Life Aspects of Lycopodium clavatum

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Kurt Weidelaton
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Background and general aspects of life

Overall, the lycopsids are not very well known groups of plants to the average botanist. Most often they are merely recognized and passed over. Usually, some one must have the urge and enthusiasm to get down on their knees and delve back into history to a prehistoric scene to understand lycopsids to their fullest. Lycopsids are truly an ancient plant in all aspects. In looks, you can practically see the monstrous plants that thrived millions of years ago and child so graciously to provide us with our present day coal reserves. In reproduction, they certainly have not changed from their past means of primitive generation, yet today there is much evidence of variation within the species and even genus, and this variation never seems to be a settled matter.

Lycopsid is such a plant as to exhibit active hybridization of species due to their life aspects of thriving in disturbed areas and forming a gene community that will no doubt intermingle with other species of lycopsids. To add to the botanists confusion, lycopsids are easily affected by their environmental surroundings. The plants morphology will change with changes in its environment; such as one plant growing in the sun and also in the shade will show a lax aspect in the shade and a more upright posture in the sun. Things of this sort may clearly bring about the looks that could stimulate one into thinking "hybrid?" Unfortunately lycopsid clavatum is afflicted with such characteristics. Fortunately though, the hybrid complex of clavatum is not one of such intensity to warrant great confusion as are several other lycopsid hybrid complexes such as; obscurum and dendroides (Beik, 1977). In clavatum it is a matter of overlap of the northern taxon and its southern counterpart. To the far north of Canada the variety monostachyophy becomes the dominant taxon. It is characterized by having only one strobilus per peduncle, a shorter peduncle and more appressed leaves. The question of whether var. monostachyophy is considered a species varietes, or just a form becomes apparent and important when its range overlaps with the typical form at its southern border in northern Minnnesota, Michigan, New England and the two remain distinct. Unfortunately I was not able to locate any plants that indicated any such variations as var. monostachyophy does, as characters that are of the hybrid are extremely subtle. So the matter of varieties or hybrids remains one to be looked at.

The breakdown of the classification of lycopsid clavatum begins roughly with the division Pteridophyta and divides into the class Lycopsidinae and thus into
the order Lycopodiales separating from the order Selaginellales. From here it is placed in the family Lycopodiaceae, they are then divided into their own genus of Lycopodium separated from other genera such as Isoetes, Stylites and Selaginella which are all heterosporous.

The genus Lycopodium is characterised as being perennial, homosporous, vascular plants, moss-like in appearance and with alternation of generations. They have slender stems—some prostrate, some erect and basically branching dichotomously. The sporophytes generation or the green part above ground is the dominant phase. Lycopods are unique in the plant world in having xylem and phloem within both the stem and the root. They have spirally arranged scale microphylls or minute leaves and unlike sporangia in the microphyll axes. Often sporophytes are reduced to form a strobili which may be pedunculated or not. Some species do not form strobili but instead form sporangia on upper surface of leaves near the top of a branch. Their main means of propagation is by runners, often laying forward. As the plant grows forward the former old growth dies out. Some may produce bulblets which form at the base of the upper leaves, fall to the ground upon ripening and start anew. All however reproduce by spores. These spores will grow to subterranean levels and are termed the gametophyte generation. The spores may begin to germinate within a few days after being shed, but they may also take up to three—eight years to germinate. It may also take from eight months—six to 18 years for the gametophyte to develop sexual organs or sporophyte generations. This is alternation of generations.

Lycopodiells may be low terrestrial dwellers as is usually the case in North America or they may be epiphytic in jungle or tropical situations. They are found on every continent except antarctica from the tropics to treeline and above, one habitat they do avoid though is a desert habitat. Overall there are more than 600 species of Lycopodium found in the world with 12 being found in the eastern united states.

More specifically Lycopodium clavatum (“clava” meaning club) or another definition says that it is greek for wolf foot, in regards to it thriving in barren places (Boyleday), has many common names ranging from running club moss, common club moss, staghorn club moss, wolfs club moss to Robinhoods hatband and forks and Knives. Many species are referred to as ground pines presumably from their resemblance of leaves to cedar hummock and pine. A brief definition of the species clavatum is as follows.

It has horizontal stems, creeping and sometimes leaping over obstacles, at surface or barely under the ground, rooting a irregular internodes. Stem produces branches that are erect or slightly arching, these branches may fork up to 7 times almost always dichotomously, leaves are yellowish green and at all the same
length so that the branch outline is cylindrical in appearance, they are arranged in rows and densely packed and not scale like at all more needle like and linear. The most distinguishing character of the plant I think is the appearance of a bristly, colorless hair approximately three mm long at the tip of each leaf. This character is recognizable from a distance away. The newgrowth leaves are silvery green and the older dark green. The reproductive organs are produced on long scaly peduncle. There can be up to 7 strobili, and one up to 7 cm long. These strobili can be produced on an erect branch and will mature during August or Sept. Lycopodium Clavatum is found from Labrador to Alaska, south to North Carolina and Washington. It is a circumboreal plant (Lawrence 1951). An overall habitat preference has been derived from several references (Underwood 1908, Wherry 1961, Glazier and Coots 1969) and the consensus is that Lycopodium Clavatum generally prefers dry and open areas, preferably in an opening or edge of a mixed coniferous deciduous woods. In soil that is slightly to moderately sandy or gravelly and non-calcareous or acidic. I will now discuss my findings and compare all things to the site description above.

Overall I found Lycopodium Clavatum growing quite commonly in northern Michigan. Here is a discussion and description of certain areas spread throughout northern Michigan in which I found the plant. On a trip to the upper Peninsula I found Clavatum growing in a “borrow pit” between Rt 28 and a swampy woods 1.7 miles southwest of Hubert’s Corners, Chippewa Co. Michigan. It was a particularly sandy site and was quite moist. The plant itself was growing on the edge of the swampy woods and the pit under some Picea Mariana (black spruce) Interestingly it was growing in association with four different types of Lycopodium: L. inundatum, L. Sabini, L. trifolium and L. Salae. This must have been a perfect habitat for Lycopodium and for hybrids amongst all the many species of Lycopodium species. This site was typical of the site for Lycopodium described above. I also found it growing just east of Cheboygan in an area called grass bay. Here it was in a quite different habitat. It’s associates were typical of a swamp or wetland. Some were Carex trifolius, Cornus Canadensis, Petasites palmatus, Trientalis borealis, Betula pumila and as it always seems to be in association with Lycopodium inundatum. There were many fallen and decaying logs and this habitat seems to be quite fitting for Lycopodium Clavatum in northern Michigan. As I also found it extensively throughout poor swamp growing quite profusely. In my site notes I found a small patch under QUAD and hemlock trees growing on a decaying log. This seemed typical for
a growth pattern for Clavatun to creep and crawl with long runners as this plant did. Some of the typical associates in these swampy areas, were Pteridium aquilinum, Myriophyllum, Cornus (cupressoides), and Ulmus. Along the trail I found some of the nicest patches of Clavatun in the swamp. Halfway to Butch Lake on the south side of the creek I found a large mat of Clavatun and also found it scattered along the trail further down. In some instances the plant was practically covered by the foliage of trientalis and Pteridium. Acalia trientalis Cornus and Lycopodium obscure were within feet of these patches. The most notable thing about this area was that it was along an open, fairly level, used trail, which supports the information description of habitat preference for Lycopodium Clavatun.

I only noted two instances of Clavatun being a plant of open areas and sandy spots, hardly ever did I see it in a particularly dry habitat, what I think Lycopodium Clavatun strategy is, is to take advantage of areas that are not particularly good for other plants, such as the blower pits site. Lycopodium distinctly fits in the succession scheme of things definitely as an introductory species. It is an important and integral part of the series of plants occupying a wide range of habitats throughout the successional process.
Literature Cited

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9. Lycopodium clavatum L.
subsp. monostachyon (Grev. & Hook.) Sol.
*Lycopodium clavatum* var. monostachyon Grev. & Hook.; *L. clavatum* var. lagopus Laest.

differs from subsp. clavatum in having solitary, sometimes very short-peduncled spikes.

described from Smoking River, lat 59°N, in Rocky Mountains.

8. Lycopodium clavatum L.
subsp. clavatum

stem long, densely covered with more or less appressed leaves, creeping on ground, with ascending branches repeatedly forking with age, branches terminated by a usually long peduncle covered with short bracts and bearing 2–5 spikes at least the lower spore-bearing leaves tipped with a soft, hair-like bristle, best observed on young leaves at tops of branches.

woods and rocky places in lowlands, ascending to lower alpine region, mostly on acid soil. described from Europe.

var. integerrimum spring (common in British Columbia) differs in having bracts lacking bristles.