

# The Shetland Isles in the Nordic Context: A Tree Grower's Perspective®

James Mackenzie

Shetland Amenity Trust, Garthspool, Lerwick, Shetland ZE1 ONY

**Geographically and climatically, as well as historically and culturally, The Shetland Islands have much in common with their Nordic neighbours, in particular the Faroe Islands, southern Iceland, western Norway, and Denmark. The Orkney Isles also lie within this Nordic context. Until recently, however, horticulture in Shetland has been largely derived from the U.K. mainland, which did not always suit the islands' extremely oceanic climate. Links made with the Faroese Forestry Service, then with the Nordic Arboretum Committee, resulted in more attention being paid to provenance selection, especially for shelterbelt trees, and enabled the introduction of several species of trees and shrubs, originating from both northern and southern hemispheres.**

## INTRODUCTION

At a latitude of 60° north the Shetland Isles are not only the northernmost archipelago in the British Isles but are climatically extremely oceanic, and share many characteristics with Nordic neighbours in similar latitudes such as the Faroe Islands, southern coastal Iceland, and the coastal fringe of western Norway. Wind, salt, and cloudiness, as well as cool short summers and long relatively mild winters, present challenges to horticulture not experienced to the same degree in other coastal areas of the British Isles, apart from the Outer Hebrides and the Orkney Isles.

Many who have never visited Shetland regard it as virtually treeless but this is not true. Remnants of post-glacial woodland are represented by isolated individuals and populations of trees and shrubs — and associated flora — in locations inaccessible to both grazing animals and humans, often in full exposure to sea winds. The species present include *Betula pubescens* subsp. *carpatica*, *Corylus avellana*, *Malus sylvestris*, *Populus tremula*, several species and hybrids of *Salix*, and *Sorbus aucuparia*.

Pollen deposits in loch sediments and mires reveal evidence of substantial birch-dominated woodland, but including possibly alder, ash, oak, and elm, declining swiftly with settlement by humans practising agriculture about 3000 years ago. Remains of birch, willow, hazel, and alder have been found in peat cuttings, so the latter is generally accepted as being native to Shetland.

Broadleaves such as sycamore, common ash, and wych elm have, however, been successfully planted on fertile soils since at least the 18th century, and both of the principal towns of Shetland, Lerwick, and Scalloway, boast fine examples of these species. The extensive plantations of Kergord were begun in the early 20th century and comprise approximately 8 ha of mixed woodland, with Japanese larch and Sitka spruce forming the bulk of the conifers. Canopy height here reaches 16 m.

The Forestry Commission undertook much research and application in provenance selection, including setting up some experimental plots and shelterbelts in Shetland between the 1950s and 1970. But the lack of commercial availability

of other species of tree suitable for Shetland and, just as crucially, the lack of any agency with the potential to advise the landowners on what to plant where, meant that there were many plantation failures — which could only have exacerbated the common misconception that “trees just don't grow in Shetland”.

### THE FAROESE CONNECTION

This situation was radically changed in 1985 when Shetland Amenity Trust (SAT) started the restoration of the Kergord and other mature woodlands and began planting on new sites. It was, however, not until 1992 when contact was made with the Forestry Service of the Faroe Islands (Skogrókt Landsins) that there was a significant new development in the Trust's activities.

This contact, which was followed by a short visit to Faroe in the summer of 1993, revealed several important facts. First, the Chief Conservator of Skogrókt Landsins, Tróndur Leivsson, was a member of two Nordic groups: The Nordic Arboretum Committee (Nordisk Arboretsudvalg) and the Nordic Sub-arctic Sub-alpine Ecology Group. The Forestry Service has responsibility for maintenance and development of tree plantations in Faroe, and runs a nursery that supplies plants to the public and to other growers. It also maintains close links with the City Gardeners who have overall responsibility for plantings in municipal areas, and are employed by local authorities.

Secondly it was evident that much research had been undertaken and efforts made to put into practice the lessons learnt, of good provenance selection. Plant-collecting expeditions had been made to the southern tip of South America, and to the south-east coast of Alaska, in order to select provenances most akin to the Faroese climate — the emphasis being on coastal and near-to-treeline locations.

A number of species new to Faroese horticulture had been introduced, among them the following: *Alnus sinuata*, *Berberis ilicifolia*, *Drimys winteri*, *Embothrium coccineum*, *Maytenus magellanica*, *Nothofagus antarctica*, *N. betuloides*, *N. pumilio*, *Populus trichocarpa*, *Salix alaxensis*, and *S. hookeriana*.

Alaskan species of alder, poplar (black cottonwood), and willow were of particular interest as they demonstrated obvious tolerance of strong salt-laden winds and were fast growing. Being broadleaves they also offered an alternative to evergreen conifers, particularly Sitka spruce which in Shetland was showing signs of repeated aphid attack and was attracting unfavourable publicity for ecological reasons. At the same time it was astonishing to see *Embothrium coccineum* in full flower in Tórshavn, among a wide and flourishing collection of exotic and native flora.

A third important event was the publication of 'A Century of Tree-planting in the Faroe Islands' in 1989 (Højgaard et al 1989), which provided an exhaustive inventory, with commentary by the late Dr. Søren Ødum of Hørsholm Arboretum in Denmark, of trees and shrubs growing in Faroe. The book also relates exhaustive trials of southern hemisphere trees and shrubs in Faroe, Norway, and Denmark, with the conclusion that many Tasmanian, New Zealand, and Tierra del Fuegan species are better suited to Faroe's oceanic climate than to the comparatively continental climates of the other two Nordic countries.

### THE NORDIC ARBORETUM COMMITTEE

The Nordic Arboretum Committee (NAU) was established in 1971 after the creation of the Norwegian Arboretum at Milde near Bergen, comprising arboreta and other

horticultural and forestry research establishments in Denmark, Finland, Iceland, Norway, and Sweden. By 1990 representatives from Faroe, Greenland, and the Åland Islands had joined. In 1994 affiliated membership was granted to SAT, and by 2000 both Estonian and Latvian botanic gardens and arboreta had affiliated. In 1996 the NAU's annual general meeting was held in Tórshavn, the capital of the Faroe Islands. On this occasion there was also representation from Shetland, the Orkney Islands and the Forest Research division of the Forestry Commission (U.K.).

Joint expeditions have been made to Australasia (1974-75), southern South America (1974-75), South Korea (1976), and Japan (1976), with a total of approximately 3500 individual specimens of seed or cuttings introduced. In addition, individual members have since participated in or organised expeditions to many countries and regions of the world. Therefore a wealth of material of known origin has been shared and tested in the widely varying climates of the Nordic countries.

Staff from SAT have visited and gained work experience at the Norwegian Arboretum, which has also donated many seed samples and other live native plant material. Other material has been acquired from Faroe, Finland, Sweden, Denmark, and Iceland. Attendance at NAU meetings in Faroe, Sweden and Iceland has enabled a fruitful exchange of knowledge and information; each of these meetings is combined with excursions and study tours of horticultural and botanical interest.

#### **THE NORDIC SUB-ARCTIC SUB-ALPINE ECOLOGY GROUP (NSSE)**

Some members of the NAU also participate in the research that is carried out by the NSSE, one of whose main fields is the mountain birch forests which form the timberline in the Nordic countries. Often, as in 1996 and 2000, the meetings of both organisations are held simultaneously in the same location.

Mountain birch is currently named *Betula pubescens* subsp. *czerepanovii* (ORLOVA) HAMET AHTI, and occupies widely differing habitats, from hyper-continental to hyper-oceanic. Research is undertaken into many aspects of birch ecology, including the physiology and chemistry of the tree itself, and influences of climate change and human and animal pressure on mountain birch plant communities. Some of this research was recently published (Wielgolaski, 2001).

Currently the group is involved in an EU sponsored project, Human Interaction with the Birch Ecosystem (HIBECO), which also has input from the Macaulay Land Use Research Institute in Aberdeen, Scotland, in particular with regard to grazing pressure on woodland. As Shetland and its Scottish neighbour Orkney both have remnants of birch woodland and are undergoing projects to establish new native woodland in formerly heavily sheep-grazed areas, NSSE research is of great value to tree growers and planters in these island groups.

#### **THE ORKNEY WOODLAND DEVELOPMENT PROJECT (OWDP)**

Although Orkney is much closer to the Scottish mainland than Shetland, it too has cultural, historical, and climatic connections to the Nordic countries. Co-operation between SAT and the OWDP strengthens the links of both organisations to the Nordic countries. Currently they are both engaged in a project with the University of Abertay Dundee, funded by the Esmée Fairbairn Foundation, to conserve the few remaining native hazels in the two island groups. The project initially aims to establish in vitro collections of the trees, then to undertake comparative DNA analysis before initiating a breeding programme. Essential to this analysis will be

hazel accessed from western coastal Norway, therefore the partnership of the NAU will again provide vital material and information. The project will also be of value to Nordic conservation measures, especially in the Faroe Islands.

### PLANT INTRODUCTIONS FROM NORDIC COUNTRIES

A total of 70 taxa have been accessed by SAT from Nordic countries, and from Orkney, mostly in the form of seed and cuttings, since 1993, and the majority of them are of known wild origin. One of SAT's aims identified in its Shetland Woodland Strategy is the creation of an arboretum which would have conservation, on both a local and an international scale, as one of its main principles. Another aim is the introduction of well-trialled plant material of good quality and suitability for Shetland's extreme maritime climate into the local horticultural trade.

Species such as *A. sinuata* and *S. alaxensis*, which are generally not available on the U.K. market, provide quick-growing shelter for small gardens and for crofts in Shetland, provided their provenance is suitable. Both these species have been sourced from south-east Alaska and have demonstrated remarkable salt-resistance; they also show potential for short rotation coppice which could, on a domestic or small community scale, be practised as a form of croft diversification.

Tierra del Fuegan strains of *Berberis ilicifolia*, *Embothrium coccineum*, and *Nothofagus* species are now in cultivation in Shetland, and along with the other Nordic introductions — from both southern and northern hemispheres — are currently being evaluated.

### CONCLUSIONS

There is still much to be discovered and learned in Shetland horticulture. Even within the small landmass of the islands there are differences in soil conditions, aspect, and topography, which can affect the health and vigour of a plant. Landscaping and architecture can of course modify such differences. Shelter can drastically improve the climate in a garden, and the range of plants grown can thus be extended. Other climatic factors, however, such as daylength, the lack of good ripening weather in autumn, and wet winters are likely always to pose severe challenges for gardeners. Such challenges have already been confronted by Shetland's Nordic neighbours, and the information, ideas, and material that is currently being exchanged will bear fruit for many years to come.

### LITERATURE CITED

- Højgaard, A., J. Jóhansen, and S. Ødum (eds) 1989. A century of tree planting in the Faroe Islands. Føroya Frodskaparfelag, Torshavn.
- Wielgolaski, F.E. (ed). 2001. Nordic mountain birch ecosystems. Man and the biosphere series Vol 27 UNESCO Paris and Parthenon Publishing, New York and London.