

Chapter 5

THE NETHERLANDS

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1. INTRODUCTION

The Dutch fishing industry is one of the smallest in the EU. Including the supply sector and retail trade, it employs *circa* 15,000 or less than 0.4% of total employment. In 1999 the fleet comprised 399 beam trawlers (cutters), 16 pelagic freezer trawlers and 77 mussel boats (Table 5.1) with a combined manpower of some 2,560 persons. Since 1993, the year of the influential policy document *Vissen naar evenwicht*, the number of vessels in the Dutch fleet has declined by some 13%. In terms of economic output, mussel cultivation, shrimping, cockle fishing and oyster farming dominate the inshore fisheries accounting for 24% of the total value of landings in 1999.

Table 5.1 Size structure of the Dutch fishing fleet (number of vessels)

	1993	1994	1995	1996	1997	1998	1999	% change 1993-99
Cutter (1-300 hp)	244	247	239	234	230	224	224	-8
Cutters (301-2000 hp)	156	146	144	136	120	120	114	-27
Cutters (2001 hp and over)	74	71	69	67	66	63	61	-18
Trawlers	12	12	12	14	14	15	16	+33
Mussel boats	77	77	76	75	75	76	77	+/-0
Total	563	553	540	526	505	498	492	-13

Source: Visserij in cijfers, 1999

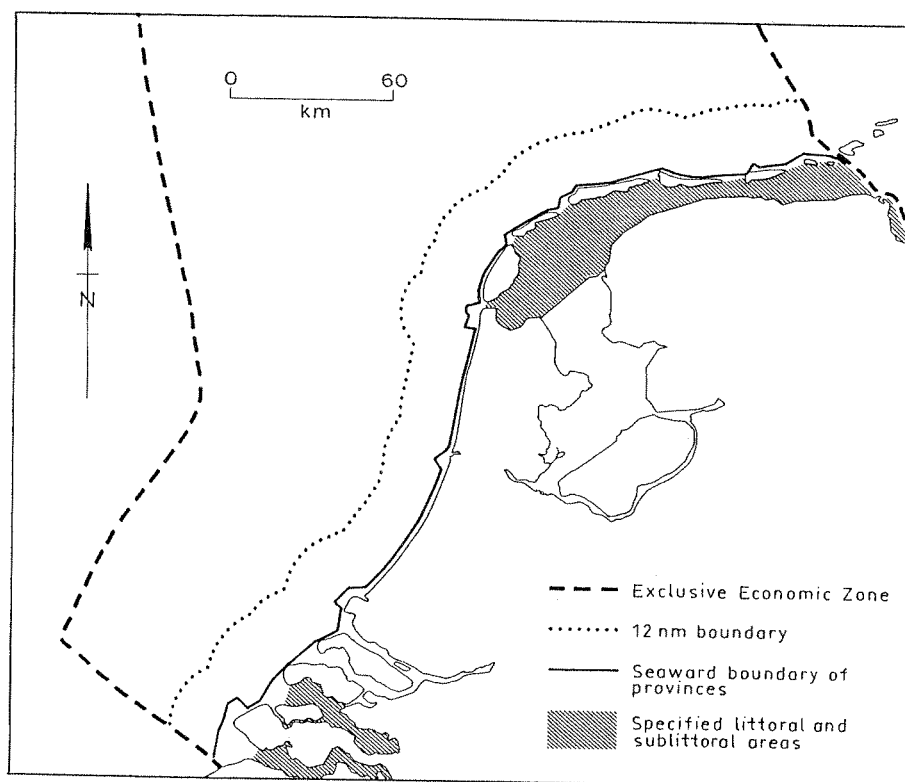


Figure 5.1 The Netherlands: Fishing Limits and Coastal Fishing Waters

Following EU directives, the 12 nm limits would seem to make a useful distinction between inshore and offshore fisheries. Vessels not exceeding 300 hp engine capacity are allowed to fish within these limits and in 1999, 224 such vessels had access. However, policy documents referring to *Kustvisserij* (coastal fishing) refer to fisheries in specific littoral and sublittoral areas specified in an amendment to the 1963 Fishery Act. They include: the Wadden Sea and the Dutch part of the Eems-Dollard estuary; the Western Scheldt, the Eastern Scheldt and its tributaries in the province of Zeeland; and the Voordelta and the Zeeland islands and peninsulas (Figure 5.1). These areas are extremely significant as spawning and nursery grounds.

Unlike offshore fisheries, the coastal fisheries are mainly subject to national policy the goals of which are: to regulate fisheries in relation to other marine functions, including the most important ecological function; to regulate fisheries *vis-à-vis* each other, and the leasing of shellfish farming plots. Recently, a system of devolved management has been introduced

giving responsibility to the Dutch fisheries sector to develop a balance between fishing activity and nature through self-management.

2. INSHORE FISHERIES: THE MANAGEMENT APPROACH

There is growing pressure for the integration of fisheries and marine environmental management. Since 1993 the policy document *Vissen naar evenwicht* (Fishing for Balance) has sought to create a responsible way of fishing in which economic and ecological interests are balanced so as to achieve both economic and ecological sustainability (Vissen, 1993). The state aims to further fisheries interests through regulation, consultation with the industry and the maintenance of quality. Fishermen must take account of other functions of the seascape, especially its natural value. Fisheries policy is also intertwined with government policies regarding water management, nature conservation and planning, which makes for a complex institutional framework, especially for inshore fisheries.

Based on the *Nature Conservation Act 1974* the greater part of the Wadden Sea (150,000 ha) was designated a publicly owned nature reserve in 1981. In 1993 most of the remaining area was incorporated in the designation, which now covers 85% of the Dutch Wadden Sea. Several non-binding regional plans refer to the area but the key policy document is the *Planologische Kernbeslissing Waddenzee* (1981) (Physical Plan for the Wadden Sea, also known as the Wadden Sea Memorandum), defining the overall objectives for conservation, management and use of the Wadden Sea which are binding on all state, regional and local authorities. A number of boards and committees advise the politicians at different levels concerning proposed policies and plans (Steins, 1997). In addition, the Wadden Sea is subject to international agreements. In 1982, a Joint Declaration on the Protection of the Wadden Sea was agreed between Denmark, Germany and the Netherlands outlining their intention to coordinate future activities for the protection of the area. Trilateral conferences are held every three years. The Wadden Sea is also designated an EU Special Protection Area (1991), a Ramsar site (1984) and a UNESCO Man and Biosphere Area.

The Dutch state opts for a 'principle of interwovenness' in its fisheries policy for the Wadden Sea and Zeeland waters, meaning that exploitation is allowed only if fisheries and nature can coexist. Otherwise the functions are strictly separated. In the 1993 policy statement new forms of cooperation were encouraged. The state's aim is to enhance responsibility and social control through self-management. The state has considerable leeway in managing its coastal fisheries, principally through a system of licensing. Since 1993, inshore fishermen operate under a management plan

(*beheersplan*). A co-management scheme for the mussel and cockle fisheries has been developed by two working groups, involving representatives from the mussel and cockle sectors, environmental organisations and the government. Producers' organisations (POs) have been established on a basis of voluntary membership: their prime goal is to achieve rational exploitation of the resources and improved marketing conditions. Fishermen's organisations contribute to the development, implementation and enforcement of management measures helping to increase user group support for the management regime including measures to protect nature (Keus, 1997).

The two main goals of the management plan are to limit exploitation of the marine domain and prevent food shortages for seabirds. In years when cockle stocks are low, 60% of a specified minimum level of the cockle and mussel supply is reserved for seabird consumption. When stocks fall below this level temporary bans may be introduced. Also in 1993 it was decided to close more than a quarter of all areas exposed at low tide, including the intersecting gullies, to mussel seed, cockle and other fisheries. The same applies to a large portion of the Eastern Scheldt while cockle and mussel seed fishing in the Western Scheldt and the Voordelta is subject to restriction. To protect the ecosystem of the Voordelta, the government also seeks to reduce shellfish dredging with fishermen agreeing to leave old mussel banks and eelgrass plots untouched. Annual total allowable catches (TACs) are set for the mussel and cockle sectors. In the mussel industry, the TAC (amounting to 65 million kg of mussel seed as of 1998) is divided into individual quotas. When the total TAC is exhausted the fishery is closed. The TAC for cockles is 10 million kg of cockle meat.

These measures are implemented through annual fishing plans drafted by the two POs and are binding on their members. The plans detail the area and time for fishing, gear restrictions, TACs, capacity reductions, control and arbitration procedures. All fishing vessels must be equipped with a 'black box' which records the boat's position and activity so that all fishing activities can be monitored. This devolved management system also implies that state supervision can be maintained at existing levels without need to intensify controls. Sanctions for breaching the rules are severe: mussel seed fishermen can be fined up to Dfl 20,000 and cockle fishermen can lose their permits. In March 1998 a review of the first phase of the new policy concluded that the management and the fishing plans developed by the fishermen's own organisations had contributed to the realisation of the fisheries policy (Structuurnota, 1998). On the basis of this it was decided to continue the policy in a second phase from 1998 to 2003 (*Beheersplan Schelpdiervisserij*, 2000). To contribute to the recovery of natural mussel

banks, the cockle and mussel fishermen have decided voluntarily to close an additional 5% and 10%, respectively, of their fishing grounds.

There are, however, signs that the fragile relationships between the key parties in the co-management process are coming under considerable pressure. Development of the second management plan (1999-2003) is proving much more difficult (Steins, 2000) partly for technical reasons - the short time span allowed for negotiation following the evaluation exercise and the absence in the early stages of a carefully selected steering group to supervise the process - but also because of an erosion of trust between the fishing industry and the conservation organisations. This grew out of the latter's public denunciation of the mechanised cockle fishery in 1997, supported by some fisheries scientists and seen by the industry as reneging on their original commitment to co-management. The fisheries department was put in a difficult position, needing to act as facilitator in the negotiations but also expected to uphold the government's declared policy. Certainly the potential for consensus building has been seriously impaired by these developments.

3. THE FISHERIES

In terms of landing value and employment, molluscan and crustacean fishing and farming are the most important coastal fisheries (Table 5.2). Blue mussels (*Mytilus edulis*) and European flat oysters (*Ostrea edulis*) are cultivated, mussel seed, shrimps (*Crangon crangon*) and cockles (*Cardium edule*) are fished.

Table 5.2 Value of shellfish and crustacean landings (million Dfl)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Mussels	102	91	92	88	102	120	107	123	101	125
Shrimps	46	39	44	54	43	68	58	42	53	85
Cockles	29	8	29	27	24	18	7	10	60	50
Flat oysters	4	5	8	8	7	4	6	6	5	8
Total	181	143	173	177	176	210	178	181	219	268

Source: Dutch Fish Product Board

3.1 Mussel farming and fishing

Mussel farming in the Netherlands is a semi-culture. For some weeks in spring and autumn, for three days a week, mussel farmers are allowed to catch young seed mussels. The Ministry of Agriculture, Nature Management and Fisheries (MANMF) which has jurisdiction over the shellfish grounds determines the opening and closing dates of this short season and the locations where dredging is permitted. The Fish Product Board (*Productschap Vis*), an organisation representing the fishing industry as a whole, together with representatives of the Mussel Advisory Committee drawn from the harvesters, merchants and processors, determine quality standards and set minimum prices.

Seed fishing forms the basis of cultivation and permits are granted only to mussel farming firms; a total of 88 permits are issued and since 1991 each firm is allowed to use one vessel to fish seed mussels. The musselmen plant the seed and young mussels on plots rented for a period of three years from MANMF. A total of 3,500 ha (divided into 460 plots) is available for cultivation in the Wadden Sea and 2,000 ha (380 plots) in Zeeland waters. Each firm rents a number of plots in each of the two areas at rentals based on acreage and the share of the total value of mussel production. Access and use rights are exclusive.

The natural beds are usually - though not always - productive enough to permit seed fishing from year to year. It is of paramount importance that fishermen catch a sufficient amount of seed to relay their plots. The mussels mature within two years by which time they are dredged and transported to the national auction at Yerseke, the country's foremost shellfishing community with 45 of the 84 mainly family owned mussel firms. No single firm has more than a 7% share of the total annual production. Processing and marketing of mussels is almost entirely concentrated in Yerseke where the top four companies have a 50% share of mussel sales. Throughout the 1990s, up to and including the 1999/2000 season, the auction paid an average of Dfl 106 million to the producers, roughly 10% of the value of all fish landings in the Netherlands. The average net profit was almost Dfl 450,000 per firm. Some 80% of the mussels are for export, mainly to Belgium and France.

Sharp fluctuations in production characterise the industry due usually to the scarcity of seed mussels on the natural beds but also to harsh winters, ice drift and storms which cause low recruitment. High prices tend to compensate for lower production. However the continuation of mussel seed fishing despite declining productivity has led to misuse and the depletion of the natural mussel beds.

A dedicated PO was established in 1988. Only three cultivators opted out, refusing to sign the fishing plan. The PO has since petitioned for an

extension de régime, requiring non-members to comply with the fishing plans, but so far the Ministry has refused. The PO and the Fish Board negotiate with the Ministry over replacement of plots which have become unproductive due to siltation, land reclamation, hydraulic works or other cause. The state's aim is to optimise the use of existing plots rather than entertain any expansion. With demand far exceeding supply, there is scope for the industry to expand and remain sustainable but at the cost of diversity. A further increase in output would require more space and so reduce opportunities for other uses - or non-use - of the marine environment.

3.2 Cockle fishing

Cockle fishermen operate in the Wadden Sea, Eastern and Western Scheldt and the Voordelta. Since 1974 all those using mechanical gears need a licence; initially 36 were issued increasing to 37 in 1992. Licences are saleable and in 1993 their market value was estimated at around Dfl 1 million. Of the total 33 are owned by a handful of large companies and the remaining four by skipper-owners. Investments in the cockle fisheries are considerable. Nearly all cockle landings are exported, principally to Spain and Portugal, after being cooked on board or in the shore based canneries. Though fluctuating significantly, the Wadden Sea stocks average around 50 million kg with an annual production of 6 million kg of cockle meat deemed acceptable. Employment in the sector including canning and trade - amounts to some 300 persons. Skippers and crew are paid either a flat wage or on a commission basis.

Out of season the cocklemen will meticulously map the locations with particularly abundant stocks, returning to exploit these areas during the fishing season. Like the musselmen, cockle fishers experienced particularly poor seasons in 1990 and 1991 when, due to natural causes including low winter temperatures and heavy storms, stocks were very low yielding an estimated 4 million kg of cockle meat. Despite this fishing continued resulting in serious stock depletion, censure from both scientists and environmentalists and the closure of a large area of the Wadden Sea and Eastern Scheldt.

In their fishing plans, the cockle fishermen agreed to reduce their harvesting capacity by reducing the number of hydraulic suction dredges from two per licence to one. A cockleman holding two licences could scrap one of his vessels and retain two gears on the other. As a result the number of vessels in the cockle fleet was reduced from 37 to 23. Use of hydraulic dredges is also subject to restrictions, while sorting machines on board can ensure that undersized cockles are returned live to the sea. During

September, October and November, the active fishing season, cocklemen are permitted to fish four days a week, deciding among themselves where each vessel will operate in an attempt to disperse fishing effort for the benefit of the fishermen and the stocks. The dedicated cockle PO, formed in 1995 and which incorporates all cocklemen using mechanical gears, will censure anyone not complying with the fishing plan. Some who breached the rules in the early days were fined and one skipper was dismissed by his company for persistent non-compliance (Steins, 1997). Today compliance rates are high.

So far, co-management seems to satisfy all the parties involved except the conservationists. But whereas the musselmen fared reasonably well in the 1990s, cockle fishers have faced huge problems. In 1996 and 1997, probably on account of the harsh winter of 1995-96, the cockle stock remained below the threshold level of an estimated 12.6 million kg of cockle meat: suction dredging has been banned in 26% of the intertidal areas of the Wadden Sea and the cockle fishery in the Eastern Scheldt completely shut down. Since 1993, landings have fallen below 7 million kg, reaching as low as 1.4 million kg in 1997. Subsequently, catches have increased considerably and were close to 10 million kg of cockle meat in 1998 and 8 million kg in 1999. Some cockle fishermen have begun catching *Spisula subtrunca* within the 12 mile zone and in 1997 sixteen firms established a PO drawing up a fishing plan similar to that for cockle fishing. The fishery is closed from December to May but otherwise unregulated. Returns are, however, much lower than in the cockle industry.

In addition to mechanical cockle fishing, some fishers rely entirely on handraking which until 1989 was unrestricted. But since the number of licence applications rose to over 350 a drastic reduction in numbers became necessary to prevent disturbance of the intertidal areas. Non-transferable permits were issued to 84 professional, small scale cocklemen on the basis that they were earning at least half the minimum wage through cockling. Today there are 77 licence holders of whom 25 are active and 20 depend on cockling for their livelihood. Most full time and some part time cocklemen have organised themselves in an association which acts as an intermediary between their interests and those of the traders, state, conservationists and the mechanical harvesting sector. As of 2000, five non-mechanised cockle fishers have become members of the PO. One eighteenth of the TAC is allocated to the hand operators; when the TAC is low, as in most recent years, the full time handworkers are forced to find alternative sources of income. There is a strict segregation of the cockle grounds with the handworkers allowed to fish year round. Since 1992 the sector has operated under a fishing plan, drawn up by their own association, signed up to by 30 fishers, but lacking in means of enforcement. Those who have opted out of the plan are only permitted to fish in one designated area. Unlike the larger,

mechanised cocklemen, the handrakers have so far escaped the wrath of the conservation lobby.

3.3 Oyster production

For very many years oyster farming in Zeeland's coastal waters had been a lucrative business yielding between ten and thirty million marketable oysters each year. However, like cockles, oysters are vulnerable to low temperatures and following the drastically cold winter of 1962-3 a large proportion of the oyster stocks were killed. This, together with the threatened damming of the Eastern Scheldt, persuaded most to give up oyster farming. But the proposal to dam the Scheldt was abandoned in 1973 in favour of a storm surge barrier, leaving the nine surviving firms in a highly advantageous situation since they now leased nearly all the oyster beds. However, against the advice of the fisheries biologists, these firms decided to restock the beds with imported oysters from France which turned out to be infected with the parasitic disease, *Bonamia ostreae*. By 1980 the disease had affected stocks in the Eastern Scheldt and the state intervened to ban the cultivation of the European flat oyster.

Only in the Grevelingen, which had been dammed earlier but conserved as a saltwater lake, was the cultivation of *Ostrea edulis* continued. In the second half of the 1980s an annual yield of *circa* ten million oysters was harvested in the Grevelingen. New claimants demanded entry to the industry and after a political battle won their case. Since 1990 the state has rented plots to a total of 27 firms with rents, based on the estimated production value of the plot, yielding Dfl 1.3 million in state revenue in 1993. No new leaseholders are now admitted. Following the new fisheries policy in 1993, oyster plots have been redistributed. Earlier, in 1989, *Bonamia ostreae* was found to have spread to the Grevelingen: harvests declined sharply from around ten million to half a million oysters and this desperate situation continues to the present day although mortality from *Bonamia* appears to be on the decrease. Most of the oysters are exported to Belgium.

A profitable business can no longer operate on the basis of flat oysters alone. Another species - the cup or Pacific oyster (*Crassostrea gigas*) introduced in the 1970s - has proliferated in Zeeland waters and is now exploited by the existing oyster firms and 34 permit holders for the oyster fishery in the common area. Whereas flat oysters mature in six years, cup oysters are marketable in two years. In recent years, production has expanded from *circa* 10 million to 25 million oysters, even reaching a peak of 29 million in 1999. It is partly a capture and partly a culture fishery, but only the tenants of the cultivation plots are allowed to fish for oysters. The

value of cup oysters is considerably lower than that of the European flat oyster, but since they are more prolific they are also serious competitors for food and space. Most oystermen combine oyster farming and fishing with other fishing or shellfish farming activities. In the first half of the 1990s, the value of oyster landings averaged Dfl 14.8 million a year, but by 1998 it had dropped to Dfl 6 million. A dedicated PO was established the following year and has 28 oyster producer members; together they account for 90% of Dutch oyster output.

3.4 Shrimp fishing

Some 233 Dutch vessels are licensed to shrimp within the 200 mile EEZ; their number is declining. Shrimping is done mainly in the Wadden Sea where according to a policy statement issued in 1988 the number of licensed shrimpers is restricted to 98 at least until the year 2000. Today 90 licences are extant: of these 46 are for boats permitted to fish within the 3 mile limits and 30 within the 12 mile zone. Wadden Sea shrimping is a year round activity though fishing is permitted on only four days of the week and may not be undertaken at weekends. A further 18 fishermen with historic beam trawling rights are allowed to catch shrimps in the Eastern Scheldt but only for part of the year. To protect the juvenile flatfish stocks, the shrimpers must meet stringent bycatch requirements, using sorting grids to separate the juvenile fish from the target catch of shrimps. Wadden Sea shrimp licences are transferable, changing hands for around Dfl 150,000; those in the Eastern Scheldt are not.

Unlike the mussel and cockle industries described earlier, shrimping has been scarcely affected by the change in fisheries policy in 1993. No new restrictive measures have been introduced. Indeed, shrimping is generally held to have only a relatively low impact on the natural environment. In the early 1990s landings averaged around 8 million kg rising to over 10 million in the middle years of the decade when the total value exceeded Dfl 60 million. In 1999 11 million kg was landed with a value of almost Dfl 85 million. Although shrimp processing is an important activity in the Netherlands, with Dutch firms handling around 60% of all European landings, most of the market for shrimps lies abroad.

Wadden Sea shrimpers are organised in the *Nederlandse Bond van Garnalen Kustvissers* (Dutch Union of Coastal Shrimpers); other shrimpers are members of the *Visserbond* (Fishermen's Union). Most also join local or regional POs. The advantages of PO membership include not only access to minimum landing price schemes but also entry to the Biesheuvel self-management groups in the case of vessels with quota allocations for sole,

plaice and roundfish. Individual shrimpers are not required to sign an agreement with the PO (as is the case with mussel and cockle fishermen) but are still subject to the discipline of the PO and can be fined for infringement of PO rules. A problem of freeriding occurs where non-members derive the benefits of a well regulated market without being subject to the PO's rules of engagement. As with the mussel fishermen noted above, there is a strong feeling among PO members of the need to extend PO rules to cover non-members.

One of the problems facing the full time shrimper is the tendency for the much larger cutter vessels to switch to shrimping when their demersal catch quotas are low. Quayside prices tumble when landings are significantly increased. Moreover, the cutters, not exceeding 300 hp, permitted to fish both within and outside the 12 mile zone and with quota entitlements to flatfish and roundfish species, have the advantage of greater flexibility over the shrimp boats restricted to inshore waters as a result of safety regulations and thus dependent on a single species. Expansion of the cutter fleet's harvesting capacity does cause concern over the possible overexploitation of shrimp stocks in the inshore zone.

3.5 Other fisheries

One measure of the supreme importance of the four key inshore fisheries - mussels, cockles, oysters and shrimps - is the almost complete lack of attention paid to other fisheries occurring within the inshore zone in the various policy documents and the paucity of statistical data. As in other European countries the official statistics do not distinguish between offshore and inshore harvests. Nonetheless a considerable variety of species - including eel, sprats, grey mullet, bass, lobster and anchovy - are caught using a range of gears, including fyke and set nets, pots and weirs, *inter alia*, not to mention the digging of lugworm in the intertidal areas of the Wadden Sea. However, land reclamation and the construction of dykes and dams in the Wadden Sea area in the 1930s and in the Zeeland area from the 1960s onwards have had devastating consequences for such species as herring, anchovy, turbot, ray, brill, periwinkle and whelk which once featured quite prominently in the mixed fisheries of the small scale inshore fleets in the Netherlands.

4. INSHORE FISHERIES MANAGEMENT: AN EVALUATION

The characteristic diversity of the inshore fishing industry makes for difficulties in creating an overarching policy that meets with the agreement and compliance of all inshore fishermen, let alone non-fishing interests. The tendency in the past had been to support those sectors which contribute most to the economy. Thus for a long time the mussel industry was favoured over shrimping, while mechanised cockle fishing received more benefits than the handrakers. Since the late 1980s, however, the order of priority has changed: nature conservation interests are now given first preference. In response to trenchant criticism of the shellfish industry and the early trilateral agreements concerning the management of the Wadden Sea, the state systematically set out to reconcile natural values and economic activities in its approach to fisheries policy in the period from 1993-2003. Co-management regimes were proposed for the inshore and offshore sectors. Mussel and cockle fishermen were encouraged to establish their own POs and to draft fishing plans in order to arrive at a state of self-management. Only the shrimping sector stood exempt from this new approach.

Positive effects of fishing plans in the mussel and cockle industries include improvements in the quality of shellfish landed and structural rationalisation through the concentration of licences. Shrimpers also enjoy the economic benefits of a licensing system since new competitors cannot enter the business. Black boxes used by cockle and mussel fishermen enable close monitoring of their fishing activities; when fishermen are accused of illegal fishing computer registered information is used to identify the offender. Moreover, the decision to disperse the cockle fleet avoids over-concentration of fishing in particular locations. In the mussel sector, mussel seed is used more efficiently; with the introduction of seed mussel quotas, fewer mussels are planted on the plots yet efficiency has increased threefold - less seed has resulted in outputs not dissimilar to the situation prior to the introduction of the quota system (Steins, 1997).

There are negative effects, however, including financial losses from decreasing output overall and more seriously from closures in the cockle sector. Cockle fishermen receive no compensation for their economic losses and an increasing ambivalence about the new policy threatens to undermine its legitimacy. For both cockle and mussel fishers the traditional freedom to deploy their experience and skill in a competitive form of fishing has been replaced by a system of PO controlled rights and obligations. Significantly, the cockle fishermen now undertake the annual mapping of resource rich locations collectively rather than individually.

The licensing system privileges those presently working in the industry and obstructs the entry of newcomers. Thus the firms tend to remain within a

small network of kin: without the aid of family members who are vessel owners and licence holders, it is virtually impossible to become an owner operator. One major problem for the mussel industry is that not all musselmen are members of the PO and therefore do not have to comply with the fishing plans - a situation which can undermine the co-management regime where non-members can rely on alternative provisions made by the state. So far the Ministry has refused to grant an *extension de régime*. The same applies to the shrimping industry. Other than the exercise of informal social controls, no sanctions can be taken against those who undermine the formal agreements. Effective management would seem to require the government either to make PO membership obligatory, though this may contravene the articles of association, or to make the fishing plans binding on non-members.

The co-management regime operates within a framework set by government. It has increased the legitimacy of state-led policy, enabling an integrated approach to the management of coastal waters. Through their systems of self-management, cockle and mussel fishermen now perceive the government's approach as necessary and legitimate. Compliance with rules and regulations is high. They themselves refer to the period prior to the new regime as an irresponsible 'wild west' fishery. As long as the economic viability of their enterprises is not endangered, they are likely to accept the rules. But there is a potential threat: should they experience a prolonged period of financial recession, compliance will probably decline and pressures on the state institutions to relax the restrictive measures will increase.

There is another side to the success story. Many small scale entrepreneurs have been ousted from the industry while newcomers have failed to gain entry. There is, therefore, a large measure of social immobility, with most firms reliant upon occupational inheritance. The inshore industry now resembles a closed shop: outside the family networks, there are scarcely any new owner operators. Moreover, inheritance taxation creates difficulties for the survival of the family firm. The market value of quotas and transferable licences has become so high that only the wealthiest firms can afford to buy them.

5. EMERGING ISSUES: THE TENSIONS OF MULTIPLE USE

The key issues affecting inshore fisheries in the Netherlands are predominantly multiple use conflicts. First, in recent years conservation organisations have become stakeholders in the decision making concerning the inshore domain. They favour the non-utilisation of renewable marine resources and seek to turn areas like the Wadden Sea and the Eastern Scheldt

into nature parks where no human activities are allowed. As claimants to the marine domain they enjoy widespread popular support and have achieved considerable political clout. Secondly, multiple use of the inshore domain for fishing leads to conflict between groups of fishermen whose activities cannot be carried out simultaneously. Where exploiting similar niches fishing methods based on stationary gears (fyke nets, set nets, fish traps) cannot coexist with mobile gears (beam trawls, pair trawls, dredge nets). Similarly, mussel farming is carried out on private allotments in locations also preferred by cockle and shrimp fishermen and their modes of exploitation do not tally. Thirdly, inshore waters are increasingly used for purposes other than fishing and nature conservation. Holiday making, recreation, military activities, maritime traffic, dredging, oil and gas development, industrial and harbour construction and modern agriculture all interfere in some measure with inshore fishing and shellfish farming. The first two issues are considered in more detail below.

5.1 Fishermen v. environmentalists

Inshore fishermen have been subject to increasing interrogation by environmentalists regarding the impacts of their activities on marine habitats and ecosystems especially in the Wadden Sea where the scarcity of cockles and mussels in the early 1990s brought vehement criticism of the shellfish industry from the conservation lobby. The natural shellfish beds are seen as precious biotypes, but to satisfy the need for mussel seed and cockles fishermen must exploit them. The scarcity coincided with high mortalities among seabirds, especially eiders and oystercatchers: the environmentalists accused cockle and mussel fishermen of plundering the scarce supplies leaving nothing for the seabirds. Organisations including the Wadden Sea Association, Bird Protection and the World Wildlife Fund (WWF) sought legal action to prevent the state handing out permits to mussel seed and cockle fishers, but were unsuccessful. The sixth Trilateral Government Conference on the Protection of the Wadden Sea in Esbjerg 1991 decided on the permanent closure of large parts of the Wadden Sea for cockle and mussel fisheries. The Dutch fisheries minister had already decided to ban cockle fishing in the Wadden Sea for a prolonged period.

Subsequently the debate became mired in accusation and counter-accusation. Cocklemen, who had voluntarily agreed a reduction in fishing effort in 1992, in particular were vilified. According to the industry, fishermen always receive the 'disbenefit of doubt' (*NRC Handelsblad*, September 3, 1992), while the conservation lobby complained of the role of 'might as right' in respect of the fishermen's behaviour - self-imposed

restrictions were seen as mere window dressing. The highly emotive confrontation tended to obscure the scientific explanation for the natural decline in mussel stocks.

Claims for the protection of marine wildlife have been recognised. Since 1993, fishermen's organisations and state representatives, in consultation with environmental organisations, have agreed to restrict fishing in the intertidal zone. In addition to the voluntary closures of 5% of the cockle grounds and 10% of the mussel grounds, 26% of the intertidal zone in the Wadden Sea and 14% in the Eastern Scheldt are closed to shellfishing, while the fisheries sector and government agencies cooperate in the management of fishing elsewhere in order to guarantee a sufficiency of food supply for the seabird population whatever the state of the stocks. Although the environmental organisations agreed the new management scheme, the underlying tension still simmers: the environmentalists continue to argue for the closure of all intertidal areas to the fishing industry. According to Bird Protection

'We should introduce a moratorium and agree to abandon fishing for mussels and cockles for a period of ten years. We must reserve the beds for nature.'

(*de Volkskrant*, September 20, 1997)

For WWF the antidote to 'over management' of the Wadden Sea is to allow nature to take its course.

In contrast to the attempts to achieve consensus, some conservationists insist on steering a confrontational course in their attempt to frustrate the use of the inshore domain by shellfish fishermen and farmers. They can claim the tacit support of scientists at the Institute of Marine Research. Blame for the destruction of the natural mussel and cockle beds in the late 1980s and early 1990s is laid at the door of the fishermen and their deployment of suction dredges - significantly, the research was funded by the conservation organisations. The continued antagonism of conservationists is met with resentment by both fishermen's organisations and government officials.

'Though they claim not to oppose fishermen but policy, the effect is the same. Conservationists should well realise that they can achieve more with a policy for which there is support than with a policy that goes against the grain of fishermen.'

(Bert Keus, in *Platform* 1997, 13 (11): p. 8-9)

What is clear from the controversy is the intensifying distrust which has to be resolved before any truly integrated management approach can be

implemented. The eighth Trilateral Conference in 1997 reaffirmed the need for continuing efforts to conserve and protect the Wadden Sea and that the implementation of policies must be undertaken through cooperative dialogue with all stakeholders. Though fishermen's organisations and environmentalists may sit around the negotiating table, the latter appear unwilling to relax their aspirations. They have rejected the positive evaluation of the current policy undertaken in 1998 and sought legal action in the European Court to reverse the policy, but to no avail. For their part, mussel and cockle fishermen are also disappointed with the policy evaluation, pointing out that they are only allowed to fish in 3.5% of the Wadden Sea - a restriction which has cost them millions of guilders in lost income.

5.2 Fishermen divided

Musselmen confront shrimp fishermen in the north over the privatisation of shellfish plots which renders multiple use impossible. Since the 1950s shrimping territory has been drastically reduced. Shrimpers resent the fact that Zeelanders can plant mussels in 'their' territory. In 1994, Texel and Wieringen shrimpers had to relinquish 470 ha so that the state could allocate new mussel plots to replace unproductive ones. The shrimpers were offered compensation: some accepted while others contested the situation in court and lost. Musselmen have also offered to buy out shrimpers or pay compensation from their own funds to help shrimpers convert their boats and obtain permits to fish beyond the 12 mile limits.

Cockle fishers have recently attempted to expand their own areas of operation by occupying unworked mussel plots. Approximately 1,000 ha have been officially reallocated as a reciprocal for the allocation of new mussel plots. In their turn handrakers have struggled against the mechanised sector in terms of access to cockle grounds finally convincing the state authorities to reserve certain areas for their exclusive use. Meanwhile there is tension between Zeeland musselmen and oyster farmers over apparently unused oyster beds lying fallow in anticipation of the eradication of *Bonamia*. Quarrels have also occurred between oystermen who survived the collapse of stocks in the 1960s and those who decided to quit in the expectation that the Eastern Scheldt would be closed but felt cheated when the government later reversed its plans. Oystermen who had originally worked the Grevelingen but opted for mussel plots in the Wadden Sea or eel fishing rights in Grevelingen by way of compensation were aggrieved to see former competitors harvesting oysters in what they considered to be 'their' fishing grounds. After several legal actions, judgement was finally decided

in 1987 in favour of allocating plots in the Grevelingen to 15 oyster firms - since when no new tenants have been admitted. One of the certainties of privatised shellfish farming is that established firms will invariably oppose the entry of newcomers and may resort to litigation to defend their rights.

6. CONCLUSIONS

Modern shellfish production, such as that dominating the inshore fisheries in the Netherlands today, implies an increasing level of intervention by man, which in turn leaves little room for multiple use. Success in shellfish farming is usually achieved at the cost of other fisheries, through the exclusive occupation of marine space formerly shared with other fisheries. Moreover, privatisation implies the selfish protection of individual interests, the rejection of claims by potential new entrants and can lead to the marginalisation of small scale fishers. These internal conflicts and problems of equity need to be solved or friction will increase. External pressures resulting mainly from permanent or seasonal urbanisation - until now effectively restrained by vigorous physical planning - cannot be held back permanently. The moratorium on oil and gas exploration in the Wadden Sea may be lifted in the future and it will be surprising if the shellfish industry does not have to cede some of its territory to tourism development at some point in the near future.

Apart from internal problems of social equity, monoculture can also lead to ecological issues - a point forcefully recognised by the environmental lobby. Considerable fluctuations in natural stocks can occur without any apparent relationship to stock recruitment. The dilemma is that shellfish cultivation can enhance production, but only at the cost of ecological diversity. Carelessness on the part of a few users or forces beyond man's control can seriously deplete the common resource and erode the collective interests of all stakeholders. In recognition of these dangers various partners in the Netherlands have come together to create a unique system of co-management intended for the mutual benefit of fishing and wildlife conservation. The legitimacy of this system is, however, at risk of being undermined either through persistent denigration of its achievements by certain environmental groups or as a result of persistently poor economic returns caused by what some may consider to be an overregulated inshore fishing industry.

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