

Excellent!

1960

Mike Frohlich
FROHLICH

A Survey of the Aquatic Plants of the Upper Platte River

The Platte River is located in Benzie County, Mich. It rises in a group of lakes (Lake Ann, Bronson Lake and others) in the eastern part of the county and flows westward. In the western part of the county it flows through Large Platte Lake and then enters Lake Michigan.

The section of river investigated is midway ~~between the lakes~~ in the central ^{stretch} ~~part~~ of the river, far from any lakes. It is between the Cass bridge of Pioneer Road and the crossing of the gas pipeline, ~~to~~ in Homestead township, (T26N R14W), section 15 and the North East quarter of section 16. The river was visited on three occasions, July 19 + 22 and August 4.

~~From~~ Current velocity readings were obtained by dropping a bucket ^{tied} ~~attached~~ to 20 feet of rope into the river and measuring the time required to ~~extend~~ ~~the~~ stretch the rope.

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Temperature readings were obtained with an alcohol thermometer. The water temperature was 19°C (on August 4) except in ^{a few} small areas where springs enter the river. ~~what was it there?~~

There are a number of different aquatic habitats ~~in~~ ^{around} the river, depending on the rate of flow and the water depth. ~~In the~~ ~~of flow and the water depth.~~ ~~The river~~ ~~is~~ is never ~~to~~ very deep (up to $3\frac{1}{2}$ feet), but the current speed varies from very fast ($3\frac{1}{2}$ feet per second) to very slow among logs by the shore. The ~~river~~ river bottom varies from gravel to sand to muck accordingly. There are no marsh areas along the shore, ~~which is at~~ ~~the~~ ~~Thuja~~ ~~swamps~~, but there are a few small islands in the river with marsh plants on them, and a few seepy areas on the shore with a thin layer of water over the soil which also support marsh plants. In most places the Thuja swamp

On the shore comes right to the river banks.

Potamogeton zosteratus is by far the most prominent plant in the river. It is found in large beds practically everywhere, from the fastest flowing spots to places with much bottom.

It occasionally forms such dense growths that many leaves are held up against the surface film. Along logs ~~and~~ where the current is very slow it sometimes ^{even} catches duck-weeds in its growth.

Hydrilla vulgaris is fairly common in the river, growing ~~on~~ in beds on gravel and sand bottoms. *Ranunculus longirostris* is common

and occurs mainly on sand bottoms, ~~usually~~ ^{usually} ~~with~~

^{In some patches} the stems ^{are} buried and only leaves protruding into the water. *Elodea canadensis* is

common on sand and mud bottoms ~~and~~ and

is sometimes found on gravel. *Veronica catenata*

is common on muck bottoms, and is found ~~on~~ on sand but never on gravel bottoms.

Potamogeton fresii was found in three places on shallow muck near shore. These were rather small plants in the quieter parts of the river.

One very small fragment of *Potamogeton richardsonii* was discovered caught in a mass of *potamogeton vaginatus* near shore. It had no roots, and apparently was carried to this ~~part~~ location from somewhere upstream. I ~~do not consider it a real~~ doubt that it would have to survive for very long in the place it was caught, and do not consider it a really part of flora of that section of river.

Of the submerged plants mentioned above four were found in flower, or producing flowering type shoots. Of these only *Veronica catenata*

was successful, ~~in lifting~~ & it was found in bloom near the ~~shoa~~ river bank, where there was very little current.

~~Flowers~~ Much of the *Elodea* in the stream was in bloom, but all of the flowers seen were held underwater, at about the same depth as the leaves, by the current. The pedicels would have been long enough to reach the surface, but they were stretched straight down stream.

Two clumps of *Ranunculus longirostris* were found with ^{submerged} flowers, one with about 10 open flowers and the other with 4.

~~The flower stalks of the~~
~~flowers and the other with about 4.~~ The flowers
The pedicels were ~~long enough to~~ reach the surface ~~if they were~~ extended straight up from them.

The pedicels were not long enough to reach the surface, even if they were held

straight ~~and~~ vertically. In fact they were more nearly horizontal, with the tip curved up to hold the flower in a vertical position just above the leaves, ^{but 2-4" below the water surface,} It is interesting to note that three patches of Ranunculus were discovered above water growing on muck. Their leaves extended an inch or two into the air. Only one of these ^{patches} had any flowers at all, and it had only two ^{open} flowers, ~~or~~ even though it covered an area of 8 or 10 square feet with dense foliage.

In a number of places *Hypericum* was found with above water, flowering type shoots, all of which were completely under water.

The ^{basal parts of} shoots pointed down stream, ~~with the~~ but the tips curved up so they were almost vertically, and about 1-2 1/2" below water.

It was about a month after the blooming season for *Hypericum*, so even if these shoots

get above water level then flowers may well go to waste.

The platte river ~~usually~~ does not normally change level quickly, and local residents said that its ^{depth} had not raised. its ~~to~~ depth had not changed ~~significantly~~ very much in the previous few days. Thus, the under water flowers cannot be explained as normal structures that were drowned by flood. The most ~~apparent~~ ~~tree~~ ~~of~~ have grown where they were found. Their presence shows spectacularly poor adaptation for life in fast flowing streams.
Implications about heterophyly?

In several places ~~th~~ on the bank ^{up to a foot above water level} there were seepy areas, where springs slowly brought water to the surface. The soil was a fine mesh ~~and~~ and ~~was~~ thoroughly soaked in water. A thin film of water covered them and any tiny depressions ^{were} were filled with water.

how the 1968 flow ~~was~~ in ~~the~~ ~~stream~~ ~~was~~ ~~different~~ ~~from~~ ~~previous~~ ~~years~~?

Lysanachia numularia grew in profusion on ~~these~~ these areas along with *Polygonum hydropiper* and a few other marsh plants. The one unusual plant there was *Lemna minor*.

It grew on the surface film of water, and was rooted in the soil. ~~These areas~~ is undoubtedly without doubt the source for the Lemna often seen mixed with floating debris caught among logs and caught among *Potamogeton vaginatus*. The Lemna must perpetuate itself ~~to~~ from year to year in these seepy areas since parts of them are so high

that the river must flood them only very, very rarely, and I do not believe the river got that high ~~this year~~ ^{this year} and thus cannot

Thus, one cannot explain the duck weed's presence ^{these} by yearly reintroductions ~~to each~~ ^{by} ~~from~~ the river from far up stream.

Annals

A number of plants were found growing

This habitat is really quite dry and
on ^{taps of} loops in the river, ~~and~~ ^{plus} many of
the plants ~~are~~ are not aquatics (~~the~~ i.e. Athyrium
felix-femina or Parnassia glauca)

The marsh-like area was very limited
near the flatte due to the ^{and dense} forest ~~or~~ on
the stream banks. None of the plants ^{found} ~~growing~~
there were growing in very unusual circumstances,
so they will just be listed:

have you mentioned
all non-marsh
species?

Nasturtium officinale

Scirpus cyperinus

Scirpus atrovirens

Phalaris arundinacea

Calla palustris

Alnus rugosa

Leersia oryzoides

Typha latifolia

Ranunculus pennsylvanicus

Scirpus validus

Eupatorium maculatum

Eupatorium perfoliatum

Sagittaria latifolia

Scutellaria epilobifolia

Cicuta bulbifera

Campanula aparanoidea

Verbena hastata

Galium

Rumex sp. - in flower, need fruit to identify

Juncus sp. - in flower, need fruit to identify

Juncus effusus

Lycopus americanus

Impatiens capensis

Sambucus canadensis

Carex hystericina

Eleocharis

Alycia grandis

Alycia striata

Cornus stolonifera

Sporogonium sp. (not in flower or fruit)