Farming of cobia or black kingfish (*Rachycentron canadum*)

**Niels Svennevig**  
Head, International Projects Department  
SINTEF Fisheries & Aquaculture, N-7465, Trondheim, Norway  
E-mail: neils.svennevig@post3.tele.dk

Cobia is a fast growing pelagic fish found in the tropical/subtropical seas all over the world. It is normally found as a lonely strangler or in small groups from the shallow coastal water or coral reefs to further offshore. Cobia is the only species in its family and its closest relatives are the remoras or suckerfish. It is a sturdy cigar-shaped fish (maximum size of 75kg and 1.80m), actually looking wider when seen from above than from the side due to its large mouth. Although the colour may change according to mood, it is normally brownish-grey on the back and flanks with two more or less distinctive silvery longitudinal stripes on the sides; the belly is yellowish-white. The scales are small and imbedded in the thick skin and the total appearance of a large black kingfish when seen from above actually is very much like a small dolphin.

Due to its wide distribution and common appearance as a by-catch of the fishermen cobia has many other names of which black kingfish is the most common, but others like ling, crab eater, sergeant fish or lemon fish also are used.

Farming of cobia is a ‘new’ species to aquaculture. It started probably a decade ago in Taiwan in seawater ponds and small sea cages, and now it is the main farmed marine fish in Taiwan, occupying 80% of the sea cages and with an estimated production of 1,500 tons in 1999 (Su, M.S. et.al.2000). Mainland China (at least Hainan and Fujian) likewise is producing commercial quantities. During the last couple of years a few dedicated commercial farms have also been started in the Philippines and Vietnam, often with Taiwanese private investors and fry involved. Though the Taiwanese grow-out of cobia seems achieving relatively good results with the lowest production costs (72.89NTS/kg live weight) of the marine species (Liao, D.S. 2000), the farming of marine fish in Taiwan seems constrained by an overall heavy mortality of 42% in the sea phase. During the very cold spell of the spring 2000 mortality of cobia even exceeded 70-80% (this incident also affected most other species in the cages).

In many small cage farms in the SE Asian region one would see the odd number of wild-caught cobia fingerlings farmed. But commercial hatchery production of fry does take place in Taiwan (1999: 5 mill. fry) and China using the extensive pond method.

Ranking as the third ‘cobia’ country, Vietnam has also been working on hatching of cobia for several years, and the first larger number – 10,000 fingerlings ready for farming in the sea – was produced in 1999 at the Cat Ba Island research facility of Research Institute for Aquaculture No. 1. The research facility holds a well-established broodstock and experiments especially in developing methods for intensive/controlled cobia fry production. In year 2001 a production of 30,000 fry is planned, and it has recently become a priority species in the marine fish farming development plans of Vietnam. Other countries such as USA and Australia are also more or less in the process of starting research on hatching of cobia.

The reason why being interested in cobia-farming is that is has many preconditions for becoming a large volume production and if so desired an industrial production. First of all the growth is VERY fast and normally the weight of 5-6 kg can be reached within one year and 8-10kg in 16 months. If
feeding and temperature regimes are optimal the astonishing growth from 30g (55-70 days old fingerlings) to 6-10kg should be achievable in 280-390 days (Su, M.S. et.al.2000). The feed used are trash fish, moist and dry pellets, as an example Hainan province is importing pelleted feed even from Denmark.

Another reason to focus on cobia is that it is considered a very good fish for eating. The meat of the different parts of cobia shows very distinctive qualities as for fat and moisture contents and therefore cobia has a very versatile use, as sashimi, steamed, fried or broiled and boiled for soups. This property together with its pan-tropical/subtropical distribution opens up for a very big market potential. The main constraint though is the very scattered occurrence on the fish markets, which leaves many people unfamiliar to the qualities of cobia. It will therefore take substantial generic marketing efforts to achieve a fast development of the consumption of cobia – but the pre-conditions seems better than those for Atlantic salmon some years ago.

From an environmental point of view the successful development of cobia into a world-wide farmed warm water species would put it into a unique position – as being the only world-wide cultured organism which actually is not exotic to any of the areas it is being produced in!!!

The fast growth of cobia however also poses some constraints (or potentials) to (industrial) culture as for developing optimal feed and feeding regimes.

The bulk of present fry originates from extensive systems. These systems have the weakness of taking up land and somehow uncontrolled output volumes, survival rates being 5-20%. But till now it has not been possible to present the larvae optimal feed in the traditional intensive hatchery. For example under extensive conditions the larvae will grow very fast and reach 2-2.5cm within 11 days while only 1cm under intensive conditions being presented rotifers (from day 3) and enriched Artemia (from day 8). This is however an area of research – it seems as if even enriched Artemia is not optimal food. On the other hand the larvae will eat formulated feed already from day 12 (3cm) – and this could possibly be narrowed down further.

With a ‘normal’ mortality of 40% as seen in Taiwan, the grow-out phase likewise has a big potential for improvement. Therefore it seems as if the R&D needs - like earlier those existing for the salmon - are also valid for cobia, but likewise a huge potential is there – and surely many shortcuts in development can be made with the experience from other productions.

References:

Footnote
Research Institute for Aquaculture No.1, Vietnam and SINTEF Fisheries and Aquaculture, Norway are cooperating in developing certain appropriate marine farming technologies for Vietnam a.o. within marine fish hatchery.