then, total weight loss by natural deaths in the population begins to exceed total weight gain by body growth. The more fish that are taken by angling, the fewer that can be lost to other causes. The greatest yield of fish and enjoyment can usually be obtained by doing most of the harvest during the fishing season in which the trout reach 7-10 inches.

Experience over the years may show how much you should spread out the angling harvest over the season to get the results that you want.

Under a "put-**grow**-and-catch" scheme of management, trout grow while the harvest is spread out over the season each year. You should be able to harvest an amount of trout about equal in weight to the total poundage that exists in the pond at the start of summer. This is because body growth of the remaining trout fills in for those removed.

Under "put-and-take" management for rapid catch-out of one or repeated stockings of trout in one season, many times more pounds of trout can be caught than is the momentary capacity of the pond to support—but you'll never catch as many pounds of trout as were stocked. There isn't time for the trout to make use of the food supply and to grow enough to compensate for the usual high post-stocking mortality. The cost per pound of fish caught will be much higher than in put-grow-and-catch stocking.

A put-and-take fishery may be appropriate for ponds where temperatures are suitable for trout only in spring and fall.

Artificial Feeding

Supplemental feeding shouldn't be needed if the stocking rates in Table 8-1 are followed. At these densities, the trout should have enough natural food to sustain desirable growth.

Higher population densities can be maintained if feed is added. Some people keep as much as 5,000 pounds of trout per acre in hard-water ponds with artificial feeding —and harvest that amount annually. This can only be done where a strong supply of spring water keeps temperatures low and rapidly replenishes the oxygen consumed by decaying feed and fish wastes.

However, there are disadvantages to such intense management. Once the population is built up to the level needing feed, then the trout must be fed almost daily during the growing season. "Feed lot" conditions are created, and pond appearance may become unpleasant. Excess feed and the unavoidable large amounts of trout feces raise water fertility to levels causing undesirable algae growths. The accumulation of unused feed, trout wastes, living and dead plant matter, and decay microorganisms in the pond consumes large amounts of dissolved oxygen. Having too little oxygen hampers trout growth and, if severe enough, kills them. In softwater ponds especially, excess enrichment can cause fluctuations of pH (acidity-alkalinity) which are intolerable for trout. This situation gets so bad that the pond must be redredged if it is to be further used for trout.

If there must be supplemental feeding, give no more feed at one time than the trout eat immediately. This minimizes residue of unused feed and reduces cost.

Convenient pelletized dry feed is available from livestock feed stores. Use only those especially made for trout. Feeds for other animals (such as chickens) don't have the ingredients in the right proportions and won't work. In most cases, floating pellets are best. They stay up where trout can find them longer—and where **you** can see when they have had enough.

Special Aquatic Plant Control in Trout Ponds

Amounts of algae and rooted plants should be kept moderately low in trout ponds. While water plants produce oxygen in daylight, they consume more than they produce at night. An overabundance of plants, together with the decay of dead plants, may reduce dissolved oxygen levels below the trout's needs especially on hot summer nights or in the darkness of winter ice cover. See Chapter 10 for information on aquatic plant control.

CAUTION: Trout are generally more sensitive than are warmwater fishes to chemicals used to kill algae (algicides) or rooted plants (herbicides). Some of the chemicals will kill trout at the concentrations needed to kill the intended plants. For example, the commonly used algae-killing chemical, copper sulfate, should never be used in trout ponds. No other copper compound such as Cutrine (chelated copper) should be used either. Before buying any chemical for killing aquatic plants in a trout pond, determine its effect on trout. It will be safer to remove plants by mechanical means (Chapter 10).

Artificially Circulating the Pond Water

If the pond is having dissolved oxygen problems which threaten to make it unsuitable for trout, redredging is the best solution. However, it may help to circulate the water by the air-lift method to achieve better aeration. Injecting a stream of air bubbles at the bed in the deepest part of the pond creates vertical circulation of the pond because the bubbles draw bottom water toward the top as they rise. At the surface, the oxygen-poor water spreads and takes on oxygen from the atmosphere. Surface water circulates to the bottom to replace it.

The bubble stream is produced by a compressor on the pond bank. The air passes through a hose along the pond bed to an air stone or other dispenser. A variety of air-lift circulation systems are sold especially for lake and pond use (Appendix).

The circulation prevents pond water from layering and stagnation which may occur in summer and winter. Circulation may also keep part of the pond surface unfrozen in winter.

One risk with circulating a trout pond in summer is that the entire pond may be warmed beyond tolerance for trout. There are special devices for aerating only the deep, cool part of the pond, without mixing into it the warm surface water.