

PRELIMINARY OBSERVATION ON THE NUMBER OF VERTEBRAE
IN MILKFISH, Chanos chanos (Forsk.)

by

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Abstract

The existence of races and/or subpopulation in milkfish, a widely distributed species, is suggested by many workers. Comparison of mean numbers of vertebrae is one of the useful method of distinguishing subpopulations. The present paper reports the results of preliminary studies made on the vertebral counts of milkfish fry collected from several areas. The results obtained, though not conclusive, suggest the scope for further study in the line.

Introduction

The milkfish has a wide distribution extending from the east coast of Africa through the Southeast Asian waters to the Southwest coast of United States and Mexico. The existence of subpopulations in such a widely distributed species cannot be ruled out. It is also reported that in the Southern Philippines, as well as in Indonesia, there are two peaks in fry season while in the other regions, milkfish has only one spawning season. These information suggest the possibility of having more than one race in milkfish.

Since comparison of the mean numbers of vertebrae is often useful in distinguishing subpopulations, the present study was taken up with a view to determine subpopulation, if any. The data accumulated so far are very limited. The authors, however, intend to present this paper to the Milkfish Workshop Conference to stimulate interest in workers on this important aspect of milkfish study.

Materials and Methods

As a preparatory step, study was made to find out the progress of oosification in the vertebrae of different sizes of milkfish larvae.

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A few larvae collected at Pandan, Antique Province, Philippines, during 1975 were stained with alizarin red. It was observed that the calcified vertebrae alone had taken the dye.

In a larva of 8.6 mm in total length, only the dorsal half of the urostyle (the last vertebra) was well dyed, and the third to the 18th vertebrae were only partially dyed while the rest did not take the dye at all. Calcification of vertebrae, however, has progressed in a larva of 10.2 mm in total length, and all vertebrae excepting three anterior to the preceding urostyle were well dyed. In larvae of 11 mm in total length, all the vertebrae took the dye well and the number of vertebrae could be counted accurately, although the neural and hemal spines did not appear on the centrum of this stage. Neural and hemal spines start developing in about 15 mm long larvae, at first on the posterior vertebrae, and advance anteriorly as the fish grows.

The above findings confirmed that the dye could be effectively used for the study since total length of larvae caught by fry collectors in the beach, usually range from 10 to 15 mm and are old enough for the study of vertebral number.

The materials for the study were collected from three different stations: Station I: 188 fry (11.2-14.0 mm in total length) were caught by a fry collector along Tigbauan beach on the southern coast of Panay Island, Philippines, on April 21, 1976; Station II: 279 fry (10.1-15.0 mm in total length) were collected by the staff of Hamtik Substation, SEAFDEC Aquaculture Department, in Hamtik shoreline on the southwest coast of Panay Island, during March 29 to April 24, 1976 and Station III: 41 fry (15.0-28.0 mm in total length) were obtained from Taiwan through the courtesy of Dr. I-Chiu Liao of Tungking Marine Laboratory, Taiwan Fisheries Research Institute, on March 30, 1976.

The fry were dyed with alizarin red, and made transparent by following Hollister's method (Hollister, 1934).

Results and Discussion

Table 1 summarizes the results of the study giving the number of vertebrae present in specimens collected from three different stations together with the mean and some other statistics.

Table 1. Number of vertebrae present in milkfish fry collected from three different stations.

<u>Number of vertebrae</u>	<u>Stations</u>		
	<u>Tigbauan</u> (I)	<u>Hamtik</u> (II)	<u>Taiwan</u> (III)
40	--	1	--
41	--	4	--
42	2	3	2
43	100	145	19
44	86	119	20
45	--	7	--
Total number of specimens	188	279	41
Mean of vertebral number	43.447	43.427	43.439
Variance	0.2684	0.4465	0.3525
Standard deviation	0.5181	0.6682	0.5937
Standard error	0.0378	0.0400	0.0927

The majority of the specimens from each station had either 43 or 44 vertebrae. The highest value of the mean of the vertebral number was 43.447, observed in the Tigbauan specimens, and the lowest value of 43.427, in the Hamtik specimens. The difference in the means of vertebral numbers in the specimens from the three stations, is statistically insignificant. However, the number of vertebrae in the Hamtik specimens had a greater range (40-45) while that in the Tigbauan and Taiwan specimens were smaller (42 to 44). From this meager data, it will not be justified to conclude that the number of vertebrae in the Hamtik fry is more variable than the others. We need much more data for confirmation.

Table 2 shows the number of vertebrae of milkfish reported so far from several countries by various authors.

Table 2. Number of vertebrae in milkfish reported from several localities by various authors.

<u>Locality</u>	<u>Author</u>	<u>Number of vertebrae</u>
India	Gunther, 1868	44
Indonesia	Sunier, 1922	44-45
Indonesia	Delsman, 1923	43
Philippines	Herre & Mendoza, 1929	46
Hawaii	Jordan & Evermann, 1905	45

It is interesting to note that the vertebral numbers reported by some authors (Jordan and Evermann, 1905; Sunier, 1922; Herre and Mendoza 1929) are rather high compared to those observed in the present study. A detailed study based on larger number of specimens from remote areas of varied ecological and environmental conditions may throw some light on the existence of subpopulations of milkfish.

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