Pond School 2008
Development, Management & Enjoyment of Your Pond

Ken Dunder, Santiam Valley Ranch

Oregon Freshwater Aquaculture – Fish for Your Ponds

Licensed Propagator in Oregon: Santiam Valley Ranch has raised warm-water fish for pond stocking since 1982, and has been a licensed propagator of game fish since that time. Fish raised at Santiam Valley Ranch are: largemouth bass, bluegill, black crappie, pumpkinseed, channel catfish, yellow and brown bullhead catfish and mosquito fish.

Transportation Permits: An approved transportation permit issued by Oregon Department of Fish and Wildlife (ODFW) must accompany sales of game fish. Exports to other states must also have an additional permit issued by those state agencies. Upon taking your order for fish, we apply to ODFW in your behalf to obtain the necessary transportation permit. The purpose of the transportation permits:

(1) ensures that the species is permitted in that locality,
(2) ensures that fish are disease free,
(3) limits release of fish into waterways of the State by requiring screens on privately held ponds,
(4) limits introduction of new species with goals to protect native species,
(5) develops data bases on introduced fish, and
(6) allow citizens to import introduced species while providing centralized information to the State.

For further information about transportation permits or fish stocking regulations in Oregon, contact Laura Tesler, Oregon Department of Fish & Wildlife.

Fish Rearing at Aquaculture Facilities: The goals for a pond owner vary significantly from those who raise fish with an aquaculture business. Our goals are to develop ponds suitable for easy seining and capture of fish. Rather than building a pond and inviting the natural environment to create a pleasing, aesthetic environment, our ponds are 'sterile' in their appearance. We need to keep the ponds free of structures that could interfere with seining and to protect ourselves while manipulating nets inside the ponds. We discourage tree growth around the ponds, as they too interfere with maintenance of banks. Our ponds can be filled and drained in order to ease collection of fish. And like other pond owners, a considerable effort is made to reduce production of aquatic plants, which can become trapped in seine nets and greatly deteriorate effective collection of fish.

Fish for Your Ponds:

Cold-water or warm-water fish. When pond owners contact us, the first requirement is to determine which type of fish you want: cold-water or warm-water. Trout must have cooler water, which holds more oxygen. Warm-water fish can live in cold water environments, but to reproduce, they require water temperatures in the high 60˚F or above.

Determine the long-term goal of raising fish. Many times, people want fish for their grandchildren to catch on a hot summer day, or simply to have fish for their food supply. Some want warm-water fish for ornamental ponds and are seeking fish they want to see and interact with, while others seek to use fish in hydroponic greenhouses to utilize water, provide fertilizer for the plants and provide high protein food. All of these, combined with many other reasons, determine which fish people decide to stock and nurture.

Organize your pond or water facility to accomplish your long-term goal.
If you plan to raise fish using a recirculation system, such as within an ornamental pond or greenhouse tank, you may need to invest by installing a biofilter system that cleans the water. In addition, options can include ultraviolet systems and/or ozone systems to eliminate infections to your fish through disease.

If you plan to raise fish in a pond, options can include introduction of aeration to provide oxygen to the fish and to eliminate gases produced within the pond, such as methane from decomposing organic material. Aeration should be placed in the deepest part of the pond, on the bottom, as gases are heavier than water and will flow to the deepest area. Other options can include waterfalls, which provide additional oxygen flow into the pond. Waterfall construction can provide other options for water clarity and purification through biofilters, ultraviolet and/or ozone systems.

It is important to maintain varying levels of water within the pond, including shallow areas for spawning (two feet in depth along the edge). Other options to encourage spawning could include addition of gravel (3/4” minus, round) or other structures, such as rocks, concrete slabs, etc.

Within the pond, it is important to offer protection for the fish from predators. Such options could include a deck, downed timber, cement culverts, etc., which provide shelter and shade for the fish. In addition, it is important to provide shade for some portions of the pond using willows, small shrubs or trees.

Stocking Rates for Warm-water fish: Santiam Valley Ranch provides extensive information about fish physiology and recommended stocking rates at www.fishsvr.com

For new ponds, we recommend stocking fingerling fish, with the goal that the fish will develop along with the development of the pond ecosystem over time. For ponds that already have fish, or that have a well-developed pond ecosystem, pond owners can stock adult fish (greater than 3" in length). We recommend stocking fish of equal size, or larger forage fish (bluegill, crappie, pumpkinseed) with smaller predator fish (bass, channel catfish).

Many pond owners would like to have trout and warm-water fish in the same pond. This is possible if there are two types of environments within the same pond, such as cold, deep areas for trout, and warmer, shallow areas for warm-water fish that also provide sites for spawning. If bass reproduction is successful, future stocking of trout with bass will require stocking of larger trout in a size somewhat comparable to the size of the bass.

Aquatic Vegetation: We strongly recommend that pond owners should not use ornamental aquatic plants within a natural pond ecosystem. Non-native species including *Elodea densa*, commonly known as South American waterweed, and Parrot Feather are commonly sold for ornamental pond owners—those who have black plastic pond liners or cement water fountains. These plants provide quick growth rate and suitable environments for Koi, goldfish and even warm-water fish. However, non-native plant species are horribly invasive in large ponds, and will completely cover the surface and/or depth of your pond. They are very difficult to control or kill, and distribute noxious weeds to other waterways distributed by waterfowl. Considerable effort is underway to educate the public to refrain from introducing these types of plants. Recommendations for appropriate aquatic and riparian plant species are essential for enjoying a great pond environment.

Other plants can cause great problems for pond owners. These include algae and duck weed, which again can cover the pond or significantly reduce areas in the pond which could preferably be used for fishing or aesthetic enjoyment.

Options to control aquatic plants can include introduction of barley straw to minimize algae growth, aeration, floating aquatic gardens which utilizes fertilizer produced in the pond, introduction of grass carp, herbicide control, Aquashade "blue" dye which limit penetration of the sun interfering with photosynthesis in aquatic plants, weeding, planting shade trees, etc. Note that some aquatic plants are essential for successful reproduction of warm-water fish. They provide suitable habitats for younger fish and provide cover from predators, including osprey, kingfishers and Great-blue heron.

History of Warm-water fish: Warm-water game fish (bass, bluegill, crappie, catfish and mosquito fish) have been introduced into Oregon with the exception of one native west coast sunfish that occurs in the Klamath Basin (Sacramento perch). More about introduction of pond fish by the early pioneers in the late 1800's and

early 1900's is noted within our web page. Because warm-water fish have been so successful in adapting to Oregon's ponds and waterways, stocking of warm-water fish is allowed in areas where such fish have already become established. The goal is to limit introduction of warm-water fish into Oregon pristine environments where introduced species have not yet been introduced.

In addition to experts at Pond School 2008, there are others who may be able to assist further. One notable expert is Jim Nelson,"the Pond Doctor", located in Lebanon. Paul Kay, owner of Rogue Water Restoration in Ashland, has developed protocols for floating wetland gardens. Renee Stoops, Director of SPROut which is located at Oregon Garden in Silverton, focuses on wetland management.

Pond Enjoyment = Pond Management: For those who enjoy their pond and the ecosystem that emanates from the pond environment, maintenance is an on-going responsibility. Having a pond is another responsibility that enters the list of things to do, along with mowing the grass or weeding the garden.

In pond construction or repair, creating an island attracts waterfowl seeking protected nesting sites. Birdhouses bring swallows that minimize insects. Efforts on your part will provide solace for wood ducks. Raised nesting sites offer protection for nesting geese. Wood limbs in the water provide resting sites for turtles, frogs, herons and egrets. Unmowed areas provide nesting sites for ducks. Even predators provide a wonder of amazement, including ospreys, Great-blue heron, egrets, mink and river otters.

The introduced species, Nutria, require on-going maintenance requiring traps and hunting. Their impact in deteriorating pond banks and dikes can at times be overwhelming.

River otters, playful and enjoyable to watch, can decimate the number of fish in your pond. Removal of this native species is regulated by Oregon Department of Fish & Wildlife, and permits for trapping can be obtained by calling your local office.

With a bit of involvement, your pond can play the center point of your home environment, providing aesthetic appeal, options for recreation or just relaxing, enjoying the fauna and flora that come and go as the seasons change.

For further information: Santiam Valley Ranch has developed considerable information for pond owners, which is available on our web site: www.fishsvr.com or contact Ken Dunder & Kathy Bridges at 503-743-2931.