

Notes on Indiana Fresh Water Sponges

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When a zoology teacher mentions sponges his students at once think of the ordinary commercial sponges, for the excellent reason that these are the only kind most of them have ever seen or heard of; they are quite unaware that sponges may be found in streams and fresh-water lakes in many places. Apparently but few have been interested in these simple animals, and this, added to the fact that they are of no economic importance, has tended to keep them in obscurity.

This is a preliminary report on some work that has been done in investigating the sponges in some of the lakes and streams of two counties thus far—Kosciusko and Wabash. In this area sponges are to be found most numerous in the lakes and their immediate outlets. Only a very few have been found in streams other than lake outlets. As an example, Eel River was explored rather thoroughly for about a mile and in that distance but two small specimens were found, the largest being about a quarter of an inch in diameter. In every case, with the exceptions noted above, when smaller streams were investigated, not a single specimen was found. The reason for this is evidently the amount of sediment carried by these streams; for there are records from streams in other parts of the state. Since sponges depend for their food and oxygen on water that must pass through rather minute pores, any sediment will manifestly prove a serious handicap to them.

But some of the lakes tell a different story. A few seem to be without sponges, as diligent search has failed to disclose any; but in others they are more or less abundant. In the author's experience, a good way to determine their presence in a given lake is to examine the outlet of the lake. Here one is very likely to discover many specimens of the kinds to be found in the lake itself, on submerged sticks, on stones or gravelly bottoms, on roots that project into the water, and sometimes on various water weeds. It is interesting to note that though many specimens may be found in such a location, farther down the stream the matter of sediment seems again to become the dominant factor, and sponges are not to be found. Because of the sedimentation that occurs in the lake, the water there and in its outlet furnishes an environment that is usually very satisfactory for sponges. If they are found in a given lake they are often abundant in some parts of it, while in others that look as well adapted they may be entirely absent. In the lakes examined, most specimens were found on rushes growing in shallower water and very rarely on other submerged objects, evidently because the latter are rarely free from algae or sediment of some sort. For some reason they seem to prefer the cylindrical stems to triangular ones and at times they are found almost exclusively on rushes that have been cut or broken off at about the water level. It is possible that the action of wind on the

rushes may explain this behavior. Potts suggests that they will be found rarely or not at all in water containing considerable amounts of lime; but many found on rushes show the presence of lime deposits in and about them in quantities sufficient to be quite noticeable, thus demonstrating that they are able to exist in the presence of this substance.

Pretty generally the specimens found are of the "encrusting" type. The only exceptions are those found growing on roots or matted weeds. Because in growing they follow the numerous branches of these, they are found in a few cases to be somewhat "massive" but rarely of the size of a finger. They vary considerably in surface texture and somewhat in appearance, but those found are rarely branched. Occasionally they have slight elevations, but these would scarcely be called branches. Most sponges are some shade of tan, though, if they have grown where they are exposed to direct sunlight, they are usually green shading to tan or whitish as they reach the more shaded part of their support. They have a distinctive odor which, once it is recognized, is sometimes of use in distinguishing doubtful specimens from certain algal growths at time of collecting. This, coupled with the use of a small pocket lens rarely leaves one in doubt as to the identity of a given specimen.

Potts reports observing sponges throughout the winter and in the South they seem to be regularly perennial, but none have been found in the area explored. They have been found on rushes by the middle of June, but by mid-November they usually have completely disappeared except for gemmules, sometimes interspersed with a few spicules. The gemmules seem to adhere to the base on which they grew and start the sponge anew the following summer. Most species do not form gemmules until October 1 or later, though some have been found as early as the fore part of August. In one or two species, notably *Spongilla aspinosa*, it is difficult to find gemmules at any time, but it is evident that they must form or that these are perennial.

In Vol. XIV of the Illinois Natural History Survey, Smith names seven species as being reported from this state, viz: *Spongilla fragilis*, *Ephydatia crateriformis*, *Heteromeyenia argyrosperma*, *H. repens*, *H. ryderi*, *Carterius latitenta* and *C. tubisperma*. In addition he states that *Ephydatia fluviatilis* or *E. mülleri* should be included, though he is unable to determine which from the reports, as these two are often confused. Not all of these have been found in the area examined but five species have been identified, three of which are to be found in his list. *Spongilla fragilis* and *Carterius tubisperma* are numerous as is also *Ephydatia mülleri*; and if one follows some authorities and divides this last into two species—*mülleri* and *japonica*—both are to be found. Two species not listed by Smith are to be found here—*Spongilla aspinosa* and *S. lacustris*, though neither is as common as the other three. It is hoped that wider search will reveal a number of other species.