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Current Status of Senopopulations of Scutellaria Comosa Juz (Lamiaceae) in the Fergana Valley

[1]Akbarova Mukhayo Khusanovna, [2]Nabijonova Gulshoda Farhojon kyzy, [2]Zhuraev Zukhuridin Nazhmidin ogli

[1]Senior Lecturer, Fergana State University, Uzbekistan
E-mail: muhayyo-akbarova@mail.ru
[2]Students, Fergana State University, Uzbekistan

Abstract: *Ontomorphogenesis and the ontogenetic structure of cenopopulations of Scutellaria comosa have been studied under natural conditions. A brief ecological and phytocenotic characteristic of its habitats is given. The life form of the species is a vegetatively immobile aeroxyl sympodially growing shrub. Morphogenesis phases are described. The shoot structure of an adult is represented by a system of branched composite skeletal axes (an architectural unit) formed by four types of partially dying perennial shoots. Ontogenesis of S. comosa is simple, incomplete, senile individuals are absent. Left-sided, centered, and right-sided ontogenetic spectra of coenopopulations were revealed. Their diversity in different ecological and coenotic conditions is determined by the change in the rate of development of individuals and the frequency of seed renewal.*

Keywords: morphogenesis, coenopopulation, coenotics, ontogenetic spectrum, senyl, ex situ, immature, generative, ontogenesis.

Introduction

In recent years, there has been a negative impact of transformation of plants in hillside regions on the characteristics of the organism and population of senopopulations. Species of the genus Scutellaria, distributed in the Fergana Valley, are no exception. The scientific results obtained by assessing the current state of senopopulations of Scutellaria species distributed in the Fergana Valley allow to identify some patterns associated with changes in vegetation. Therefore, one of the most pressing issues today is the assessment of the current state of senopopulations of Scutellaria species in the Fergana Valley, the development of measures for their protection and the creation of a living collection in ex-situ conditions. All over the world, we can see that there is a lot of research on new species, chemical composition, morphology, and ontogeny of species among the research on the species over the last 10 years. However, there is less research on the geography of the species, its natural resources, and the current state of its senopopulations.

New species for science are being introduced more than the flora of Turkey, Iran and China. The main reasons for this are the high diversity of species in these countries, as well as the use of modern methods. Scutellaria ketenoglu M. Cicek & Yaprak, Scutellaria anatolica M. Cicek & O. Ketenoglu [7] for science from Turkish flora in 2011, Feut Zhao and other scientists in 2017 , Scutellaria wuana C.L. and Xiang & F. Zhao from Sichuan province of China. [11], and in 2017, K. Safikhani and other scientists conducted a complex (phylogenetic, morphological, molecular, and systematic) analysis of the Scutellaria multicaulis Boiss species distributed in the Iranian flora. Scutellaria arakensis Jamzad & Safikhani, Scutellaria multicaulis Boiss. subsp. multicaulis var. gandomanensis introduced species such as Jamzad & Safikhani to science as a new species [9].

Scutelaria comosa Juz. (Lamiaceae) is an endemic to mountainous Central Asia, its range is the Tien Shan (mountains of the middle reaches of the Naryn River, Susamir, Uzun-Akhmat, Chatkal, Qurama, Fergana ridges), Pamir-Alay (Turkestan, Turkestan, Alay ridges, Alay valley, Zarafshan, Gissar, Qorategin, Peter I, Darvoz, Bobotag ridges, low mountains of Southern Tajikistan), are widespread along the Surkhandarya river valley. [4]

Although the research revealed that the life form of S. comosa is a semi-shrub, the formation and growth of twigs, branches, the organizational structure of adult bushes and their morphogenesis are not sufficiently studied, morphological and population adaptation to their growth and development in different conditions mechanisms have not been identified. The purpose of this study was to study the morphogenesis and ontogenetic structure of S. comosa senopopulation.

Object and methods of research

In the Fergana valley S.comosa are common in areas such as in the north-west of the Qurama mountain range, in the Chatkal mountain, in the north-east of the Fergana ridge, in the southern part of the Turkestan, Alay mountain ranges, in the foothills where they are collected. [12] Among the shrubs are Berberis oblonga, Caragana alaica, Rosa fedtschenkoana, R. maracandica, R. cocanica, Lonicera microphylla, Spiraea hupericifolia. Perovskia scrophulariaefolia, P. angustifolia Artemisia diffusa, Thymus zeravschanica, T. diminuthus, Ziziphora pamiroalaica, Z. brevicalyx are more widespread in the meadow-shrub layer. The species cover rate in the phytocenosis is 20-26 species. Herbs are dominated by Achillea bibersteini, A. millefolium,

Agropyron trichophorum, Stachys betonicaeflora, Nepeta pannonica. On steep rocks there are mature shrubs Caragana, Spirea in the presence of phytocenosis saturation of closely related species, in the grassy layer the predominance of Stipa, Festuca, Artemisia and other species.

SP1.1- senopopulation The hills around the village of Damkul, Fergana district, Fergana region, were separated from the southern rocky-gravel slope by various grass-green-grassland communities. N 40 ° 31 ′ 39.67 ″; E 71 ° 80 ′ 83.53 ″, h-685m. The rate of projective coverage in senopopulation is 65-70%. The number of species in the plant community was 38.

SP2 - there are 21 species of ephemeral-wormwood plants in the hills around Zilol sanatorium, Chimyon village, Fergana district, Fergana region. N40 ° 28 ′ 02.88 ″; E71 ° 52 ′ 98.51 ″, h-580m. The degree of projective coverage in senopopulation is 35-40%.

SP3 - Shohimardon village, Fergana district, Shohimardonsoy basin, northern mountain range, various herbaceous-haprili-wormwood plant communities. N 39 ° 96′5395; E 71 ° 75′9803, h-1134 m. Vegetation coverage is 70-80%. The team consisted of 42 members.

SP4 - North mountain slopes of Aksu river, Yordon village, Fergana district. N 39 ° 96 ′ 57.85 ″; E 71 ° 76 ′ 00.03 ″, h-1743. There are 37 species of various herbaceous-steppe plant communities. Vegetation coverage is 65-70%.

SP5 - Sokh district, Sokh river basin, Demursat mountain slopes were separated from Shirachli-Marmarakli-Shuvakzor community. N 39 ° 56 '07.1 "; E 71 ° 10' 59.3", h- 1886. The rate of projective coverage in senopopulation is 65%. The round robin composition of the team was 25.

The species is listed in *the Central Asian Plant Definition [28] and the International Plants Names Index (www.ipni.org)* [6] and The Plant List (www.theplantname.com) [10]. The life form of the species was described using IG Serebryakov's ecological and morphological classification of life forms. [22,23]. In the study of morphogenesis, insights into the phases of morphogenesis were approached (Senopopulations, 1976; Serebryakova, 1980; Savin, Cheremushkin, 2015). [29,24,21].

The study of the structure of adult plant bushes and branches is based on the concepts and ideas about woody plants, as well as architectural unity, developed by I.G.Serebryakov (1962), M.G.Mazurenko, A.P.Khokhryakova (1977) (Barthelemy, Caraglio, 2007).). [23,18,2]. In the process of studying the development of plants, the concept of discrete description of ontogeny was adopted (Rabotnov, 1950, Uranov, 1975). [20,26].

The ontogenetic structure of senopopulations was studied according to the generally accepted method (Senopopulations, 1976). [29]. 1-5. Senopopulations were studied in the second decade of May, and 6-10 SPs in the second half of May. The ontogenetic spectrum was described on the basis of reports from 16–64 sites with a volume of 10 m^2, regularly placed in 10 m wide transects. The number of plants analyzed in the studied populations ranged from 250 to 420 bushes. SP type is given according to the classification of A.A.Uranov and O.B.Smirnov (1969) and L.A.Zhivotovsky's classification of "delta-omega". [27]. Ecological density was determined by the number of plants per unit area (Odum, 1986). [19] The absolute age of plants is determined by their annual rings. [15,16]. The rate of recovery of the species was determined by the method proposed by A.R.Ishbirdin, the rate of aging of the senopopulation by N.V.Glotov.

Discussion and results

In recent years, we can see that the amount of research conducted by chemists working in our country to study the chemical composition of the species Scutellaria L. in the flora of Uzbekistan is growing. In particular, the research conducted by A.M. Karimov [17] and G.U.Siddikov [25] is unique. During their research, scientists have studied some species of Scutellaria L. distributed in the flora of Uzbekistan (S. sordifrons Juz., S. phyllostachya Juz., S. comosa Juz., S. haematochlora Juz., S. immaculata Nevski ex Juz., S. ocellata Juz.) were the first to isolate new flavonoids, glycosides, and aglycones. The biological activity of these substances, such as paracetamol and heliotrin alkaloids, has been shown to have anti-inflammatory and anti-toxic, sedative, and antihypertensive effects, as well as the technology of dyeing half-wool, wool, silk and other fabrics are proposed (Karimov (2017) [17] and G.U. Siddikov (2018) [25].

To study the natural resources of the species that are the object of this research, to assess the current state of senopopulations and to develop recommendations for the preservation of gene pool in order to ensure future sustainability, to create maps of species distribution and vitality, to preserve natural populations of protected species Research work on "*Biological characteristics and natural resources of Scutellaria L. (Lamiaceae) species distributed in the Fergana Valley"* is being carried out

in order to develop measures for their survival. Field research in the Fergana Valley, the study of samples stored in large collections, and a critical analysis of the data in the available literature revealed that the series includes 12 species in the Uzbek part of the Fergana Valley. However, that number is likely to change as field research continues. There are currently more than 350 species of the Scutellaria L. family on Earth (Paton, 1990) [8]. The genus is widespread in the foothills, foothills and mountainous regions of Eurasia, where species diversity is high compared to other regions, especially Iran-Turan, Central Asia and Afghanistan, where the Mediterranean is one of the centers of origin of the species. the eastern part of the sea is recognized as the second center (Safikhani, 2017) [9].

In the flora of the former union of species of the genus (1954) into 4 sections:

- *Euscutellaria Brig.,*
- *Cystaspis Juz.,*
- *Anaspis (Roching) Juz.,*
- *Apeltanthus (Nevsky) Juz.*

148 species were recorded. [30,31]. There are 84 species of the genus in Central Asia (Abdullaeva, 1987, 1991) [12].

The ontogenetic structure of Scutellaria comosa

Scutellaria comosa Brig. ontogeny is simple, incomplete, there is no senile period. Before the generative period, the plant develops in the form of a bush, and only after the change of the growth system of the branches begins to form a semi-bush structure in the young generative period. Plant ontogeny is characterized by rapid growth of plants before the generative period, long duration of the middle-aged generative period and rapid death in the postgenerative period, which are the absence of senile plants. [13]

The ontogenetic structure of the senopopulations studied during the study was different. The average ecological density in the 1st senopopulation (SP-1) located on rocks, boulders and large rocks was 9.6 m^2.

The mean value of the ontogenetic structure of SP-1 is in the left-spectrum of the two peaks, with the first maximum peak corresponding to the young generative stage and the second peak to the juvenile stage. The presence of up to 17.9% of juvenile plants in the senopopulation is associated with the growth of S. comosa among large boulders, which protects young plants from drying out, damage to grass, and livestock grazing. It also reduces the impact of various natural processes of plant elimination, which has a weak root and stem system. The high variability in the rate of development of plants in the young generative period (2 to 6 years) allowed them to accumulate in the SP and form at the maximum peak in the ontogenetic spectrum. The share of plants in the population of the middle and old generative period is equal (12%). Plants in the post-generative period became extinct due to constant grazing of livestock. According to the Delta-omega classification, SP belongs to the young type (Δ=0,26; ω=0,56).

In SP-2, too, the left-handed ontogenetic spectrum was single-celled, and the peak (or peak) was found to correspond to virginil-aged plants (39.6%). Some of the plants growing in semi-rigid rock formations with a substrate of 70-80% fine and coarse gravel with a slope of 30 ^{o}, become virgin in the first year, because in the middle of summer the primary branch lies down and lateral buds in its plagiotropic part develop, leading to the formation of a bush. Sufficient development of the root system in plants and the prolongation of the virginil period for 2-3 years ensures their accumulation in the senopopulation. [14]. However, as a result of burying in the substrate and the natural extinction of virgin plants, the share of plants in the young generative period is reduced by half (21.1%). The ecological density is much higher and is 20.5 m^2. Mature senopopulation according to the Delta-omega classification (Δ = 0.31; ω = 0.65).

The cone between the SP-3 high hills was studied. The ecological density of S. comosa bushes is also high here - 20.2 m^2. Plants are unevenly formed in groups on the slopes of watercourses. The ontogenetic spectrum of SP is right-sided, with a maximum of 38.8% of older generative plants. The absence of juvenile and immature plants, as well as the low proportion of virginil plants (1.8%) is due to the weakening of their root system and their washing away during spring floods. When plants have a strong root system, they are attached to the substrate and do not suffer from mechanical death. In such a habitat, the life expectancy of plants is up to 24 years. Plants live for 3-4 years in the young generative period, 5-8 years in the middle generative period, and 3-6 years in the old generative period. Prolongation of life expectancy leads to the accumulation of old generative plants in the SP, associated with the strong formation of perennial stems, which gradually die in the inactive substrate. Despite the

fact that the life expectancy of plants in the subsenyl period is extended to three years, their number is significantly reduced due to the weakness of the stem and root systems (8.5%), so the aging SP is considered (Δ = 0.57; ω = 0.81). .

SP-4 is located in the Kyzyltag-Ala rocky-gravelly rock formations along the Aksu River. SP-4 is located downstream. Plant density was very low in SP-4 and SP-5 and was 3.0 and 6.2 m^2.

SP-5 Sokh district Sokh river basin is located on the slopes of Demursat mountain. In both SPs, the concentrated spectrum is formed with a maximum in middle-aged generative plants. (In SP 4 and 5 - 41.7 and 65.5%, respectively). Low proportion (or indicators) in the SP of juvenile (0.7-0.8%) and immature (1.0-1.2%) plants in the short-term virginil (9.1-14.9%)) and young generative (13.6-26.1%), as well as the burial and washing of plants due to river flooding is determined by changes in the substrate. According to the Delta-omega classification, both SPs are mature: for SP-4: 4 Δ = 0,45 va ω = 0,83; for SP-5 : 5 Δ = 0,41 va ω = 0,86.

Characteristics of the studied senopopulations Scutellaria comosa

Table 1

№ SP	Areas of Senopopulations		Plant communities and dominant species	Team type-composition	Level of Vegetation Coverage%	Soil Description
	Geographically coordinates	*Geographical and / or administrative names*				
1	**N 40°31′ 39.67″; E 71° 80′ 83.53″ h-685 m.**	Hills around Damkol village of Fergana district of Fergana region	Various grass-green-wormwood associations	38	65-70	rocky soil
2	**N40°28′ 02.88″; E71° 52′ 98.51″, h-580 m.**	Hills around Zilol sanatorium on the outskirts of Chimgan village, Fergana district, Fergana region	Kovul-ephemeral-shuvak association	21	35-40	gravelly
3	**N 39°96′5395 E 71°75′9803 h-1134 m.**	Shohimardon village of Fergana district Shokhimardonsoy basin northern mountain ranges	all kinds of weeds and grasses	42	70-80	gravelly soil, rocky
4	**N 39° 96′ 57.85″ E 71° 76′ 00.03″ h-1743 m.**	Northern slopes of Aksu river, Yordon village, Fergana district	all kinds of grassy meadows	37	65-70	gravelly, dark gray soil

5	**N 39°56' 07.1"** **E 71°10' 59.3"** **h- 1886 m.**	Sokh district Sokh river basin Demursat mountain slopes	succulent - marmarak herbaceous plant	25	65	gravel and large rocks

List of plants distributed in the senopopulations of Scutellaria comosa

Table 2

№	Plant name	Life form	Abundance of species, (SP), %				
			1	2	3	4	5
1.	*Astragalus villosissimus Bunge*	Bush	+	-	+	+	+
2.	*Berberis oblonga Schneider*	Bush	-	-	+	+	2
3.	*Cerasus verrucosa (Franch.) Nevski*	Bush	-	-	+	2	2
4.	*Ephedra equisetina Bunge*	Bush	+	+	+	+	+
5.	*Halimodendron halodendron (Pall.) Voss*	Bush	-	-	+	+	1
6.	*Lonicera microphylla Willd. ex Schult.*	Bush	-	-	+	+	2
7.	*Lonicera nummulariifolia Jaub. & Spach*	Bush	-	-	-	+	+
8.	*Lonicera paradoxa Pojark.*	Bush	-	-	-	+	+
9.	*Rhamnus sintenisii Rech.fil.*	Bush	-	-	-	1	1
10.	*Rosa fedtschenkoana Regel*	Bush	-	-	-	1	2
11.	*Rosa kokanica (Regel) Regel ex Juz.*	Bush	-	-	-	2	4
12.	*Salsola arbuscula Pall.*	Bush	1	4	+	+	-
13.	*Spiraea hypericifolia L.*	Bush	-	-	-	1	4
14.	*Tamarix androssowii Litw.*	Bush	-	-	-	+	+
15.	*Tamarix hispida Willd.*	Bush	-	-	-	+	+
16.	*Acantholimon katrantavicum Lincz.*	Semi-shrub	-	+	+	+	+
17.	*Acantholimon schachimardanicum Lincz.*	Semi-shrub	-	-	-	+	+
18.	*Artemisia diffusa Krasch. ex Poljakov*	Semi-shrub	+	-	-	+	+
19.	*Artemisia ferganensis Krasch. ex Poljakov*	Semi-shrub	6	6	6	4	6
20.	*Artemisia sogdiana Bunge*	Semi-shrub	+	+	+	2	2
21.	*Artemisia tenuisecta Nevski*	Semi-shrub	+	+	+	+	+
22.	*Kochia prostrata (L.) Schrad.*	Semi-shrub	6	1	-	-	-

23.	*Lagochilus hirsutissimus Vved.*	Semi-shrub	-	-	-	+	+
24.	*Lagochilus pubescens Vved.*	Semi-shrub	-	-	-	+	+
25.	*Perovskia angustifolia Kudrjasch.*	Semi-shrub	-	-	+	2	+
26.	*Perovskia scrophulariefolia Bunge*	Semi-shrub	-	+	+	12	6
27.	*Salsola drobovii Botsch.*	Semi-shrub	1	1	-	-	-
28.	*Salvia deserta Schangin*	Semi-shrub	-	-	+	6	10
29.	*Ziziphora clinopodioides Lam.*	Semi-shrub	2	+	-	-	-
30.	*Salvia margaritae Botsch.*	Semi-shrub	-	-	+	-	-
31.	*Scutellaria adenostegia Briq.*	Half-shrub	2	2	2	2	4
32.	*Scutellaria comosa Juz.*	Half-shrub	8	4	2	2	2
33.	*Scutellaria immaculata Nevski ex Juz.*	Half-shrub	-	-	4	5	2
34.	*Acanthophyllum pungens (Bunge) Boiss.*	Perennial	-	-	+	+	+
35.	*Achillea biebersteinii Afan.*	Perennial	+	+	+	1	1
36.	*Achillea filipendulina Lam.*	Perennial	-	+	+	+	+
37.	*Achillea millefolium L.*	Perennial	-	-	+	+	+
38.	*Acroptilon repens (L.) DC.*	Perennial	+	+	+	+	+
39.	*Agropyron trichophorum (Link) K. Richt.*	Perennial	+	+	+	+	+
40.	*Alhagi kirghisorum Schrenk ex Fisch. & C. A. Mey.*	Perennial	+	+	-	-	-
41.	*Alhagi pseudalhagi (M. Bieb.) Desv.*	Perennial	+	+	+	+	+
42.	*Allium alaicum Vved*	Perennial	-	-	-	+	+
43.	*Allium backhousianum Regel*	Perennial	-	-	-	+	+
44.	*Allium schachimardanicum Vved.*	Perennial	-	-	+	+	+
45.	*Allium sochense R.M. Fritsch & U. Turakulov*	Perennial	-	-	-	+	+
46.	*Alopecurus arundinaceus Poir.*	Perennial	1	+	+	-	-
47.	*Alopecurus pratensis L.*	Perennial	+	+	+	+	+
48.	*Althaea cannabina L*	Perennial	+	+	-	+	+
49.	*Althaea officinalis L.*	Perennial	-	-	+	+	+
50.	*Anemone gortschakowii Kar. & Kir.*	Perennial	-	-	+	+	+
51.	*Arctium leiospermum Juz. & Ye.V. Serg.*	Perennial	+	+	+	+	+

52.	*Artemisia absinthium L.*	Perennial	+	+	+	+	+
53.	*Astragalus dianthoides Boriss.*	Perennial	-	-	-	+	+
54.	*Astragalus pseudoscoparius Gontsch*	Perennial	-	-	+	+	+
55.	*Botriochloa ischaemum (L.) H. Keng*	Perennial	+	-	-	-	-
56.	*Capparis spinoza* L.	Perennial	2	6	1	+	1
57.	*Carex pachystylis J. Gay*	Perennial	+	+	+	+	+
58.	*Cichorium intybus L.*	Perennial	+	+	+	+	+
59.	*Convolvulus hamadae (Vved.) Petrov*	Perennial	+	+	+	-	+
60.	*Convolvulus lineatus L*	Perennial	-	-	+	+	+
61.	*Convolvulus pseudocantabrica Schrenk*	Perennial	+	+	-	-	-
62.	*Cousinia alaica Juz. ex Tscherneva*	Perennial	-	-	-	+	+
63.	*Cousinia caespitosa C. Winkl.*	Perennial	-	-	+	+	+
64.	*Cousinia ferghanensis Bornm.*	Perennial	-	-	+	+	+
65.	*Cousinia kokanica Regel & Schmalh.*	Perennial	+	+	+	+	+
66.	*Cousinia microcarpa Boiss.*	Perennial	-	-	-	+	+
67.	*Cousinia platylepis Fisch., C.A. Mey. & Avé-Lall.*	Perennial	-	-	-	+	+
68.	*Cousinia pungens Juz.*	Perennial	-	-	+	+	+
69.	*Cynodon dactylon (L.) Pers.*	Perennial	+	+	+	+	+
70.	*Delphinium knorringianum B.Fedtsch*	Perennial	-	-	+	+	+
71.	*Delphinium semibarbatum Bien. ex Boiss.*	Perennial	+	+	+	+	+
72.	Echinops dasyanthus Regel & Schmalh.	Perennial	+	+	+	+	+
73.	*Eremurus ferganicus Vved.*	Perennial	-	-	-	1	4
74.	*Eremurus sogdianus (Regel) Franch.*	Perennial	-	-	-	4	6
75.	*Ferula foetida (Bunge) Regel*	Perennial	+	+	+	1	+
76.	*Ferula kokanica Regel & Schmalh.*	Perennial	-	-	+	+	+
77.	*Ferula lipskyi Korovin*	Perennial	-	-	-	+	+
78.	*Fritillaria ferganensis Losinsk.*	Perennial	-	-	+	+	+
79.	*Gagae circumplexa Vved.*	Perennial	+	+	+	+	+

80.	*Gagea juniperina Levichev ined.*	Perennial	+	+	+	+	+
81.	*Gagea schachimardanica Levichev*	Perennial	-	-	+	+	+
82.	*Haplophyllum acutifolium (DC.) G. Don*	Perennial	10	5	-	+	+
83.	*Haplophyllum ferganicum Vved.*	Perennial	8	2	+	-	-
84.	*Hypericum perforatum L.*	Perennial	-	-	-	2	1
85.	*Hypericum scabrum L.*	Perennial	-	-	-	1	1
86.	*Iris oxypetala Bunge*	Perennial	-	-	+	+	+
87.	*Iris songarica Schrenk*	Perennial	-	-	+	+	+
88.	*Ixiolirion ferganicum Kovalevsk. & Vved.*	Perennial	+	-	+	+	+
89.	*Ixiolirion tataricum (Pall.) Schult. & Schult. f.*	Perennial	1	+	+	+	+
90.	*Jurinea ferganica (Iljin) Iljin*	Perennial	+	+	+	+	+
91.	*Jurinea schachimardanica Iljin*	Perennial	-	-	+	+	+
92.	*Jurinea winklerii Iljin*	Perennial	+	+-	+	-	+
93.	*Limonium ferganense IIkonn.-Gal.*	Perennial	+	+	-	+	+
94.	*Marrubium anisodon Koch*	Perennial	+	+	+	+	+
95.	*Oxytropis schachimardanica Filim.*	Perennial	-	-	-	2	1
96.	*Phlomoides alaica (Knorring) Adylov, Kamelin & Makhm.*	Perennial	-	-	+	+	+
97.	*Phlomoides kirghisorum Adylov, Kamelin & Makhm*	Perennial	-	-	+	+	+
98.	*Phlomoides speciosa (Rupr.) Adylov, Kamelin & Makhm.*	Perennial	+	+	+	+	+
99.	*Plantago lanceolata L.*	Perennial	+	-	+	+	+
100.	*Plantago major L.*	Perennial	+	-	+	+	+
101.	*Poa bulbosa L.*	Perennial	+	+	+	+	+
102.	*Rhinopetalum stenanterum Regel*	Perennial	-	+	+	-	-
103.	*Rindera holochiton Popov*	Perennial	-	-	+	+	+
104.	Salvia sclarea L.	Perennial	-	-	+	+	+
105.	Salvia virgata Jacq.	Perennial	-	-	-	+	+
106.	*Scorzonera songorica Lipsch. & Vassilcz.Krasch & Lipsch.*	Perennial	+	-	+	-	-

107.	Stachys betonicaeflora Rupr.	Perennial	+	+	+	+	+
108.	*Trichodesma incanum* (Bunge) A.DC	Perennial	+	+	+	+	+
109.	*Tulipa ferganica Vved.*	Perennial	-	-	+	+	+
110.	*Artemisia annua L.*	Annual	+	+	+	+	+
111.	*Artemisia scoparia Waldst. & Kitag.*	Annual	+	+	+	+	+
112.	*Ceratocarpus utriculosus Bluket ex Krylov*	Annual	+	-	-	-	-
113.	*Ceratocephala testiculata (Crantz) Bess.*	Annual	+	+	-	-	-
114.	*Delphinium barbatum Bunge.*	Annual	-	-	-	+	+
115.	*Delphinium biternatum Huth*	Annual	-	-	+	+	+
116.	*Delphinium knorringianum B.Fedtsch*	Annual	-	-	+	+	+
117.	*Echinops knorringianus Iljin*	Annual	-	-	+	+	+
118.	*Eremopyrum bonaepartis (Spreng.) Nevski*	Annual	-	-	-	-	-
119.	*Eremopyrum distans (Koch) Nevski*	Annual	+	-	-	+	-
120.	*Erodium cicutarium (L.) L'Her.*	Annual	+	+	+	+	+
121.	*Erodium ciconium (Jusl.) L'Her.*	Annual			+	-	-
122.	*Glaucium corniculatum (L.) Curtis*	Annual	+	+	+	+	+
123.	*Onobrychis pulchella Schrenk*	Annual	+	-	+	+	+
124.	*Papaver pavoninum C.A. Mey.*	Annual	+	-	+	+	+
125.	*Roemeria hybrida (L.) DC.*	Annual	+	+	+	+	+
126.	*Roemeria refracta DC.*	Annual	+	+	+	+	+
127.	*Salsola iberica Sennen & Pau*	Annual	+	+	-	-	+
128.	*Salsola turkestanica Litv.*	Annual	-	-	+	-	-
129.	*Scandix pecten-Veneris* L	Annual	+	+	-	-	-
130.	*Strigosella turkestanica (Litv.) Botsch.*	Annual	-	-	+	+	+
131.	*Ziziphora tenuior L.*	Annual	+	+	+	-	-

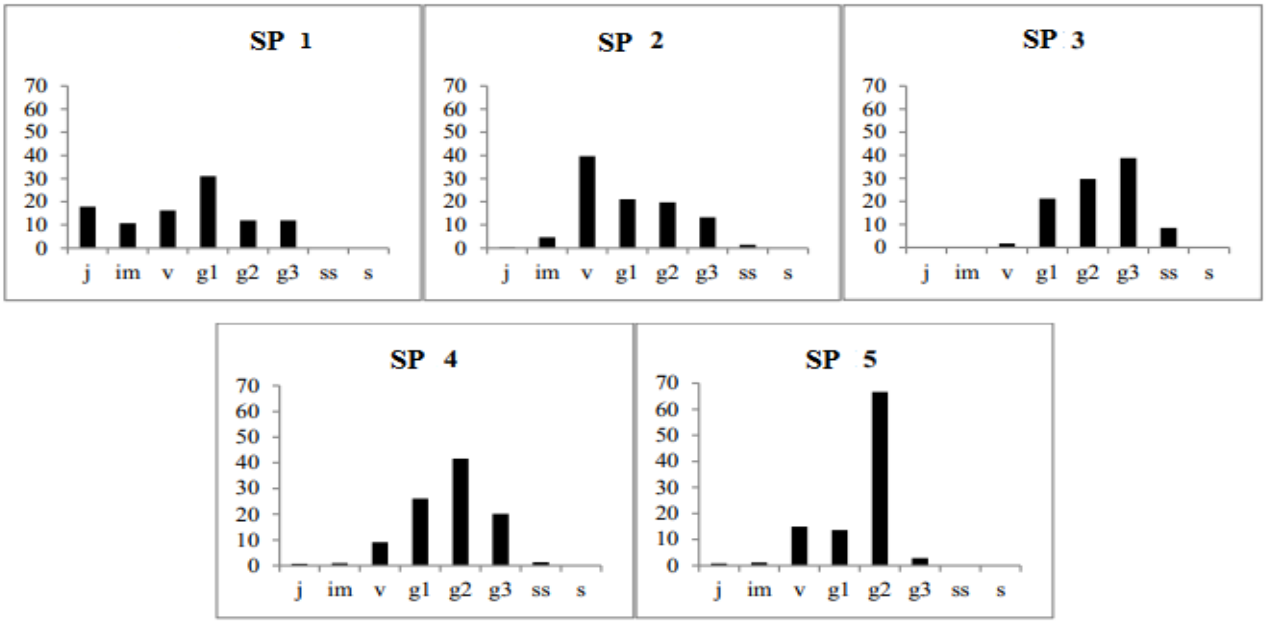
Conclusions

Table 3

№ SP	Ontogenetic state							Demographic indicators			SP type according to Delta-Omega classification
	j	im	v	g_1	g_2	g_3	ss	R_{ekol}	Δ	ω	
1	17,9	10,7	16,3	31,1	12	12	0	9,6	0,26	0,56	Young
2	0,2	4,7	39,6	21,1	19,7	13.3	1,4	20,5	0,31	0,65	Maturing
3	0	0	1,8	21,2	29,7	38,8	8,5	20,2	0,57	0,81	maturing
4	0,7	1	9,1	26,1	41,6	20.2	1,3	3	0,45	0,83	Mature
5	0,8	1,2	14,9	13,6	66,6	2.9	0	6,2	0,41	0,86	Mature

Left – sided ontogenetic spectrum of Scutellaria comosa

Picture 1



The study of the ontogenesis of Scutellaria comosa spread in the Fergana Valley revealed similarities and differences in plant morphogenesis in different ecologo-senotic conditions. In all living environments, they undergo the same phases of morphogenesis as each other: the initial rod-branched, the initial rod-the initial bush. Until the generative period of vegetation, parts of onground branches develop as shrubs without destruction. This is facilitated by the rapid development of plants before the generative period and the anisotropy of branches. The structure of the adult plant Woody branched branches in the structure is caved in the state of the completed branched base-core-axis system, which in 2-3 years grows monopodially and partially perishes. The multi-variability of ontogenesis and the feature of perennial body foundation construction of various types of branches serve as a morphological step to the germination of the plant species under different conditions.

Thus, the studied cenopulations of the Scutellaria comosa Juz. were normal, incomplete and in different living conditions formed two types of spectrum: the centralized and the left-sided type. The peaks of the left-sided ontogenetic spectrum at different ages are determined by the moisture level of the substrate. And the centralized spectrum was formed due to the high rate of vegetative reproduction in the stony substrate of the plant community.

For the regions under study, the instability of precipitation in the summer period affects the number of juvenile and immature plants in the senopopoly. The formation of several types of ontogenetic spectra is associated with changes in the process of plant development in different ecological-senotic conditions.

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