

Avoidance Strategies and Governmental Rigidity:

The Case of the Small-Scale Shrimp Fishery in two Mexican Communities¹

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Hardin's "tragedy of the commons" has been one of the most popular theories used in explaining the problems of fisheries resources (Hardin 1968). Basically, the problem of overcapitalization, overexploitation and overexpansion that typify many of the world's fisheries today are blamed on their status as common property resources. The most accepted recommendation by fishery managers to deal with these problems has been to specify property rights to the resource in such a way as to limit the level of fishing effort. Governmental intervention has been perceived as crucial to "impartially" define those rights by regulating access to resources and the behavior of individuals (e.g. J. Crutchfield 1982). Accordingly, states have spent enormous efforts at devising regulations to limit access in the belief that such efforts will lead to greater conservation. All over the world, however, we find that regulatory strategies developed by governments have failed (J. McGoodwin 1990). One of the critical issues in explaining such results concerns the high enforcement costs and intrinsic difficulties involved in supervising the exploitation of marine resources (L. Anderson 1986; J. Sutinen and Hennessey 1986).

It is surprising to find that little attention has been paid to how local populations respond when faced with externally imposed regulations designed to restrict their use of resources (see T. McGuire and M. Langworthy 1991). This is exactly what I attempt to explore here through the analysis of avoidance strategies developed within the small-scale shrimp sector in two Mexican fishing communities: Puerto Magdalena and Paraje de Unión². In both communities a wide range of illegal behavior is found: black market activity, use of illegal gear, entry violations, infringement of areal and seasonal closures, and open political defiance.

1. This article is the result of one year of field research (part of 1991 and 1992) for my doctoral dissertation in two fishing communities of the Pacific coast of Mexico. It is based on qualitative data collected through a variety of ethnographic techniques such as participant observation, in-depth interviews with key informants, and focus group interviews. I would like to thank several fishermen and their families, the Tacalos, the Olivas Grajedas, and the Flores, for their help in the field and their enduring friendship. There are many others that I would like to thank, but due to the illegal nature of the activities described here, I cannot mention their names. I also thank Dr. Thomas R. McGuire for his encouragement and the many ideas which served as the basis for this article. Finally, I want to gratefully acknowledge the support of the Bureau of Applied Research in Anthropology at the University of Arizona for contributing in the support of my field research.

2. The names of the communities used in this article are pseudonyms to protect the privacy of those involved.

More specifically, I intend to examine what influences fishermen's decisions to engage in illegal activity. Is there an overriding concern for profit maximization, thus an emphasis on individual calculation of costs and benefits associated with noncompliance? Or is there a greater concern for community interests--such as fishermen breaking the rules as an attempt to secure long term community access to resources? These questions address a long standing debate within the social sciences over whether or not individual rationality thwarts the possibility of collective action when individuals are trying to achieve collective benefits in commons situations (see E. Ostrom 1990). Although this debate has been generally addressed within the context of legitimate decision making, here I refer to it within the context of illegal activity. Do individuals jointly break the rules? And, if so, are there any incentives to achieve collective interests by avoiding externally imposed regulations?

I will begin with a brief review of current enforcement and avoidance theories (EAT) developed in an effort to understand the effectiveness of regulatory enforcement in the fisheries. I will then discuss the importance of the role of the Mexican government in the development of its shrimp industry and the high degree of dependence of local fishermen on government regulations and policies. Finally, I will examine the incentives, justifications and goals involved in different types of rulebreaking and discuss their significance in terms of management of fishery resources.

Enforcement/Avoidance Theories

Economists have recently begun to develop a theoretical framework instrumental in understanding the relationship between levels of regulatory enforcement and levels of compliance--and noncompliance. Under regulatory enforcement, individuals face an additional constraint. punishment is costly and will either discourage the individual from engaging in illegal behavior (L. Anderson 1986), or will create "disharmonious incentives." That is, "each fisherman has a competitive incentive to defeat the effort-limiting rule by building bigger boats, misreporting landings, and so on" (R. Townsend and J. A. Wilson 1987:319). Townsend and Wilson suggest that since traditional management systems have "built-in incentives that tend to defeat both conservation and efficiency objectives" (ibid.:320), regulatory schemes should focus on regulating market prices--fishermen will switch away from declining stocks as long as market prices for that stock do not go up.

Milliman (1986), as reviewed by McGuire and Langworthy (1991), stresses the extra costs undertaken by illegal fishermen in order to avoid detection: the more resources are invested in avoidance activities the harder it will be for regulatory enforcement to succeed, leading to an overall waste of resources. In extreme cases, Milliman suggests that even open access might be a better alternative, so as not to have fishermen undertaking unnecessary costs if they are going to fish anyhow. In terms of regulatory enforcement, some economists suggest that efficient enforcement does not mean absolute enforcement, as the costs of regulatory activities may be greater than the net benefits obtained from the fishery (T. Tietenberg 1984). In any case, the actual measurement of costs and benefits involved in illegal activity is an obviously difficult undertaking, as is the calculation of enforcement success (J. Sutinen and Hennessey 1986).

EAT does not give a straight forward solution to the problem of enforcement, but as McGuire and Langworthy (1991) suggest, a closer look at two of its fundamental assumptions may shed some light on how enforcement and avoidance issues in fishery

management should be approached. The first assumption is that the individual "rational actor" should be the unit of analysis. The second is that the incentives that guide individual behavior are the same regardless of regulatory enforcement: to try to maximize profits.³ From an anthropological point of view, these assumptions are problematic because by removing fishermen's decisions from their social and cultural context, they "[fail] to illuminate social process." (P. Peters 1993:1064). In addition, they imply that no interdependence exists among fishermen who fish in the same waters and for the same resources. Instead, fishers act alone, without concern for others, and are incapable of cooperating.

In the context of policy making, these assumptions have frequently turned into axioms, constituting a substantial limitation. Ostrom's observations about the assumptions behind the "Tragedy of the Commons" paradigm apply to EAT,

[W]hat makes these models so dangerous--when they are used metaphorically as the foundation for policy--is that the constraints that are assumed to be fixed for the purpose of analysis are taken on faith as being fixed in empirical settings, unless external authorities change them (E. Ostrom 1990:6).

Like the "Tragedy of the commons paradigm", EAT assume that:

Whenever one person cannot be excluded from the benefits that others provide, each person is motivated not to contribute to the joint effort, but to free-ride on the efforts of others. If all participants choose to free-ride, the collective benefit will not be produced (Ibid).

The inevitable prescription is that regulatory enforcement be undertaken by external institutions, be it the market or the state. This prescription, however, fails to address problems of regulatory enforcement encountered in empirical situations. How should rights over resources and disputes be settled in different contexts? How should enforcement officials be chosen, encouraged to do their job, and supervised? What rights have to be defined? Who will pay for the costs of excluding? And, more importantly from the point of view of this article, what happens to decision-making and resource management possibilities when the potential for cooperation is introduced into the analysis?

From a theoretical stand point, there have been various attempts at formulating a theory of collective action (see R. Axelrod 1984; E. Ostrom 1990; F. Runge 1986), "whereby a group of principals can organize themselves voluntarily to retain the residuals of their own efforts" (E. Ostrom 1990:24-25). A number of anthropological studies have provided empirical evidence that supports the concept of cooperation among fishermen in formulating regulations, enforcing them, and punishing those who break the rules (J. Acheson 1975, 1987; C. Bailey, D. Cycon and M. Morris 1986; F. Berkes 1987; J. Cordell 1974, 1989; B. McCay 1980; T. McGuire 1983; T. Panayotou 1982). Except for McCay's study (1984) of a New Jersey fishery, however, and McGoodwin's (1987) of small-scale shrimpers in Mexico, there is little documentation of fishermen cooperating to break externally imposed regulations. In McCay's case, fishermen cooperate to avoid regulatory

3. EAT's assumption that the profit maximizer, "rational actor" is the appropriate unit of analysis is by no means unique. It is also the basis of Hardin's "Tragedy of the Commons" and of neoclassical economic theory in general.

enforcement. Furthermore, rule breaking is so prevalent at a community level, that McCay refers to it as a "culture of piracy". McGoodwin describes cooperative behavior to break the law among pescadores libres (defined below) on the coast of Sinaloa, Mexico. For this group of fishers there is "...a consciously perceived need for cooperation and communication since technically all these men are comrades in crime" (1987:225).

As I will discuss next, the analysis of the small-scale shrimp fishery in Mexico has the potential to contribute excellent empirical material to aid in the formulation of a theory of collective rule breaking, one that includes the possibility of individuals jointly breaking the rules in an attempt to achieve collective benefits.

The Case of the Mexican Shrimp Fishery

As in the case of most commercial fisheries, central government authority has played a major role in the development of the Mexican shrimp industry--for decades one of the leading sources of foreign exchange (M. Miller 1990). The Mexican government has controlled the organization of labor through state-licensed cooperatives that had, until recently, exclusive exploitation rights over shrimp resources (J. McGoodwin 1987; T. McGuire 1983; and T. McGuire and M. Langworthy 1991). It has also organized the export marketing system through the parastatal company Ocean Garden, giving it monopsony control and setting official prices at levels below black market figures. Credit to cooperatives has traditionally been supplied by public banks. In addition, through a highly centralized management organization, the state has controlled all matters concerning the formulation, implementation and enforcement of regulations (M. Vásquez-León 1993).

When examining the myriad of external regulations that have traditionally existed, a fundamental opposition in policy decisions becomes obvious. At some periods (from the 1930s through the 1950s) the state has emphasized its commitment to equity by setting up cooperatives and giving them exclusive exploitation rights over the resource. At other periods (from the 1960s to the mid-1980s), as shrimp started to become an economically important commodity, the state underscored its commitment to aggregate national economic growth by allowing private investors to obtain substantial benefits from the fishery by renting boats, equipment, and by processing facilities to cooperatives. At the same time it relegated equity concerns and the social sector to its legal base (G. Hernández Fujigaki 1988; S. Mendoza Martínez 1985). The most dramatic policy change in the history of the shrimp industry occurred under the Salinas de Gortari administration. In the 1990s, harvesting rights and control over all facets of production and distribution have been gradually transferred to private investors. In addition, private banks are now supplying credit to individual entrepreneurs. The system of cooperative organization in the industrialized sector of the fishery has been legally dismantled.

At the local level, for small-scale fishers in the two neighboring communities under study here--Puerto Magdalena and Paraje de Unión--the consequences of this radical policy change have been severe. In order to attract private investors to an industry that is now in a state of bankruptcy (there are too many shrimp trawlers, the fleet is overcapitalized, and there are fears that the resource has been overexploited) additional regulations have been chartered. These are specifically designed to redistribute benefits from the small-scale sector of the fishery to the newly privatized industrialized sector. Because both compete for the most valuable species of shrimp, *Penaeus stylirostris* or blue shrimp, it is believed that by curtailing the activities of small-scale shrimpers, the

industrialized sector will increase its share of the catch (see M. Vázquez-León and T. McGuire 1993). For the small-scale sector, where cooperative organization continues to provide the only legal means of exploiting and marketing shrimp, privatization has meant an open threat to their status as shrimpers.

Despite their high dependance on government regulatory enforcement, small-scale fishers have not remained passive. If they lose access to shrimp resources, they will lose a significant portion of their yearly income. Not surprisingly, well-developed and organized systems of rule breaking have evolved, and it has become quite evident that external regulations and the level of enforcement undertaken are ineffective in deterring fishermen from breaking the law.

Noncompliance can be attributed to a multiplicity of factors, and avoiders of external regulatory enforcement cannot be considered a homogeneous group of people. To facilitate the analysis, Puerto Magdalena and Paraje de Unión fishermen have been classified into five noncompliance categories: Mapacheros engaged in the infringement of areal and seasonal closures, Pescadores libres engaged in entry violations, changueros who use illegal gear, guaterismo or black market activity, and disidencia or open defiance of new regulations and increased enforcement. These categories are not exclusive of one another, a fisherman may belong to several at one time, or switch from one to the other at different points in time.

Before taking a more detailed look at these categories, some relevant characteristics of the communities under study must be specified. Although both communities are subject to the same regulations and share the same fishing grounds (the San Juan Bay in the case of the small-scale sector), they differ in size, importance, and range of economic opportunities, and have a very different fishing culture. Paraje de Unión is a relatively small town.⁴ Aside from a declining railroad industry and fishing, it offers few alternative job opportunities. There are no well-established markets for marine species other than shrimp. In addition, most Paraje de Unión fishermen come from agricultural families that migrated to the area in the 1940s and 1950s.⁵ They tend to be first or second generation fishermen who have specialized in the harvesting of shrimp and who, consequently lack the knowledge to shift to other economically viable species in times of shrimp scarcity. Puerto Magdalena, on the other hand, is one of the major ports in the Mexican Pacific, and has a much more diversified economy, including tourism and an important offshore industrialized shrimp and sardine fleet. In addition to several popular seafood restaurants, there are several well-established fish marketing agents. Also, Puerto Magdalena's small-scale fishermen have a long family tradition in fishing that, in many cases, goes as far back as four generations. The collective knowledge of Puerto Magdalena fishermen and their ownership of a variety of equipment makes them highly diversified and able to shift

4. The population of Puerto Magdalena is more than double that of Paraje de Unión. The former has a population of about 90,000 and the latter a population of about 36,000 (INEGI 1991).

5. The name Paraje de Unión derives from *junción* or junction, which was the town's original name. Paraje de Unión was founded at the beginning of the century as a result of the establishment of the general shops for the Pacific railroad. It then became the place where North American land owners would come to hire cheap Mexican labor from the south of the country. Many of those immigrants stayed in Paraje de Unión, becoming shrimp fishermen or working at the railroad (A. Padilla Campillo 1992).

fishing strategies as soon as shrimp becomes scarce. In contrast, Paraje de Unión fishermen are much more dependent on shrimp. Many are engaged in illegal activities through most of the year, becoming highly vulnerable to regulatory enforcement.

Defining Illegal Behavior

Mapacheros: infringement of areal and seasonal closures

Mapacheros are the most economically, socially and politically marginalized group of resource users. These are men and women from Paraje de Unión who completely depend on the informal economy for their survival. Although they procure their daily subsistence from harvesting shrimp and collecting clams from the nearby estuary, they do not belong to cooperatives and do not identify themselves as fishers. They will take advantage of any opportunity to make some cash including the resale of stolen goods and the sale of second hand clothes from the United States.

Within the shrimp fishery, their activity is highly illegal. They shrimp throughout the year, even during the closed season. They also shrimp in shallow estuarine waters, violating areal closures and catching juvenile shrimp before they are recruited by the offshore population. In addition, their catch tends to be well below marketable size, and it is processed and marketed outside of the legal channels (i.e. they may make shrimp tamales and sell them door to door or at the side of the main road). Equipped with a small cast net and a flashlight, mapacheros shrimp on foot, at night. Their success is highly dependant upon other mapacheros. They use their flashlights to warn one another when inspectors are in sight. They also go out in groups in which at least two people have homes close to the shore so they can find refuge if they are chased by an inspector.

Mapacheros recognize their marginal status within the community. They perceive their activity as justified because of economic necessity; most claim that they would rather do something else. Because the local economy does not provide an alternative, they feel that they have the right to subsist, even if that means breaking the law, and even if their activity is detrimental to the long term sustainability of the fishery.

Enforcement here is highly variable. On the one hand, local fishery inspectors as well as fishermen are aware of the mapacheros' economic plight. In addition, inspectors have few incentives to enforce regulations as mapacheros are not profitable targets, having neither the financial resources to bribe inspectors, nor any valuable equipment or catch to be confiscated. On the other hand, it is believed that their activity endangers the sustainability of the fishery and reduces the allowable catch during the season. With the industry's privatization, fishery inspectors are being increasingly pressured into enforcing regulations on the mapacheros, specially during the closed season.

Pescadores libres: entry violations

Pescadores Libres, or "free fishermen," are small-scale fishermen who do not officially belong to a shrimp cooperative. Unless they obtain temporary affiliation to the local cooperative during the season, they have no legal right to commerce in shrimp; they are only allowed a daily catch for household consumption. Pescadores libres from Paraje de Unión have a particularly difficult time obtaining temporary membership in the local coop, and most end up shrimping illegally through the season. Lack of cooperative affiliation also means that they have to market their product through illegal channels. Unlike mapacheros, however, pescadores libres are considered to be legitimate marine resource

users by local officials and fishing cooperatives. They are full-time, year-round fishers who obtain their subsistence as well as cash requirements from a variety of species.

Noncompliance in this case is seen as justified by both cooperative members and unaffiliated fishermen. Although the cooperative must deny temporary affiliation to pescadores libres under direct orders from local regulators, cooperative members will help pescadores libres simply by not turning them or by warning them with CB radios of the presence of an enforcement agent.

Although this cooperation has little to do with individual short-term self-interest, because pescadores libres represent an element of competition, there is an implied interest here, perhaps, in the preservation of the rights of small-scale fishermen in general. Noncompliance becomes a strategy to fight limited entry and it is justified by the belief that all full-time fishermen have an intrinsic right to exploit maritime resources. There is also a perception that all small-scale fishers have a common struggle against competition with the offshore sector for blue shrimp (see J. McGoodwin 1987; M. Vásquez-Léon and T.R. McGuire 1993). In the words of an angry cooperative official,

When the armadores [private sector boat owners] started buying shrimp trawlers, the fisheries ministry decided to cut the number of pescadores libres that we, as a cooperative, were allowed to endorse. That's all bull shit, how can it be possible that the traditional fisherman doesn't have the right to harvest shrimp any more? Instead, the armadores, most of which have never been on board a trawler, now have the right to monopolize the product (M Vasquez-Leon:fieldnotes).

From the perspective of national fishery officials pescadores libres have no rights to the fishery, they are perceived as "internal pirates," "lowly contrabanders," and "thieves of the national patrimony" (J. McGoodwin 1987:224).

Protection by black market intermediaries (guateros), individual cooperative members, and the cooperatives themselves, make enforcement difficult. When caught, pescadores libres may lose their equipment and their catch, or they may get away with a bribe either paid in cash or in shrimp.

Changueros: the use of illegal gear

A large number of Paraje de Unión fishermen shrimp during the closed season, when there is a 30 to 40 percent increase in the value of shrimp. They use an illegal trawling net known locally as a chango. The chango not only increases fishing efficiency during the months when shrimp is scarce, but it can also be used offshore and at night, decreasing the possibilities of getting caught. This net is also used illegally during the season.

There are substantial risks involved in this type of activity. Fishermen may lose their most valuable capital asset, their equipment including engine, panga (small boat) and net, and they may face heavy fines or even imprisonment and lose a catch with significant market value. Considering such risks, cooperation among fellow fishermen and enforcers is crucial for success.

Changueros are either more explicitly organized around a specific guatero--receiving protection in exchange for their catch--or loosely organized in groups that operate on their own. In Paraje de Unión, guateros have a high social status that lies in having the ability to develop strong ties with enforcers. Thus for a certain monthly "fee", fishery inspectors at different levels will ignore any illegal activity from explicitly organized changueros. Guateros will also cooperate with enforcers to catch independent changueros, ironically contributing to the effort to diminish illegal activity.⁶

For independent changueros, although the benefits from illegal activity might be higher (they can sell their catch to the highest bidder) the risk of getting caught is much greater. This makes interdependence among fellow fishermen essential for success. Independent changueros will always go out in groups and flee in different directions at the sight of an inspector, the fastest pangas diverting attention away from the slower ones. Also, they often have a watchman who uses a flashlight to warn them of inspectors waiting on shore.

As enforcement efforts increase and avoidance becomes more risky and costly (mainly as a result of private sector intervention), individual changueros may change their strategy and diversify.⁷ But most changueros do not see a way out, and although they are aware of the problem of catching gravid female shrimp during the closed season, their decision to pursue the illegal behavior is largely based on immediate household needs.⁸ Many also feel that the law which bans the chango is arbitrary. As changos are a miniature version of the trawling nets used by the offshore sector, if they are banned for small-scale fishers, should they not also be banned for the offshore? If changos were to be legalized, catches during the season would increase. This would provide an opportunity to save enough money for when the season ends, and perhaps, deter fishers from shrimping offseason.

Guaterismo: the black market

The most important context in which illegal behavior takes place is through a highly organized black market for shrimp which involves fishermen, their communities, intermediaries, and enforcement agents. The law dictates that all shrimp must be bought and sold through official channels. However, guaterismo, the illegal harvest and marketing of shrimp, has been a dominant practice.

Guateros recruit small-boat fishermen to either buy shrimp offshore from trawlers or to shrimp during the season and turn their catch over to the guateros rather than the cooperatives. In order to obtain the appropriate marketing trademark, guateros must pay a "fee" to have their product packed at one of the officially recognized processing plants. An additional "fee" must be paid to a cooperative official in order to obtain legal documentation for the transport of shrimp that is to be sold across the border or within the country.⁹

6. One of the ways enforcers and guateros cooperate to catch more informally organized changueros is as follows: the guatero will send his pangas out with the knowledge that fishery inspectors will be surveying the area at a certain time. Upon the arrival of inspectors the guatero's men will have already lifted their nets and are ready for a quick and quiet retreat, usually towards a prearranged direction. The pangas that are left will be caught by surprise, with their nets in the water. They will either have to cut the ropes losing their nets, or take the time to retrieve the nets and increase their chances of getting caught.

7. There is the case of a changuero owner of equipment who joined a young fisherman adventurous enough to learn how to dive on his own. This made it possible to shift to other species and to stop the illegal activity.

8. Their only alternative is to catch crabs or clams, time consuming and low paying operations which might not provide enough to sustain a family with a low producer/consumer ratio.

Guaterismo, aside from providing strong economic incentives to individual fishermen, is also justified as a way to challenge the institutions for rule making, a form of political protest practiced by most fishermen in both communities, Puerto Magdalena and Paraje de Unión. According to Breton and Lopez Estrada (1989), this activity began in the 1970s as an economic strategy against private capital intervention in the offshore sector. By selling in the black market, fishermen sabotaged the "contracts of association" between the private sector and cooperatives. These agreements stipulated that the private sector could obtain benefits from shrimping by renting boats, equipment, and processing facilities to the cooperatives. During the Echeverría administration the "contracts of association" became increasingly favorable to private investors whose share of the catch increased to over 60 percent (S. Mendoza Martínez 1985). Cooperativized fishermen responded to this situation by increasing their participation in the black market:

[Guaterismo became] almost a law which threatens to ruin the industry...the first 500 kilos caught are sold immediately, and the benefits are distributed among the crew...the captain that does not participate will have difficulties finding a crew for the following trip (G. Cortés Campo 1977).

This continues to happen in the 1990s as regulations and enforcement increase and marginalize the cooperative sector in favor of private entrepreneurs. Guaterismo has also been used as a way to protest against corruption of cooperative officials who, through "contacts" at a higher level, were able to remain in power for decades.

Guaterismo has become so prevalent, that one could say it has become a cultural trademark. It not only occurs when there is a need to increase revenues, but all the time. Even when cooperatives raise prices, a large percentage of the catch still ends up in the black market. Bribes are so common that for many fishermen and guateros they are merely perceived as an additional transaction cost and are rarely questioned. For enforcers, bribes are simply seen as a way to compensate their low salaries. For private entrepreneurs who are now investing in the shrimp industry, guaterismo is a manifestation of delinquency and a form of social deviance. Regardless of how it is perceived, guaterismo is a major community activity through which many, aside from fishermen, are able to make a living or supplement their income.

Disidencia: open defiance

A fifth level of illegal activity has developed as a direct response to private sector intervention. This refers to the open defiance of regulations designed to redistribute shrimp resources from the more marginalized small-scale sector of the fishery to the newly privatized offshore sector (see M. Vásquez-León and T. McGuire 1993).

Two examples will suffice: (1) the unjustified prohibition by the fisheries ministry of the most efficient net used by small-scale shrimpers, the chinchorro de línea, and (2) increased levels of enforcement to prevent small-scale fishermen from shrimping offshore. Both actions are seen by fishermen as a direct threat to their economic and cultural survival. These regulations are broken by all Paraje de Unión and Puerto Magdalena fishermen. It is felt that, like many other recent regulations, these can only exacerbate

9. There are a number of licensed cooperatives called cooperativas fantasma or phantom cooperatives that have no members or gear but make their profits by selling the documents for the legal sale of shrimp.

poverty and the social marginality of small-scale fishing communities. Noncompliance in this case is a community affair and these fishermen are supported by all traditional resource users, including offshore fishermen who feel themselves threatened by the privatization of the industry.

In the past, pressure from small-scale cooperatives on local fishery officials limited attempts at enforcing these regulations. During the 1992-93 season, however, the private sector officially accused local enforcement agents of breaking the law. As attempts to enforce the laws increased, fishermen responded through civil disobedience by shrimping offshore with the *chinchorro de línea*, while taking their wives and children on board, in order to avoid potential violence from law enforcers.

Discussion

In every one of the cases discussed above individuals do calculate costs and benefits of illegal harvesting and are concerned about maximizing their gains. In some activities it is evident that economic benefits provide strong incentives for individual fishermen to participate in avoidance strategies. Such is the case of *guaterismo* where black market prices are much higher than official prices, or the case of the *changueros* whose off-season catch is highly valuable. For others, like *mapacheros*, a lack of economic alternatives makes illegal activity the only viable possibility.

The present empirical study suggests, however, that in order to understand noncompliance decisions, there must also be an understanding of the structure and organization of the social groups and networks of which the individual actors are part. In all of the cases described here, violators will rarely act alone and in disregard of community needs. Rule breaking is carried by coordinated groups of people, not just by an aggregate of individuals. *Mapacheros*, harvesting shrimp in shallow estuarine waters, warn one another with flashlights at the sight of an inspector. *Pescadores libres* are supported by cooperatives and intermediaries in their decision to violate entry restrictions by capturing shrimp for commerce without official authorization. *Changueros*, violating gear and entry restrictions, either receive protection from *guateros* in exchange for their catch, or help one another elude enforcement agents. *Guateros* must, to a certain extent, operate within the system in order to buy, process and transport black market shrimp; they receive the tacit cooperation of officials in exchange for bribes. Groups of *disidentes* openly defy increased regulatory enforcement and new regulations that seek to redistribute benefits from the small-scale sector of the fishery to the newly privatized offshore sector. In every case violators depend to different degrees on others to be able to carry out illegal activities.

Also, in every case, noncompliance directly benefits the community. Some activities, such as *guaterismo* and *mapacheo*, redistribute the economic benefits from shrimping by allowing local nonfishermen community members to participate in the marketing of shrimp, from which they would be otherwise excluded. Furthermore, noncompliance also benefits the community in that through it, the community is able to manifest their resistance to external regulations that limit their access to resources. Through noncompliance as an expression of insubordination, the communities feel that in spite of their marginal position, they still have a degree of autonomy.

Contrary to EAT and neoclassical methodological individualism, decisions to engage in rule breaking are not always based on individual calculations of costs and benefits. In households with low producer/consumer ratios, where the decision to pursue illegal

behavior is largely based on immediate household needs, fishermen will continue to break the law even when the risks of getting caught become extreme--for instance, poor changueros who get caught and lose their equipment feel forced to continue acting illegally by becoming temporary mapacheros, an activity despised by all shrimp fishermen because of its grave consequences for the fishery. In the case of disidentes, there is a conscious cooperation to increase joint benefits for the community and defend the continuity of small-scale shrimping.

Avoidance decisions also take place within what seems to have evolved into a cultural system, *guaterismo*. Regardless of economic need, most fishermen do sell a portion of their catch in the black market, and, after appropriate bribes have been paid, enforcement agents usually cooperate. Enforcers who choose to play the legal game, however, are soon removed from their posts as they are seen as a potential threat to an already established system. And those few fishermen who do not participate in *guaterismo* are ridiculed and perceived as somewhat deviant. For enforcers, black market bribes represent an important and necessary subsidy. Without them enforcers would have to demand higher bribes for other illegal activities. For the communities, this provides an incentive to continue black market payoffs. In addition, the black market is an important source of employment that prevents many people from becoming changueros or mapacheros, ironically helping to reduce a type of pressure on the fishery that is much more detrimental.

Noncompliance decisions have elements of both self- and collective interest, and the relationship between the two varies according to the type of illegal behavior. At one end are the mapacheros for whom individual interests seem to override larger community interests; their activity is an obvious threat to the long term sustainability of the resource upon which the community depends. There is a degree of collective interest that refers to the survival and maintenance of the mapacheros as a group, however, not to the larger community of resource users. In the case of *guaterismo*, one could also say that individual self-interests run counter to collective interests because by not turning in their catch to the cooperative, fishermen affect cooperative earnings and contribute to cooperative disintegration. But, as already noted, *guaterismo* also brings substantial benefits to the community at large.

In terms of enforcement, by accepting bribes, fishery inspectors not only sabotage the government-controlled marketing system, but in some cases may even contribute to the decline in the next year's shrimp stocks. The reduced level of enforcement that results from bribing officials, however, also lends flexibility to an otherwise strict hierarchical structure, allowing the communities to make a living from shrimp resources.¹⁰

The different risk functions faced by individuals, and the community to which the individual belongs have important implications as to why or how often fishermen engage in avoidance strategies. "Connections" in the formal system, social status, economic possibilities, and fishing knowledge are all factors that determine how risky and costly avoidance behavior can be for an individual or a group of fishermen. The risk of changueros who work for a *guatero* are much lower than for changueros who decide to work on their own. Fishermen with better economic standing are able to bribe officials and their risk of losing equipment is much lower. Fishermen with greater knowledge, and who

10. Local officials have been, up to a certain extent, aware of the socioeconomic needs of shrimpers, so in many cases noncompliance is simply ignored.

own equipment, can shift to another fishery when risks of illegal shrimping become too high.

The latter is the case for Puerto Magdalena fishermen, most of whom only participate in *guaterismo* and *disidencia*. They do not shrimp offseason, do not use the *chango*, and do not shrimp in estuaries. Quite simply, they do not need to do so; they are highly diversified and can quickly respond to changes in resource availability. They also have more alternatives on land and better access to marketing channels. Paraje de Unión fishermen, on the other hand, participate in all avoidance strategies; most break the rules often, so much so that their practices represent a potential threat to the future of the resource. They capture juveniles, shrimp offseason, and use equipment that is damaging to the ecosystem. Being first generation fishermen, they lack the knowledge and equipment to switch fisheries when the season closes or when shrimp become scarce. Also they have difficulties accessing marketing channels and lack economic alternatives on land. Their dependance on shrimp throughout the year makes them much more involved in illegal activity than Puerto Magdalena fishermen, and much more vulnerable to regulatory enforcement.

So far, flexibility rather than the strict enforcement of laws has been the norm. This is changing with the increasing privatization of the industry, however, and, as government policies change, even enforcers run the risk of getting punished.¹¹ I expect that in the future more innovative avoidance strategies will develop as a result of resource scarcity, and that we will see an increased marginalization of small-scale producers. The only thing that is certain now is that local populations in Puerto Magdalena and Paraje de Unión have already demonstrated that they are not passive and that their responses are critical to any attempt at successfully managing the fishery.

There are two practical conclusions that arise from this empirical study. The first refers to the importance of getting rid of the assumptions of methodological individualism and profit maximization. Peters clearly explains the relevance of this issue:

The choice of a theoretical model affects what one perceives in social life...[The] rational individual...appears as a self interested individual trying to ensure being a "winner" rather than a "loser", a "traitor" rather than a "sucker." I doubt that a model that premises such a unidimensional, all-or- nothing world can be sufficiently retooled to deal with social process (P.Peters 1993:1074).

Instead, the possibility of collective behavior must be incorporated. This will permit the interpretation of the social and cultural dynamics of groups over time. It will also allow us to understand the larger motivations behind the development of avoidance strategies. For instance, a lack of alternative opportunities might be an important cause of overfishing. The real solution in that case lies in creating alternatives, rather than increasing enforcement.

Finally, in order for regulations to be considered legitimate and to promote compliance, local resource users must be allowed to take an active role in the design, implementation and enforcement of regulations. This means that regulations must address

11. This process has brought private resources into enforcement efforts. Soldiers from Mexico City are being brought to the area as enforcement agents, and rotated every few weeks so that they do not have a chance to become familiar with the bribing system and the important *guateros*.

some of the fishermen's concerns, allow for an equitable access to resources, and be impartially executed. If the communities perceive regulations as fair, and if they believe that they will be able to continue to depend on fishery resources and exercise some control over those resources in the future, enforcement will probably be more effective and less costly (see Jentoff 1989).

Given the profitability of the shrimp industry, however, the fact that there are strong economic interests in dispute, and that a variety of users--both local and nonlocal--benefit from the fishery, to advocate absolute local community management would be unrealistic. In addition, it is evident from our discussion of avoidance strategies that local fishermen are not always able to act in a "sustainable" manner. A much more plausible solution, and the one advocated here, would be the comanagement of this region's fishery resources, in which both government and local communities would participate to manage the fishery, making it possible to address interests of economic profitability, conservation of resources, and local economic needs.

Comanagement offers benefits to both, local resource users and managers. Paraphrasing Jentoff (1989:154), on the one hand fishermen's organizations have greater knowledge in terms of fishing practices and fishing territory, access control, and making distributional decisions among individual resource users. On the other hand, government has a role in global planning, in the management of total fishing effort, in solving distributional conflicts among the various contenders for shrimp, in providing legal support for local fishermen organizations, and in acting as a check to any local violations that threaten shrimp stocks.

The frequency of illegal activity and the many strategies developed by local fishers in Puerto Magdalena and Paraje de Unión to avoid governmentally imposed regulations are clear indications that fishermen are demanding a real participation in decision making. The magnitude of illegal activity seems to point to a loss of confidence in the government's ability to solve management problems, and to a conviction that government intervention and contradictory management policies have made the problems worse (see Pinkerton 1989).

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