NATIVE PLANT SOCIETY OF NORTHEASTERN OHIO

Founding Chapter Of

THE OHIO NATIVE PLANT SOCIETY

6 Louise Drive
Chagrin Falls, Ohio 44022
(216) 338-6622

On the Fringe

VOLUME 2 NOVEMBER 1984 NO. 6

NOVEMBEMBER PROGRAMS AND EVENTS:

FRIDAY, NOVEMBER 30th - ANNUAL DINNER at the Cleveland Museum of Natural History.

Wine and Cheese	5:45- 6:30
Buffet Dinner	6:30- 7:30
Meeting & Election	7:30- 8:00
Speaker	8:00

Dinner ticket (INCLUDES Speaker ticket)..... $6.50

Speaker ticket only $3.00

Special diets such as vegetarian and medical provided for.

FAMILY AND GUESTS WELCOME !!!!!

Frederick W. Case, Jr., is an internationally recognized authority on rare and endangered plants, with special expertise on orchids, trilliums and pitcher plants. On his own property he has a bog, a fen, a prairie, an arctic rockery, a deciduous woodland garden and an aquatic garden. He is the author or the orchidist's out-of-print bible "Orchids of the Western Great Lakes Region".

Mr. Case is in the process of completing a revised edition that will be available next Spring. He is a fascinating and widely travelled botanist and is known as one of America's best rare plant hunters.

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RESERVATIONS, ACCOMPANIED BY CHECK MUST BE IN NO LATER THAN NOVEMBER 23rd, 1984.

PRESIDENT'S COLUMN

Once more we come to the closing of a Native Plant Society year. It seems only yesterday that we opened with Donald Dean's Botany class - in the teeth of a blinding snowstorm. Let us pray that the weather is more clement for the November 30th program. By now, you should all have received your orange flier giving all the details of that evening. If you have not received one, please call me. 1-(216)-338-6622 It is important that we have a good showing for the Museum if we are to hope to do this again in the future. EVERYBODY turn out! The meal, buffet style, will feature roast beef, roast chicken, and for the non-meat eaters, a rigatoni with mushroom marinara sauce, plus lots of side dishes. We have kept the cost unbelievably low and the speaker's ticket is thrown in free! Where else can you get such a deal??? If you need a ride, let me know.

On November 10th the Stark Wilderness Center in Wilmot, Ohio will have the first meeting of Chapter Number 2 of the Ohio Native Plant Society. Our own Emliss Ricks will be their speaker. The chapters in Columbus, Ohio, Toledo, and Dayton will probably not get going until Spring. We also have a very interested taker in Cincinnati.

Our State Charter for both the Ohio Native Plant Society and the Native Plant Society of Northeastern Ohio are in hand, as is our tax exemption from the IRS. So, we are now an independent and viable organization. The new Executive Board will decide at their January meeting whether to continue under the sponsorship of The Holden Arboretum.

Our program committee is hard at work on the 1985 program and field trips. We hope to be able to hand you a printed agend at the November 30th meeting. We will continue to have programs both at the Museum and at Holden, and wherever else is feasible. If you have any suggestions, please let me know.

This has not been a banner year for projects. The Museum Ravine, which should be of great concern to us, was not attended to in the manner in which I had hoped. Several good people came down to work three or four times. However, the job is much bigger and requires more of us at regular intervals. I will be speaking to this subject at the annual meeting, and I

hope that more members will mark off their 1985 calendars in advance so that we may accomplish more next year and hold up our end of the bargain. The Board will come up with additional suggestions in the January newsletter.

In closing, I feel that our second year of operation was one of continuing progress and growth. More people have become actively involved. The turn-out for the mushroom program and field trip was heart-warming. Many thanks are due the newsletter editor, Gene Spohn, for consistently putting out a newsletter that has drawn praise from readers all over the country, including the prestigious New England Wildflower Society. And, to all the rest of you who have put your shoulder to the wheel, my sincere appreciation for making it all go.

Ann Malmquist
President of NPS of NEO and OHIO

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IMPORTANT NOTES:

* In January dues will go up to: (We just could not maintain the high quality we have all gotten used to.)

Active	$ 7.50
Family	15.00
Sustaining	25.00
Patron	50.00

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* Members who would like to attend Board Meetings are welcome. Please notify your President that you will be coming.

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***** Donald S. Dean, Professor Emeritus of Baldwin Wallace College will be honored at the November 30th Annual Dinner.

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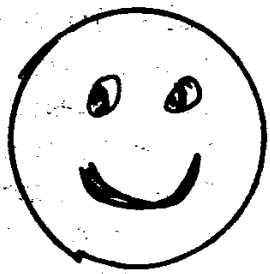
NEW MEMBERS: Bert L. Szabo, Monroe Falls
Cordetta Valthauser, North Royalton
Thomas E. LePage, Cleveland

WELCOME!



** To all those members and others who helped make this NEWSLETTER what it was this year, my heartfelt THANKS. It wouldn't have been except for you.

Gene Spohn

LICHENS

The Lichens are a group of organisms which are all about us and are not usually noticed by most people. Many of them are scarcely worhty of notice in terms of beauty, size or other remarkable attributes. However, once they have been brought to your attention, you will find them virtually anywhere and they will add another dimension to any walk through field or woodland.

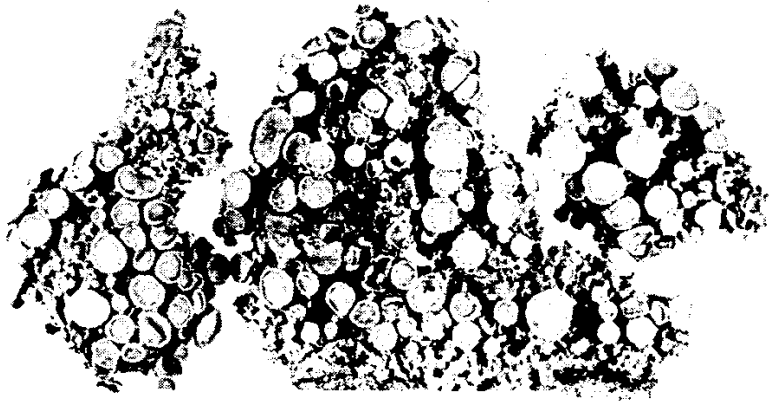
Until a few years ago there was no question that lichens were plants. Strange plants to be sure, composed of both a fungus and an alga, but definitely plants. Now that the fungi are not considered to be plants but to belong in a separate kingdom (Kingdon Fungi) , the status of the lichen as a plant is questionable. As if that were not enough the latest system of classification even takes the algae out of the plant kingdom and place them elsewhere (Kingdom Proctista). What then is a lichen? As matters not stand the only answer is "none of the above" which includes all of the five kingdoms now proposed in biological classification. History will record the conclusions of those who classify things. As far as we are concerned in this discussion lichens are plants.

Lichens are organisms which are formed by the association of a fungus and at least one alga. The fungus is usually an Ascomycete (cup fungus) and either a green or blue-green alga. Some lichens contain both green and glue-green algae in addition to the fungus. These combinations result in organisms which are capable of growing in a remarkable range of environments. The fungus component provides a tough outer coating and anchorage to a substrate. In addition the fungus absorbs, and apparently stores, water and minerals. The algal component is photosynthetic and makes the

Cetraria ericetorum

food required by the organism from atmospheric carbon dioxide, light energy and the water and mineral collected by the fungus component. Those lichens which have a glue-green alga as a component generally also have the capability of converting atmospheric nitrogen to organic nitrogen. It seems that the fungus is the dominant member of the pair because it is the one whose ability to exist in a given environment and to protect and provide for the alga in that environment probably is the crucial factor in the plant's growth. The alga apparently can grow inside the fungus container virtually any where there is sufficient light. The lichen can therefore grow where there is no food for the fungus and where the unprotected alga would die quickly.

A given species of lichen has characteristic form, morphology, habitat requirements, physiology and reproductive habits. In general none of the physical attributes of the lichen are characteristic of either the fungus or the alga grown separately. An exception is the fact that many of the fungal partners carry out sexual reproduction, when doing so they produce the typical cup structure of their species. Presumably fungal spores are released from these cups. Although the alga is not involved in the reproductive activity noted above the lichen does reproduce. Reproduction of the lichen is accomplished by the formation of very small spore-like structures formed of both fungal filaments and algal cells. Commonly these structures consist of a tough outer layer of fungus enclosing softer fungal filaments with algal cells imbedded between them. Presumably these are scattered by wind and rain.



Xanthoria polycarpa

Many of the lichens have a definite internal structure. In many of these, the fungus forms a thick, tough upper layer and a bottom layer which is variously adapted for anchorage and absorbtion. In these a central layer of loosely packed fungal filaments exists in which the algal cells are supported and grow. However, many lichens lack this rather elaborate structure and the alga seem to be more or less randomly distributed throughout the organism.

The lichen is quite literally a separate organism whose characteristics are defined by the cooperative growth of these two alien species in one unit. It has been possible in several cases to separate the fungus and alga in a lichen and to induce them to grow on appropriate media in the laboratory. Under these conditions each grows as a normal fungus or single celled alga with no indication that they were one-time lichen partners. In a few cases it has been possible to reunite the two in a common culture and to induce them to combine and grow as the lichen from which they were obtained.

The literature on the physiology, and culture of lichens is scanty. One reason is the very long periods of time required to do an experiment or growth analysis. This is because most lichens grow very slowly, only a few millimeters per year under the best of conditions. The lack of data is such that we literally know nothing of the physiological adaptations that these plants have made which allow them to inhabit the toughest natural environments on earth. These include bare rocks in the hottest deserts and the rocks and tundra of the arctic.

There are nearly 20,000 known species of lichens. They are world-wide in distribution and can be found in virtually any natural habitat. There are even a few aquatic forms. In general they prefer undisturbed substrates. Rocks, tree trunks and comparatively barren untilled fields are the most common substrates locally. Although the lichens grow slowly they are exceedingly tough. Once established they are capable of withstanding almost anything except fire. Some of the arctic lichens are estimated to be a least 4000 years old. Many of these grow considerably less than a millimeter per year. With whis type of life style it is easy to understand whey they are found on undisturbed substrates. Fields that are ploughed every year or so would not allow a lichen time to even get started.

Although lichens can take virtually anything that nature can dish out they do not do well in competition with man. Industrial cities and similar sources of air pollution kill out many of the lichens in the area. They are sensitive to a variety of air-borne industrial pollutants. A few years ago a project was proposed to use alalyses of lichens as a way of measuring pollution near cities. The pilot project to test the idea was carried out on the west coast where lichens and pollution are both abundant and in close proximity. Unfortunately, the lichens were shown to be useful in this context were those growing in the tops of tall trees. The estimated cost of

measuring the pollution using this method was much higher than anyone was willing to pay.

The range of color found in the lichens is really quite amazing. Some are brilliant yellow, orange or red. Commonly a species will produce one of the bright colored pigments which mixed with the basic gray green of the alga-fungus tissue produce a wide variety of less spectacular pigmentation. Lichens which have a blue-green alga as the photosynthetic partner usually have a blue cast to them. Several species are black. It should be no surprise that the color of a lichen is often one key to its identity.

Usnea herrei

As a general rule, lichens appear to be inedible. So much so, that even insects rarely bother them. A major exception to the rule is the lichen commonly known as "reindeer moss" which is a major food source for reindeer herds and other grazing animals of the arctic. Another lichen is a major food for various animals of the large swamps of the southern states. With the exceptions noted above, it is difficult to assign a definite function in the affairs of our planet to the lichens. Quite possibly because no one has looked very hard into the affairs of lichen life. One function that is commonly listed for the lichens that live on rocks is that of soil formation. They probably do serve in that capacity as the millenia pass, but there is no measure of their value compared to that of other physical and biological soil forming processes.

Although it is fairly simple to identify most lichens as such, it is quite another matter to determine the identity of a particular unknown lichen. Technical keys to the lichens exist, but most of them cannot be used unless a microscope is available. Most general botany courses at the college level require the students to be able to distinguish the three major morphological forms of lichens. These are the Foliose (foliage like), Crustose (crust like), and Fruticose (brush like). These criteria allow you to proceed to one of three sections in a key.

Careful inspection of the larger features of the surface may provide sufficient information to allow you to determine the genus to which the specimen belongs. If you wish to determine the species at hand or confirm your identification to genus, you will need a laboratory area, a microscope, a few chemicals and lots of time.

Physcia aipolia

The chemicals are needed because lichens produce some unique compounds called lichen acids. These compounds (there are around thirty of them) become colored when treated with appropriate reagents. The final identification of many lichen species depends on the identification of the particular lichen acid produced by the specimen. This is done by reacting a very small piece of the lichen with a drop of reagent on a microscope slide. The color produced with a given reagent is used to identify the substance and hence the lichen. The amount of colored substance involved is small and the microscope is necessary to determine the color. In difficult cases the form of the crystal of the colored material must be determined.

The above description of the procedures required for lichen identification are not intended to discourage you from trying. Many can be learned and recognized by visual inspection. If you become enamored of lichens, neither the modest expense or space involved in setting up the required laboratory will deter you.

There are plenty of lichens in Ohio to keep anyone occupied for a long time. Taylor, 1967, lists 380 species of lichens in his "Lichens of Ohio".
(Taylor, Conan J., 1967. "The Lichens of Ohio", the Ohio Biological Survey, Biological Notes No. 3, Published by Ohio State University).

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Photographs: LICHENS OF OHIO, by Conan J. Taylor, Ohio Biological Survey

ON VISITING AN OHIO BOG

by

Dr. Barbara K. Andreas

Bogs are exotic places to visit. Hot and steamy in the summer, full of dangers such as the possibility of falling through the sphagnous mat or contracting a severe case of poison sumac, bogs provide the substrate for many unusual plants.

The term "bog" is used in different contexts by different wirters to refer to peatlands. After much botanical, exological and chemical research, a pattern is beginning to emerge that separates Ohio bogs from other types of wetlands. Ohio bogs (1) develop in areas where drainage is blocked and there is little or no circulation of water, (2) contain brown water due to an accumulation of organic material, (3) have a more or less continuous Sphagnum mat, (4) have vegetation dominated by ericaceous shrubs and a herbaceous layer primarily dominated by dedges and (5) have a wat er pH between 3.5 and 5.5.

On herbarium specimens, in literature and in general references, Ohio bogs have been referred to as Sphagnum bogs, leatherleaf bogs, shrub bogs, tamarack bogs, cranberry bogs, acidic bogs and more recently, weakly minerotrophic or ombrotrophic swamps.

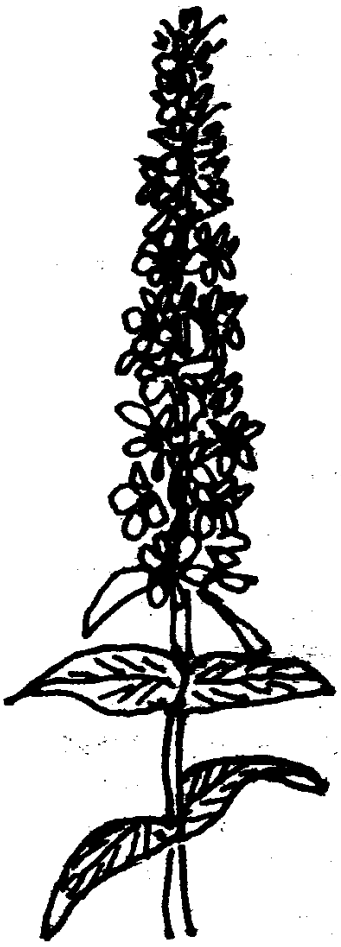
With the exception of the few bogs in extreme northwestern Ohio, bogs are confined to the Glaciated Allegheny Plateau. Less than 10% of the bogs known to occur in Ohio are located outside of the northeastern corner of the state. All Ohio bogs occur within the area glaciated during the Wisconsinan ice advance.

To the visitor, the striking feature of any bog

LEFT TO RIGHT:
Horned Bladderwort
Greater Bladderwort
Flat-leaved Bladderwort
Swollen Bladderwort

is its continuous springy Sphagnum mat. This mat usually develops on substrates, or purchaes, formed by vascular plants such as swamp loosestrife, leatherleaf or sedges. As these plants invade an aquatic situation, Sphagnum will follow and grow entangled among their stems and roots. Sphagnum species are the most ecologically significant and descriptive feature of a bog.

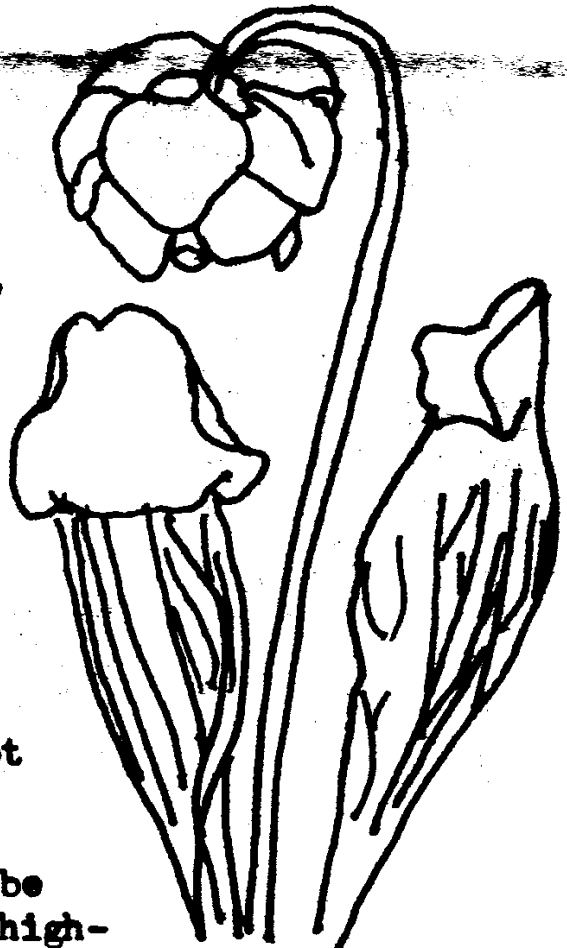
Sphagnum doesn't require acidic conditions but causes acidity by exchanging hydrogen ions for other cations so that the species can live in otherwise alkaline conditions. It is not unusual to find a Sphagnum mat at the edge of an alkaline lake, or bog plants growing on the side of a Sphagnum hummock in an alkaline fen community. Sphagnum hummocks, due to their differences in water availability and acidity, usually support a variety of Sphagnum species.



LOOSESTRIFE

Visitors to a bog come in contact with plants that supplement their nutrient requirements by curious methods. Since nitrogen and other nutrient levels are low in bogs, some plants, such as sundews, pitcher plants and bladderworts, have evolved systems by which they supplement their nitrogen requirements by capturing and digesting insects. Often these species are very successful and are an important component of the bog mat. Fens, too, are nitrogen deficient. A common fen shrub, swamp alder (Alnus rugosa) can procure nitrogen through root nodules.

PITCHER PLANT



A visitor from southern Ohio might be surprised to see two ericaceous shrubs, highbush blueberry (Vaccinium corymbosum) and huckleberry (Gaylussacia

baccata), growing in the wet Sphagnum mat. Elsewhere, these species grow on dry, sandy, wooded uplands and openings. Many of the ericaceous shrubs found in bogs are adapted to drought conditions. Plants such as blueberry, leatherleaf and huckleberry have thick leaves with an abundance of waxy cuticle. Some species, such as cranberries and Labrador tea, have leaf margins which roll inward (revolute). Evergreenness or semi-evergreenness is common in species which grow in bogs. All of the above morphological adaptations are associated with the prevention of water lossand/or nutrient loss. The explanations for these drought-resistant adaptations in a very wet environment are controversial. Perhaps it is related to the fact that bog shrubs have their roots in cold water (or even ice) for a large part of the growing season and these cold temperatures limit metabolic activities. Retention of the leaves over winter not only conserves nutrients but also allows the plant to be ready for photosynthesis at the first opportunity.

Visiting an Ohio bog can be a gustatory experience. In late July and early August, blueberry and huckleberry bushes are covered with ripened fruits. In November, cranberries are ready for harvest. These fruits add color to plant communities which typically has few of[illegible] yellows and blues of the Fall composites.

Bog communities are rare in Ohio and deserve to be left undisturbed. It has been estimated that less than 1% of Ohio's land surface was in peatlands at the time of the arrival of the early European settlers. These peatlands, both bogs and fens, are becoming more rare due to draining, clearing and filling so that the land may be used for agriculture or development. Peat deposits are being mined to commercial peat. Many kettle hole lakes, once surrounded by a floating Sphagnum mat and tamaracks, are ringed now with summer cottages.

Ohio bogs are small in area covered and are ecologically fragile. They are the rare jewels of natural area types, a piece of history left behind when the last of the Wisconsinan ice melted. Representative Ohi bogs may be visited from the boardwalks at Eagle Creek and Cranberry Island State Nature Preserves. Glacier-created peatlands are, in Ohio, at the edge of their North American range. More extensive and diverse examples of bog communities occur further north in Michigan, Wisconsin, Minnesota and Canada.

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This busy lady is wife, mother, Professor of Biology at CCC, on the Natural Areas Council

NATIVE PLANT SOCIETY OF NORTHEASTERN OHIO

Founding Chapter Of

THE OHIO NATIVE PLANT SOCIETY

6 Louise Drive Chagrin Falls, Ohio 44022

[redacted]

SPONSORED BY THE HOLDEN ARBORETUM

1984
NATIVE PLANT SOCIETY BALLOT

Election will be by ballot only! It may be mailed or brought in to the museum by 8 p.m. Nobember 30th. Ballots MUST be signed.

			Write In
PRESIDENT	______	Ann Malmquist	____________
VICE PRESIDENT	______	Larry Giblock	____________
SECRETARY	______	Marian Larson	____________
TREASURER	______	Tom Sampliner	____________
AT LARGE	______	Donald Dean	____________
AT LARGE	______	Jack Selby	____________

Signature: ____________________

MAIL TO: Native Plant Society of Northeast Ohio
6 Louise Drive, Chagrin Falls, Ohio 44022