

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

FISHPOND MANAGEMENT

(No.)
CODE 399

DEFINITION

Developing or improving impounded water to produce fish for domestic use of recreation.

PURPOSES

To improve or maintain fish production and fishery use by making a favorable water habitat, supplementing natural food supplies, and reducing competition from unwanted plants and animals.

CONDITIONS WHERE PRACTICE APPLIES

In ponds, lakes, and reservoirs where a crop of fish is wanted.

CRITERIA

Habitat

Cold water habitat (surface water temperature 70°F or less throughout the year) is suitable for trout production.

Warm water habitat (surface water temperature more than 70°F from May through September each year) is suitable for black bass, bluegill, catfish and/or minnow production, or other warm water fish.

Marginal range habitat (surface water temperature more than 70°F for less than four months during the summer).

Where surface water temperature remains below 78°F and the dissolved oxygen content at depths below three feet remains at or above 5 ppm (with cool nighttime air temperature or some cold water entering the pond) the habitat may be suitable for trout production. This habitat is also suitable for bass, bluegill, catfish and minnow production, but the growth rate will be slow.

Where surface water temperature exceeds 78°F and/or the dissolved oxygen content below three feet is less than 5 ppm, the habitat is sub-marginal for trout production and marginal for the commercial production

of catfish, but is suitable for regular bass and bluegill production and for other warm water species.

Fertilizers

In warm water habitat where maximum fish production is desired and where aquatic weed control is necessary, warm water ponds can be fertilized. The application of fertilizer increases the growth of plankton in the water, shading the bottom so that rooted plants cannot grow, and supplying additional food for aquatic insects and the like on which small fish feed.

In cold water habitat, fertilization for trout production is not recommended.

Fishpond fertilization should not be undertaken unless the pond owner understands the purposes and techniques of fertilizer application and intends to do a good and continuing job of pond management. Partial or inadequate fishpond fertilization is a waste of time and materials. Also, it is useless to fertilize shallow ponds where most of the water depth is less than 24 inches because of emergent weed problems. Fertilizer can actually make the problem worse.

The annual pond fertilization program should be started early in the spring, the first application being made just before weed growth begins, generally March in Southern California along the south coast, in the Sacramento and San Joaquin valleys, and in April elsewhere. The applications should be continued, as necessary, until the first fall frost or the beginning of plant dormancy or deterioration.

Fertile water is generally green, or sometimes brown in color. Clear water is an indication of need for fertilization. The frequency of fertilizer applications should be governed by the visual observance of 4 to 6 inch white disc, 16 to 20 inches below the water surface. If the disc can be seen, an application of fertilizer at the standard rate should be made. In beginning the fertilizer program each year, two or three applications may have to be made at weekly intervals to get a water "bloom" that will obscure the disc.

Fertilizer should not be used when pond water is removed from ponds, either directly or indirectly for domestic use. Fertilization can be ineffective and very costly if large quantities of water flow through the pond during the time it would be used.

CONSIDERATIONS

Use of inorganic fertilizer in which the nitrogen (N) and phosphorus (P) components are balanced in an approximate ratio of 8 pounds of available N to 8 pounds of available P₂O₅ per surface acre per application. Potassium (K) may not be needed in all areas of the state. One of the most common fertilizer formulas used to obtain this ratio in pond fertilization is 8-8-2 applied at the rate of 100-200 pounds per surface acre per application. A commonly available fertilizer is 16-20-0, which is applied at 50-100 pounds per surface acre. (Potash should be added at the rate of two pounds per surface acre to ponds where a satisfactory bloom is not obtained with 16-20-0.) There is some advantage to using basic ammonium nitrate for nitrogen in acid waters, and acidic ammonium sulfate in alkaline waters.

Superphosphate applied at the rate of 50-100 pounds per acre has been effective as an emergency measure in arresting fish die-off resulting from oxygen deficiencies.

Water Quantity

This practice will have no effect on the quantity of surface or ground water.

1. Effects on the water budget.

Water Quantity

Water may be added to and removed from the pond during management. When water is released, this water may be high in waste feed, fish feces, and other organics. There may be a detrimental effect on the water immediately downstream of the point of release. This may be temporary and may only occur at the time water is being released.

1. Effects of pesticide and nutrient use and fish feeding on surface and ground water quality.
2. Effects on the movement of dissolved substances to ground water.
3. Effects on wetlands or water-related wildlife habitats.

4. Effects on the visual quality of water resources.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Some species are year-round residents in some streams, such as, freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that during critical periods, such as spawning, eggs in gravels, and rearing of young may preclude activities in the stream that may directly affect the stream habitat during those periods. For example there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

PLANS AND SPECIFICATIONS

Plans and specifications for the management of fishponds shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve the intended purpose.

Plans, drawings, and specifications for site installations shall be reviewed by a NRCS Biologist prior to commencement of any installation operations.

Specification Guide

Fertilizers and Rate of Application

Fertilizer should be applied to pond waters in a manner that will permit the material to be dissolved near the surface. This is accomplished by:

1. Suspending the fertilizer in a coarse-mesh bag from inflated inner tubes anchored in several feet of water.
2. Placing the fertilizer on stationary or floating 4x4 foot wooden platforms 12-16 inches below the surface.
3. Spreading fertilizer along shoreline if a hard surface free of silt and vegetation is available. In larger ponds, one such platform per 8 to 10 surface acres of water is considered adequate.
4. Lay the fertilizer bag flat in 12 inches of water, tear the bag open, allowing the water to dissolve the fertilizer.

The loss of fertilizer or fertile water from the pond or reservoir may be reduced by outletting the normal flow or irrigation water needs from the bottom of the impoundment.

Stocking Rate of Fingerlings Per Surface Acre

Bass and Bluegill. 100 bass and 1,000 bluegill in fertilized ponds, or 50 bass and 500 bluegill in unfertilized ponds.

Catfish. 200 to 500 in natural waters, or 1,500 to 2,000 in production ponds where supplemental feed is provided.

Trout. 1,000 to 4,000 depending on desired size at the end of the growing season.

Artificial Feeding

Artificial feeding of trout and catfish is commonly resorted to in commercial or private ponds to increase production. Excellent feeds are on the market under a variety of trade names. Follow manufacturer's specifications or those given in the Channel Catfish Guide or Pond Management for Trout in California.

Use of Toxicants

Rotenone (Derris root), a common insecticide is the primary fish toxicant that is available to remove undesirable fish populations from ponds and other waters. The use of this material as fish toxicant is regulated by law. Persons wishing to use fish poisons in pond management work must first obtain a permit from the State Department of Fish and Game.

OPERATION AND MAINTENANCE

An operation and maintenance plan must be prepared by the Designer for use by the owner or other responsible for operating this practice. The plan should provide specific instructions for operating and maintaining the system to insure that it functions properly. It should also provide for periodic inspections and prompt repair or replacement of damage components.