

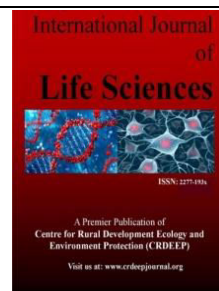
Vol. 8. No. 3. 2019.

©Copyright by CRDEEP Journals. All Rights Reserved.

Contents available at:

www.crdeepjournal.org

International Journal of Life Sciences (ISSN: 2277-193x) SJIF: 5.79



Full Length Research Paper

The diversity of species and growth development of genus *Galanthus* in the South Colchis

Makaradze E¹, Varshanidze N², Mepharishvili G³, Diasamidze I⁴, Shainidze G⁵.

¹PhD Student, Batumi Shota Rustaveli state University, Georgia.

² Professor, Batumi Shota Rustaveli State University, Georgia.

³ Researcher Phitopathology and Biodiversity Institute, BSU, Georgia.

⁴ Assistant Professor, BSU, Georgia.

⁵ Geography Department, BSU, Georgia.

ARTICLE INFORMATION

Corresponding Author:
Diasamidze I

Article history:

Received: 05-06-2019

Revised: 08-06-2019

Accepted: 10-06-2019

Published: 13-06-2019

Key words:

Galanthus, population,
endemic, bioecology.

ABSTRACT

The work deals with the description, distribution, GPS data, bioecology, the growth development and dynamics of population of three species of the genus *Galanthus*, the family of *Amarilidaceae*. *Galanthus woronowii* Losinsk, *G. rizehensis* stern., *G. Krasnovii khokhr*, *G. Alpinus sosn.* are distributed in Ajara region. A major method of investigation was in 2015-2018, a traditional route expedition-excursion method, collecting plant specimen for herbarium and cameral processing. We identified plants according plant indexes of Adjara (Georgia). In order to determine rarity status, distribution and extinction of subpopulations were estimated on the basis of the following correlation between the number of 10x10 km UTM grid cells reflecting occupied habitat and extinction risk categories.

Introduction

The floristic region of Adjara represents “Hotpoint” of Caucasian which is distinguished with the uniqueness of its it relict Colchis flora. It represents one of the most powerful refuge in western Eurasia, which is not touched by the chilling because has the special geographical location. The nature of Adjara is under the economic impact of a powerful man pressure, which poses a threat to certain species and ecosystem balance [1,2]. Endangered herbaceous species of medicinal and ornamental qualities distinguished genus *Galanthus*. These plants are early spring blooming species. Many from these species were lost as a result of gaining forest resource, trading and collecting successive amount of plants. The successive amount of resources causes the reduction of biodiversity. According to the list of species verified using the recent systematic 1837 wild plant species united in 159 families and 742 genuses are found in the floristic district of Ajara. From these families, the most attractive place took genus *Galanthus*, family – *Amarilidaceae*. The genus *Galanthus* is a small genus of approximately 20 species of bulbous perennial herbaceous

plants in the family *Amaryllidaceae* [3,4]. There are 10 species in Georgia, four species in the South of Colchis: *Galanthus woronowii* Losinsk, *G. Rizehensis* stern., *G. Krasnovii khokhr*, *G. Alpinus sosn.*, and all of them are endemic plants of Georgia. *Galanthus alpinus sosn.* – endemic species of Georgia, *Galanthus rizehensis* and *Galanthus Krasnovii khokh.* – endemic species of Ajara-lazeti [3,4,8]. Most species flower in winter, but some flower in early spring and late autumn. The plant grows 10-30 cm high and is ephemeral plant species. The genus is decorative plants and all the four species are under CITES regulations. Endangered herbaceous species of medicinal and ornamental qualities distinguished genus *Galanthus*. These plants are early spring blooming species. Genus *Galanthus* and is sold during the Spring holiday season. Many from these species were lost as a result of gaining forest resource, trading and collecting successive amount of plant. A particular characteristic of the *Amaryllidaceae* plant family is a consistent presence of an exclusive group of isoquinoline alkaloids, which have been isolated from plants of all the

genera of this family. As a result of extensive phytochemical studies, over 500 alkaloids have been isolated from the amaryllidaceous plants [6]. Galanthamine, which is produced from *Galanthus* bulbs, is used for the treatment of nervous system traumatic injuries, it restores the nervous muscle trauma after stroke, inhibits eyeball, reduces blood pressure, prevents adrenaline secretion[4].

Research methods : A major method of investigation is a traditional route expedition-excursion method, collecting plant specimen for herbarium and camera processing. We
Result and discussion:

identified plants according to plant indexes of Adjara[7]. In order to determine rarity status, distribution and extinction of subpopulations were estimated on the basis of the following correlation between the number of 10x10 km UTM grid cells reflecting occupied habitat and extinction risk categories. For determining the frequency of the species participation we used Braun-blanchet method[8]. The phenomenal observation was done with the help of the Serpriacov method. The plant systematic and nomenclature of species are indicated by Cherpanov[9].



Fig 1. *Galanthus woronowii* Losinsk

Galanthus woronowii Losinsk grows on the slopes of bushfires, shrubs, cliffs, wooden gardens, citruses and bamboo plantations in the lower part of the valley, on the roadside slopes from 10-728 sea level. We analyzed the environmental, exposure and location impacts on the growth and development

dynamics of the population in Chaisubani area GPS N 41°41'20.61 E 41°46'33.67 305m from sea level. In Sarpi - GPS N 41°31'18.03 E 41°32'59.14. 61m from sea level. In Sarpi *Galanthus woronowii* Losinsk all phases of development begin 15 days earlier than in the village of Chaisubani.



Fig 2. *Galanthus rizehensis* Stern

Galanthus rizehensis Stern. is growing in citrus plantation of the village Chaisubani, 295 m from sea level, GPS data N 41°41'20.99 E 41°46'37.94. In Chakvi- N 41°35'12.33 E

41°53'26.33. The species start vegetation phases of development 22 days earlier than in the village of Chaisubani.



Fig 3. *Galanthus krasnovii* khokhr.

Galanthus krasnovii khokhr. Is distributed in Keda, the village Tchalati 900 m from sea level. It starts vegetation phases 1 month later than *Galanthus woronowii* Losinsk and *Galanthus*

rizehensis Stern. This species distribution in Tchalati is N 41°34'45.75 E 41°59'31.43



Fig 4 *Galanthus alpinus* Sosn.

Galanthus alpinus Sosn. is distributed in Keda, the village Khokhna, 174 m from sea level. All phases of development run like *Galanthus woronowii* Losinsk. As a result of observation of plant phenological phases, the height of the sea level is determined by the development of all four types of genus *Galanthus*. In particular, with the increase of 100 m in height, the duration of the phenomena of the species is delayed by 7-9 days. *Galanthus woronowii* Losinsk does not create a clear population, in Chaisubani there are the following species in *G. woronowii* Losinsk. population: *Ficaria popovii* A. khokhr., *Duchesnea indica* (Andr.) Focke, *Pteridium tauricum* (Presl.) Krecz. *Sambucus ebulus* L., *Dentaria quinquefolia* Bieb, *Spiraea japonica* L.f, *Ficaria popovii* A. khokhr., *Poa bulbosa* L. ssp. *vivipara* (Koel.) Arcang, *Stelaria media* (L) Vill. *Lysimachia japonica* Thunb. *Matteuciastruthiopteris* Todaro., *Corydalis caucasica* DC. *Convolvulus arvensis* L. As a result of our study *Galanthus woronowii* Losinsk. is a progressive relict species that extends the distribution area. In Chaisubani this species has very interesting development of vegetation dynamics, in fact, in January-February than starts vegetation, *G. woronowii* Losinsk. is dominant, while *Pteridium tauricum* and *Poa bulbosa* are dominant in fertility period. According Braun-blanchet frequency scale it has coefficient 5. In Sarpi population there are dominant *Dryopteris filix mas*, *Cyclamen ibericum*, *Simphytum ibericum*, *Trachistemon orientalis*.

Conclusion

Galanthus woronowii Losinsk, *G. rizehensis* Stern., *G. Krasnovii* khokhr, *G. alpinus* sosn. are endemic plants, which is distributed in the South colchis. *Galanthus alpinus* sosn-endemic species of Caucasus, *Galanthus woronowii* losinsk. – endemic species of Georgia, *Galanthus rizehensis* and *Galanthus Krasnovii* khokh.- endemic species of Ajara-lazeti. All the fourth species are ephemeral, decorative and medicinal plants. *Galanthus woronowii* Losinsk populations are studied in the village Chaisubani, GPS data GPS N 41°41'20.61. E 41°46'33.67, 305 m from sea level. In Sarpi GPS N 41°31'18.03. E 41°32'59.14. 61m from sea level, it was shown that in the Sarpi conditions the *Galanthus woronowii* Losinsk vegetation phase begins 15 days before than in the village Chaisubani. *Galanthus rizehensis* Stern. GPS N 41°42'35.86 E 41°43'40.54 40 m from sea level, in Chakvi the population starts its vegetation phases 22 days earlier than in Chaisubani, GPS N 41°41'19.09 E 41°46'21.31, 251 m from sea level. *Galanthus krasnovii* khokhr is distributed in Tchalati GPS N 41°34'45.75 E 41°59'31.43, 900 m from sea level, starts vegetation phases 1

month later than *Galanthus woronowii* and *Galanthus rizehensis*.

References

- [1] Dolidze K, Diasamidze I, Makaradze E, Chitanava J, Varshanidze N, Turmaidze N, Bolkvadze G. A Preliminary Review of Endemic in Situ Conserved of Adjara Protected Areas in Georgia. NTGB. International Journal of Environmental Sciences 6 (1), 13-16. 2017.
- [2] Manvelidze Z. K., Memiadze N. Kharazishvili D., Varshanidze N. Diversity of floral area of Adjara (List of wild grown plants species) //Annals of Agrarian Science, 2008, vol.6, No 2.
- [3] Jakeli E, Varshanidze N, Diasamidze I, Zarnadze N, Dolidze K. Biodiversity of medicinal plants of wild flora in Adjara-south colchis and their usage in folk medicine. Conference Processing Books : ISS2018 3rd International Science Symposium "New Horizons in Science", At Pristina, Cosovo. 2018.
- [4] Varshanidze N, Turmanidze N, Dolidze K, Zarnadze N, Diasamidze I, Epitashvili T, Katcharava T. Biodiversity of Medicinal Plants Containing Essential Oil and their spreading in Adjara. Universal Journal of Agricultural Research(3): pp. 99-104, 2018
- [5] Jakeli E., Varshanidze N, Zarnadze N, Diasamidze I, Dolidze K. Medicinal plants from the flora of Adjara (south colchis) used against certain chronic diseases. In: Inesec 2018 international health sciences conference (IHSC), abstract books, 14-17 November 2018 Diyarbakir/Turkey www.ineseg.org www.inesegconferences.org
- [6] Varshanidze N, Jakeli E, Turmanidze N. Wild medical plants diversity in Adjara National Parks. International Caucasian forestry Symposium. Abstract book. Artvin. Turkey. 2013
- [7] Dmitrieva A.A. The Planter of Adjara Plants. Tbilisi. „Metsniereba” T-II, 1990.
- [8] Blanquet J.B. 1965. Plant Sociology: The Study of Plant Communities. Authorized English Translation of Pflanzensoziologie by J. Braun-Blanquet. Transl., rev. and Ed. by George D. Fuller and Henry S. Conard. Hafner Pub
- [9] Czerepanov S.K. Vascular plants of Russia and Adjacent states (the former USSR) Cambridge University press. 1995.