

# **FISHY RESOURCES AND RESOURCEFUL FISHERS THE MARINE COMMONS AND THE ADAPTIVE STRATEGIES OF TEXEL FISHERMEN**

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## **Introduction**

Throughout the world, there are numerous examples of the abuse, over-exploitation and depletion of living marine resources. Often, these problems are ascribed to the fact that fish resources are common property. It is Hardin's well-known pessimistic message that "[r]uin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all" (1968, 1244). This proposition, known as "the tragedy of the commons", is widely accepted by marine biologists and economists. They claim that resource abuse is inevitable under a system of common property tenure. They point out that fishermen who enjoy unrestricted access to fishing grounds seek to maximize their profits in the short run. Initially, catches increase. But with the arrival of more and more newcomers, per boat catches decline: overfishing ensues (cf. Gordon 1954; Scott 1955; Pontecorvo 1967; Anderson 1976; Cunningham *et al.* 1985). In this view, fishing is perceived as a zero-sum game in which one man's gain is another's loss. Under these conditions, fishermen are bound to encounter severe problems which they themselves have brought about. There are numerous advocates of the tragedy scenario, not least among policy-makers and politicians. As Ralph Matthews recently observed, the "force of this metaphor [i.e. the metaphor that represents common property resources as being subject to a tragedy] is so great that it has been used as the basis of many of our most enduring theoretical justifications for the formation of political society" (Matthews 1993, 239).

However, in recent years the assumptions underlying the "tragedy of the commons" have been criticized by anthropologists and other scholars (cf. McCay and Acheson 1987; McEvoy 1988; Berkes 1989; Ostrom 1990; Kanbur 1992). The gist of their critique is the implicit understanding that there is inherently open access to commons, inevitably leading to maximization of short-term self-interests and hence to abuse. These assumptions often do not hold true. There are examples of viable common property

regimes characterized by communal management and sustainable use (cf. Ruddle and Akimichi 1984; Ruddle and Johannes 1985; McCay and Acheson 1987). On the other hand, some critics of the tragic scenario depict fishermen as "noble commoners", whose actions are guided by ecological wisdom (Berkes 1989).

But marine commoners are neither noble nor nefarious. It is generally understood that tragedies of the commons are likely to occur if access to fishing grounds is open to one and all and if marine resources are not managed in some way by their users, by external authorities, or by a combination of the two (Acheson 1981). The debate concerning the commons is to a large extent clouded by ideological connotations. In part, this obfuscates a clear view of what fishermen actually do, why they do it and what it does to the natural resources and to themselves. This article takes as its point of departure John Bennett's observation that "human systems are not unitary, but are dynamic and proliferational: when needs cannot be satisfied by one system, a subsystem is likely to form through the adaptive actions of individuals; or, the individual may switch his behaviour from one system or subsystem to another, seeking out more congenial alternatives" (1976, 255). How these systems operate can only be fully comprehended by taking a diachronic perspective and devoting attention to the economic, social and cultural embeddedness of human behaviour. Thus, it is my explicit aim to describe and analyze the adaptive strategies of Texel fishermen in the nineteenth and early twentieth centuries within this wider context (see also van Ginkel 1993, 1994). More specifically, I will focus on diversification, intensification and specialization as modes of adapting to resource and market fluctuations.

Texel (the Netherlands) is the largest and southwesternmost of the Frisian Islands. Of the island's 163 square kilometres, nearly a third was reclaimed during the nineteenth century. The island is approximately thirty-five kilometres long and ten kilometres wide and is separated from the mainland by the Marsdiep narrows. Today, Texel has approximately 13,000 inhabitants. There are seven villages: Den Burg, Oosterend, Oudeschild, Den Hoorn, De Koog, De Waal and De Cocksdorp. From the middle of the eighteenth century until 1930, the island population fluctuated from 4,500 to a little over 7,600. The population of Oosterend, the main fishing village, declined from 768 in 1830 to 698 in 1930. During the same period, the number of inhabitants of Oudeschild, the other important fishing village, decreased from 1275 to 670. Fishing has always constituted an important pillar of the local economy. In 1895, at the peak of the fishing fleet's growth, some 500 crewmen sailed with approximately 175 sail-powered vessels. A century earlier, there were about ninety fishing boats, two-thirds of which were used in oyster fishing. This branch of fishing had

already gained a prominent place in the island economy in the early part of the eighteenth century and was the preserve of fishermen hailing from Oosterend and the environs.

### A Texel Tragedy

The history of the Texel oyster industry provides an interesting example of the development of what seems to be a classic instance of a tragedy of the commons. In the eighteenth and early nineteenth centuries, oystering appears to have been fairly successful. Although natural fluctuations affected the catches, Oosterenders were able to supply the Amsterdam and Hamburg markets, from which the oysters were distributed further inland. They fished oysters in the public waters of the Zuyder Sea and replanted the young specimens on plots they claimed in an inlet near their home. There the spat and yearlings could grow until they were marketable. Thus, the oystermen considered parts of the marine commons as *res nullius* and other areas as *res communes* to which access was restricted. Initially, this system of quasi-cultivation yielded good results.

However, in the mid-1840s the oyster harvests diminished dramatically and soon alarming reports about depletion of the oyster stocks appeared.<sup>1</sup> One observer wrote: "For the last eight or ten years, the oyster fishery has been in a deplorable state. The oyster banks seem nearly exhausted, and to keep the Texel oyster trade going, it has become necessary to import oysters ... Previously, several million oysters were caught by the Texel fishermen, but nowadays the catch only amounts to a few hundred thousand" (Allan 1856, 21). Others attributed this decline to the fishermen's rapacious character.

But there were several causes for the reversal of the oystermen's fortunes, causes which reinforced each other. Firstly, the fishing fleet expanded from sixty to seventy-one vessels between 1836 and 1839, and grew to eighty in 1846. Secondly, gear improvements led to a greater catching efficiency in the same period. Thirdly, infrastructure and transportation developments (railways, steam-powered vessels) created the preconditions for market expansion and increased the demand. These factors probably contributed to undermining the carrying capacity of the oyster banks. A fair indication is that the total catches initially increased (to a record high of nearly eight million in 1838), but per boat catches declined, followed by diminishing aggregate yields. Following this decline, a fourth factor became important. Initially, the oystermen intensified their catching efforts because of price fluctuations and their own poverty or indebtedness. To stay economically solvent, they simply had to harvest more bivalves. Their Calvinist ethos of hard work and their previous experience with fluctuating

catches reinforced this attitude. They perceived the oyster supply to be inexhaustable, an image that faded rapidly when the oyster crisis persisted.

However, the decline cannot solely be attributed to human behaviour. Ecological changes also had an impact. Severe winters and storms caused marked oyster mortality, and cold summers and changing currents had a negative effect on reproduction. More importantly, land reclamation in 1835 implied that a large part of the area where oysters had been planted in the past was now lost. This shallow, relatively warm and quiet cove had provided good conditions for shellfish reproduction, and to make matters worse, what little was left of it silted up. The ecological deterioration and growing oyster scarcity exacerbated the situation. To eke out a living, the fishermen had to catch as much as they could. This had less to do with an innately rapacious mentality (as Hardin *cum suis* would have it) than with the fact that their existence was at stake. Short-term interests prevailed, not because the fishermen were purblind and greedy *per se*, but because for the moment they saw few alternatives.

### Trimming the Sails to the Wind

But the oystermen did not continue their destructive activities until they had caught the very last oyster. They diligently looked for other options. They could no longer earn a living from oyster fishing alone, and shifted to other ventures. They broadened their economic horizon and in an effort to cope with resource deterioration began to exploit other marine ecological niches. From the mid-1840s onwards, many switched to harvesting eelgrass (*Zostera marina*) in the summer and fall, and catching shells (the raw material for the production of lime) in the spring and winter. As a consequence, in the 1850s and 1860s only thirty to forty vessels were active in the oyster fishery for a short season (mostly October and November). Probably as a result of these adaptive strategies, the oyster stocks recovered somewhat, and from 1858 till 1862 the annual Texel catch averaged approximately two million oysters. But oystering never regained its prominent place in Texel fishing. Moreover, it faced various setbacks. Eelgrass harvesting was restricted because the state leased parts of the beds to a number of lessees and to the neighbouring municipality of Wieringen, limiting entry for Texelians. In addition, shells became increasingly scarce when mechanized harvesting with steam vessels was introduced in the late 1870s. This turning of the tides forced fishermen to diversify even more.

As a consequence of infrastructural and market developments, there was a growing demand for fish and fish products. As of the 1870s, Texel catches could be transported farther away by rail and regular steamboat connections, supplying markets at home and in Belgium, France and England.

According to reports, the island fishermen could sell whatever they caught or harvested at sea. As a matter of fact, many began to fish species they had previously disregarded either because it was difficult to find market outlets, or because of the rapid deterioration of fish. With faster transport and new conservation methods (for example, the boiling and salting of shrimp and cockles), these problems were overcome. In addition to oysters, eelgrass and shells, Texelians began to catch periwinkles, cockles, whelks and mussels, starfish, shrimp, flounder, sole and plaice, rays, anchovy, garfish, eels and several other kinds of fish. By the end of the century, a wide spectrum of marine resources were utilized and oysters were caught during a short season only. More and more, the fishermen alternated their catches.

Thus, after a short period of intensification, the Texelians opted for diversification, a strategy fishermen elsewhere also applied if the catches of any one species declined (McCay 1978, 409 ff.). Diversification had obvious merits as effective insurance against resource decline and market fluctuations, although it required greater capital outlays, since the fishermen had to acquire various sets of nets. It was the fact that marine resources were held in common that made this versatility possible and enhanced the fishermen's shock absorbing capacity. Decisions on fishery cycles and gear switching were largely made on the basis of resource availability and accessibility, fish prices, fishing know how and expertise, vessel size, personal preferences, and alternative employment and sources of income.

A limiting factor on gear and niche switching were the claims some fishermen made on exclusive entry and use of certain locations, especially if they used stationary gear such as fish-traps and eel-baskets. But over and over again, the ambivalent attitude of the fishermen towards territoriality was a problem. Although they claimed the exclusive use of certain fishing grounds, they rarely acknowledged the rights of others who claimed fishing grounds elsewhere.<sup>2</sup> This phenomenon, widespread all across the globe, is known as the "tragedy of incursion" (McCay and Acheson 1987). In this respect, the fishermen did indeed consider the marine domain a commons they could freely exploit. This attitude is evident in the autobiography of a Texel fisherman: "Fishing is free to me; as it is to so many others / All that the sea provides us with / is for all of us in common" (van der Vis n.d., 89). And although some fishermen were able to exercise informal rights-to-use, entry into the fishing industry was relatively easy.

The state refrained from large-scale interventions in the fishing industry. In the nineteenth century, it largely adopted a *laissez-faire* policy. There were exceptions, however. In the eelgrass and oyster industries, limited entry schemes and privatization of plots were introduced in the 1840s and 1880s, respectively. Due to a wide range of factors, the most important of which was probably poor ecological conditions, privatized oyster farming

in the Zuyder and Wadden Seas has never been successful. Besides, the fishermen were ambivalent about state intervention. When they perceived advantages, they favoured regulation, but as soon as they saw disadvantages, they vehemently opposed it. Moreover, diverging interests of specific categories of fishermen led to disagreements on the measures to be taken. There was also ambivalence concerning other less far-reaching regulations, for example with respect to seasons, gear, and mesh and fish sizes. At times, the fishermen urged the state to intervene, at other times they demanded the withdrawal of regulatory regimes. All in all, legal measures set up very few obstacles to anyone wishing to enter the fishing industry.

The period from 1870 to 1895 was characterized by a boom in coastal fisheries, not only on Texel but elsewhere in the Netherlands as well. Many Texelians took to fishing. In Oudeschild, where until the middle of the century there had only been a small fishing fleet, scores of inhabitants entered the industry and the Oosterend fleet expanded and modernized. At the peak of the island's fishing fleet's expansion in 1895, there were approximately 175 boats, manned by over 500 crew members. Depending on the season and the economic situation, these vessels sailed the Wadden, Zuyder or North Seas. The fishermen took optimal advantage of the variety of ecosystems in these marine environments, utilizing the niches they deemed most profitable. The unintended and unforeseen consequence of the fishermen's adaptive strategies was that the pressure on resources was dispersed, alleviating pressure on any one single species. Therefore, the carrying capacity of these species was not undermined, as could have been the case if all the fishermen had concentrated their efforts on one or a few resources.

However, there were short periods when many people focused their endeavours on a single resource because the price was high, the catches of other species proved disappointing, or the weather prohibited sailing the open sea. This temporary concentration often occurred in the shrimp and anchovy fisheries, but as soon as prices fell, many switched to other fisheries. In this respect, the fishermen behaved as veritable opportunists. They did not even refrain from working as farmhands when fishery activities slackened off, as was usually the case in the summer. In general, this occupational pluralism only occurred in the ranks of the poorer fishermen, who lived mainly in Oudeschild.

All in all, this flexibility required a short-term orientation with respect to deciding which niches and species could best be exploited. As the Swedish ethnologist Orvar Löfgren contends, "The special nature of the resources exploited and uncertain marketing conditions make the irregularity of successful seasons a characteristic of many fishing economies. Fishermen face difficult management problems in attempting to adapt their strategies to

these fluctuations and consequently, tend to develop a preference for short-term planning" (1972, 82). For most, these strategies implied success. As has been noted above, the quarter of a century after 1870 was a period of relative prosperity. But it was short-lived, and after 1895, the Texel fishermen were assailed by several problems.

### **Riding the Waves of Fortune**

Along with the expansion of markets and the introduction of fish conservation methods, the chains between the first producers and the last consumers grew. This left the fishermen in a position at the outer end of the production-market chain, making them vulnerable to recessions and sharp price fluctuations. They tried to cope with these uncertainties by pursuing new markets and making arrangements regarding production and minimum prices. Besides these trade cooperatives, the fishermen struck similar deals with individual traders. Though these agreements aimed at keeping production low and prices high, the unintended consequence was the restrained exploitation of marine resources. However, the fishermen were as ambivalent regarding price and production restrictions as they were on territoriality and state intervention. Sooner or later, informal agreements were forgotten or broken, turning co-operating individuals into fiercely individualistic competitors.<sup>3</sup>

This mounting competition among fishermen for the extraction of scarce resources, the market gluts and the concomitant fall in prices meant that intensification or diversification increasingly became inadequate adaptive strategies to maintain or improve their standards of living. Therefore, some of the fishermen used a third option to adapt to changing ecological conditions and specialized in one type of fishery. Some fishermen began to sail the North Sea to catch flatfish, others became more or less full-time shrimpers. There were also fishermen who ended their career. They changed their occupation and for example began to work as farmhands, or migrated and settled on the mainland, taking on non-fishery-related jobs. According to the "economy of flexibility" hypothesis, specialization usually follows once intensification and diversification have become inadequate coping responses. This proposition states that "minimal, less costly, and more reversible responses to environmental perturbation are predicted to occur first. If an environmental problem worsens or is not adequately met by the initial responses, 'deeper,' more costly, and less reversible responses take over, restoring flexibility to other responses" (McCay 1978, 410).

Several Oosterend fishermen, who had been quite successful during the boom period, continuously invested in vessels and equipment. By the late 1910s, they motorized their fleet and in the 1920s they introduced steel-

hulled cutters with 100 hp engines in the Netherlands. This modernization led to an expansion of the catching potential of some production units, but it is my impression that the total catching effort of Texelians declined because of the overall reduction in the island's fishing fleet. The Oosterenders specialized in North Sea flatfish, and only occasionally switched to Wadden Sea shrimp in the winter when shrimp prices were high or storms made it dangerous to sail the North Sea. An important element in their success was the fact that their crews were usually composed of agnatic kin. Family firms were able to continue fishing because skipper-owners working with close kinsmen did not have to pay weekly salaries.

Most of the Oudeschild fishermen began to specialize in shrimp fishing, which usually gave "dependable" outcomes, at any rate relatively dependable compared with other fisheries. But they still combined this activity with other maritime pursuits and/or occupational switching if necessary, and between June and November catching mature shrimp was impossible because they disappeared from the nearby waters. As of the late 1920s, small fry (*nest* or *puf*) was turned into animal fodder in a local fish-drying house. Initially, Texelians protested against catching immature shrimp and demanded a prohibition, but it was to no avail. Thereupon, they also began landing small fry. Although hardly rewarding, it helped them to stay in business, even though most of these fishermen could barely make ends meet. The small fishermen were dealt severe blows during the recessions. With their feeble vessels, they could not sail the North Sea and tried to eke out a meagre living from the fairly crowded Wadden Sea niches. Sometimes they even refrained from sailing altogether because the wear and tear of their equipment would cost more than they could earn. They usually curtailed consumption and cut expenses by neglecting the necessary maintenance of their vessel. This made for economic survival in the short run, but undermined future chances for recovery. Generally, the mechanization of Oudeschild vessels occurred much later than in Oosterend.

It became ever more difficult for small skipper-owners to recruit crewmen, especially if they could not count on their own male kin. Given the share-system of remuneration, it was financially unattractive for crew to join a skipper-owner who did not earn much. Thus, in an era of economic crisis many crewmen left the fishery. This led in turn to a shortage of workers, forcing some skipper-owners to temporarily leave their vessel in the harbour and find a land-based job, especially in the summer. Although some small fishermen continued fishing part of the year, the fact that they had to eat into their capital sapped their resilience. Fewer and fewer fishermen's sons went into their father's line of work and more and more fishermen – crewmen and skipper-owners alike – quit fishing altogether. They either found jobs on Texel (commonly as farmhands) or on the mainland



(mostly as factory workers). Consequently, the number of Texel fishermen steadily decreased from more than 500 in 1895 to approximately 180 in 1930. At the same time, the number of vessels declined from 175 to some 80. Like gear switching, turning away from the fisheries also implied a relaxation of pressure on the marine resources.

In general, Oosterend fishermen have been more successful than those in Oudeschild. Though they shared an existential labour ethos, Oudeschilders were predominantly subsistence-oriented, whereas Oosterenders were much more inclined toward accumulating profits and staying ahead of their competitors. The former perceived themselves as labourers, the latter as entrepreneurs. Underlying these differences was an interwoven pattern of demographic, political and religious factors.<sup>4</sup> This requires some further explanation. Oosterenders had larger families than Oudeschilders. This enabled them to recruit family crews, enhancing their shock absorbing capacity. The demographic composition of the two communities originated in politico-religious differences. In the late nineteenth century, many Oosterend fishermen became orthodox Protestants, whereas in Oudeschild the rise of the Social Democratic Party went along with deconfessionalization. Churches stimulated large families, Social Democrats smaller ones. The Christian and Social Democratic ideologies both had an impact on the villagers' world views. They provided models which fit the fishermen's previous experiences. For example, Oosterenders ran considerable risks venturing out to the North Sea. In Calvinism they found a way of mentally coping with these perils. Oudeschilders were largely embedded in capitalist relations of production and often felt exploited. In social democracy, they saw a means of achieving social justice. Of course, in turn these ideologies influenced the fishermen's behaviour, goals, attitudes and labour ethos. The contrasts between the two communities, separated by only nine kilometres, make it abundantly clear that Hardin's homogenizing view of people exploiting commons grossly underestimates the importance of socio-cultural diversity.

## Conclusion

"If the sea can be fished dead, let's at least have our share of the funeral meal" (Verslag 1854, 143). In these words, the mode of thinking and behaviour of Dutch fishermen was epitomized as early as the mid-nineteenth century. In the course of time, this tenacious stereotype has been supported by economic theories and propositions like the "tragedy of the commons". The premises in these theoretical models seem to be that each fisherman using common property resources operates in an economic, social and cultural vacuum and behaves as an archetypical homo economicus. However,

anthropologists have presented many examples of socio-cultural institutions and arrangements enabling the sustainable use and governance of fish and fishing grounds (Ruddle and Akimichi 1984; Ruddle and Johannes 1985). Yet, there are numerous instances of over-fishing, even in places where, as on Texel, access to fishing grounds was not entirely free to all. However, as I have argued, the reasons over-exploitation (in this case in the oyster fishery) came about cannot be explained by merely citing Hardin's model. Exogenous forces, ecological and technological developments, and market fluctuations – understood in the context of a market economy – should also be taken into account. The Texel example demonstrates that in situations of ecological deterioration (not necessarily caused by human action), indebtedness and impoverishment, fishermen can face dilemmas that, if they have few or no alternatives, may force them to opt for survival in the short run. This choice can lead to the overexploitation of fish stocks. For the individual, it is a reasonable choice to intensify exploitation, but what is adaptive for the individual can be maladaptive for the collectivity of users and the environment they exploit (Bennett 1976, 195). This is true in particular “if a relatively large number of individuals make high demands on a *single* CPR [common property resource]” (Ostrom 1992, 297; *italics* RvG).

Usually, however, the pressure on the resource is alleviated as a result of various adaptive strategies. Fishermen rarely exploit one single species or one single ecological niche. Moreover, as economists Townsend and Wilson maintain, there is a “normal tendency of fishermen to switch away from declining stocks” (1987, 323). This is indeed illustrated by the Texel fishermen's diversification. They usually caught different species with different kinds of gear over the annual cycle, using various ecological niches. James Acheson calls this switching behaviour “the most important adaptive strategy used by fishermen” (1988, 49). It is precisely the common property nature of resources which enables this kind of flexibility: “In the face of ... environmental uncertainty, common property institutions may be innovated which, rather than emphasize the right to exclude, provide for the right to be equally included as a hedge against these uncertain prospects. [...] Poverty, natural resource dependency and resulting uncertainties ... create an incentive structure that may make common property a comparatively rational solution to certain problems of resource management” (Runge 1986, 625).<sup>5</sup>

What is more, we have seen that many fishermen turn away from fishing altogether if they deem the returns on their capital and labour insufficient. Thus, there is usually a point long before complete resource depletion when fishermen turn their backs on the sea. One unintended consequence of fishermen's coping strategies may be a recovery of the carrying capacity of

the marine environment. Thus, the sum-total of conscious adaptations sometimes brings about an adaptive process, or “very occasional automatic feedback mechanisms operating outside of cognitive awareness” (Bennett 1976, 148). Though one would be mistaken to consider these cybernetic processes evidence of control over nature or automatic homeostasis, they are nonetheless important for an understanding of how natural resources are exploited. They may affect sustainability in a positive way, a factor completely overlooked by the proponents of the pessimistic “tragic” scenario. The same goes for territoriality and certain forms of sustained collective action, such as co-operatives which introduce quotas. Although they are aimed at obtaining privileged space and higher prices respectively, they can contribute to limited exploitation.

Should we therefore dismiss the tragedy of the commons and similar theoretical models as null and void? I do not think so. They are still useful as heuristic and analytical devices (Brox 1990). In part, the criticism by anthropologists and other scholars of the axioms of these models is based on conceptual confusion. They define commons much more broadly than Hardin or Gordon do. Hardin and his followers stress situations where entry to natural resources is unrestricted. Anthropologists, however, maintain that common property includes resources to which individuals, communities and states claim rights of access and use (Berkes 1989; McCay and Acheson 1987). But these claims – or “bundles of rights” – are not necessarily property (Durrenberger and Pálsson 1987; Schlager and Ostrom 1992). Although Hardin’s interpretation also lacks clarity in this respect, he does not postulate that “a commons brings ruin to all” but that “*Freedom in a commons brings ruin to all*” (1968, 1244; italics RvG). The fact that this is a crucial premise in this theory also appears in Gordon’s writings, in which he cites the work of anthropologists and states that many peoples have institutions – in his words “property rights” (1954, 134) – which are developed “[to] prevent the resources of the community at large from being destroyed by excessive exploitation” (ibid.). Whereas anthropologists propose that such institutions and common tenure overlap, economists say they are mutually exclusive. In as far as entry to natural resources is indeed open and unregulated, there is no reason to doubt the validity of the tragedy of the commons proposition. The empirical studies of anthropologists, “just describe cases where the assumptions of the model are not satisfied”, Ottar Brox (1990, 229) rightly observes.

Accusing fishermen of reckless exploitation is as short-sighted as apologetically viewing them as “noble savages” who possess some ultimate ecological wisdom. The use of communal natural resources in complex and dynamic socio-ecological systems cannot simply be explained by such simplistic and deterministic models as the tragedy of the commons, but should,

as I have shown, be interpreted in a broader contextual framework. Fishing practices are embedded within the historical, economic, social and cultural context of communities. Hardin, however, assumes a direct and unmediated relationship between individual behaviour and the ecosystem, thus obscuring a myriad of factors relevant to people's use and management of natural resources. Their beliefs, social norms and values, relationships of co-operation and conflict, and the institutions they have developed should be taken into account to understand the shaping and constraining forces of ecological adaptations. These adaptations operate through systems of cultural meanings and social relationships (Keesing 1981, 171-172). However, the properties of people's relationships with nature and with one another "derive neither from their will nor their consciousness" (Godelier 1986, 6). To quote Roy Rappaport, "Nature is seen by humans through a screen of beliefs, knowledge, and purposes, and it is in terms of their images of nature, rather than of the actual structure of nature, that they act. Yet, it is upon nature itself that they do act, and it is nature itself that acts upon them, nurturing or destroying them" (1979, 97). It is largely because of this fact that ecological problems do occur. As Michel Foucault once contended, "People know what they do; they frequently know why they do what they do; but what they don't know is what they do does" (quoted in Dreyfus and Rabinow 1982, 187). Therefore, it is necessary to go beyond the image of the rapacious, maximizing man-the-fisher and the image of the noble marine commoner. We should instead devote ample attention to the wider context fishermen operate in, the unintended and unforeseen consequences of their behaviour and the feedback processes which give rise to new coping responses.

## NOTES

1. The oyster tragedy was not a strictly local phenomenon, for by the middle of the nineteenth century, sharply declining yields also assailed oystermen elsewhere in Europe and the United States (Clark 1959; Cove 1982; Winstanley 1978; Taylor 1983). Oysters are particularly prone to overexploitation because they are an immobile species thriving in shallow waters, where they can be harvested fairly easily.
2. Territoriality had little to do with resource management, but provided "privileged space".
3. It proved hard to maintain these arrangements, because Texelians were of course not the only fishermen supplying the market. Therefore, they were hardly in a position to control prices. Usually, fishermen are *price-takers*, not *price-makers*.
4. This is a simplified version of a rather complex matter. See van Ginkel (1993, 251-258) for a more comprehensive account.
5. Of course, the availability of multiple niches and resources is a precondition for flexibility. Marine commons offer more opportunities in this respect than, say, a small communal tract of land which is suitable only for cattle grazing.

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