Proceedings of the Iowa Academy of Science

Volume 62 | Annual Issue Article 21

1955

Discovery and Description of a Sphagnum Bog in Iowa, With Notes on the Distribution of Bog Plants in the State

Martin L. Grant
Iowa State Teachers College

Robert F. Thorne
State University of Iowa

Discovery and Description of a Sphagnum Bog in Iowa, With Notes on the Distribution of Bog Plants in the State

By Martin L. Grant and Robert F. Thorne

DESCRIPTION OF THE LOCALITY

This Sphagnum bog is located in Dead Man's Lake, Pilot Knob State Park, Hancock Co., Iowa. The county is in the center of the state east and west and is in the second tier of counties from the north, just south of Winnebago Co., which, in turn, borders Minnesota. Pilot Knob Park is in the northeastern part of the county, half in Section 3 and half in Section 4 of Ellington Township (97-23). It is right at the northern border of the county and three miles west of the eastern border. It can be reached by driving 3.5 miles east from Forest City (Winnebago Co.) on U.S. 9, and going south for a mile on Iowa 332 to the entrance at the northwest corner of the park.

The park is an irregular mass of morainic hills, formed of pebbly Mankato (Wisconsin) drift, with marshy and boggy depressions in between, with Pilot Knob (1450′), by far the most outstanding of these hills, towering about 300′ above the level of Lime Creek, to the southwest, and 100′ above Dead Man's Lake. For a description of the forest, mostly oak, which covers the whole upland area, see Macbride (1903) "Forestry Notes for Hancock Co." Oak wilt has caused much tree destruction in the last three years.

Pilot Knob early attracted considerable attention, and received its name from it use as a landmark, to "pilot" the traveller. "This is not only the finest morainic mound thus far described in Iowa, but is one of the finest in the whole country" (Ibid. :90). The amazing height, for Iowa prairie country, excited various writers to a free use of superlatives: "From the top of Pilot Knob a larger area of fertile land may be seen than from anywhere else on this earth I believe" (Secor, 1919:128).

DEAD MAN'S LAKE

This lake (Figure 1), the only natural one in the area, once called Secor Lake, is in the southwest corner of the park, 220′ from the west park boundary and 240′ from the south boundary. It can be reached easily by driving south into the park along the west boundary for a half-mile, stopping at the shelter-house where the road curves to the east, the road going on another ¾-mile to the Pilot Knob.

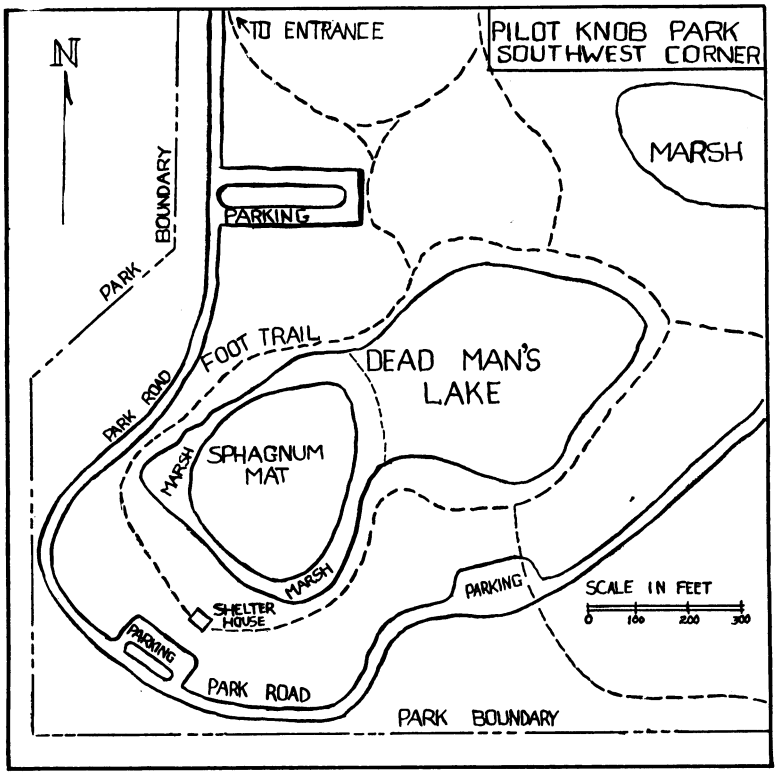

Fig. 1. Dead Man's Lake. Based on Pilot Knob Base Map, U. S. Dept. Int. Nat. Park Serv. and Iowa Cons. Comm., March 1, 1937. Original scale: 1″ = 200′.

The lake has a tetonic shape, like the cross-section of a human torso, with the longest axis (1060′) oriented WSW-ENE, and two protuberances projecting to the SSE. At the constriction between them the lake is 250′ wide, partially divided into halves, the eastern one 460′ wide (perpendicular to the long axis), and the western one 420′. Its total area is 7.9 acres.

The eastern half is almost entirely open water, with one small islet near the southeast corner, a few submerged and floating aquatic plants, and a fringe of marsh vegetation in mud around the less abrupt parts of the shore. In contrast, the western half is, from the shore, apparently a solid mass of vegetation. Along the shore line this is also marsh, almost solidly grown up with emergent vegetation, but the whole central area is a spongy floating mat of *Sphagnum* and other mosses, with about half of its surface covered with bog shrubs and herbs, the whole solid enough, in most but not quite all places, to easily allow walking around. This west half of the lake has an area of 3.8 acres, the *Sphagnum* mat occupying slightly over 3 acres (470′ x 380′) (In Figure 1 this mat is drawn

too small, i.e., to be correctly shown to scale, it should extend closer to the shore.)

HISTORY OF THE LAKE

From the available records it seems that the bog mat originally covered a somewhat larger part of the lake than it does now. For example, the 1926 report of the Board of Conservation landscape architect (Fitzsimmons, 1926:174) says: "The encroaching bog is to be partially removed from the surface of the east half of the lake and a channel cleared along the shore of the west half. Native pond lilies, spatter dock, iris, arrowhead, and other native water-loving plants are to be replaced in the lake, and the growth of ferns, columbines, lady slippers, phlox, etc. are to be set out along the shores and slopes adjoining the lake." And, in recommending what improvements were necessary, the most important was (p. 180): "1. Removal of certain sections of the floating bog from Dead Man's Lake as indicated on plan." Then follows a list of twelve other suggestions, applying to other parts of the park, most, if not all, of which have obviously been carried out. Now there is essentially no bog at all on the east half, but the planting program, listed above, apparently was not carried out. Macbride's photo (Ibid: 92, f. 17), taken in 1902 or before, shows an enormously greater growth of water lilies than now occurs.

One can only wonder what other rare plants, not now found, might have been growing in that part of the mat in the eastern half of the lake, which apparently was removed shortly after 1926 as a result of this well-intentioned ill-advisement. Certainly the giver of this advice meant well (Fitzsimmons: 171): "The true value of state parks lies in the preservation of their natural resources. The development of these areas, therefore, should be minimized . . ." Ironically, he forecast what was about to happen (Ibid: 174): "Constant use as a picnic place and the ruthless hand of man, have destroyed some of its boundary plant life."

In 1937 or 1938, a second, slightly smaller, lake, 1000′ north of the east end of Dead Man's Lake, was created by artificial impoundment, using WPA or NYA labor. Since there is a definite ridge between the two, there is no evidence that this second lake, not included in the present study, has had any direct effect on Dead Man's Lake. Theoretically, by helping maintain a higher ground-water level, it should have an indirect beneficial effect.

Botanists have known of the existence of Dead Man's Lake for well over 50 years, hence it is in some ways amazing that the Sphagnum bog in the lake, unique in Iowa, with its wealth of unusual plants, was not discovered until this past summer. In the Iowa Geological Survey Report for 1902 Macbride (1903:110) writes, "In the preparation of the list of native trees following, the

author would acknowledge his indebtedness to . . . B. Shimek, who . . . has made a special study of this particular part of Iowa." "Dead Man's Lake" appears on Shimek's sheet of *Brasenia,* collected Sept. 27, 1902, and *Glyceria borealis,* collected August 17, 1912. Another Shimek specimen, *Ludwig iapolycarpa,* also collected in 1912, (IA), is labelled "swampy border of Dead Man's Lake". According to his field notes, he found the relatively rare *Menyanthes trifoliata* along Lime Creek (only a few miles from the Lake) on July 18, 1896, and collected at the lake itself Sept. 27, 1902, Aug. 17, 1912, and Aug. 30, 1927. These notes list several species of plants apparently found now only on the *Sphagnum* mat (*Dryopteris thelypteris, Scirpus cyperinus,* and *Campanula aparinoides*), but apparently he didn't get out quite far enough to find the more boreal species. This could in no way be a disparagement of Shimek's collecting ability, for undoubtedly no one has ever covered as many types of habitat in Iowa as he has, or found as many unusual species of plants as he did. In fact, his field notes mention, for the border of Dead Man's Lake, at least eight species which we did not find: *Alisma plantago-aquatica* (= *A. subcordatum*), *Calamagrostis canadensis, Spartina michauxiana* (= *S. spectinata*), *Parnassia caroliniana* (=*P. glauca*), *Penthorum sedoides, Gerardia tenuifolia, Ludwigia polycarpa,* and *Lobelia siphilitica.*

Macbride describes the lake as follows (Ibid:91): "A tiny lake (f.17) . . . fed by springs, cold and clear, in summer decked by water lilies and all forms of northern vegetation." Miss Gilbert (1919:125) wrote, "About half a mile southwest of the Mound is a body of water covering about two acres, called 'Dead Man's Lake', it is bordered with low timber and in the lake are three kinds of lilies." (There are about four acres of open water now. Is this her underestimate, or an indication of how much more floating mat there was then?)

Secor waxed poetic (1919:129): "In its waters grow three species of pond lilies, one of which I am told is found nowhere else in Iowa. The lake is frequented by botanists in search of rare specimens and shells. With slight expense it could be dredged so that fish might be planted. Dead Man's Lake is a gem in Nature's diadem, placed there when the grinding in the mills of God ceased in these parts." Fortunately, the lake, apparently at least, has not been dredged. The botanist "in search of rare specimens and shells" could only have been Shimek. *Brasenia,* the water-shield, in the water-lily family, had at that time been found in only one other Iowa locality, in Muscatine county, a record of which Shimek was aware, as he mentioned it in a paper in 1904. And, lastly, Fitzsimmons (1926:174) speaks of "its bog plants and water fowl visitors."

Apparently, however, Shimek and other botanists who visited the lake did not realize it really was mostly bog, though the local residents (i.e., Secor) and park authorities did. From the shore there is nothing to indicate that it is anything but an ordinary marsh. Our own chance discovery resulted largely from an exploratory attempt to relocate the *Brasenia.*

Our hope is that nothing further happens to disturb the lake, and our recommendation to the Conservation Commission is that it be allowed to remain as it is, with the possible exception of artificial attempts to maintain the water level, if, in the future, it ever should become necessary.

Taxonomy

Except for the genera *Sphagnum* and *Polytrichum,* no organized attempt was made to collect the bryophytes. There appear here in the annotated list nine species of mosses, including four species of *Sphagnum and* three of *Polytrichum.* Brother Fabius has made more extensive collections and presumably will report on them later. Our mosses were given preliminary determinations by Dr. H. S. Conard, and Dr. R. V. Drexler has examined those of *Sphagnum.* We have also received determinations made by Dr. A. L. Andrews of Brother Fabius's material of *Sphagnum.* In view of the taxonomic difficulties presented by sterile *Sphagnum,* and the impossibility of being certain that material sent out by us to two different people actually represents the same species, it is not surprising that the results are inconsistent. Of the three people who have examined *Sphagnum* from this bog, two have found two species each, and one has found three, but in only one case was there any overlap of names, i.e., two of the individuals reported *S. magellanicum.* Thus six species names have been tentatively applied to the material. The Iowa distribution of the species of *Sphagnum* is from Drexler (1953).

For the vascular plants, 75 species are listed below, with annotations. These involve two species of *Dryopteris,* 10 grasses, 14 sedges (including 6 *Carex*), 8 other monocots, 5 *Salix,* 5 Polygonaceae, 4 water-lilies, 3 Rosaceae, 5 mints, 4 composites, and 16 other dicots, making a total of 2 pteridophytes, 32 monocots, and 41 dicots. Nomenclature, unless otherwise indicated, is that of Gray's Manual (Fernald, 1950).

The authors have each collected twice at the lake, once together and once singly. The dates are as follows, all in 1954: Grant field numbers 12295-12329 July 8, 12515-12535 August 21; Thorne numbers 14348-14396 July 8, 14556-14612 August 10. Brother Fabius's mosses were also collected on August 10. This report is based on 54 numbers (48 species) collected by Grant, 57 numbers

(52 species) by Thorne (30 species were collected by both), 4 numbers (2 species) by Fabius, and 2 species by Shimek; all collected at Dead Man's Lake. Twelve common and easily-recognized species were not collected. Grant's specimens are at Iowa State Teachers College (ISTC), and Thorne's at the State University of Iowa (IA). The herbarium abbreviation ISC stands for Iowa State College. Family numbers are those of Torre and Harms.

Distribution and Floristics

Of the 75 species of vascular plants, 30 (indicated in the list) seem to be previously unreported from Hancock Co., 24 have been reported before, and the remaining 21, mostly rather common and wide-spread species, have not been checked for this point. It is quite possible, of course, that some records have been overlooked, and thus these numbers are only approximate.

One species, *Carex cephalantha,* has not previously been reported from Iowa. *Carex chordorrhiza* has not been collected in the state for 70 years, *Drosera* not for 46, and *Eriophorum gracile* not for 27 years.

Several other relatively rare plants were secured, and following is a list of species of limited distribution in Iowa (largely because of lack of suitable habitats), all of which seem to represent first collections from Hancock Co. As an index to the scarcity of these species in the state, there is given the number of Iowa counties, including Hancock, in which the plant is now reported to have been found, admitting again the probability of some published records having been overlooked.

Carex cephalantha	1	Lysimachia thyrsiflora	8
Carex chordorrhiza	2	Cyperus engelmannii	9
Drosera rotundifolia	2	Potentilla palustris	9
Pyrus melanocarpa	2	Najas guadalupensis	10
Utricularia minor	3	Carex comosa	11
Potamogeton berchtoldii	4	Carex lacustris	12
Eriophorum gracile	4	Aster junciformis	12
Salix pedicellaris	5	Sphenopholis intermedia	13
Lysimachia terrestris	6	Potamogeton illinoensis	14
Triglochin maritima	6	Dulichium arundinaceum	16
Dryopteris cristata	8		

Other than the two *Carex* mentioned above, the sundew (*Drosera*), which occurred in great abundance, was the most interesting of the finds. Dead Man's Lake is apparently the only place in Iowa where this sticky-leaved insect-catching plant can now be found. *Pyrus melanocarpa,* the black chokecherry, is found in only one other spot, 100 miles away in Winneshiek Co. The others are discussed more specifically in the annotated list.

Three other species, while not new to the county, have been collected infrequently enough to make an additional record significant: *Glyceria borealis,* now known from 6 counties; *Brasenia schreberi,* 8; and *Dryopteris thelypteris,* 15.

For most of the above 24 species, the Iowa distribution map is the form of a triangle, with the eastern and northern boundaries of the state being two of the sides, and a northwest to southeast diagonal being the other. This is probably due to a combination of climatic and edaphic factors which result in the provision of more moist habitats as one goes from the southwest corner of the state towards either the north or the east, and, as a resultant, towards the northeast.

The genus *Sphagnum* had been known previously in Iowa (Drexler, 1953) only from six counties in the east-central portion (Clayton, Benton, Linn, Johnson, Cedar, and Muscatine), and from Warren Co. (which is almost the exact center of the southern half of the state). The present Hancock Co. site is 115 miles northwest of the nearest of these localities (Benton Co.). All four of the species collected here, though it must be emphasized that the determinations have not been cross-checked enough to all be considered final, thus represent considerable extensions of range. One of them is known from five other counties, two have been found only in Linn Co., and the fourth is new to Iowa.

Of the few other mosses collected, *Polytrichum gracile* is new to Iowa, *Aulacomnium palustre* has been found only in Emmet and Linn Cos.,*Helodium blandowii* is known only from Linn Co., and the other two (*Polytrichum*) are wide-spread.

ECOLOGY

Three main types of habitat are provided by the lake: open water, marsh (including the lake margin), and the floating mat.

The lake plants proper, in the open water, consisted of submerged aquatics (*Potamogeton berchtoldii* and *Najas guadalupensis*), floating-leaf aquatics (*Potamogeton illinoensis, Brasenia schreberi, Nuphar advena,* and *Nymphaea tuberosa*), and one free-floating species (*Lemna minor*). These seven lake plants, at least the floating-leaf forms, apparently are not nearly as abundant as they once were.

Thirteen marsh plants, mostly emergent aquatics, were found primarily around the edge of the lake:

Alopecurus aequalis	Polygonum punctatum
Clyceria striata	Rumex crispus
Leersia oryzoides	Rorippa islandica
Poa palustris	Cicuta bulbifera
Sphenopholis intermedia	Stachys palustris
Carex cristatella	Cephalanthus occidentalis
Acorus calamus	

Two species were collected in two habitats, both in the marsh-zone and on the mat: *Sagittaria latifolia* and *Eleocharis obtusa.* Another, *Utricularia minor,* was found in a small pool on the mat, here also treated as a double habitat.

All the other species (52) were found on, at least emerging from, the floating moss mat, and will not be listed separately. (See the annotated list where the habitats are marked.) There were found, then, 8 lake plants, 15 marsh plants, and 55 mat plants, a total, minus duplications, of 75 species. Three of these are naturalized: *Hordeum jubatum, Polygonum persicaria,* and *Rumex crispus;* the rest are presumably native. The nine mosses, not included in the above totals, were all found exclusively on the mat.

The floating mat fills the central area in the west half of the lake. At the southwest edge it extends to within 18 feet (average) of the edge of the lake basin, leaving a narrow belt of typical marsh (emergent vegetation) between the mat and the shore. The mat itself varies from 3-9 inches in thickness, floating on top of a layer of water 6-10″ deep. Below this water layer is a mass of decomposing plant material which continues down to the mineral-soil bottom of the lake. The distance from the surface of the mat down to this semi-solid bottom (able to support a man) was 44 inches (measured in only one place). Wherever it was tested, this "false bottom" effect was found, i.e., there was 6-10″ of relatively clear water between the mat proper and the deposit of peat (2½ feet thick where measured) overlying the lake bottom.

The soil type around the lake is exclusively the "rolling phase of Clarion loam" (soil map in Brown et al., 1935), with "peat" in the marsh to the northeast (Fig. 1).

A single test on water squeezed out from the *Sphagnum,* the test made with Hellige Wide-range Indicator D, gave a pH of 6.5, thus slightly acid.

Little information is available on the other *Sphagnum* habitats in Iowa, though they all seem to be very much smaller than this three-acre patch (Drexler, 1953). Most of them are on sand, rather than being floating, and along the shore of a pond (rather than in the center) or a small stream. They also are more acid (pH 5.6), though our single measurement of this is insufficient to generalize on. At the station with the largest area of *Sphagnum* (Linn Co., Station 2; the only one at which fruiting material was found), the "mats are very well developed . . . and extend along the south margin of a small narrow pond for several hundred feet" (Ibid: 85).

Fay and Thorne (1954:125) record the plants of a small *Sphagnum* bog in Cedar Co. Of the 25 vascular plants listed there, only three are found in this more northern (Hancock Co.) bog: *Dryopteris thelypteris, Salix petiolaris* (= *S. gracilis*), and *Eupatorium perfoliatum.*

ANNOTATED LIST OF SPECIES

SPHAGNACEAE

Sphagnum magellanicum Brid.—Grant 12295, det Conard and Drexler. Abundant. Previously known in Iowa only from Linn Co.

Sphagnum palustre L.—Fabius 6889b, 6891, 6894, det. Andrews. Found in five other Iowa counties: Benton, Buchanan, Cedar, Linn, and Muscatine.

Sphagnum recurvum Beauv. var. *tenue* Klinggr.—Fabius 6889a, det. Andrews. New to Iowa.

Sphagnum teres (Schimp.) Angstr.—Grant 12324, 12329, det. Drexler. Also in Linn Co. Some of the material of these numbers has been preliminarily determined as *S. squarrosum* Crome (known from Linn Co. only), and *S. cuspidatum* Ehrh. (otherwise unknown in the state). Checking of more material is necessary.

POLYTRICHACEAE

Polytrichum commune Hedw.—Grant 12296. Common throughout Iowa.

Polytrichum gracile Sm.—Grant 12325. New to Iowa.

Polytrichum juniperinum Hedw.—Grant 12326. Common in the northeast half of Iowa.

AULACOMNIACEAE

Aulacomnium palustre (W. & M.) Schw.—Grant 12327. Previously known from Emmet and Linn Counties.

LESKEACEAE

Helodium blandowii (W. & M.) Warnst.—Grant 12328. Also from Linn Co.

POLYPODIACEAE

Dryopteris cristata (L.) Gray. Crested wood-fern.—Grant 12515, on mat. New to the county. Previously reported from seven other counties in the northeastern half of the state, though specimens (IA, ISC, ISTC) are available only from Clayton, Johnson and Muscatine Cos.

Dryopteris thelyteris (L.) Gray var. *pubescens* (Lawson) Nakai. Marsh fern.—Grant 12307, 12516; Thorne 14365, 14569; on mat. Previously reported from 15 northeastern counties (including Hancock), extending west to Webster Co.

8 TYPHACEAE

Typha latifolia L. Broad-leaved cattail.—Thorne 14364, on mat.

11 ZOSTERACEAE

Potamogeton berchtoldii Fieber. Pondweed.—Thorne 14580, lake. New to the county; previously known only from Dickinson, Palo Alto, and Muscatine counties.

Potamogeton illinoensis Morong.—Thorne 14581, lake. New to Hancock; also known from 13 other counties.

12 NAJADACEAE

Najas guadalupensis (Spreng.) Magnus. Naiad.—Thorne 14380, lake. New to Hancock; also from nine other counties.

14 JUNCAGINACEAE

Triglochin maritima L. Arrow-grass. Inadvertently this species was not collected. On mat. Known only from five other northern counties: Dickinson, Clay, Emmet, Palo Alto, and Winnebago.

15 ALISMATACEAE

Sagittaria latifolia Willd. var. *obtusa* (Muhl.) Wieg. Arrowhead.—Grant 12520, on mat; Thorne 14582, marsh between mat and open water. New to the county.

19 GRAMINEAE

Agrostis scabra Willd. Hairgrass.—Grant 12306, Thorne 14358. On mat.

Alopecurus aequalis Sobol. Foxtail.—Thorne 14382, marsh. New to the county, but reported from 18 others.

Glyceria borealis (Nash) Batchelder. Small floating manna-grass.—Shimek, Aug., 1912 (IA, reported by Beal, 1952); Grant 12308; Thorne 14367. On mat. Reported from Emmet, Clay, Palo Alto, Hamilton, Hancock, and Story Cos.

Glyceria grandis S. Wats. Reed-meadow grass.—Thorne 14374, on mat.

Glyceria striata (Lam.) Hitchc. Fowl-meadow grass.—Thorne 14384, marsh.

Hordeum jubatum L. Squirrel-tail grass. On mat. Naturalized.

Leersia oryzoides (L.) Swartz. Rice-cutgrass.—Grant 12530, marsh.

Muhlenbergia glomerata (Willd.) Trin.—Grant 12527, Thorne 14577. On mat.

Poa palustris L. Fowl-meadow grass.—Thorne 14391, marsh.

Sphenopholis intermedia Rydb.—Thorne 14383, marsh. New to the county, known from a dozen others.

20 CYPERADEAE

Carex cephalantha (Bailey) Bickn.—Thorne 14366, Grant 12302. On mat. New to Iowa. Superficially similar to *C. interior* Bailey, but differing in the larger size (7 dm. tall), the longer pistillate scales (as long as the body of the perigynium) and perigynium beak (well over half as long as the body), the slightly more-prominently bidentate beak, and the more pronounced nerving on the inner face of the perigynium.

Carex chordorrhiza L.f.—Thorne 14372, on mat. Previously known in Iowa only from a bog two miles north of Armstrong, in Emmet Co., where it was collected three or four times between 1878 and 1884. After 70 years it appears the species is not yet extinct in Iowa.

Carex comosa Boott.—Grant 12299, Thorne 14370. On mat. New to the county; known from ten others.

Carex cristatella Britt.—Thorne 14392, marsh. Bennett (1949) has reported this species from Hancock Co.

Carex lacustris Willd.—Thorne 14375, on mat. New to Hancock, but known from eleven other counties (Gilly, 1946).

Carex lasiocarpa Ehrh. var. *americana* Fern.—Grant 12303, on mat. A new county for this species. However, *C. lanuginosa* Michx., previously known from Hancock Co., though maintained as separate in Gray's Manual, is considered by many students of *Carex* to be merely varietally (or subspecifically) different, as *C. lasiocarpa* var. *latifolia* (Böckl.) Gilly.

Cyperus engelmannii Steud. Galingale.—Thorne 14570, on mat. New to Hancock Co. Known from the four lake counties (Dickinson, Emmet, Clay, and Palo Alto), and also Hamilton, Winnebago, Wright, and Linn (Gilly, 1946; Bennett, 1949).

Dulichium arundinaceum (L.) Britt. Three-way sedge.—Grant 12300; Thorne 14361, 14575. On mat. New county record; reported from 15 other counties.

Eleocharis obtusa (Willd.) Schultes var. *obtusa*. Spike-rush.—Grant 12304, marsh; Thorne 14355, on mat.

Eleocharis palustris (L.) R. & S. Spike-rush.—Thorne 14356, on mat.

Eriophorum gracile W. Koch. Cotton-grass.—Grant 12301, Thorne 14371; on mat. New to the county. Specimens are now known from three other counties: Emmet, where collected 1878-93, Webster, 1905-6, and Cerro Gordo, 1917; and Cratty (1898) cites an additional specimen from

Wright Co., 1886. This is thus another case of a plant, feared extinct in Iowa, turning up after a long absence (27 years).

Scirpus cyperinus (L.) Kunth. Wool-grass.—Grant 12531; Thorne 14574, 14574a; on mat. This last speciman is the variation treated in Gray's Manual as *S. pedicellatus* Fern.

Scirpus fluviatilis (Torr.) Gray. River-bulrush. On mat, not collected. Cratty (1898) reported a Hancock Co. speciman (Shimek, 1896), which, however, was not located by Gilly (1946).

Scirpus validus Vahl. var. *creber* Fern. Great bulrush.—Thorne 14376, on mat.

23 ARACEAE

Acorus calamus L. Sweetflag.—Thorne 14362, marsh, at west edge of mat. New for the county.

24 LEMNACEAE

Lemna minor L. Duckweed.—Thorne 14385, lake. New county record.

56 SALICACEAE

Salix amygdaloides Anderss. Peach-leaved willow.—Grant 12321, on mat.

Salix bebbiana Sarg. Long-beaked willow.—Grant 12317, Thorne 14353. On mat. New to Hancock Co.; has also been reported from 16 others (Grant, 1954), and from Scott Co. (Barnes, 1900).

Salix discolor Muhl. Large pussy-willow.—Thorne 14352, on mat. New to the county.

Salix gracilis Anderss. var. *textoris* Fern. Willow.—Grant 12518, Thorne 14351, on mat.

Salix pedicellaris Pursh. var. *hypoglauca* Fern. Smooth bog-willow.—Grant 12314, Thorne 14354; on mat. New county record; known otherwise only from Emmet, Winnebago, and Cerro Gordo counties, and reported from Worth Co.

77 POLYGONACEAE

Polygonum lapathifolium L. Smartweed. On Mat.

Polygonum persicaria L. Lady's-thumb. On mat. Naturalized.

Polygonum punctatum Ell. var. *leptostachyum* (Meisn.) Small. Water-smartweed.—Grant 12517, marsh.

Rumex crispus L. Yellow dock.—Grant 12322, marsh. Naturalized.

Rumex orbiculatus Gray. Water-dock. On mat.

88 NYMPHAEACEAE

Brasenia schreberi Gmel. Water-shield.—B. Shimek, Sept. 27, 1902 (IA, ISC), with abundant fruit; Grant 12305, lake, one small leaf only. Recorded from seven other counties (Thorne, 1954).

Nuphar advena (Ait.) Ait. f. Yellow pond-lily.—Thorne 14381, 14583, lake.

Nymphaea tuberosa Paine. Water-lily.—Grant 12323, Thorne 14389; lake.

105 CRUCIFERAE

Rorippa islandica (Oeder) Borbas. Yellow cress.—Thorne 14386, marsh.

112 DROSERACEAE

Drosera rotundifolia L. Round-leaved sundew.—Grant 12297, 12535; Thorne 14359, 14578; on mat, very abundant. Although collected by G. H. Berry in Linn Co. in 1908, this very interesting species has never appeared in a systematic list of Iowa plants, being merely incidently mentioned just recently (Thorne, 1954). Other than Berry's single sheet, this is the only Iowa record.

126 ROSACEAE

Potentilla palustris (L.) Scop. Marsh-fivefinger.—Grant 12309, Thorne 14377; on mat. New county record. Also known from Linn Co., and seven other counties in northeastern Iowa (Grant, 1954).

Pyrus (*Aronia*) *melanocarpa* (Michx.) Willd. Black chokeberry.—Grant 12534, on mat. Otherwise known in Iowa only from a single station on sandstone rock near Hesper, Winneshiek Co. (Grant, 1954).

Spiraea alba DuRoi. Meadow-sweet.—Grant 12310, Thorne 14363; on mat.

170 VITACEAE

Parthenocissus quinquefolia (L.) Planch. Virginia creeper.—Grant 12531, on mat. This is hardly a typical bog plant, but the specimen clearly shows *Sphagnum* among the roots.

187 GUTTIFERAE

Hypericum virginicum L. var. *fraseri* (Spach) Fern. Marsh St. John's-wort. Grant 12320, 12528, Thorne 14569; on mat.

224 ONAGRACEAE

Epilobium coloratum Biehler. Willow-herb.—Grant 12532, on mat.

Epilobium leptophyllum Raf. Willow-herb.—Grant 12533, Thorne 14573; on mat.

228 UMBELLIFERAE

Cicuta bulbifera L. Water-hemlock.—Grant 12519, Thorne 14576, marsh. New to the county.

237 PRIMULACEAE

Lysimachia terrestris (L.) BSP. Loosestrife.—Grant 12312, Thorne 14373; on mat. A westward extension of its Iowa range, being known heretofore from Chickasaw, Fayette, Allamakee, and Jefferson Cos.

Lysimachia thyrsiflora L. Tufted loosestrife.—Grant 12316, Thorne 14378; on mat. Recorded previously from the four lake counties, also Webster, Fayette, and Muscatine Cos.

248 ASCLEPIADACEAE

Asclepias incarnata L. Swamp-milkweed. On mat.

253 VERBENACEAE

Verbena hastata L. Blue vervain.—Thorne 14568, on mat. Moldenke (1949) does not list this from Hancock Co.

254 LABIATAE

Lycopus americanus Muhl. Water-hoarhound.—Grant 12525, Thorne 14566; on mat.

Lycopus uniflorus Michx. Water-hoarhound.—Grant 12526, Thorne 14565; on mat.

Scutellaria epilobiifolia Hamilton. Common skullcap. On mat.

Scutellaria lateriflora L. Mad-dog skullcap. On mat.

Stachys palustris L. Woundwort. Marsh.

257 SCROPHULARIACEAE

Mimulus ringens L. Monkey-flower. On mat.

264 LENTIBULARIACEAE

Utricularia minor L. Bladderwort.—Thorne 14373a, 14599, in shallow pools on the east end of the mat. The only other Iowa records are from Dickinson and Emmet Cos.

270 RUBIACEAE

Cephalanthus occidentalis L. Buttonbush.—Grant 12315; Thorne 14564; marsh.

Galium tinctorium L. Bedstraw.—Grant 12318, Thorne 14368; on mat.

276 CAMPANULACEAE

Campanula aparinoides Pursh. Marsh-bellflower.—Grant 12298, 12523; Thorne 15471; on mat. Shimek's specimens (IA) from near here ("near Forest City, July 18, 1896" and "border of swamp along Lime Creek, Aug. 31, 1927") were annotated by P. H. Monson in 1952 as *C. uliginosa* Rydb. I am not certain the species are separable.

280 COMPOSITAE

Aster junciformis Rydb. Aster—Grant 12311, 12522; Thorne 14360, 14572; on mat. New county record. Known from 11 other counties, mostly in northern Iowa.

Erechtites hieracifolia (L.) Raf. Pilewort.—Grant 12529, Thorne 14567; on mat.

Eupatorium perfoliatum L. Throughwort. On mat.

Lactuca canadensis L. var. *longifolia* (Michx.) Farw. Wild lettuce.—Grant 12524, on mat. Reported from Hancock Co. (Davidson, 1952), but without a confirmatory specimen.

SUMMARY

In Dead Man's Lake, a well-known 8-acre pond in Pilot Knob State Park, Hancock Co., Iowa, there was discovered in July, 1954, a typical boreal floating-mat Sphagnum bog, about 3 acres in area, apparently by far the largest such bog known in Iowa. The environmental factors and vegetation-types are described, and an annotated list of 75 species of vascular plants and 9 mosses is given. *Carex cephalantha* is a new species for the state, and *Carex chordorrhiza, Drosera rotundifolia* (sundew), and *Eriophorum gracile* had not been collected in the last 70, 46, and 27 years, respectively. *Pyrus melanocarpa* is known otherwise only from one restricted locality. A complete or partial distribution by counties is given for a dozen other relatively rare Iowa plants. One each of the species of *Sphagnum* and *Polytrichum* are new to the state, and several of the other mosses found are exceedingly rare.

ACKNOWLEDGEMENTS

We wish to thank Dr. H. S. Conard for calling our attention to the existence of the Lake; Dr. Conard, Dr. R. V. Drexler, and Dr. A. L. Andrews for identifying the mosses; Wilbur A. Rush, Chief of the Division of Lands and Waters, State Conservation Commission, for furnishing us with a map of the park, and with photostats of early documents pertaining to it; Dr. H. G. Wood for making the pH reading; Miss Mary Hurlbut for drawing the map (Fig. 1); and Miss Jean Grant for determining the depth of the water and peat beneath the floating mat.

Bibliography

Barnes, W. D.; Reppert, F.; Miller, A. A. 1900-1901. The flora of Scott and Muscatine counties.—Davenp. Acad. Sci. Proc. 8:199-287.
Beal, E. O. 1952. The distribution of aquatic monocotyledons in Iowa.—MS Thesis, Univ. Iowa. 201 pp.
Bennett, H. D. 1948 (1949). Notes on the Cyperaceae of Iowa.—Iowa Acad. Sci. Proc. 55:77-82.
Brown, P. E., et al. 1935. Soil survey of Iowa. Hancock Co.—Iowa Agr. Exp. Sta. Soil Surv. Rept. 76. 64 pp.
Cratty, R. I. 1898. The Iowa sedges.—Iowa Lab. Nat. Hist. Bull. 4:313-375.
Davidson, R. A. 1952. The Senecioneae, Cynareae, and Cichorieae of Iowa.—MS Thesis, Univ. Iowa. 123 pp.
Drexler, R. V. 1952 (1953). The genus Sphagnum in Iowa.—Iowa Acad. Sci. Proc. 59:85-88.
Fay, M. J.; Thorne R. F. 1953 (1954). Additions to the flora of Cedar Co., Iowa. Iowa Acad. Sci. Proc. 60:122-130.
Fernald, M. L. 1950. Gray's Manual of Botany, 8th ed. N. Y.: Amer. Book Co. 1632 pp.
Fitzsimmons, J. R. 1926. Pilot Knob State Park.—Iowa State Parks, 1926: 170-181.
Gilbert, Winifred. 1919. Pilot Mound's beauties.—Iowa Parks, Rep. State Board Cons., 1919:125-126.
Gilly, C. L. 1946. The Cyperaceae of Iowa.—Iowa State Coll. Jour. Sci. 21:55-151.
Grant, M. L. 1953 (1954). Notes on Iowa vascular plants.—Iowa Acad. Sci. Proc. 59:141-149.
Macbride, T. H. 1903. Geology of Kossuth, Hancock, and Winnebago Counties—Iowa Geol. Surv. Rept. 13:81-122.
Moldenke, H. M. 1949. The known geographic distribution of the members of the Verbenaceae . . .—N. Y.: Auth. (N. Y. Bot. Gard.). 215 pp.
Secor, Eugene. 1919. Pilot Knob should be a park.—Iowa Parks, Rept. State Board Cons., 1919:127-129.
Thorne, R. F. 1953 (1954). Notes on rare Iowa plants.—Iowa Acad. Sci. Proc. 60:260-274.

AUTHOR'S NOTE. Since the above was written, there has come to our attention "Pilot Knob State Park . . .," a 56-page pamphlet published by L. H. Pammel as President of the State Board of Conservation (Des Moines, 1925), in which he cites the following additional records from the Park: "Wild rice, which at one time was common in Dead Man's Lake . . . The red water shield (Brasenia) has not been observed in recent years." (p. 26); Salix rostrata (= S. bebbiana), S. discolor, and "in some places in the ponds" S. candida (p. 35-36); "in the bog of Dead Man's Lake" Dulichium spathaceum (= D. arundinaceum), Comarum palustris (= Potentilla p.), and Menyanthes trifoliata (p. 36); "several species of Potamogeton," P. amplifolius, Lobelia siphilitica (p. 36); yet he also states "Sphagnum has not been found anywhere in the bogs of northern Iowa." (p. 53). In the same pamphlet, W. R. Prewitt adds (p. 13), "The lake originally spread over about two acres . . . Now, since the coming of the white man, natural surroundings have changed and about half of the lake is covered with moss and peat."

SCIENCE DEPARTMENT
IOWA STATE TEACHERS COLLEGE
CEDAR FALLS, IOWA

DEPARTMENT OF BOTANY
STATE UNIVERSITY OF IOWA
IOWA CITY, IOWA