



THE RED BOOK OF PLANTS OF THE REPUBLIC OF ARMENIA



Dear compatriots,

Armenia is one of the corners of the Caucasus. The country's attractiveness and public welfare are directly linked with the splendour and richness of its natural heritage. In the meantime, population growth and accelerating rates of economic and construction development impinge on environmental quality and the status of natural ecosystems with their constituent flora and fauna.

As stated by the Earth Summit that was held in Rio de Janeiro in 1992, each country is liable for biodiversity conservation and contribution to global sustainable development.

This is also an objective of the Red Book of Plants of the Republic of Armenia publication of which has been a

landmark event for the country's conservation, socio-economic life and science. Production of the Red Data Book is another step forward in preservation and recovery of the region's biodiversity.

Publication of the second edition of the Red Data Book ensues from the long and meticulous work of scientists, experts and researchers allowing everyone to learn about rare and endangered species of plants and animals and to contribute to biodiversity contribution.

Maximally using the potential of nature, we should learn to treat it heedfully and to preserve rich diversity of species.

Hopefully, each person in our country would make the careful attitude to the environment a standard of life and the conservation of its richness would consider a conscious necessity. Only this way, shoulder to shoulder, we can hand over our environment to future generations.

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INTRODUCTION

The core problem of plant kingdom conservation has essential vital importance for the whole humanity. Making use of natural resources, which serve as the basic source for the nation's well-being, people have negative influence on the natural ecosystems and biodiversity formed during the ages. The development of industry and agriculture, large-scaled development of natural territories, climate change lead to the disturbance of the integrity and the balance of ecosystems which results in the degradation of vegetation and decline in the quantity of many plant and animal species. Plants play principal role in the nature being the basis of any biocoenosis since they provide oxygen and food for many living organisms including people.

Armenia lies in northeastern part of the Armenian volcanic plateau and is situated at the altitudes of 375–4090 m above sea level. The average hypsometric altitude of the republic is 1830m. Complicated geological structure, strong volcanism and seismicity, rugosity, great altitudinal variability, far distance from large marine basins have lead to the enormous diversity of climate and relief.

The combination of all these factors determines floristic richness of Armenia and its originality – approximately 3600 vascular plant species and 1200 macroscopic fungi. 123 endemic vascular plant species were found in Armenia, effective measures for their conservation should be applied. Almost half of the whole Caucasian flora and all main vegetation types of the region except humid subtropical vegetation are represented in the territory of less than 30000 sq. kilometers of our country.

Despite the data of the Red Book new edition, about 50% of the rare species grows in protected areas and are in comparatively good state, other endangered species also need conservation very much.

During the independence of Armenia environmental conservation was stimulated by passing new RA laws ("On flora", "On specially protected natural areas", "RA Forest Code", "National Program of RA forests", etc.) and numerous normative documents which support flora and vegetation conservation by whole its diversity. The presented Red Book of plants serves the aim as well.

According to the article 14 of RA Law on Flora the Red Book of Armenia is a complete document that meets the international demands and registers information about status,

geographical distribution, ecological conditions, biological peculiarities, present state and conservation measures of rare and endangered species. The aim of the Red Book is inventory, conservation, reproduction, use, development and implementation of scientific based special measures of rare and endangered species, as well as the public awareness on these.

The bases for being registered in the Red Book are decline in quantity and extension borders of the species, data on worsening of life conditions and threat of extinction.

The Red Book of Armenian SSR published in 1989 is in use till nowadays. 387 rare and endangered vascular plants species are registered in the book that are in focus of attention of the specialists. But during the latest decades ecosystems and biodiversity of Armenia have been subjected to intensive anthropogenic influence (forest cuttings, overuse of water and biological resources, development of various branches of economy, privatization of lands etc.) in the result of which natural ecosystems have been degraded, loss of natural habitats of some species has taken place, their areas of distribution have been declined, quantitative and qualitative structure of the populations have undergone changes. This particularly refers to the rich of biodiversity mountain regions of Armenia in the ecosystems of which all the activities take place more rapidly than in lowlands. On the other hand during the years after the first edition the continuing investigations have enabled to discover many new species growing in the territory of Armenia. In recent 10 years more than 20 new for science species have been described from Armenia. They need assessment and probably conservation.

The creation of the new Red Book of Armenia have been implemented during 2007–2009 on the basis of existing data and new field observations by the specialists of Institute of Botany of NAS RA and Yerevan State University. It's worth mentioning that macroscopic fungi have been included in the presented Red Book which has not been registered in the previous one. The evaluation of the status of all the species and determination of their categories have been done according to the internationally accepted standards - by applying the Categories and criteria of International Union for Conservation of Nature and Natural Resources (IUCN, 2001, version 3.1). Vast new materials, which have been gathered during 20 years after the first publication of the Red Book, have been taken into consideration during the assessment of the species.

The Red Book on Plants of the Republic of Armenia has been approved by the Government of Armenia Resolution #72-N (on January 29, 2010) and incorporates the description of 452 plant species and 40 fungi species. In addition, the second section of the Red Book (part B) includes information on additional 223 endangered plant species.

The following categories have been given to 675 plant species included in the presented Red Book.

1. Critically Endangered (CR – 141 species). A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.
2. Endangered (EN – 248 species). A taxon is endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.
3. Vulnerable (VU – 63 species). A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it

is therefore considered to be facing a high risk of extinction in the wild.

4. Near Threatened (NT – 21 species). A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future. Those species are represented in a separate part of the book with the short description of the category of the threat.
5. Data Deficient (DD – 96 species). A taxon is Data Deficient when there is inadequate information to make a direct, or indirect assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are 10 lacking. Data deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified. The species of this category are represented in a separate list.
6. Least Concern (LC – 106 species). A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant species are included in this category. The species of this category are represented in a separate list.

Distribution of the plant species according to floristic and administrative regions of the republic is represented in separate lists.

The alphabetical order of the families inside of larger taxa, as well as the genera and the species within them is accepted in the new publication. Changes of modern classification have been adopted. Latin, Armenian and Russian names are given for each species. The assessment of the species and the short explanation of the assessment is given, as well as the brief description of the species, its distribution, biological, ecological and phytocoenological peculiarities, limiting factors, conservation actions (undertaken and necessary conservation actions are described). Locations are shown by marks in schematic maps – collections done by 1950s are marked by red triangles, by blue – by 1980, by green after 1980.

Some terms need to be explained.

Extent of Occurrence (EOO) (criteria A and B) is defined as the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred and projected sites of present occurrence of a taxon, excluding cases of vagrancy. This measure may exclude discontinuities or disjunctions within the overall distributions of taxa (e.g. large areas of obviously unsuitable habitat). Extent of occurrence can often be measured by a minimum convex polygon (the smallest polygon in which no internal angle exceeds 180 degrees and which contains all the sites of occurrence).

Area of Occupancy (AOO) (criteria A, B and D). AOO is defined as the area within its “Extent of occurrence” which is occupied by a taxon, excluding cases of vagrancy. The measure reflects the fact that a taxon will not usually occur throughout the area of its EOO, which may contain unsuitable or unoccupied habitats. In some cases Area of occupancy is the smallest area essential at any stage to the survival of existing populations of a taxon.

Location (Criteria B and D). Location defines a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations. Where a taxon is affected by more than one threatening event, location should be defined by considering the most serious plausible threat.

The following abbreviations were used in the Book: CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora, Bern convention – Convention on the Conservation of the European Wildlife and Natural Habitats (Bern, 1979).

Taking into consideration that the conservation of fungi relatively differs from that of the plants, the description of 40 species to be included in the Red Book have been represented by 6 categories internationally accepted for macroscopic fungi: Extinct (EX), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Data Deficient (DD).

The new edition of the Red Book of plants puts a new task before the scientists, state stakeholders, as well as environmental non-governmental organizations connected with the conservation of rare species, the establishment of new protected areas which will lead to a desirable result only by the general participation of the public, keeping the nature safe and undisturbed for generations.

The publication of the new Red Book is important official document and guidebook for the effective conservation of the exceptional flora of Armenia for which it is necessary to carry out vast works for the improvement of the legal basis, securing of the monitoring of the populations of the species included in the Red Book, early discovery of the threats against those populations, as well as works towards the regional strategy on the conservation of the gene pool.

The Ministry of Nature Protection of Republic of Armenia expresses its appreciation to the authors of the Red Book of plants of RA, to all the specialists, scientists, representatives of non-governmental organizations that have put their efforts and knowledge during the creation of the Red Book, as well as to International Union for Conservation of Nature and Natural Resources (IUCN), United Nations Development Program (UNDP), World Wide Fund for Nature (WWF), German Technical Cooperation Agency (GTZ) for providing financial support for the preparation and the publication of the Red Book.

GOVERNMENT OF THE REPUBLIC OF ARMENIA

DECREE

N° 72–N, 29 January 2010

ON APPROVAL OF THE RED BOOK OF PLANTS OF THE REPUBLIC OF ARMENIA

According to Point "G", Article 5, of the Republic of Armenia's Law "On Flora", the Government of the Republic of Armenia decides:

1. To approve the Red Book of Plants of the Republic of Armenia according to the Annex;
2. Within the first month of the present Decree coming into effect, the RA Minister of Nature Protection is in charge of submitting a schedule, to the RA Prime-Minister's approval, on submission of draft legal acts on making amendments and changes in relevant legal acts to bring them in compliance with the list of plants registered in the Red Book of Plants of the Republic of Armenia;
3. The present Decree comes into effect on the 10th day of its official promulgation.

Prime Minister of the Republic of Armenia
T. Sargsyan

5 February 2010
Yerevan