

dant. This commonly occurs where overly **dense** stands of aquatic plants occupy too much of the pond. Scattered stands with moderate plant density (about 80 stems per square yard or meter) promote a better balance between predator and prey fishes. Methods for controlling aquatic plants are discussed in Chapter 10.

Water Level Drawdown

In some cases, fish populations can be controlled by manipulating pond water level. The water level can most easily be drawn down and raised again if the pond is formed by a dam with a proper water control structure to regulate the outlet. To draw down undrainable ponds, low-head pumps or a siphon can be used. The length of time needed for the pond to refill should be considered.

Whenever water is discharged from a pond, take care to insure that downstream waters or properties are not damaged by flooding, erosion or sedimentation. It is the owner's responsibility to release the water in a judicious, reasonable and prudent manner.

Fish present in the pond may not be released into public waters without a permit from the MDNR Fisheries Division. Unauthorized introductions of fish can disrupt natural fish populations to the detriment of public interest. Contact the MDNR District Fisheries Biologist whenever a drawdown or other water release from a pond is desired.

Total Drawdown is used to eliminate all fish from the pond. A special effort must be made not to overlook fish that may find refuge in residual puddles. Spot applications of fish toxicant chemicals may help in attaining complete kill. Desired fish, such as large bass, can usually be salvaged and kept alive for restocking, if other water for holding them is available.

Partial drawdown is usually used to concentrate fish so that predators like bass can become more efficient. This tactic depends on having enough predators to consume a large portion of the unwanted fish. When the pond refills, the survivors

may be able to make better use of the existing food supply, if overabundant aquatic plants have been killed by drying during the drawdown, as is often the case. Predatory reduction of small fishes will be most effective if the partial drawdown is done for a month or more in July or August. Carefully consider whether there will be increased danger of oxygen depletion and mass fish die-off during partial drawdown.

Seining

Fish can be removed by drawing a seine through the water. This is often the most effective method for reducing numbers of unwanted fish in small ponds. Seining is usually done by two people, each holding a wooden upright which supports an end of the net. Floats keep the seine top at the water surface, and weights hold the bottom edge on the pond bed. For best results, the seine must be deeper than the deepest part of the pond so that it will "belly" without being pulled away from the pond bed as it is drawn along. The seine must stay tight along the pond bed, or fish will escape underneath.

Small "minnow seines" of 15-40 feet (5-12 meters), available at sporting goods shops, can be used along shorelines to remove panfish fry and fingerlings. Small seines may be especially useful on panfish

during spawning periods. Longer, deeper seines allow greater coverage. Seines of 50-200 feet (15-60 meters) can be built to fit your pond.

Use nylon netting. It is most rip-resistant and lasts long with little maintenance. For removing small panfish, use netting with mesh of from $\frac{1}{4}$ to $\frac{1}{2}$ inch ($\frac{1}{2}$ to 1 cm). Smaller mesh isn't needed and is harder to draw through the water. Larger mesh will let those fish escape that are often the most important to remove.

Ready-made or custom-built seines can be ordered from various suppliers (Appendix). You can also make them yourself with netting, cord, floats and weights from the same sources.

For seining, the pond bed should be smooth and free of snags such as rocks, logs and brush. Dense weed beds also impede seining. Water-level drawdown (described previously in this chapter) can aid in seining by drawing the water away from weed beds and other shore-zone obstructions, as well as decreasing the area and depth to be seined.

If the seine spans the pond's width, two people can draw it the length of the pond in one sweep. This is the most efficient method. If the pond is too wide for that, pull the seine out from shore in an arc—using a boat if needed—and back to shore. Draw the arc tighter and into

Seining a pond.

