NATURAL RESOURCES OF SAGURAMO PRESERVE

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Abstract
In 2017-2021, on the basis of the monitoring carried out in different areas of the Saguramo Reserve, we created the first synopsis of the natural resources of the Saguramo Reserve, including about 400 species, distinguished with biodiversity of the flora of Georgia. The current state of their populations was analyzed; A computer database of both widely represented and rare and endangered species (affected by anthropogenic or natural hazards) was created, taking into account the modern requirements of taxonomy and nomenclature.

Keywords: Saguramo Range, flora, rare, species, medicinal plants, diversity

1. Introduction

Botanically outstanding refugium - the flora of the Saguramo Reserve (range) is very rich and diverse, which is due, on the one hand, to the location of the Saguramo Range, as a result of which a unique microclimate develops, and on the other hand, to the influence of flora of the historical past of the Tertiary period (mesophilic) and Central Asia (xerophilic), as a result of which a very interesting, floristically rich and varied vegetation has developed.
The peculiar microclimate formed here also causes the preservation of Colchian elements in this area, making the flora of the Saguramo Nature Reserve very interesting.

The mentioned diversity led to our interest in the natural resources of Saguramo Reserve (range).

2. Material and methods

The research object was the Saguramo Reserve (range), which is a branch of the Kakheti mountain system of the main Caucasus Range and is directed from the north-west, located from 600 meters to 1393 meters above the sea level.

The Saguramo Reserve, which is 5241 ha, was established in 1946 on the Saguramo Ridge. The watershed of the reserve is the Saguramo ridge, where alluvial soils are common [1,2].

The Saguramo range is located in a moderately humid zone with moderately cold winters and hot summers. The southern slope of the reserve area is characterized by a (relative) lack of precipitation, frequent winds, and high temperatures in summer, while the northern slope, on the contrary, is characterized by more precipitation, rare winds, and a relatively low temperature in summer [3].

3. The purpose of the research:

The purpose of our research was to compile the floristic lists of the natural resources of the Saguramo Reserve, which have different purposeful uses, and to study the Colchis - type relics of the Tertiary period spread in this area.

4. Results and discussion

The existing nature of the climatic factor complex determines the xerophytility of the vegetation cover of the southern slope of the Saguramo Reserve (Saguramo Range). There are developed thorny shrubss: Jerusalem thorn -Paliurus spina-christi, spiræa -Spiraea hypericifolia, Black buckthorn-Rhamnus pallasi, Blackthorn-Prunus spinosa, Oriental hornbeam-Carpinus orientalis, Georgian oak - Quercus iberica, rarely Dwarf almond - Amygdalus nana, etc.

The mesophilic character of the vegetation cover of the northern slope indicates the presence of a peculiar microclimate, different from the south. The Saguramo Preserve is represented by rich and varied vegetation [4].

There are 19 species of Colchis-type relicts of the Tertiary flora (holly - Ilex colchica, bilberry -Vaccinium myrtillus, Colchian ivy-Hedera colchica, Pastukhov's ivy - Hedera pastuchowi, Colchian boxwood - Buxus colchica, Taxus baccata, clemantis - Clematis vitalba, smilax - Smilax excelsa, bladder-nut - Staphylea pinnata, Colcian bladder-nut - Staphylea colchica, wild grape - Vitis silvestris and etc., which makes up 38% of its dendroflora [5].

The main composition of forest types spread on the Saguramo Ridge is characterized by great diversity [6]. It is widespread here:

Beech forests (Fageta; Fagus orientalis), which are phytocenologically represented by the following associations:

1. Beech forest with holly undergrowth (Fagetum ilexsosum)
2. Beech forest with ivy cover (Fagetum hederosum)
3. Beech forest with blackberry cover (Fagetum rubosum)
4. Beech forest with woodruff cover (Fagetum asperulosum) around 1100-1400 m from sea level
5. Beech forest with pachyphragma (Fagetum pachyphragmosum)
6. Beech- hornbeam forest with ivy cover (Fagetocarpinetum hederosum pastuchovii)

Hornbeam forests (Carpineta; Carpinus cauasica) - are phytocenologically represented by the following associations:

1. Hornbeam forests with Colchian ivy cover (Carpinetum hederosum colchicae)
2. Hornbeam forests with pachyphragma cover (Carpinetum pachyphragmosum)

Ash-trees forests (Fraxineta; Fraxinus excelsior)- are phytocenologically represented by the following associations:

1. Ash-trees forest with dogwood undergrowth (Fraxinetum cornosum)
2. Ash-trees forest with oriental hornbeam undergrowth (Fraxinetum carpinulosum)
3. Ash-trees forest with herbaceous cover (Fraxinetum mixtoherbosum)
4. Hornbeam, ash-trees, nut-grove forests with pachyphragma cover (Carpineto-Coryleto-Fraxinetum pachyphragmosum)

Oak trees forests from Georgian oak (Querceta; Quercus iberica) – are phytocenologically represented by the following associations:

1. Oak forests with oriental hornbeam undergrowthQuercetum carpinulosum)
2. Ash-trees-oak forests with spiræa undergrowth (Fraxineto –Quercetum spiraeosum)

In 2017-2021, we conducted more than 50 targeted field trips, often repeatedly, in different sections of the mountain range, from early spring to late autumn, in order to fully record the natural resources of Saguramo Reserve.

Based on the botanical research, we compiled a floristic list of young plants on the Saguramo ridge, which includes about 400 species united in 87 botanical families.

1. **Aceraceae–** Acer iberica, A.campestre, A. laetum, A. velutinum
2. **Adiantaceae –** Adiantum capillus-veneris
3. **Aquifoliaceae –** Ilex colchica
4. **Alliaceae -** Allium atroviolaceum, A.paradoxum, A. ursinum, A, victorialis
5. **Amaranthaceae -** Amaranthus albus, A. hybridus
6. **Amaryllidaceae -** Galanthus caucasicus, G. kemulariae

7. **Anacardiaceae** - Cotinus coggygria, Rhus coriaria
8. **Apocinaceae –** Vinca herbaceae
9. **Araceae –** Arum albispathum
10. **Araliaceae –** Hedera colchica, H. helix, H. pastuchovii
11. **Asparagaceae -** Asparagus officinalis, A. verticillatus, Convallaria transcaucasica, Muscari szovitsianum, Ornithogalum ponticum, O. woronowii, Polygonatum multiflotum, P.glaberrimum, P orientale (polyanthemum), Scilla siberica.
12. **Aspleniaceae –** Asplenium trichomanes, A.septentrionale, Ceterach officinarum
13. **Asphodelaceae** - Asphodeline lutea
14. **Balsaminaceae –** Impatiens noli-tangere
15. **Berberidaceae –** Berberis iberica, B. Vulgaris
16. **Balsaminaceae –** Impatiens noli-tangere
17. **Berberidaceae –** Berberis iberica, B. vulgaris
18. **Betulaceae (= Corylaceae)** – Corylus avellana, C. iberica, Carpinus caucasica, C. orientalis
19. **Boraginaceae** – Anchusa italica, Cynoglossum officinale, Aegonychon purpureocaeruleum, Echium vulgare, E.rubrum, Lycopsis orientalis, Lithospermum officinale, Myosotis arvensis, Onosma caucasica, Pulmonaria mollissima, Symphytum caucasicum, S. grandiflorum.
20. **Buxaceae** – Buxus colchica
21. **Campanulaceae –** Campanula alliariifolia,C. hohenackeri, C. oblongifolia,C. rapunculoides,
22. **Cannabaceae** – Cannabis ruderalis
23. **Capparaceae** – Capparis spinosa
24. **Caprifoliaceae** - Centranthus longifolius, Cephalaria gigantea, Lonicera iberica, L.caprifolium, Sambucus ebulus, S.nigra, Scabiosa columbaria, Viburnum lantana, V. orientale, Valeriana officinalis.
25. **Caryophyllaceae** – Cerastium argenteum, C. holosteum, Dianthus caucaseus, D.orientalis, D. subulosus, Melandrium boissieri, Gypsophila elegans, Stellaria media, S. holostea, Silene wallichiana, Saponaria officinalis
26. **Celastraceae –** Euonymus europaea, E. verrucosa, E. latifolia
27. **Chenopodiaceae –** Chenopodium album, Ch. vulgare
28. **Colchicaceae – M**erendera trigyna, Colchicum umbrosum, C. speciosum
29. **Compositae** – Achillea setacea, A.biebersteinii (A.micrantha), A.biserrata, A. millefolium, Anthemissaguramica, A..cotula, Arctium lappa, Artemisia absinthium, A.scoparia, A.vulgaris, Bellis perennis, Carduus acanthoides, C. nutans, Centaurea bella, Cichorium intybus, Carthamus lanatus, Cicerbita deltoidea, Cirsium incanum, Doronicum orientale, Echinops sphaerocephalus, Eupatorium cannabinum, Inula aspera, I.helenium,

Galatella dracunculoides, Gnaphalium sylvaticum, Leucanthemum vulgare, Onopordum acanthium, Petasites albus, P. georgicus, Pyrethrum corymbosum, P parthenifolium, P.sericeum , Psephellus carthalinicus, Silybum marianum, Seratula quinquefolia, Solidago virgaurea, Taraxacum praticolum, T. officinale, Tragopogon graminiifolius, Tussilago farfara, Xanthium spinosum, X. strumarium, Xeranthemum squarosum

30. **Convallariaceae** – Convallaria majalis L. subsp. transcaucasica. Polygonatum glaberrimum, P. multiflorum, P. orientale
31. **Convolvulaceae –** Calystegia sylvatica, Convolvulus arvensis, C. cantabrica
32. **Cornaceae** – Cornus mas, Swida australis (Thelycrania australis)
33. **Crassulaceae** – Sedum caucasicum, S. oppositifolium, S.acre, S.album, S. stoloniferum, Sempervivum transcaucasicum.
34. **Cruciferae -** Alliaria petiolata, Brassica campestris, Capsella bursa-pastoris, Crambe juncea, Erysimum caucasicum, Isatis iberica, Lepidium campestre, Nasturtium officinale, Hesperis matronalis, Rapistrum rugosum, Sinapis arvensis, Sysimbrium officinale
35. **Cucurbitaceae**– Ecballium elaterium, Bryonia dioica
36. **Cuscutaceae** – Cuscuta europaea
37. **Dioscoriaceae** – Tamus communis
38. **Dipsacaceae** – Cephalaria gigantea
39. **Elaeagnaceae –**Elaeagnus angustifolia, Hypophae rhamnoides
40. **Ephedraceae** – Ephedra procera
41. **Euphorbiaceae** – Euphobria boisseriana, E. helioscopia
42. **Fagaceae –** Fagus orientalis, Quercus iberica
43. **Fumariaceae –** Corydalis angustifolia, C. marschaliana, Fumaria officinalis,
44. **Geraniaceae** – Erodium cicutarium, Geranium robertianum, G.sylvaticum, G. tuberosum.
45. **Helleboraceae** – Consolida orientalis**,** Helleborus caucasicus
46. **Hyacinthaceae –**Bellevalia speciosa, Muscari szowitsianum, Ornithogalum magnum. O.ponticum, Scilla sibericum
47. **Hypericaceae –** Hypericum perforatum
48. **Iridaceae –** Crocus adamii, C. speciosus, Gladiolus italicus, Iris caucasica, I. pumila, I. reticulata
49. **Iuglandaceae –**Iuglans regia
50. **Labiatae** – Ajuga chia, A. reptans, Betonica officinalis, B. macrantha (B. grandiflora), Glechoma hederaceae, Hyssopus angustifolius, Lamium album,L. amplexicaule, Leonurus quinquelobatus, Lycopus europaeus, Marrubium vulgare, Melissa officinalis, Mentha longifolia, Nepeta mussini, N. cataria, N. pannonica, Origanum vulgare, Prunella vulgaris, Phlomis pungens, Ph. tuberosus, Salvia sclarea, S.nemorosa, S.verbascifolia, Saturea

laxiflora, Scutellaria orientalis, Sideritis montana, Stachys sylvatica, Teucrium nuchense, T. orientale, T.polium, Thymus tiflisiensis, Ziziphora serpillaceae.

51. **Leguminosae –** Astragalus caucasicus**,** Cercis siliquastrum, Colutea orientalis, Coronilla varia, Cytisus caucasicus, Dorycnium intermedium, Galega orientalis, Genista tinctoria, Lathyrus aphaca, L .pratensis, L. roseus, Lotus corniculatus, Medicago coerulea, Melilotus officinalis, Trifolium arvense, T.campestre, T.canescens, T.repens, Vicia sativa.
52. **Liliaceae** – Gagea chlorantha, G.lutea, Lilium szovitsianum, Tulipa eichleri
53. **Linaceae** – Linum austriacum
54. **Loranthaceae** – Viscum album
55. **Malvaceae** –Alcea rugosa, Malva sylvestris, Lavatera thuringiaca
56. **Moraceae** – Ficus carica, Morus alba
57. **Oleaceae** – Jasminum fruticans, J. officinale, Ligustrum vulgare, Fraxinus excelsior
58. **Oxalidaceae** – Oxalis acetosella
59. **Orchidaceae - ** Cephalanthera longifolia,C. rubra **,** Orchis purpurea, O. simia, O. laxiflora, O. flavescens, Ophris caucasica, Platanthera chlorantha
60. **Paeoniaceae –** Paeonia caucasica
61. **Papaveraceae** – Chelidonium majus, Papaver arenarium,P. commutatum, Glaucium corniculatum,
62. **Peganiaceae** –Peganum harmala
63. **Plantaginaceae –** Plantago lanceolata, P.major
64. **Polygonaceae** – Atraphaxis spinosa, Polygonum convolvulus, P. persicaria, P.hydropiper, Rumex acetosa, R.acetosella, R.crispus, R.confertus
65. **Polypodiaceae** – Polypodium vulgare
66. **Primulaceae** – Cyclamen vernum, Primula macrocalyx, P. saguramica, P.woronowii,
67. **Punicaceae** – Punica granatum
68. **Ranunculaceae** – Adonis aestivalis, Anemone caucasica, Clematis orientalis, C.vitalba, Ficaria ledebourii, Thalictrum foetidum, Ranunculus illyricus, R. repens
69. **Resedaceae –** Reseda lutea
70. **Rhamnaceae** – Rhamnus pallasii, Rh. cathartica, Paliurus spina-christi
71. **Rosaceae** – Agrimonia eupatoria, Amygdalus communis**,** Armeniaca vulgaris, Crataegus pentagyna, C.kyrtostyla, Cerasus mahaleb,Cotoneaster racemiflorus, Cydonia oblonga, Geum urbanum, Fragaria vesca, Filipendula vulgaris, Malus orientalis, Mespilus germanica, Prunus spinosa, P.divaricata, Pyrus caucasica, Poterium polygamum, Potentilla reptans, P.argentea, Pyracantha coccinea, Rosa canina, Rubus caesius, Spiraea hypericifolia, Sorbus caucasigena
72. **Rubiaceae** – Asperula odorata, Galium verum, G.verticillatum, Rubia tinctorum
73. **Rutaceae** – Dictamnus caucasicus

74. **Scrophulariaceae** –Digitalis ferruginea, D. ciliata, Linaria vulgaris, Scrophularia divaricata, Verbascum speciosum, V. phlomoides, V.pyramidatum, Veronica officinalis
75. **Simaroubaceae –** Ailanthus altissima
76. **Solanaceae** –Atropa caucasica**,** Datura stramonium, Physalis alkekengi, Hyosciamus niger, Solanum nigrum, S. persicum
77. **Smilacaceae** – Smilax excelsa
78. **Staphylaceae** – Staphylea colchica, S. pinnata
79. **Taxaceae** – Taxus baccata
80. **Thymelaceae** – Daphne mezereum
81. **Tiliaceae** – Tilia cordata
82. **Trilliaceae** – Paris incompleta
83. **Umbelliferae** – Anthriscus nemorosa, Ammi visnaga, Astrodaucus orientalis, Bupleurum rotundifolium, B. polyphyllum, Carum caucasicum, Chaerophyllum roseum, Conium maculatum, Daucus carota, Eryngium campestre, E. caeruleum, Falcaria sioides (F. vulgaris), Foeniculum vulgare, Heracleum antasiaticum, Laser trilobum, Malabaila dasianthus, Pimpinella aromatica, Sanicula europaea, Seseli grandivitatum
84. **Urticaceae** – Urtica dioica
85. **Verbenaceae** – Verbena officinalis
86. **Violaceae** – Viola alba, V. arvensis, V. odorata, V. suavis, V. kitaibeliana, V. reichenbachiana **Vitaceae –** Vitis silvestris
87. **Zygopyllaceae –** Zygophyllum fabago, Tribulus terrestris

5. Conclusion

As a result of the research, it was revealed that the composition of species in forests, forest meadows, forest edges is particularly diverse; The southern slopes of Saguramo Nature Reserve, where many xerophytic plants are present, are of no less interest.

Up to 70 species of herbaceous plants are often found in the phytocenoses of the Saguramo Reserve in the form of large groups:Atraphaxis spinosa, Achillea biebersteinii, A. setacea, A. millefolium, Asperula odorata, Aegonichon purpureo-caeruleum, Alcea rugosa, Allium atroviolaceum, A. paradoxum, Amaranthus hybridus, Ammi visnaga, Anthemis altissima, Arctium lappa, Calystegia silvatica, Campanula rapunculoides, Carduus nutans, Carthamus lanatus, Cichorium intybus, Chenopodium album, Ch. hybridum Chelidonium majus, Convolvulus arvensis, Corydalis angustifolia, C. Marschalliana, Cyclamen vernum, Daucus carota, Dorycnium herbaceum, Ecbalium elaterium, Echinops sphaerocephalus, Eryngium caeruleum, Euphorbia helioscopia, Falcaria vulgaris, Filipendula vulgaris, Fragaria vesca,Heracleum antasiaticum, Impatiens noli-tangere, Galium verum, Galanthus caucasicus, Geranium robertianum, Hedera helix, Lamium album, Linum austriacum, Malva sylvatica, Melandrium boissieri, Mentha longifolia, Melilotus officinalis, Myosotis arvensis, Onopordum acanthium, Polygonatum glaberrimum, P.multiflorum, Plantago major,P.

lanceolata, Primula macrocalyx, P. woronowii, Ranunculus repens, Reseda lutea, Rubia tinctorum, Sambucus ebulus, Sanicula europaea, Scutellaria orientalis, Scilla siberica, Serratula quinquefolia, Sideritis montana, Silybum marianum, Stellaria media, Teucrium nuchense, T. polium, Tussilago farfara, Tribulus terrestris, Urtica dioica, Xanthium spinosum, X. strumarium, Xeranthemum squarosum,Viola odorata, V.kitaibeliana.

About 25 species of trees and shrubs are widely represented: Acer campestre, A. laetum, Cotinus coggygria,Carpinus caucasica, C. orientalis, Cercis siliquastrum, Celtis caucasica, Cornus mas, Crataegus pentagyna, C. kyrtostyla, Clematis orientalis, C.vitalba, Ephedra procera, Fagus orientalis, Ilex colchica, Paliurus spina-christi, Quercus iberica, Prunus spinosa, Pyrus salicifolia,Rosa canina,Rhamnus cathartica, Rh. pallassii, Rhus coriaria, Rubus fruticosus, Spiraea hypericifolia.

Most of the species grow fragmented, in the form of small groups and single individuals [7-10].

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