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TAXONOMIC SPECTRUM OF THE SPECIES BELONGING TO THE *Potentilla* L. GENUS OF THE ROSACEAE FAMILY IN THE NAKHCHIVAN FLORA

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ТАКСОНОМИЧЕСКИЙ СПЕКТР ВИДОВ РОДА *Potentilla* L. СЕМЕЙСТВА ROSACEAE ВО ФЛОРЕ НАХИЧЕВАНИ

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Abstract. The presented article provides information on the systematic composition of the species belonging to the *Potentilla* L. genus, which is spread in flora. During the comparative analysis of the collected herbarium materials and literature sources, it was found that the *Potentilla* genus of the Rosaceae family is represented by 17 species in the territory of Nakhchivan, and information about the current status of those species is reflected in the article. The article also studied the ecological groups, geographical elements, and altitude zones of species belonging to the genus *Potentilla* L. of the Rosaceae family.

Аннотация. В представленной статье приводятся сведения о систематическом составе видов рода *Potentilla* L., распространенного во флоре Нахичевани. В ходе сравнительного анализа собранных гербарных материалов и литературных источников было установлено, что род *Potentilla* семейства Rosaceae на территории Нахичевани представлен 17 видами, а также в статье отражены сведения о современном состоянии этих видов. В статье также изучены экологические группы, географические элементы и высотные пояса видов, относящихся к роду *Potentilla* L.

Keywords: taxonomic composition, genus, family, species.

Ключевые слова: таксономический состав, род, семейство, вид.

The Nakhchivan Autonomous Republic, which is an integral part of the Azerbaijan Republic, differs from other botanical and geographical regions with its natural resources. This richness was created and developed due to the combined effect of natural-historical, ecological and anthropogenic factors in the long-term evolutionary process. The rich xerophytic flora of Nakhchivan AR has historically developed in close genetic connection with the flora of the Mediterranean Sea, Front Asia and Iran. Thus, plant diversity in the area has been of great interest to research botanists and pharmacists since ancient times. In the flora of the autonomous republic, the basis of dicotyledonous plants starts from the relatively polymorphic Rosaceae family, and the species belonging to the family have a special role. Plants from the family of *Rosaceae* family plants are widespread in nature and include more than 3 thousand species. The species included in this family are mainly perennial grasses, shrubs and trees. Up to 195 wild species of 29 genera are found in Azerbaijan. There are 153 species belonging to 30 genera in the territory of Nakhchivan AR, and the genus *Potentilla* L. has a special place due to its richness of species. Also, among the



representatives of the family, there are many which have the signs of superiority along with the signs of primitiveness. Considering the above mentioned, it is considered important to conduct research in this direction.

Material and methodology of the research

In the study area, materials related to woody species of the Rosaceae family can be found in a number of literatures [2-4, 6, 12-18]. Species belonging to the genus *Potentilla* L. were studied as research material. "Flora of Azerbaijan", "Flora of Caucasus", "Plants of Azerbaijan" by A. M. Askerov. In determining and clarifying the names of the species belonging to the genus *Potentilla* L. such works were used. Recent taxonomic changes were made based on World Flora Online [1, 9; 10, 19].

Discussion and conclusion of the study

The members of the Rosaceae family consist of trees, shrubs and grasses. It is known that the species belonging to the family are considered as fruit, medicinal and ornamental plants. From this point of view, the herbaceous plants of the family are also important. As a result of the analysis of literature data and personal field research materials, we compiled the taxonomic spectrum of 17 species of the *Potentilla* L. genus, belonging to the *Potentilla* genus, spreading in the territory of Nakhchivan AR.

Familia: Rosaceae

Genus: *Potentilla* L.

- 1 (1) *Potentilla adenophylla* Boiss. & Hohen.
- 1 (2) *P. agrimonioides* M. Bieb.
- 1 (3) *P. anserina* L.
- 1 (4) *P. argaea* Boiss. & Balansa Boiss. & Bal.
- 1 (5) *P. argentea* L.
- 1 (6) *P. canescens* Bess.
- 1 (7) *P. crantzii* (Crantz) G. Beck ex Fritsch
- 1 (8) *P. cryptophila* Bornm.
- 1 (9) *P. gelida* C. A. Mey
- 1 (10) *P. lomakinii* Grossh.
- 1 (11) *P. obscura* Willd.
- 1 (12) *P. pedata* Willd. ex Hornem.
- 1 (13) *P. pimpinelloides* L.
- 1 (14) *P. recta* L.
- 1 (15) *P. reptans* L.
- 1 (16) *P. supina* L.
- 1 (17) *P. szovitsii* Th. Wolf

The species of the *Potentilla* L. genus are perennial, biennial or annual grasses. The studied species are found in various cultivated fields, meadows, forests, bushes, dry slopes in lowland and mountain regions. In the Republic, there are species with a wide range (straight-backed hawk, crane hawk, etc.), as well as rare species (like a hawk, bull hawk). Looking at the morphological structure, the species belonging to the genus have erect and spreading stems, three- or five-fingered or feathery leaves. The flowers are small, bigenual, single or gathered in a shield-broom-like flower group, and sometimes in an umbrella-like flower group. Calyx leaves and petals are usually 5, rarely 4, stamens vary from 10 to 30. It is characterized by the fact that its fruit is in the shape of a dry nut. Almost most of them are valuable medicinal plants. At the same time, there are many decorative and dyeing plants among the species.



Figure 1. *Potentilla obscura*

Based on paleobotanical materials found in the territory of the Nakhchivan Autonomous Republic, as well as the modern state of the flora, stationary observations, material analysis and determination, and comparative analysis of literature materials, the bioecological characteristics of the species of the genus were determined (Table).

Table

BIOECOLOGICAL CHARACTERISTICS OF SPECIES BELONGING TO THE GENUS *Potentilla*

<i>№</i>	<i>Species name</i>	<i>Geographical elements</i>	<i>Altitude belts</i>	<i>Ecological groups</i>
1.	<i>Potentilla adenophylla</i>	Front Asia	in the lower and mid-mountain belt	Xeromesophytes
2.	<i>P. agrimonioides</i>	Caucasus	subalpine and alpine zones	Mesophytes
3.	<i>P. anserina</i>	Holarctic	mid-mountain belt	Mesophytes
4.	<i>P. argaea</i>	Front Asia	subalpine and alpine zones	Mesophytes
5.	<i>P. argentea</i>	Western Palearctic	to the mid-mountain belt	Mesophytes
6.	<i>P. canescens</i>	Caucasus	to the mid-mountain belt	Mesoxerophytes
7.	<i>P. crantzii</i>	Holarctic	subalpine and alpine zones	Mesoxerophytes
8.	<i>P. cryptophila</i>	Iran	subalpine and alpine zones	Xeromesophytes
9.	<i>P. gelida</i>	Central Asia	alpine zones	Mesophytes
10.	<i>P. lomakinii</i>	North Atropatan	high mountain belt	Mesophytes
11.	<i>P. obscura</i>	Not known	to the mid-mountain belt	Mesoxerophytes
12.	<i>P. pedata</i>	Caucasus	to the mid-mountain belt	Mesoxerophytes
13.	<i>P. pimpinelloides</i>	North Atropatan	high mountain belt	Mesophytes
14.	<i>P. recta</i>	Western Holarctic	to the mid-mountain belt	Mesoxerophytes
15.	<i>P. reptans</i>	Western Palearctic	to the mid-mountain belt	Mesoxerophytes
16.	<i>P. supina</i>	Palearctic	in the lower and mid-mountain belt	Mesoxerophytes
17.	<i>P. szovitsii</i>	Atropatan	mid-mountain belt	Xerophytes

Recently, N. N. Portenier's system is used as a basis for geographic analysis in the Caucasus region. 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 [8].

Based on the herbarium materials we collected from the territory of the Nakhchivan Autonomous Republic, the examination of the herbarium funds of the Institute of Botany and Bioresources of the Nakhchivan Department of the AR ETN, and literature sources, it was determined that the species belonging to the genus *Potentilla* L. belong to different areal types, which allows us to determine the migration routes of the species to the area. Taking into account the above, the species belonging to the genus are grouped into 10 areal classes based on zonal and regional principles. As can be seen from the table, it is known that there are 3 species in the Caucasus areal class, 2 in the Western Palearctic, 2 in Front Asia, 2 in North Atropatan, 2 in Holarctic and 1 species in each of the other areal classes. The areal type of *Potentilla obscura* species is not known (Table 1.)

Y. S. Medvedyev first distributed the vegetation of the Caucasus by zones based on floristic principles in 1915 and determined the types of vegetation [7]. O. S. Grebennikov, A. A. Grossheim, A. G. Dolukhanov and Y. S. Medvedyev based the complex climatic conditions on the distribution of vegetation of the Caucasus in zones [5]. A. A. Grossheim indicated the plain, foothills, low highlands, middle highlands, high highlands, subalpine and alpine zones. However, A.S. Ibrahimov divided the distribution of the species distributed in the region by zones according to the division of A. A. Grossheim: plains (600-1000 m), foothills (1100-1300 m), low mountains (1400-1800 m), medium mountains (1800-2100 m), high mountain (2200-2800 m), subalpine (2900-3200 m), alpine (3200-3600 m), subnival (3600-3800 m), nival (3850-3906 m). The lower highlands cover areas up to 1200 m high. The plain areas of the Middle Araz valley belong to this zone. These plains are narrow in the southeastern part and widen to the northwestern part. The largest place is the Nakhchivan river basin. There are a number of difficulties in determining the exact boundaries of the species in the studied zones. In this regard, there are species that are recorded only in one zone, and some species are found in several zones. For example, the species *Potentilla adenophylla* and *P. supine* spread both in the lower mountain belt and in the middle mountain belt. The middle mountain belt covers areas of 1200-2400 m. The territory is divided by river valleys and dry river valleys. The area is located in a cold climate with dry summers. The foothills are drier. Species of the genus *Potentilla obscura*, *P. canescens*, *P. pedata* and *P. recta* are found in areas up to the mid-mountain belt, and species *P. anserine* and *P. szovitsii* are found in the mid-mountain belt. The high mountain belt is characterized by grassy soil and high vegetation, and its floristic composition is very diverse. The plants of this zone protect the mountain slopes from erosion and these slopes are used as summer pastures. *P. lomakinii* and *P. pimpinelloides* are species distributed in the high mountain belt.

One of the main features of the alpine zone is the absence of woody plants and the presence of wet and dry areas in the same area. Since the plants of this area, unlike the plants of other zones, are adapted to unfavorable conditions (more rarefaction of the air, stronger evaporation despite less precipitation, stronger lighting, frequent and sharp changes of heat and cold), these plants, under suitable conditions, have low height, strong branching, on the ground it is very normal to develop adaptations such as strong compaction, small leaves, hairiness of plants, hardness. Alpine plants are mainly perennial herbs and shrubs. *P. agrimonioides*, *P. argaea*, *P. crantzii* and *P. cryptophila* are species spread in subalpine and alpine zones. Important abiotic factors affecting plant growth and development are moisture, light, soil conditions, and temperature. Thus, indicators of abiotic factors are not constant, and plants have gained a wide range of adaptation in relation to them. Nevertheless, in most cases of differentiation of ecological groups, they are based on the relationship of this or that type of plant to the degree of soil moisture.

Since the external environmental conditions are constantly changing, water is important as an

ecological factor in the spreading of plants in large areas under different climatic conditions and in the formation of different groups. Thus, such changes affect each species in different ways, and they themselves can change the environment. The moisture requirement of organisms depends on the seasons and the place of residence. Therefore, they have evolved physiological adaptations to maintain the amount of water in the body at a constant level. Depending on their water requirements, plants are divided into several different ecological groups. Spreading of the species belonging to the *Potentilla* L. genus of the *Rosaceae* Juss. family of the Nakhchivan Autonomous Republic by ecological groups was carried out according to Shennikov's classification system [11].

Mesophytes occupy an intermediate position between hygrophytes and xerophytes in terms of their relation to moisture and their requirements. Mesophytic plants are mainly forest, shrub, subalpine, alpine plants and are more common. These plants differ not only in terms of the number of species, but also in terms of various ecological characteristics under the influence of various factors under suitable conditions under the influence of the natural nutritional environment. Mesophytic species include *P. agrimonioides*, *P. lomakinii*, *P. pimpinelloides*, etc. types can be shown.

Mesoxerophytes are more humid than xerophytes and drier than mesophytes. These species are mostly found in forest clearings, forest thickets, north-west and north-south slopes of mountain slopes. Mesoxerophytes are 7 species and make up 41% of the total species. These plants include *P. canescens*, *P. recta*, *P. reptans*, *P. supine*, etc. includes such species (Figure 2).



Figure 2. *Potentilla recta*

Xeromesophytes occupy an intermediate position between xerophytes and mesoxerophytes. According to their spreading, these plants come after mesophytes and mesoxerophytes. They are mostly found in forest clearings and sparse scrub areas, and especially in the north-western and south-western slopes of the mountain slopes. Xeromesophytes are 2 types and make up 12% of the total plants. *P. adenophylla* and *P. cryptophila* are xeromesophyte species of *Potentilla* L. genus. Xerophytic species include plants that are common in dry areas. Xerophytes are mainly found on southern exposure slopes that are hotter and less humid. For xerophytes, diversity in their structures against moisture deficiency is important. The genus *P. szovitsii* is a xerophytic plant (Figure 3). As can be seen from the picture, mesoxerophytes and mesophytes dominate (represented by 7 species each) and 41%, xeromesophyte species represent 12%, and xerophyte species represent 1 species, among the species belonging to the *Potentilla* L. genus.

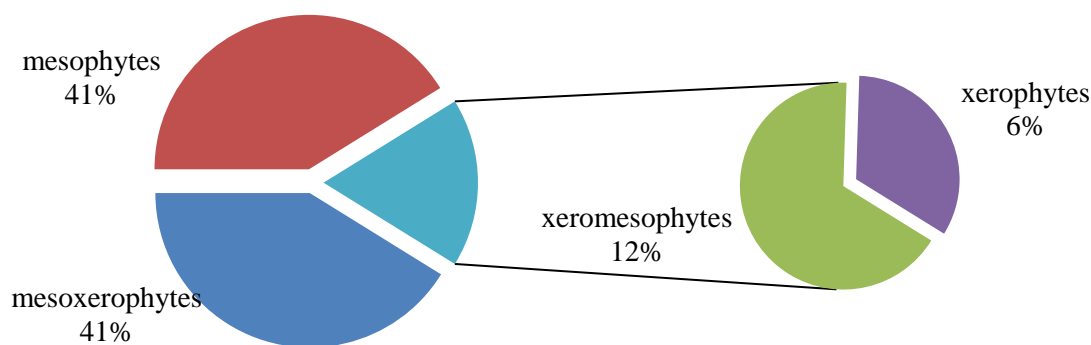


Figure 3. Distribution of species belonging to the genus *Potentilla* L. by ecological groups

Conclusions

1. As a result of the conducted research, the systematic composition of the species belonging to the genus *Potentilla* L. of the genus *Potentilla* in the Nakhchivan Autonomous Republic flora was studied and it was known that 17 species of the genus are found in the study area.

2. On the basis of zonal and regional principles, the species belonging to the genus *Potentilla* were organized into 10 areal classes, and it was known that 3 species were inhabited by the Caucasian areal class, 2 by the Western Palearctic, 2 by Front Asia, and 1 species by each of the other areal classes. The areal type of *Potentilla obscura* species is not known. According to their ecological groups, mesoxerophytes are represented by 7 species, mesophytes by 7 species, xeromesophytes by 2 species, and xerophytes by 1 species. According to the analysis of altitude zones, it was found that the species belonging to the genus are also found in the alpine zone, starting from the lower mountain zone.

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