Journal of Vasyl Stefanyk Precarpathian National University. Biology

https://journals.pnu.edu.ua/index.php/jpnubio/

Vol. 11 (2024), P183-P188

JPNUBIO scientific journal

UDC: 574.3:581.9(477.87)

Distribution of *Origanum vulgare* L. in the subcarpathian and carpathian regions for further cultivation within the Ivano-Frankivsk oblast

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Abstract: A study was conducted on the distribution of *Origanum vulgare* L., a medicinal plant that can be used in the future for producing food products, specifically spices or for preparing tea blends, in the Carpathian and Subcarpathian regions. The research aims to determine the potential for spreading *O. vulgare* L. in the natural conditions of the Ivano-Frankivsk Oblast for the subsequent cultivation of the plant on a large industrial scale.

Keywords: *Origanum vulgare* L., field research, distribution, growth, range, ange, plant introduction, acclimatization.

1. INTRODUCTION

The introduction of *Origanum vulgare* L. into the Subcarpathian region is an important task, as the cultivation of this plant and the preparation of raw materials will ensure the use of *O. vulgare* L. in industry, for example, in the production of spices, medicines, or tea blends (Carrasco, A., Perez, E., Cutillas, A. B., Martinez-Gutierrez, R., Tomas, V., & Tudela, J., 2016, Jnaid Y., Yacoub R., Al-Biski F., 2016, Nurzyńska-Wierdak R., Walasek-Janusz M., 2025). Because of this, determining its natural potential within the Ivano-Frankivsk Oblast is a crucial step in planning its industrial cultivation. This, in turn, will contribute to the development of local agribusiness, the creation of new jobs, and the enhancement of the region's economic appeal. When working on the introduction of oregano into the "Druzhba" Arboretum of the Vasyl Stefanyk Carpathian National University, it was first necessary to determine the natural growth conditions and distribution area of *O. vulgare* L. in the Subcarpathian and Carpathian regions to ensure the conditions in the arboretum were optimal. The area, climate, and soil types in the Subcarpathian and Carpathian regions can support the distribution of this plant species, but the issue requires specific study. This is because no up-to-date information on the growth of *O. vulgare* L. in this area could be found in previous research. *O. vulgare* L. prefers dry, permeable, and well-drained soils, and it grows best in open, sunny areas (Reichling J., Schnitzler P., 2009; Sharifi-Rad, M., Berkay Yılmaz, Y., 2020). In the shade, the stems elongate and the leaves lose their rich aroma (Sikkema, J., De Bont, J. A., 1995, Silva, F. V., Guimarães, A. G., Silva, E. R., 2012). In Ukraine, the plant is widespread on the Black Sea coast, in Crimea, and in the steppes and forests of Central and Eastern Ukraine. According to existing data, *O. vulgare* L. is also found in the Caucasus, Central Asia, China, Southern Siberia, and the USA (Guimarães, A. G., Silva, E. R., 2012). Based on the Global Biodiversity Information Facility (GBIF), an international organization that collects information on the distribution of millions of plant and animal species worldwide [8], *O. vulgare* L. grows actively in European Union countries such as France, Spain, Portugal, Germany, and Italy. It is also found on the coasts of the Baltic Sea in Switzerland and Finland, as well as on the coast of Estonia. Regarding other countries—Hungary, Poland, Slovakia, Czech Republic, Slovenia,

Latvia, Serbia, Bulgaria, Montenegro, Croatia, Bosnia, and Romania—the distribution of *O. vulgare* L. is minor but not non-existent (Global Biodiversity Information Facility, 2025).

2. RESEARCH OBJECTIVE, METHODOLOGY AND DATA

The primary aim of this study was to investigate the spatial distribution of *Origanum vulgare* L. within the Carpathian regions, with the broader objective of expanding current knowledge on the flora of these territories. Special emphasis was placed on identifying the range and ecological conditions under which this medicinal species occurs in the natural environment of the Ukrainian Carpathians. This research is particularly relevant in the context of the species' potential for agricultural cultivation, as understanding its ecological preferences and distribution patterns is essential for developing sustainable cultivation practices.

A detailed analysis of the species' distribution allows for a deeper understanding of the adaptive strategies employed by *O. vulgare* L. in response to environmental variability. Furthermore, such findings may contribute to broader ecological research, including bioindication studies and strategies for biodiversity conservation in mountainous and foothill ecosystems.

The methodological approach incorporated a combination of direct field observations, systematic fieldwork, analytical data processing, and comparative analysis. This integrative methodology enabled a comprehensive assessment of the species' ecological niche and distribution trends across different altitudinal zones and habitat types.

For better visualization, the discovered populations of *O. vulgare* L. from the field studies are marked on Figure 1.

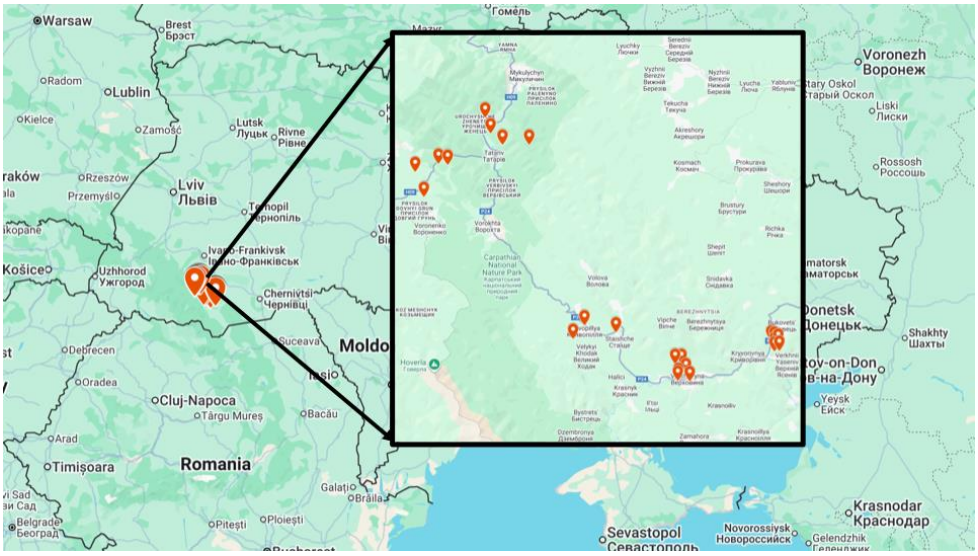

Fig. 1. Populations of *Origanum vulgare* L. discovered during field research.

Coordinates (Verkhovyna):

1. Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhovyna, 48.166792, 24.803615.
2. Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhovyna, 48.166792, 24.811717.
3. Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhovyna, 48.159119, 24.817225.
4. Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhovyna, 48.155120, 24.807828.
5. Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhovyna, 48.152742, 24.807018.
6. Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhovyna, 48.152309, 24.822572.

Coordinates (Kryvopillya):

1. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Kryvopillya, 48.199331, 24.689246.*
2. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Kryvopillya, 48.193582, 24.728513.*
3. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Kryvopillya, 48.188206, 24.674451.*

Coordinates (Verkhniy Yaseniv):

1. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhniy Yaseniv, 48.186773, 24.924969*
2. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhniy Yaseniv, 48.185651, 24.929527*
3. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhniy Yaseniv, 48.181864, 24.930368*
4. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhniy Yaseniv, 48.183875, 24.934365*
5. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhniy Yaseniv, 48.177750, 24.929316*
6. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Verkhniy Yaseniv, 48.178030, 24.935206*

Coordinates (Tatariv):

1. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Tatariv, 48.374436, 24.563585*
2. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Tatariv, 48.361254, 24.570324*
3. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Tatariv, 48.351800, 24.585674*
4. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Tatariv, 48.351551, 24.618995*

Coordinates (Yablunytsia):

1. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Yablunytsia, 48.335874, 24.504430*
2. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Yablunytsia, 48.334629, 24.515662*
3. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Yablunytsia, 48.307742, 24.485710*
4. *Ivano-Frankivsk Oblast, Verkhovyna district, village of Yablunytsia, 48.328904, 24.474478*

3. RESULTS AND DISCUSSION

Evaluating the limited possibilities for scientific activity during martial law, the study area for the distribution of *O. vulgare* L. covered only the Ivano-Frankivsk and part of the Ternopil regions. Cooperation with specialists in the nature conservation sector significantly simplified the search for the plant. By contacting representatives of nature conservation areas, it was possible to gather information about the distribution of this plant species within the parks and reserves.

Carpathian Biosphere Reserve. Its area is 66,417.4 hectares. It contains 35 high-altitude lakes, five peaks over 2,000 meters, the world's largest massif of beech primeval forests (21,000 hectares), 130 animal species listed in the Red Book, and 150 plant species from the Red Book (Carpathian Biosphere Reserve, 2025). Based on the data received, we note that *O. vulgare* L. is not registered as a species widespread within the reserve.

Carpathian National Nature Park. The park's area is 50,510 hectares. It includes two high-altitude lakes, five waterfalls, 2,581.4 hectares of primeval forests, 77 animal species from the Red Book, and 80 plant species from the Red Book (Carpathian National Nature Park.) *O. vulgare* L. is not widespread within the park.

Halych National Nature Park: The park's area is 146,848 hectares. It includes: 1,050 species of vascular plants, 75 of which are listed in the Red Book of Ukraine, 7 in the European Red List, and 7 in the Bern Convention list. Additionally, there are 700 species of macrofungi, 15 of which are listed in the Red Book of Ukraine (Halych National Nature Park, 2025). *O. vulgare* L. is a registered species that grows within the park, specifically in the Krylivske and Blyudnykivske forestries.

Verkhovyna National Nature Park: The territory covers 13,718.4 hectares. Two rivers flow within the park. It is home to 1,058 animal species and 978 plant species, of which more than 700 are vascular plants. 64 plant species growing in the park are listed in the Red Book of Ukraine (Verkhovyna National Nature Park, 2025). The park has 3,000 animal species. Of the vertebrates, there are 139 species, 76 of which are included in official conservation lists. 302 insect species have been identified (Verkhovyna National Nature Park, 2025). *O. vulgare* L. is a registered species within the park.

Gorgany Nature Reserve: The area is 53.442 square kilometers. The park is a UNESCO World Heritage site. The park has about 402 plant species, including 34 higher vascular plant species listed in the Red Book of Ukraine, as well as 39 plant species that are protected at the regional level (Gorgany Nature Reserve, 2025). The park's fauna includes over 1,000 invertebrate species and about

150 vertebrate species (Gorgany Nature Reserve, 2025). Upon contacting a park representative, it was found that *O. vulgare* L. is not widespread within the park.

Field research was conducted by us from May 2025 to September 2025. During this time, 14 trips were made to the Carpathian region. The research was carried out in the villages of Yaremche, Delyatyn, Verkhovyna, Tatariv, Palyanytsia, Vorokhta, Kryvopillya, Kryvorivnya, Krasnyk, Verkhniy Yaseniv, and Yablunytsia. The overall results can be seen in Table 1.

Table 1. Distribution of *Origanum vulgare* L.

Name of the location	Number of individuals found (*O. vulgare* L.)
Verkhniy Yaseniv	21
Verkhovyna	12
Vorokhta	0
Delyatyn	0
Kryvorivnya	0
Kryvopillya	4
Krasnyk	0
Palyanytsia	0
Tatariv	5
Yaremche	0
Yablunytsia	3

In summary of the field research results, *O. vulgare* L. was found in the following villages: Verkhovyna, Kryvopillya, Verkhniy Yaseniv, Tatariv, and Yablunytsia. Total number of individuals found is 45.

In Verkhovyna, *O. vulgare* L. was the easiest to find. Locals call oregano "Dushetsia." The plant grew along roadsides, in pastures, near village houses, and in the undergrowth by the banks of the Chornyi Cheremosh River. Locals use it as feed for cattle and for preparing tea blends for the winter.

Residents of Kryvopillya confirmed that *O. vulgare* L. grows in the village, but also claimed that the plant is "shy," and with the construction of new recreational complexes and the active sale of land, it has become harder to find. We managed to find the plant in a pasture, in the direction of Mount Bukovianka.

In Verkhniy Yaseniv, *O. vulgare L.* was found along the P24 highway toward the village of Bukovets. A small population of *O. vulgare L.* was also discovered on the mountain meadow in the Zapiidok tract, at an altitude of 700 meters above sea level.

After interviewing residents of the village of Krasnyk, it was determined that *O. vulgare* L. once grew there, but it could not be found during the study.

In Tatariv, *O. vulgare* L. was found in places along the H08 highway and at the foot of the "Bilyi Kamin" (White Stone) mountain.

The growth of *O. vulgare L.* in the village of Yablunytsia was recorded in spots along the H09 highway and in pastures.

Several specimens of *Origanum vulgare* L., found in the Carpathians during the field research conducted in the villages of Kryvopillia, Verkhnii Yaseniv, Tatariv, and Verkhovyna, are presented in Figures 2–5.

Fig. 2-3. *Origanum vulgare* L. was found in Verkhnii Yaseniv, Kryvopillia.

Fig. 4-5. *Origanum vulgare* L. was found in Verkhovyna, Tatariv.

In Vorokhta, Palyanytsia, Kryvorivnya, Delyatyn, Yaremche, and the village of Krasnyk, the species *O. vulgare* L. was not found during the research.

4. CONCLUSIONS

In summary of the results, the following conclusions can be drawn: *Origanum vulgare* L. is a plant species that grows in the Carpathian region. *O. vulgare* L. is distributed at altitudes up to 800 meters. The plant is mainly found on the sunny side of mountains, in pastures, or in villages such as Verkhovyna, Kryvopillya, Verkhniy Yaseniv, Tatariv, and Yablunytsia. The plant's distribution in this area proves that it can be successfully cultivated within the Subcarpathian region, despite the not-so-favorable climate. We can also state that *O. vulgare* L. could be grown on a large scale, but with the active construction of new recreational complexes, land sales, and the use of the plant as animal feed, its wild population is declining.

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Світлана Гаріджук, Надія Різничук Поширення *Origanum vulgare* L. в регіоні Прикарпаття та Карпат для подальшого культивування в межах Івано-Франківської області Журнал Прикарпатського національного університету імені Василя Стефаника. Біологія, 11 (2024) , С183–С188.

Анотація: Досліджено поширення материнки звичайної, як виду лікарської рослини, що може бути використана в подальшому для виготовлення харчової продукції, а саме спецій чи для заготівлі суміші чаїв, на території Карпат та Прикарпаття. Дослідження спрямоване на визначення можливості поширення *O. vulgare* L. в природних умовах Івано-Франківської області, для подальшого вирощування рослини в великих промислових маштабах.

***Ключові слова**: Origanum vulgare* L., польові дослідження, поширення рослин, зростання, ареал, інтродукція рослин, акліматизація.