

BANGOS HATCHERY OPERATIONS

by

Rogelio O. Juliano*

Introduction

One immediately notices from the program of this National Bangos Symposium that the topics and sequence of papers more or less cover the life cycle of the milkfish from spawners to consumers of the fish cultured in the pond or pen. However, information on the fate of the fry not caught for pond culture has not been included as one of the topics. It is acknowledged that this portion of the bangos life cycle which occurs in nature is not really known; however, it is essential in our attempt to control and increase production of the fish in ponds and pens.

There are areas or topics in this Symposium of which our scientific and technical knowledge is very meager. Resources of some agencies are now geared toward studies intended to bridge these gaps of information. For instance, the emerging problem of lack of bangos fry supply is now recognized and efforts are channeled toward spawning the fish. From knowledge of spawning will follow man's control of some aspects of bangos reproduction like:

1. Being able to reproduce the fish throughout the year either by induced spawning or artificial fertilization.
2. Having high survival rates from fertilization to fry stages.
3. Developing efficient methods of gathering spawners or adults.
4. Developing the technology of growing adult fish and spawners in ponds and, therefore, independent of the sea as source of spawners to be used in hatcheries (i.e. complete the life cycle in the ponds), and
5. Developing hatchery techniques and operations.

*Professor and Dean, College of Fisheries, University of the Philippines System, Diliman, Quezon City

Bangos Hatchery Operations

There has been no work done on hatchery operations for bangos (Chanos chanos) in the Philippines or anywhere else in the world primarily because there is yet no knowledge on the spawning of the fish. Although there are some scientific literature which indicate the possibilities of spawning grounds, some information on spawning, limited information on egg and larval development, and others, most of which are given in the review of biological data on bangos made by Schuster (1960), these data are scanty and some are doubtful. It cannot be denied, however, that Schuster's efforts in compiling data on bangos biology have been and will be very useful in serving researches of scientists at present and in the future.

There is no known information on bangos hatcheries, hence, this paper will concentrate mainly on my own personal views related to studies which should be done to achieve capabilities in hatchery operations for bangos.

Success in the area of reproducing the fish either by inducement with sex hormones or by artificial fertilization of eggs can trigger the start of studies in hatchery operations. Basic to this is the knowledge of spawning, hatching and larval development of the fish. Once the fish can be spawned, knowledge of hatching and larval development of the fish automatically follows. Larval studies can also be done from collections of fertilized eggs from spawning grounds which may be reared in aquaria or hatchery tanks. It is also possible for hatchery operations to proceed without success on spawning of bangos, if fertilized eggs can be collected from the sea and cultured in hatcheries.

Studies on hatchery operations will start from knowledge of spawning and larval development, together with designs of hatchery facilities (troughs, tanks, water circulation, salinity control, temperature control, etc.) based on available knowledge on ecological requirements of fertilized eggs, sac fry, post-sac fry, and other early stages of fish development. As more data are gathered in the course of research in hatchery operations, and ecology of spawning grounds and larval development, improvements can be incorporated in hatchery facilities (i.e., designs and constructions) to improve survival rates by providing optimum environmental conditions to the different developmental stages of the fish.

One critical concern in hatchery operations is knowledge of the nutritional requirements of the post-sac fry and later larval stages. Perhaps, as a start, the larvae can be fed with natural food collected from the sea or cultured in the hatchery. Fish nutritionists should, however, start working on the nutritional requirements of the larvae (e.g., proteins, carbohydrates, lipids, minerals and vitamins) from which feed formulations may be based. Good survival rates in hatcheries depend on a lot on the

proper nutrition, which may be changing during the course of bangos development. The diet or feed formulations to be developed should be based on information from nutrition studies and should take into consideration locally available foodstuffs at low cost.

In the course of hatchery operations, occurrences of diseases and parasites of the larvae are common. These happen even though optimal conditions in the hatcheries, including proper nutrition are maintained. Fish pathologists should work on these diseases (which may be of viral, bacterial or protozoan origin) and come up with methods of prevention and control, diagnosis and treatment. It is always best to prevent and control diseases, however, without diagnosis and treatment, these diseases can wipe out the stock in the hatchery.

Studies on hatchery operations require a conglomerate of expertise in many fields—nutritionists, fish dieticians, chemists, fish physiologists, fish behaviorists, engineers, fish pathologists, fish embryologists, ecologists, etc. Team effort and good research management are necessary for this research project to gain national importance. This way, bangos hatchery operations can be resolved at the shortest possible time. Any scattered attempt made by several agencies will only mean slow progress on hatchery development because of meager resources of fishery agencies.

Literature Cited

Schuster, W.H. Synopsis of biological data on milkfish, Chanos chanos (Forsk.) 1775. FAO Fisheries Biology Synopsis No. 4, Rome, 1960 (November).