

## STUDY ON THE CONSERVATION STATUS OF THE SPECIES GALANTHUS NIVALIS IN THE NATURA 2000 ROSCI0327 NEMIRA - LAPOȘ SITE

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**Key words:** *Galanthus nivalis*, Natura 2000, Nemira Lapoș

### INTRODUCTION

*Galanthus* or snowdrop is a small genus of about 20 species of bulbous perennial herbaceous plants in the family Amaryllidaceae [16]. The plants have two linear leaves and a single small white flower with six petaloid tepals. The genus *Galanthus* is encountered in Europe and in the Middle East. The northern limit is uncertain because *G. nivalis* has been introduced and cultivated throughout the entire Europe [9].

The Nemira – Lapoș site (figure 1) lies in the Eastern Carpathians, in the Nemira Mountains, with the following geolocation: Longitude: 26.226253, and latitude: 46.308594. The site's area is of 9980.2 ha.

The snowdrop is a small perennial bulbous herb with linear basal leaves. The stem ranges between 15 and 35 cm in height, and it supports a three-petal unique, delicate white flower (that is shaped as a bell). The six stamens are inserted at the base of the perianth.

The ovary is inferior. The tepals differ from one another, the inner ones are shorter. The blooming period for the snowdrops is in the months of February and March. The fruit is a capsule that bears several seeds with characteristic hook-shaped elaiosomes that attract insects (ants, to be more specific) for the dispersal of this species. [4-9]. In Romania, *Galanthus nivalis* L. is spread all over the country, excepting the steppic region [1-3].

### MATERIAL AND METHODS

The necessary tools for the field observations were: the GPS kit, the compasses, the photo camera, the field determinator and work sheets and notebooks, the maps indicating the site's limits.

The field identification and the assessment of the preservation status were done for the species *Galanthus nivalis* L., in the site ROSCI0327 Nemira – Lapoș.

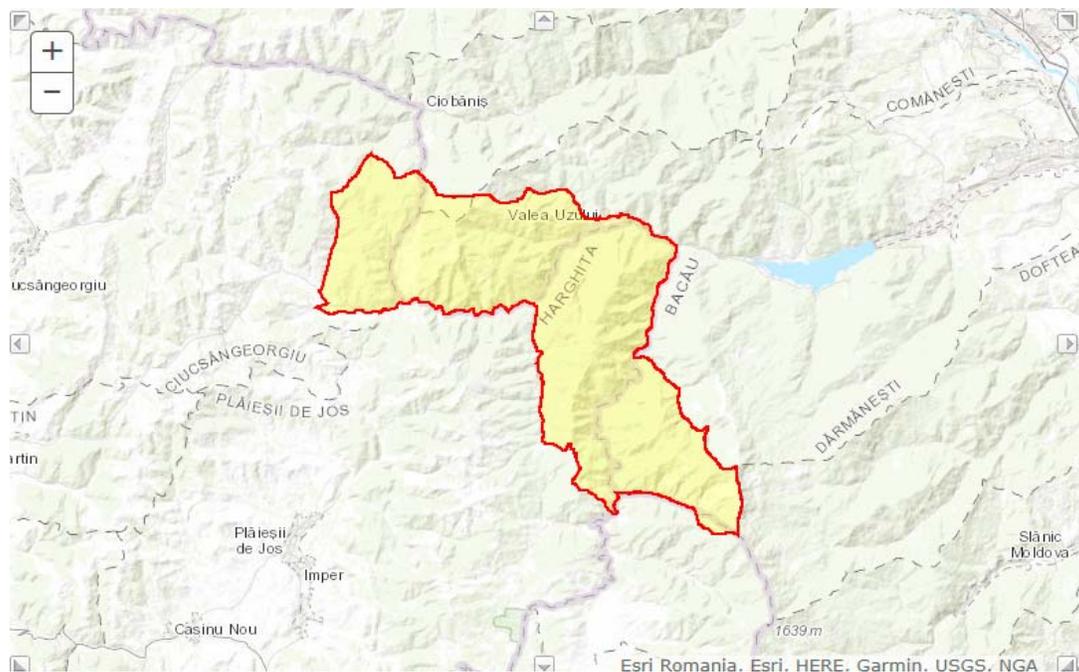


Figure 1. The limits of the Natura 2000 ROSCI0327 Nemira – Lapoș site

In view of depicting the studied species, there were observed numerous transects, in the characteristic habitats of this species. The measurements and the GPS recordings in field followed a data structure that allowed the automatic upload/stocking in the GIS database. There were investigated sample areas (botanical surveys) within the regions in which this species was identified that provided the estimate on the population size and the preservation status of *Galanthus nivalis* L. (considering the accompanying species, as well).

## RESULTS AND DISCUSSIONS

Our monitoring period spanned over three years (2019-2021). Regarding the fact that this species is not included in the site's standard form, it may not be the subject of monitoring, in which case prone to decline in that region. At present, based on our observations within the studied habitat (photo 1), there is an area of about four hectares on both river banks of the Uz river, in which there are 7-8 plants of *Galanthus nivalis* on each square meter (photos 1-12). The area is characterized by the following geo-location of the core surface: latitude: 46°20'16.84"N, and longitude: 26°14'37.28"E (figure 2).

The purpose of our research and of this scientific paper is to draw attention on a plant species in decline, due to its massive collecting each year. The entire plant is torn from the ground, in many cases, with the underground parts. The estimate is of more than 100 million plants of snowdrop collected every year in Romania for commercial purpose.

We noticed an unfavourable conservation status (U1) with a slight tendency of decline unless the necessary impact decrease regulations are enforced (photos 2, 6). Furthermore, we noticed a slight decrease of the

snowdrop population from the northern part of the habitat towards the southern one, triggering the fact that there is a pressure and an anthropic menace, much more enhanced in the northern part, on the left bank of the Uz river and of the access road DJ 123, compared to the southern area of this habitat and to the right river bank.

Considering that the snowdrop population is rather numerous, next to the access road, the harvesters are not compelled to cross the Uz river and collect more plants from the left river bank, causing the decrease of the *Galanthus nivalis* L. population every year.

These anthropic pressure and menace, together with the pasturage, forest arrangements, maintenance of the access roads and trails, leisure sports and activities (G.01), litter and solid waste discarded by the tourists (H 05.01) (photo 2), invasive species (I), and global changes (M) turn this snowdrop population into a vulnerable one.

In order to reduce the impact on the studied species within its habitat, we recommend several regulations: first of all, installing many info pannels to prohibit the harvesting of the entire herb (with its underground parts)(F.04), and the enforcement of fines in case of non-compliance. Moreover, during the months of February and March, when the snowdrops are in bloom and of great interest for the harvesters, the curators of this area should thoroughly monitor and visit the habitat more often.

Another aspect and environmental conservation regulation is the addition of the *Galanthus nivalis* L. species in the Standard Form of the Natura 2000 ROSCI0327 Nemira – Lapoş site, in the section 3.3 – other significant flora and fauna species, as well as part of the Management Plan to enforce the monitoring procedures, and to establish some impact decrease regulations.

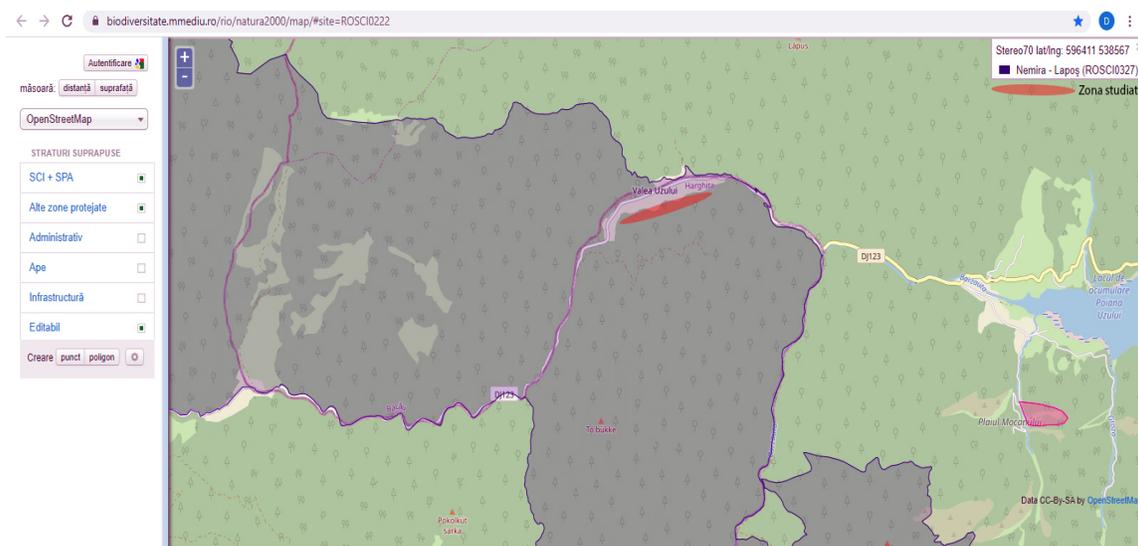


Figure 2. The distribution map of the *Galanthus nivalis* L. species in the studied habitat



Photo 1. 'The snodrop camp' region in Valea Uzului



Photo 2. *Galanthus nivalis* plants next to litter and solid waste discarded by tourists (H05.01)



Photo 3. *Galanthus nivalis* individuals



Photo 4. *Galanthus nivalis* plants within the studied habitat



Photo 5. *Galanthus nivalis* plants within the studied habitat



Photo 6. The snowdrop plants (menace F04 - collecting/harvesting of terrestrial plants, in general)



Photo 7. *Galanthus nivalis* in the studied area



Photo 8. *Galanthus nivalis* – general aspect



Photo 9. *Galanthus nivalis* – detail



Photo 10. *Galanthus nivalis* – macro photo



Photo 11. *Galanthus nivalis* – detail



Photo 12. *Galanthus nivalis* in the studied habitat

## CONCLUSIONS

*Galanthus nivalis* L. was depicted in the Natura 2000 ROSCI0327 Nemira – Lapoș site, in which there are about 7-8 individuals on each square meter (the entire area is of four hectares).

The conservation status is U1 (unfavourable with a slight tendency of decline unless the necessary impact decrease regulations are enforced).

The menaces and pressures are: the harvesting of the entire herba (including the underground parts), the pasturage, forest arrangements, maintenance of the access roads and trails, leisure sports and activities (G.01), litter and solid waste discarded by the tourists (H 05.01), invasive species (I), and global changes (M).

We recommend the addition of the *Galanthus nivalis* L. species in the standard form of the natura 2000 ROSCI0327 Nemira – Lapoș site, in the section 3.3 – Other significant flora and fauna species, as well as part of the Management Plan to enforce the

monitoring procedures, and establish some impact decrease regulations.

## ABSTRACT

The snowdrop (*Galanthus nivalis* L.) belongs to the Kingdom *Plantae*, Division *Tracheophyta*, Class *Magnoliopsida*, Order *Astragales*, Family *Amaryllidaceae*. It is part of the commune interest plant species under the Natura 2000 code 1866. Our scientific study displays the presence within the site of a plant species that is included in the Habitats Directive Annex V B, and GEO 57 updated in the Annex V A, and not a part of the Standard Form of the Natura 2000 ROSCI0327 Nemira – Lapoș site.

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