Gardening the wild – Growing the mind:
Fostering Kyrgyzstan’s botanical community to advance public outreach and environmental awareness

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1. Introduction

As a region hailed for its botanical diversity in landraces, local ecotypes and crop wild relatives, the Central Asian Kyrgyz Republic has been a focus country for a multitude of related research and conservation efforts especially over the last thirty years. Home to some 4,100 vascular plant species of which 139 are considered national endemics and around 1,500 are regional endemics to the wider area of the Mountains of Central Asia Hotspot identified by Conservation International in 2005 (RBGK, 2012), this floral wealth includes also over 130 species of ancestry forms of wild relatives of economically important crops found in Kyrgyzstan’s Tien Shan region (Dzunusova, 2008), notably various fruit and nut bearing trees. Exploitation of timber and fuelwood, grazing and fire, have been highlighted as major causes threatening the survival of many of these species and their populations (Eastwood et al., 2009). The second edition of the Kyrgyz Republic Red Data Book (State Agency on Environment Protection and Forestry et al., 2006) documents some 83 higher plants of conservation concern, including a number of crop wild relatives such as Amygdalus petunnikowii, Malus niedzwetzkyana and M. sieversii, Pyrus korshinskyi, Sorbus persica and Vitis usunachmatica. A regional conservation status assessment (Eastwood et al., 2009), has recorded a number of additional, crop wild relative tree species as threatened.

The links between local varieties and crop wild relatives occurring in relative proximity in the forests of southern Kyrgyzstan, and related local knowledge of use and management practice, illustrate in turn the close relationship between biological and cultural diversity (United Nations Development Programme et al., 2001). This is exemplified by a growing number of environmental initiatives in the region that focus their efforts on bio-cultural conservation challenges. Despite this more targeted attention in recent years, crop wild relatives by and large are still not considered flagship or iconic ‘members’ of biodiversity, and mobilising resources for research, conservation, capacity building and public outreach remains a challenge (Hunter, 2011). As elsewhere in other centres of crop wild relatives of the world, addressing successfully conservation threats and development of sustainable management approaches is further compounded in Kyrgyzstan by a generally limited awareness of the ecological and socio-economic relevance and cultural value of these species within the policy and decision making arena and the public at large.
As part of a highly interdisciplinary project funded by the United Kingdom’s Department for Environment, Food and Rural Affairs between 2009 and 2012, Botanic Gardens Conservation International (BGCI) has been working with Gareev Botanical Garden of the National Academy of Sciences of the Kyrgyz Republic to develop public outreach activities on the importance to safeguard Kyrgyzstan’s fruit and nut bearing tree species and the ecosystems they are part of. This paper provides an account of the work undertaken with a general introduction and overview of the status of botanic gardens in Central Asia and Kyrgyzstan.

2. Overview of botanic gardens in Central Asia and Kyrgyzstan

2.1 Defining botanic gardens

As major centres for botanical research, conservation, horticulture and education, botanic gardens play a major role in integrated conservation and development involving the wider public (Wyse Jackson et al., 2000). Generally defined as ‘institutions holding documented collections of living plants for the purposes of scientific research, conservation, display and education’ (Wyse Jackson, 1999), botanic gardens offer an ideal venue for public outreach receiving over 200 million visitors each year (BGCI, 2012). While scientifically documented plant collections constitute the characteristic feature distinguishing botanic gardens from institutions such as public parks and amenity planting areas, botanic gardens place different emphasis on the above functions. This gives each botanic garden its distinctive character and special role reflected in its specific purpose, organisational structure and location.

2.2 Central Asia’s botanic garden community in the former USSR and post 1991

In Kyrgyzstan as in other countries of the former Union of Soviet Socialist Republics (USSR), botanic gardens mainly served as institutions under the authority of the Academy of Sciences, the Ministry of Education or the respective municipality undertaking scientific studies in traditional areas of plant taxonomy, biosystematics, or research in plants of socio-economic importance and utility (Kuzevanov et al., 2006). Comparatively less or no attention was paid to the potential role in raising environmental awareness using the botanic gardens’ living plants collections. The disintegration of the USSR and creation of the Commonwealth of Independent States in 1991 including Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, and the almost concurrently ushering in of a new era for conservation at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil in 1992, also had a profound influence on the landscape of Central Asia’s botanical community.

Providing a new opportunity to take on contemporary challenges and perspectives in conservation, especially related to rapid global change at demographic and climatic levels (Heywood, 2010), lack of facilities, resources and management capacity (State Agency on
Environment Protection and Forestry et al., 2008), however, are not only hampering Kyrgyzstan’s botanic garden development and environmental outreach capacity. It is a challenge for the region at large and any institution dedicated to environmental protection and biodiversity conservation in Central Asia (International Fund for Saving the Aral Sea et al., 2007). The scope to enhance institutional and administrative competencies in Central Asia to raise environmental awareness and strengthen public outreach as well as interest and participation in conservation action remains enormous (European Community, 2007).

2.3 Present-day situation of botanic gardens in Central Asia and Kyrgyzstan

Strengthening the capacity of existing and new botanic gardens which are still sparsely distributed throughout the region and mainly located in the major urban centres of Central Asia to advance conservation and environmental education, represents an ongoing priority in securing Central Asia’s unique botanical wealth for generations to come. According to BGCI’s records, some 23 related institutions are listed in BGCI’s GardenSearch database (BGCI, 2012), in comparison and stark contrast to over 870 botanic gardens in western Europe represented on a comparable, though to some extent bigger land mass (Figure 1). These include 11 botanic gardens and affiliated institutions in Kazakhstan, 2 in Kyrgyzstan, 5 in Tajikistan, 1 in Turkmenistan and 4 in Uzbekistan. Gareev Botanical Garden of the National Academy of Sciences of the Kyrgyz Republic (NASKR) and the botanic garden of the Kyrgyz National University of Balasagyn, Ministry of Education, are Kyrgyzstan’s main botanic gardens.

Figure 1: Distribution of botanic gardens in Central Asia and western Europe
3. **Ex situ conservation, environmental education and public outreach through Kyrgyzstan’s botanic gardens**

3.1 **Current ex situ conservation initiatives**

As elsewhere in the world, Kyrgyzstan is pursuing various research and ex situ conservation initiatives through living collections and germplasm banks, especially for economically important plant species and their wild relatives. Related work is carried out in particular by the Kyrgyz National Agrarian University, the Kyrgyz National University, Osh Technological University, the Kyrgyz Technical University, and the National Academy of Sciences of the Kyrgyz Republic.

Founded in 1954 under the Academy of Sciences of the former USSR (Cross, 1996), the National Academy of Sciences of the Kyrgyz Republic (NASKR) maintains a leading position within Kyrgyzstan’s institutes of higher learning related to environment and natural resources. Its aim is to advance basic research in and knowledge on nature and society, promote new technologies and goods, enhance the development of strategic sectors and public processes and secure innovation and growth by integrating science, production and vocational education (NASKR, 2012). NASKR comprises more than 13 scientific research institutes including Gareev Botanical Garden in Bishkek. In collaboration with the Royal Botanic Gardens Kew Millennium Seed Banking Worldwide programme, the Institute of Biotechnology of NASKR and its sister Institute of Biology and Pedology opened the first seed bank for wild species in the country in 2008. To date, the project partners have collected and conserved over 400 native species in-country and at the Millennium Seed Bank in Wakehurst, United Kingdom (RBGK, 2012). An assessment of institutions with major ex situ collections including those of the Kyrgyz Research Institute of Farming, the Institute of Biology and Montane Forests and Gareev Botanical Garden of NASKR estimated some 1527 accessions of agricultural crops (Dzunusova, 2008). The Fourth National Report on Conservation of Biodiversity of the Kyrgyz Republic (State Agency on Environment Protection and Forestry et al., 2008) encourages that all endemic species should be secured through ex situ conservation in botanic gardens in Kyrgyzstan. Living ex situ conservation collections are especially maintained by Gareev Botanical Garden, NASKR, and the botanic garden under the Department of Biology of the Kyrgyz National University of Balasagyn, Ministry of Environment, Bishkek. The national herbarium is kept at the Institute of Biology and Pedology, NASKR.

3.1.1 **Viability of ex situ collections**

Maintaining viable ex situ collections plays a critical role in determining the value of ex situ conservation, ultimately, as an insurance policy for the future. This has been a topic of long-standing and ongoing debate (Falk et al., 1991; Guerrant et al., 2004; Volis et al., 2010; Kozlowski et al., 2012). Collections with the most direct conservation application (e.g. for in situ restoration and reintroduction programmes) are genetically diverse and
representative of the species, and must be managed to ensure the material is genetically sound and available for research and conservation activities over the long-term. Many ex situ collections today do not meet these standards due primarily to limited genetic diversity, unknown provenance of the plant material, or loss of genetic diversity via drift or adaptation to cultivation and hybridisation (BGCI, 2012). As shown in assessments carried out by Botanic Gardens Conservation International in Europe and North America (Sharrock et al., 2009; Kramer et al., 2011), a significant number of threatened taxa/species are in ex situ conservation by very few gardens (often even only one), while few taxa of rare and threatened species are widely distributed over various ex situ collections in different locations. What’s more, genetic diversity of cultivated taxa/species is often underrepresented, or worse, the provenance of the plant material is unknown making its use in conservation programmes less valuable.

While it is beyond the scope of this study to provide an analysis of the genetic diversity and representativeness of the plant material held in national plant conservation collections, ex situ conservation in Kyrgyzstan is faced with similar challenges as elsewhere in the world. Future surveys and inventories need also to consider the dynamic nature of living plant collections, requiring tremendous resources in personnel and funding for their management. Stronger coordination of collection policies and priorities of both, living collections and other germplasm banks, is as critical step to advance collections management standards guaranteeing conservation and research value of collections in the long-term.

3.1.2 Planning and monitoring tools for ex situ conservation – BGCI Plant- and GardenSearch databases

As the world’s largest network of botanic gardens and affiliated institutions, Botanic Gardens Conservation International (BGCI) works with members and partners from nearly 120 countries. BGCI links botanic gardens through membership, international congresses, facilitation of regional and national networks, and a number of informational resources pertaining to the work of botanic gardens including publications and data related to their ex situ collections and organisational setup – namely BGCI Plant- and GardenSearch databases.

- PlantSearch

In order to monitor ex situ conservation progress globally, institutions that hold ex situ collections are encouraged to make their living collections’ information available in BGCI’s global PlantSearch database. Launched in 2002, this free, online database allows institutions to upload lists of taxa maintained in their ex situ collections, and then compiles all uploaded data into a single list of taxa. Linked to other global databases including the IUCN Red List of Threatened Species (Figure 2), BGCI’s PlantSearch
database presently holds over one million records representing nearly 240,000 taxa including some 60 species provided by Gareev Botanical Garden, NASKR.

For institutions that contribute information to PlantSearch, the database provides a collection management tool, allowing botanic gardens to identify threatened species or species related to other categories from amongst their own collections and to establish how many other gardens are cultivating the same species. Using PlantSearch, a botanic garden can for example identify if they are the only institution cultivating a particular globally threatened species, or develop research collaboration with other gardens working on the same species. PlantSearch can thus help gardens to analyse the conservation ‘value’ of their collections and allow prioritisation of conservation action. For instance, staff at the United States Botanic Garden in Washington DC used PlantSearch to identify globally threatened species in their collections in order to incorporate Red List labels in their displays and education programmes.

Figure 2: BGCI’s PlantSearch database – Example of Pyrus korshinskyi

At the global as well as at the national level, BGCI’s PlantSearch database provides a monitoring and evaluation tool towards the achievement of Target 8 of the Global Strategy for Plant Conservation (GSPC) under the Convention on Biological Diversity (CBD). Adopted by the Parties to the CBD in 2002, Target 8 of the GSPC calls for at least 75 per cent of threatened plant species in ex situ collections, preferably in the country of origin, and at least 20 per cent available for recovery and restoration programmes by 2020 (CBD, 2010). BGCI calls on botanic gardens and other institutions with ex situ
conservation collections to make related data available in PlantSearch and provide periodical updates. In turn, this will allow to establish a representative global analysis and perspective pertaining to ex situ collection objectives set by the international biodiversity conservation community.

Presently, PlantSearch is the only comprehensive global database of wild plant species in ex situ collections. As such it complements information of other databases on plants held in ex situ collections including information on crop varieties maintained for instance by the institutions affiliated with the Consultative Group on International Agricultural Research.

- GardenSearch

All plant records in PlantSearch supplied by botanic gardens are linked to the provider’s own institutional records in BGCI’s GardenSearch database. This global database contains information accessible online on over 2,600 botanic gardens around the world including two botanic gardens in Kyrgyzstan (Figure 3). Presently, it represents the only global repository of botanic garden resources and expertise.

**Figure 3: BGCI’s GardenSearch database – Botanic gardens in Kyrgyzstan**

As with PlantSearch, gardens are able to add and update their own information online. This includes a description of the garden, staff numbers, features and facilities, and details about their conservation and research programmes (Figure 4). All garden records
include latitude and longitude information, allowing locations to be mapped using web-based mapping tools. While originally intended to act as a contact directory, the added value of GardenSearch lies in its ability to capture relevant information on resources and expertise for a wide audience including conservation practitioners, policy makers, and botanic garden staff alike.

Figure 4: BGCI’s GardenSearch – Garden profile of Gareev Botanical Garden, NASKR

As all garden records and associated plant lists are geo-referenced, the combination of PlantSearch and GardenSearch offers a practical tool to explore the geographical locations in which any particular species is in cultivation, and through links with other databases, such as the Global Biodiversity Information Facility, how these relate to the natural distribution of a species. Information on the range of environments a species can grow in is essential in developing an understanding of the ‘plasticity’ of a species and its potential to adapt to climate change.

3.2 Environmental education and public outreach

The Kyrgyz Biodiversity Strategy and Action Plan issued by Ministry of Environmental Protection in 1998 highlighted the limited awareness of Kyrgyzstan’s biodiversity conservation challenges within the wider public and the absence of an overall plan to enhance public outreach regarding environmental issues. Although major efforts have been made in recent years to advance environmental awareness, especially also through a growing number of non-governmental organizations and formal education institutions
(International Fund for Saving the Aral Sea et al., 2007), there is still a major shortage in related personnel, as well as educational and outreach resources (State Agency on Environment Protection and Forestry, 2009).

3.2.1 Gareev Botanical Garden of the National Academy of Sciences of the Kyrgyz Republic

Established in 1938 and named after the Tatar botanist Enver Z. Gareev, the botanic garden in the heart of the capital Bishkek originally served as a centre for research and conservation of the local flora as well as of exotic species. Over a total area of 150 hectares, the garden’s and arboretum’s collections hold some 5000 taxa of higher, vascular plants. Comprising a large area with fruit tree cultivars, in particular apples, pears and plums, there are also a number of crop wild relatives including *Malus niedzwetzkyana*, *M. sieversii*, *Armenica vulgaris* and *Prunus sogdiana*.

Besides horticultural challenges, there is a need to enhance the garden’s potential for public outreach and environmental education informed by an overall collections policy and management strategy. In collaboration with BGCI, a number of activities aiming to strengthen public outreach and capacity of staff at Gareev Botanical Garden, NASKR have been developed as part of the Darwin Initiative project funded by the United Kingdom’s Department for Environment, Food and Rural Affairs. Promotional materials (Annex 5 and 6) as well as an interpretational display exhibit about Kyrgyzstan’s fruit and nut forests have been established. Including eight species-specific panels and one display describing the conservation goals of this initiative, the exhibit provides information on the species’ use, distribution and conservation status, in three languages, Kyrgyz, Russian and English (Annexes 7 – 15). Aimed at the wider public, this permanent display at the botanic garden provides an ideal vehicle for public outreach in an urban centre of over 900,000 dwellers. Many of the species that have been researched under this Darwin Initiative, grow in the garden’s living collections offering thereby an excellent opportunity to visualise these species live supported by special displays and plant labels.

*The importance of plant diversity and the need for its conservation incorporated into communication, education and public awareness programmes* is also a major objective of the Convention on Biological Diversity as referred to in Target 14 of the Global Strategy for Plant Conservation. To work towards the implementation of this objective, Botanic Gardens Conservation International and Royal Botanic Gardens, Kew, United Kingdom, are offering a number of international training opportunities specifically related to education and management challenges in botanic gardens. This Darwin Initiative has also facilitated the attendance of personnel from Gareev Botanical Garden to these courses that aim to equip participants with the necessary management and education skills and strategies to communicate effectively to their varied audiences.
4. Conclusions

As elsewhere in the world, wild plants maintained in Kyrgyz botanic gardens and affiliated institutions play an important role in conservation. However, in order to assess the extent and viability of these ex situ conservation collections (for example for in situ species recovery and ecosystem restoration programmes), a detailed assessment of their genetic diversity and representativeness would need to be undertaken which was beyond the scope of this study. Development of an ex situ conservation policy in relation to in the near-future likely available resources, is vital to establishing collections’ management approaches appropriate to ensure their research and conservation value in the long-term. National coordination of ex situ conservation policies and priorities of all living collections and germplasm banks and related new initiatives, is another critical step to enhance and advance the importance of the collections.

The scope to strengthen the garden’s potential for public outreach and environmental education informed by an overall collections policy, remains tremendous. Even plant collections constraint by limited documentation and genetic diversity, as well as the botanic garden venue itself are a vital, yet underutilised resource and opportunity to influence public attitudes towards biodiversity conservation. In Kyrgyzstan, where biological and in particular plant resources are closely linked to culture, customs and the economy, botanic gardens are ideally placed to remind all sectors of society of the relevance of the plant kingdom as the foundation of life.

Growing the wild in gardens may hold an alternative pathway to raise a growing mind that cares for the safeguard of our natural wealth.

Acknowledgements

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Conserving Eden:
Participatory forest management in the Tien Shan region of Kyrgyzstan

The Republic of Kyrgyzstan lies at the very heart of a biodiversity hotspot of international importance: the Mountains of Central Asia. Spanning an area of 600,000 km², these include two of Asia’s major mountain ranges, the Pamir and the Tien Shan. Broadleaved forests, predominantly composed of walnut trees (Juglans regia), form a particular natural characteristic of the varied ecosystems of Kyrgyzstan’s Tien Shan region. Growing above the higher zones in sheltered valleys, these forests bear a remarkable botanical wealth including a number of rare fruit and nut producing trees and shrubs such as species of apricots, pears, cherries, plums, apricots and almonds.

A threatened botanical wealth vital to sustaining livelihoods of rural communities

The wild fruit and nut trees forests have always been of central importance to the livelihoods of the people living in the region. As a source of firewood, timber or food. They allow provide grazing grounds for livestock, and the understorey of wood pastures is cut for hay. Although an important source of income for rural communities, unsustainable rates of harvesting pose a tremendous threat to the forests. Unregulated logging, grazing and pests put long-established ecosystem functions and services under pressure. More than 50% of the forest habitat has been lost in recent decades. The Red List of Trees of Central Asia (2010) identified more than 46 tree species including a number of wild fruit and nut bearing trees and shrubs as globally threatened with extinction.

The project

Launched in 2009, this project funded by the Darwin Initiative addresses the critical and acute decline of Kyrgyzstan’s native broadleaved forests, it builds on the expertise and experience of a wide range of international and local partners to strengthen capacity for participatory forest management.

Specifically, the project contributes to:
• Institutional strengthening of participating local partners through the provision of research equipment and technical assistance.
• Training for project personnel and local stakeholders.in-country and abroad in research and survey methods, participatory management approaches, and the production of management plans, and best practice guidelines.
• Research on the distribution and conservation status of wild fruit and nut trees, and the socio-economic significance derived from these for local communities living in the project pilot sites.
• Public outreach to raise environmental awareness such as through the production of educational and informational materials at Darwin Botanical Gardens, Bishkek, and locally in the project pilot sites, or the establishment of live demonstration of target species at local schools.

The role of Darwin Botanical Gardens of the National Academy of Sciences of the Kyrgyz Republic

Established in 1910 and named after the botanist Erwin Z. Darwin, the 160 hectares botanical garden located in the capital Bishkek is part of the National Academy of Sciences of the Republic of Kyrgyzstan. A major Kyrgyz institution in research and conservation, the garden is also central for education and public outreach, to raise awareness of the critical importance to secure Central Asia’s botanical heritage for future generations.

A major wealth lies in the garden’s collections holding more than 5000 taxa of higher vascular plants. These include a number of native and rare trees and shrubs such as apricots (e.g., Malus microphylla, M. sikkimensis), walnuts (e.g., Juglans regia), maples (e.g., Acer pseudoplatanus), pines (e.g., Pinus sibirica) and vines (e.g., Vitis vinifera).

Garden Biodiversity Conservation International (BGCI)
BGCI – the world’s largest network of botanical institutions for the conservation of plant diversity – works directly with the Darwin Botanical Gardens to minimize the value of its precious living collections and promotes its significance for ex situ conservation and in situ recovery programmes as well as for public outreach.

Specifically, the programme of work includes the:
• Review and updates of the garden’s records contained in BGCI’s global databases (BGCI Garden and PlantTree).
• Development of interpretative resources at the garden using the collection displays and project activities in situ to raise awareness about wild fruit and nut trees species and forest.
• Capacity building of botanic garden staff and other relevant project stakeholders in environmental education and interpretation.
• Support to environmental education and conservation programmes of local project partners in selected study areas.

The project and the Convention on Biological Diversity (CBD)

The project directly contributes to the implementation of the Global Strategy for Plant Conservation (GSPF) under the Convention on Biological Diversity (CBD). This demonstrates clearly the commitment of the Kyrgyz Republic to achieve internationally agreed biodiversity conservation targets.

For further information visit: www.bgci.org

B.G.C.I. (Botanical Gardens Conservation International)
Annex 6

Darwin Initiative – Project promotional materials

The Gareev Botanical Garden of the National Academy of Sciences of the Kyrgyz Republic

Established in 1960 and named after the late Bolbolel Gareev, the Gareev Botanical Garden is located in the capital city of Bishkek, in the National Academy of Sciences of the Republic of Kyrgyzstan. A major Kyrgyz institution in plant diversity research and conservation, the garden is also a centre for education and public outreach to raise awareness of the rich biodiversity of Kyrgyzstan.

In 2017, as part of the Darwin Initiative, the Gareev Botanical Garden received financial assistance, personnel and resources in order to facilitate research findings and contribute information for local communities.

The projects activities are realised through a series of projects designed to promote the conservation of native plant species found in its unique fruit and nut forest zones.

For further information on the project contact:
Ms. Serafimi Balko
Gareev Botanical Garden
National Academy of Sciences of the Kyrgyz Republic
Bishkek, Kyrgyz Republic

Conserving Eden:
Participatory forest management in the Tien Shan region of Kyrgyzstan

The wild fruit and nut tree forests of Tien Shan

The project

A Darwin Initiative funding was awarded to the Tien Shan region, which is home to high-altitude forested areas. Further information on this project can be found in the project’s promotional materials.

For further information on the project contact:
Ms. Serafimi Balko
Gareev Botanical Garden
National Academy of Sciences of the Kyrgyz Republic
Bishkek, Kyrgyz Republic

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National Academy of Sciences of the Kyrgyz Republic
Bishkek, Kyrgyz Republic
Annex 7

Darwin Initiative – Project panel

Annex 8

Walnut panel
Annex 9

Wild apple panel

Alma

Scientific name: Malus spp.
Family: Rosaceae

The apple does not fall far from the tree...

This does not refer to the apple's evolutionary origins of the apple. The relationship of the wild panel apple (and today's widely cultivated species) and domesticated species is in which apple's relatives are found in the highest level of common ancestry.

in areas where apples are grown, the wild apple is often found in the same type of soil as the cultivated ones, and the fruits of wild apple diversity. Considering these factors we can conclude that apple has a significant contribution to the apple's evolutionary success in this region, and this finding is consistent with previous findings.

Wild Apple

Scientific name: Malus spp.
Family: Rosaceae

Annex 10

Wild pear panel

Almurot

Scientific name: Pyrus spp.
Family: Rosaceae

Wild Pear

Scientific name: Pyrus spp.
Family: Rosaceae

The apple does not fall far from the tree...

Well, actually you can, to get rid of the old saying. Pears are the most relatives – both belong to the same family (Rosaceae). And, as with apples, you can eat many of the species of this world. For the first time, Pears, the domesticated apple, are found in the wild population of the New World.
Annex 11

Wild plum panel

Annex 12

Wild apricot panel
Annex 13
Wild almond panel

Annex 14
Wild grape panel
Annex 15

Mountain ash panel

Rowan / Mountain Ash
Scientific name: Sorbus aucuparia. Family: Rosaceae

In the Atlantic region, 139 names of Mountain Ash species are in the Geographic names of the World list of the International Union for Conservation of Nature (IUCN). Mountain Ash is a natural species in the Central Asia. In the Transcaucasian mountain range, the highest population grows in the area of the Uzerchay twisted and Carpathian mountains grouped in a zone high in the mountains. This species is widespread from the north of the Caucasian states to the north of Europe. Mountain Ash is one of the traditional ingredients for making wine. Many countries, many families, many Sorbus species serve wine relatively rare growing in mountainous areas in the cultural context of the traditional uses of the plant.

Sorbus aucuparia has been included in the Red Book of Kyrgyzstan (1988) due to pressure to protect its habitat and endemism in mountain areas.

The introduction of the distribution of Sorbus aucuparia in the countries: Russia, Ukraine, Georgia. A. Galiev