

SOUTH ASIA

BANGLADESH

There is little information available on traditional community-based fisheries management systems in Bangladesh. Skagerstam and Brattström (1991) mention them briefly for villages near Chittagong.

There, in general, inshore waters are strictly divided among villages. But the situation varies. For example, at the village of Rakhim Para, Kurushkul, marine waters are apparently under open access, except that first-comer's rights prevail to a fishing spot.

In contrast, estuarine waters are strictly divided. Eldest sons inherit these fishing areas patrilineally. Fishing sites may be leased or rented to other fishermen. Similarly, at Ghorok Ghata, on Maheshkali Island, owned spots are leased for stake nets.

Inter-village conflicts over trespass in fishing rights areas, and intra-village gear conflicts, are mediated by the Village Council, composed of respected elders in the community.

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INDIA

A scattered literature reveals that traditional community-based systems of fisheries management are widespread in India. With the exception of a study by Mathew (1991), in Tamil Nadu State, most reports are highly fragmentary, and do not give a clear picture of management systems.

In a study of three small-scale fishing communities in the East Godavari, Visakhapatnam and Srikakulam districts of northeastern Andhra Pradesh State, Suryanarayana (1977) provides an outline of the fishery management system. The Pallae are the main people studied. They are both estuarine-riverine and inshore marine fishermen, although mainly the former. A similar - although undescribed - management system is used by the Vodabalija and Jalarie people of Visakhapatnam and Srikakulam districts. In the Pallae villages of East Godavari District community fishing territories have fixed boundaries for estuarine fishing. In contrast, coastal fishing is under open access.

Since fishing villagers are mostly all from the same caste, there is no senior caste that controls economic activities. Estuarine and riverine fishing is controlled by hereditary village headman (*pettandar*), the number of which depends on the population of a village. Villages are divided into groups of families (*mutha*), and each *mutha* is represented by a *pettandar*. Based on the total population size of the village, the *pettandar* collectively decide how many fishing rights ("shares") should be allocated to each *pettandar* for sale to the members of his *mutha*.

The first access qualification is residency in a *mutha* (which, since there is no out-marriage from the village, means a birthright). Qualification is also gender-based, since females cannot obtain fishing rights. The third access qualification to become a fisherman in the community is the purchase of a right (share) from the headman, for 10 rupees. Thereafter to maintain his status a shareholder (*rythulu*) must make an annual payment of 3 rupees. On that basis a father may obtain rights for a son, but until that son has become an independent adult fisherman, the father cannot purchase a right for another son.

The nature of the rights varies somewhat among villages. In Mullaetimoga village, for example, rights are not inheritable, and cease with the death of the holder. Nor are they transferable. In contrast, at nearby Pandi village, rights are both hereditary and transferable, and an official record is kept of them.

Each shareholder group, based on the *mutha*, exercises its rights within defined tracts of river and estuary. Equity of access among the members of the group is based on a spatio-temporal rotational system, with the *pettandar* deciding when and where fishermen may place their nets, and the turn they must take in the rotation.

However, there is apparently no system to ensure equity among villages. For example, the fishing territory of Kottapalam village is closer to the mouth of the estuary than is that of Mullaetimoga. Hence the catches made in the latter village, and particularly the valuable prawn catch, are far smaller.

Eleven types of net are used by the Pallae in river and estuarine fishing. These are two types of boat seine, two types of beach seine, five types of drift net, the casting net, and a stake or pound net. (Suryanarayana [1977] does not mention to which gear[s] the management system is applied.)

Also from the east coast of India, Raychaudhuri (1980) mentions the principal operational rule and mechanism for conflict resolution employed by stake net fishermen during their seasonal fishing

around Jambudwip Island, off the Ganges Delta, in West Bengal. The group studied were refugee professional fishermen from former East Pakistan.

The principal operational rule concerns setting the net. First-comer's rights prevail, in that no other group can set its net either in front of or behind the first-comer's gear, and so impede its catch either on the flow or ebb tide. Inter-group conflicts arise mainly from the infringement of this rule. When such a conflict arises, an informal committee (*panchayat*) of fishing group leaders and other respected fishermen is formed. This committee hears the evidence of both parties, and attempts to reach a compromise settlement. If agreement cannot be reached, both parties are taken to the site. There the movements of a log dropped in the sea are observed in detail. If it enters directly into the net set in front of another, the owner of that net must relocate it. The use of sites on the island for temporary fishing bases is also governed by the first-comer rule, in that a site cannot be appropriated by another fishing unit while the first group continues to use it. However, that first group forfeits its right to the site if it misses one season of use.

There are scattered references to community-based fisheries management in Kerala State, on the west coast. For example, it was observed that the economic importance of stake nets is demonstrated by the tax levied by the State of Kerala on the right to site these nets, and also because such rights were not uncommonly transferred as part of a dowry (Klausen, 1968).

Historically, fishing communities in Kerala enjoyed exclusive access to inshore waters. The free entry of capital and outsiders into traditional fishing communities was prevented by such social barriers as caste and the requirement to have fishery-specific skills (Kurien, 1991). Kurien (1990) observes that as a consequence of the shrimp-trawling boom in the 1980s, inshore fisheries in Kerala were *de facto* converted from being "... the exclusive preserve of traditional fishing communities who viewed the sea as their community asset... [to] a virtually open access resource to anyone who could afford to make the necessary investments in craft and gear".

In response to prawn trawling in Kerala, from 1979 inshore fishermen started a "socio-ecological" movement to reclaim their historical rights (Kurien, 1990). They did so by a programme of erecting artificial reefs. This programme was based on traditional practise and knowledge, since to increase their catches beach-seine fishermen had for generations dumped rocks fastened with coconut fronds in inshore waters 5-10 m deep. This traditional practise, in combination with the experience of greater catches taken by hook-and-line fishermen over sunken structures (such as ship wrecks) in deeper waters, provided the impetus for an artificial reef programme. Five construction initiative-user rights combinations have emerged during the years since 1980 (Box 1), although there is evidence of a convergence toward community use rights.

Lagoon fisheries for prawn and mullet in Tamil Nadu State of southern India are regulated by community-based traditional management systems known as *padu* and *talekettu* (Mathew 1991). The former depends on the latter, since to be a member of the *padu* a man has first to be a married member of the *talekettu*.

The *talekettu* system, used in some lagoon and marine fisheries north of Madras city, is a village organization based on caste and gender. Entrance is limited to male villagers of a particular caste if the Village Council confers eligibility on them. Eligibility depends on a candidate's skill level and acceptability to the village. When a potential candidate is about 15 years of age his father approaches the Village Council. If the boy is accepted his father pays an entrance fee. Membership of the *talekettu* entails the obligation to be responsible with other members for the common expenditure of the village.

(1) reefs constructed by an individual and fishing rights rented to fishermen. This was not entirely successful owing to problems of monitoring and prevention of free access;

(2) Group initiatives in fishing villages to construct reefs and limit use rights to the group members who bought shares to pay for their construction;

(3) group and external agency initiative and group use whereby which village cooperative members bought equal shares, which, supplemented by a grant from the South Indian Federation of Fishermen Societies, covered construction costs. Fishing rights were limited to the shareholders;

(4) group initiative and community use under which construction funds were collected from village households through the initiative of a committee, the members of which would accrue social prestige from so doing, in the same way that a village festival is financed. The reefs erected by this group initiative and to which the entire village contributed what it was able were open to all village fishermen;

(5) community initiative and community use in which the artificial reefs would be under open access but subject to operational rules regarding gear limitation, equitability of catch distribution and sanctions for those who infringed the rules.

BOX 1: CONSTRUCTION INITIATIVE - USER RIGHTS COMBINATIONS FOR ARTIFICIAL REEFS IN KERALA STATE

The *padu* (lit. "fishing site") is a traditional system of rotating access to a fishery whereby eligible fishing groups take their turn at specified fishing activities on an allotted fishing ground. In India this system is used by the marine beach seine fishermen of Tamil Nadu and the lagoon fishermen of Pulicat Lake. Although this is claimed as an ancient management system in Pulicat Lake, rights have been strongly asserted only since the early-1970s, with the development of an export market for prawns.

The system is open only to those married males of the *periya pattanavar* caste who are also members of the *talekettu*. The permitted gears are the long-used *suthu valai*, a fixed bag-net for prawns, and the recently-introduced *badi valai*, a drag-net for mullet. The *badi valai* is owned by the village elite, and the rights that are applied to it are far less egalitarian than those for the group-owned *suthu valai*. However, use of the *badi valai* has declined owing to changes to the lagoon bottom topography as a result of a 1984 cyclone, as well as to localized infestations of oysters.

Rights differ between the two gear types. For the fixed bag-net they are that only eligible fishermen can participate, the rights are group-, site- and species-specific, operating time is limited to 12 hours, frequency of operation is based on rotation of rights, and access is equitable for all eligible fishermen. In contrast, anybody can participate in drag-netting. Rights are owner- and site-specific only for the larger *padu*, but they are not species-specific. Operational time is 24 hours, with the frequency of operation depending on the number of eligible fishermen in the family owning the gear. Equitable access is ensured for all gear-owners.

In Pulicat Lake the *padu* system is applied to just three small fishing grounds, with a total area of 4.2 km², near the mouth of the lagoon bar. These three units are sub-divided, to facilitate allocation of fishing space among the three villages that are eligible to use them. Boundaries of the sub-divisions are not strictly demarcated.

The implicit function of the management system differs for the two types of gear. For the fixed bag-net the objective is to ensure equitability of access to fishing grounds, whereas for the drag-net it aims at equal opportunity for all fishing units in designated grounds.

The system functions differently for the two gear types.

For the fixed-bag net (*suthu valai*) equitability of access is guaranteed to the fishermen from the three villages by a lottery that operates independently in each village. The number of days of a year allocated to a village for use of a specific ground are known. On auspicious days the villagers gather, and supervised by the Village Council, draw lots to allocate the space among their membership. Lots are drawn by fishing groups (not based on kinship). The names of the groups and their allotted fishing grounds are recorded. The annual right of a group to fish on specified days for 12 hours, from 6 a.m. to 6 p.m., on a particular ground is inalienable. This right can neither be leased nor sold. Should a group be unable to fish on an allotted day, the *talekettu* of its village have the right to operate it for that day. Since fishing grounds are of unequal productivity, groups have to alternate between them on their consecutive allotted days, until the *padu* cycle is complete. Each village has an average of five fishing days per month. But because of unequal productivity of fishing grounds, each village has access to the best ground only once every 12 days, or for 30 of the eligible 120 days each year. Some groups will elect to forego their right to fish in the less-productive grounds.

The drag-net (*badi valai*) is a family-owned gear, and the number of turns for this gear on the *padu* grounds is determined by family size. Fishing is allocated by a lottery.

Pressures on the System

Demographic pressure has forced the introduction of further restrictions to the system since the early-1980s. Now entry qualifications to *padu* rights are strictly enforced, fishing grounds have been further sub-divided, and boat crew size has increased from two to three persons. Grounds are now saturated: there are 550 eligible fishermen in the three villages, but on any single day the grounds can accommodate only 168. Because of the intensity of pressure in one village, a shift system of fishing has been introduced, and the number of fishing days allotted per group has been halved.

Although the lagoon is now clearly overfished, no control or conservation measures are contemplated by the Village Councils, who believe that catch reduction is not caused by overfishing but by external factors, particularly adverse weather conditions, like cyclone and drought.

A further pressure on the system has been conflict since the 1930s with free-riding outsider marine fishermen who do not acknowledge the *padu* system. As a consequence, rights have been

PREREQUISITES FOR ACQUISITION OF FISHING RIGHTS

(A) Talekettu

- (1) Village Residence
- (2) Male Gender
- (3) Membership of *periya pattanavar* caste
- (4) Requisite skills
- (5) Acceptability to villagers
- (6) Payment of membership entrance fee

(B) Padu

- (1) Membership of *talekettu*
- (2) Fisherman must be married

RIGHT OF TRANSFER

No such right exists, either permanent nor temporary

DEFINITION OF FISHING TERRITORIES

Three territories defined and named, and sub-divided to facilitate temporal rotation. each of the three villages permitted to operate within them 120 days/yr

GEAR AND SPECIES RULES

Only the fixed bag-net (*suthu valai*) for prawns, and the drag net (*badi valai*) for mullet, are permitted

ACCESS RULES

- (1) Village-based lottery to fix sequence of site rotation among eligible fishermen ensures equitable access
- (2) Fishing permitted for 12 hours/day (06:00-18:00)

AUTHORITY

Village Council

SANCTIONS

BOX 2: TRADITIONAL TALEKETTU - PADU MANAGEMENT SYSTEM OF PULICAT LAKE, TAMIL NADU

conceded to outsiders. Conflict intensified with the growth of the prawn export market, during the 1970s, when, as a consequence of physical violence, the outsiders acquired more rights within the *padu* area. Then, in the late-1980s, the government resettled outsider fishermen around the lagoon,

and granted them rights within it. Local fishermen claimed that the government had no authority to grant rights within the *padu* area. This led to conflict and the deaths of nine fishermen. As a result the government intervened and forced the local fishermen to grant rights to the resettled fishermen allowing them 50 days per year of gill-netting. These pressures are exacerbated by landless labourers and dispossessed tribal peoples, who are also demanding access rights.

In response the local fishermen formed the "Association of Traditional Lake Fishermen of Pulicat" to uphold the *padu*. Their arguments against outsiders' rights are based on the moral axioms of caste and tradition: tribal peoples and non-fishing peoples are reminded to keep to their caste-based occupations, and other fishermen are asked to keep to their traditional grounds. An ultimate solution is sought in the Government granting title deeds to the traditional *padu* fishermen. However, the Government does not recognize the community-based control of access rights, and favours the introduction of a licensing system to control overfishing.

Thus external pressures, and particularly the market-driven commercialization of the prawn fishery, has led to outsiders demanding rights and to the undermining of the system. This case also demonstrates clearly that community-based management of access alone will not necessarily guarantee management of resources. It shows that limited access fisheries can also be over-capitalized and over-fished if intensity of effort is not also controlled.

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SRI LANKA

Although according to statutory law coastal fisheries in Sri Lanka are managed under open access, in many localities fisheries operate under locally-sanctioned systems of limited entry, based on socio-cultural barriers. Customary rights are limited to beach seines (*madel*), *kattudela* or *bandudela* (stake or pound nets) and *jakotuwa* or *akulwetiya* (fish weirs) (Atapattu, 1987). That customary rights have an important economic role in Sri Lankan coastal fisheries was demonstrated by Fernando (1985), who shows that differences in incomes among fishing villages can be attributed to whether or not their fishery is governed by a community-based property rights system. Those that are so governed invariably have higher incomes.

In such communities customary fishing rights are vested in the local community, and outsiders are neither permitted entry to the fishing grounds nor are they recruited as fishing labourers. However, the strength of this exclusion right varies. Among relatively recently settled fishing villages on the east coast, seasonally migrant fishermen were not denied access in villages where fishing was not well organized. Once the community becomes organized, however, outside fishermen are banned. Under the exclusion mechanism used, outsiders are not permitted to beach their boats or to anchor off-shore in a village's sea territory (Fernando *et al.*, 1985).

Although customary law has diminished and was overlain by Roman-Dutch law since the sixteenth century, with the impact of first Dutch and then British colonialism, customary law still plays an important role in managing coastal fisheries. Customary law relates to gear types, time of fishing, net hauling and drying, rotational use of fishing grounds, division of labour, sharing of the catch or proceeds of the catch, and the payment of tithes. So strong are the rights in the beach seine fishery, for example, that they sometimes form part of the marriage dowry (Alexander, 1977; 1982; Atapattu, 1987).

The articulation between statutory law and customary law varies. Where the latter consists of strong and precise management rights and rules that pass the test of immemoriality, certainty and reasonableness, it is generally upheld by the courts. As in the case of *Gurvey v Bastian 3 Lor. 161*, where the court stated that "the common law right of fishing in the open sea may be controlled by custom regulating the time and mode of fishing (Anon., n.d.).

But where custom is weak and the management loose, it has generally been overridden by the courts. In general they have been reluctant to uphold custom apart from that concerning the large and expensive beach-seine (*madel*) (Anon., n.d.). In one court case (*Fernando v Fernando 42 N.L.R. 27*), the customary procedure of limiting fishing in territorial waters (*paduwas*) adjacent to west coast villages exclusively to resident villagers was challenged by a fisherman who had been excluded. This customary right of exclusion was not accepted by the court, which regarded it as a loose arrangement that was not invariably followed. Therefore, as a custom, it failed for lack of certainty.

Socio-cultural factors, particularly caste and religion, also limit entry to fishing (Munasinghe, 1985; Atapattu, 1987). Fishing is done by groups of families having a common caste identity. In the west, southwest and south of the country it is done mainly by Sinhalese of the Karawa caste; along the northern coast Tamil fishermen belong to the Karayar caste; and on the eastern and north-western coast the fishermen are the Mukkuvas, of Indian origin.

Along the west and south coast the fishing population is predominantly Roman Catholic, a legacy of Portuguese colonialism. Thus the Sinhalese Karava fishermen are also Roman Catholics. The church plays a major role in the small-scale fishing sector in Sri Lanka: fishermen pay tithes to the

church, are often financed by it, and the village priest often has a major role in conflict resolution. In some villages, in addition to residence, membership of the village Roman Catholic church was a qualification for fishing in village waters (Anon., n.d.).

But, under pressure from labour shortages, and the resultant high cost of labour, formerly closed communities are beginning to admit outsiders as fishery labourers. With time, such persons become accepted members of the community and function as social bridges to other outsiders (Fernando *et al.*, 1985). It is premature to predict yet whether this will lead to the further erosion of the system.

Community-based management of a Kattudel (Stake/Pound Net) Fishery

This type of fishery occurs in the Negombo and Chilaw lagoons. In the Negombo Lagoon the stake or pound net fishery has existed at least since 1721, as is attested by deeds preserved in local Roman Catholic churches. The fishery might be older, dating back to the fifteenth century (Atapattu, 1987). The Roman Catholic churches in the fishing villages assisted the fishermen in organizing themselves. The fishery was controlled by the church, which also resolved conflicts in it. The church received 10 percent of the income from the fishery as a tithe (Atapattu, 1987). Nevertheless, some disputes were beyond resolution by the church and were settled by Ministry of Fisheries and Industries via the *Negombo (Kattudel) Fishing Regulations (1958)*, which restricted the operation of a *kattudel* in Negombo Lagoon to members of one of four village-based branches of the Kattudel Fishermen's Associations (KFA). The result has been that the traditional community-based management systems has been reinforced by statutory law, such that traditional rights are well guarded and entry to the fishery very tightly controlled. The principal characteristics of the system are shown in Box 3.

Community-based Management of a Mandel (Beach Seine) Fishery

In 1970-71 Alexander studied the beach-seine fishery in Mawelle, on the southern coast of Sri Lanka (Alexander, 1977; 1982). Large beach seines were introduced to Sri Lanka from Madras, around 1860. In Mawelle village they were introduced in 1890 by three brothers.

Beach-seining requires a large extent of unobstructed sandy bottom, in sheltered locations close to the shore. Because the local coast is protected from the force of the monsoons, unlike other areas in Mawelle, fishing is a year-round activity. Beach-seining is restricted by coastal geomorphology to a roughly 1 km stretch of beach, which is sub-divided into two fishing locations, the harbour side and the rock side. Each net normally has a permanent crew of nine men.

Fishing Rights

As descendants of the three brothers who introduced the large seine net to the village in 1890, Mawelle fishermen claim sole rights to fish in village waters, as a birthright. Rights are based on bilateral inheritance. Outsiders marrying into the village acquire rights through their wives, as part of the dowry. Any person with access rights was entitled to construct and use a beach seine. The number of nets was not limited. This was effectively demolished in 1933, when government legislation required registration and licensing of beach-seiners, and only those with a license were permitted to work off a given beach. The legislation also permitted sale of shares in nets to persons without hereditary rights in the fishery. In most areas where beach-seining is conducted today the fishery is controlled by one or two licensees, who own all the gear, take all the profits, and who employ the net crew on a wage basis. The old system, prior to 1933, remained in Mawelle because village elites were unable to gain control of the fishery.

Authority: Local Roman Catholic Church and Kattudel Fishermen's Association.

Acquisition of Rights: Patrilineal descent among villagers *only*. (Rights cannot be rescinded.)

Territory of Rights: Defined and named.

Village Territorial Rights: The access rights to named territory *padu* defined, as are exclusive rights by certain villages to specific territories.

Village Temporal Rights: The days on which a village may exercise its access rights to a territory are defined.

Sanctions: Only fines are imposed for infringement of rules.

Acquisition of Membership in KFA: Only two qualified persons permitted per annum.

Use Rules: Lottery held among eligible fishermen every six days in each village branch of the KFA to allot *padu* among them. Winner makes first choice of site and so on in turn among all members. During the first six months after their entrance to the KFA, new entrants can select their fishing territories only after all other members have chosen theirs.

BOX 3: COMMUNITY - BASED MANAGEMENT OF THE NEGOMBO KATTUDEL (STAKE/POUND NET) FISHERY

Rules

Given the average time of three hours needed for one fishing trip with the beach seine, a total of only 18 hauls/day is possible (eight from each of the two fishing locations). However, there were 99 nets in operation, thus demanding regulation of access to the water. A rotational system of fishing is practised, based on the following set of operational rules to ensure equal fishing opportunity:

1. All nets are named and the owner of each net knows the names of those immediately preceding and following his turn in the sequence;
2. The fishing area is divided into two fishing locations, the "harbour side" and the "rock side";
3. The fishing (net) cycle begins on the harbour side;
4. A net can be used at anytime during the day after the net immediately preceding it has been used;

5. The net with the dawn turn in either location must be used before midday or forego its rights.

Although this system of rotation does not ensure equal opportunity during a single year, over a longer period (*i.e.*, during the life of a net) it apparently does so. One net sequence takes about 105 days, which means that during a 4-year period every net will have been used in every month: at good and bad locations, times of day and seasons

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