

# Acceptability of territorial use rights in fisheries: towards community-based management of small-scale fisheries in the Philippines

Susana V. Siar<sup>a</sup>, Renato F. Agbayani<sup>a</sup> and Jaime B. Valera<sup>b</sup>

<sup>a</sup>*Aquaculture Department, Southeast Asian Fisheries Development Center, Tigbauan, Iloilo 5021, Philippines*

<sup>b</sup>*Office of the Director of Instruction, University of the Philippines at Los Banos, College, Laguna, 4031, Philippines*

(Accepted 26 February 1992)

## ABSTRACT

Siar, S.V., Agbayani, R.F. and Valera, J.B., 1992. Acceptability of territorial use rights in fisheries: towards community-based management of small-scale fisheries in the Philippines. *Fish. Res.*, 14: 295–304.

The granting of territorial use rights in fisheries (TURFs) to fisherfolk associations, similar to that practiced in Japan, is recommended as a management tool for small-scale fisheries in the Philippines. This study, carried out to determine the acceptability of the practice under Philippine conditions, was conducted among 211 coastal dwellers of five municipalities in Panay Island, Central Philippines. Respondents of the survey generally perceived the practice of TURFs as acceptable as it would lead to an improvement of their catch. Results suggest that the respondents' present predicament of inadequacy of catch to support their livelihood is the starting point for introduction of the rationale for community-based management of coastal marine resources.

## INTRODUCTION

Municipal or small-scale fishing in the Philippines is defined as fishing that utilizes boats of three gross tons or less, or fishing without boats. In 1990, it contributed 45% to the country's total fish production and accounted for 68% of direct employment in Philippine fisheries (Bureau of Fisheries and Aquatic Resources, 1991).

The conversion of mangrove swamps into fishponds, use of dynamite, cyanide, and fine mesh nets for catching fish, and forest denudation causing siltation are largely responsible for the declining productivity of marine eco-

---

*Correspondence to:* S.V. Siar, Aquaculture Department, Southeast Asian Fisheries Development Center, Tigbauan, Iloilo 5021, Philippines.

systems in the Philippines. Of the 448 310 ha of mangroves existing in 1968, only 251 574 ha remained in 1976 (Food and Agriculture Organization of the United Nations, 1982). Moreover, only 6% of coral reefs are in excellent condition based on the living coral cover (Gomez and Alcala, 1984).

The prevailing open access in fisheries has resulted in wasteful exploitation of the resource as each fisher is unable to regulate his catch, economic waste brought about by too much effort on too small a resource, decline in fishers' income, and the development of conflict among fishers using the same gear for the same resource, or those using different gears for the same resource (Hardin, 1968; Christy, 1982).

The participation of the fisherfolk themselves is believed to be the key to fisheries management (Ferrer, 1989). Community-based management has proved effective in maintaining coral reef habitat, improving species abundance, and arresting the decline of coastal productivity in Central Visayas, Philippines (White, 1988; Alix, 1989; White, 1989). The granting of territorial use rights in fisheries (TURFs) to fisherfolk associations, similar to that practiced in Japan (Ruddle, 1987), has been recommended as a management tool for municipal fisheries (Lacanilao, 1989). As granting TURFs to fisherfolk associations is yet to be institutionalized, we conducted a village survey to find out the acceptability of the practice under Philippine conditions.

TURFs include the right of exclusion, i.e. the right to limit or control access to a territory, the right to determine the amount and kind of use within the territory, and the right to extract benefits from the use of the resources within the territory (Christy, 1982; Pollnac, 1984).

The entry of commercial fishing boats using trawl and purse-seine within the 7 km limit from the coastline is a perennial conflict in small-scale fisheries. To protect municipal fishers, Fisheries Administrative Orders and Letters of Instructions banning entry of trawlers and purse-seiners within municipal waters have been issued since 1981. Among municipal fishers themselves, illegal fishing practices such as the use of dynamite and cyanide are rampant (Del Norte et al., 1989; Galvez et al., 1989). Under the Fisheries Decree of 1975 (Presidential Decree 704), illegal fishing practices are punishable either by imprisonment or fines. The ineffectiveness of law enforcement underscores the necessity of fisherfolk participation in the protection of their fishing grounds.

Low standard of living is the problem confronting the fisherfolk (Smith, 1979). Acquiring TURFs may not solve the overfishing problem in an already overcrowded fishery. To reduce fishing effort, the granting of TURFs must be coupled with the introduction of other sources of livelihood. These could come in the form of seafarming and other land-based activities. Such alternative employment opportunities would alleviate the poverty characteristic of coastal communities and help discourage new entrants to the fishery.

As a legal right, TURFs become meaningful when placed within the context

of what is sustainable and economically beneficial to the fisherfolk, measures aimed at raising their standard of living, securing the environment of their livelihood from destructive practices, and reinforcing positive beliefs, customs and activities that could contribute to achieving these goals. Sustainable development may be more possible through TURFs than under any other arrangement currently available under the auspices of organized fisherfolk.

Results of the survey suggest that the present predicament of inadequate catch is the starting point at which the rationale for community-based management of municipal marine resources, should be introduced.

## METHODS AND STUDY AREA

A survey was conducted among 211 coastal dwellers between June and November 1990. Five coastal municipalities in Panay Island, Central Philippines (Fig. 1) were chosen as study areas. These were Concepcion and San Dionisio in the province of Iloilo, Culasi and San Jose in the province of Antique, and Nueva Valencia in the sub-province of Guimaras.

The respondents were selected from a sample frame using the table of random numbers (Blalock, 1979). A structured interview schedule, translated into the local dialect and pre-tested, was used to gather data. The interview schedule covered the following: socio-demographic characteristics of respondents such as sex, age, educational attainment and source of livelihood; experiences regarding collective undertaking and problem-solving within the village; perception regarding ownership, utilization, and management of coastal resources; perception regarding adequacy of catch to support livelihood, and the acceptability of TURFs.

Acceptability of TURFs was measured by the following questions: (1) whether the fisherfolk association has the right or not to establish rules and regulations pertaining to the utilization of a fishery; (2) whether granting TURFs to fisherfolk associations is beneficial or not to small-scale fishers in general; (3) whether granting TURFs to a fisherfolk association in his/her village is beneficial or not to respondent and his/her family; (4) whether respondent would cooperate or not with the fisherfolk association in regulating fishing activity to lessen pressure on a fishery; (5) respondent's perception of whether other fisherfolk in the village would cooperate or not with the association in regulating fishing activity.

The questions listed above were answerable by 'yes' or 'no'. Regression models for each measure were estimated. Models with the highest multiple squared  $R$  were selected through a backward elimination procedure (Morris et al., 1986). Logit regression analysis (Darlington, 1990), the appropriate statistical tool for dichotomous dependent variables, was then conducted for each of these models. Like the usual multiple regression model, the output of logit regression has a constant, a coefficient for each independent variable, a

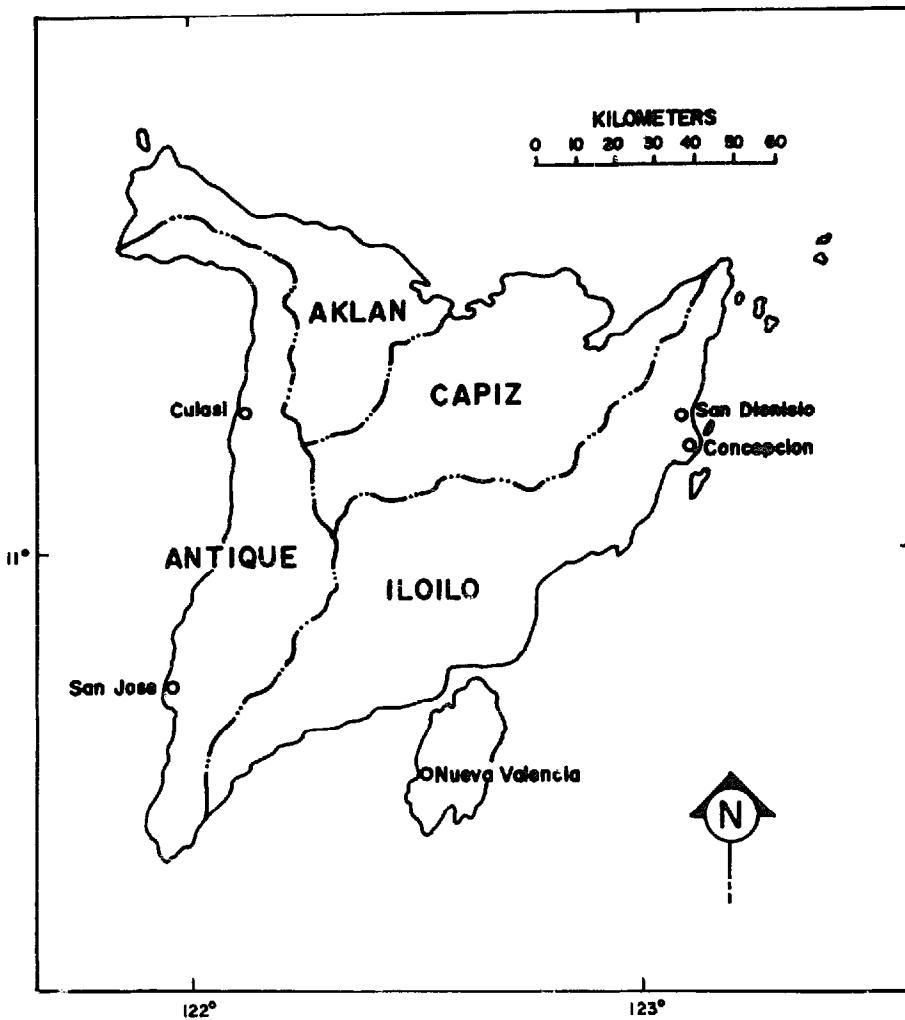


Fig. 1. Map of Panay.

standard error for each coefficient, a  $t$ -value which is the ratio of the coefficient to its standard error, and a probability associated with each  $t$ -value.

The respondent's source of livelihood and perception regarding utilization and management of coastal resources were analyzed as multicategorical variables (Darlington, 1990).

## RESULTS

There were 115 males and 96 females interviewed in the survey. The average male fisher was 41.2 years old, had lived in his village for 31.7 years, and had 5.6 years of schooling. The average female respondent was 44.1 years old, had lived in her village for 31.8 years, and had 5.8 years of schooling. Fishing is male-dominated; however, 15.6% of female respondents were engaged in fishing. Except for three, all of the male respondents were fishers. Sources of

livelihood such as fish vending, fry-gathering, and farming are associated with women. Less than half (41.7%) of all respondents were members of an association. Membership was higher for males than for females.

Almost 75% of the respondents indicated that there had been incidences in the past of collective undertaking and problem-solving within the village. The activities centered predominantly on the construction of village projects such as the chapel, hall, deep well and road. The same percentage had experienced solving a problem collectively, usually emergencies in the village such as death, illness and accidents, a category of problems which would encourage cooperation among the villagers.

As regards ownership, utilization and management of coastal resources, 45% of respondents believed that the people in the village owned the coastal resources, 94.3% held the opinion that the people have the right to utilize the coastal resources, and almost half (49.3%) identified the government as responsible for managing them. More than half (56.9%) stated that their present catch as source of income was inadequate to support their family's basic needs. Responses to each measure of acceptability of TURFs are presented in Table 1.

TABLE 1

Acceptability of TURFs in five fishing villages of Panay (data show percent of respondents)

Measure of acceptability	San Dionisio (n=45)	Concepcion (n=43)	Nueva Valencia (n=56)	Culasi (n=34)	San Jose (n=33)	All sites (n=211)
<i>Do you think a fisherfolk association has the right to establish rules and regulations pertaining to the utilization of a fishery?</i>						
Yes	68.9	100.0	83.9	73.5	81.8	82.0
No	31.1	0.0	16.1	26.5	18.2	18.0
<i>Do you think that granting TURFs to fisherfolk associations is beneficial to small-scale fishers?</i>						
Yes	64.4	90.7	92.8	85.3	90.9	84.8
No	35.6	9.3	7.2	14.7	9.1	15.2
<i>Would it be beneficial for you and your family if a fisherfolk association in your village is granted TURFs?</i>						
Yes	60.0	88.3	87.5	85.3	78.8	80.1
No	40.0	11.7	12.5	14.7	21.2	19.9
<i>Would you cooperate with an association in regulating fishing activity to lessen pressure on the fishery?</i>						
Yes	77.8	97.7	100.0	73.5	93.9	89.6
No	22.2	2.3	0.0	26.5	6.1	10.4
<i>Do you think other fisherfolk in the village would cooperate with an association in regulating fishing activity?</i>						
Yes	44.4	81.4	66.1	58.8	63.6	63.0
No	55.6	18.6	33.9	41.2	36.4	37.0

TABLE 2

Codes for independent and dependent variables

Variable	Code
Age of respondent	Age
Sex of respondent	Sex
Educational attainment	Sch.
Length of residence in the village	Res.
<i>Occupation</i>	
Fishing	Occp. 1
Fish vending	Occp. 2
Fry-gathering	Occp. 3
Farming	Occp. 4
Small village storekeeper	Occp. 5
Animal raising	Occp. 6
Membership in an association	Mem.
Presence of collective endeavor within the village	Colv.
<i>Perception regarding utilization of coastal resources</i>	
People have the right	Util. 1
Fisherfolk have the right	Util. 2
Government has the right	Util. 3
<i>Perception regarding management of coastal resources</i>	
People are responsible	Mgt. 1
Fisherfolk are responsible	Mgt. 2
Government is responsible	Mgt. 3
Adequacy of catch to support livelihood	Adq.
Awareness regarding TURFs	Awr.
Whether a fisherfolk association has the right or not to establish rules and regulations governing the utilization of a certain fishery	Right
Whether granting TURFs to fisherfolk associations is beneficial to small-scale fishers in general	Benefit
Whether it is beneficial or not for respondent and family if a fisherfolk association in their village is granted TURFs	Family
Whether respondent would cooperate or not with association in regulating fishing activity to lessen pressure on a fishery	Coop
Respondent's perception on whether other fisherfolk in the village would cooperate or not with association in regulating fishing activity	Others

Authorization from the municipal government is enough for villagers to recognize the association's right to establish rules and regulations pertaining to the utilization of a fishery. Respondents generally perceive the practice of TURFs as beneficial, as it would lead to an improvement of their catch and the fishing grounds would be for the exclusive use of small-scale fishers only.

Codes for dependent and independent variables are shown in Table 2. Table 3 presents the logit models for each measure of acceptability. Age ( $P < 0.05$ ) and educational attainment ( $P < 0.01$ ) positively affect respondent's perception regarding the right of a fisherfolk association to establish rules and regulations pertaining to the utilization of a fishery. This means that the

TABLE 3

Logit models for acceptability of TURFs

Functional relationship <sup>1</sup>	$\chi^2$	df	Correct prediction (%)
Right = f (Age - Sex + Sch. - Mem. - Adq. - Colv. - Occp. 1 + Mgt. 1) - Occp. 2 + Mgt. 2 - Occp. 3 + Mgt. 3 + Occp. 4 - Occp. 5 - Occp. 6	32.13**	15	84.8
Benefit = f (Occp. 1 - Util. 1 + Mgt. 1 + Awr. - Sch.) Occp. 2 - Util. 2 + Mgt. 2 Occp. 3 - Util. 3 + Mgt. 3 Occp. 4 Occp. 5 Occp. 6	35.97***	14	84.3
Family = f (Res. - Sex + Sch. + Occp. 1 + Mgt. 1) + Occp. 2 + Mgt. 2 + Occp. 3 + Mgt. 3 + Occp. 4 + Occp. 5 + Occp. 6	27.67**	12	81.0
Coop = f (Sch. - Sex + Occp. 1 + Util. 1 - Adq. - Colv.) - Occp. 2 + Util. 2 + Occp. 3 + Util. 3 - Occp. 4 - Occp. 5 - Occp. 6	53.27***	13	91.9
Others = f (Age - Sex + Sch. - Adq. + Occp. 1 + Mgt. 1) + Occp. 2 + Mgt. 2 + Occp. 3 + Mgt. 3 + Occp. 4 + Occp. 5 - Occp. 6	28.60**	13	69.6

<sup>1</sup>Occp., Mgt., and Util. are multicategorical variables. For explanation of codes see Table 2.

\*\*Significant at the 0.01 level.

\*\*\*Significant at the 0.001 level.

older the respondent and the higher the educational attainment, the higher is the probability that he or she will perceive that a fisherfolk association has the right to establish rules governing the utilization of a fishery. A fisher ( $P < 0.01$ ) and a farmer ( $P < 0.05$ ) have higher probabilities of perceiving that granting TURFs to fisherfolk associations is beneficial. However, a fish vendor and a farmer have higher probabilities of agreeing that granting TURFs to a fisherfolk association in their village is beneficial to them and their family.

Educational attainment ( $P < 0.05$ ) and adequacy of catch to support the family's livelihood ( $P < 0.001$ ) significantly affect the respondent's coopera-

tive behavior towards regulation of fishing activity to lessen pressure on the fishery. The latter is negatively related with cooperative behavior, which means that those who experience inadequate catch are more likely to cooperate with the association in regulating fishing activity than those who state that their catch is still adequate to support their livelihood. Moreover, the more educated the respondent is, the higher is the probability that he or she will cooperate with the association. Age ( $P < 0.05$ ) and educational attainment ( $P < 0.01$ ) positively influence the respondent's perception about other fisherfolk's cooperative behavior. The older the respondent and the higher the educational attainment, the more likely it is that he or she will perceive that other people in the village would cooperate with the association in regulating fishing activity to lessen pressure on a certain fishery.

## DISCUSSION

Article XIII, entitled Social Justice and Human Rights, Section 7, of the 1987 Philippine Constitution states: "The State shall protect the rights of subsistence fishermen, especially of local communities to the preferential use of communal marine and fishing resources, both inland and offshore". Consistent with this constitutional mandate is the emerging practice of granting TURFs to fisherfolk associations. This right could be granted through a municipal ordinance for fisherfolk associations to regulate fishing activity, control entry, and manage a portion of the municipal waters.

The passage of the Local Government Code of 1991, which took effect on 1 January 1992, sets the stage for the granting of TURFs to fisherfolk associations. Section 149 of the code states that "municipalities have the exclusive authority to grant fishery privileges in the municipal waters (defined as 15 kilometers from the coastline) and impose rentals, fees or charges". Registered organizations and cooperatives of marginal fishermen have the preferential right to the establishment of fish corrals, oyster, mussel and other aquatic beds or milkfish fry areas.

The results of the survey could be taken as an indication of the readiness of the fisherfolk for the practice of TURFs. The dynamics of total acceptability in terms of technical, economic and social feasibility could only be determined through pilot testing of the practice in a coastal community. The value of this survey is in the identification of the relationship between inadequacy of catch and cooperative behavior among small-scale fishers. The inverse relationship between adequacy of catch to support livelihood and the respondent's cooperative behavior is the most appropriate link to the introduction of community-based management of coastal resources. With the assistance of government agencies and non-government organizations, the fisherfolk could be mobilized to organize themselves to overcome their present predicament of inadequacy of their catch.

The significant and positive influence of educational attainment on acceptability underscores the importance of an extension program to make them understand the rights, responsibilities, and benefits associated with community-based management. This could be in the form of an education campaign using various media like radio and audio-visual materials popularizing information on the current state of the country's marine ecosystems such as coral reefs, seagrasses and mangroves. Through this, the fisherfolk could be made to realize that they are confronting a critical situation that must be resolved urgently. As the majority of the fisherfolk are solely dependent on fishing and fishing-related activities for their livelihood, the concept of and rationale for community-based management could be easily conveyed.

#### ACKNOWLEDGEMENTS

This is part of the senior author's thesis for a Master of Science degree in Rural Sociology submitted to the University of the Philippines at Los Banos. We thank the International Development Research Centre of Canada for partial financial assistance. The senior author also thanks Dr. Flor Lacanilao of SEAFDEC's Pilot Seafarming and Searanching Project for support, Alessandro Babol and Rolando Ortega for technical assistance, and Marilyn Surtida for her comments.

#### REFERENCES

- Alix, J.C., 1989. Community-based management: the experience of the Central Visayas Regional Project-I, In: T.-E. Chua and D. Pauly (Editors), *Coastal Area Management in Southeast Asia: Policies, Management Strategies and Case Studies*. ICLARM Conference Proceedings 19. Ministry of Science, Technology and Environment, Kuala Lumpur, Johor State Economic Planning Unit, Johore Bahru, Malaysia, and International Center for Living Aquatic Resources Management, Manila, Philippines, pp. 185-190.
- Blalock, Jr., H.M., 1979. *Social Statistics*. McGraw-Hill, New York, 625 pp.
- Bureau of Fisheries and Aquatic Resources, 1991. *1990 Philippine Fisheries Profile*. Quezon City, Philippines, 40 pp.
- Christy, Jr., F.T., 1982. Territorial use rights in marine fisheries: definitions and conditions. *FAO Fisheries Technical Paper 227*, Rome, 10 pp.
- Darlington, R.B., 1990. *Regression and Linear Models*. McGraw-Hill, New York, 542 pp.
- Del Norte, A.G.C., Nanola, C.L., McManus, J.W., Reyes, R.B., Campos, W.L. and Cabansag, J.B.P., 1989. Overfishing on a Philippine coral reef: a glimpse into the future. In: O.T. Magoon, H. Converse, D. Miller, L.T. Tobin and D. Clark (Editors), *Coastal Zone 1989. Proceedings of Sixth Symposium on Coastal and Ocean Management 4*, Association of American Engineers, New York, pp. 3087-3097.
- FAO (Food and Agriculture Organization of the United Nations), 1982. *Management and utilization of mangroves in Asia and the Pacific*, FAO Environment Paper 3, Rome, 160 pp.
- Ferrer, E.M., 1989. People's participation in coastal area management. In: T.-E. Chua and D. Pauly (Editors), *Coastal Area Management in Southeast Asia: Policies, Management Strategies and Case Studies*. ICLARM Conference Proceedings 19. Ministry of Science, Technol-

- ogy and the Environment, Kuala Lumpur, Johore State Economic Planning Unit, Johore Bahru, Malaysia, International Center for Living Aquatic Resources Management, Manila, Philippines, pp. 117–127.
- Galvez, R., Hingco, T.G., Bautista, C. and Tungpalan, M.T., 1989. Sociocultural dynamics of blast fishing and sodium cyanide fishing in two fishing villages in the Lingayen Gulf area. In: G. Silvestre, E. Micalat and T.-E. Chua (Editors), *Towards Sustainable Development of the Coastal Resources of Lingayen Gulf, Philippines*. ICLARM Conference Proceedings 17, Philippine Council for Aquatic and Marine Research and Development, Los Banos, Laguna, and International Center for Living Aquatic Resources Management, Makati, Metro Manila, Philippines, pp. 43–62.
- Gomez, E.D. and Alcala, A.C., 1984. Survey of Philippine coral reefs using transect and quadrat techniques. *UNESCO Rep. Mar. Sci.*, 21: 57–69.
- Hardin, G., 1968. The tragedy of the commons. *Science*, 162: 1243–1248.
- Lacanilao, F., 1989. Countryside development through small-scale fisheries. *Diliman Rev.*, 37: 3–7.
- Morris, R.A., Kim, J.H. and Valera, J.B., 1986. Landforms and modern rice varieties. IRRI Research Paper Series 121, College, Laguna, 15 pp.
- Pollnac, R.B., 1984. Investigating territorial use rights among fishermen. In: K. Ruddle and T. Akimichi (Editors), *Maritime Institutions in the Western Pacific*, Senri Ethnological Studies 17. National Museum of Ethnology, Osaka, Japan, pp. 285–300.
- Ruddle, K., 1987. The management of coral reef fish resources in the Yaeyama Archipelago, Southwestern Okinawa. *Galaxea*, 6: 209–235.
- Smith, I.R., 1979. A research framework for traditional fisheries. ICLARM Studies and Reviews No. 2. International Center for Living Aquatic Resources Management, Manila, Philippines, 45 pp.
- White, A.T., 1988. The effect of community-managed marine reserves in the Philippines on their associated coral reef fish populations. *Asian Fish. Sci.*, 2: 27–41.
- White, A.T., 1989. Two community-based marine reserves: lessons for coastal management. In: T.-E. Chua and D. Pauly (Editors), *Coastal Area Management in Southeast Asia: Policies, Management Strategies and Case Studies*. ICLARM Conference Proceedings 19. Ministry of Science, Technology and the Environment, Kuala Lumpur, Johor State Economic Planning Unit, Johore Bahru, Malaysia, and International Center of Living Aquatic Resources Management, Manila, Philippines, pp. 85–96.