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**PHYTOCENOLOGICAL CHARACTERISTICS OF THE WOODY SPECIES
OF THE ROSACEAE FAMILY IN THE STEPPE VEGETATION
OF THE FLORA OF NAKHCIVAN**

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**ФИТОЦЕНОЛОГИЧЕСКАЯ ХАРАКТЕРИСТИКА ДРЕВЕСНЫХ ПОРОД
СЕМЕЙСТВА ROSACEAE В СТЕПНОЙ РАСТИТЕЛЬНОСТИ
ФЛОРЫ НАХИЧЕВАНИ**

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Abstract. The article provides information about the shrub vegetation of the high mountain steppes of the woody species of the Rosaceae family, which spread in the flora of the Nakhchivan. Typical highland steppes of the study area are found mainly on the steep southern slopes of mountains, hills, ravines and valleys. 3 formations, 13 associations and 1 subassociation were identified in the class of shrub vegetation of the high mountain steppes, and a phytocenological classification of the vegetation was given for the first time.

Аннотация. В статье приведены сведения о древесной растительности семейства Rosaceae, распространенной в высокогорных степях Нахичевани. Типичные высокогорные степи изучаемой территории встречаются преимущественно на крутых южных склонах гор, холмов, оврагов и долин. В классе кустарниковой растительности высокогорных степей выделено 3 формации, 13 ассоциаций и 1 субассоциация, впервые дана фитоценологическая классификация растительности.

Keywords: steppes, meadows, plant communities.

Ключевые слова: степи, луга, растительные сообщества.

A characteristic feature of the shrub-steppe complex is the formation of unique low-stemmed bushes. The woody canopy of species consists of species that form the understory of broad-leaved forests — mainly woody species of the Rosaceae family. This process confirms the opinion of the researchers and shows that steppe ecosystems were actually formed due to the disappearance of forest vegetation reasons. The richness of plant life forms provides a complex structure of groupings. The specific characteristics of the vertical structure of the groupings of the shrub-steppe complex create a significant difference in the height of different groups of shrubs.

Shrub groups are found in all relief forms, water basins, ravines, high mountain steppes. Often these completely independent phytocenoses form the most diverse groupings. Obviously, this is due to both optimal soil-climatic conditions and strong fragmentation of the terrain, which creates a large number of different ecotopes. In poorly developed soils, the composition and structure of shrub groups are greatly simplified. Considering the relevance of the topic, it is considered important to conduct research in this direction.

Material and methodology of the research

Since 2019, in the territory of Nakhchivan, the study of woody species of the Rosaceae family has been started to be researched in the high mountain steppe vegetation. Regardless of the location, high mountain steppe plants in all areas are constantly in contact with woody plants of the Rosaceae family and form different groups [1–3]. In determining the subassociations studied by us, V. V. Alekhin [4], G. I. Poplavskaya [5], A. P. Shennikov [6], G. N. Vysochsky [7] etc. works of researchers, V. Sukachev [8–10] methods are taken as a basis. In the classification of vegetation, B. A. Bykov [11], R. D. Yaroshenko [12], Y. M. Lavrenko [13], L. I. Prilipko [14], A. Sh. Ibrahimov [15] and the works of other researchers were used.

Discussion and conclusions of the study

High mountain steppes are a natural grouping of natural grasses dominated by xerophytes with various shrubs, covering large areas in the region and forming a zone. High mountain steppe vegetation can be divided into two groups, typical mountain steppes and high mountain meadows. Upland meadows are found mainly in humid areas. Along with grasses, the main inhabitants of the steppes, the basis of the grass cover in the steppes is sparsely weeded and rhizomes with the presence of multi-species, almost always abundant diversity of grasses. Both typical mountain steppes and high mountain meadows are rich in woody species of the Rosaceae family (Figure 1).



Figure 1. Phytocenoses of high mountain steppes

Stipa pulcherrima and *Rosa hemisphaerica*, *R. hraciana*, *R. iberica*, *R. karjagini*, *R. kazarjani* and *R. pimpinellifolia* species are characteristic for humus-rich soils on low-slope

mountain slopes of high mountains. The groupings are dominated by grass making species and the role of diversity is great. In grass cover *Calamagrostis arundinacea*, *Brachypodium sylvaticum*, *Aster alpinus*, *Stachys macrantha*, *Primula macrocalyx*, *Myosotis alpestris*, *Filipendula vulgaris*, *Carex vesicaria*, *Stipa capillata*, *Bromopsis riparia*, *Stipa pulcherrima*, *Festuca valesiaca*, *Koeleria cristata*, *Potentilla crantzii*, *Plantago saxatilis*, *Pyrethrum parthenifolium*, *Pulsatilla albana* etc. are the more common types. There are shrub plants such as *Bromopsis riparia*, *Carex vesicaria*, *Elytrigia trichophora*, *Potentilla crantzii*, *Teucrium chamaedrys*, *T. polium*, *Scutellaria platystegia*, shrubs *Rosa hemisphaerica*, *R. hraciana*, *R. iberica*, *Cotoneaster melanocarpus*, *C. multiflorus*, *C. suavis*, *C. saxatilis*, *Sorbus luristanica*, *S. roopiana*, *S. takhtajanii*, *S. turcica*, *Berberis vulgaris*, *Malus orientalis* and *Prunus divaricata*.

Formation: 1. *Pruneta divaricatae*

In this formation, we define 4 associations and for the first time 1 subassociation. The phytocenotic groupings formed by *Pruneta divaricatae* — dominated shrub species in the high mountain steppe vegetation can be grouped as follows (Table 1).

Table

SPECIES COMPOSITION OF *Pruneta divaricatae* FORMATION

| № | Names of species | Abundance | Height, cm | Phenophase (blossom-fruit) | Level |
|----|--|-----------|------------|----------------------------|-------|
| 1 | <i>Prunus divaricata</i> Ledeb. | 3-5 | 300-400 | III-IV, VII-VIII | I |
| 2 | <i>Crataegus meyeri</i> Pojark. | 1-3 | 300-400 | V-VI, IX-X | I |
| 3 | <i>C. orientalis</i> Pall. ex M. Bieb. | 1-2 | 300-400 | V-VI-VII, IX-X | I |
| 4 | <i>C. monogyna</i> Jacq. | 1 | 200-400 | V-VI, IX-X | I |
| 5 | <i>Pyrus salicifolia</i> Pall. | 1 | 800-1000 | IV-IX | I |
| 6 | <i>Rosa canina</i> L. | 2-3 | 100-250 | V-VI, VIII-IX | II |
| 7 | <i>R. chomutoviensis</i> Chrshan. & Lasebna | 1 | 100-150 | VI-VII | II |
| 8 | <i>R. corymbifera</i> Borkh. | 2 | 200-300 | VI-VII | II |
| 9 | <i>R. floribunda</i> Steven ex M. Bieb. | 1-2 | 120-150 | VI-VII | II |
| 10 | <i>Stipa capillata</i> L. | 2-3 | 20-70 | VII-VIII | III |
| 11 | <i>Bromopsis riparia</i> (Rehmann) Holub | 2-3 | 30-70 | VI-VIII | III |
| 12 | <i>Lathyrus pratensis</i> L. | 2-4 | 40 | VI, VII-VIII | IV |
| 13 | <i>L. sylvestris</i> L. | 2 | 100 | V, VII-VIII | III |
| 14 | <i>L. chloranthus</i> Boiss. & Balansa | 1-2 | 50-60 | V, VII-VII, VIII | III |
| 15 | <i>L. aphaca</i> L. | 1 | 40-50 | VI-IX | IV |
| 16 | <i>Vicia variabilis</i> Freyn & Sint. | 1-2 | 70-80 | V-VI | III |
| 17 | <i>V. grossheimii</i> Ekvtim. | 1 | 45-90 | VI-VI | III |
| 18 | <i>V. balansae</i> Boiss. | 1-2 | 30-60 | VII-VIII | IV |
| 19 | <i>V. nissoliana</i> L. | 1 | 30-80 | V-VI | III |
| 20 | <i>Lens ervoides</i> (Brign.) Grande | 1-2 | 20-40 | V-VI | IV |
| 21 | <i>Lotus tenuis</i> Waldst. & Kit. ex Willd. | 2 | 20-60 | V-VII, VII- IX | IV |
| 22 | <i>L. corniculatus</i> L. | 3-4 | 20-40 | V-VI, VI-VIII | IV |
| 23 | <i>Poa pratensis</i> L. | 3-4 | 60-120 | V, VI-VI, VIII | II |
| 24 | <i>Phleum phleoides</i> (L.) H. Karst. | 2-3 | 30-60 | VII-VIII | III |
| 25 | <i>P. pratense</i> L. | 1-3 | 60 | VII, VIII | III |
| 26 | <i>Dactylis glomerata</i> L. | 3-5 | 20-140 | V-VII | III |
| 27 | <i>Trifolium pratense</i> L. | 2-4 | 15-40 | V-VII | IV |
| 28 | <i>T. fontanum</i> Bobrov | 1-2 | 15-30 | VI-VII | IV |
| 29 | <i>T. trichocephalum</i> M. Bieb. | 2 | 15-40 | VI-VII | IV |



| № | Names of species | Abundance | Height, cm | Phenophase (blossom-fruit) | Level |
|----|--|-----------|------------|----------------------------|-------|
| 30 | <i>T. medium</i> L. | 2-3 | 5-80 | V, VI-VII-VIII | III |
| 31 | <i>Ranunculus caucasicus</i> M. Bieb. | 1-2 | 10-20 | VI-VIII | IV |
| 32 | <i>R. meyerianus</i> Rupr. | 1-2 | 30-60 | V-VII | IV |
| 33 | <i>Potentilla argentea</i> L. | 1-3 | 20-60 | VI-VII | IV |
| 34 | <i>Filipendula ulmaria</i> (L.) Maxim. | 2 | 60-100 | VI-VII | III |
| 35 | <i>Geum rivale</i> L. | 1-3 | 30-60 | VI, VII-VIII | IV |
| 36 | <i>Geranium sylvaticum</i> L. | 1-3 | 30-60 | VI, VII-IX | IV |
| 37 | <i>Rumex acetosa</i> L. | 2-3 | 30-90 | VI-VII | III |
| 38 | <i>Origanum vulgare</i> L. | 1-3 | 30-60 | VI, VII-VII, X | III |
| 39 | <i>Galium verum</i> L. | 2-5 | 30-120 | VI-IX | III |

Crataegus meyeri, *C. monogyna* in the groupings of shrubs dominated by *Prunus divaricata* species. *C. orientalis*, *Pyrus salicifolia*, *Rosa canina*, *R. chomutoviensis*, *R. corymbifera*, *R. floribunda* species are widespread. The *Prunus divaricata* group covers large areas on the slopes of the middle and high mountain zone and along the edges of lowland forests with steppe and meadow groups.

Association: 1. Grain-variegated lowland (*Prunetum varioherboso-graminosum*)

Association: 2. Common hawthorn lowland (*Prunetum-crataegoso varioherbosum*)

Association: 3. Diverse herbaceous hawthorn hip low (*Prunetum rososo-crataegoso varioherbosum*)

Subassociation: 1. *Prunetum rososo-crataegoso varioherbosum subass. parvoherbosum*

The shrub cover consisted of *Rosa canina* and a small amount of *R. rapinii*, *R. orientalis*, *Prunus microcarpa* and *Crataegus meyeri* species. Dominants cannot be clearly identified.

Association: 4. Herbaceous cereal legume low (*Prunetum-faboso-poaoso-varioherbosum*)

Formation: 2. Pure Hawthorny area (*Crataegueta*)

We have identified 3 associations within the formation. The species composition of trees and shrubs in the grouping is quite rich. The grouping includes *Crataegus meyeri*, *C. monogyna*, *C. orientalis*, *C. pallasii*, *C. pojarkoviae*, *Prunus divaricata*, *Pyrus medvedevii*, *P. oxyprion*, *P. raddeana*, *Cotoneaster integerrimus*, *C. melanocarpus*, *Sorbus graeca*, *S. persica*, *S. luristanica*, *S. takhtajanii*, *S. turcica* species are found. The large number of shrub plants in the grouping and their very dense location caused the weakening of the grass cover under the shrub cover. In denser thickets, grass cover has been reduced to almost non-existence. The grouping is a formation that is distinguished by the largest number of woody species belonging to the *Rosaceae* family in the high mountain steppes.

Association: 1. Cartilage Various Grassy Hawthorny area (*Crataeguetum varioherboso-poaosum*)

Association: 2. Poorly Grassy Rosehipy Hawthorny area (*Crataeguetum-rososo-parvoherbosum*)

Association: 3. Shrubby Hawthorny area (*Crataeguetum fruticosum*)

Formation: 3. Pure Rosehipy area (*Rosoeta*)

We have identified 6 associations within the formation. The species composition of trees and shrubs in the grouping is richer in comparison with other formations.

Association: 1. Soft brushy Various grassy Rosehipy area (*Rososum varioherbosocalamagrostosum*)

Association: 2. Tonga grassy Various grassy Rosehipy area (*Rososum-varioherbosobromosum*)

Association: 3. Various grassy Hawthorny Rosehipy area (*Rosoeto-cratagueta Varioherbosum*)

Association: 4. Various grassy Nettle Rosehipy area (*Rosoeto-Prunetum urticoso-varioherbosum*)

Association: 5. Various grassy Willowy Plumpy Rosehipy area (*Rosoeto-prunetum-salicoso-varioherbosum*)

Association: 6. Achillea Vicia Rosehipy area (*Rosoeto dactuloso-vicioso-achillosum*)

The woody species of the Rosaceae family in the vegetation covering the high mountain steppe have attracted attention due to their specificity, high level of floristic and phytocenotic diversity, and richness in rare species. Also, the study of woody species of the *Rosaceae* family in the vegetation of the high mountain steppe is based on the formation of the ecological-floristic principles of the vegetation classification of that area (Figure 2).

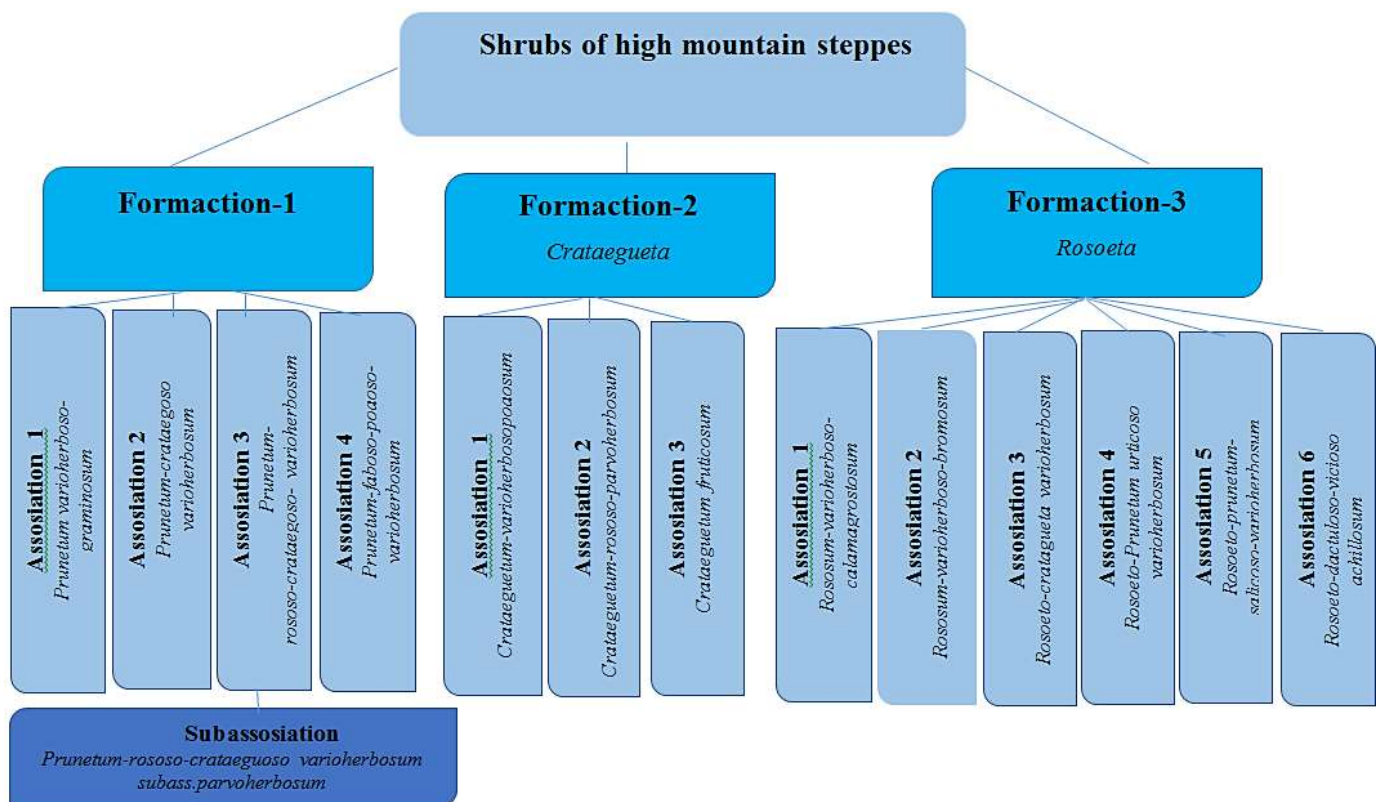


Figure 2. Classification scheme of woody species of the high mountain steppe vegetation

Result

As a result of the conducted research, 3 formations, 13 associations and for the first time 1 sub-association were identified in the high mountain steppe vegetation class of the woody species of the Rosaceae family and a phytocenological classification of the vegetation was given.

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