

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

Other proposalsA. Proposal

Inclusion in Appendix II of roots of *Panax ginseng* in accordance with the provisions of Article II, paragraph 2(a).

B. Proponent

Russian Federation

C. Supporting Statement1. Taxonomy

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|--------------------------|------------------------------------|
| 1.1 Class: | Dicotyledones |
| 1.2 Order: | Araliales |
| 1.3 Family: | Araliaceae |
| 1.4 Genus: | Panax |
| Species: | <i>Panax ginseng</i> C.A.Mey, 1847 |
| 1.5 Scientific synonyms: | <i>Panax schin-seng</i> T.Nees |
| 1.6 Common names: | English: ginseng |
| | French: ginseng |
| | Spanish: ginseng |
| | German: Kraftwurz |
| | Russian: |

2. Biological Parameters

2.1 Distribution

Panax ginseng is endemic to the Manchurian flora area and represents the Araliaceae relict family. Its main habitat is in the area between the main ranges of the Sikhote Alin ridge and the Ussuri River; from the Hasan Lake in the south to the right bank of the Hor River in the north, along the shoreline of the East Sea/Sea of Japan up to the Zerkalnaya River in the north. Ginseng habitat is tied to the mixed coniferous-broad leaved forests of the Manchurian type. Its current natural area is fragmented. In the Russian Federation it is found in the Primorsky Krai area and in the south of the Khabarovsk Territory.

At the beginning of the 20th century *Panax ginseng* also used to grow in the northeast of China and the northern part of the Korean peninsula. At present this plant is practically extinct in the forests of China and the Korean peninsula.

2.2 Habitat availability

Panax ginseng is a hylophyte grassy plant with relatively narrow ecological amplitude. Its main habitat is in mixed *Pinus koraensis*, *Abies holophylla*, *Pinus koraensis*, *Picea koraensis* and *Carpinus cordata* forests. Ginseng is also found in *Quercus mongolica* and *Tilia mandshurica* forests with Korean cedars and firs, as well as in *Betula* sp. and *Quercus* sp. forests. Currently *Panax ginseng* is mainly found in coniferous-broad leaved forests of Manchurian type dominated by *Pinus koraensis*, *Picea koraensis* and *Abies holophylla* together with representatives of the broad-leaved forests as well as in the derivative deciduous plantations of *Quercus mongolica*, *Betula schmidtii*, etc.

Panax ginseng is a typically shade-prefering plant whose normal growth and development is ensured exclusively under forest shade without durable impact of direct sunshine, although heavy shade may also impede the growth of this plant, which periodically enters into the state of dormancy. Forest areas with tree cover density of 0.6-0.8 are most favourable to *Panax ginseng* development. *Panax ginseng* favours well drained although sufficiently moist weak-acid soils rich in mould.

2.3 Population status

Two major populations represent the current natural areas of *Panax ginseng*. The largest one - in the Primorsky area - is located in the southern part of the Sikhote Alin range, while a smaller second one is found on the Russian (Nadezhdinsky and Hasan districts of the Primorsky Krai) and Chinese (Tsilin and Heyludian provinces) territory. The Blue range population (Spassky district of the Primorsky Krai) is sometimes viewed as a separate population or part of the Primorsky population of ginseng.

2.4 Population trends

Natural ginseng resources are extremely difficult to assess because of the ecological and biological features of this particular relic specimen: they are growing in remote areas that are difficult to access. There is irregular flowering dormancy and early fruit shedding and particular specimens have the tendency to enter into extended periods of dormancy.

The following data on stockpiling of ginseng roots provides some idea on the ginseng population and its growth dynamics.

Until 1917 about 380 kg of agrarian ginseng roots were exported annually from the Primorsky area through Vladivostok alone.

In recent years the ginseng collection quota was set at 100-150 kg. The Primorsky Forestry Agency stockpiled it almost exclusively. In 1991 its employees stockpiled about 60 kg of roots. In 1994 the quota was set at 65 kg and was not met (see Table 1, Section 3). Currently the volume of legally stockpiled roots is decreasing annually and so is the quality. The volume of high quality roots in stockpiles is shrinking every year.

The analysis of data from wildlife protection agencies on volumes and composition of stockpiles shows that natural populations of ginseng are currently in a state of extreme depletion.

Urgent measures are needed to restore the resources of this valuable species and preserve its genetic potential since natural populations provide material for the reintroduction and renewal of the specie in the areas of its former habitat.

2.5 Geographic trends

At the beginning of the 20th century *Panax ginseng* used to grow in the northeast of China and northern areas of the Korean peninsula. In the 1930s annual stockpiling of ginseng reached about 500 kg, but by 1950 only 150 kg were stockpiled. In 1991 only 3.5 kg of ginseng roots were stockpiled in the Chonbay mountain area which is the principal area of ginseng habitat in China. Currently there is no meaningful information on wild growing ginseng in China. There

have been no confirmed reports on ginseng sightings on the Korean peninsula since 1930. Apparently this plant has completely disappeared from the forests of Korea and China.

Large volumes of ginseng roots have been traditionally cultivated in these two countries. Although it is common knowledge that cultivated plants lose a substantial part of their genetic potential as a result of domestication.

For the last 70 years the area of ginseng habitat in Primorsky Krai has virtually remained unchanged and stayed generally within its historical boundaries covering an area of about 120 sq. km. According to some researchers the area of species habitat has somewhat decreased. The northern boundary of habitat has moved south, while the western has moved east. Ginseng habitat conditions have deteriorated. Currently the Russian Far East remains the only place on Earth where wild growing ginseng is still found in quantities sufficient for its preservation as a species.

2.6 Role of the species in its ecosystem

As has been noted above *Panax ginseng* is found in the Primorsky Krai area in relict coniferous broad-leaved forests dominated by *Pinus koraensis*, *Abies holophylla*, *Picea koraensis* with representatives of broad-leaved forest (*Quercus* sp., *Acer* spp., *Carpinus cordata*, *Tilia mandshurica*, *Fraxinus* spp., etc.). Its competition capacity is inherently low and it does not tolerate any wet soil. It is a rare species found from time to time in small groups (families) or individually, located far apart. In the herbaceous layer, *Oxalis acetosella*, *Phryma tenuifolia*, *Thalictrum filamentosum*, *Adiantum pedatum*, *Asarum sieboldii*, *Polystichum tripterum*, etc. usually accompany it.

2.7 Threats

The numbers of species, their age and accordingly ginseng stock resources in their natural habitat areas have been constantly decreasing since procurement of ginseng roots began. Currently it is difficult to find a plant that is more than 20 years old. The distribution of the species in its habitat has changed and become more fragmented.

The distribution, quantity of specimens and stock resources have been substantially affected, and continue to be affected, by changes in habitat conditions due to industrial-scale lumbering, mainly of the Korean cedar, frequent forest fires that lead to forest degradation and proliferation of miscellaneous herbs, spring fires that are deadly for young plants, and slope erosion.

As a result of continuous stockpiling (both legal and illegal) and habitat transformation, further decreases in the number of *Panax ginseng* species and its genetic potential are inevitable.

3. Utilization and Trade

3.1 National utilization

Panax ginseng is one of the most ancient medicinal herbs. The curative effects of this wonderful plant have been known in China and the Russian Far East for several thousand years. Oriental medicine considers it to be a universal medication. Ginseng-based medications have been used for centuries as tonic, a stimulating means to fight physical and mental fatigue or lowering of work efficiency, prostration and attrition due to grave illnesses, to increase stress resistance, etc. Modern medical science has established that ginseng-based drugs increase human body resistance to radioactive exposure.

Demand for ginseng-based substances is growing both for medical and prevention purposes. Ginseng-based agents are used for manufacturing of food products, various additives, including beverages (tinctures, balsams, non-alcoholic beverages, etc.), teas, perfumery and cosmetic products - creams, shampoos, gels, etc. Ginseng production waste has been successfully utilized in agriculture, especially in stock-raising. Demand for raw material in ginseng-based products manufacturing has recently increased dramatically.

A dramatic decrease in natural ginseng stock has long ago stimulated ginseng cultivation on the Korean peninsula, in China and later also in Japan.

Experiments with ginseng cultivation had been undertaken in the former USSR during the 1930s in the Far East preserves of Ussuriysky and Kedrovaya Pad. In 1963 a special sovkhos ginseng has been set up in the Primorsky Krai. It has gradually increased its ginseng plantation up to 50 hectares and became the only large industrial producer of ginseng roots. This special production facility is currently idle, although a number of small ginseng plantations have been set up by state agro-industry and forestry enterprises as well as farmers.

Lately ginseng has been cultivated in the Caucasus and in Siberia, on small plots of people who like to use it. Currently it is being cultivated on home garden plots and even in apartments.

An increase in the ginseng standing population by means of biotechnology would contribute to wider use of ginseng-based substances in medical, food producing and other fields and, most importantly, to the preservation of genetic potential and biological diversity of wild populations of this rare species.

3.2 Legal International trade

The former USSR has been engaged in export of wild ginseng for a long time. In the 1960s and 1970s annual exports of (dried) roots sometimes exceeded 50 kg, while in the 1980s it has substantially decreased. In 1985 ginseng export accounted for 12.12 kg, in 1986 – 14.26 kg, in 1987 – 5 kg.

Owing to a depletion of wild ginseng root stocks the USSR Council of Ministers adopted on 12 April 1988 a decree that allowed wild ginseng root procurement only under exceptional circumstances.

At the request of Primorsky Krai Administration annual ginseng root collecting was undertaken up to 1997. In 1988 the quota for ginseng root was set at 50 kg (crude weight). Primorsky Krai Administration has granted major ginseng root export rights to the Prodintern Primorie Joint Venture which signs joint activity contracts with the Primorsky Forestry Agency – the main purveyor of ginseng roots. Collection and confiscation volume data trends are shown in the table below.

Table 1

Years	Quotas (in kg)	Legal Collection (in kg)	Confiscated Roots (in kg)
1993	100.0	72.0	15.0
1994	65.0	28.0	2.5
1995	70.5	27.0	6.0
1996	50.0	25.3	5.5
1997	50.0	44.0	11.9
1998	0.0	0.0	30.0

3.3 Illegal trade

The data in Table 1 on collection and confiscated roots does not provide a realistic picture since it is a proven fact that owing to falling living standards in recent years the intensity of ginseng search by local population is increasing annually. According to expert estimates, the volume of illegal procurement has been five times higher than legal procurement and the number of root purveyors has increased three to five fold (an increase of 10 times compared to the beginning of this century).

According to expert estimates, in the last three years the volume of wild ginseng roots illegally procured and smuggled into China has reached an annual level of 500-600 kg (in crude weight),

while in the last five years Customs officials of the Far East region have intercepted and put on sale only 19.8 kg of ginseng roots. The volume of ginseng roots confiscated by Customs officials, as a rule does not exceed 1-2 per cent of the volume procured.

Increase in volumes of illegally collected roots has been accompanied in recent years by a decrease in the quality. The volume of high quality roots (in excess of 12 kg) in overall procurements has been falling annually.

Russian scientists believe that, in the absence of the most radical international actions against smuggling, the current trend would in the near future result in the extinction of wild ginseng and irrevocable loss of its genetic potential.

3.4 Actual or potential trade impacts

The current critical situation, which is fraught with the danger of losing the gene pool for this rare relic species owing to illegal procurement and trade, has the tendency for further aggravation. In order to solve the current problem it would be appropriate to strengthen export and import controls.

3.5 Artificial propagation for commercial purposes (outside the country of origin)

Important measures contributing to wild ginseng preservation, such as ginseng cultivation on plantations, home gardening plots, etc. as well as its artificial propagation *in vitro* (see more details in Section 3.1.) should be undertaken. The ancient tradition of ginseng cultivation has been developed in the countries of East Asia: it has been cultivated in Korea for more than 400 years, in China – for more than 300 years, in Japan – for more than 150 years. China, North Korea and Japan are among the major exporters of cultivated ginseng on the world market. Currently ginseng is also cultivated in several European countries (e.g. Bulgaria, Germany and others).

4. Conservation and Management

4.1 Legal status

4.1.1 National

Panax ginseng as an endemic and relic species has been included in the Russian Federation Red Book under endangered species. Earlier it was included in the USSR Red Book (1978, 1984).

Protection of rare and endangered species in the Russia Federation is regulated by several acts of legislation, but mainly by the Law on Environment Protection adopted on 19 December 1991.

Section 65 of the above mentioned Law indicates that "the Russian Federation Red Book and the Red Books of Federation members are being established with the aim of protecting rare and endangered species of plants and animals". According to this law plants and animal species listed in those Red Books are exempt from commercial use, activities leading to the decrease of those plants and animals populations; the deterioration of their habitat conditions is banned. Land users with plants and animals species listed in the Red Books are under an obligation to undertake activities aimed at their preservation and reproduction.

Government Decree # 158 (about the Red Book), which was adopted on 19 February 1996 indicates that "wildlife species listed in the Russian Federation Red Book are subject to special protection. Extraction of those species from the wild is allowed in exceptional cases under regulations established by the Russian Federation legislation."

In accordance with Federal legislation, regional legal acts have been adopted. In particular, on 17 June 1997 the Primorsky Krai Governor issued a Decree on Measures

Strengthening Wild Ginseng Protection and regulations with regard to ginseng root procurement in 1997.

4.1.2 International

The Ginseng Biodiversity Scientific and Administrative Project on preservation and restoration of ginseng biodiversity has been developed on the initiative of scientists from the Far East in order to assure adequate preservation of natural populations of *Panax ginseng*. This document provides for the establishment of an International Ginseng Protection Foundation (with the participation of China, the Republic of Korea and the United States of America).

The scientific foundation of this project is based on a ginseng protection concept that provides for several levels of protection activities.

4.2 Species management

4.2.1 Population monitoring

Nature Chronicles State Scientific Research Program for state preserves provides for the monitoring of plant species populations listed in the Russian Federation Red Book on the preserve territories as well as in the adjacent areas.

4.2.2 Habitat conservation

Panax ginseng habitat is officially protected in three Far Eastern reserves: Lazovsky, Ussuriysky and Kedrovaya Pad. Multipurpose scientific research is carried out in those reserves in the framework of the Nature Chronicle State Scientific Program that provides for annual monitoring of the conditions of and changes in population trends of rare species and their habitat. Proposals to establish other protected areas are under review. In particular it is suggested to create a 660 hectare Ussuri Ararat National Park with functions of a ginseng reserve that would also accommodate a wildlife ginseng reproduction centre by providing a seed bank collection and a reproduction nursery.

4.2.3 Management measures

In accordance with the Law on Environment Protection, land users with plants and animals species listed in the Russian Red Book are under an obligation to undertake activities aimed at their preservation and reproduction. The Interagency Programme for regeneration of the Primorsky ginseng population has been developed in accordance with this document to preserve natural resources of *Panax ginseng*. Implementation of this program would allow the future use of ginseng resources in a non-depleting fashion and prevent illegal trade.

4.3 Control measures

4.3.1 International trade

Ginseng export across the borders of the Russian Federation is under the control of the Customs agency. To export ginseng it is necessary to present to Customs officials an export permit issued by the Russian Federation Trade Ministry after clearance by the Russian State Committee on Ecology (Goscomecology), which verifies that ginseng roots were legally acquired. Ginseng imports and subsequent re-export by importing countries is not regulated.

4.3.2 Domestic measures

The Administration of Primorsky Krai, where most of the wild ginseng population area is located, undertakes various activities in order to preserve natural resources of this rare species, especially before and during ginseng root collection periods. Measures

developed on the basis of scientifically justified recommendations include identification of collecting areas, establishment of quotas and time limits, limitation of the number of collecting entities and the number of specific individuals engaged in collecting, allocation of specific areas, registration and issuance of permits, media information and a campaign of education on the rules of collecting ginseng roots and sanctions for violating regulations.

Permits for collecting ginseng roots are issued by Goscomecology on the basis of scientific recommendations by the All-Russia Environment Protection Scientific and Research Institute (VNIIPriroda) and approval of the requested quota by the Primorsky Krai Goscomecology. VNIIPriroda issues approvals in cases when requested procurement quotas do not harm natural ginseng population.

5. Information on Similar Species

Of the eight species of *Panax* known to scientists, six grow in the countries of East Asia with another two in North America - *Panax quinquefolium* and *Panax trifolium*. They differ in the number of leaves in the rosette (five or three) and the colour of fruits – the one with five leaves has red fruits, while the one with three leaves has yellow fruits. Wild North American ginseng *Panax quinquefolium* is found in the eastern United States and southern Canadian provinces.

One of the East Asian species – *Panax ginseng* – grows in the Russian Far East. *Panax quinquefolium* and *Panax ginseng* have the strongest resemblance as demonstrated by the morphology of the overground and underground organs, specifics of ontogenesis and life expectancy. Both have healing effects (although *Panax ginseng* substances are considered to be more powerful) and are used in medicine and food processing as well as in various consumer products: creams, shampoos, cigarettes, etc. Both species are widely cultivated. American species are included in CITES Appendix II.

Roots of the species mentioned above are very similar.

6. Other comments

In accordance with the provisions of Resolution Conf. 8.21, this proposal was distributed to the Parties with Notification to the Parties no. 1999/43 of 1 June 1999.

7. Additional Remarks

Conclusion

Insufficiently clear distinctions between the above-mentioned species of *Panax quinquefolium* and *Panax ginseng*, export and re-export between countries, and, most of all, the need to preserve natural gene pool and biological diversity, demand the imposition of strict international trade controls and inclusion of *Panax ginseng* in CITES Appendix II.

8. References

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