PLANT SPECIES FROM *AL. BELDIE* HERBARIUM - *VERONICA* GENRE - SHORT DESCRIPTION

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Abstract

The present paper reunites the morphological and ecological description of certain species belonging to the Veronica genre and present in Al. Beldie Herbarium from Marin Drăcea National Institute for Research and Development in Forestry (INCDS) from Bucharest. The Herbarium contains 107 plates of this genre that belong to 15 species. In this paper, some representative species of this genre are described (Veronica austriaca L., Veronica gentianoides Vahl., Veronica hederifolia L., Veronica longifolia DC., Veronica officinalis L. and Veronica montana L.). Furthermore, statistics and diagrams concerning the place and year of harvest are also present, together with annotations made by the botanists that have gathered them.

Key words: herbarium, botanists, plants, flowers, leaves

INTRODUCTION

Herbariums have an extremely important scientific role as they offer essential information for biologists, ecologists, bio-geographists, genetics or people passionate about nature. Furthermore, they play an important role in bio-geography, in studying global warming, as phenology resources or for realizing lists of rare plants (Vasile et al., 2017).

The Alexandru Beldie Herbarium from *Marin Drăcea* National Institute for Research and Development in Forestry (INCDS) from Bucharest, contains an impressive collection (approximately 60 000 plates) of certain plants, especially from mountain areas. This aspect is due to the fact that its creator, Alexandru Beldie, a well-known Romanian botanist, has studied with preponderance the flora of Bucegi Mountains (Beldie, 1967; Beldie, 1972). As such, some of the mountain plants contained by the Herbarium are the 32 *Arabis* genre species (Dincă et al., 2017) or the 112 *Hieracium* genre species (Dincă et al., 2017). However, the herbarium also contains species collected from other parts of the country, such as the ones gathered by S. Pașcovschi in Bazoș Dendrology Park, near Timișoara (Chisăliță et al., 2017) or from other countries around the globe. Together with the above mentioned species, the Herbarium also contains the *Veronica* genre, and is the main subject of this paper.

MATERIAL AND METHOD

The study material was composed of the 107 plates present in the above mentioned Herbarium and belonging to the *Veronica* genre. In order to elaborate this study, the *Veronica* species were systemized based on their species (the Herbarium contains 15 species of this genre), harvest year, the place from where they were collected, as well as the specialist who has gathered them. An excerpt of this inventory is rendered in Table 1.

Table 1

The *Veronica* genre inventory from Iuliu Moldovan Herbarium, INCDS Bucharest (excerpt)

Drawer number	**Plate number**	**Herbarium/ Botanic collection/ Institution**	**Species name**	**Harvest date**	**Place of harvest**	**Collected/ Determined by:**	**Conservation degree (1..4)**
43	70	Bucharest Polytechnics School Herbarium Botanic Laboratory	*Veronica austriaca L.ssp jacqinii Baumg f.bipinnatifida Koch*	1936.05.17	Durostor Turtucaia Pad.Bobla	P.Cretzoiu/J. Neuwirth	1
43	23	Bucharest Polytechnics School Herbarium Botanic Laboratory	*Veronica elatior*	1941.06.25	Branesti Pad.Cernica	C.Georgescu/ I.Morariu	1
43	106	Societe Helvetique	*Veronica fruticulosa*	1879.07.11	Muntii Hohneck	Gerard	1
43	80	Museum Botanicum Universitatis Cluj	*Veronica hederifolia* L.	1924.04.23	Cluj	E.I.Nyarady	1
43	58	Bucharest Polytechnics Herbarium Silviculture Faculty	*Veronica jacquinii*	1942.06.14	Chitila Distr.Ilfov	I.Morariu	1
43	38	Bucharest Polytechnics Herbarium	*Veronica longifolia L.*	1921.08.03	Retezat	M.Haret	1
43	3	Bucharest Polytechnics Herbarium Silviculture Faculty	*Veronica oficinalis* L.	1943.07.01	Poiana Costilei Bucegi	Al.Beldie	1

Furthermore, based on a thorough bibliographic research, the *Veronica* species present in the Herbarium were described.

RESULTS AND DISCUSSION

***Veronica* genre** belongs to the *Lamiales* Order, *Plantaginaceae* Family. Having almost 500 species, this genre is considered one of the largest one belonging to the above mentioned family. Commonly known as speedwell, gypsyweed or bird's eyes, the plant is an annual or perennial

herbaceous species that can be found in the Northern Hemisphere. The Veronica name is considered to have been used in many European countries (as a connection with Saint Veronica) and languages (for example it is attested in 1572 England), so Carl Linnaeus used this nomenclature for defining the genre. Over 198 species of this genre have been described over time (http://christian000.free.fr/pages/234-veronica.htm).

This genre's plants are characterized by its flowers that present only 2 stamina and whose corolla presents a very short tube and 4 unequal lobes (the superior lobe larger than the rest, corresponds to 2 connected petals, while the 3 other lobes belong to the other 3 petals). The flowers are blue or purple, rarely pink or white. All the species of this genre are astringent and bitter, while some are used in medicine or cultivated as ornamental plants. For example, *Veronica Americana* is highly edible and used for treating asthma and allergies. In Austria, the plant has been used in treating disorders of the cardiovascular system, respiratory, metabolism problems or nervous conditions (Vogl et al., 2013). Some species are also food source for Lepidoptera larvae.

The species belonging to this genre that are present in this collection are as follow:

***Veronica austriaca* L.**, (Fig. 1), also known as Austrian speedwell, broadleaf speedwell or saw-leaved speedwell, is a species native to northern Europe. The plant can reach a height of 90 cm, being an herbaceous perennial plant, with dented leaves and bright blue flowers. The plant is mainly ornamental and has received the Royal Horticultural Society's Award of Garden Merit for its species (namely Crater Lake blue and Royal blue). (https://en.wikipedia.org/wiki/Veronica_austriaca).

***Veronica gentianoides* Vahl.,** (Fig. 2), commonly known as Gentian speedwell, is a plant that can be found in Iran, Turkey and the Caucasus, where it prefers open and damp habitats, from forests, meadows and alpine areas. It can grow up to 3600 meters. The plant can be recognized by its ranging flower colors, from blue to while and by its formation of a mat of leaves, grouped into rosettes. The blooming period is during summer. The most known species are Tissington White (with its name coming from its pale flowers), Nana or Variegata (recognizable through its leaves ticked with white). (https://en.wikipedia.org/wiki/Veronica_gentianoides).

Veronica hederifolia L., an annual herbaceous plant native to Eurasia. It grows from a taproot and has a stem that can grow up to 60 centimeters. The stem has round shaped leaves and blue flowers. The plant has migrated to other areas as well, but has become mainly a weed.

***Veronica longifolia* DC.** is a plant that can reach 1 meter in height and can be recognized through its pink and white flowers.

Fig. 1. *Veronica austriaca*

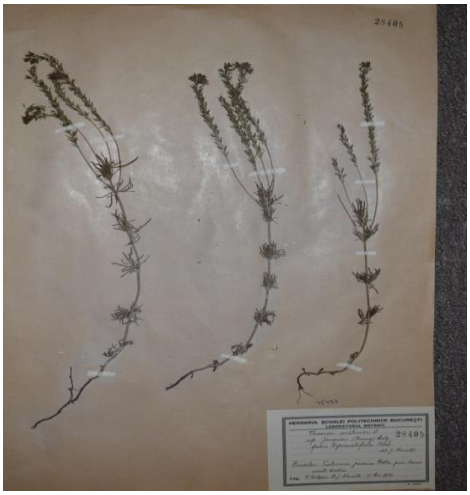

Fig. 2. *Veronica gentianoides*

***Veronica officinalis* L.** (Fig. 3), commonly known as gypsyweed, heath or common speedwell, is a perennial herbaceous plant that can reach 10-50 cm in height, creating covers of leaves and purple flowers. The plant blooms between May and August. Native to Europe and Western Asia, the plant was also introduced in other areas of the globe, especially in North America. This was caused by its medicinal usage. Even though it has a bitter and astringent taste, the green parts of the plant were used in treating coughs, otitis, and gastrointestinal problems or for cardiovascular, respiratory and nervous disorders. In France it was commonly used as tea infusion and received the name of *thé d'Europe* (Europe tea). As such, the plant is rich in vitamins and anti-inflammatory elements (Aucuboside).

***Veronica montana* L.,** (Fig. 4), a plant that can reach 15-50 cm in height, blooms between May-July and is pollinized by insects or dispersed by ants. The leaves are opposable, with long oval-obtuse petiole, strongly dented, while the flowers have the pedicel two or three times larger than the caliciu. The plant is mostly spread in the hill and mountain areas and up to altitudes of 1500 m. It is a share or semi-shade sub-Atlantic and sub-Mediterranean species (Rameau et al., 1989).

The most widespread *Veronica* species present in this herbarium are: *V. hederifolia* (24 plates), *V. jacquinii* (16 plates), *V. officinalis* (10 plates), and *V. urticifolia* (10 plates). The herbarium also contains the following species: *Veronica elatior, Veronica fruticulosa, Veronica jacquini, Veronica maritima, Veronica nummularia, Veronica urticifolia.*

The plant's harvest year. The plants were gathered in a time period ranging from 1850 up to 1964. The oldest plants of this genre are *Veronica officinalis*, harvested in 1850 and *Veronica hederifolia*, gathered in 1852.

The periods in which most plants were gathered were 1930-1939 and 1940-1949 (Fig. 5).

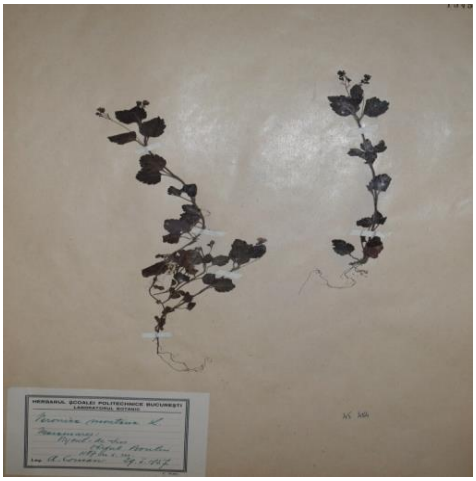

Fig. 3. *Veronica officinalis*

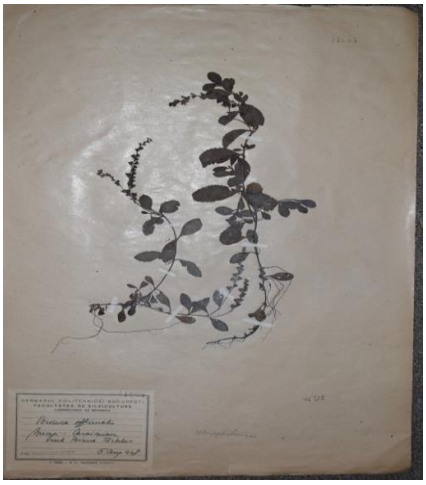

Fig. 4. *Veronica montana*

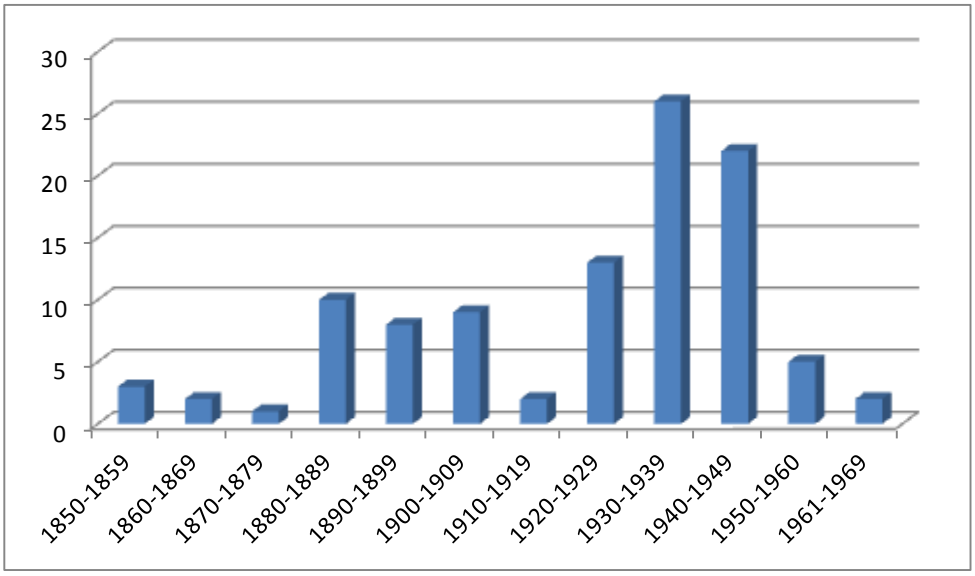

Fig. 5. Gathering periods of *Veronica* plants from INCDS Herbarium

The harvesting place of the species present in the herbarium range from Romanian alpine areas (Caraiman, Cheile Zănoagei, Diham, Valea Cerbului - Bucegi; Ceahlău; Muntele Mic; Retezat), as well as hill areas (Cluj, Iași, Mihăești, Câmpulung Muscel, Tismana, Tulcea, Vălenii de Munte, Vișeu) or field ones (Brănești, Chitila, Lehliu, Comana, Hanul Conachi, Băilești, Timișoara) (Fig. 6). However, some plants were gathered

from different parts of Europe: Budapest, Durostor, Pyrenees, Innsbruck, Kuban.

The people who gathered the plants are especially represented by renowned Romanian specialists (P. Cretzoiu, C. Georgescu, I. Morariu, Al. Beldie, E. I. Nyarady, S. Pascovschi, At. Haralamb, M. Ciucă, M. Iacobescu), as well as foreign botanists (Elos Busch, M. Gandoger, Oberleitner, Gerard, Sagorski).

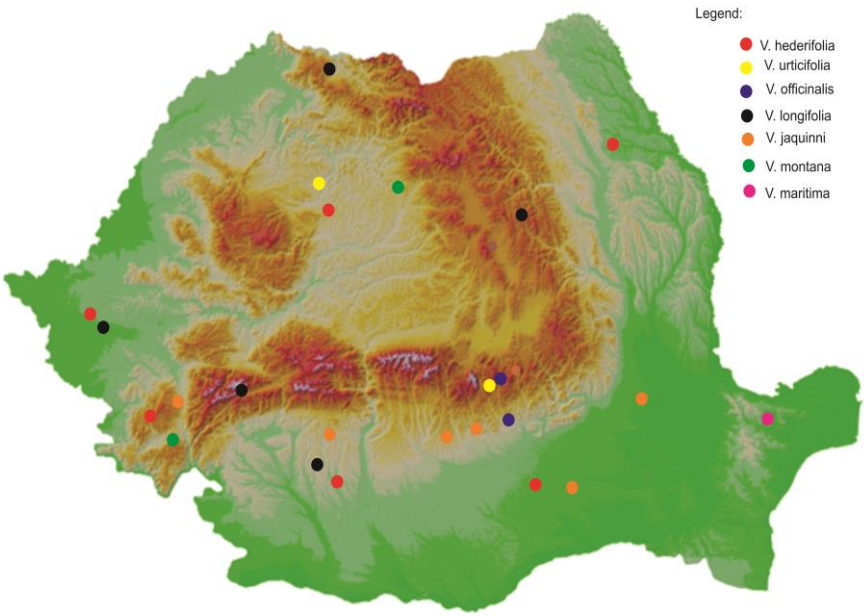

Fig. 6. Harvest place of *Veronica* plants

CONCLUSIONS

Veronica plants are characterized through its blue or purple flowers that have only 2 stamina and whose corolla present a very short tube and 4 unequal lobes and through its bitter astringent taste characteristic of many species.

The *Al. Beldie* Herbarium from INCDS Bucharest contains numerous plates of some species such as *Veronica hederifolia* (24 plates), *Veronica jacquinii* (16 plates), *Veronica officinalis* (10 plates), and *Veronica urticifolia* (10 plates), as well as exemplars of *Veronica elatior*, *Veronica fruticulosa*, *Veronica jacquini*, *Veronica maritima*, *Veronica montana*,

Veronica nummularia and *Veronica urticifolia.* As a total, 15 species of this genre are present in the herbarium.

The plants from this herbarium were gathered between 1850 and 1964, reaching a maximum in the period 1930-1949 by renowned Romanian and foreign botanists (P. Cretzoiu, C. Georgescu, I. Morariu, Al. Beldie, E. I. Nyarady, S. Pascovschi, Elos Busch, M. Gandoger). The plants were gathered from Romanian mountain areas (Bucegi, Ceahlău, Muntele Mic, Retezat) or near cities from our country (Cluj, Iași, Mihăești, Câmpulung Muscel, Tismana, Tulcea, Vălenii de Munte, Vișeu, Brănești, Chitila, Lehliu, Comana, Timișoara), as well as some areas from Europe (Pyrenees, Innsbruck, Budapest, Durostor, Kuban).

The plants are in a good conservation degree and are very useful in many research and knowledge domains.

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