

made very long by splicing several pieces and twisting them before they became dry. One end would be fastened to a tree and the line pulled and stretched.

*Cords.*—Spanish moss, after being properly prepared, was used in making ropes and lighter cords. Some were made by twisting, others by braiding.

*Saddles.*—Saddles, or pads used as saddles, were made by weaving the soft cords of moss.

*Weapons.*—Blowguns and bows and arrows were made and used. Blowguns were made of pieces of cane, the perforation being formed by first preparing a long, slender piece of hard wood and forcing it down one end of the cane and then down the other until the entire length was open and clear. Darts were made of pieces of hard pine, worked and smoothed, then tufted with some soft material.

*Transportation.*—Canoes were made of a single log, cypress being the favorite wood. Canoes, or dugouts, 20 feet in length and 3 feet in width were not uncommon, although much smaller ones were used on the shallow, narrow bayous. The larger canoes were used in crossing Lake Pontchartrain, and when the weather was favorable sails made of one or more deerskins would be raised.

*Burials.*—The bodies were wrapped in blankets or skins and carefully placed, in an extended position, in graves which had been thickly lined with palmetto leaves. A quantity of similar leaves were placed over the bodies and all was covered with earth or sand.

It is to be regretted that more could not have been learned of the manners and ways of life of the people of this native settlement, which evidently existed until some sixty years ago. Nor is it now possible to give the name of the tribe or tribes to which the people belonged, but it is more than probable they were Muskhogean closely allied with the Choctaw whose villages stood on the northern shore of Lake Pontchartrain.

BOTANY.—*Notes on marsh and aquatic plants of Missouri.*<sup>1</sup> F. P. METCALF, Biological Survey. (Communicated by A. Wetmore.)

During the summer of 1920 the writer was engaged in an extensive survey of the marsh and aquatic plants of Missouri for the Biological Survey, U. S. Department of Agriculture. The results of this work were so interesting from the standpoint of plant distribution that it

<sup>1</sup> Received June 5, 1922.

is thought advisable to make known the most salient features in a preliminary paper.

Ten species of plants collected by the writer had not previously been reported in the State. These are as follows: *Alisma brevipes* Greene; *Hemicarpha aristulata* (Coville) Smyth; *Naias guadalupensis* (Spreng.) Morong; *Nymphoides peltatum* (S. P. Gmel.) Britten & Rendle; *Paspalum plenipilum* Nash; *Potamogeton crispus* L.; *P. friesii* Rupr.; *P. heterophyllus* Schreb.; *Ruppia maritima* L.; *Rynchospora corniculata* (Lam.) A. Gray.

The majority of these plants are from stations that fall well within the range of manuals covering the region, from which they have been omitted, in most cases, from lack of intensive work on the marsh and aquatic flora of the state. *Naias guadalupensis* and *Potamogeton heterophyllus* are good examples of this, as they were found in a number of lakes. Most interesting of all, however, were the plants whose known range did not previously extend into Missouri. Of these there may be mentioned first *Nymphoides peltatum*, formerly known to be naturalized only in the vicinity of Washington, D. C.; an unpublished report for this plant from Louisiana,<sup>2</sup> as well as that of the writer from Missouri, extend its range to the southwest for a considerable distance. Another species, *Potamogeton friesii*, was previously unknown south of Minnesota, Wisconsin and Michigan. The known range of *Alisma brevipes* is extended southeastward, as formerly it was not recorded east of North Dakota, Nebraska and New Mexico, while *Hemicarpha aristulata* was found at the extreme eastern border of its range.

Besides those that have been mentioned, new locality records are given for a few other plants that for the most part are decidedly rare throughout Missouri, where their distribution is inadequately known. In these two categories are: *Eleocharis quadrangulata* (Michx.) Roem. & Schult.; *Panicum bicknellii* Nash.; *Potamogeton amplifolius* Tuckerm.; *P. foliosus* Raf.; *P. pectinatus* L.; *Sagittaria brevirostra* Mackenzie & Bush; *Utricularia minor* L.

Complete data for all plants mentioned, with actual citations of specimens collected, will be found in the subjoined list. It may be well to add that in all cases where the collector is not cited, the plant was collected by the writer. All specimens have been placed in the U. S. National Herbarium at Washington.

A list of the more important local and state floras for Missouri has

<sup>2</sup> See annotated list below.

also been appended among which the *Flora of Missouri* by Tracy (24), the only general catalogue for the state, is now somewhat incomplete and out of date, as it was published in 1885. Among local and county floras those of greatest value are that for Columbia and vicinity by Daniels (8); for Jackson county by Mackenzie and Bush (14); St. Louis and vicinity by Eggert (9), Engelmann (10), Hus (13), and the Engelmann Botanical Club (28). The southeastern counties have been discussed by Bush (4) and Uphof (25). The trees and shrubs are treated by Broadhead (2), Bush (6) and anonymously (29). A few miscellaneous papers of interest have been included in addition to those mentioned.

There is no doubt that the number of new plants here added to the flora of Missouri is small in comparison with those that will be found when extensive general collections are made. The Ozark region of the southwest and the swampy region of the southeast are incompletely known. The latter region may be worked profitably by anyone as it will yield important data bearing on many interesting problems in southern and northern distribution.

#### LIST OF PLANTS

*Alisma brevipes* Greene. Not previously recorded from the state. Range here extended southeastward; formerly unknown east of North Dakota, Nebraska and New Mexico. Fairly common in lake near Lake City, Jackson County (No. 1030, September 25, 1920).

*Eleocharis quadrangulata* (Michx.) Roem. & Schult. This plant was reported (28) from Allenton and Pinks Lake near St. Louis but a recent publication (27) states that these stations as well as that of Dozier (which is represented in the U. S. National Herbarium by a sheet collected by George W. Letterman) have been destroyed by drainage and cultivation. The National Herbarium has three other sheets of this rare plant, one from Paddy's Lake, Oswego County, N. Y., July, 1882, by C. S. Sheldon, and two others from Goose Pond, August 20, 1912, and Pond at the Frisco Shops, September 2, 1912, both near Springfield, Mo., collected by P. C. Standley (Nos. 9042, 9777). The writer found this plant exceedingly abundant in Iron Mountain Lake, Iron County (830, August 9, 1920), where in shallow water it formed a complete band around the whole lake.

*Hemicarpha aristulata* (Coville) Smyth. Not previously recorded from the state. Rare along the sandy border of Lower Contrary Lake, Buchanan County (1006, September 20, 1920). This represents almost the eastern limit of the range of this plant.

*Najas guadalupensis* (Spreng.) Morong. Not previously reported from the state which, however, comes within the commonly given general range. Common in Kilarney Lake, Iron County (No. 844, August 8, 1920), Little Bean and Bean Lakes, Platte County (No. 1019, September 22, 1920), and rare in Katy Allen Reservoir, Nevada, Vernon County (No. 969, September 9, 1920), and Loch Lin Lake, St. Louis, St. Louis County (No. 821, August 5, 1920).

*Nymphoides peltatum* (S. P. Gmel.) Britten & Rendle. Not previously recorded from the state. The U. S. National Herbarium has only four sheets of this rare plant. Two of these from near Washington, D. C., from a station where the plant is now extirpated, are from the only locality mentioned for this plant in the 7th edition of Gray's Manual, and in Britton and Brown's Illustrated Flora. One of these specimens was secured August 7, 1894, by A. Fredholm (No. 637), the other on September 27, 1895, by C. L. Pollard (No. 710). The other two sheets come from Gretna, Louisiana, collected May 12, 1899, by C. R. Ball (No. 378), and a pond near St. Louis, Missouri, collected August 21, 1904, by M. W. Lyon, Jr. The writer found this plant abundant in a small pond in Ironton, Iron County (No. 826, August 9, 1920).

*Panicum bicknellii* Nash (*P. bushii* Nash). Fairly common near Prairie Lake, Papenville, Bates County (No. 980, September 10, 1920). Collected by B. F. Bush, McDonald County, July 24, 1893 (No. 413) and described as a new species, *P. bushii* by Nash (26); possibly the only other record for the state for this rare plant is that of a specimen from Eagle Rock, in the National Herbarium, also collected by B. F. Bush (No. 3246) on August 14, 1905.

*Paspalum plenipilum* Nash (*P. praelongum* Nash). Fairly common along border of lake near Cedar Gap, Wright County (No. 915, August 26, 1920); not previously recorded although Missouri comes within the range commonly given. The species is also represented in the U. S. National Herbarium by a single sheet from Missouri taken at Paw Paw Junction, September 4, 1877, by B. F. Bush (No. 213).

*Potamogeton amplifolius* Tuckerm. Not definitely recorded<sup>3</sup> before from the state, although Missouri comes within the general range commonly given. Common in Gravais Mills Lake, Morgan County (No. 888, August 23, 1920), and rare in Hahatonka Lake, Camden County (No. 929, August 27, 1920); in both cases the lakes were fed by cold springs.

*Potamogeton crispus* L. Not previously recorded from the state; represented in the U. S. National Herbarium by two sheets from Hatchery Ponds, Neosho, Newton County, May 28, 1903 (deposited by Fish Commission). This plant was also collected by the writer (No. 948, September 6, 1920) from the same locality where it has long been established.

*Potamogeton foliosus* Raf. Apparently common throughout the state, being recorded or collected from Bell Lake, Boone County (No. 869, August 21, 1920); Gravais Mills Lake, Morgan County (No. 885, August 23, 1920); Seequeeota Lake, Springfield, Green County (No. 935, August 29, 1920); Logan Pond, Billings, Christian County (No. 940, September 4, 1920); Lake near Rich Hill, Bates County (No. 993, September 10, 1920); Bean Lake, Platte County (No. 1020, September 22, 1920); Crescent Lake, Excelsior Springs, Clay County (No. 1057, October 2, 1920) and Cemetery Lake, Macon, Macon County (No. 1080, October 9, 1920). Apparently only known<sup>4</sup> previously from Hiffner's Lake, near Alberton, Jackson County (3), a record undoubtedly based on a sheet in the National Herbarium collected by B. F. Bush (No. 618, July 9, 1896). The National Herbarium also has specimens from Poplar Bluff, July 27, 1892, *H. Eggert*; Turner, Green County, September

<sup>3</sup> Reported by Eggert (9), but it is not definitely stated whether the locality was in Missouri or Illinois.

<sup>4</sup> Reported by Eggert (9) and also anonymously (28) in vicinity of St. Louis, but it is not definitely stated whether the locality was in Missouri or Illinois.

5, 1912, *P. C. Standley* (No. 9845), and Springfield, August 20, 1912, *P. C. Standley* (No. 9061).

*Potamogeton friesii* Rupr. Fairly common at Hahatonka Lake, Camden County (No. 923, August 27, 1920). This and a specimen collected by J. W. Blankinship in Howells County in 1888 in the U. S. National Herbarium are the only two recorded from the state; both extend the range of this plant southward.

*Potamogeton heterophyllus* Schreb. Fairly common in Normandy Golf Club Ponds, St. Louis County (Nos. 787-788, July 29, 1920); Loch Lin Lake, St. Louis County (No. 819, August 3, 1920); Kilarney Lake, Iron County (No. 845, August 8, 1920); Iron Mountain Lake, Iron County (No. 842, August 9, 1920); pond near Rolla, Phelps County (No. 853, August 12, 1920), and Bean Lake, Platte County (No. 1018, September 12, 1920). Not previously reported from the state; represented in the National Herbarium by a single sheet, from Goose Pond, Springfield, September 2, 1912, collected by P. C. Standley (No. 9780).

*Potamogeton pectinatus* L. Fairly common throughout the state, being recorded or collected from Big Creve Coeur Lake, St. Louis County (No. 782, July 27, 1920); Upper Contrary Lake, Buchanan County; Mud Lake, Buchanan County (No. 1011, September 21, 1920); New Made Lake, Buchanan County; Sugar Lake, Platte County; Bean Lake (No. 1017, September 22, 1920), Little Bean and Duck Lakes, Platte County. Previously recorded (28) from Arloe, Meramac Highlands, and Creve Coeur Lake, St. Louis County, and possibly by Eggert (9). There is also one additional specimen in the National Herbarium from Gascondy, July 21, 1914, *W. H. Emig* (No. 223).

*Ruppia maritima* L. Not previously recorded from the state. Common in Clinton Club Lake, Clinton, Henry County (No. 905, August 24, 1920). Possibly introduced but growing vigorously; establishment of the plant here undoubtedly due to the salinity of the spring flowing into the lake.

*Rynchospora corniculata* (Lam.) A. Gray. Fairly common along Black River, Fagus, Butler County (No. 691, July 10, 1920). Previously reported only from Butler County by Letterman (24). However, there are in the U. S. National Herbarium specimens from Paw Paw Junction, September 4, 1897, *B. F. Bush* (No. 219); St. Louis, July 27, 1892, *H. Eggert*; and Campbell, September 9, 1910, *B. F. Bush* (No. 6302).

*Sagittaria brevirostra* Mackenzie & Bush. Common in Cooley Lake, Clay County (Nos. 1043-4, October 1, 1920); this lake is only about 20 miles from the type locality for this rare and interesting plant, at Courtney (17), Jackson County, where it was collected by B. F. Bush (No. 2175) August 14, 1904, and October 10, 1903. A specimen (*Bush* 1917) collected on the latter date is the only sheet in the National Herbarium.

*Utricularia minor* L. Previously reported from St. Louis by Riehl (24) and East St. Louis, Illinois (28). Rare, only found in Duck Lake, Platte County (No. 1025, September 23, 1920). The National Herbarium has no other specimens from this or adjacent states.

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