

# Performance of Fishing Cooperative Societies in Implementing Fish Conservation Measures: Case Studies from Two Reservoirs of Orissa

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## ABSTRACT

Fishing cooperative societies are an important institution at the grass roots level having wide presence both in inland and marine fisheries sector. Though cooperatives have been a subject of study and debate since long specially in the agriculture sector, few studies have been done on the fishing cooperatives. Further, most of these studies have focused on production, marketing and financial aspects of fishing cooperatives. This paper presents case studies of two reservoirs namely, Hirakud and Surada, of Orissa undertaken to assess the performance of the fishing cooperative societies in implementing conservation measures in fisheries resource management. An index was prepared to measure the performance of fishing cooperative societies. The findings revealed that performance of the Primary Fishing Cooperative Society at Sourada reservoir was high in implementing fish conservation measures while it was low at the Hirakud reservoir.

**Keywords:** Co-management, Reservoir fisheries resources, Fishing cooperative societies

## INTRODUCTION

In the wake of emerging challenges, there is an imperative for better management to prevent further fisheries overexploitation and coastal resource degradation, to reduce conflict, and to address human needs. During last two decades, there has been a shift in the governance of fisheries to a broader approach that recognizes fishers' participation, local stewardship and shared decision-making in the management of fisheries. Globally, today there is a large amount of theoretical and empirical literature available on analysis of co-management arrangements in fishery resources (Jentoft and McCay 1995; Sen and Nielsen 1996; Jentoft 1989; Karlsen 2001; Pomeroy *et al.*, 2001; Nielsen *et al.*, 2004; Jentoft, 2004; Thomson, 2006).

In India and several other developing countries, cooperative societies and self-help groups are such institutions which could be a partner in conservation and co-management of natural resources. Cooperatives are established by like-minded persons to pursue mutually beneficial economic interest (Sharma and Daipuria, 2013). In India, fishing cooperative societies

have been studied by very few researchers (Kurien, 1980, Singh and Dhar Choudhary, 1997; Bhatta, 1997; Nair and Singh, 1997; Rahim and Singh, 1997; Moorti and Chauhan, 1997; Deepak, 1998; Das, 1992; Singh and Bhattacharya, 1991; Chatterjee & Bandyopadhyay, 1990; Jyotishi and Parthasarathy 2007, Tyagi *et al.*, 2007 and Tyagi *et al.*, 2008 and Tyagi *et al.*, 2013).

Most of the studies, barring a few recent ones, have been conducted by economists and focused on performance of fishing cooperatives on production, marketing and financial aspects. The questions like, whether these institutions can play an effective role in conservation and management of fisheries resources for sustainable utilization?, have been addressed by very few researchers. In view of this perspective, case studies were undertaken to assess the performance of the fishing cooperative societies in implementing conservation measures in reservoir fisheries resource management at selected locations in Orissa state.

## MATERIALS AND METHODS

The study was undertaken in the Hirakud and Surada reservoirs which are located in the Sambalpur and

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Ganjam districts, respectively, of Orissa state. Hirakud reservoir on Mahanadi has mean water spread of 74592 ha. There are 5 Primary Fishing Cooperative Societies (PFCSs) at Hirakud reservoir namely, Ibb, Mahammadpur, Thebra, Lachhipali and Tamdei. Surada reservoir is connected with seasonal streams and mainly the water of Padma River (also known as Patma River) is reserved in it. Mean water spread area of the reservoir is 400 ha. There is one PFCS at Suroda managing the fisheries resources of the reservoir in close supervision of the state fisheries department.

Two PFCSs of Hirakud reservoir namely, Ibb (total members 657), Mahammadpur (total members 879) and PFCS, Surada (total members 304) were selected for this study. A total of 100 members from each of the three PFCSs, thus, total 300, members were interviewed with the help of an interview schedule for this study. Besides, officials of state fisheries department were also interviewed.

Performance of the fishing cooperative societies in implementing conservation measures in resource management was measured with the help of a Conservation performance index developed for this purpose. The Conservation performance index was prepared based on the pilot visits and interaction with state fisheries department and cooperative societies officials, which consisted of all the conservation/resource management measures implemented by the state fisheries department and/or cooperative societies. The responses of the society members were documented about the frequency (always, sometimes, never, with scores of 2,1,0, respectively) at which the fishermen of their society were following each of these measures. Information was also obtained to know whether the selected societies undertake any monitoring or rule enforcement activity to implement conservation measures in their area? If yes, at what frequency? The location-wise responses were analysed.

## RESULTS AND DISCUSSION

### Performance of fishing cooperative societies in implementing conservation measures in resource management

Results for the performance of the fishing cooperative societies in implementing conservation measures in resource management are presented in Table 1. The data

**Table 1: Performance of the selected societies in terms of the fishery resource enhancement and conservation measures undertaken**

Perceived conservation performance	Hirakud reservoir (n=200)	Surada reservoir (n=100)
Low	56(28)	10(10)
Medium	124(62)	51(51)
High	20(10)	39(39)
Mean	13.5(24)*	21.8(24)*

Figures in parenthesis indicate percentage

\*Maximum obtainable score

for two PFCSs of Hirakud reservoir was similar, hence, has been merged. The data in Table 1 shows that the performance of the fishing cooperative society at Surada reservoir was high (mean score 21.8 out of 24), where as it was low at the two societies of Hirakud reservoir (mean score 13.5 out of 24). Over a third of the respondent members perceived performance of their society at Surada reservoir as high where as very few members of Hirakud reservoir societies perceived performance of their societies as high. Over one-fourth (28 per cent) respondent members of two PFCSs of Hirakud reservoir perceived performance of their societies in implementing conservation measures in resource management as low. Over half of the members of the selected societies at both the reservoirs perceived performance of their societies as medium.

### Monitoring/rules enforcement by fishing cooperative societies

Data presented in Table 2 shows that a large majority of the member respondents of two PFCSs of Hirakud reservoir told that their societies do not undertake any monitoring or rule enforcement activity to implement conservation measures in their area of operation in the reservoir. On the other hand, over two-thirds of the member respondents of the PFCS, Surada reservoir told that their society undertake such measures like patrolling during close fishing season, stocking fish seed in the reservoir for resource enhancement, etc. Further, majority of the respondent members of the PFCS, Surada reservoir who said that their society undertake conservation and resource enhancement measures, told that such activities are undertaken seasonally or year round depending upon the activity, where as majority

**Table 2: Monitoring/rules enforcement by fishing cooperative societies**

Activity	Hirakud reservoir (n=200)		Surada reservoir (n=100)	
	Yes	No	Yes	No
Does your society undertake any monitoring or rule enforcement activity to implement conservation measures in its area? If yes, how frequently?	39(19.5)*	161(80.5)*	63(63)*	37(37)*
Rarely	18(46.2)^		13(20.6)^	
Seasonally	21(53.8)^		33(52.4)^	
Year-round	0(0)^		17(27)^	

\*Figures in parenthesis indicate percentage of the total no. of respondents

^Figures in parenthesis indicate percentage of the respondents who said yes to the previous question

of the respondent members of two PFCs of Hirakud reservoir who said that their societies undertake such activities, told that they do so seasonally or rarely only.

### CONCLUSION

It is clear that performance of the fishing cooperative society at the Surada reservoir was high in implementing fish conservation and resource enhancement measures where as it was low in case of both the societies of Hirakud reservoirs. This was also corroborated with interactions with the state fisheries department officials. Surada being a medium size reservoir, members had a sense of ownership of the resource and there was a feeling of collective responsibility towards the resource and a sense of responsibility for its sustainable management. It shows that if members of fishing cooperative societies could be made aware of the importance of sustainable utilization of their resources, these institutions could become effective partners in implementing conservation measures. However, this would require efforts on the part of development agencies and line departments to educate the office-bearers and members of fishing cooperative societies towards this hidden potential of theirs in fish resource conservation and management.

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Received on June, 2013, Revised on February, 2014