

Ponds As Places For Fish To Live

Basic Pond Characteristics for Natural Production of Fish

The ideal Michigan sportfishing pond has:

- a surface area of one-half acre (one-fifth hectare) or larger,
- steep side slopes (about one foot vertical per three horizontal),
- at least a quarter of the bed 15 to 25 feet deep (5-8 meters),
- a water supply exclusively by seepage of groundwater (rather than stream water or runoff from land—even during the hardest rains and greatest snow-melt),
- 150-250 parts per million dissolved minerals,
- an acidity-alkalinity rating of 7-8 on the pH scale,
- a location in land with fertile soil,
- an inflow of only moderate amounts of nutrient chemicals—amounts such as would enter the pond if the land were covered by natural, undisturbed vegetation (inflow only of groundwater helps avoid excessive nutrient enrichment),
- a moderate amount of rooted plants and algae grown from naturally moderate amounts of nutrients—less than $\frac{1}{4}$ of the pond bed covered by dense plant growths,
- concentrations of dissolved oxygen which seldom fall much below 5 parts per million, even in the deepest water,
- a balance between amount of fish and amount of natural food so that body growth is rapid.

These **ideal** guidelines apply regardless of whether the pond is for warmwater fishes or for trout. A pond can have somewhat different characteristics in any of the categories and still produce worthwhile fishing. In many locations, some of the ideals cannot possibly be met, even with considerable management. For example, regulating the dissolved mineral content of groundwater will usually be infeasible, and one should not hesitate to have a pond just because the water has only 50-100 parts per million.

An ideal coldwater pond for trout will differ from a warmwater pond primarily by having greater seepage of well-oxygenated groundwater (springs), which keeps water temperature lower in summer.

This section of the bulletin briefly explains why the previously mentioned pond characteristics are important to the well-being of fish. The functioning of ponds is complex, but it is understandable and predictable enough that knowledge of it can help us manage for better habitat and food supply for kinds of fish that the owner wants—and thereby to achieve sustained fishing quality.

The Pond Ecosystem

The pond is an organized system of water, soils, dissolved substances and living organisms. We call this the pond ecosystem. Its vast number of parts continually change and interact, driven by energy from the sun, wind and gravity.

Matter and energy enter and leave the pond continuously. Most minerals and organic materials that wash, flow or fall into the pond are trap-

