A history of nets and bans:
Restrictions on Technical Innovation along the Coromandel Coast of India

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Abstract This article examines the way in which fishing communities along the Coromandel Coast of Tamil Nadu in India act to regulate the innovation of fishing gears. It takes a historical perspective, focusing on the circumstance that the non-governmental fisher councils in this region have strong authority to restrict or prohibit gear types which they consider particularly harmful. Five cases drawn from various time periods illustrate the range of gear bans. The paper then discusses the motivation for banning new gear types, highlighting fisher conceptions of harm. Three cultural dimensions of harm are distinguished: harm to the fish stock, to other gear users and to the community as a whole.

Introduction

Numerous studies on the socio-economics of fisheries in India have been performed in recent decades. However until the mid 1990s, little attention had been paid to the way in which small-scale fishing communities manage marine resources. Although Kurien (1994:107) suggested that there had been 'a variety of initiatives aimed at creating an awareness about the necessity of institutions at community level for sustainable development and management of natural resources', efforts to study the current institutional setting were still rather limited. At the time of writing, however, this situation has changed markedly. Bavinck (2001a,b) and Karunaharan (2006) have analysed fisher institutions in Tamil Nadu, Salagrama (2005) in Andhra Pradesh and Rajan (2004) and Lobe and Berkes (2004) in Kerala.

The authors' protracted study of fisher law and management along the Coromandel Coast of Tamil Nadu[1] has highlighted organizational practices regulating access to and usage of marine fish stocks. One of the most interesting conventions is that the fisher population of one or more hamlets sometimes decides to prohibit (Tamil: *tadai*) a new net or use thereof in adjacent waters, creating barriers to the technological innovation process and contradicting economic logic. Further investigations reveal that the collective banning of fishing gear, like the in-

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novation process itself, has deep historical roots. The earliest case which we were able to trace dates back to 1886 and the period of more than a century which followed provides examples of what appears to be a genuine institutional tradition.

The primary aim of this paper is to document and pay homage to this special segment of South Asian fisher history. Five instances of gear banning from different eras and with varying geographical scopes provide an overview of the patterns involved. Secondly we probe the reasons for banning certain kinds of fishing gear to the exclusion of others and explain why these motives have remained basically unchanged. The argument is that gear bans are related to three fisher conceptions of harm, which have remained relatively constant over time: harm to the fish stock, harm to an important category of other gear users and harm to the community as a social entity.

An analysis of gear bans can only be ventured based on an understanding of the character of fishing communities and their decision-making structures and the major changes which have taken place in artisanal fishing in Tamil Nadu over the past decades. This is where the paper begins.

Communities and Decision-making

Two hundred sixty one fishing hamlets line the coast between Pulicat Lake on the border between Tamil Nadu and Andhra Pradesh in the north and Point Calimere to the south, a distance of approximately 400 kilometres. Most of these settlements, which average 1,150 inhabitants (Government of Tamil Nadu 2000), are of early origin. The majority of the coastline population belongs to the Pattinavar caste, which is traditionally divided into two segments, *Sinna* and *Periya Pattinavar* (Bharathi 1999). Although the divide still affects patterns of marriage, sub-caste solidarities seem to be gradually making way for a sense of belonging to the wider community of fisherfolk.

Decisions on the regulation of fishing are generally made at hamlet level by the village council or *panchayat*, a non-governmental body with roots in traditional caste administration. This council, which is headed by a dignitary with the title of *chettiyar*, *naaddaar,* or, more recently, president, has authority over fishing activities taking place in village waters. Land boundaries extend into the sea to demarcate, within the limits of eyesight, the circumference of this privileged territory (cf. Bavinck 2001a, 2001b).

The village council has broader responsibilities than over fisheries alone. It settles disputes, represents the village in the outside world and makes decisions which are supposed to be for the common good. It guards the systems of village membership and taxation as well as the social practices which help to tide individuals or the collective over periods of hardship. The old practice of distributing rice to each household during the monsoon period, when fishing activity is limited, is a good example of the latter.

In order to understand the origin and function of these institutions and practices, the sense of community which prevails in fishing hamlets must be underlined. A number of historical and geographical factors contribute to social cohesion. The fact that hamlets are small and traditionally occupied by fisher

families alone is important, as is the incidence of caste homogeneity. Carrying out the same profession in a broadly identical fashion, male and female inhabitants work together and face similar risks and rewards. Kinship and marriage tie the population together and inter-village rivalries strengthen the feeling of togetherness. 'Community' finally finds religious expression in the village goddess (*uur teevam*) who is common to all inhabitants. She protects borders, houses and streets against evil intrusions; she is the caretaker of the population, the source of good but also of disaster. The grand festival which is held semi-annually in her honour is at the same time a signal to the outside world of the hamlet population's unity and prosperity.

Changes in Fishing Gear

The nature of fishing along the Coromandel Coast has probably changed more over the past fifty years than agriculture in an average district of Tamil Nadu – in spite of the green revolution. The timeless look of the traditional craft called *kattumaram* beached on the shore is deceptive[2]: at sea a technical revolution has taken place. A comparison of current fishing gear with those used in the first half of this century illustrates the immensity of change.

James Hornell emphasized the unique character of Coromandel Coast fisheries in his study of the early 1920s. 'The main peculiarity of Coromandel fishing appliances', he notes, 'is the predominant place taken by bag nets operated by two or more catamarans and the small place taken by gill nets' (1927:61). Foremost among the bag nets were the large lift net sometimes used in combination with fixed lures (*idaivalai* or *kambivalai*), the shore seine (*periya valai*) and a simple pair trawl (*tuuri valai)*. Other gear types, of lesser economic significance, revolved around this trio.

These nets all demanded cooperation between large groups of fishers. Shore seines and lift nets were often shareholdings and employed sizable segments of a village's population. The simple pair trawl was operated by two kattumaram crews. Of the shore seine, which even has children and women tugging at the ropes, it is still said that 'if the shore seine is shot, the whole village eats' Tamil: *periya valai pooddaal uuree saappidum*). A characteristic of all this gear was that the fish was alive when it was taken from the water. We return later to the significance of this apparent triviality.

It seems that the traditional gear trio maintained its dominance well into the 1960s, although slowly losing ground to gill nets. A score of interviews with fishers throughout Chingleput District confirms the former centrality of the three. Written sources, although far from clear or consistent, substantiate the claim. Anugraham (1940:25-27), in a detailed study of four marine fishing hamlets in Madras just before the Second World War, emphasized the key role of the beach seine, lift net and simple trawl in the annual fishing calendar. Drift nets had already started to take root, however, possibly ahead of more isolated regions (idem: 33). Figures from the first fisheries census in 1957 show that hamlets in the districts of Chingleput, Madras and South Arcot on average still had six beach seines, sixty simple pair trawls and thirteen lift nets.[3]

By 2000, the number of districts along the Coromandel Coast had increased, through bifurcation, to six. The fisheries census of that year indicates that the average number of beach seines had declined to 2.9 per village. The use of simple trawl nets had almost disappeared: each village now numbered an average of only three simple trawls (lift nets unknown). Gill nets and entangling nets had taken their place: the census now attributes an average of 200 nets to each village.[4]

The German geographer Weber, who conducted a close study of one of the South Madras fishing hamlets in the early nineties, captures the breadth of transformation that had taken place (1995:347-348, translation authors, mb/kk): 'Of the traditional nets, only the beach seine has been able to maintain itself. The other nets – in so far as they are still available – are used only incidentally. Nowadays more than 90% of the fish catching operations are conducted with synthetic gill nets.'

We leave aside the complex reasons for the changeover from an economy dominated by bag net fishing to one in which gill nets predominate. It is without doubt, however, that fishers themselves stood at the forefront of change. The regulatory efforts considered below must therefore be regarded as part of a continuous process of innovation.

The following sections present five instances in which fisher communities have tried to regulate the use of new fishing gears, starting in 1886 and ending in 1996. An effort has been made to present the full range of motives underlying restrictions. Some cases illustrate one particular theme, while others contain a combination. Finally we have sought to include gear types which attained great popularity among fishers of this shoreline.

Two of the cases, the protest against nylon netting in the 1960s and the prohibition of the snail net in 1996 were clearly of regional importance. These restrictions were replicated over a large geographical area. The other three examples derive from one village south of Madras called Kalvimanagar (a pseudonym) and it is unsure to what extent the restrictions were repeated elsewhere. In two of these cases, however, broader incidence is likely if only because the technology was introduced in a wider region at about the same time.

Five Cases of Gear Bans

A banning which failed (1886)

One of the earlier publications of the Madras Bureau of Fisheries contains a reference to a petition submitted to the colonial government in 1886.[5] In this appeal, artisanal fishermen of the Madras region requested the government to prohibit a net – the *vaalaivalai* – which a group of fishers had recently put to use. The vaalaivalai – a cotton drift net with a two inch mesh, used for mackeral (*scomber brachysoma*) as well as scabbard fish (*chirocentrus dorab*, called *vaalai* in Tamil, hence the name) – formed a break with fishing tradition along the Coromandel Coast which was still based on bag net technologies. In fact, the petitioners felt that this net was the cause of a general decline of catches which had recently set in. The petition reads:

> [T]he apparent reason for not obtaining fish is that 30 or 40 men have started a new kind of fishing net called vallay vallai, for about the last 10 years and use them in the sea at nights...when these nets are used, there being no bag attached to these nets, to allow the fish to get into safely, the fish get entangled in the ropes of the vallay vallai in a suspending position throughout, bleed and die instantaneously.

According to the petitioners, the smell of this blood terrified shoaling fish, driving them to deeper waters and depriving others of a catch.

We do not know what precipitated the petition or what action the colonial government subsequently took. It is likely, however, that the fishing communities to which the petitioners and the *vaalaivalai* fishermen both belonged first tried to reach a settlement regarding the use of the net, probably suggesting its prohibition. Only when these efforts failed, was a petition finally made to the authorities.

From a long-term perspective, it is clear that the efforts to restrict the use of the *vaalaivalai* failed. Documents show that it soon became the most common gill net along the Coromandel Coast, remaining popular throughout the first half of the 20th century.[6] By 1978, however, the net had largely been replaced by more effective gill net varieties, even though it is still recorded in the census.

Protest against Synthetic Net-making Materials (1960s)

The post-independence endeavour to modernize fisheries included the replacement in net-making of natural fibres by synthetic twines and filaments. Although a programme to this effect was inaugurated in 1955, the Fisheries Department of Tamil Nadu only commenced major distributions of synthetic materials at subsidized rates around 1960. Initial reactions were mixed. Many individual fishermen, having heard that nets made of *paddu nuul* (Tamil for synthetic twines) produced higher catches, were eager to give the material a try. Documents and oral histories testify, however, that there was also a broad measure of protest against their use in the Madras region.

Warriar (1967:99) writes: 'In the initial stages [Madras fishermen] were reluctant to use nylon for making nets mainly on sentimental grounds. But of late nylon has become very popular...' According to Blake (1970:102), who studied fisheries in Chingleput and Madras districts, 'fishermen have stated that even though the nylon nets tend to take larger catches (others say this is not true), the nylon twine tends to cut the flesh of the fish causing early spoilage and frightening other shoals away from the smell of blood.' Yet another social scientist, Kathleen Norr, writes of a community in South Madras (1972:186):

> As is often the case with innovations, initially there were a number of prejudices against the nylon nets. Many people believe that the catch from nylon nets was harmful and it was rumoured that at least one person had died from eating fish caught in nylon nets...In addition to these problems, owners of cotton nets complain because the nylon net fishes the waters too thoroughly...Thus the large catches of the nylon nets seem to be taken at the expense of all the other nets in the village.

The above authors conducted fieldwork in the late 1960s, after the most serious objections to the technology among fishermen had faded. Moreover, they display a clear bias in favour of change, not appearing to take the substance of protest seriously. This being the case, they may have missed the fact that fisher councils were so distressed that they actually took efforts to ban the use of *paddu nuul* from their midst. This at least was the case in Kalvimanagar.

According to oral sources, the fisheries cooperatives that had been established in the region began to issue synthetic twines around 1963. The council of Kalvimanagar immediately decided to ban their distribution and usage. In the neighbouring hamlet of Reddykuppam, however, one group favoured the use of *paddu nuul* nets while another group opposed it. A number of Reddykuppam fishers started using the nets in waters adjacent Kalvimanagar, which was bitterly resented by the locals.

> Q: What was the reason for the conflict?
> Selvam (Kalvimanagar, 50): We weren't using *paddu nuul* when it was first introduced and didn't want others to use it in our waters.
> Q: Did you believe that by using *paddu nuul* fish would bleed and others would run off?
> Selvam: Yes, we thought catches would start to go down (*kuraincha taan pootu*).

The conflict between the two villages escalated: at its peak fishers from Kalvimanagar seized the outsiders' nets and, weighing them down with stones, dumped them into the sea. An irate Reddykuppam fisher subsequently filed a case in the district court with protracted litigation and heavy expenses for both parties as a result.

The Kalvimanagar ban held only for a year or two, ending in 1965.

> Q: Why was the ban terminated?
> Subramaniam (Kalvimanagar, 50): The government was encouraging its use and fishers from many adjacent villages came to our waters to fish. We stopped them regularly, but when there are so many, a ban is hard to enforce. Finally a village meeting was held to discuss the lifting of the ban and a date was fixed after which all village fishermen could make use of the material.

The issue of the cessation of gear bans is returned to in the course of the paper.

A Localized Ban on Fishing with Bottom Nets (1960s)
Kalvimanagar is located along a characteristic section of the Coromandel Coast. Unlike most fisher communities of the region, the inshore waters adjacent to the hamlet are particularly rocky. Historically this has given rise to a specialized fishery: more than in other coastal villages, Kalvimanagar fishermen developed knowledge and skills in hand-lining. Here, hook and line fishing stood side by side with the three bag net fishing methods mentioned above, contributing in large measure to the village economy.

In the late 1960s – following the demise of several drift net technologies that were negatively affected by the ascent of trawling – set bottom nets began to become popular in the region. Where the sea floor was rocky, bottom nets provided particularly rich catches of demersal fish and lobster. In Kalvimanagar, however, the council prohibited the usage of these nets. Fishers from neighbouring villages who were eager to use these nets in Kalvimanagar waters were prevented from doing so. Why?

> Saminatan (35): 'At that time everyone was using hook and lines, even old people were able to earn Rs 10-20 a day. The feeling was that if we allowed bottom nets, all the fish would be caught. 'Why are you the only one using this kind of net? It will affect the rest of us' people would say.'
> Wife (30 yrs): 'Only the rich could buy those nets.'
> Saminatan: 'Those with money would invest and earn well, around Rs 100 to 200 a day. At the same time hook and line fishermen would earn Rs 10-20. That is not good. In that state of affairs, what could we do [but ban the net]?'

This ban lasted several years, until Kalvimanagar fishers learned how to use bottom set nets and the technology became widespread. Hand-lining has since declined. An old fisher still complains, however:

> Nagappan (55): 'I am specialized in hand line fishing but I can't carry it out now as [bottom nets are being used on the same grounds. As I am older, I can't manage to go in search of other rocky patches further out at sea.'

The Trammel Net – Enchantment and Trepidation (1980s)

Private traders introduced the three-walled trammel net (Tamil: *mani, disco,* or *eppo valai) to* the Coromandel Coast in the early 1980s. Forming the first real innovation in gear technology in many decades, it attained great popularity because of its rich shrimp catching potential. The trammel net currently forms one of the standard pieces of equipment of a fisher, whether he is rich or poor. In the early phases of introduction, however, fishing communities subjected it to two kinds of restrictions.

When the net became known in the villages south of Madras in the early months of 1983, the village councils decided for a common introductory date – 1 April 1983 – and banned the use of the net before this time. The reason for the time-bound ban was simple: every fisher in a hamlet was to have a similar opportunity for obtaining and using profitable gear. An older fisher explained the principle as follows:

> It is not fair if one fisher goes fishing in the traditional way and catches less than his neighbour who is using a new fishing method. That is why the council announces a temporary ban [*tadai*] and fixes a meeting to discuss the matter and determine an introduction date. In the meantime all fishers can procure the net and prepare it for use.

But after the introduction date – at least in the hamlet of Kalvimanagar – the trammel net was also struck by another ban, this time affecting its application. The enormous catching potential of the net had filled villagers with trepidation:

> Saminatan (35 yrs): People were scared (*baiyam irundichchu*)! Before the trammel net arrived we only had the *araivalai* [another gill net type]. But the trammel net catches lobster, shrimp, fish – all species – in large numbers. We feared that old men might suffer because of declining fish stocks – not catching fish they would have a hard time (*miin kidaikkaamal kashtapadigiraargal*).

Believing that day time fishing would be less harmful than night fishing, the council prohibited the use of the trammel net at night.

> Same fisher: We though that if we used the trammel net at night, the fish would go far away (*tuuratillai pooyiruchchi*). Fish would die in the net and others would flee to the deep sea due to the smell of the dead fish (*ooru maatariyaana vaadai adikkum, meelaalai pooyidum*). This is why we imposed the 'system' (*system kuuda kodutta vechchiruntaangal*).

In the course of time, the ban on night fishing in the village slowly faded, possibly because ownership had become so widespread (including even the older fishermen who otherwise depend on hook and line fishing) that no one group was disadvantaged. Currently there are no special regulations affecting the use of the trammel net.

1996: the Banning of the Snail Net[7]

At some time during 1995, traders dealing in special seafood products, apparently responding to international demand, offered individual fishermen small hoop nets called *kachaavalai* (literally: net baited with waste) with which they could catch snails on the sea floor. As the price for snails was worthwhile, fishers in a number of hamlets decided to give *kachaavalai* fishing a try.

In the following months, however, councils along at least 100 kilometres of coastline swung into action, prohibiting the use of the net. In twenty eight fishing hamlets for which we have evidence, the *kachaavalai* was disallowed soon after it was introduced by trading interests. In some locations, prohibition was subject to discussion and dispute. In others, it was decided quietly and without much ado. State authorities were involved in only one case, when law and order was at stake. In all instances the council decision was complied with and remains in force at the time of writing.

The reasons ventured for banning the *kachaavalai* were remarkably similar. Two ecological arguments and a social perspective were put forward. First, the smell of the bait (which invariably consists of decomposing meat, generally of ray fish) was believed to have a negative influence on fish stocks in the surrounding area. Secondly, the snails targeted by the *kachaavalai* fishers were argued to play an essential role in maintaining fish stocks in inshore waters. If the snails were

removed, fish stocks were likely to decline in the inshore areas. Social motives reinforced this line of thought. A fisher attending a meeting to decide on the matter wondered: 'Why should everyone suffer because of the activities of a few?' And another, quoting a common saying said: 'Ten people shouldn't benefit at the expense of general welfare.'

Common Strands in Gear Bans

The five examples of gear banning presented above are drawn from a period of more than a century. In spite of this time span, the cases display a remarkable similarity. In each case, the fishing community rallied to restrict the use of a fishing appliance which was felt to cause harm to the group, motivating its action in analogous terms. Harm is not a one dimensional concept, however. On closer look, fishers seem to distinguish three types or indexes of harm: harm to the fish stock, which rebounds to affect the survival chances of the fishing community, harm to the majority style of fishing and harm to the community as a social entity. In any one case, one finds an intermingling of these themes. Injury to the resource is sometimes almost synonymous with injury to a majority gear user. And injury to a gear user sometimes overlaps with injury to the community itself.

Harm to the Fish Stock

When fishers refer to harm imposed on the fish stock they are concerned primarily with the species which are important for their livelihood – the varieties they target because of their market price and their availability. Due to the limitations of the equipment they use, fishers generally aim to catch the smaller demersal and pelagic species which populate inshore waters in large numbers. Gear bans are implemented with the fate of this category of marine life in mind.

It is the depletion of fish stocks which fishers fear; depletion, however, of a particular kind. The examples demonstrate that fishers do not expect the eradication of marine life but the fleeing of fish away from the grounds where they can be caught. The reprehensible gear types cause flight, not extinction. Flight is said to be the result of danger signals emitted by caught specimens. These signals are of an olfactory kind: a fetid odour which contaminates the surrounding waters and warns other specimens of impending peril.

The *vaalaivalai* of the 1880s was said to cause fish to get entangled and bleed – the smell of this blood terrifies shoaling fish and drives them out to deeper waters. The synthetic twines of the 1960s also induced bleeding, with similar results. And of trammel net fishing at night, fishers in the 1980s said that 'fish would die in the net and others would flee to the deep sea due to the smell'. Finally, the stench of the bait used in the snail net in 1995/96 was argued to result in fish fleeing.

Marine scientists assure us that marine species do communicate through 'smell' – the emission of chemical substances which spread in the water and are read by others. Danger signals are naturally particularly poignant.[8] But whether the fishers of the Coromandel Coast are correct in attributing flight reactions to the smell of blood and death has not been scientifically verified.

Although a factual basis for fisher reasoning cannot and should not be discounted, a cultural factor may possibly also be at work. As pointed out above,

the fishing culture of the Coromandel Coast has traditionally revolved around bag nets. One of the characteristics of bag nets is that the catch is drawn out alive, to die on board or on the shore. The newcomers on the gear front, gill nets, work along different lines. As these nets are left in the water for some time before they are drawn in, at least some of the catch dies in the water, scaring off others – from the viewpoint of fishers – with the signs of their death struggle. One might argue that these nets pollute, while the earlier nets are supposed to be clean, not overly affecting the marine environment.

'Our usual way of fishing' thereby coincides with bag nets, a clean fishing method and live fish removed from the water. 'New-fangled ways of fishing' on the other hand correspond with standing nets, 'fish dying in the water' and pollution. The fear of the flight of important fish stocks following the use of standing nets matches and perhaps reinforces the feeling of unease caused by a novel method of fishing, which often also has consequences for social organization. This is a background – although not necessarily a cause – to the prohibition of several important standing net types. We would argue that this cultural logic persisted long after standing nets replaced bag nets as a dominant technology and forms the reason for it emerging with the introduction of the trammel net as well as the snail net.

Competition for Ecological Niches

The belief that certain gear applications will result in the flight of important marine species to the detriment of other fishers can also be interpreted in terms of competition for a similar ecological niche (Tuomi-Nikula 1987, Bavinck 2005). This was clearly the case in the localized ban on bottom set nets in Kalvimanagar, which were used in a niche also utilized by hand line fishers. As hand line fishery was part of the annual fishing calendar and vital to the village economy, it was protected by the council decision to ban bottom set nets. It seems that this ban faded alongside shifts in the village economic base. As the method and the profitability of bottom set net fishing became familiar – not only around the rocks where hand-lining was concentrated but in other areas as well – more and more fishers were eager to use the technology. The group of hand line fishers eroded as did the political basis for the ban.

As the last quote in the section on this gear restriction demonstrates, however, older fishers – who often still rely on hand-lining – may be the main victims of the change. Other bans are sometimes co-motivated by referring to the interests of the older population who no longer have the physical strength to seek out distant fishing grounds. The ban on using the trammel net during night hours was also explained in this way.

Competition for ecological niches played a role in the other bans as well. Thus Norr (1972:158), commenting on the protest against synthetic net-making materials, states that 'the large catches of the nylon nets seem to be taken at the expense of all the other nets in the village.' The local restriction on the use of the vaalaivalai during the beach seine season when fish shoals are sighted is another good example of this principle. Finally, if the snail net was to be used in inshore waters, fishers say, other gear users in the same area would be overly affected.

Social Harm

If important fish stocks flee the fishing grounds, this affects a hamlet's population in its sustenance and causes general harm. And if a new appliance is used in a similar ecological niche, it may influence the economic performance of a large group of other gear users. But gear technology can also result in injury to the community as a social entity. The prevention of such injury and the maintenance of community cohesion is therefore another important strand in the banning of certain fishing gear or application thereof.

The snail net was argued to be *unfair* as it affected the catches of the majority in a negative sense, only yielding profit to its users: 'Why should everyone suffer because of the activities of a few?' And: 'Ten people shouldn't benefit at the expense of general welfare.' Conversely it is also not right that some should profit from a new method which is not accessible to all. The obsession with equal opportunity is reflected in the temporary ban which accompanied the introduction of the trammel net: if the net was to be used, everyone should be able to apply it simultaneously and discrepancies caused by unequal access should be avoided. Similar statements were heard when synthetic twines were introduced.

The fact that fishers using similar gear land different catches is considered a fact of life. But fishers should all have a choice whether to acquire or use a new and profitable net. If some have more access because of wealth, luck or chance contacts, it is considered unjust and in need of correction (Kurien and Vijayan 1995). In a reflection on the prohibition of bottom-net fishing in Kalvimanagar, a fisher woman thought that those nets could only be bought by the rich, who would then also increase their wealth by earning well. Unequal access to new gear types threatens the equal status of fisher households in a hamlet and ultimately the unity of its population. It is thus also with the intention of maintaining unity that councils can decide to ban a type of gear.

Variations in Fisher Restrictions

In the foregoing section the motives permeating gear bans which were implemented in a smaller or larger geographical region were reviewed. However, councils do not curtail all new fishing appliances. The history of Kalvimanagar is dotted with instances in which no ban was imposed, not even to facilitate a simultaneous start. Two circumstances appear to be conducive to a quiet or banless debut. First of all, gear types which form a continuation (with a slight variation) of an earlier gear used in a hamlet generally do not seem to be affected by restrictions. The assumption seems to be that if the previous version of a gear could be tolerated, so could its successor. Seondly, gear types which are viewed by a large group as having disadvantages for the user (easily damaged, not effective etc), yet not forming a threat for others, are often quietly adopted by the few who perceive some benefit. If it suddenly gains popularity, however, a ban may still be imposed. The gear types which have been restricted in some way or other have generally been those with economic promise and popularity, but also with a strong aura of harm.

Although the three indications of harm give some impression as to whether village councils are likely to restrict a gear type or not, a decision to do so ultimately depends on the political momentum at the hamlet level. A characteristic of village

councils (see Mandelbaum 1970) is that they generally only assemble when an issue is raised by one of the hamlet's constituent groups. Only when individual fishers are troubled about an appliance and willing to bring the matter to the attention of the collective is an opportunity created for a discussion on possible regulation. The course of events is also affected by the status of the factions representing various standpoints. The possibility of a ban also appears to be heightened if a fishing appliance has already been restricted elsewhere.

How do we explain the varying duration of bans? Our examples provide us with an initial impression. The bid to prohibit the vaalaivalai probably misfired as councils were unable to bring the fishers using the gear under their control. In view of the subsequent course of events, it is unlikely that the colonial government, to which the petition was directed, took effective action either. The restriction on using synthetic net-making materials faded due to the overwhelming force of circumstances. The Fisheries Department was offering financial inducements to those willing to use new materials and many individual fishers and communities succumbed. Other fisher communities, such as Kalvimanagar, continued their resistance until they were overwhelmed by fishers from other hamlets who were using the gear. This goes to prove that a gear ban is most successful if it is replicated on a large scale. But beliefs regarding the bad effects of synthetic effects of synthetic materials also seem to have changed. Norr (1972:186) notes that 'these rumours have almost disappeared now that nylon nets account for a large portion of each day's catch' and that probably describes the process in other villages as well. Changes in the belief system therefore seem to contribute to the fading of a ban.

The same was possibly true for the demise of the local restriction on the use of bottom set nets in Kalvimanagar. The all-round shift from hand line to standing net fishing probably contributed to the change too, however. The economic depression which had hit artisanal fisheries at the time of the introduction of the trammel net probably encouraged its proliferation and the waiving of all restrictions except those dictating a simultaneous start.

And the ban on the snail net? This is still in force at the time of writing. The continued ban on the snail net is an indication of the persistent demand for this seafood product, as well as the fierce resistance of local fishers to this specific fishery.

Conclusion

The purpose of this article was to examine from a historical perspective the way in which fishing communities along the Coromandel Coast regulate the use of fishing gear in inshore waters. We focused on the circumstance that fisher councils in this region have the authority to restrict or prohibit gear types which they consider particularly harmful. Five cases drawn from various time periods illustrate the range of gear bans. The paper finally discussed the motivation for banning new gear types, highlighting fisher conceptions of harm. We distinguished three dimensions of harm: harm to the fish stock, to other gear users and to the community. These conceptions are argued to variously permeate the gear bans which have occurred during the past century.

In this era of overfishing – evidence for which is now also emerging for the various regions of India (Bhathal 2005) – fisher notions of the injury caused by fishing gear to fish stocks are of particular interest. We highlighted some special features of the gear bans along the Coromandel Coast. The first of these is that fisher councils engaged in the banning of gear do not refer to the risk of decimating fish stocks but rather to their flight from the geographical area. Motives of this kind might well be connected to the nature of small scale fisheries, in which vessel range is limited.

A second feature of gear bans in this region is the belief that marine life flees the area because fish that are already caught emit olfactory danger signals. This motive might be linked to the tradition of bag net fishing in the region. Unlike gill net fishers who set their nets for longer periods of time, often leaving their catches to die in the water, bag net fishers regularly empty their nets of the live catch. The latter practice is supposed to be 'better' because it causes less disturbance to the marine environment, while the former may result in the flight of available fish stocks. In view of this conception of fish behaviour, it is not surprising that all known gear bans refer to passive fishing gear.

Throughout we have stressed the innovative nature of fishers and their communities along the Tamil Nadu coastline. In this dynamic profession, where the actions of each individual fisher affects others through the fact that all exploit a common resource, regulatory efforts such as gear bans form a means to achieve a perceived common good, a method to avoid the most deleterious of activities. The nature of 'good' and the manner in which it is to be attained are of course culturally defined. But do not so-called 'modern' management methods also have a cultural dimension?

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Notes

1 Field studies took place in 1994-1996 and 2000-2006 (Bavinck) and 1997-2006 (Karunaharan) and involved a combination of ethnographic techniques (participatory observation, interviews and a review of secondary sources).

2 The tsunami of 26 December 2004 and the subsequent relief efforts have precipitated a major change in the types of fishing craft employed along the Coromandel Coast. Although fibreglass boats had already appeared on the stage during the 1990s, these craft came to predominate only after the tsunami. However, *kattumarams* are still popular in many fishing villages (Bavinck, Salagrama and Vivekanandan forthcoming).

3 Unfortunately the 1957 census (Chacko, George and Krishnaswamy 1957) shows many deficiencies. Column headings are unclear (for example, we have assumed through cross references that the heading 'drift net' refers to the lift net or *idai valai*), a number of net types are not included and data does not always appear trustworthy. This precludes it from being used more elaborately.

4 The 2000 census is notorious for its inaccuracy and generally counts as a sloppy job. One of its deficiencies is a lack of definitions. What, for example, constitutes a gill net or a fishing village – how was counting actually conducted? For a critique of the census see Bavinck & Karunaharan (forthcoming).

5 James Hornell (1927:61) refers to and cites this petition, which is included in the Proceedings, Board of Revenue, Madras, No 1887 dated 21 August 1986.

6 See Hornell (1927:75) and Anugraham (1940:27, 33).

7 Bavinck (1997, 1998, 2001a) presents an elaboration of this case study.

8 Another cultural factor may be involved in the case of the protest against synthetic twines in the 1960s. Currently fishers still believe that *paddu nuul* is a heating substance and that it is not good to be in touch with it over protracted periods of time. Thus, according to one fisher, a person who mends nets continuously will become ill after a month. The fact that synthetic fibres also affect fish (and indirectly therefore the human consumer) is hinted at by Norr (1972): 'Many people believe that the catch from nylon nets was harmful; it was rumoured that at least one person had died from eating fish caught in ny-lon nets. Daniel (1984) discusses Tamil notions on the heating/cooling properties of substances.

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