

A case study of abalone poaching in South Africa and its impact on fisheries management

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In South Africa, as fisheries management continues to move through a transformation process, it is confronted with a myriad of uncertain scenarios which have the potential to jeopardize its objectives. One such situation, which has proved to be threatening to the sustainable utilization of marine resources, is illegal exploitation. In recent years, South Africa has witnessed an increase in poaching activities, with a particular emphasis on the lucrative abalone industry. This fishery has existed successfully for almost 50 years, with an average annual catch in the past 10 years of 615 tonnes. Dramatic cuts in the total allowable catch since late 1996, with up to 90% reductions in key areas, have placed the long-term sustainability of the fishery in question. A criminological study of abalone poaching in a community where both the legal and illegal industries are centred has clearly illustrated both the severity and the complexity of the problem. Negative ramifications have spread through several spheres, incorporating environmental, social, economic, and political dynamics. From the perspective of the community, where poaching is rife, this study highlights the impact poaching has had on a local level, representing significant obstacles for successful fisheries management. The de-legitimization of regulations, the mistrust and corruption of authorities, the bitter and often violent conflict between resource users and the increased fear within the community exacerbate the challenges for cooperative management structures. Although there has been a historic reliance on law enforcement and crime control to address the problem of illegal exploitation, it has been recognized that a shift in governance needs to take place. However, such a shift will require extreme measures that consider the broad issues discussed above.

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Introduction

The abalone industry in South Africa has been reliant on a single commercially exploited species, *Haliotis midae*, although a second species, *H. spadicea*, is also fished recreationally. Up until the early 1990s, the fishery was almost totally commercial, but with a small recreational component. Subsequently, abalone farming has been initiated in South Africa (Genade *et al.*, 1988; Cook, 1990, 1998). The sector represents a capital investment of some R70 million (US\$11.7 million in 1999), with 12 abalone farms and one experimental ranching operation spread widely along the South African coast (Sweijd *et al.*, 1998).

Currently, the abalone fishery is based on a zone system with a total allowable catch (TAC) distributed among each of the eight zones. The most intensively fished areas have traditionally been zones A-D (Fig. 1), with zone C located adjacent to the coastal community of Hawston.

The history of the fishing sector is complex (Tarr, 1992; Stander, 1995). Briefly, regulation of the industry was introduced in 1970 prior to which no limit on the harvest of abalone was in place (Fig. 2). In 1983 a whole mass quota system was introduced and the harvest remained relatively stable at around 650 t. This was the case until the 1996/1997 season, when a downward adjustment to 550 t was made to compensate for

over-exploitation (Stuttaford, 1997). This adjustment was effected primarily in zone C, where the TAC was cut by 90% (Fig. 3).

In terms of the regulations of the fishing sector, divers (who have exclusive rights) are permitted to use surface air supply to fish abalone and, since 1984, a select group of divers has been allocated (disputed) catch entitlements. They are required to sell their catch to those processing companies that hold separate processing and export permits (Tarr, 1992).

While the abalone fishery is among the smallest in South Africa with respect to yield, it is the most lucrative in terms of unit value (Stuttaford, 1997). In 1999, live unshucked abalone fetched some R192 (US\$32.00) per kg whole mass in the Far East (which translates to approximately R580 per kg for the meat). Although the value varies according to the type of processing, the fishery has a minimum annual gross value of around R70 million and employs some 300 people directly (D. Van Rensburg, Abalone Packers Association, pers. comm.). Recent reductions in the TAC of around 100 tonnes represent a loss of at least R13 million to the fishing industry. The high value of abalone, together with the fact that it lives in the shallow intertidal, makes it a prime target for illegal exploitation.

With poaching activity continuing unabated in South Africa, important questions and challenges are raised in regard to fisheries management. Alternative methods of regulation need to be considered, and these have to be embedded in the socio-political context of South Africa and explore the international shift taking place in fisheries management. For example, methods such as co-management, which endorse shared management responsibility between resource users and the state, are being investigated in favour of top-down management strategies. Here, we attempt to explore the extent to which poaching activity threatens the transition to joint fisheries management. By investigating the case study of abalone poaching in South Africa, it is possible to begin to explore the possible obstacles this activity poses to sustainable resource utilization and the inclusion of users in management processes.

Methodology

A criminological study was conducted in 1995 and centred on the coastal community of Hawston situated some 130 km east of Cape Town (Fig. 1). The community was identified for the study because of its concentration of both legal and illegal divers exploiting the abalone resource. Although it is not the only location where poaching of marine life in South Africa occurs, controversy around the issue has centred there. Violent confrontations between members of the community and the police in 1993 led to controversial

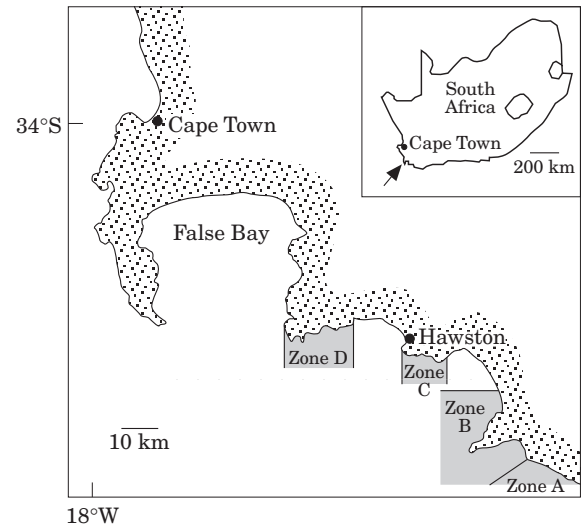


Figure 1. Location of Hawston and abalone fishing zones A–D on the South African coast.

discussions about the causes of over-exploitation and potential strategies to prevent resource decimation. The methodology for the study involved two years of qualitative interviewing, observing, and interacting with residents of the community, including two months of extensive residential fieldwork. The findings are presented in an analysis of poaching, the impact on the resource and the socio-economic and political ramifications.

Results

Analysis of poaching

Poaching is one of four distinct forms of exploitation that impact on the abalone fishery. The other three sectors are recreational, subsistence, and commercial. Poaching refers to any activity which contravenes industry regulations outlined in the Marine Living Resources Act of 1998 (Anon., 1998a). The various infringements range from diving in restricted areas to exceeding the daily catch limit (Anon., 1998a). The latter violation can refer to a minor offence that involves an excess of one or two animals by recreational divers. However, it can also refer to a more serious offence that involves in excess of several hundred kilogrammes by highly organized poaching syndicates (South African Police Service, 1997). It is this latter group of new participants in the industry that attracts the greatest controversy and highlights the problematic issues involved in regulating marine resources. This “informal sector” encompasses the people who exploit the abalone resource as a means of supplying the growing black market (Hauck, 1997). The involvement of syndicates in supporting the high demand for abalone products in the Far East has

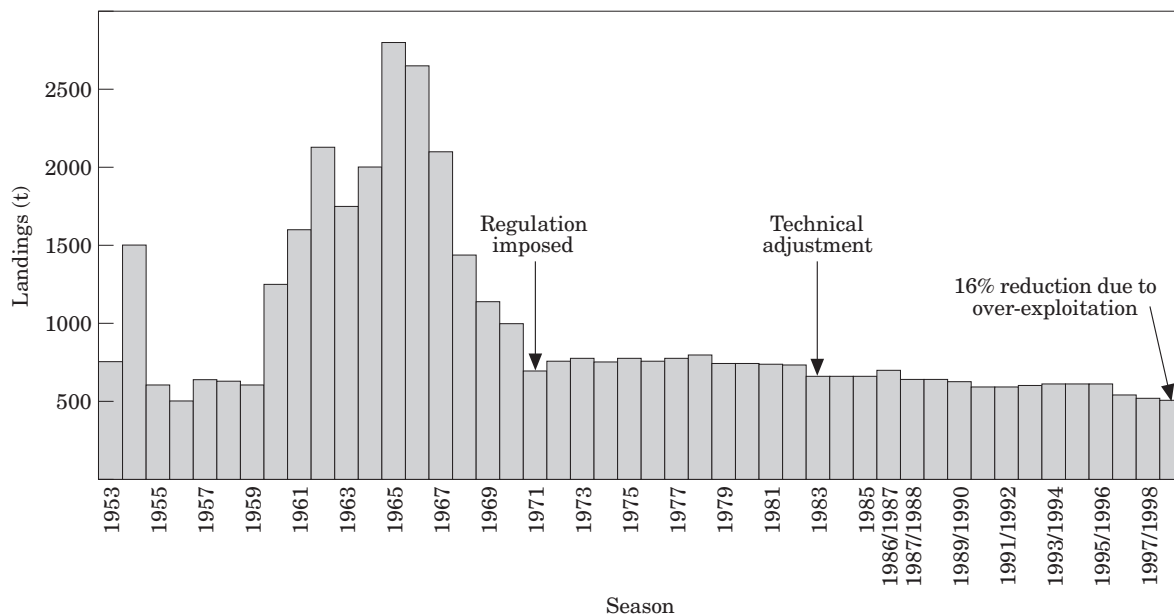


Figure 2. Landings of *Haliotis midae* (whole mass), modified from Tarr (1989). The yield since 1970 represents quota limits applied to the fishery from that year.

exacerbated the problem and has resulted in devastating effects at local level.

Impact of over-exploitation on the resource

Haliotis midae is an important grazer in the nearshore subtidal marine ecosystem, especially in the kelp beds of the south-western Cape, where it occurs in highest densities (Tarr, 1989; Fig. 2). Being a broadcast spawner and dioecious, it depends on the proximity of conspecifics for successful reproduction (Tarr, 1989). Furthermore, it has a commensal relationship with sea urchins (*Parechinus angulosus*), juvenile abalone acquiring a refuge from predation by fish and rock lobsters under the spines of the urchins (Day, 1998).

Management of the abalone resource is based on effort-limitation with a minimum legal size (MLS) of 10.16 cm shell breadth, bag limits, TACs, closed seasons, and reserves as some of the measures in place (Anon., 1998a). The MLS, which is based on size at sexual maturity of the local population, allows for 3–4 years of protected spawning before the animals recruit into the fishery (Tarr, 1992). The rationale behind this limit is that, because the size of abalone generally increases with depth (Tarr, 1989), sexually mature, but legally undersized, animals tend to live in aggregations that increase the likelihood of successful spawning (McShane, 1995). Evidence from the size composition of confiscated abalone samples indicates that the majority of poached abalone are undersize (Fig. 3). This, along with the fact that the aggregations are found in relatively shallow

water, demonstrates the vulnerability of the abalone broodstock to poachers.

Before poaching activities began to spread along the coast, the most heavily poached area within the distribution of the species was in zone C. This is evident from police records, catch per unit effort (c.p.u.e.) data and the associated drop in the allocation for this zone as a means of compensating for the increased illegal harvest (Fig. 4). Independently, a biological problem has resulted in the failure of recruitment of abalone in this intensively fished region (Tarr *et al.*, 1997). The population of urchins and abalone recruits has collapsed as a result of what is believed to be increased predation on urchins, and possibly also the abalone recruits, by rock lobster (*Jasus lalandii*). While evidence of this phenomenon has not yet been manifest in the fishery, the near extinction of adult broodstock in zone C, together with the failed recruitment in zones C and D, poses a major threat to a fishery recovery there.

Over-exploitation of abalone, and the resulting threats, is not limited to South Africa. In California, over-exploitation has caused a decline in stocks and the possible extinction of at least one species, *Haliotis sorenseni* (Tegner *et al.*, 1996; Davis *et al.*, 1998).

Socio-economic and political ramifications

In addition to the biological impact of poaching, there are other significant consequences. Social upheaval was a result of conflict and competition between commercial divers and poachers living in the same community. In

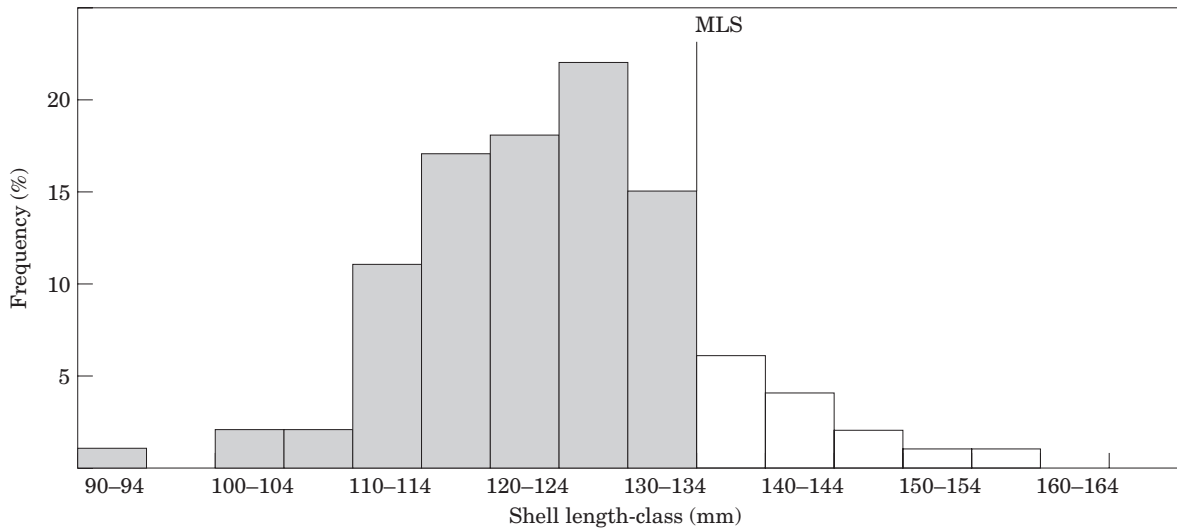


Figure 3. Frequency distribution of a confiscated consignment of abalone poached from zone C near Hawston. MLS=Minimum Legal Size. The sample represents many confiscated samples that comprise mostly undersize animals (courtesy Sea Fisheries Research Institute). n=127.

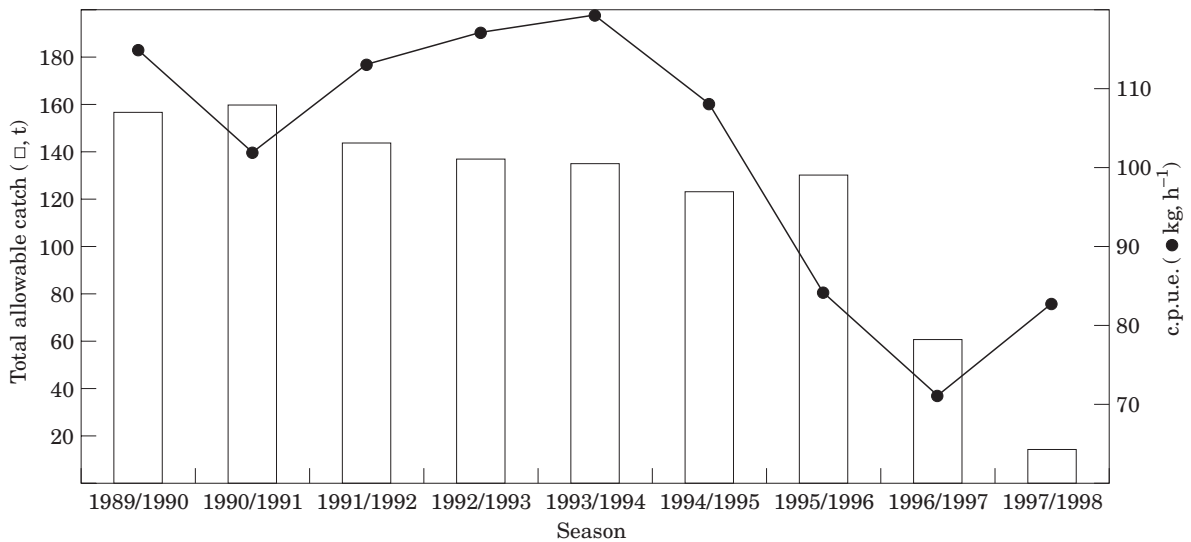


Figure 4. TAC and c.p.u.e. for the legal fishery in zone C from 1989 to 1997. The recent drop in c.p.u.e. reflects the depletion of the resource in this zone which has been targeted by poachers. Consequently, the TAC for this zone was reduced by 90% from 1995/1996 levels, which amounts to a 16% drop for the overall TAC (courtesy Sea Fisheries Research Institute).

addition to generating animosity and violence, the polarization had a direct impact on community decision-making and development. Other social issues include the increased involvement of the youth in poaching activities, more money to be used for drug and alcohol abuse, encroachment of gangs and related criminal activity, and the quality of life being undermined as local residents fear for their lives.

Poaching also poses an economic threat by flooding the international market with illicit abalone, so increas-

ing competition for the legitimate industry. If this trend continues, the commercial divers and exporters of abalone in South Africa, as well as those in the burgeoning mariculture sector, could suffer irreparable economic damage. In addition, if the abalone resource continues to decline towards ultimate collapse, there will be severe economic repercussions in coastal communities. Whether directly or indirectly dependent on the abalone fishery for their livelihoods, people would need to seek alternative forms of income in an already bleak economy.

The political underpinnings associated with poaching activity are complex and require a historical analysis (discussed in greater detail in Hauck, 1997). Illegal exploitation has raised important issues about access rights and also questions about political injustices of the past. This is particularly relevant to a community such as Hawston, which was segregated and oppressed under the repressive Group Areas Act of 1966, which declared Hawston “an area for occupation and ownership by members of the Coloured Group” (Anon., 1972). This racial composition continues today, as 99% of Hawston’s population of 4470 people are defined racially as “coloured” (Centre for Statistical Services, 1991).

Abalone poachers from the community argue that they have been denied legal access to abalone diving rights unjustly, forcing them to continue poaching rather than to become legitimate members of the industry. Irrespective of whether this belief is true or not, some poachers became activists and exerted political pressure during the development of the new fishing policy for South Africa. It may well be that this pressure contributed to the wording of section 2 (j) of South Africa’s new Marine Living Resources Act of 1998* (Anon., 1998b) and to the following statement in the final report of the Access Rights Technical Committee: “With political changes there are expectations that access rights should be broadened, particularly to redistribute access to those people previously denied rights because of political considerations” (Access Rights Technical Committee, 1996).

The complexity of the problem

Illegal exploitation is intertwined with issues that move beyond the traditional methods associated with resource management and consists of numerous complexities that threaten sustainable utilization. First is the involvement of a broad spectrum of role-players, ranging from those at the water’s edge to highly organized syndicates. Whether involved as divers, assistants, bag carriers, look-outs, transporters, or buyers, both employed and unemployed people are involved in a hierarchy of poaching activities. Therefore it is difficult to define who is a poacher; those involved represent a wide variety of socio-economic, racial, and professional backgrounds.

Second, the complexity of the problem is enhanced when one tries to understand why people become involved in illegal exploitation. When this question was explored in the Hawston community, three themes were

identified: need, greed, and politics. Local residents saw the poverty and under-developed living conditions in the area as important issues related to poaching. Some people were involved in poaching because it was a mechanism by which to feed their families and to survive a desperate situation. In addition, there was great consensus in the community that many people were involved in illegal exploitation because of the large amounts of money associated with poaching. Elements of greed crept in as people with legitimate employment either quit their jobs or subsidized their incomes through the lucrative poaching industry. Third was the political issue. It was largely the poachers who argued that policies associated with access rights and redistribution needed to be revisited as a matter of urgency. Evident from these responses is that the people most affected by poaching recognized that the issue was not simple, but incorporated complex dynamics relating to poverty and the economy, greed and money, and politics and history.

Lastly, that which fuels ongoing illegal activity and further enhances the complexity of the problem is organized crime. Responsible for supplying the high demand for abalone products to the Far East, syndicates feed on the lucrative illegal market. In China, abalone is believed to have the esoteric properties of delayed senility and increased fertility. Also considered an aphrodisiac, the demand for abalone products dictates a high price, with the Chinese black market paying a minimum of US\$65 per kg of abalone (Provincial Intelligence Production Unit [PICOC], 1997). With technological and financial support, these syndicates prey on the disadvantaged position of coastal communities to sustain their profitable trade. As a result, in addition to the wide variety of role-players and the intricacies at local level, this international criminal element introduces additional complications – the rapid increase of organized criminal activity in South Africa is discussed in Gastrow (1998) and Shaw (1998).

Discussion

Impact on fisheries management

The underlying complexities and intertwined dynamics involved in abalone poaching raise uncertainty about future regulation of the abalone fishery. Illegal exploitation is spreading to new areas along the coast, the resource is becoming decimated and poaching is in fact becoming more organized over time. As a result, there are significant obstacles to successful management of the resource, including threats to new initiatives that involve resource users in a shared management arrangement. First, the lucrative nature of the abalone product encourages short-term gains over long-term interests. By diving an average of 40 kg in 2–3 h and receiving a minimum of R45 per kg, the financial incentives become

*This section states: “The Minister and any organ of state shall in exercising any power under this Act have regard to the following objectives and principles: . . . (j) the need to restructure the fishing industry to address historical imbalances and to achieve equity within all branches of the fishing industry”.

evident. That yield (R1800) is almost equivalent to the average household income of R2101 per month in the Hawston community (Schutte, 1993). As one schoolboy explained, he can make more money in a couple of days than his teachers make in a month. As a result, the long-term objectives of co-management are forfeited in favour of immediate financial return.

A second obstacle posed by poaching activity is the involvement of syndicates. This moves the problem beyond resource management into the realm of organized criminal activity. Syndicates fuel illegal exploitation by providing a lucrative incentive to poach and the means to export the product overseas. In addition, these criminal organizations have an important impact on the community. Local residents live in a state of fear and intimidation if they pose a threat to illegal operations. As a result, many members of the community are afraid to oppose poaching and are reluctant to become involved in attempts to address it.

Poaching activity has also impacted on fisheries management by being utilized as a political tool. Poachers have highlighted the inequities in resource allocation and have utilized the argument to justify their activities. By de-legitimizing regulations, they have pressured central government to address the injustices of the past. Amnesty has been raised as a potential option within fisheries management, and poaching has been highlighted as a significant tool for acquiring access rights. However, even if access rights are redistributed to new entrants, not all "poachers" can benefit. The resource is simply not big enough.

A fourth obstacle to negotiated and inclusive fisheries management is the bitter conflict which poaching has generated between the various stakeholders. Animosity has escalated to violent proportions where both commercial divers and poachers compete for their livelihood. This has led to what is known as the "abalone war" and has also contributed to violence between authorities and the poachers (Argus, 1994, 1996; Cape Times, 1995). This in turn has caused deep-rooted tension and division within the community, which pose a serious threat to local participation and negotiation in the management process.

Yet another obstacle to fisheries management, which is directly related to poaching activity, is corruption of the authorities. This was recognized, both within the community and within law enforcement agencies, as a serious hindrance to the success of diminishing poaching activities (Hauck, 1997, 1998). Whether it is turning a blind eye or receiving financial or other payments to assist in illegal activity, corruption is becoming an increasing concern. In addition to the detrimental impact this has on the law enforcement objective of targeting organized crime (Shaw, 1998), it also hinders the development of relationships between community members and state officials. Corruption gener-

ates mistrust and scepticism, which in turn can lead to an unwillingness of local residents to cooperate and compromise with other stakeholders.

Although traces of these problems are witnessed in other management systems, where resource users utilize opportunistic behaviour, manipulate the political structure, and generate conflict and mistrust among the various role-players, the situation is exacerbated in the Hawston area by an active criminal element. With an ongoing demand for poached abalone, the rewards are high enough for poachers to continue their activities and to contribute to intensified fear, animosity, and corruption within their local communities. Quite simply, the abalone resource faces the possibility of commercial and biological collapse if drastic measures are not immediately pursued.

A shift in fisheries management

Internationally, fisheries management has often been the responsibility of central government, which administered various regulations based on biological models in an attempt to manage its marine resources (Hilborn, 1992). Therefore, it was the role of the state to define the rules and regulations of fisheries exploitation, maintaining the right to enforce and control fisheries activity. However, government-centred regulation has failed in preserving a wide variety of fisheries and has contributed to increased conflict and antagonism between the stakeholders (Townsend, 1995). As a result, issues of governance have become a factor of growing importance in resource management (Ostrom, 1990). Emphasis has been placed on the shift in responsibility away from the state to local communities most affected by resource utilization (Pinkerton, 1989; Pinkerton and Weinstein, 1995). The philosophy changed from excluding people from their local resources to promoting shared management responsibility, encouraging community participation in the ownership, management and enforcement of sustainable resource utilization.

This theoretical shift in conservation and management strategies has been a response to ongoing resource over-exploitation. It has been argued that the exclusion of resource users and other stakeholders from management decision-making, combined with draconian law enforcement, met with little success in achieving resource sustainability (Peluso, 1992; Stocking *et al.*, 1995; Ite, 1996). As a result, in the area of fisheries, the late 1980s witnessed the exploration of co-management arrangements as an alternative to independent state control (McCay and Acheson, 1987; Jentoft, 1989; Jentoft and Kristoffersen, 1989; Pinkerton, 1989). The assumption was that fishers would not obey regulations which they perceive as illegitimate (Jentoft, 1989). Therefore, it was argued that the long-term protection of natural resources did not demand increased law enforcement,

but required more effective resource management through user participation. In other words, there was a shift away from apprehending the offender to promoting biodiversity, sustainable resource utilization, and the inclusion of resource users (Middleton, 1995).

The transition to joint management responsibility is also being considered in South Africa as an alternative to existing strategies of state centralization, both at theoretical (Hutton *et al.*, 1997; Hutton and Pitcher, 1998) and practical levels (Harris *et al.*, 1996; Sowman *et al.*, 1996). Management arrangements and regulation tactics have been explored throughout the development of the Marine Living Resources Act (Anon., 1998b; see also Access Rights Technical Committee, 1996) and the Green Paper on coastal policy (Coastal Management Policy Programme, 1998). In addition, attempts are being made in South Africa to endorse coastal and fisheries co-management arrangements (National Workshop on Coastal and Fisheries Co-Management, 1997).

However, although shared management responsibility is supported, the abalone fishery highlights important obstacles that need to be considered; for instance, that there are many people who believe they deserve access to the resource. Not only does this raise complicated allocation issues, it also raises questions of compliance in an industry with a lucrative resource. Nevertheless, management strategies need to be investigated that include local participation in making decisions about access, and the resulting institutional arrangements. Joint management is, in fact, encouraged as a means of achieving legitimate rules and regulations (Pinkerton, 1989; Ostrom, 1990; Hutton and Pitcher, 1998). In addition, co-management arrangements have been implemented to assist in resolving conflict and building relationships between resource users and the authorities (Pinkerton, 1989; Hutton *et al.*, 1997). Jentoft (1989) argues that regulations established through shared decision-making are more often a means of avoiding conflict and ensuring fair access than in the name of conservation or resource protection. Although the establishment of co-management arrangements is more complex in a fishery that includes an organized criminal element, and in a country undergoing political and economic transition, the principle of shared responsibility should not be abandoned. A proactive solution is required that merges the top-down and bottom-up approaches into an effective strategy of intervention.

Where to from here?

Creative strategies need to be developed to co-ordinate two key elements. One is the identification of, and intervention in, the illegal trade perpetuated by organized crime; second is the focus on community involvement in crime prevention, enforcement, awareness,

resource ownership, resource management, and local governance. Law enforcement has a role to play in intelligence, border control, policing, and monitoring of the illegal trade. In order to target syndicates that are providing the demand for abalone markets, smuggling routes need to be identified, *modus operandi* understood, and money-laundering targeted. However, confrontational crime-control methods at ground level, within communities, will not be the most effective means of diminishing poaching activities. In fact, the problem is often exacerbated through this approach. Community-based intervention, through strategies that encourage shared management responsibility, should be considered a more effective and long-term approach. Although important obstacles to this form of resource management have been identified in this case study, measures to address them are embedded in partnerships and shared initiatives with other role-players. Both policing and co-management strategies need to be developed at different levels through parallel processes. Resource users and state authorities will need to sit together to establish their common interests of protecting the resource and combating crime.

Recent developments have occurred in both of these areas. For example, the Organized Crime Unit of the South African Police Service (SAPS) has developed a specialized Marine Investigation Unit, based in Cape Town, to target the syndicates involved in the illegal trade of marine products. The recognition of marine poaching as a priority crime in South Africa in 1997 (South African Police Service, 1998) demonstrates that it is considered not only an environmental problem, but also a security risk involving organized crime, illegal trade, gang activity, and violence. In addition, fisheries management in South Africa has witnessed positive developments through its new Marine Living Resources Act (Anon., 1998b). Although the policy process itself was fraught with controversy, there are elements of the Act which relate specifically to marine resource redistribution and allocation [e.g. section 2 (j)]. Although co-management arrangements were not legislated in the Act, practitioners are beginning to identify and implement such systems in South Africa (National Workshop on Coastal and Fisheries Co-Management, 1997).

Although these are positive developments in diminishing poaching activity, neither will prove successful if they are implemented in isolation. It is absolutely essential to recognize that poaching and the illegal trade of marine products will not be diminished through a single approach. In fact, the very structure of these activities, which range from local abalone divers to international syndicates, emphasizes the importance of developing different, but integrated, methods of intervention. Not only do new approaches need to be considered for the various aspects of the problem, but partnerships need to be forged between the initiatives.

Conclusion

What has become evident through this case study of abalone poaching is that it is not a problem that can be understood and addressed solely through top-down methods of fisheries management. This criminological study has highlighted the importance of gaining a broader understanding of poaching in order to comprehend it in its full complexity. Similarly, the recognition of poaching as a crime should not identify it as a problem to be addressed solely by law enforcement officials. On the contrary, the resource management issues and the criminal issues need to be identified and differentiated so that cooperative and balanced strategies of intervention can be developed.

Although there are problems and obstacles which need to be considered within state mechanisms and community structures, fisheries-management practices need to adapt to the threats of poaching in order to diminish it. This shift in management philosophy requires co-ordinated and shared decision-making to take place in order to achieve the successful regulation of the abalone resource. If bold and creative steps are not taken in the immediate future to implement these partnership arrangements, the devastating effects of poaching will be evident through the inevitable collapse of the South African abalone fishery.

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