

Technical Bulletin #48:

Cage Aquaculture: Cage Design, Site Selection and Maintenance

Cage System

The parts of the system (Figure 1) are:

1. Cage Frame
2. Barrels for Flotation
3. Net bag to hold the fish
4. Cover with feeding hole
5. Feeding ring
6. Conditioning bag

Barrels are used for flotation and are secured to the anchor points at the bottom of the cage frame. The barrels can be used to control how deep the cage floats. The net bag is tied inside the cage frame. The feeding ring is tied so that it floats below the feeding hole in the cover. The cover is sewn onto the top of the frame, except for one corner which is tied down to provide easy access for cleaning and removal of dead animals. The conditioning bag is used to stock the fish. During the first few weeks a small mesh net must be used to train the fingerlings not to escape from the cage.

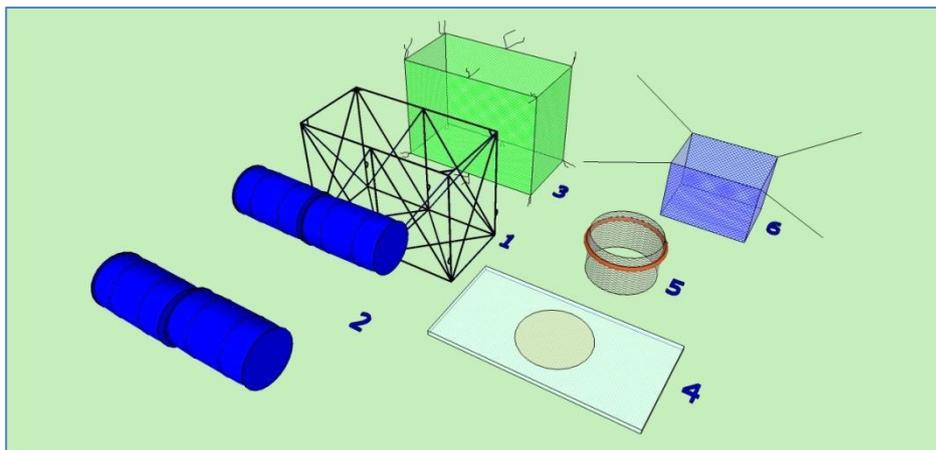


Figure 1: Cage system parts

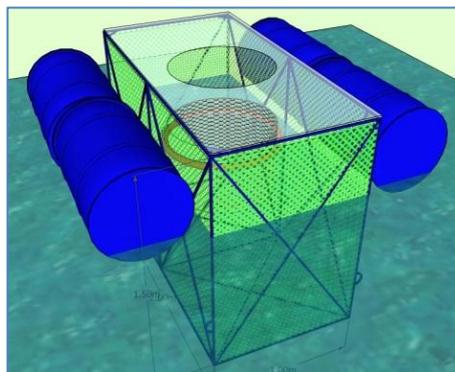


Figure 2: Cage system assembled



Figure 3: Cage system in use

Mesh Size of Net Bag

The mesh size of the net bag is selected based on the size of the fish. The mesh size should be small enough to retain all the fish, and as large as possible to allow maximum water flow through the bag. Small fish will need a smaller mesh size than large fish (Figure 4). Change bags to a larger mesh size to increase water flow as the fish grow (Figure 5).

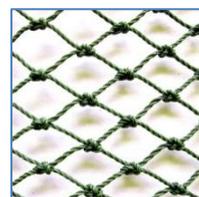


Figure 4: 2 cm mesh net

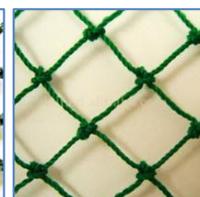


Figure 5: 4 cm mesh net

Cage Site Selection

Where a cage is placed will determine how effective and profitable it will be. Good sites for a cage will have the following characteristics:

- Adequate water depth
- Good water quality
- Water movement
- Easy access for feeding and monitoring



A cage should never be allowed to touch the bottom (Figure 6). There should always be as much water under the cage as possible. Increased water circulation will improve water quality which will increase fish health and growth.

The Cambodia HARVEST cages have been designed to have adjustable depth. As water becomes shallower the cage should be raised by shortening the ropes holding the flotation barrels (Figure 6).

Good water quality is important to fish survival, health, and growth. High quality water is free of sewage, chemicals and oil, is not too muddy, and has adequate oxygen for good fish growth.

Flowing water will wash the fish waste out of the cage and bring in new water that is high in oxygen. **Always try to locate a cage where the correct amount of water is able to flow through it.** The water speed where the cage is used should be between 1 to 5 meters per minute (Figure 7). The easiest way to measure water speed is to use an object like an orange that will float just at the surface of the water. Place it in the water gently and measure how far it moves in one minute. Water speeds below 1 meter per minute will not remove the waste adequately. Water speeds above 5 meters per minute will make the fish tired, grow slower and become stressed because they must always swim against a fast current.

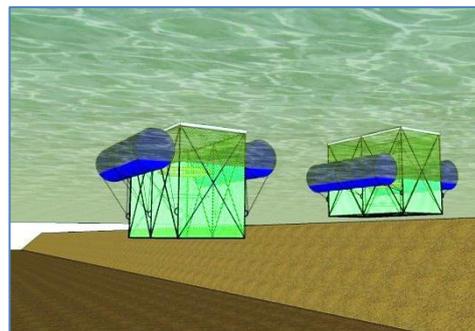


Figure 6: Cage floatation adjusted to prevent cage from touching the bottom

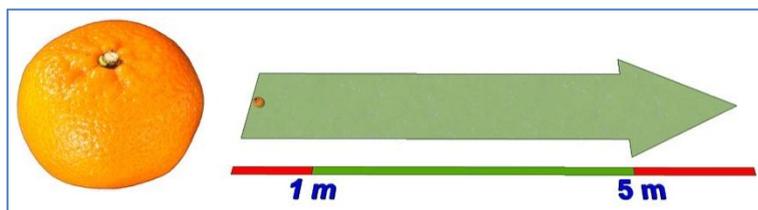


Figure 7: An orange should move between 1 to 5 meters in 1 minute.

It is important to place the cages in a locations where the fish can be easily monitored and easily fed.

Cage Care

Clean cages regularly to remove algae and anything else that can limit the amount of water that can flow through a cage.

Inspect net bags regularly for damage and tears (Figure 8). A torn bag will allow fish to escape and predators to get in. **Repair or replace damaged or torn net bags immediately.**

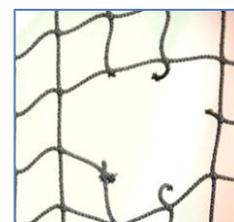


Figure 8: Torn net that must be repaired immediately

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