



Fishers' Knowledge on Marine Fisheries Management and Conservation

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Abstract

Marine fishers play an important role in the management of marine resources. Hence, there is a need to analyse the fishers' knowledge level in relation to marine fisheries resource management and conservation. The present study was undertaken in selected fishing villages of Kanyakumari district of Tamil Nadu. The 'Teacher made test' was constructed and used for the assessment of fishers' knowledge. More than 60% of the respondents had medium level of knowledge on marine fisheries management and conservation, marine policies and regulatory measures and mariculture practices. Fishers' knowledge on marine parks and sanctuaries, community based approach, oil spillage, installation of artificial reefs, mesh size for catching shrimps and catching of brood fishes was found to be low. Fishers had medium level of knowledge on issues like over exploitation, mangrove destruction, marine pollution, and mesh size regulations, mechanisation of boats, indiscriminate fishing methods and fishing with nets of reduced mesh size. These areas need to be taken into account for enhancing the fishers' knowledge level for increasing sustainability of fishing.

Keywords: Knowledge, fishers, management, conservation

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Introduction

Marine fisheries play an important role in the economy of all maritime countries in the world. It is an important source of livelihood and employment mainly to fishers. During recent years, global

concerns in conservation and management of marine resources have been visualised and discussed by several agencies, particularly aiming at conservation of marine species. Oceans being the natural gift of creation, are considered to be the common heritage of mankind and the living and non-living resources of oceans are considered as common property resources (Kumaran, 1994). Since marine fishery is a million dollar business, pressure on the open access resources is increasing day-by-day, resulting in overexploitation of marine resources, which would not only have a negative impact on environment but also lead to their exhaustion. Increase in population and indiscriminate dumping of garbage along the Indian coast has destroyed over 50% of the mangroves. It is predicted that at least one species is on the verge of extinction every day (Kannaiyan & Alfred, 2005). There are many laws for protecting the marine resources in India. However, the authorities concerned have constraints in the implementation of the policies and the related laws. Marine fishers play an important role in the management of marine resources. Hence there is a need to analyse the fishers' knowledge level on marine resource management and conservation.

Materials and Methods

There are 44 marine fishing villages in Kanyakumari district which come under three taluks, viz., Agatheeswaram, Kalkulam and Vilavancode. A total of 150 respondents, constituted by 50 each from the three coastal taluks (two villages in each taluk and 25 respondents from each village), were selected randomly for the study. The 'Teacher made test' was constructed and used for the assessment of knowledge (Wadt & Brown, 1963). The knowledge test composed of 35 questions (called items) selected out of the 43 items prepared initially by discussion with the experts. All the questions were of objective type and the respondents were asked to indicate their

response against each of the knowledge items. A score 'one' was given to the correct answer and 'zero' for the incorrect answer. The summation of scores of the items for a particular respondent indicated his/her extent of knowledge. After computing the knowledge level scores, the respondents were categorised into three categories namely low, medium and high by taking mean and standard deviation as per Sathyanarayana & Rao (2000). Correlation analysis was carried out to find out the relationship of characteristics of fishers with their knowledge level.

Results and Discussion

It was assessed from the study that 62% of the fishers had medium level of knowledge on marine fisheries management and conservation. The fishers with high and low level of knowledge were 24.66 and 13.33%, respectively (Table 1). This may be due to their better educational level, occupation, level of participation in social and extension events and better utilization of mass media contacts, which is evident from the significant correlation of these factors with the knowledge level of fishers. In contrast to this, Bandyopadhyay & Pradeep (2002) reported that fishers of the Oxbow lakes of North Bengal had less awareness about the improved management, development and conservation practices. The knowledge level of fishers on marine policies and regulatory measures showed that 61.34% of the fishers were in medium level, followed by 19.33% in high level and 19.33% in low level of knowledge (Table 1). This variation may be due to the reason that fishers may not have much awareness about marine policies and regulation measures. Bankey et al. (1997) in their study on analysis of key communicators and non-key communicators among fishermen, reported that the

knowledge of the respondents towards motorisation of the craft was 76.17%. However, the fishers' knowledge level on mariculture practices showed that 80% of the fishers had medium level of knowledge, followed by 13.33 and 6.67% in low and high level category respectively (Table 1). Kumar (2008), in his study on adoption of composite fish culture technology among the fish farmers of Thanjavur district of Tamil Nadu reported that 75.83% of the respondents had medium level of knowledge on the technology, followed by 14.17 and 10% of the respondents with low and high level of knowledge, respectively, whereas, Nagarajaiah (2002) reported that knowledge level of fish farmers was medium (37.69%), high (35.49%) and low (26.2%) on the composite fish culture practices in Southern Karnataka.

The fishers had knowledge on marine fishing regulations which included the monsoon ban period (Rank 1), bottom trawling operations (Rank 3), fishing with reduced mesh size nets (Rank 4) and modernised fishing methods (Rank 4) (Table 2). From Table 2, it was observed that, fishers had good knowledge on environmental conservation and mariculture practices such as fish species used for mariculture (Rank 6), alternate livelihood opportunity by mariculture (Rank 9), coral reef destruction (Rank 11) and effects of discharge of sewage (Rank 12). This indicates better awareness about environmental problems among the fishers of the area. Further, the rough sea condition encountered by the fishers may have forced them to think for mariculture.

The knowledge level of fishers on certain areas namely, knowledge on marine parks and sanctuaries (Rank 35), community based approach (Rank 34), oil spillage (Rank 33), installation of artificial reefs (Rank 32), mesh size of different species (Rank 31),

Table 1. Fishers' knowledge level on marine fisheries management and conservation (n=150)

Knowledge level	Marine fisheries management and conservation		Marine fisheries policies and regulatory measures		Mariculture practices	
	No.	Percent	No.	Percent	No.	Percent
High	37	24.67	29	19.33	10	6.67
Medium	93	62.00	92	61.34	120	80.00
Low	20	13.33	29	19.33	20	13.33

Table 2. Level of fishers' knowledge on marine fisheries management and its conservation measures (n =150)

S. No.	Questions to fishers	No. of Fishers Responded	Rank
Marine Fisheries Regulation			
1	Duration of monsoon ban	150	1
2	Traditional crafts are allowed for fishing during monsoon ban	114	8
3	Period of monsoon ban	150	1
4	Fishing holidays are not required to enhance the marine stock	80	24
5	Increase in mechanisation of boat leads to catch depletion	89	15
6	Bottom trawling with heavy sinkers does not damage the benthic community	138	3
7	Mechanised crafts are allowed for fishing in territorial areas	89	16
8	Name some modernised fishing methods	128	4
9	Name some endangered species	82	21
10	Overexploitation leads to decline of marine resources	70	28
11	Name some indiscriminate fishing methods	88	19
12	Multispecies fishing better than target fishing	72	27
13	Mesh size for capturing shrimps	57	31
14	Catching of brood species threatens marine biodiversity	62	30
15	Catching fishes with reduced mesh size would lead to destruction of marine fauna	128	4
16	Overexploitation leads to decline of marine resources	104	10
17	Name some destructive fishing gears	118	7
18	Multispecies fishing lead to more bycatch and juvenile catch than target fishing	110	11
19	Catching of endangered species leads to loss in biodiversity	63	29
Environmental Conservation and Mariculture			
20	Name some common pollutants in coastal fishing areas	82	21
21	Discharge of concentrated sewage increases the plankton production in the coastal marine ecosystem	97	12
22	Oil spillage affects marine ecosystem	54	33
23	Coastal pollution has no effects on marine biodiversity	78	25
24	Mangrove destruction affects marine biodiversity	89	16
25	Would mangrove areas have to be considered as parks and sanctuaries?	93	13
26	Destruction of coral reefs affect our marine biodiversity	97	11
27	Name some marine species which could be cultured	119	6
28	Would mariculture practices of fish and seaweed culture help to create alternate livelihood to fishers?	113	9
29	Does mariculture reduce the pressure on marine catch?	87	20
30	Sea ranching of shrimps increases the stock in sea	73	26
31	Strict mesh size regulation helps in sustainable fishing	92	14
32	Installation of artificial reefs has negative effect in conserving marine biodiversity	55	32
33	Establishment of marine parks and sanctuaries are needed to conserve biodiversity	49	35
34	Whether community based approach in fishing is needed for resource management	51	34
35	Do you know about CCRF (Code of Conduct for Responsible Fisheries)?	89	16

and catching of brood fishes (Rank 30) were found to be low. These areas are of much importance for sustaining the marine resources, so there is a need for government and voluntary agencies to improve both awareness and fishers' knowledge level in these aspects. Fishers had medium level of knowledge on issues like over exploitation, mangrove destruction, marine pollution, mesh size regulations, mechanization of boats, indiscriminate fishing methods and catching fishes with reduced mesh size. These areas also need to be taken into account for enhancing the fishers' knowledge level for the sustainability of fishing.

Table 3. Relationship between characteristics of fishers and knowledge level on marine fisheries management and conservation measures

S. No.	Variables	"r"
1	Age	-0.04483 NS
2	Educational qualification	0.1634 *
3	Experience	0.07887 NS
4	Family type	0.02707 NS
5	Family size	-0.03439 NS
6	Communication asset possessed	0.1166 NS
7	Cosmopolitaness	0.09076 NS
8	Extension agency contact	-0.0947 NS
9	Extension participation	0.16281*
10	Mass media utilization	0.18964*
11	Scientific orientation	0.26851**
12	Innovativeness	-0.09637 NS
13	Economic motivation	0.06239 NS

** Significant at one percent level; * Significant at five percent level; NS - Non significant

Educational qualifications, extension participation and mass media utilisation had significant and positive relationship with knowledge ($p < 0.05$) (Table 3). Scientific orientation had highly significant positive relation with the knowledge of fishers ($p < 0.01$). When the fishers possess high educational qualification, they may have inquisitiveness to update their knowledge in fisheries and hence this would have made them to acquire more knowledge on marine fisheries management and its conservation measures. Increase in participation in extension programme results in increase in fishers' knowledge level. Extension programmes such as awareness campaign, demonstrations and exhibitions are used

by these fishers in a positive way, which paves the way for increase in their knowledge levels. Mass media utilisation was found to have a significant positive relationship with the fishers' knowledge level. Newspapers, radio, television, and other media help in increasing their knowledge on fisheries and fisheries regulation. These fishers are more aware of mariculture practices due to efficient utilisation of media. Scientific orientation was positively related to knowledge level which may be due to their better educational status. Fishers with more scientific orientation were conducive to proper adoption of scientific technologies for sustaining marine resources.

It was clear from the study that fishers had medium level of knowledge in marine fisheries management and resource conservation. Fishers are the conservers of biological resources and holders of knowledge and information relating to the adoption of management measures. As the role played by fishers in resource management is important, knowledge based programmes should be organised to enhance their knowledge levels. Fishers need to be motivated to adopt conservation measures to maintain sustainable fisheries.

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