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FISH SUMMARY

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When considering a fish community, it is important to recall that one of the useful characteristics of the community is its trophic structure. Which organisms are the predators and which are the prey. UNDERC waters contain a wide variety of fish, ranging from the small members of the family cyprinidae, to the large members of the family Esocidae like the tiger muskie and northern pike. As in most trophic arrangements where predation occurs, the large tend to feed on the small. This means that any small fish is more likely to be preyed upon. Some species overcome this disadvantage by producing huge numbers of fry like the minnows and smaller sunfishes. Other species overcome this problem by growing fairly rapidly to a size which is not easily consumed, the pike Esox lucius is ordinarily a good example of this. What must be remembered is that the small fish are needed to provide nutrients for the larger fish. The nutrients of a lot of plankton can be concentrated inside of one minnow. Thus the larger fish enjoy the advantage of condensed fuel when they dine on smaller fish. *Very nice!*

Basically the two lakes surveyed had different species of fish but the lakes were really similar. Almost any lake that supports fish requires minnows, small fish like bluegills or perch or rock bass, and big fish like black bass or northern pike. These are the type of fish which occur in UNDERC lakes. Notably missing are any Salmonids. These fish require cold water with high oxygen content. They are usually abundant in oligotrophic lakes like Lake Superior. Apparently the rather warm, shallow UNDERC waters are incapable of sustaining salmonids. Since most of the UNDERC waters would be classified as Eutrophic, it stands to reason that warm water fish would predominate. But inside this warm water category there is more room. For instance, largemouth bass (Micropterus salmoides) likes still, warm water with a muddy bottom. The smallmouth bass (M. dolomieu) prefers moving water with a rocky

or gravel bottom. If this much variation is possible within the same genus, think how variable the fish community must be. *Good!*

Many fish are intolerable of low pH. The mudminnow Umbra is one of the few fish capable of living at a pH below 6.0. Other fish shy away from moving water like Tenderfoot Creek. For many species, streams and creeks provide spawning areas. This may help account for the large number of small fish taken from the creek. In addition to the large number of minnows, many immature yellow perch and rock bass were taken. Probably the main reason for the size difference between the creek samples and the lake samples was the size of the net mesh used. The seine used in Tenderfoot Creek was designed for catching small fish while the large mesh gill nets used in the lakes were designed to impale larger fish like bass and pike.

The size of the pike in Morris Lake is difficult to explain. At four years, pike would be expected to be much larger than twenty inches. Esox lucius is capable of growing to lengths of near fifty inches. Twenty inches of pike roughly corresponds to two pounds. Under good conditions, ~~northern pike~~ can grow as much as a pound of weight a year. ¹Apparently conditions for growth in Morris Lake are not good. The most probable cause for what appears to be stunting is a lack of food. Pike are extremely voracious and will eat almost anything that moves. Smaller fish like young perch, bluegills, minnows are their favorite prey. If we assume the lake to be overpopulated with pike, one can see why the small fish population would diminish rapidly. The yellow

¹I Like Pike by Lou Klewer; Fisherman's Digest; 18th Ed. pg. 74.

perch captured in the nets were all big. This could be explained by the predation pressure on the perch. Any of the perch that manage to escape predation by the pike would find limited competition from members of its own species.

When dealing with a population of fish, it is important to know some history of the lake. When aging the fish by scales we saw a lot of four year old fish. Later it was found that four years ago was an excellent spawning year. When studying the age and size distribution of a fish population, this kind of information is important. Winter kill, and time of ice-out are also very important. It is entirely possible that the Morris Lake pike have experienced two or three long hard winters and are not actually stunted but simply growing at a slow rate. If the lake is indeed overpopulated the numbers of pike should probably begin to dwindle within a couple years. Hopefully this would allow the prey populations to accumulate and then support a more normally distributed age distribution.

General trends in lakes are difficult to discuss because they really say so little. Suffice it to say that UNDFERC houses good populations of warm water gamefish and minnows, but is void of Salmonids like Rainbow or Lake Trout. This is consistent with the water chemistry data collected which indicated all the lakes were well into the process of Eutrophication.