

TORREYA

September, 1914.

Vol. 14

No. 9

THE AQUATIC VEGETATION OF SQUAW SHOALS, TUSCALOOSA COUNTY, ALABAMA

BY ROLAND M. HARPER

Most rivers which traverse hilly and rocky regions have rapids or shoals at many places, where they cross strata a little harder than the average. At such places the gradient of the stream-bed is steeper than usual, and consequently the velocity of the water is greater and its depth and seasonal fluctuations less. Most rocky shoals, in the eastern United States at least, seem to be almost devoid of aquatic vegetation. But for some reason not at present obvious, vegetation seems to thrive on the shoals of the Warrior River, which drains most of the coal region of Alabama and parts of some of the neighboring limestone valleys. Shoals were formerly abundant along this river and its tributaries above the fall-line at Tuscaloosa, but in the last two decades all within 25 miles of Tuscaloosa have been obliterated by the building of locks and dams for the purpose of extending navigation to as many coal mines as possible and ultimately to Birmingham ("the Pittsburgh of the South"). The lowest shoal on the river that is still visible is Squaw Shoals, in the extreme northeastern part of Tuscaloosa County (in T. 18 S., R. 8 W.), about 26 miles from Tuscaloosa by water. And at the present writing a 63-foot dam (Lock 17) is being built at its foot, which if no unexpected difficulties arise will completely spoil the shoals for scientific purposes within a year or two.*

* Since the above sentence was written the work has been suspended for lack of further appropriations from Congress, which will be welcome news to phytogeographers.

[No. 8, Vol. 14, of TORREYA, comprising pp. 133-148 was issued 12 August 1914.]

On a visit to Squaw Shoals on June 4, 1913, I gathered some facts which may be of interest for comparison with other places, even after the opportunity for verifying some of them is gone forever.

The shoal is about three miles long and a thousand feet wide, with a total fall, at low water, of forty feet. Its foot is about 155 feet above sea-level. As some of the accompanying illustrations show, the river in this part of its course is bordered by rather steep wooded hills, rising two or three hundred feet above the water in a distance of half a mile or so, but the country is not at



FIG. 1. View of Squaw Shoals looking up-stream, showing *Dianthera* in foreground and *Panicum virgatum* farther away. The most conspicuous trees at the brow of the bluff at the right are *Pinus palustris*.

all mountainous. The rock in the neighborhood is all shale and sandstone of the upper Carboniferous, with the strata horizontal or nearly so. In the bed of the river it is pitted with numerous pot-holes a foot or so in diameter. The water averaged only about two feet deep on the shoals at the time of my visit, so that a pedestrian could pick his way across without much difficulty. It probably varies from less than half to more than twice that depth. It is always more or less turbid. The dis-

charge of the river at this point varies from about 100 to 116,000 cubic feet a second, and averages about 6,700. As a rule the maximum occurs in March and the minimum in September.

The rocky bottom projects above the water in many places, and in some of the quieter spots there are deposits of sand and silt; so there is naturally some local diversity in the vegetation. In the following list, however, all the plants found growing in the channel of the river at the shoals are included. They are divided into trees, shrubs and herbs, and those in each group arranged as nearly as possible in order of abundance. The trees are all rather stunted, as might be expected.

TREES

Platanus occidentalis L.
Betula nigra L.
Liquidambar Styraciflua L.
Salix nigra Marsh.

SHRUBS

Alnus rugosa (DuRoi) Koch
Cephalanthus occidentalis L.
Hypericum galioides Lam.
Itea Virginica L.

HERBS

Panicum virgatum L.
Hymenocallis coronaria (LeConte) Kunth.
Dianthera Americana L.
Scirpus Americanus Pers.
Zizaniopsis miliacea (Mx.) Doell. & Asch.
Osmunda regalis L.
Triadenum petiolatum (Walt.) Raf.
Harperella fluvialis Rose.
Eleocharis mutata (L.) R. & S.

The occurrence of a *Podostemon* in such a place would not have been at all surprising, but it was not detected.

Most of the species listed are rather common and widely distributed, but three or four of them are here some distance from the localities given for them in Mohr's Plant Life of Alabama, and two or three deserve special mention.

The *Hymenocallis*, although perhaps not quite the most abundant herb, was the most conspicuous element of the vegetation at the time, being in full bloom. From a distance its numerous large white flowers gave somewhat the appearance of a thin layer of snow. Up to 1901 this species seems to have been reported only from rocky shoals in muddy rivers just above the fall-line near Columbia, S. C., and Augusta, Ga. In the year named Dr. Mohr (in his Plant Life of Alabama, p. 447) added a third station, very similar to the others, namely, the Warrior River near Tuscaloosa, where it was found by Dr. Eugene A. Smith. That locality having been drowned out several years ago, Squaw Shoals is

now the lowest possible station for the plant on that river. But about the same time that I visited Squaw Shoals Mr. R. S. Hodges of the Geological Survey of Alabama saw what is undoubtedly the same species in similar situations in a creek near Helena, She by County, where it seems to be in no immediate danger of extermination.

Strange to say, this rare and handsome plant is not mentioned

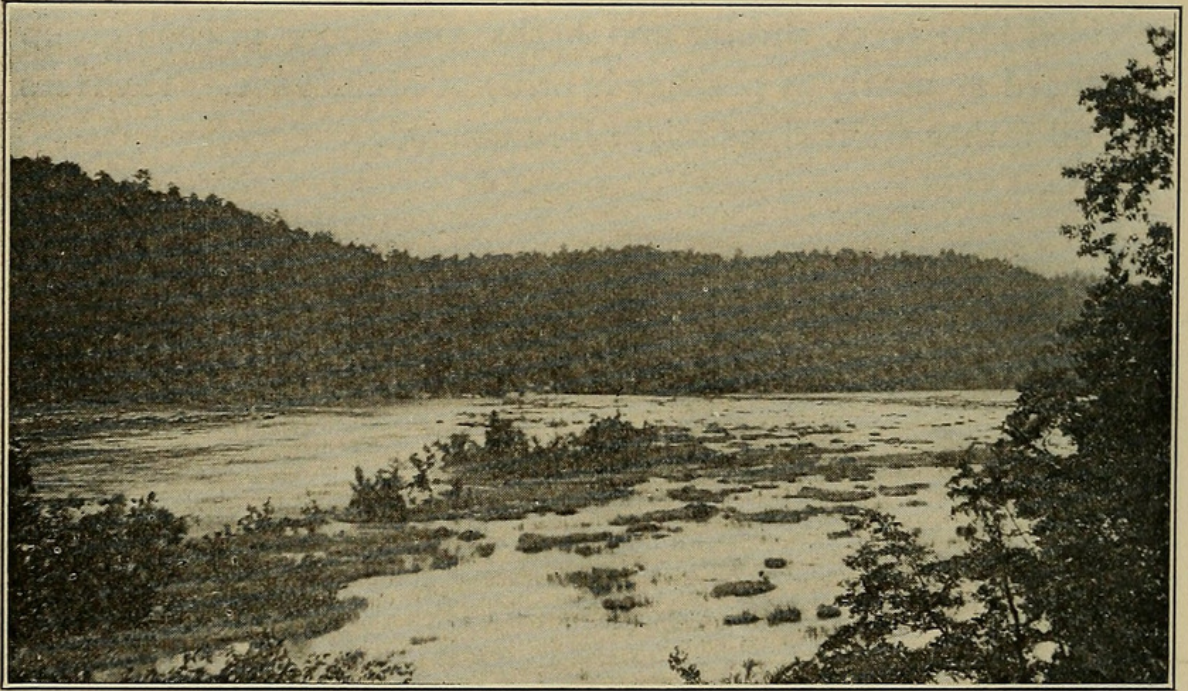


FIG. 2. View of Squaw Shoals looking diagonally up-stream from site of lock on left bank.

in either edition of Small's Flora of the Southeastern States, even as a synonym. Although it might be difficult to distinguish from *H. occidentalis* in the herbarium, it differs greatly from that species in habitat, and blooms about two months earlier; approximately at the same time as an unidentified *Hymenocallis* in South Georgia of which I published a photograph a few years ago.*

It seems rather strange to find a plant with a large bulb and succulent leaves growing in running water, but this probably indicates that the rocks to which it is attached are often exposed to sun and wind for a few weeks in the fall, when the water is lowest.

* Bull. Torrey Club 32: 463-465. f. 5. 1905; Ann. N. Y. Acad. Sci. 17: 257. pl. 24. 1906.

The *Harperella* is even less known to botanists than the *Hymenocallis*, having been found previously only in rocky beds of streams on Sand and Lookout Mountains in northeastern Alabama, and that only since 1905.* It was not in flower or fruit at the time, and I did not collect specimens, so that this new locality may never be represented by evidence of the kind demanded by some systematists.

Eleocharis mutata is another comparatively rare species, pre-

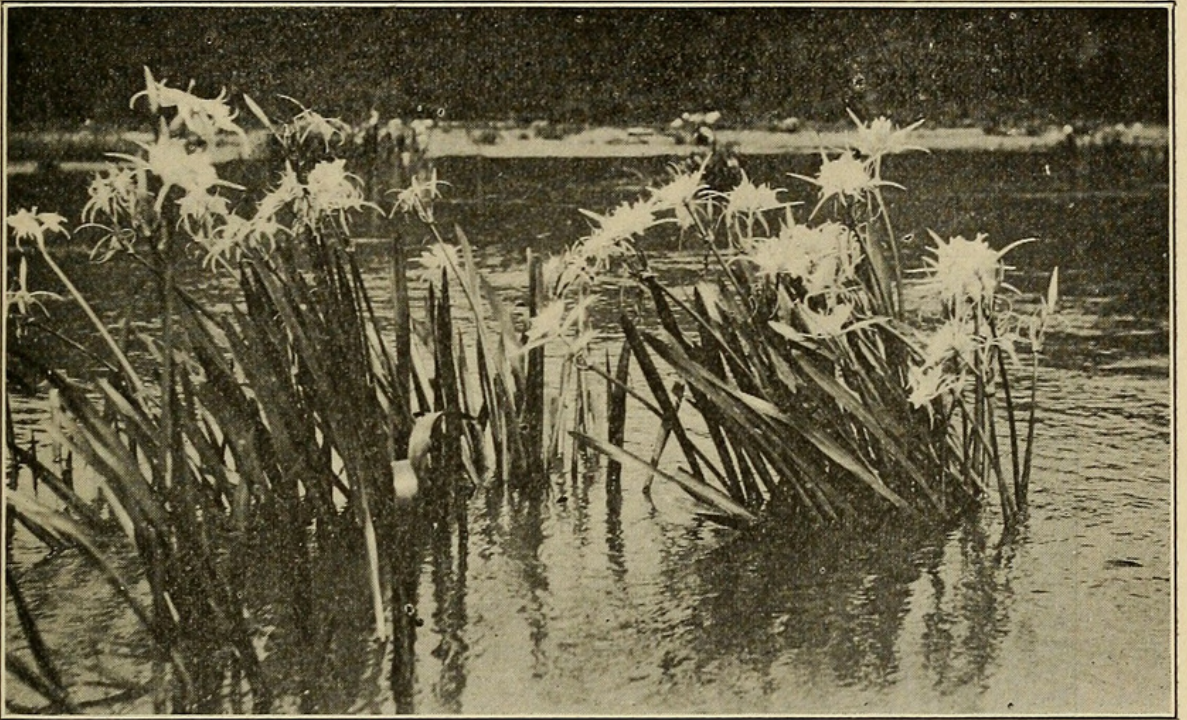


FIG. 3. *Hymenocallis coronaria* at Squaw Shoals, in about a foot of water.

viously reported in the United States only from the glaciated region and coastal plain, where it grows usually in ponds.†

On the loamy banks of the river at this place are found among other things *Alnus rugosa*, *Kalmia latifolia*, and *Batodendron arboreum*, which cannot endure much fluctuation of water, and *Fraxinus caroliniana* and *Breweria humistrata*, which are chiefly confined to the coastal plain.

It is one of the ironies of fate that the shoals, rapids and falls,

* See Torrey 6: 112-114. 1906; 10: 237-239. 1910. The plant was then referred to *H. nodosa*, *H. fluviatilis* not having been described until afterward. For description of the latter see Rose, Contr. U. S. Nat. Herb. 13: 290. 1911; Small, Fl. S. E. U. S., ed. 2, 1355. 1913.

† See Mohr's Plant Life of Ala. 396-397; also Rhodora 7: 72. 1905.

which are in many ways the most interesting spots on our rivers, are the very places that are doomed to obliteration first by the commercialistic "development" of water-power or navigation, or both—as is planned at Squaw Shoals. The controversy over Niagara Falls is of course familiar to all; and there are other instances of the same sort of work in progress in Alabama. At this very time one of the water-power syndicates is threatening to build a dam across Little River at the lower falls on Lookout Mountain, a spot noted for the occurrence of such rare plants as *Rhododendron catawbiense*, *Chondrophora virgata*, *Harperella*

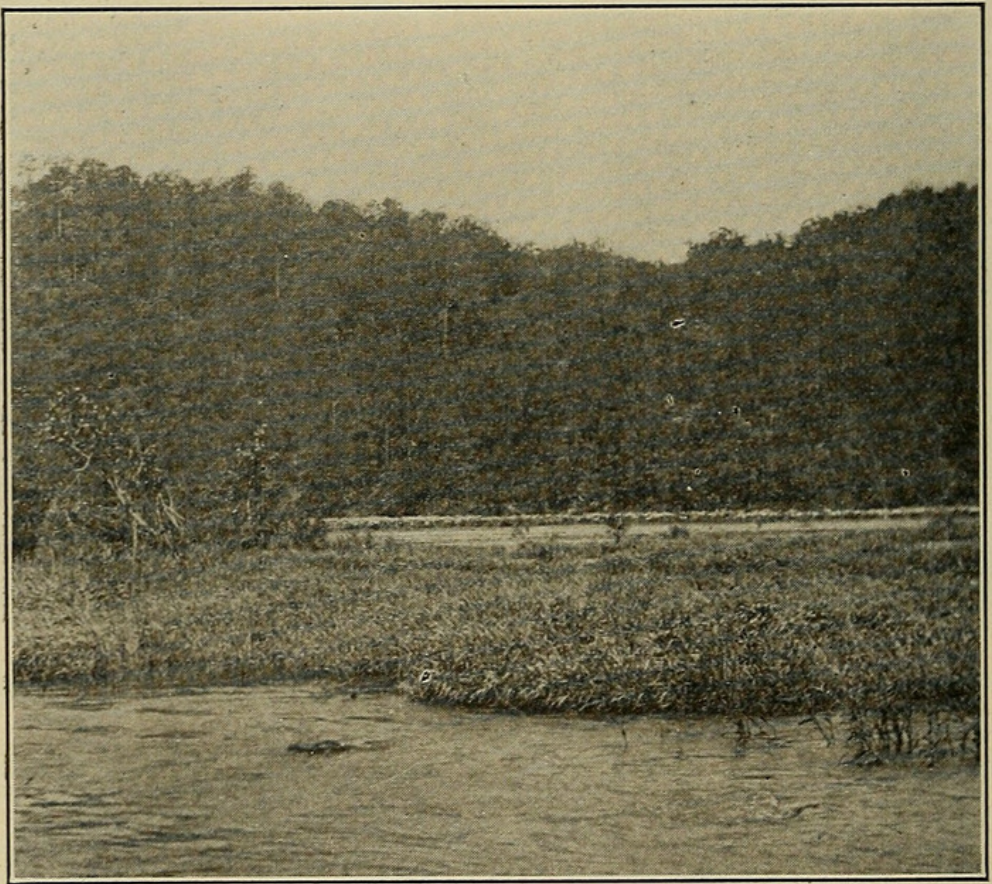


FIG. 4. Patch of *Panicum virgatum* and *Dianthera americana* on Squaw Shoals, with small trees at left.

fluviatilis, the mountain form of *Sarracenia flava*, and several species chiefly confined to the coastal plain.*

The greatest loss to science in such cases is not the mutilation of the scenery (the chief contention at Niagara), nor even the destruction of stations for the rare plants, for the same species

* See Torrey 6: 114. 1906.

can still be found elsewhere. It is the termination of the opportunity to study various interesting problems of potamology and phytogeography,* as for example, how so many coastal plain plants managed to establish themselves or persist in these interior localities. As no two shoals are exactly alike, the effacement of any one of them is an irreparable loss. But as it is impossible to measure such a loss in money, there is not much hope that the interests of science will ever be permitted to outweigh those of commercialism.

A NEW NORTHEASTERN SEDGE

BY KENNETH K. MACKENZIE

In addition to several species, which are also of wide European distribution, the group of which *Carex flava* L. is best known, is represented in the northeastern part of North America by a widely distributed plant which is unlike anything known from Europe. In all the European species of the group characterized by long beaked perigynia, the perigynia beaks are rough and strongly brownish-red tipped at the apex and the pistillate scales are also strongly brownish-red colored and very conspicuous in the spikes. In the American plant under discussion the perigynia beaks are smooth or obscurely few-toothed, under a microscope, and are whitish at the apex when young or in age are light tawny colored. The brownish-red tint is lacking in the scales, and the scales are very inconspicuous in the spikes, at maturity being concealed by the perigynia. These characters give this plant a markedly different appearance from that presented by the other members of this group, and enable it to be readily recognized in the field.

This plant was long ago recognized as distinct from *Carex flava* L. by Dewey, who treated it as identical with the European *Carex lepidocarpa* Tausch. Olney distributed various specimens

* See Bull. Torrey Club 32: 161. 1905; 37: 109. 1910; Geol. Surv. Ala. Monog. 8: 148. 1913. Since the last publication appeared the dam of the Coosa River there referred to has been completed, flooding several square miles of country, including an unrecorded station for *Sabal glabra*, among other things.



Harper, Roland M . 1914. "THE AQUATIC VEGETATION OF SQUAW SHOALS, TUSCALOOSA COUNTY, ALABAMA." *Torrey* 14(9), 149–155.

View This Item Online: <https://www.biodiversitylibrary.org/item/100136>

Permalink: <https://www.biodiversitylibrary.org/partpdf/348575>

Holding Institution

New York Botanical Garden, LuEsther T. Mertz Library

Sponsored by

The LuEsther T Mertz Library, the New York Botanical Garden

Copyright & Reuse

Copyright Status: Public domain. The BHL considers that this work is no longer under copyright protection.

Rights: <https://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.