

or at right angles to the shore, off peninsulas, or in shallow bays where small fish gather. Support traps and wings with poles or iron reinforcing rods driven into the bed. Up to 10 traps per acre (25 per hectare) may be needed.

For panfish thinning, remove the same amounts and sizes of fish as described in the section on seining. Take fish out of traps daily. Otherwise, turtles may be attracted and eat the desirable fish.

Gauze bags of bait, such as bread, oatmeal, soybean cake, or cottage cheese, can be hung in traps to increase catch, but aren't necessary.

Fish Toxicants

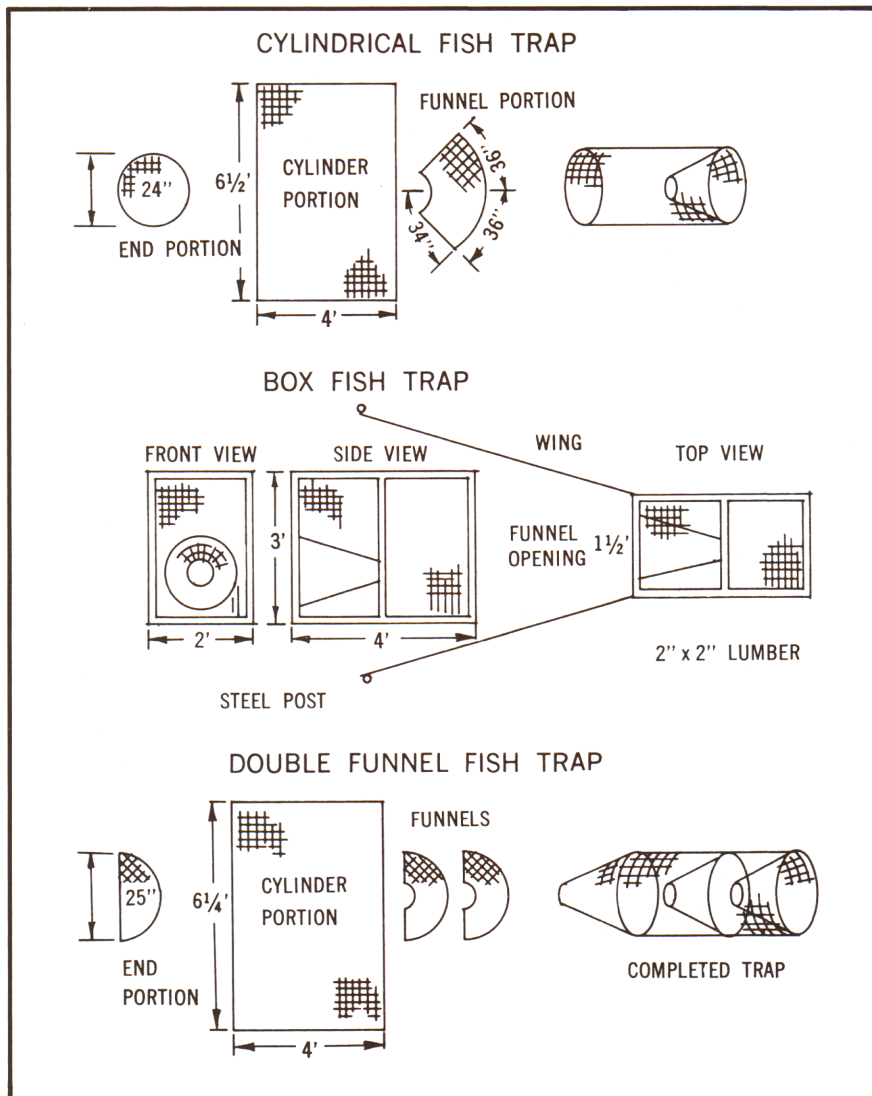
Another method of "reclaiming" ponds from panfish overpopulation or presence of undesirable fishes is to kill all fish with a chemical especially formulated to be a fish toxicant* or "piscicide". Then start anew by stocking a suitable population after the water has detoxified. Some fish can be salvaged before or during "treatment" and kept alive in other water for restocking.

"Partial treatments" to remove only certain species or sizes of fish, or to merely reduce rather than eradicate the population, can be done by applying special dosages or by treating only small parts of a large pond at one time. Partial treatments are usually very difficult and probably should be attempted only with professional help.

Only two chemicals, **rotenone** and **antimycin**, are now legally registered for use as fish toxicants. The commercial brand names and sources are listed in the Appendix. Federal law requires that only legally registered fish toxicants be used—and that they be applied strictly in accordance with instructions on the product label.

The amount of toxicant needed for total removal of fish may depend on several factors, including the kind(s) of fish to be killed, pond volume, water temperature, water

*The chemical is absorbed into the fish's gills and kills by interfering with respiration. This does *not* mean that the pond is made poisonous for humans, for any vertebrate animals other than fish, or for most invertebrates when used at the dosages prescribed for killing fish.



Fish trap construction.

hardness, light conditions, abundance of aquatic plants, and amount of other organic matter present. Correct application of fish toxicants is difficult. It is best to seek the services of a professional fishery biologist in planning and carrying out chemical treatment.

A special permit from the DNR District Fisheries Biologist is needed before applying a toxicant to any pond that is connected with surface water other than that which is completely within the property of the same pond owner. This means, essentially, any pond with an outlet.

If the pond has an outlet, special care must be taken to insure that fish aren't killed downstream. The

person who applies the toxicant is legally and financially responsible for fish killed beyond the limits of the pond. It is well to engage a licensed commercial aquatic pesticide applicator who is skilled in preventing downstream "overkill" and can take responsibility. Licensed applicators also have blanket permits, eliminating the need for pond owners to apply for permits and wait the 3 weeks or more which it takes for processing before approval.

Further information can be found in the Michigan DNR manual, "Eradication of Fish by Chemical Treatment" (Fisheries Division Pamphlet No. 19).