

m³. The fingerlings were fed @ 5% total biomass of fish with chopped low-value fishes (sardine, lesser sardine, rainbow sardine, etc.) twice in a day. Net cages were changed based on the subjective assessment of clogging of the net in order to have sufficient water exchange. Random sampling was carried out weekly with the sample size of 30 nos. per cage. This phase was continued for about 4 weeks.

Grow-out Phase

The grow-out culture was carried out in circular floating sea cages of 6 meter diameter. The cage frames were made up of HDPE pipes or GI pipes. The handrail was fixed at half meter height from the base. The space between the inner and outer rings of the cage was kept as one meter. The net cages fabricated with HDPE ropes of 2.5 mm thickness and the mesh size of 40 mm for inner net cage and 60 mm for outer net cage was used. The depth of the net cages was maintained at 4.0 meters from the base. The shape of the net cages was maintained with circular ballast. The cages were floated and moored as mentioned in nursery phase 2.

The juveniles from nursery phase 2 were transferred to these grow-out sea cages. The stocking density at this phase was maintained at 3.0-5.0 kg/m³ or 750 nos. of juvenile cobia per cage. The juveniles were fed @ 5% total biomass of fish with chopped low-value fishes (sardine, lesser

sardine, rainbow sardine, etc.) once daily. Net cages were changed based on the subjective assessment of fouling of the net in order to have sufficient water exchange. Random sampling was carried out at monthly intervals with the sample size of 30 nos. per cage. The entire grow-out culture was carried out for a period of 6- 7 months.

Performance

The fingerlings stocked in indoor nursery at around 2 grams and attained an average weight of 45 grams in 6 weeks, followed by about 70 grams in another 4 weeks of outdoor nursery rearing. The juveniles reached an average weight of 1.0 kg in 4 months and 2.5 – 3.0 kg in 6 - 7 months of

grow-out culture in sea cages. The grow-out fishes reached an average weight of 7.0 kg with a maximum weight of 8.0 kg within the culture period of one year, which was almost 100 times the initial weight.

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Cage Farming of Cobia

(*Rachycentron canadum*)



Cobia (*Rachycentron canadum*)

Cobia has gained popularity as a good candidate for mariculture due to its rapid growth and white meat of versatile use. It is considered as one of the most promising candidates for warm-water marine fish aquaculture in the world. Being the only member of the family Rachycentridae, it is found in the warm, temperate to tropical waters of the West and East Atlantic, throughout the Caribbean and in the Indo-Pacific off India, Australia and Japan. To date, research and development of cobia aquaculture has been initiated in over 23 countries and territories, half of them in the Asian-Pacific region. Statistics of FAO (2009) showed that the global aquaculture production of cobia has been increasing rapidly from only 9 tonnes in 1997 to nearly 30,000 tonnes in 2007. Since late 1990's, cobia aquaculture

production has been steadily expanding in Asia, primarily in Taiwan, Vietnam and China, but also in other Southeast and Indo-Pacific Asian countries including the Philippines, Indonesia and Iran. Although cobia production is expanding rapidly, combined production of Asian countries is still rather lower.

Cobia Farming Techniques Developed by CMFRI

India is late starter in cobia research and the seed production of cobia was achieved for first time in India by the Mandapam Regional Centre of Central Marine Fisheries Research Institute (CMFRI). Later the farming protocols in the High Density Polyethylene (HDPE) cages and Galvanized Iron (GI) cages with different feeding strategies were developed, tested and validated. Out of this farming trials the economically viable farming methods have been evolved. These

farming methods have been executed in a participatory farming demonstration with M/s. Vitality Aquaculture Pvt. Ltd., Tuticorin and successful harvest of cobia was made during May 2013 in the presence of the Director General, ICAR, New Delhi.

The basic protocols followed for cage culture of cobia in different phases are narrated as below:-

Nursery Phase I

The 4 weeks old fingerlings were reared for 6 weeks indoor (nursery phase 1) followed by 8 weeks outdoor (nursery phase 2) before stocking in grow-out cages. The nursery phase I was carried out in FRP tanks of 7 ton capacity with 5 ton filtered sea water. The stocking density was kept as 8 nos. per litre. The fingerlings were fed with INVE (Thailand) formulated diet (assorted size from 400 μ to 1200 μ) thrice daily. The weaning to chop low-value fishes was practised during the last week of this phase. The daily water exchange was 100%.

Nursery Phase 2

The nursery phase 2 was carried out in specially designed sea cages. These nursery cages were made of HDPE pipes or GI pipe (C - class type) material. The dimension of the square sea cage was kept as 4x4 meter with the handrail fixed at one meter height from the base otherwise a circular cage of 6 meter dia was used. The net cages fabricated with HDPE ropes of 2.5 mm thickness and the mesh size used were 20 mm for inner net cage and 40 mm for outer net cage. The depth of the net cage was kept 3 meters from the base. The shape of the net cages was maintained with ballast. The buoyancy of the cages was enabled by tying HDPE drums with the cage frame and moored with two numbers of GI anchors of 70/100 kg each in opposite directions.

The fingerlings from the nursery phase I were transferred to the floating nursery sea cages. The stocking density biomass at this phase was maintained at 1.8-3.0 kg/

