

PRELIMINARY REPORT ON THE BOGS OF NORTH-
ERN ILLINOIS

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It is a fact not generally known to the public at large and even to the botanists of the state that in Lake County there are several bogs, small in size but possessing the characteristic vegetation and conditions of similar formations usually found much farther north. While these bogs may have been mentioned in local statements, so far as known to the writer, no technical description of them has appeared in print. This report is based on a superficial survey with the expectation of a more detailed study of environmental conditions and a discussion of suggested problems later.

So far seven bogs have been located and it is probable that there are others, although the conditions necessary for the production of bogs may be found only in Lake County and not in other parts of the state. These seven bogs are all within the limits of the Valparaiso moraine which is characterized by a soil consisting of clay or gravel, frequently containing a large percentage of calcium carbonate, and having an uneven topography, originally with many knobs and kettle holes. Most of these depressions have been included in the drainage systems of the rivers of the region, but a section in western Lake and eastern McHenry Counties on the divide between the Fox and DesPlaines Rivers still contains a few poorly drained or undrained depressions, and it is in these that the bogs are found. It is probable that bogs were formerly very numerous, as indicated by the many patches of deep peat shown on the soil map of Lake County, although of course peat is formed by swamp vegetation as well as by bog plants. These bogs are interesting, first, as furnishing the only specimens of bog types of vegetation to be found in Illinois, and second, as an illustration of the method by which many of the patches of deep peat have been formed.

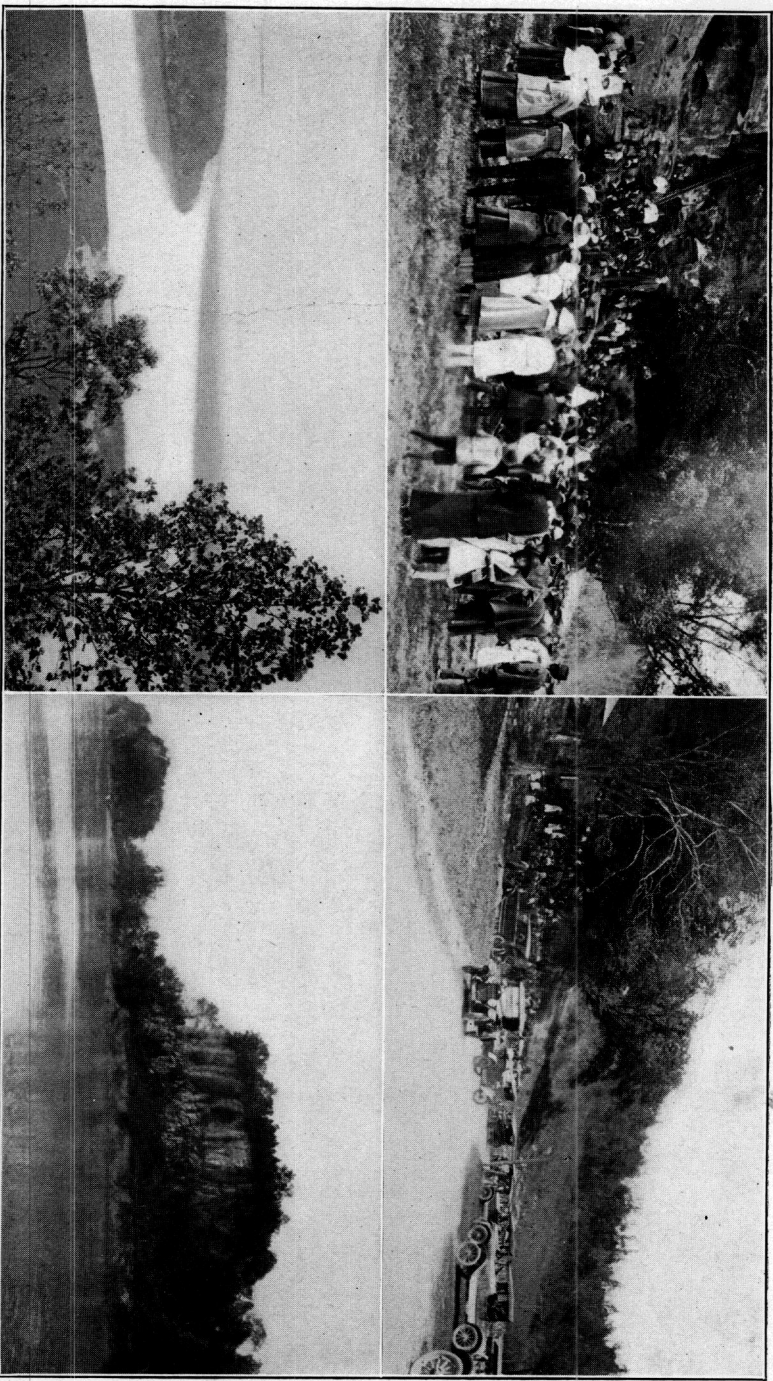
As these bogs are found in Lake County approximately from ten to twenty miles west of Lake Michigan, the general climatic conditions are similar to those of Chicago and vicinity, but on the whole probably more extreme, and of

course the average temperature is colder than that of the rest of the state. The vegetation in these bogs would be exposed to cold northwesterly winds on the approach of cold waves, as they are far enough away from the lake to lose any tempering effect from those waters. The vegetation of this region was originally the prevailing Oak Hickory forest of Illinois, so that the patches of tamarack trees found in the bogs make a very striking contrast to the trees inhabiting the rest of this region.

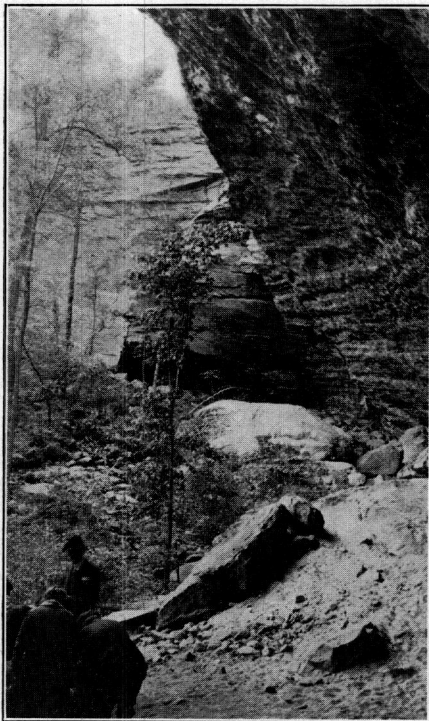
DESCRIPTION OF INDIVIDUAL BOGS.

1. Cedar Lake Bog.—Cedar Lake is located in Section 32, T. 46 N., R. 10 E. It is about three-quarters of a mile long and half a mile wide and is roughly oval or pear-shaped in outline, with its longest diameter extending north and south. The water is shallow over most of the lake, but according to local testimony a rather deep basin is found in the north central portion. The shores show evidences of earlier stages of high water, three or four feet above the present level, under which conditions the waters of the lake had an outlet through a channel which apparently passed just northeast of the present railroad station, as its banks can still be traced in a southeasterly direction to another small lake called Mud Lake. The vegetation on the ridges surrounding the lake was originally typical oak hickory forest with large numbers of red cedar trees on the more exposed shores. These forests have been almost entirely cleared away with only a very open patch of forest remaining on the upland northeast of the lake.

The bog lies in the form of a crescent in the north end of the lake. It is separated from the shore on the north by a stretch of shallow water one to two hundred yards across containing grass hummock formation. At either end of the crescent the swampy space is narrow and partakes more of the character of the typical moat of open water which usually surrounds a bog. With the rough apparatus available, there was found to be a depth of at least ten feet of water under the mat in the center of the bog. The bog consists of a quaking mat whose framework is made up of the roots of dwarf birch, blueberry, and cranberry with filling of sphagnum moss and also marsh marigold, buck bean, cot-



Academy field trip, April 30, 1921, to Fountain Bluff, Jackson County, as guests of the citizens of Murphysboro. Above, right, automobiles, and left, scene at barbecue. Below, left, Mississippi river from the bluff, and right, the Devil's Bake-oven near Grand Tower. Photos by Prof. W. C. Waterman.



A view in the amphitheater of "Fern Cliff," Goreville, Illinois.

Taken by Catharine A. Mitchell, May 1, 1921.

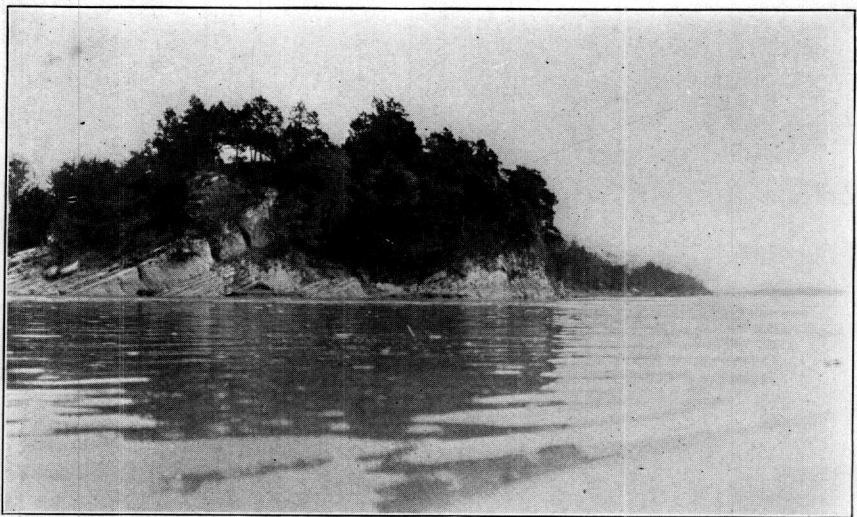


Characteristic canon of Fern Cliff near Goreville, Illinois.

Photo by Clarence Bonnell, May 1, 1921.



Scene on the Illinois side of the Mississippi river, between the village of Grand Tower, Ill., and Fountain Bluff. Photo by Clarence Bonnell, April 30, 1921.



Uplift shown on Illinois bank of the Mississippi river, between Grand Tower and Fountain Bluff, Illinois. Photo by Clarence Bonnell, April 30, 1921.



Fig. 1. Young tamaracks on immature bog on Cedar Lake.



Fig. 2. Very mature bog near Allandale Farm, showing dead and dying tamaracks.

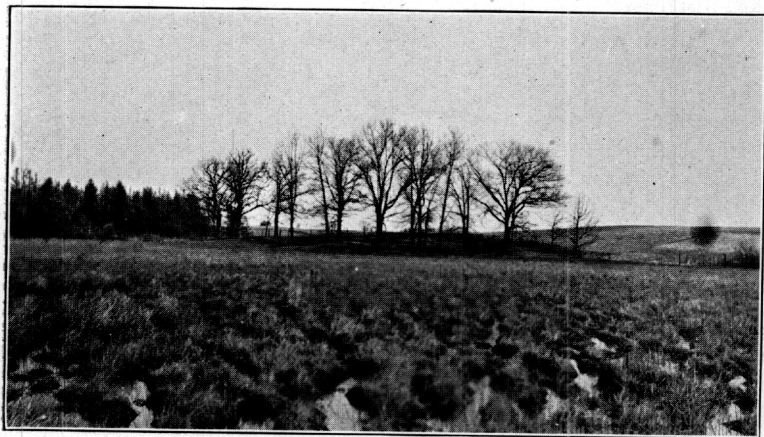


Fig. 3. Bog near Volo from the south, showing swamp, oak-hickory remnant on knoll, and tamaracks.



Fig. 4. Edge of tamarack forest in bog near Volo. Swamp sumach in foreground.



Fig 5. Northern portion of bog near Volo, showing mature moat, blueberry heath and tamaracks.

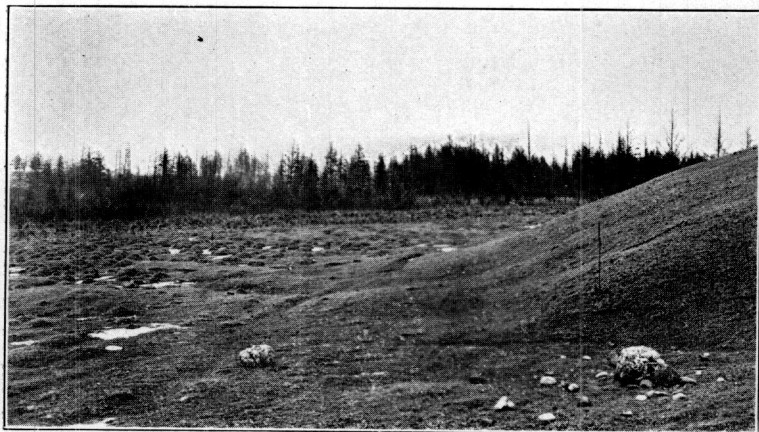


Fig 6. Mature bog near Wauconda, showing old shore line, swamp, shrub zone and tamaracks.

ton grass and other bog plants. There are frequent openings in the mat of from six inches to two feet in diameter which contain floating mosses of *spirogyra*.

At the west end of the bog near the Allandale farm is an elongated cluster of young tamaracks containing about fifty trees, none apparently more than fifteen years old. There are also one or two isolated trees of about the same size near the center of the bog. Fig. 1.

The bog is of local importance economically because of its annual crop of cranberries. These plants grow luxuriantly and produce many berries, but on account of the unstable character of the mat, many people are afraid of venturing on it. Within the last five years at least one horse and one cow have wandered out on the surface of the bog and have gone down in a soft spot and been drowned.

From the features described this is apparently a very young or immature bog, and it would be interesting to know whether or not it has increased in extent within the memory of man. Local testimony as to its history is somewhat uncertain but it seems probable that it has not increased much in size in the last fifty years. It is agreed, however, that the tamarack trees appeared rather suddenly about twelve to fifteen years ago.

2. The Allandale Bog.—About five hundred yards west of Cedar Lake and northwest of the Allandale farm is a kettle hole of low relief, the center of which contains the remains of a small bog. This was artificially drained about ten years ago, but was evidently very mature long before the draining. The bog lies about fifteen feet below the surrounding upland, is oval in shape and about two hundred yards in its longest diameter. The substratum on the soil at this depression is peaty but solid, though soft and water soaked in a wet season. The slopes surrounding the depression were originally covered with oak hickory forests and here also a few trees are left on the west side. The land between this depression and Cedar Lake was cleared a number of years ago. In the depression the vegetation is very mixed. There are still standing the dead trunks of several large tamarack trees eight to ten inches in diameter. Fig. 2.

Testimony is lacking as to whether or not these died before the artificial draining of the bog. *Ilex verticillata* and *Pyrus arbutifolia* are abundant, and a few clumps of sphagnum have been found on the floor. On the other hand the presence of several more mesophytic families including *Osmunda regalis* and *Aspidium spinulosum*, also *Solanum dulcamara*, and even *Maianthemum* and one or two small trees, including oak and mountain ash, indicate that the bog was mature and conditions had become quite mesophytic even before it was drained.

3. Volo Bog.—The depression in which this bog is situated is located near the center of Section 28, T. 45 N., R. 9 E., about one and three-quarters miles northwest of the town of Volo. This depression also is oval with its largest diameter north and south and with two connecting valleys or extensions, one to the southwest and the other curving around to the northwest and west. The depression is approximately three-quarters of a mile in length by one-half mile in width. It is surrounded by ridges of morainal gravel averaging about fifty feet above the floor of the valley, and like Cedar Lake the surrounding slopes show evidences of lake erosion at a previous stage of high water. The depression drains from the southwest corner into Sullivan Lake situated about a quarter of a mile distant.

The south end of the depression has a level floor of glacial clay, in one place rising into a hillock about one hundred yards in length by fifty in breadth covered by an open stand of oaks, mostly white and ellipsoid. Fig. 3. This clay floor is covered with water to a depth ranging from one to three feet at different seasons. The vegetation is pronounced tussock formation with scattered *Betula pumila* and occasional clumps of willow. This formation covers approximately one-third of the depression and gives way rather suddenly to a mature tamarack forest bordered by a shrub zone consisting of chokeberry and swamp sumach. The latter is especially prominent and forms the largest growth of this shrub which the writer has seen in this region. Fig. 4. The floor of the tamarack forest is still slightly quaking and the undergrowth is made up largely of sphagnum and cranberry with frequent pitcher plants and some blueberries.

Passing north through the forest, the pitcher plants, swamp sumach and cranberries gradually decrease and the blueberries increase.

The northern part of this bog originally held a tamarack forest, but the trees have been cut with the exception of a narrow fringe on the east and northeast and the whole northern third is now a blueberry heath of perhaps twenty or thirty acres. Fig. 5. The floor is composed of peat but is rather solid with occasional wet spots, and the dominant types are blueberries and chamaedaphne with occasional ledum and a shrub zone of chokeberry and occasional swamp sumach around the outside. A small pond is reported in the center of the bog but the writer did not have time to ascertain its shape, size or other characteristics. On the northwest side of the bog, the swamp formation from the south narrows down and changes decidedly in the character of its vegetation. A belt of shrubs and small trees is found next to the tamarack forest, and between this and the shore is a stretch of equal width covered with sedges and grasses. This extends to the northwest corner of the depression, but the tree zone seems to have been less extensive toward the north consisting mostly of willows and has recently been entirely cut away.

The original oak hickory forest of the upland has been almost entirely cut, but there are some patches remaining on the hills to the southwest and northwest as well as the clump previously mentioned on the morainal knoll in the swamp.

There was little opportunity to study the environmental factors of this bog, but tests of acidity of the substratum show it to be neutral for the tussock formation and for the old moat on the west, of moderate acidity for the floor of the tamarack forest and of the blueberry heath, and of a slight alkalinity for the morainal slopes.

4. Wauconda Bog.—This bog is situated in the southwest quarter of Section 25, T. 44 N., R. 9 E., on the southern outskirts of the town of Wauconda. The general shape and location of the bog is similar to that of Volo, with a grass

association on the south, a tamarack forest covering about half of the depression and the remains of a moat on the north. The substratum in general is drier than that of the Volo Bog.

The valley sides also show evidences of a previous stage of high water. Several years ago an attempt was made to drain this depression into Wauconda Lake to the north, but it was abandoned because there was not sufficient difference of level to enable the bog to drain into the lake. Fig. 6.

The floor of the depression is much drier than that of Volo and the vegetation is more advanced. There is no sign of quaking in the forest floor. The pitcher plants and sphagnum are very few and other more mesophytic plants have come in, including at least three young oaks.

Two other tamarack forests were observed to the northwest of Volo Bog, but they have not yet been visited. From reports they seem to be of the same nature as those of the Wauconda Bog. They will be visited as soon as possible and included in the final report.

This paper has attempted only to describe the location and general features of the bogs so far discussed and visited. There has been no attempt to discuss the problems presented as there has not been opportunity to observe the necessary data for such discussion. Work along these lines is now being carried on and will be reported later.

Two features at least may be noted, first, that these bogs apparently represent very different stages of maturity, ranging from the Cedar Lake bog which is very young, to the adjoining Allandale pocket which is the most mature of those observed. Secondly, the condition of Cedar Lake bog suggests very strongly the probability that it is of rather recent origin—perhaps much later than the end of the glacial period. If this can be proved, it will overthrow the present opinion that all of the northern cold bogs are direct relics of glacial invasion.

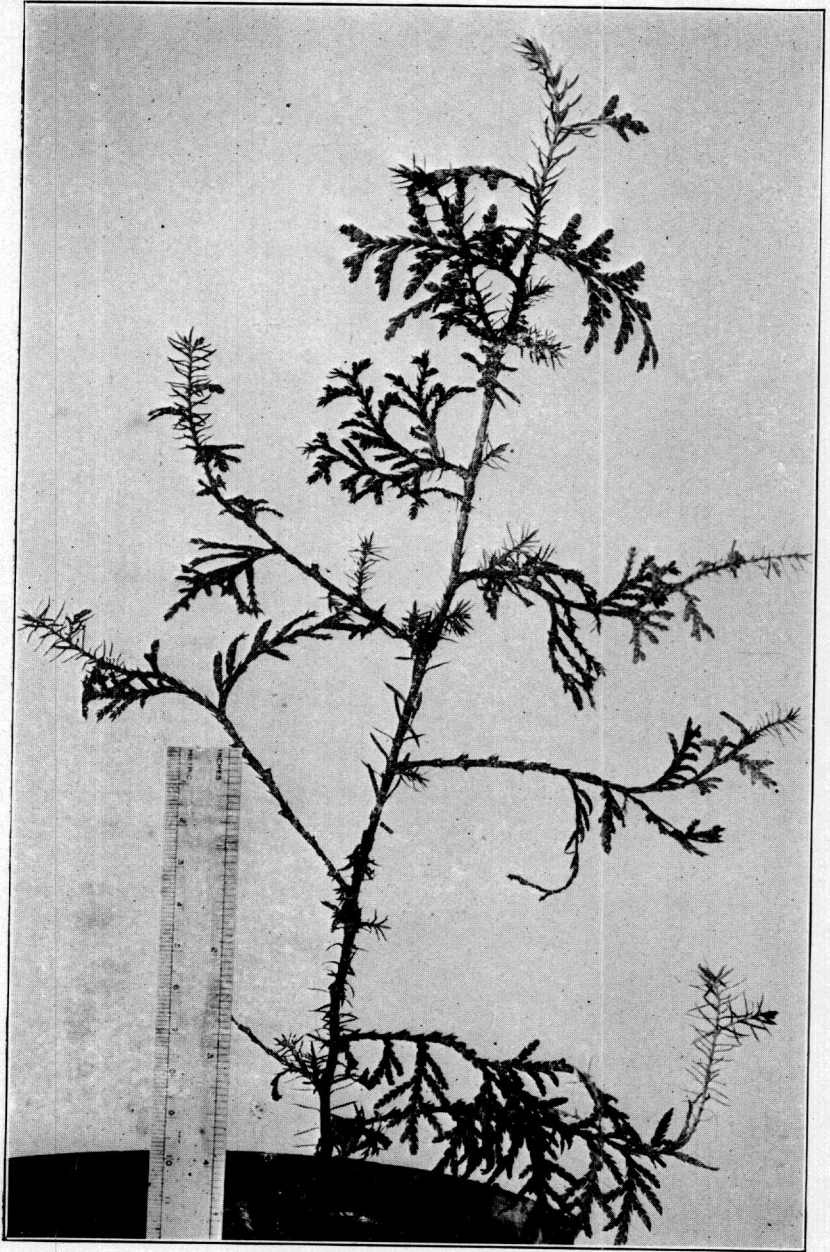


Fig. 1. Young plant with numerous juvenile shoots.



Fig. 2. Detail of plant showing branched juvenile shoot.