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FLORA CURRENT STATE OF Rosaceae WOODY SPECIES IN MOUNTAIN XEROPHYTIC AND STEPPE VEGETATION OF ORDUBAD DISTRICT

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СОВРЕМЕННОЕ СОСТОЯНИЕ ФЛОРЫ ДРЕВЕСНЫХ ВИДОВ Rosaceae В ГОРНО-КСЕРОФИТНОЙ И СТЕПНОЙ РАСТИТЕЛЬНОСТИ ОРДУБАДСКОГО РАЙОНА

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Abstract. The current state of the tree family Rosaceae is considered. As a result of the research, the taxonomic composition, life forms, ecological groups, geographical areas and classes of tree species of the Rosaceae family, widespread in the mountain-xerophytic and steppe vegetation of the flora of the Ordubad district, were revealed. When characterizing the Rosaceae tree species of the mountain-xerophytic and steppe zone of the flora of the Ordubad region, it was established: *Rosa* — 14 (29.1%), *Prunus* — 6 (12.5%), *Crataegus* — 5 (10.4%), *Pyrus* — 5 (10.4%), *Sorbus* — 5 (10.4%), *Cotoneaster* — 5 (10.4%), *Rubus* — 3 (6.25%), *Spiraea* — 2 (4.16%) and 1 (2.08%) each of *Malus*, *Louiseania* and *Pyracantha*. The structure of the flora of the Ordubad region is dominated by species belonging to the genus *Rosa* L. They are part of the shrub steppes and form independent groups and unique communities.

Аннотация. Рассматривается современное состояние древесных семейства Rosaceae. В результате исследований выявлен таксономический состав, жизненные формы, экологические группы, географические ареалы и классы древесных пород семейства розоцветных, широко распространенных в горно-ксерофитной и степной растительности флоры Ордубадского района. При характеристике древесных пород Rosaceae горно-ксерофитной и степной зоны флоры Ордубадского района установлено: *Rosa* — 14 (29.1%), *Prunus* — 6 (12.5%), *Crataegus* — 5 (10.4%), *Pyrus* — 5 (10.4%), *Sorbus* — 5 (10.4%), *Cotoneaster* — 5 (10.4%), *Rubus* — 3 (6.25%), *Spiraea* — 2 (4.16%) и по 1 (2.08%) *Malus*, *Louiseania* и *Pyracantha*. В структуре флоры Ордубадского района преобладают виды, относящиеся к роду *Rosa* L. Они входят в состав кустарниковых степей, образуют самостоятельные группы и уникальные сообщества.

Keywords: mountain-xerophytesteppe, taxonomic composition, life form, ecological group.

Ключевые слова: горно-ксерофитная степь, таксономический состав, жизненная форма, экологическая группа.

Due to its rich flora, Nakhchivan Autonomous Republic has always attracted interest by being different from other botanical-geographical regions of Azerbaijan and the Caucasus. As a result of the fact that the Autonomous Republic is a typical mountainous country, vegetation is divided into distinct zones. One such zone is the territory of Shahbuz region, which differs from other places due to its vegetation and fertile soil. There are many studies on the composition, structure and dynamics

of the vegetation of Shahbuz region. However, little attention has been paid to the characteristics of mountain-xerophyte and steppe vegetation in the region.

The mountainous relief of Nakhchivan MR has caused the vegetation of the region to be divided into easily distinguishable zones. The research conducted by us allows to determine the important features characteristic of the woody species of the *Rosaceae* family of the mountain-xerophyte and steppe zone flora of Ordubad region. In the structure of the mountain-xerophyte and steppe complex, shrubs, especially woody species of the *Rosaceae* family, occupy an important place.

Material and methodology

Research has been carried out since 2019. The mountain-xerophyte-steppe zone of the flora of the Shahbuz region of Nakhchivan MR was chosen as the study area, and tree species belonging to the *Rosaceae* family were chosen as the object of study. To clarify the species, we used the books by A. M. Askerov “Flora of Azerbaijan” [5], A. Sh. Ibragimov, M. Z. Piriev, D. Sh. Ganbarov “Trees and shrubs of the *Rosaceae* family on the territory of the Nakhchivan Autonomous Republic” [17].

Discussion and conclusions

Rosaceae family is one of the main families spread in the flora of Nakhchivan Autonomous Republic. In the mountain-xerophytic and steppe vegetation of the flora of the Autonomous Republic, tree species of the *Rosaceae* family are characterized by 79 species belonging to 12 genera of the family. Thus, as a result of processing the materials of personal field research conducted by us, it was established that in the mountain-xerophytic and steppe zone of the flora of the Ordubad district of the region, 48 species belonging to 11 genera of the *Rosaceae* family were found. The systematic composition and floristic analysis of tree species of the *Rosaceae* family, widespread in the mountain xerophytic and steppe vegetation of the study area, are reflected in Table 1 [1, 3, 4, 7, 8, 11–14].

Table 1

SYSTEMATIC COMPOSITION AND FLORISTIC ANALYSIS OF WOODY SPECIES
 OF THE *Rosaceae* FAMILY SPREADING IN THE STUDIED AREA

№	Species name	Life forms	Ecological groups	Geographical area classes
1.	<i>Cotoneaster integerrimus</i>	nanophanerophytes	xerophytes	Europe
2.	<i>C. melanocarpus</i>	nanophanerophytes	xerophytes	Palaearctic
3.	<i>C. multiflorus</i>	nanophanerophytes	xerophytes	Central Asia
4.	<i>C. suavis</i>	nanophanerophytes	xerophytes	Central Asia
5.	<i>C. saxatilis</i>	nanophanerophytes	xerophytes	Central Asia
6.	<i>Crataegus caucasica</i>	microphanerophytes	xeromesophytes	Atropatan
7.	<i>C. cinovskissi</i>	microphanerophytes	mesophytes	Atropatan
8.	<i>C. monogyna</i>	microphanerophytes	mesoxerophytes	Europe
9.	<i>C. orientalis</i>	microphanerophytes	mesoxerophytes	Eastern Mediterranean
10.	<i>C. pallasii</i>	microphanerophytes	mesoxerophytes	East-Pontic
11.	<i>Louiseania ulmifolia</i>	microphanerophytes	mesoxerophytes	Unknown
12.	<i>Malus orientalis</i>	microphanerophytes	mesophytes	Caucasus
13.	<i>Prunus communis</i>	microphanerophytes	mesophytes	Front Asia
14.	<i>P. divaricata</i>	mesophanerophytes	mesophytes	Eastern Mediterranean
15.	<i>P. fenzliana</i>	microphanerophytes	xerophytes	Front Asia

№	Species name	Life forms	Ecological groups	Geographical area classes
16.	<i>P. incana</i>	nanophanerophytes	xerophytes	Iran
17.	<i>P. microcarpa</i>	nanophanerophytes	xerophytes	Iran
18.	<i>P. nairica</i>	nanophanerophytes	xerophytes	Atropatan
19.	<i>Pyracantha coccinea</i>	nanophanerophytes	mesophytes	Eastern Mediterranean
20.	<i>Pyrus medvedevii</i>	mesophanerophytes	xerophytes	Atropatan
21.	<i>P. oxyprion</i>	mesophanerophytes	xerophytes	Atropatan
22.	<i>P. salicifolia</i>	mesophanerophytes	mesophytes	Iran
23.	<i>P. georgica</i>	mesophanerophytes	xerophytes	Iberia
24.	<i>P. megrica</i>	microphanerophytes	mesoxerophytes	Atropatan
25.	<i>Rosa brotherorum</i>	nanophanerophytes	mesophytes	Caucasus
26.	<i>R. buschiana</i>	nanophanerophytes	mesophytes	Caucasus
27.	<i>R. canina</i>	nanophanerophytes	mesophytes	Western Palearctic
28.	<i>R. chomutoviensis</i>	nanophanerophytes	mesophytes	Unknown
29.	<i>R. hracziiana</i>	nanophanerophytes	xerophytes	Atropatan
30.	<i>R. iberica</i>	nanophanerophytes	xerophytes	Asia Minor
31.	<i>R. multiflora</i>	microphanerophytes	mesoxerophytes	Eastern Mediterranean
32.	<i>R. nisami</i>	nanophanerophytes	mesophytes	Atropatan
33.	<i>R. orientalis</i>	nanophanerophytes	xerophytes	Atropatan
34.	<i>R. sachokiana</i>	nanophanerophytes	xerophytes	Albania
35.	<i>R. sosnovskyana</i>	nanophanerophytes	mesophytes	Caucasus
36.	<i>R. tomentosa</i>	nanophanerophytes	mesophytes	Europe
37.	<i>R. tschatyrdagi</i>	nanophanerophytes	xerophytes	Unknown
38.	<i>R. tuschetica</i>	nanophanerophytes	xeromesophytes	Caucasus
39.	<i>Rubus anatolicus</i>	nanophanerophytes	mesophytes	Caucasus
40.	<i>R. caesius</i>	nanophanerophytes	mesophytes	Western Palearctic
41.	<i>R. ibericus</i>	nanophanerophytes	mesophytes	Caucasus
42.	<i>Spiraea crenata</i>	nanophanerophytes	mesoxerophytes	Pontic Sarmatian
43.	<i>S. hypericifolia</i>	nanophanerophytes	mesoxerophytes	Pontic Sarmatian
44.	<i>Sorbus persica</i>	microphanerophytes	mesoxerophytes	Iran
45.	<i>S. luristanica</i>	microphanerophytes	xeromesophytes	Iran
46.	<i>S. roopiana</i>	microphanerophytes	mesophytes	Iran
47.	<i>S. takhtajanii</i>	microphanerophytes	xeromesophytes	Unknown
48.	<i>S. turcica</i>	microphanerophytes	xerophytes	Atropatan

Life forms, as types of adaptation structures, demonstrate on one hand the ways in which different types of plants adapt to the same conditions, and on the other hand, the possibilities of similarity of these ways in unrelated plants belonging to different species, genera and families. Therefore, the classification of life forms cannot be compatible with the usual classification of systematics based on the structure of reproductive organs and reflecting the common origin of plants. The classification of life forms is based on the structure of vegetative organs.

Based on K. Raunkier's system, an analysis of the life forms of tree species belonging to the Rosaceae family of the mountain-xerophytic and steppe zone of the flora of the Ordubad region was carried out. Although his system was relatively simple, it was nonetheless a perfect system. He argues that to identify forms of life, one must pay attention to three basic nuances. This system is characterized mainly by important morphological features rather than by the appearance of the plant [2, 9, 18].

Taking into account the above, the life forms of the woody species of the mountain-xerophyte and steppe zone of the Shahbuz region flora, which are included in the *Rosaceae* family, are grouped into 3 subtypes of phanerophytes. Mesophanerophytes are trees up to 8–30 m tall, microphanerophytes are trees and shrubs up to 2–8 m tall, and nanophanerophytes are shrubs less than 2 m tall. Of the woody species of the mountain-xerophyte and steppe zone of the Ordubad region flora, 27 are nanophanerophytes, 16 are microphanerophytes, and 5 are mesophanerophytes (Figure 1) [8, 16].

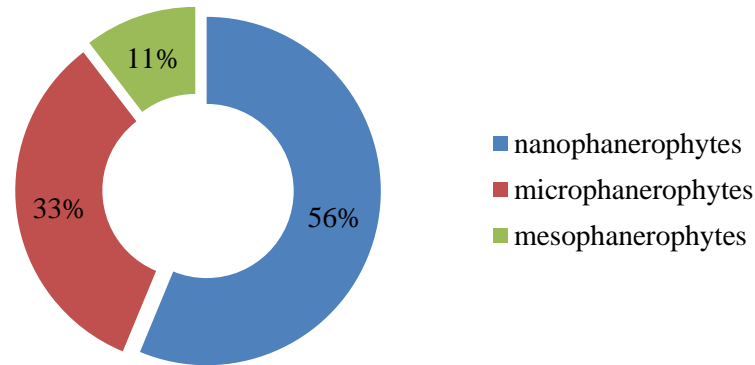


Figure 1. Life forms of woody species belonging to the *Rosaceae* family of the mountain-xerophyte and steppe zone of Ordubad region flora

Water is important as an ecological factor in spreading plants over wide areas under different climatic conditions, spreading them in different areas and forming different groups. Plants are divided into different ecological groups. Spreading of woody species of the *Rosaceae* family of Nakhchivan MR by ecological groups was carried out according to Shennikov's classification system. Mesophytes occupy an intermediate position between hydrophytes and xerophytes in their relation to moisture and their requirements. Mesophytic plants are mainly forest, shrub, subalpine, alpine plants. Xerophytic species are plants that spread mainly in dry areas and have acquired various adaptations to moisture deficiency. This group of plants includes desert, dry steppe, thorn sparse forest, rocky, etc. refers to the plants common in the areas. There are also plants that are mesophytic in origin and lead a relatively xerophytic lifestyle by adapting to their ecological environment. These plants are mesoxerophytic plants. Xeromesophytes occupy an intermediate position between xerophytes and mesoxerophytes. They are mostly found in forest clearings and sparse bush areas, and especially in the north-west and south-west of the mountain slopes [6].

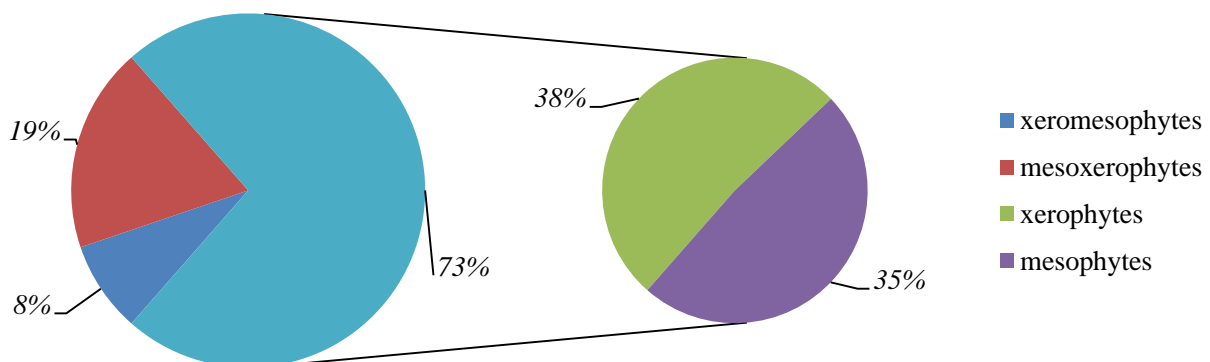


Figure 2. Ecological groups of woody species belonging to the *Rosaceae* family of the mountain-xerophyte and steppe zone of Ordubad region flora

From Figure 2 it is known that in the mountain-xerophytic and steppe regions of the Ordubad region, mesophytes are represented by 17 species, xerophytes — by 18 species, mesoxerophytes — by 9 species, xeromesophytes — by 4 species.

Areal types of species reflect the relationship between the flora of the studied region and the flora of large areas surrounding this region, leading to the study of species' migration routes from a historical point of view. Based on available literature sources and our personal field research, it was determined that the woody species of the Rosaceae family of the mountain-xerophytic and steppe zone of Shahbuz region belong to different areal types and classes, which allows us to determine the migration routes of the species to the area.

Based on zonal and regional principles, the woody species of the family spreading in the studied area were analyzed in 4 types of geographical areas and 15 areal classes [10; 15].

As can be seen from the given diagram, the Xerophilic areal type includes 26 species, the Caucasian areal type-9, the Boreal areal type-6, and the Desert areal type 3 species (Figure 3). The habitat type of 4 species is unknown.

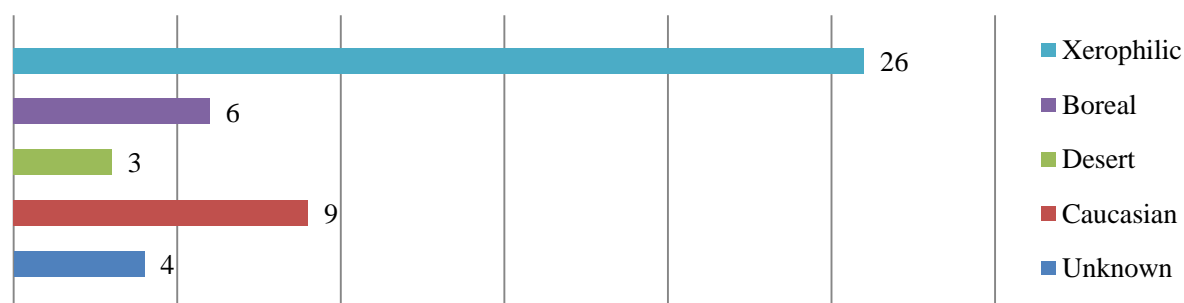


Figure 3. Areal types of woody species belonging to the Rosaceae family of the mountain-xerophyte and steppe zone of Ordubad region flora

Thus, as a result of the conducted research, the taxonomic composition of 48 woody species of the mountain-xerophytic and steppe zone of the Ordubad region flora included in the *Rosaceae* family was determined and grouped according to their life form, ecological group and areal classes. The result of the research was considered an important scientific base for studying the flora of the mountain-xerophyte and steppe zone of Ordubad district flora.

Conclusions

1. As a result of the conducted research, it was determined that woody plants belonging to the *Rosaceae* family are characterized by 48 species belonging to 11 genera in the mountain-xerophytic and steppe areas of Ordubad region, and it was found that *Rosa* — 14 (29.1%), *Prunus* — 6 (12, 5%), *Crataegus* — 5 (10.4%), *Pyrus* — 5 (10.4%), *Sorbus* — 5 (10.4%), *Cotoneaster* — 5 (10.4%), *Rubus* — 3 (6, 25%), *Spiraea* — 2 (4.16%), *Malus*, *Louiseania* and *Pyracantha* — 1 species (2.08%) are found.

2. The analysis of life forms shows that the woody species of the mountain-xerophyte and steppe zone of the Ordubad district flora, which are included in the *Rosaceae* family, are grouped into 3 subtypes of phanerophytes. It was found that mesophanerophytes are represented by 5 (10.5%), microphanerophytes by 16 (33.3%), and nanophanerophytes by 27 (56.2%) species. According to ecological groups, mesophytes are represented by 17 (35.41%), xerophytes 18 (37.5%), mesoxerophytes 9 (18.75%), xeromesophytes 4 (8.33%) species.

3. In the mountain-xerophytic and steppe areas of Ordubad region, there are 26 types of woody plants belonging to the *Rosaceae* family, Xerophilic areal type-9, Caucasian areal type-9, Boreal areal type — 6, and 3 species of the Desert areal type. The areal type of 4 species is not known.

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