DESCRIBING THE *LYCOPODIUM* GENUS BASED ON THE PLANTS PRESENT IN AL. BELDIE HERBARIUM

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Abstract. *The present paper presents the morphological and ecological description of certain species that belong to the Lycopodium Genus and that are present in Al. Beldie Herbarium from Marin Drăcea National Institute for Research and Development in Forestry (INCDS) from Bucharest. The Herbarium hosts 55 plates that belong to 7 species of the above mentioned Genus. These species are kept in a good conservation state, being gathered by Romanian botanists between 1858 and 1981. Furthermore, data regarding their harvesting year and place are also mentioned, as well as the people that gathered them and their conservation degree on a scale from 1 to 4. The Lycopodium species have been collected from different mountain areas from Romania, such as Bucegi, Țibleș, Călimani or Piatra Craiului Mountains.*

Key words: *Lycopodium, herbarium, species*

INTRODUCTION

„Marin Drăcea" National Institute for Research and Development in Forestry from Bucharest hosts a herbarium named after a renowned Romanian botanists, namely the "Alexandru Beldie" Herbarium. This Herbarium is inscribed in Index Herbariorum and contains approximately 40.000 plates organized in 600 drawers [19]. For example, this Herbarium contains 112 *Hieracium* species [6], 69 *Potentilla* species [2], 19 *Centaurea* species [7]), 19 *Androsace* species [3], 32 *Arabis* species [4], 17 *Amaranthus* species [8], 15 *Ornitogalum* species [10], 15 *Veronica* species [5] and 16 *Abies* species [9].

MATERIAL AND METHODS

The study material was comprised of 55 plates from "Al. Beldie" Herbarium that belong to the *Lycopodium* Genus. The plates were introduced in a data base and then grouped on species (the herbarium contains 7 species of this Genus), gathering year and place, the person that has harvested them and their conservation degree. An excerpt of the Lycopodium Genus' inventory is rendered in Table number 1.

Table 1

Lycopodium Genus inventory (excerpt from the data base)

Drawer Number	Plate Number	Herbarium/ Botanic collection/ Institution	Species Name	Gathering Date	Gathering Place	Collected/ Determined by:	Conservation Degree (1..4)
123	21	Museun Botanicum Universitatis Cluj	Lycopodium inundatum L.	1934.09.07.	Bucovina, Distr. Storojenet	E.Topa	1
123	15	Al. Beldie Herbarium	Lycopodium selago L.	1948.06.24.	Bucegi	Al. Beldie	1
123	48	Museun Botanicum Universitatis Cluj	Lycopodium alpinum L.	1923.07.01.	Maramures, Muntii Tibles	E.I.Nyarady, Gh. Bujorean	1
123	36	Bucharest's Polytechnics Herbarium, Silviculture Faculty	Lycopodium annotinum L.	1943.08.15.	Valea Cheia	C.C. Georgescu	1
123	31	Museun Botanicum Universitatis Cluj	Lycopodium clavatum L.	1923.08.02.	Distr. Mures-Turda, sat Lapusna	I. Grintescu	1
123	22	Museun Botanicum Universitatis Cluj	Lycopodium complanatum L.	1931.07.27.	Distr. Campulung, sat. Vatra Dornei	E.Topa	1

RESULTS AND DISCUSSIONS

Lycopodium is a Genus of perennial herbaceous plants that belongs to the *Lycopodiaceae* Family. This family contains approximately 400 species of ferns, spread out from the tropical area up to temperate and cold areas. The species from this Genus present in the Herbarium are: *Lycopodium clavatum* L., *Lycopodium annotinum* L., *Lycopodium inundatum* L., *Lycopodium selago* L., *Lycopodium alpinum* L., *Lycopodium complanatum* Holub, and *Lycopodium tristachyum*. The following paragraphs will describe the above mentioned species, based on the specialty literature. The most numerous *Lycopodium* species from this Herbarium are the following: *L. selago* L. (21 plates), *L.*

annotinum L. (15 plates), *L. clavatum* L. (9 plates), *L. alpinum* (3 plates), *L. innundatum* (3 plates), *L. tristachyum* Pursh. (3 plates) and *L. complanatum* Holub (1 plate) (Fig. 1).

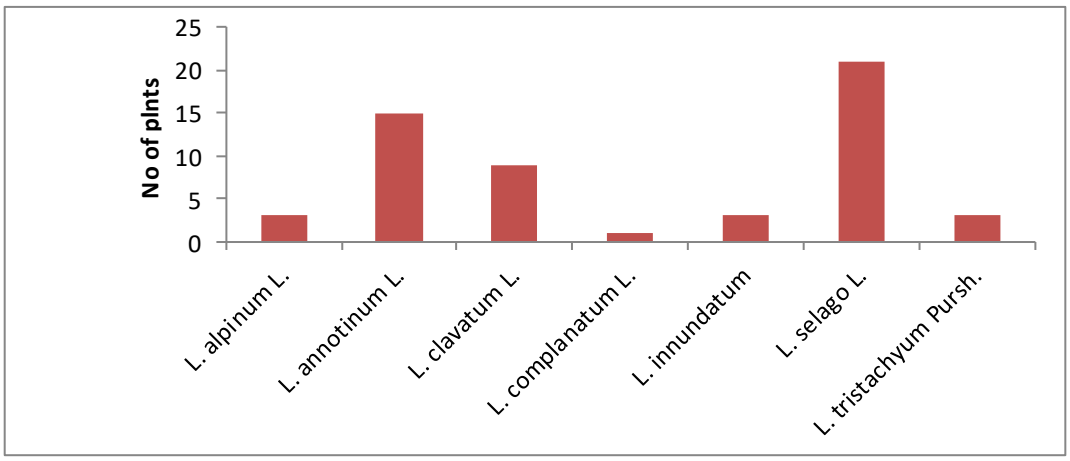
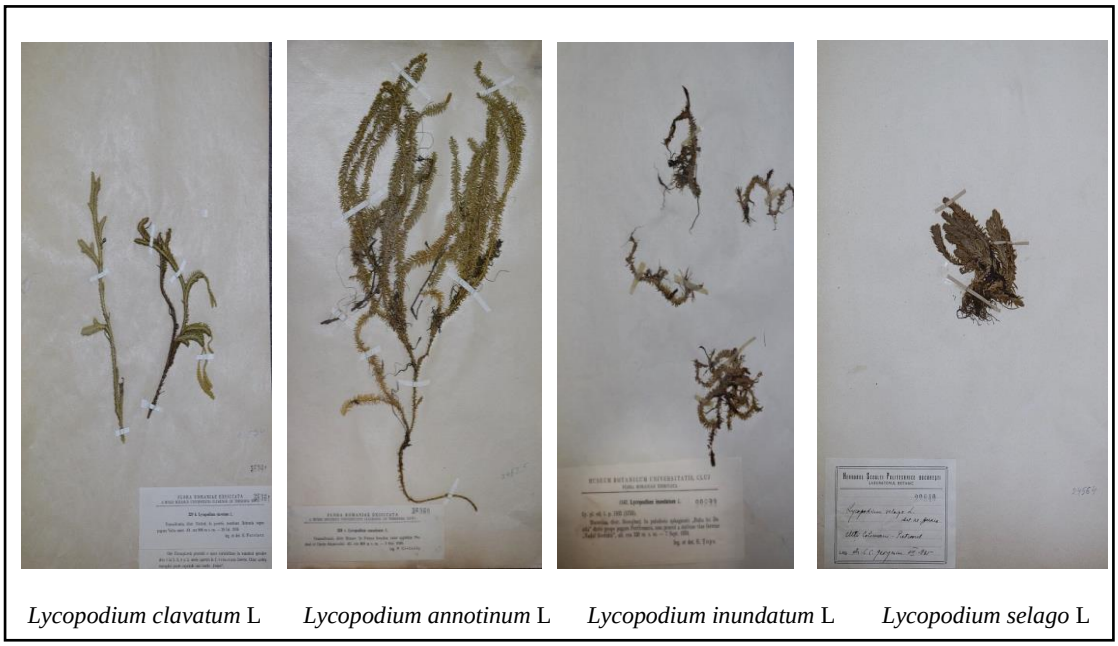


Fig. 1. *Lycopodium* species present in the herbarium

Lycopodium clavatum L.(Fig. 2) commonly known as lycopodium or lycopod is the most widespread *Lycopodium* species. The plant has long stems, a ramified root and small (3-5 mm), linear, acute, persistent and light green leaves [20]. It is a perennial plant from the spontaneous flora that grows in Europe, North and South America and East Africa. In certain countries (Hungary) or regions from France and Switzerland it is considered a national protected plant [23]. The extraction from *Lycopodium clavatum* spores is used for treating urinary, digestive, epileptic, pulmonary affections, as well as rheumatism [14].

Lycopodium annotinum L. (Fig. 2) has small (5-10 mm), linear-lanceolate and light green leaves, an elongated and ramified stem and branches that can reach 10-15 mm in length [20]. The plant is spread out in subarctic, subalpine and mountain regions from Central Europe where it vegetates in common beech forests, on acid soils [22].



Lycopodium clavatum L *Lycopodium annotinum* L *Lycopodium inundatum* L *Lycopodium selago* L

Fig. 2. Samples of preserved biological material

Lycopodium inundatum L. Holub (Fig. 2) is a perennial plant that has a weak vascular system and can reach up to 5-20 cm in height. The specie's distribution is strongly fragmented due to the drainage of acid swamps from the field area [15]. It prefers acid, sandy and humid soils from basins and near oligotrophic lakes [12]. The species is spread out from North America, Central and North Europe to Japan [17]. The species was also included in the New Red list of Polish wetland flora and listed as vulnerable –VU category [16].

Lycopodium selago L. (Fig. 2) is a species commonly found in North America and Eurasia [1]. The plant can reach 2-15 cm in height, while its leaves are alternate, persistent and distributed along the stems, with truncated gills. It vegetates on sandy and loamy soils with a high organic content [24]. The species is used for medicinal purposes, in treating alcoholism, constipation, dermatitis and has hypnotic properties [23].

Lycopodium complanatum Holub. also known as ground cedar, can reach 10-35 cm in height, having flattened branches and dark green leaves on the convex side and light green on the concave one [20]. This species commonly grows in agglomerations and on large areas from Eurasia and America [17].

The Lycopodium plants were collected between 1858 and 1981. During the 123 gathering years, an increase of this activity can be observed during 1920-1939 (Fig. 3.left). The oldest gathered species is *Lycopodium selago* L. in 1958 by Cretzoiu P. in Radna.

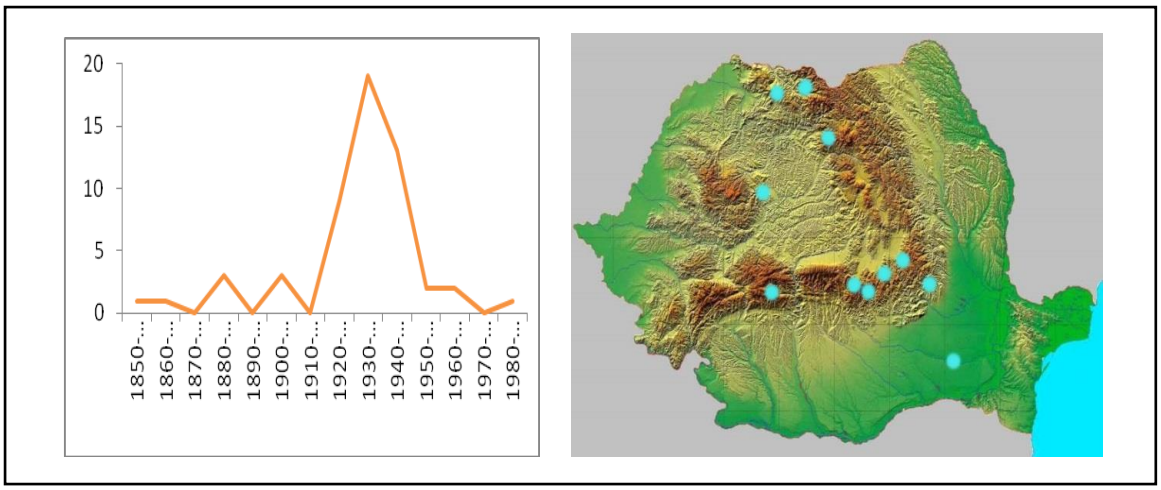


Fig. 3. Time (left) and place (right) of *Lycopodium* collections

The persons who have collected the plants are renowned Romanian specialists (A. Coman, Al. Beldie, C.C. Georgescu, M. Badea, E. Topa, E.I. Nyárády, I. Grințescu, I. Morariu, I. Lupe, M. Haret, M. Păun, N. Iacobescu, P. Cretzoiu, S. Pașcovschi).

The majority of plants were collected from Romania, with a focus on the mountain areas (Bucegi Mountains, Țibleș, Măneasa, Pietrosul, Călimani, Parâng, Piatra Craiului), Stâna de Vale, Poiana Secuilor, Turda, Brașov, Buzău, Bacău and Ialomiței Valley (Fig. 3 right).

CONCLUSIONS

The *Lycopodium* species present in "Al. Beldie" Herbarium from INCDS Bucharest are: *Lycopodium clavatum* L., *Lycopodium annotinum* L., *Lycopodium inundatum* L., *Lycopodium selago* L., *Lycopodium alpinum* L., *Lycopodium complanatum* and *Lycopodium tristachyum*. These plants were kept in a very good conservation state and were gathered between 1858-1981 by Romanian botanists (A. Coman, Al. Beldie, C.C. Georgescu, M. Badea, E. Topa, E.I. Nyárády, I. Grințescu, I. Morariu, I. Lupe, M. Haret, M. Păun, N. Iacobescu, P. Cretzoiu, S. Pașcovschi). Most of the plants were gathered from mountain areas (Bucegi Mountains, Țibleș, Măneasa, Pietrosul, Călimani, Parâng, Piatra Craiului).

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