

THE CHARACTERISTICS OF ALCHEMILLA GENRE PLANTS PRESENT IN ALEXANDRU BELDIE HERBARIUM FROM I.N.C.D.S. BUCHAREST

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ABSTRACT

The Alexandru Beldie Herbarium from I.N.C.D.S. Bucharest comprises approximately 40.000 plates of herbaceous plants, trees and shrubs. Amongst them, the present article analyses the 90 plates dedicated to the plants from the Alchemilla genre. After a short description of the genre, some of the 40 species present in this herbarium are described. The plants were gathered between 1854 and 1971, with a larger

incidence in the periods 1890-1899 and 1930-1949. Their origin ranges from different areas of our country (Bucegi, Ceahlău, Ciucas, Piatra Craiului, Rotnei) as well as from abroad (Spain, Hungary, Bulgaria, Switzerland) and were gathered by Romanian specialists (Al. Beldie, P. Cretzoiu, C. Georgescu, E. I. Nyarady, A. Haralamb) and foreign ones (D. Lager, Dr. Hrizish, Joh. Bubela Wsetin, M. Bosse, R. Masson, Ph. Paiche A Geneve).

INTRODUCTION

"Alexandru Beldie" herbarium reunites numerous plants from the mountain area, namely 33 species of the *Orobanche* genus (Scărlătescu V. et al., 2017), 9 species of *Melica*, 11 species of *Eragrostis* genus (Cântar C. et al., 2017), 32 species of the *Arabis* genus (Dincă L. et al., 2017), 15 species of *Ornithogalum* genus (Enescu R. et al., 2017), 19 species of *Androsace* genus (Dincă M. et al., 2017), or the 112 species belonging to the *Hieracium* genus (Dincă L. et al., 2017).

Numerous *Alchemilla* species are collected in the Al. Beldie Herbarium from The National Institute of Research and Development in Forestry "Marin Drăcea"

from Bucharest. The plants are kept in the original portfolio in drawers of 30 modules (Vasile et al., 2017).

This collection is enrolled as INDEX HERBARIUM and all the species were gathered by known personalities in the field of systematic botany, one of the Romanian botanists being Al. Beldie, who dealt especially with this herbarium.

The aim of this article is to present the state of this collection, to describe the species, the total number of *Alchemilla* specimens (40 species), together with the date when they were collected, their location, the botanist who collected each exemplar and their conservation degree.

MATERIALS AND METHODS

The study material was composed of the 90 plates present in the above-mentioned Herbarium and belonging to the *Alchemilla* genre. The plates were grouped by species, harvest year, the

place where they were harvested and by the specialist who harvested them. An excerpt of the *Alchemilla* genus inventory is rendered in Table number 1.

Table 1

The inventory of *Achemilla* genus from INCDS Bucharest's Al. Beldie Herbarium (excerpt)

Plate no.	Drawer no.	Herbarium/ Botanic collection/ Institution	Species	Harvest date	Harvest place	Collected/ Determined by:	Conservation degree (1..4)
52	9	Cluj University's Herbarium Flora Romaniaae	<i>Alchemilla aspestris</i>	1921.06.12	M-tii Paltinis	Dr. K. Ungar	2
52	23	Bucharest Polytechnic's Herbarium, Silviculture Faculty, Botanic Laboratory	<i>Alchemilla palmata</i> Gilib. Ssp <i>pastoralis</i>	1949.07.20	Piatra Craiului	A. Beldie	1
52	61	Flora Romaniaae Exsiccata	<i>Alchemilla arvensis</i> L.	1940.08.25	Nasaud, Valea Popii	I. Morarin	1
52	68	Bucharest Polytechnic's Herbarium, Silviculture Faculty, Botanic Laboratory	<i>Alchemilla glaberrima</i> Schummel	1934.08.04	Valea Cerbului, Bucegi	C. C. Georgescu	2
52	44	Bucharest Polytechnic's Herbarium, Silviculture Faculty, Botanic Laboratory	<i>Alchemilla heteropoda</i> Buser	1952.08.01	Bucegi, Baba mare	A. Beldie	1
52	52	Herbarium Al. Beldie Bucharest	<i>Alchemilla hybrida</i> L.	1936.06.28	Bucegi, Vf. cu Dor	Beldie Alexandru	1
52	36	ICEF Research and Forest Experimental Institute	<i>Alchemilla mollis</i> Buser	1940.08.31	Cheia, Prahova	At. Haralamb P. Cretzoiu	1
52	37	Bucharest Polytechnic's Herbarium, Silviculture Faculty, Botanic Laboratory	<i>Alchemilla mollis</i> Buser	1948.08.04	Predeal, V. Rasnoavei	A. Beldie	1
52	19	Flora Bulgarica Exsiccata	<i>Alchemilla montana</i> willd.	1932.05.29	Inherbidis m. Vitosa	T. Georgieff	1
52	28	Herbarium Al. Beldie Bucharest	<i>Alchemilla monticola</i>	1947.08.02	Poiana Tapului	A. Beldie	1
52	1	Bucharest Polytechnic's Herbarium, Silviculture Faculty, Botanic Laboratory	<i>Alchemilla obtusa</i> Buser	1942.08.16	Bucegi V. Jepilor	A. Beldie	1
52	4	Polytechnics School Bucharest, Botanic Laboratory	<i>Alchemilla obtusa</i> Buser	1932.08.01	Bucegi	P. Cretzoiu	1
52	72	Herbarium Al. Beldie Bucharest	<i>Alchemilla pyrenaica</i> Duf	1947.08.07	Bucegi, Gutanu	A. Beldie	1
52	30	Bucharest Polytechnic's Herbarium, Silviculture Faculty, Botanic Laboratory	<i>Alchemilla silvestris</i> Sch.	1943.06.01	Bucegi	A. Beldie	1
52	10	Bucharest Polytechnic's Herbarium, Silviculture Faculty, Botanic Laboratory	<i>Alchemilla subcrenata</i> Buser	1951.07.25	Bucegi Pestra Ialomitei	A. Beldie	1
52	16	Societe helvetique	<i>Alchemilla subsericea</i> Reuter	1889.08.07	Alpesspennines Piemont	M. Bosse	2
52	83	ICEF Research and Forest Experimentation Institute	<i>Alchemilla vulgaris</i> L.	1934.07.01	Mt. Radila	Haralamb et. Cretzoiu	1
52	86	ICEF Research and Forest Experimentation Institute	<i>Alchemilla vulgaris</i> L.	1934.05.13	M-tii Ciucas, Zaganul	A. Haralamb	1

RESULTS AND DISCUSSION

Alchemilla is a plant from the Rosales Order, Rosaceae family (the rose family, is a medium-sized [family of lowering plants](#), including 4.828 known species in 91 genres) with the common name "lady's mantle" (Christenhusz, M. J. M. 2016). It is estimated that there are approximately 300 species, the majority [native](#) to cool [temperate](#) and [subarctic](#) regions of Europe and Asia, with a few species native to the mountains of Africa and the Americas.

Alchemilla vulgaris belongs to the Rosaceae family, being present in hill areas up to mountain, humid ones, at forest margins and roads. The leaves are semi-circular, lobate (with 7 or 9 lobes), denticulated on the margins and with small and hard stems. The flowers are small, yellow-green and grouped in inflorescences. Common lady's mantle, is an herbaceous perennial plant commonly found in Europe and Greenland.



Figure 1. *Alchemilla vulgaris*

Alchemilla mollis, is an herbaceous perennial plant native to southern Europe that is cultivated throughout the world as an ornamental garden plant. It grows up to 30 or 45 cm (tall, with leaves that are palmately

veined, with a scalloped and serrated margin). The stipules are noteworthy in that they are fused together and leaf like. The chartreuse yellow flowers are held in dense clusters above the foliage. (https://en.wikipedia.org/wiki/Alchemilla_mollis)



Figure 2. *Alchemilla mollis*

Alchemilla erythropoda (dwarf lady's mantle) is a species of flowering herbaceous perennial plant from the Rosaceae family and native to Eastern Europe. It forms a clump of hairy, palmate leaves up to 15 centimetres high, with sprays of yellow flowers during early summer. Similar with its relative, *A. mollis*, their leaves are noted for being highly water-repellent. This plant is valued as groundcover cultivation in temperate regions as it tolerates a wide range of soil conditions, but is prone to self-seeding. It has gained the Royal Horticultural Society's Award of Garden Merit (https://en.wikipedia.org/wiki/Alchemilla_erythropoda).

Alchemilla alpine or lady's-mantle is a perennial plant with a woody rhizome that can reach a height between 5 and 20 cm. The weak stems are silkily hairy and grow from a basal rosette while the leaves are palmate with about seven lanceolate leaflets with toothed tips, smooth above and densely hairy

underneath. There are alternate pairs of leaves on the stems and the inflorescence forms a dense cyme. The flowers are lime green with four sepals, no petals, four stamens and a solitary carpel. They are hermaphrodite and the seeds develop apomictically, without being fertilised. The flowers begin to bloom in June and fade in September, while their seeds can be collected from August to October. (https://en.wikipedia.org/wiki/Alchemilla_alpina)



Figure 3. *Alchemilla alpina*

Alchemilla diademata has an erect 10 to 15 cm high stem. The stem is highly pubescent at the base, while the trichomes become less dense at the tips. The leaves are basal and measure 3 to 4 cm height and 2 to 3 cm wide; they resemble lobed kidneys with an oval and an inward curve on one side. The leaves are incised to the third into 7 to 9 lobes, each of them fringed by 6 to 7 teeth on each side of the lobes. The teeth end with bristles and are slightly connivant. The leaf underside is hispid, while its sinus is cordate. The plant has long, membranous and brownish stipules; it has a yellow-green pedicellate and glabrous inflorescence. The ovoid flowers appear from May to July, producing ovoid and urn-shaped fruits (https://en.wikipedia.org/wiki/Alchemilla_diademata).

Alchemilla bursensis is a species of lady's mantle that is endemic to two sites in north-western Turkey. It inhabits stream sides and banks under beech forests, but it is likely threatened by climate changes and forestry. (https://en.wikipedia.org/wiki/Alchemilla_bursensis)

Alchemilla arvensis, perennial plants with long petiolate leaves that have 7 up to 11 lobes. The flowers are organized in dichaz, glomerate and terminals. Usually found in mountain pastures, the plant has sericeous-silken leaves with rounded lobes.

Alchemilla hybrida is a hairy plant with the stem and leaves petiole jointed. Commonly found in humid orchards from mountains, its leaves are sericeous-silken.

Alchemilla alpestris, found in alpine orchards has a hairy stem and curly leaves, with semi rounded or short semi-oval lobes.

Alchemilla jaroschenkoi, is found in alpine meadows and pastures. (https://en.wikipedia.org/wiki/Alchemilla_jaroschenkoi)

Alchemilla stricta, grows near lakes or streams, in marshy grounds (https://en.wikipedia.org/wiki/Alchemilla_stricta)

The most widespread *Alchemilla* species present in this herbarium are: *Alchemilla mollis* Buser (11), *Alchemilla vulgaris* L. (9), *Alchemilla obtusa* Buser (6), *Alchemilla pyrenaica* Duf (5), *Alchemilla fissa* Schummel (4), *Alchemilla hybrida* L. (4), *Alchemilla arvensis* L. (4) *Alchemilla monticola* (4), *Alchemilla subcrenata* Buser (3), *Alchemilla montana* Willd. (3), *Alchemilla arvensis* Scop. (2), *Alchemilla flabellata* Buser (2), *Alchemilla pastoralis* Buser (2), *Alchemilla silvestris* (2) and *Alchemilla xanthochlora* (2).

The plant's harvest year. The plants were gathered in a time period ranging between 1854 and 1971. The oldest plants of this genre are *Alchemilla montana*, gathered in 1854 and *Alchemilla vulgaris*, gathered in 1858.

The periods in which most plants were gathered were 1890-1899 and 1930-1949 (Figure 1).

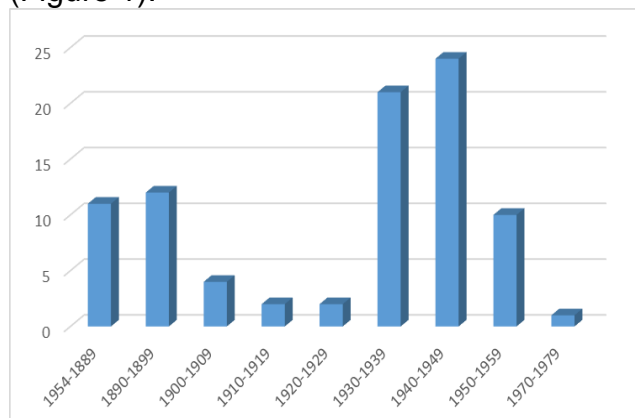


Figure 4. Harvesting periods of *Alchemilla* plants from INCDS Herbarium

The harvesting place of the most of species (*A. mollis*, *A. obtuse Buser*, *A. pyrenaica Duf*, *A. monticola*, *A. xanthochlora*, *A. heteropoda Buser*, *A.*

subcrenata buser) is generally represented by high mountain areas: Bucegi Mountains (Babele, Cheile Ursilor, Peștera Ialomitei, Valea Cerbului, Poiana Crucii, Caraiman, Valea Jepilor, Varfu cu Dor, Golul Clabucet), Ceahlău Mountains, Piatra Craiului Mountains, Ciucas Mountains, Rodnei Mountains, or near cities from our country (Cheia, Câmpulung Muscel, Sinaia, Predeal, Auzga, Maneciu, Cluj, Turda). Various species of this genus were also harvested from abroad: Spain, Hungary, Bulgaria, Switzerland.

The experts that collect plants are represented by Romanian specialists (Al. Beldie, C.C. Georgescu, E.I. Nyarady, A. Haralamb, P. Cretzoiu) or foreign ones (D. Lager, Dr. Hrizish, Joh. Bubela Wsetin, M. Bosse, R. Masson, Ph. Paiche A Geneve).

CONCLUSIONS

In "Alexandru Beldie" Herbarium, which contains more than 40,000 plates, 90 plates belong to the *Alchemilla* genus. The plants from this herbarium were gathered between 1854 and 1971, reaching a maximum in the period 1930-1949 and were gathered by renowned Romanian and foreign botanists (Al. Beldie, P. Cretzoiu, C. Georgescu, E. I. Nyarady, A. Haralamb). The plants were

gathered from Romanian mountain areas (Bucegi, Ceahlău, Ciucas, Piatra Craiului, Rodnei) or near cities from our country (Cheia, Câmpulung Muscel, Sinaia, Predeal, Auzga, Maneciu, Cluj, Turda), as well as from some European areas (Spain, Hungary, Bulgaria, Switzerland). The plants are in a good conservation degree and are very useful in many research and science domains.

BIBLIOGRAPHY

Beldie A., 1967, *Flora și vegetația Munților Bucegi*. Ed. Academiei R.S.R., București, 167 p.

Beldie A. 1979, Flora României - determinant ilustrat al plantelor vasculare. Editura Academiei RSR. vol. I, p. 263.

Cântar I.C., M. Dincă, 2017, *Două genuri de plante din familia Poaceae (Melica și Eragrostis) existente în Herbarul Al. Beldie al INCDS București*.

Christenhusz, M. J. M. & Byng, J. W. 2016. "The number of known plants

species in the world and its annual increase". Phytotaxa. Magnolia Press. 261 (3): 201–217p.

Chisăliță I., D. Vasile, L. Dincă, 2017, *Unele specii de plante culese din parcul Bazoș, județul Timiș, existente în colecția Herbarului Alexandru Beldie de la I.N.C.D.S. București*, Revista de Silvicultură și Cinegetică, nr.40, 71-76 p.

Dincă L., I.C. Cântar, M. Dincă, 2017, *The characteristics of plant species from Arabis type present in Al. Beldie Herbarium from I.N.C.D.S. Bucharest*.

Annals of West University of Timișoara, ser. Biology, vol. 20 (2), 115-122 p.

Dincă L., D. Vasile, I. Voiculescu, 2017, *The characteristics of plants from Hieracium genre present in Alexandru Beldie Herbarium from I.N.C.D.S. Bucharest*". *Lucrări științifice USAMV Iași, seria Horticultură* - vol. 60 (1), pag. 39-48.

Dincă Maria, L. Dincă, D. Vasile, 2017, *A short description of Androsace genre plants present in Alexandru Beldie Herbarium from I.N.C.D.S. Bucharest*. *Currents Trends in Natural Sciences*, Vol. 6, Issue 12, 16-24 p.

Enescu Raluca, L. Dincă, 2017, *Description of plant species of Ornithogalum genus present in Al. Beldie Herbarium from "Marin Drăcea" Bucharest* N.I.R.D.F. *JOURNAL of Horticulture, Forestry and Biotechnology*, Volume 21(3), 2017, 89-95 p.

Prodan I., Buia Al. 1958 *Flora mica ilustrată a R.P.R.* -Ed. Agro-Silvică, 268-269 p.

Scărlătescu Virgil, D. Vasile, L. Dincă, 2017, *Plant species from "Al. Beldie" Herbarium - Orobanche genre - short description*. *ProEnvironment Promediu*, 31(10), 191-198 p.

Vasile D., Dincă L., Indreica A., Voiculescu I., 2016 - *Herbarul Alexandru Beldie - o colecție de plante și o importantă bază de date pentru specialiști*. *Revista de Silvicultură și Cinegetică*, nr.39, 114-119 p.

12. https://en.wikipedia.org/wiki/Alchemilla_mollis

13. https://en.wikipedia.org/wiki/Alchemilla_erythropoda

14. https://en.wikipedia.org/wiki/Alchemilla_alpina

15. https://en.wikipedia.org/wiki/Alchemilla_diademata

16. https://en.wikipedia.org/wiki/Alchemilla_bursensis

17. https://en.wikipedia.org/wiki/Alchemilla_jaroschenkoi

18. https://en.wikipedia.org/wiki/Alchemilla_stricta