



All-Ireland Species Action Plan

Irish Lady's-tresses
Spiranthes romanzoffiana

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1. Current status

- 1.1. *Spiranthes romanzoffiana* Cham. (Irish Lady's-tresses) is a small orchid with cream-coloured flowers which, in Ireland, occurs in damp meadows, on lakeshores, in seasonally flooded pastures and in valley bogs. Flowering spikes are produced in summer, and plants over-winter by means of a lateral bud that develops during the growing season; in any one year the plant can exist in the flowering, vegetative or underground state (Gulliver & Gulliver, 2004). The species' ecological requirements have not been documented in Ireland. *S. romanzoffiana* is generally considered to be a native species in Ireland.
- 1.2. *S. romanzoffiana* is widespread and relatively frequent in North America (USA including SW Alaska, and Canada) where it occurs in a wide variety of habitat types (Brown, 2003; Catling, 1990). In Europe, the species is confined to the western fringes of Britain and Ireland, being restricted to the west of Scotland primarily on the Hebridean Islands, a single location in England – Devon, and in the north-eastern and western counties of Ireland (Preston *et al.*, 2002). Although widespread throughout much of North America, *S. romanzoffiana* is highly localised in north-west Europe; it thus has an uneven Amphi-Atlantic distribution (Hultén, 1958; Heslop Harrison, 1953).
- 1.3. The first record of *S. romanzoffiana* in Ireland was made in 1810 by James Drummond, from near Castletown Berehaven in Co. Cork. Recent (1987-2000) records for the species from nine 10x10 km squares in the west and north of the Republic of Ireland are published in Preston *et al.* (2002) although a number of other recent records are also known (F. Horsman, (2005a) & pers. comm.; National Parks and Wildlife Service (NPWS) unpublished data; D. Lupton, unpublished data). Additional sites without recent records are mapped in Preston *et al.* (2002) and Curtis & McGough (1988). Sites are concentrated in the west around Lough Conn, Lough Cullin, Lough Corrib, Lough Allen and Lough Mask, with outlying populations in Counties Kerry and Cork to the south, and Co. Donegal to the north. In Northern Ireland the populations are concentrated around Lough Neagh with outlying populations on the northern and eastern coasts, and in Co. Fermanagh.
- 1.4. It is of note that there has been a loss of *S. romanzoffiana* populations from the Lough Neagh basin and from the south-west. The species has not been recorded from three of the original sites in the south-west since 1900, further seven other sites since the 1950s and from six more sites located around Lough Neagh since 1986. Conversely, previously unrecorded sites have been discovered in the west of Ireland on an annual basis since 2000, with 12 new sites in counties Galway and Mayo. The reasons for the loss of the species at many of its sites remain unclear (see sections 1.5 and 2), but have resulted in the species being identified as a priority species for conservation and research.
- 1.5. Notable fluctuations in the presence and size of populations, based on the number of flowering shoots, suggest that population turnover may be high. As there has been no dedicated survey of the species in Ireland, this might be influenced by variation in recording effort, though it seems that some fluctuation in populations is likely. A further problem with the Irish data is the lack of a standardised census of populations, including demographic analysis of size classes. It should be noted that plants might survive underground for up to six years (J. Roberts, cited in R. Gulliver *et al.*, 2003).
- 1.6. Little published information exists about the genetic structure or reproductive biology of Irish populations. Seed set is rare with only one recent confirmed observation in Ireland (Lupton, 2003), although other instances of seed set from plants in Lough Neagh are

discussed in Horsman (2005b). Pollination studies carried out by Wilcock (2002) found that pollen was viable, however experimental manipulation of pollen tubes failed to fertilise ovules. Limited studies suggest that there is some morphological variation between northern and southern populations in Ireland (Summerhayes, 1968; Clapham, Tutin & Moore, 1987); while these populations have been treated as separate subspecies, i.e. subsp. *stricta* (Rydb.) A. R. Clapham and subsp. *gemmaipara* (Sm.) A. R. Clapham for the northern and southern plants respectively (see Sell & Murrell, 1996), it is not known whether any such variation is genetically determined. Forrest *et al.* (2004) found a genetic separation between northern and southern populations in Britain and Ireland on the basis of chloroplast microsatellites, with the northern group including Coll, Barra and Vatersay in the Hebrides, and the southern group including Colonsay (Hebrides) and Ireland. Additionally, they found that the northern group showed high levels of intrapopulation genetic diversity, suggesting that sexual reproduction and seed set has taken place. This was not found for the southern group. The genetic uniformity of the Irish populations is hypothesised to be the result of a genetic bottleneck (Forrest *et al.*, 2004; Lupton, 2003), though studies on genetic variation within and among Irish populations have been limited to date.

- 1.7. Given the restricted distribution of *S. romanzoffiana* in Europe, Ireland has an international responsibility to protect this species. The species is listed by the IUCN Orchid specialist Group as having 'critically low populations' in Europe (IUCN/SSC Orchid Specialist Group, 1996). The species is protected in the Republic of Ireland by the Wildlife Act, 1976 and the Wildlife (Amendment) Act, 2000, under the Flora (Protection) Order, 1999, and is an Irish Red-listed species. In Northern Ireland the species is protected by Schedule 8 of the Wildlife (Northern Ireland) Order, 1985. As with all orchids, trade in *S. romanzoffiana* is controlled under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

2. Current factors causing loss or decline

- 2.1. Threats to the species are poorly understood as detailed information about the species' ecological requirements is lacking. Little research has been carried out to indicate why many of the populations in the south-west appear to have declined; this apparent decline may be a function of changes in land use, or simply a lack of recording, a shift in recording bias or difficulty in locating plants if surveys were conducted when the plants were not in flower.
- 2.2. The grazing regime pertaining to *S. romanzoffiana* sites is of critical importance to the survival of the species. Both overgrazing and undergrazing may cause a loss or decline in the species. Recently Gulliver *et al.* (2003) have suggested that the species can survive a range of grazing regimes including heavy grazing. At their most heavily grazed study site a high percentage of the monitored group of plants have above ground tissue each year (R. Gulliver, pers. comm.). However, at some sites grazing might disadvantage the species if the balance of time spent above and below ground is affected by severe defoliation (D. Lupton, pers. comm.). At all grazed sites some or all of the flowering stems are lost, reducing or eliminating the possibility of sexual reproduction. The timing of the grazing may well be a very important factor. In addition to grazing by stock, *S. romanzoffiana* can be heavily grazed by rabbits and slugs. At some sites grazing by geese may be important.
- 2.3. Human disturbance on lakeshores, through trampling, and development of recreational facilities may pose a significant threat to some populations. This disturbance damages flowers thereby preventing pollination and subsequent seed set, and can lead to the loss of suitable habitat for the species.
- 2.4. Fertiliser and herbicide use, and silage cutting in the vicinity of sites may have contributed to the species' decline.

- 2.5. Successive drainage programmes in the Lough Neagh basin may have resulted in a decline in populations around the margins of the lake.
- 2.6. Abandonment of traditional management practices, as for example the cessation of peat cutting on Brackagh Moss, Co. Armagh and Montiaghs Moss, Co. Antrim, may have resulted in the loss of *S. romanzoﬃana* by allowing the sites to be colonised by rank vegetation and scrub.
- 2.7. Summary predictions for temperature and sea level rise as a result of global warming have been modeled by the MONARCH project (Harrison *et al.*, 2001). These models indicate a much smaller impact in Ireland than in Britain. Climate change could potentially result in changes in the species composition and diversity of grassland communities, in the composition and abundance of fungal associates, and result in water level changes at lakeshore sites. This may account for the perceived northern movement of the Irish populations, as southern populations become extinct and new populations are ‘discovered’ further north. As new lateral buds in *S. romanzoﬃana* are produced in the summer months and develop slowly through the autumn and winter months, to produce medium-sized plants in spring and full-sized plants in summer (Gulliver & Gulliver, 2004), climate change at any season is likely to affect the species.

3. Current action

- 3.1. All of the extant *S. romanzoﬃana* sites in Counties Mayo, Galway, Cork and Kerry occur in candidate Special Areas of Conservation (cSAC). Recently recorded populations in Counties Leitrim, Roscommon and Donegal lie outside protected sites. Most of the *S. romanzoﬃana* populations in Northern Ireland are within Areas of Special Scientific Interest (ASSIs), with one population in County Fermanagh occurring in the Upper Lough Erne cSAC, two populations occurring in the Lough Neagh Special Protection Area (SPA) and a newly reported population (2003) occurring in the North Antrim Coast cSAC.
- 3.2. Site monitoring, which occurs on a three year cycle in the Republic of Ireland and six-yearly in Northern Ireland, surveys designated sites for any changes to the habitats and species therein, reports all activities that may have an impact on the habitats and species, and in doing so monitors any effects to the protected species present.
- 3.3. Management plans for designated sites and some agri-environment schemes highlight the presence of *S. romanzoﬃana* within a site, and include prescriptions for the protection of the species.
- 3.4. Monitoring programmes specific to *S. romanzoﬃana* are traditionally conducted on an *ad hoc* basis as and when sites are visited.
- 3.5. NPWS is currently funding two research projects to study various aspects of the conservation biology of *Spiranthes romanzoﬃana*. The first project is investigating the ecology, distribution and reproductive biology of Irish populations of *S. romanzoﬃana*. This study will assess the extent of genetic variation between and among Irish, British and North American populations. These data will assist in the production of scientifically based management plans for the species and the sites in which it occurs. The second project will look more closely at the pollination biology of the species and examine the idea that due to the rarity of the species, insufficient pollinators are attracted, resulting in reduced seed production and thus increased rarity.
- 3.6. *S. romanzoﬃana* is protected in the Republic of Ireland by the Wildlife Act, 1976 and the Wildlife (Amendment) Act, 2000, under the Flora (Protection) Order, 1999, and is an Irish Red-listed species. The Flora (Protection) Order is regularly updated in light of the most

current data available for Irish plant species. In Northern Ireland the species is protected by Schedule 8 of the Wildlife (Northern Ireland) Order, 1985.

- 3.7. In the Republic of Ireland, under the Wildlife (Amendment) Act, 2000, sites can be designated as Refuges for Flora, and the designation of such sites is currently under investigation.
- 3.8. In the Republic of Ireland, under the Wildlife (Amendment) Act, 2000, sites can be designated as Natural Heritage Areas, and the designation of such sites is currently under consideration.

4. Action plan targets

- 4.1. Maintain all viable populations of *S. romanoffiana* throughout Ireland.
- 4.2. Restore *S. romanoffiana* to at least five historical sites where it was previously recorded during the last 60 years, by 2025.
- 4.3. Achieve or maintain favourable conservation status of *S. romanoffiana* in Ireland, by 2030.

5. Proposed actions with lead agencies

5.1. Policy and legislation

- 5.1.1. Ensure the conservation designation of extant sites, as appropriate, in Special Areas of Conservation, Natural Heritage Areas, Areas of Special Scientific Interest or Refuges for Flora, by 2010.
(ACTION: Environment and Heritage Service (EHS), NPWS)
- 5.1.2. Ensure that the species requirements are considered during reviews of relevant farming policies and agri-environment schemes.
(ACTION: EHS, NPWS, ongoing)
- 5.1.3. Determine the IUCN Red List threat status of *S. romanoffiana* based on the 2001 categories and criteria, and submit this information to the IUCN Species Survival Commission, by 2007.
(ACTION: EHS, NPWS, Trinity College, Dublin (TCD))

5.2. Site safeguard and management

- 5.2.1. Review management prescriptions initiated by Scottish Natural Heritage (Gulliver *et al.*, 2005a; 2005b) for *S. romanoffiana* and incorporate into plans where appropriate, by 2006.
(ACTION: EHS, NPWS)
- 5.2.2. Ensure that management plans for Special Areas of Conservation containing *S. romanoffiana* include prescriptions for the species' conservation, by 2006.
(ACTION: EHS, NPWS)
- 5.2.3. Ensure those agri-environment schemes for sites containing *S. romanoffiana* include prescriptions for the species' conservation, by 2007.
(ACTION: EHS, NPWS)

5.2.4. Ensure optimal site management of extant *S. romanzoffiana* populations in order to achieve favourable conservation status of the species, by 2008.
(ACTION: EHS, NPWS)

5.2.5. Restore to optimal site management at least five historical sites from where *S. romanzoffiana* was previously recorded during the last 60 years, to encourage the recovery of these 'extinct' populations, by 2020.
(ACTION: EHS, NPWS)

5.3. Species management and protection

5.3.1. Publish a management plan for the conservation of *S. romanzoffiana* incorporating the findings of recent research projects, by 2008.
(ACTION: EHS, NPWS)

5.3.2. Collect, if feasible, a seed sample from a representative number of sites across the species' range and supply to the Irish Threatened Plant Genebank for maintenance, storage and *ex situ* conservation, by 2006.
(ACTION: EHS, NPWS, TCD)

5.3.3. Ensure the maintenance of *ex situ* plants in Trinity College Botanic Gardens and in the National Botanic Gardens, Glasnevin, by 2006.
(ACTION: EHS, NPWS, TCD)

5.3.4. Determine whether a breeding programme for the species is required, based on the findings of the research projects detailed in section 3.5, and, if necessary, implement this programme, by 2006.
(ACTION: EHS, NPWS, TCD)

5.3.5. Determine if pollinator management is required based on the findings of the research projects detailed in section 3.5, and, if necessary, implement such management, by 2008.
(ACTION: EHS, NPWS, TCD)

5.4. Advisory

5.4.1. Inform all landowners of the presence of *S. romanzoffiana* on their lands, and highlight the importance of this rare orchid in the all-Ireland and European contexts, by 2006.
(ACTION: EHS, NPWS)

5.4.2. Advise landowners of potential impacts to *S. romanzoffiana* that could be caused by land management practices, e.g. time and intensity of grazing, trampling, recreation, by 2006.
(ACTION: EHS, NPWS)

5.4.3. Distribute advisory leaflets on legislation relevant to *S. romanzoffiana* to all landowners whose land supports the species, and as and whenever the legislation is updated.
(ACTION: EHS, NPWS, ongoing)

5.5. Future research and monitoring

5.5.1. Devise an appropriate monitoring scheme for the species by 2006, based on research findings.
(ACTION: EHS, NPWS)

5.5.2. Collate all available information and determine future research needs, further to section 3.5, by 2008.
(ACTION: All Parties)

5.5.3. Monitor all populations in sufficient detail to determine whether viable populations are being maintained, assess the factors causing population fluctuations, and determine the conservation status of the populations.

(ACTION: EHS, NPWS, ongoing)

5.5.4. Monitor habitat condition and management on a periodic basis to ensure that optimal site management is being achieved.

(ACTION: EHS, NPWS, ongoing)

5.6. Communications and publicity

5.6.1. Inform local authorities of the presence of *S. romanzoffiana* in their areas of responsibility and ensure that they are aware of the potential risks to the species that could be caused through inappropriate land management or development.

(ACTION: All parties, ongoing)

5.6.2. Raise awareness of the species among volunteers, botanists, professional conservation workers and researchers by means of reports, publications, field meetings and presentation of research results at conferences.

(ACTION: All Parties, ongoing)

6. Links with other action plans

Northern Ireland Habitat Action Plans

- Purple Moor-grass and rush pasture
- Fen
- Lowland raised bog
- Lowland meadow

7. References

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