

Conservation of plants in botanic gardens of Estonia

Heiki Tamm

Botanical Garden of the University of Tartu, Estonia

Estonia is one of the countries in the northern part of Europe on the shore of the Baltic Sea. Estonia has an area of 45,215 sq. km, from which forests cover 50%, and swamps and bogs 20% of the total area. According to census data, 1, 3 mil people are living in Estonia, and the density of the population is 29 person/ km².

The plant cover of Estonia developed into the last 12,000 years, i.e. after the retreat of the ice sheet from the Estonian territory. Phytogeographically, Estonia belongs to the Euro-Siberian region of the Holarctic realm. The pine (*Pinus sylvestris*), birch (*Betula pendula*, *B. pubescens*) and spruce (*Picea abies*) forests are dominating. The flora of Estonia consists of 1400 species of vascular plants, and the only endemic species is a rattle *Rhinanthus osiliensis*. Many rare in Estonia species are growing at borders of their distribution area, e.g. *Taxus baccata* (NE), *Rosa ciesielskii* (NW), *Rubus caesius* (N), *Rubus arcticus* (S), etc.

Nature conservation

In 1910, the first bird sanctuary was founded in Estonia. In 1936, the first Nature Conservation Act (NCA) was passed in the Parliament. Today, the latest NCA (2004) includes 251 species of vascular plants. In 1979, the first Red Data Book of Estonia was compiled. The last version of RDB (1998) consist 309 species of vascular plants (www.zbi.ee/punane/english/index). In 1992, Estonia signed the Convention on Biological Diversity, and the Strategy and Development Plan of Nature Conservation of Estonia was worked out. In 2003, *The strategy and action plan for ex situ conservation* was worked out. According to the Plan, 12 endangered species of vascular plants need immediate *ex situ* conservation support. 128 endangered species were recommended to propagate in *ex situ* conditions, and to plant these in parks and gardens. (www.eelis.ee/envir/avalik/btv/5,2exsitustrateegia.pdf).

In 2003, the national program on conservation of genetic resources of agricultural plants was started, and the group of ornamental and medicinal plant conservation was founded (www.sordiaretus.ee/?pid=14038pageHeader=National%20Programm).

Botanic gardens of Estonia

There are two botanic gardens in Estonia: Botanical Garden of the University of Tartu – founded in 1803, 4.0 ha, 6500 taxa, (www.ut.ee/botaed) and the Tallinn Botanic Garden – founded in 1961, 100 ha, 8000 taxa, (www.tba.ee). Both Gardens are members of the BGCI, and the Botanical Garden of the University of Tartu joined (2005) the International Agenda for Botanic Gardens in Conservation.

The Global Strategy for Plant Conservation

The Global Strategy for Plant Conservation (GSPC) presents the global targets for the year 2010 (www.bgci.org.uk). The important targets for botanical gardens are:

- Target 8. 60 % of threatened plant species in accessible *ex situ* collections, preferably in the country of origin, and 10 % of them included in recovery and restoration programs.
- Target 9. 70 % of genetic diversity of crops and other major socio-economically valuable plant species conserved, and associated indigenous and local knowledge maintained.

Target 9 for Estonia

Tasks

In 2002-2006 to find out, study and document ornamental and medicinal plant resources of Estonia. To compile the data base and plant living collections in botanic gardens with valuable ornamental and medicinal plant species and cultivars of Estonia. In 2007, the next 5 year program on conservation of genetic resources of agricultural plants was started.

Organization

Botanical Garden of the University of Tartu was contracted as a main centre for ornamental and medicinal plant conservation. Research and documentation was carried out together with the Institute of Pharmacy of the University of Tartu, the Tallinn Botanic Garden, the Institute of Gardening of the Agricultural University of Estonia, the Rāpina Gardening College, private gardeners and breeders, Ministry of Agriculture.

Results

Since 1940, many new cultivars of *Rosa*, *Syringa*, *Clematis*, *Lilium*, *Primula*, *Hemerocallis*, *Anemone* were bred in Estonia. One of the most outstanding collections is the *Clematis* collection of 148 cultivars, bred by the gardener Mr. Uno Kivistik. In 2002-2006, more than 700 taxa of ornamental and medicinal plants was studied, 380 taxa of ornamental and 50 taxa of medicinal plants were included to the database. Today, the plant collections of botanic gardens of Estonia include more than 123 cultivars of valuable ornamental plants. The new taxa were planted: *Hemerocallis* – 18 taxa, *Sempervivum* – 9 taxa, *Syringa* – 13 cultivars and *Clematis* – 44 cultivars. An International workshop „Conservation of genetic resources of ornamental and medicinal plants in collections”, Tartu, June 28-30, 2006 was held. www.sordiaretus.ee/?pid=1245&pageHeader=Andmekogud.

The medicinal plant collection consists of 50 taxa of valuable plants. The Project: Spice and medicinal plants in the Nordic and Baltic countries 2002-2005 was carried out. www.nordgren.org/ngb.

Target 8 for Estonia

In 2003 the Ministry of Environment of Estonia initiated the compilation of *The strategy and action plan for ex situ conservation* (www.eelis.ie.envir/avalik/btv/5,2exitustrateegia.pdf). This strategy gave an overview of all endangered plant species growing in botanical gardens of Estonia. The Tallinn Botanic Garden held 73 species and the Botanical Garden of the University of Tartu had 49 species of endangered/protected vascular plants in their collections. The collections of botanical gardens in Estonia hold 33% of all endangered plant species conserved by the National Law (total 251 species in 2004).

Tasks

In 2006-2010 to introduce more than 150 species of endangered vascular plants in the living collections of botanic gardens. To work out reproduction methods for 25 endangered plant species.

Organisation

Botanical Garden of the University of Tartu, Tallinn Botanic Garden, Institute of Botany and Ecology of the University of Tartu, Institute of Agriculture and Environment of the University of Life Sciences, Ministry of Environment.

Results

Today, 33% of endangered vascular plant species are growing in plant collections of botanical gardens in Estonia. In December 2006, a meeting on *ex situ* plant conservation matters was held in the Botanical

Garden of the University of Tartu. The practical need of 10 endangered plant species *ex situ* reproduction was pointed out. In 2006, one part-time gardener of the Botanical Garden of the University of Tartu began to compile the check list and data base of the most endangered plant species, and one endangered species – *Dianthus superbis* - has been included into the recovery program.