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Building Cages for Fish Farming

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Building Cages for Fish Farming

by Marley Beem, Extension Aquaculture Specialist

If you plan to grow fish primarily for food instead of sport, consider cages.

Cages allow complete and relatively easy harvest of fish from ponds and lakes, harvest that would be difficult or impossible by normal means.

However, they must be built correctly if poor growth, death, and fish escape are to be avoided. The cage described in this Extra is appropriate for raising rainbow trout under South Dakota springtime conditions. Recommended stocking rates, times, and feeding methods are contained in other Extras.

Materials list for two cages
(3-ft diameter, 7.5-ft depth):

1 roll (50x4-ft) plastic 1/2-inch mesh
10 ft (1-ft wide) plastic 1/8-inch mesh
76 ft hoop steel (about 13 lb)
8 hoop steel couplings
light gauge plastic-coated electric wire
8 floats (antifreeze jugs or styrofoam blocks)
6-8 boards (1x2's 7.5 ft long)
measuring tape
hammer
sheet metal snips or utility knife

Estimated materials cost/cage: $70.00
Time to build one cage: 4 to 5 hours

Materials and construction

Cylindrical cages are recommended because they are strong and can be built inexpensively. Fish do well in this shape of cage, perhaps because of their habit of swimming in circles while confined.

Depth of the cage depends on the fish to be grown. Warm-water fish, such as channel catfish, can get along in a pond warm enough to support good growth in a 4-ft deep cage. Cold-water fish, such as trout, need at least a 7.5-ft depth. The deeper cage allows trout to remain in their preferred cooler water for a longer time.

Two types of mesh are acceptable: plastic or vinyl coated. Plastic has a life of about 5 years if not stored in open sunlight. The coated metal costs more and is more difficult to cut and shape, but has a longer life and will protect against gnawing animals such as muskrats. There is a range of quality and prices, so get mesh samples from several suppliers.

Cages are cheap, compared to the cost of fingerlings and feed, so it pays to use the best materials. Do not use plain galvanized wire or fishing net type mesh. The first rusts out quickly and the second may tangle the fish.

The mesh should be the largest which will contain the fish at stocking without any possibility of entanglement. For fish more than 5 inches in length, a 1/2-inch mesh size is usually acceptable. If in doubt, take a piece of mesh with you to your fingerling supplier and try pushing a fish through.

Making a 7.5-ft-deep plastic mesh cage

1. Make four identical hoops with a diameter of 3 ft. (A 9.5-ft length gives a 3-ft diameter.) Join ends together with a coupling and crimp in place with hammer blows.

2. Roll out the 1/2-inch mesh and lay one hoop in the corner. Use electrical wire to "sew" the hoop to the mesh. Trim the excess with sheet metal snips or a utility knife. This is the cage bottom. Save the scraps for the cage top.

3. Cut two 10-ft lengths of mesh from the roll.

4. Sew one 10-ft length onto the bottom, forming a cylinder. If your measurements are correct, the ends will overlap by 7 inches. Sew the overlap together well, so no fish can escape if the cage wall flexes. It may be helpful to make a "needle" of stiff wire to feed the wire through the mesh.

5. Sew the top of the cylinder to a second hoop, with the hoop on the inside. This is the bottom half of the cage. Put it aside until a little later.

6. Sew the remaining 10-ft length of mesh to the third hoop, forming the top half of the cage. The hoop end is the top edge.

7. Sew the two halves of the cage together so that the top half is outside and there is an overlap of 6 inches. (NOTE: It will be easier if you can split the two halves at harvest, so make the connection strong but easy to take apart.)

8. Attach a 10-ft by 1-ft deep piece of 1/8-inch plastic mesh to the top **inside** of the upper half of the cage. This is the feeding ring and will keep floating feed from drifting out of the cage.

9. Sew mesh onto the last hoop to make the top. Use the 1x3-ft scrap left from Step 2 and piece it together with a 2-ft piece from the roll. The top can be attached with short lengths of wire.

10. Lash 1x2's 7.5-ft long to the outside of the cage to provide further rigidity. Attach floats and adjust in water so that 2-3 inches of cage remain above the water. Styrofoam blocks or well sealed empty antifreeze jugs make the best floats.

11. Place a cover on the cage top to reduce light inside. Black plastic or any thin material is fine. Leave a 6x6-inch hole so you can easily pour feed into the cage.

Cage placement

The cage site should be protected from high wind and wave action. Coves that are sheltered from prevailing winds are a good choice for larger lakes. Avoid areas that are choked with aquatic weeds. There should be at least several feet of water under the cage. Never let cages rest on the bottom, or you will have disease problems. If possible, choose sites where fish will not be disturbed by fishermen, thieves, or other activity.

If you have only a few cages, they can be anchored individually or attached to a dock where water depth permits. Larger numbers of cages should be tied to a main line which can be strung across an entire water body or from shore to a securely anchored large float. Use a short length of chain and cable clamps to attach each cage to the cable. Space cages 3 ft or more apart to allow water to flow freely through the cages. The main line can be plastic coated steel cable or a strong synthetic fiber rope.

Free floating docks are usually not feasible since waves may damage cages if they beat against the dock.

The heavy ice conditions in this region make it advisable to remove cages from the water during the winter months. Do not store them in direct sunlight.

Suppliers

For plastic mesh, hoop steel, couplings:

Nylon Net Company
615 E. Bodley
PO Box 592
Memphis, TN 38101
(901) /74-1500

Memphis Net & Twine Co, Inc
2481 Matthews Ave
PO Box 8331
Memphis, TN 38108

ADPI Enterprises, Inc
7001 W 60th Street
Chicago, IL 60638

InterNet Inc
2/30 Nevada Ave N
Minneapolis, MN 55427

Delta Net & Twine Co
PO Box 356
Greenville, MS 38701

For vinyl coated wire mesh:

C.E. Shepard Co.
PO Box 9445
Houston, TX 77011

Valentine Equipment Co.
PO Box 487
Hinsdale, IL 60521

Riverdale Mills Corp.
130 Riverdale Street
PO Box 200
Northbridge, MA 01534
1-(800) /62-6374

Please do not use this Extra as your only source of information. Your Extension agent will be able to provide you with further information on fish farming. See also Extension Extras 12001, 12003, and 12004.

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Exploded view of
7.5-ft deep fish cage