Abstract:
The present work deals with rare, endangered species of trees and shrubs, Georgian/Caucasian endemics of limited local distribution, included in the Red Data Book of Georgian SSR (1982) and Red Data List of Georgia (2006): Acer ibericum Bieb. (VU), Amygdalus georgica Desf. (EN), Arbutus andrachne L. (EN), Betula raddeana Trautv. (VU), Buxus colchica Pojark. (VU), Celtis glabrata Stev. ex Planch. (VU), Corylus colchica Albov (VU), Crataegus pontica C. Koch (VU), Juniperus foetidissima Wild. (VU), Juniperus polycarpos C. Koch (VU), Laurus nobilis L. (VU), Osmanthus decorus (Boiss.& Bal.) Kasapligil (VU), Ostrya carpinifolia Scop. (EN), Pistacia mutica Fisch & C. A. Mey. (VU), Pterocarya pterocarpa (Michx.) Kunth ex I. Iljinsk. (VU), Pyrus demettrii Kuthatheladze (EN), Pyrus ketzkhoveli Kuthatheladze (EN), Rhododendron ungernii Trautv. (VU), Salvia garedjii Troitzk. (VU), Sambucus tigrani Troitzk. (CR), Staphylea colchica Stev. (VU), Ulmus minor Mill. (VU), Zelkova carpinifolia (Pall.) C. Koch (VU). Ex-situ conservation activities were carried out, seed bank is created and collection of seedlings established for some of above listed species. Seeds are deposited in the Caucasus Regional Seed Bank at the Department of Plant Conservation of the National Botanical Garden of Georgia for long-term storage in a freezer at -20°C temperature according to international standards. The duplicates of seed collections and herbarium vouchers are sent for storage to the Millennium Seed Bank (MSB) of the RBG, Kew and Kew Herbarium (K). All data pertaining to collections entered in BRAHMS (Botanical Research and Herbarium Management System) - electronic data base of the Caucasus Regional Seed Bank. Collections of seedlings in pots and open ground are created for some of the target species. Optimum conditions and terms for seed sowing are determined. Seed germination and sprouting percentage are evaluated. Collections of seedlings are located at the collection plot of the Department of Plant Conservation. Reserve of excess seeds is created for some of target species at the Caucasus Regional Seed Bank. Ex-situ reserve of seeds and collections of seedlings can be used for in-situ re-introduction of target species.

Key words: ex-situ conservation, seed bank, propagation protocol.

Introduction:
Georgia comprises the south-western, central and eastern parts of the Caucasus biodiversity hotspot. Its varied landscape ranges from the Black Sea coast through semi-desert and volcanic soils to Europe’s highest peak (Mount Elbrus, 5642m) in the Greater Caucasus range, and this is reflected in a rich vascular flora of more than 4,100 species. Endemicity ranks among the highest in the temperate zone, with approximately 21% of its flora (900 species) being Georgian (300 species) or Caucasian (600 species) endemics.

Materials and methods:


Seeds of target species were collected from natural populations. Germination and propagation protocols are developed and optimum conditions for seed sowing...
established. Observations on seed germination and seedling biology were made on seedlings sown on Petri dishes and in pots outdoors. Observations on seed germination capacity were made at ambient temperature (18-20°C). Germination capacity, seed collection, drying, processing and deposition in Seed Bank was performed after Bowers B.G. (1998), T. A. Rabotnov (1960), Baskin F.&Baskin C. (2002).

Results and discussion:

Conservation work: seeds of target species are deposited for long-term storage in a freezer at -20°C temperature according to international standards at the Caucasus Regional Seed Bank (CRSB) of the NBGG. Accompanying herbarium vouchers are stored at the National Herbarium Georgia (TBI). The duplicates are sent to the Millennium Seed Bank of the Royal Botanic Gardens, Kew and Kew Herbarium (K). Reserve of seeds for germination and propagation trials has been established at the CRSB - Department of Plant Conservation, of the NBGG. Collections of seedlings and living collections have been created.

Conclusions:

As a result of accomplished ex-situ conservation work reserve of seeds is created for 23 target species. Living collections of seedlings are created for some of target species.

Ex-situ reserve of living material will be used for in-situ re-introduction of the particular species to the particular natural habitats, formerly inhabited by this or that species, but from where they disappeared by some reasons.

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Ex-situ Conservation of Several Threatened Tree and Shrub Species of Georgia’s Flora

Seedlings of Salvia garedji in pots

Seedlings of Laurus nobilis in pots

Seedlings of Pyrus demetrii on collection plot

Seedlings of Laurus nobilis on collection plot

Seeds of Buxus colchica

Seed collections of target species sealed in foil bags stored in the freezer at CRSB

Fig. 2 Seeds and seedlings of some target species

References:


