogairlean Bachlach Bàn.	SNH CnES	Àrd	Fada	SNH, SEERAD, SAC, RSPB, SCF	2, 3
4	Sgrùdadh agus rannsachadh					
4.1	Cumail suas fiosrachadh/stòr-dàta mu chlàradh den Mhogairlean Bachlach Bàn anns na h-Eileanan Siar. Feumar am fiosrachadh a ghleidheadh gu cùramach agus a bhith faiceallach mu cò a gheibh cothrom air, faic Earrann 6.	SNH CnES	Àrd	Fada	Curracag, BSBI, SIAT, PL, BRISC	4
4.2	Sgrùdadh air aon àrainn air an robh ionaltradh samhraidh agus aon gun ionaltradh samhraidh aig a' char as lugha airson seasmhachd àireamhan agus tomhas cothromach air flùraichean fo bhlàth, feadhainn fhàsmhor agus feadhainn fon talamh.	SNH	Àrd	Goirid -meadhanach	SEERAD, SAC, CnES	5
4.3	Ullachadh dà àrainn stèidhichte air am mòr-ionaltradh 1) le stad a chur air ionaltradh samhraidh, 2) le barrachd stampadh geamhraidh a chruthachadh. Bhiodh e iomchaidh 1) agus 2) a chur còmhla airson treas àrainn.	SNH	Àrd	Goirid -meadhanach	SEERAD, SAC, CnES	6
4.4	Tadhal air làraichean san robh am mogairlean roimhe. Chan eil sùil gun toir àireamhan de lusan a chithear fo bhlàth air aon turas dealbh air meud na h-àrainn. Dh'fhaodadh an obair a dhèanamh le cunnradairean, saor-thoilich no measgachadh de ix e.g. leis a' chunnradair a' sealltainn feartan nan lusan fàsmhor.	SNH	Meadhanach	Meadhanach	Curracag, BSBI, PL, SIAT, BRISC, SEERAD, SAC, CnES	7
4.5	Rannsachadh air àrainnean freagarrach ann an àiteachan gun chlàradh sam bith, gu h-àraidh an Uibhist a Tuath Dh'fhaodadh an obair a dhèanamh le cunnradairean no saor-thoilich.	SNH	Meadhanach	Meadhanach	Curracag, BSBI, SIAT, PL, BRISC, CnES	8
4.6	Rannsachadh air àrainnean freagarrach ann an àiteachan gun chlàradh sam bith, gu h-àraidh an Uibhist a Tuath Dh'fhaodadh an obair a dhèanamh le cunnradairean no saor-thoilich.	Curracag	Meadhanach-ìosal	Fada	BSBI, SIAT, PL, SNH, CnES	8
4.7	Comharrachadh làraichean a) le torrachas ùire fìor ìosal no b) ri taobh lochan far nach eil an ìre ionaltraidh a' toirt mòran buaidh air an talamh.	SNH	Meadhanach	Goirid -meadhanach	SEERAD, SAC, CnES	9
4.8	Co-obrachadh le buidhnean eile aig ìre nàiseanta agus ionadail air 2 phròiseact rannsachaidh 1) gus faighinn a-mach mu làthaireachd/neo-làthaireachd agus fiosrachadh mun t-siostam ath-ghineamhainn agus 2) comas no eu-comas air pìosan beaga de fhreumhan tionndadh gu lusan.	SNH	Meadhanach	Goirid -meadhanach	SAC, CnES, PL	10

GIORRACHADH:

BRISC	Clàradh Bith-eòlasach an Alba
BSBI	Comann Lusan Bhreatainn
CC	Ùghdarras nan Croitearan
CnES	Comhairle nan Eilean Siar
Curracag	Comann Eòlas Nàdair nan Eilean Siar
PL	Plantlife
RSPB	Comann Rìoghail Dìon nan Eun
SAC	Colaiste Àiteachais na h-Alba
SCF	Urras Croitearachd na h-Alba
SEERAD	Roinn na h-Àrainneachd & Chùisean Dùthchail Riaghaltais na h-Alba
SIAT	Urras Ghoireasan nan Eilean a Deas
SNH	Dualchas Nàdair na h-Alba
SWT	Urras Fhiadh-bheatha na h-Alba

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In addition to the above references a web based species dossier on Irish Lady's-tresses, authored by Dr Richard Gulliver, is being edited by the plant charity 'Plantlife' (www.plantlife.org.uk) and will be available in 2005.

Appendix 1:

Recommended grazing regime to maximise flowering and the possibility of seed production in Irish Lady's-tresses.

Preferred grazing composition 1) all cattle 2) mainly cattle, some sheep 3) mainly sheep, some cattle 4) all sheep.

IMPORTANT NOTES

Horses may be equivalent to cattle in their beneficial trampling activity, but less good as regards their selective feeding.

Date of termination of summer grazing break. The scheme envisages a site visit to determine if mature capsules have developed. There are no known records of mature capsules in Irish Lady's-tresses in Scotland. An illustration of mature capsules in the related Autumn Lady's-tresses is in Gulliver *et al.* 2004a. If no early autumn visit is possible, adopt alternative 1 below.

Month	Grazing level
November to April	Heavy grazing. This is particularly important.
May to June	Light to medium grazing (an absence of grazing in June will result in more ungrazed plants of Irish Lady's-tresses, but is likely to favour the growth of potentially competitive species)
July to mid September	No grazing
Mid September to end of October	
Alternative 1	1 a) if no visit is possible or b) if capsules have developed: no grazing. (Extend no grazing beyond end of October if mature capsules present but have not yet split to release seeds)
Alternative 2	2 If capsules have not developed: light, medium or heavy grazing

An example of the benefits of a summer grazing break, showing the number of plants in bloom at two sites on Colonsay between 2001 and 2003 is given in Gulliver et al. 2004a (2004 figures 85-KA, 115-KB).

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A thuilleadh air an fhiosrachadh shuas tha pàipear air an lìon mun Mhogairlean Bachlach Bàn, sgrìobhte le Dr Richard Gulliver, ga dheasachadh leis a' bhuidheann-carthannais lusan 'Plantlife' (www.plantlife.org.uk) agus bidh e ri fhaotainn ann an 2005.

Pàipear-taice 1:

Dòigh ionaltraidh air a mholadh airson gun tig barrachd den Mhogairlean Bachlach Bàn fo bhlàth agus sìol a dhèanamh.

An ionaltradh a b' fheàrr 1) crodh gu lèir 2) crodh a' chuid as motha, beagan chaoraich 3) caoraich a' chuid as motha, beagan chruidh 4) caoraich gu lèir.

NÒTAICHEAN CUDROMACH

Dh'fhaodadh gum bi eich a cheart cho math ri crodh airson stampadh, ach nach bi iad cho math a thaobh an ionalradh sònraichte.

Ceann-latha crìochnachaidh airson stad air ionaltradh samhraidh. Tha an sgeama a' sùileachadh gun tèid tadhal air an làrach gus faighinn a-mach a bheil cochaill abaich air fàs. Cha eil lorg gun deach cochaill abaich sam bith a chlàradh mun Mhogairlean Bachlach Bàn an Alba. Tha dealbh de chochaill abaich anns a' ghnè Mogairlean foghair co-cheangailte ris ann an Gulliver *et al.* 2004a. Mur bi e comasach tadhal tràth san fhoghar, faodar roghainn 1 shìos a dhèanamh.

Mìos	Ìre ionaltraidh
Samhain gu Giblean	Mòr-ionaltradh. Tha seo air leth cudromach.
Cèitean gu Ògmhios lusan	Ionaltradh aotrom gu meadhanach (leanaidh stad air ionaltradh san Ògmhios gu barrachd Mogairlean Bachlach Bàn gun an ithe, ach 's dòcha gum bi làmh-an-uachdar a thaobh fàis aig gnèithean a dh'fhaodadh a bhith nas làidire)
Iuchair gu meadhan Sultain	Gun ionaltradh
Meadhan Sultain gu deireadh na Dàmhair	
Roghainn 1	1 a) mur faighear air tadhal no b) ma tha cochaill air fàs:- stad air ionaltradh. (Stad air ionaltradh a leudachadh seachad air deireadh na Dàmhair ma tha cochaill abaich ann ach nach eil air briseadh fhathast gus sìol a leigeil ma sgaoil)
Roghainn 2	2 Mur eil cochaill air fàs:- ionaltradh aotrom, meadhanach no mòr-ionaltradh

Tha eisimpleirean de na buannachdan bho stad de ionaltradh samhraidh, a' sealltainn nan àireamhan de lusan fo bhlàth air dà làrach an Colasaigh eadar 2001 agus 2003 air a thoirt ann an Gulliver et al. 2004a (àireamhan 2004 85-KA, 115-KB).

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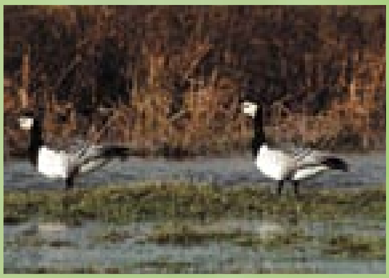
Bha ullachadh Plan-gnìomha Bith-iomadachd Ionadial nan Eilean Siar co-mhaoinichie le Comhairle nan Eilean Siar agus Dualchas Nàdair na h-Alba.

SCOTTISH NATURAL HERITAGE



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Dealbhan le cead bho Angus & Michelle MacDonald, Richard Gulliver, SNH & RSPB.

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