



The Contribution of Coral Reef Fisheries to Philippine Fisheries Production

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Background

THE IMPORTANCE of coral reef systems to coastal fishery resources in the Philippines has become a focal point in certain government planning and research activities during the past few years. Several short-term studies have been made by governmental agencies to determine the intrinsic value of coral reef fisheries.

Recent reports give a figure of 15% contribution by coral reefs to the total Philippine fisheries production (Carpenter 1977). Carpenter's estimate was based on data collected, in part, by the Marine Sciences Center of the University of the Philippines (Phase I final report, completed in 1977) and by the Bureau of Fisheries and Aquatic Resources (BFAR) (Fisheries Stat-

istics of 1975). Carpenter approximated the total coral reef area within the 10-fathom contour as 12,171 km² and to the 20-fathom contour as 33,088 km². Using this range and the maximum probable sustainable harvest derived from selective reef fisheries of 5.0 mt/km² (Stevenson and Marshall 1974), Carpenter concluded that Philippine coral reefs could yield 60,000 to 176,000 mt/yr. (Due to a computational error, the upper limit should be corrected to 165,000.) Based on the total 1975 fisheries production of 1,336,803 mt, Carpenter's (corrected) estimate for coral reef fisheries is 4.5 to 12.3% of the total Philippine fisheries production. Pointing out that

Philippine reefs are *not* selectively fished—all sized fish are utilized—Carpenter concluded that “the portion of total Philippine fisheries production which is contributed by reef fisheries is likely to be at least 15%, and probably higher.”

Estimates of the contribution of reefs to the total fisheries production are based on three factors: reef area, maximum sustainable yield and total fisheries production. We believe that neither the reef area nor yield figures can be accurately determined at this time. For example, a new estimate of reef area to 10 fathoms of 27,044 km² was recently proposed (Marine Sciences Center 1979), a difference of over

Table 1. Philippine coral reef fisheries harvest in 1976 and 1977.^a

Fish type	1976		1977	
	Commercial	Municipal	Commercial	Municipal
Threadfin bream	26,817	26,584	31,789	19,814
Fusiliers	13,973	9,836	7,734	6,397
Groupers	9,168	14,463	2,555	17,364
Sea bass	68	144	120	108
Snappers	4,059	9,105	1,469	9,145
Siganids	39	5,164	73	7,738
Goatfish	7,707	3,671	7,667	8,051
Surgeonfish	14	1,414	34	1,609
Parrotfish	58	4,331	37	3,400
Butterflyfish	27	320	—	131
Macolor	—	1	12	92
Leaf fish	—	121	14	209
Moray	—	5	—	89
Triggerfish	—	27	—	693
Cardinalfish	—	104	—	—
Total	61,930	75,290	51,504	74,840

Table 2. Contribution of coral reef fish to Philippine fisheries production.^a

	1976	1977
Total fisheries production	1,393,483	1,508,855
Finfish		
commercial	482,247	495,511
municipal	560,647	665,545
Coral reef fish		
commercial	61,930	51,504
municipal	75,290	74,840
Percentage of coral reef fish production to:		
commercial finfish	12.8	10.4
municipal finfish	13.4	11.2
total finfish	13.2	10.9
total fisheries production	9.8	8.4

^aTables 1 and 2 based on BFAR statistics, 1976 and 1977; data are in metric tons.

100% from Carpenter's estimate. Similarly, the reef fishery sustainable yield estimates of 2.0-4.7 mt/km² (Stevenson and Marshall 1974) are too broad to be useful at present. The need for a gauge of coral reef production still exists. Herein we use an alternate approach.

Method

Our existing knowledge of tropical inshore fishes enables us to adequately label harvested groups of fishes as either associated with coral reefs or

nonassociated (Goldman and Talbot 1976).

Using BFAR catch statistics, in which common names of fishes and their portion of the total catch are recorded, we compiled a list of what we determined to be coral reef fishes and their respective catches for 1976 and 1977. Earlier BFAR data were incomplete.

We deleted fishpond production and all but finfish data from the catch statistics. Then from our designation of "coral reef associated fishes" and the total finfish harvest statistics, we computed the contribution of coral

reef fisheries to the total Philippine finfish production.

Findings

In Table 1 we list the designated coral reef fish and their catches for 1976 and 1977, separated into municipal (artisanal) and commercial fisheries. The 1977 catch was slightly lower than that of 1976; in both years municipal exceeded commercial production. In terms of total finfish production (Table 2) the contribution of coral reef fish was 13.2% and 10.9% in 1976 and 1977 respectively.

Coral reef fish catches thus represented 9.8% (1976) and 8.4% (1977) of total recorded Philippine fisheries production.

Since many fish are used directly by sustenance fishermen and never enter a market place, it is highly probable that a significant quantity of fish are not included in BFAR reports. Because of this, we believe that our figures are a lower limit of the contribution of coral reef fisheries to the total Philippine fisheries production.

The only assumptions in our approach are that BFAR statistics and our designations of "coral reef fishes" are correct. We feel that this technique provides better estimates of coral reef production than do those based on area and sustainable yield calculations.

References

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