

THE EROSION AND RELOCATION OF LOCAL RESOURCE MANAGEMENT  
INSTITUTIONS IN A JAVANESE FISHERY<sup>1</sup>

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V. 12  
11-18-93  
MS  
WORKSHOP IN POLITICAL THEORY  
AND POLICY ANALYSIS  
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INTRODUCTION

The concept of "open access," much maligned in recent social science literature on common property resources (CPR's) as contributing to the "tragedy of the commons (Hardin, 1968)," is the de facto principle of access to coastal and marine resources in most of Java. Indonesia's extensive territorial waters are a common property resource legally under the management authority of the Indonesian state. The Indonesian government explicitly recognizes the open access principle for marine resources throughout Indonesia, maintaining that any Indonesian citizen has the right to fish anywhere in Indonesia's territorial waters, subject to government regulations. The principle of open-access in marine resource use is of course limited by the Indonesian government through laws and regulations governing who may use the resources and how they may be used. This situation results in a resource management regime which combines features of both open-access and state control (Berkes, et. al., 1989)

In the literature on fishery resource management, traditional systems of common property management are often equated with sea tenure arrangements, or exclusionary claims to particular marine territory by individuals or groups. Traditional, local sea tenure arrangements do not appear to any significant extent in coastal Java. The literature on marine property regimes in Indonesia has identified traditional common property systems and tenurial arrangements in fisheries and marine resources in parts of Eastern Indonesia (Zerner 1989, Bailey and Zerner 1992, Polunin 1984) and Sumatra (Polunin 1984) but no such cases of traditional territorial claims to specific fishing grounds or local systems for managing resource use based on adat, or customary law, have been documented for Java. Instead, the apparent absence of such institutions in Java has been explicitly noted by several scholars (Sya'rani and Willoughby 1983, Bailey and Zerner 1992, Polunin 1984).<sup>2</sup>

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<sup>1</sup> Paper presented at the fourth annual meeting of the International Association for the Study of Common Property, Manila, Philippines, June 16-19, 1993.

<sup>2</sup> I have found very few references to cases of marine tenure or traditional CPR management systems on Java. Polunin (1984) cites an old Dutch source which referred to markers in the sea indicating fishing spots or territorial boundaries at Tuban, on the

While open access is the underlying principle in Javanese coastal fisheries, this does not mean unlimited access. Government regulations exist which limit access through licensing, taxation, and restrictions on certain gear (e.g., the 1981 trawl ban and specific provincial level restrictions on certain other gears such as the bagan in East Java). Furthermore, local institutions and rules of resource access have developed, sometimes informally and sometimes formally, to limit resource access to fisheries in Java and other parts of Indonesia. Such institutions can be elusive to the observer: dynamic and embedded in cultural norms, they are usually location-specific and have evolved in response to particular sets of historical circumstances and conflicts that have arisen as a result of changes in the technological and social aspects of fishing production. Community-based fishery resource management institutions may involve rules and norms relating to distribution of the catch on land as well as access to fish at sea, an aspect which is often overlooked by those focusing on resource management rather than social aspects of resource access.

This paper draws on a case study of one rapidly-developing fishing community in an attempt to explain this apparent lack of strong local resource management institutions for fisheries in Java. The increasing presence of central government authority, coupled with a Javanese cultural tradition that does not include a strong tradition of sea fishing, may have contributed to the erosion of existing local institutions for managing access to fishery resources and prevented the development of strong local management institutions as an outcome of fisheries conflicts. It is argued that perhaps because of local people's inability to restrict access to the bay's fishery resources, new, informal local institutions, based on Javanese cultural traditions, have evolved for redistributing the fish catch once it reaches shore.<sup>3</sup>

#### PRIGI: A CASE STUDY OF THE DEVELOPMENT OF LOCAL RESOURCE MANAGEMENT INSTITUTIONS

Bailey and Zerner (1992), in a recent paper, have identified

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north coast of East Java, but even this could of course have been a misinterpretation on the part of the observer. Sya'rani and Willoughby (1983) have argued that adat-based marine management did not exist on Java, and Zerner and Bailey (1992) have similarly noted that traditional marine management systems have not been documented in Java, or for the Lesser Sunda Islands.

<sup>3</sup> This paper is based on field research carried out in Java from 1989 to 1991, supported by a Fulbright-Hays Dissertation Research Fellowship.

relatively low population density, homogeneous communities and the use of relatively simple extractive technologies as factors which appear to contribute to the efficacy of community fishery resource management systems in Indonesia. Polunin (1984) has argued that sea tenure arrangements are not likely to have developed in areas where people, as a culture, appear to be averse to the sea and marine exploitation is not highly developed. It would appear that sea tenure systems and strong community management institutions for coastal fisheries are likely to have developed in areas with long traditions of marine exploitation in a relatively isolated, and therefore homogeneous, setting. The Maluku and Makassar cultures, for example, where community fishery resource management institutions have been identified by Zerner (Bailey and Zerner 1992, and Zerner 1989) and others, have a long tradition of fishing, in contrast to the Javanese, Balinese, or many of the cultures of the Lesser Sundas, where such institutions have not been observed.

In Prigi Bay, the case study site in East Java, marine exploitation is relatively recent. By the time competition and conflict in fishing developed and intensified, Prigi was sufficiently incorporated into the national legal and administrative structure that conflicts tended to be mediated by the police or military or district and regency political leaders within the context of the national legal and security structure. This structure does not recognize exclusive territorial claims to the sea, and thus these conflicts did not result in the development of systems of sea tenure. In a more isolated time or place, such conflicts would have been mediated by traditional local leaders who may have been more open to establishing or supporting exclusive territorial claims. It may be that because Java was much longer and more thoroughly under the Dutch legal system that such sea tenure systems had less chance to develop or were suppressed so early on that nothing of them remains.

Absence of sea tenure systems does not mean that there are no institutions for regulating resource use and access. Two concepts appear to be key in the formulation of these institutions in Prigi: (1) "local" people have priority claims to use the bay's resources, and (2) the concept of equity or fairness. While there seems to be an explicit rejection of the idea that anyone can "own" the sea (including the government), there is a strong perception that those people living around the bay have a preferential right to the resources. There is also a perceived obligation to share the sea's bounty. This also has to do with the "luck" aspect of getting a good catch, and the social obligation to share good fortune when it befalls one. Similarly, anyone who uses "unfair" advantage to reap the benefits of the sea is acting in a socially inappropriate way.

Many of the more explicit "rules" regarding fishery access in Prigi grew out of specific conflicts over a particular technology.

Each new technology introduced was considered "unfair" initially. These conflicts were often inter-ethnic in nature, because most of the innovators were non-Javanese, and within the last 20 years at least, have been mediated within the national legal-political framework which supported open access to the bay's resources. The more informal norms and traditions surrounding fishing and allocation of the catch seem to have arisen more from Javanese and local cultural traditions. These institutions are very powerful because of the dominance of local Javanese in the purse seine and beach seine labor force.

These norms and institutions are dynamic and adaptive, constantly evolving in response to changing external pressures, such as changes in the market and introduction of new technologies, increasing population, and increasing government presence and intervention in fishing activities. They have developed in response to specific historical circumstances, but are firmly embedded in the cultural norms that govern social and economic relations in the wider community.

#### Prigi: the case study setting

Prigi is a small fishing port located on a small protected bay from which it derives its name on the south coast of East Java. While fishing has been reported there since colonial times (van der Kolpf 1936), with the exception of dried shark's fins the catch was primarily for the local market until the introduction of purse seines in the 1970's.. This was partly a result of its isolation. The whole south coast of East Java is separated from the central agricultural valleys by a limestone mountain range that kept the sparse south coast settlements relatively isolated from the rest of Java until fairly recently. As a result, Prigi was formerly a sparsely-settled isolated "frontier" area, open to migration and relatively open access resource exploitation.

The Javanese are basically agricultural people, not oriented to the sea. This is especially true on the south coast with its rough seas, rocky shores, and heavy mythological associations with Nyai Loro Kidul, the Javanese Goddess of the South Seas. Innovators in fishing development throughout Java have been primarily ethnically non-Javanese: people of Madurese, Buginese, and Chinese descent.

Local mythology holds that Prigi was settled by a prince of the court of Solo, and an annual ritual offering to the sea commemorates the peace he made with Nyai Loro Kidul. Irrigated agriculture was established in the valley near the sea, and subsistence fishing using hooks and lines from small dugout canoes probably dates back to the earliest inhabitants of the area. It is clear, however, that the early local elites were landowners, supposedly descendants of the court of Solo, who controlled the

irrigated rice lands in the valley, rather than fishers of the sea.

### The local population

Innovations in fishing technology were introduced to Prigi beginning in the 1920's by immigrants of non-Javanese background: they included people of Japanese, Chinese, Dutch, Madurese, and Buginese descent.<sup>4</sup> These people, using their skills and knowledge, in combination with varying amounts of capital, introduced fishing innovations that transformed the local agricultural economy. Early migrants from these groups were attracted primarily by open access to the untapped marine resources on the south coast of Java. This immigration occurred primarily from the 1920's through the 1970's, although it continues today as fishers from Banyuwangi and the north coast of East Java migrate both seasonally and permanently to Prigi to make their living from the sea.

At the same time, ethnic Javanese people were moving into the Prigi Bay area from the nearby hills and agricultural lowlands. They were motivated by other factors: access to agricultural land and employment in the forests, and fleeing poverty, poor environmental conditions, and political instability. Once in the coastal area, many of these people turned to fishing, in combination with agriculture and work in the forests, as part of their multiple livelihood activities. Over time, as access to forests and private land for agriculture became more restricted, these people and their descendents turned increasingly to the sea as the primary basis for their livelihood, as either independent hook and line or small net fishers, or as crew members for the mostly non-Javanese boat owners. This process occurred across, and sometimes within generations. This Javanese in-migration occurred between the 1940's and the present, with the greatest concentration during the tumultuous times of the late 1960's and into the early 1970's.

Since 1980 a new type of immigration has taken place, as government investment in fisheries infrastructure and other development programs has brought a cadre of mostly low- and middle-level government bureaucrats into the area. A government fish auction site (Tempat Pelelangan Ikan, or TPI) and other fisheries-related projects and infrastructure were established, and with this development came public health officers, more school teachers, a rural bank, and other government employees. With the fisheries port and auction site have come commercial fish traders and outside investors in the fishing industry, and more recently, investors in tourism. These outside investors typically come from large cities

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<sup>4</sup> Van der Kolff (1936), during his visit to Prigi in 1936, noted "...the establishment of several large fishing concerns in the hands of Europeans and Non-indigenous Orientals...".

and towns around Java, running their operations through a local agent, with relatively little community contact. These most recent newcomers, symbols of "development" and incorporation of this formerly quiet village into the international economy, have meant increased social differentiation and marginalization of the earlier residents of both Javanese and non-Javanese ancestry,<sup>5</sup> as well as increased dominance of the national legal-political government structure.

### Fisheries Development

The most significant events in the development of fishing in Prigi within memory were the introduction of beach seines in the 1920's and the introduction of purse seines in the 1970's. Both revolutionized fisheries production and had far-reaching impact on other aspects of the local economy as well.

Beach seines increased production dramatically, creating a surplus that was sometimes destroyed for lack of a market. Competition for beach seine labor resulted in the introduction of a cash economy and paid wage labor into the area for the first time, and gradually propelled Prigi into the international economy as cash became available to local households for the first time.<sup>6</sup>

The purse seine's introduction in the 1970's created a similar transformation of the local economy. The purse seine brought production of an unprecedented scale, which resulted in an initial sharp fall in the price of fish, with an impact on fishers using other technologies. As the number of purse seiners increased they created much more demand for labor than any previously introduced technology other than beach seine. Competition for labor, especially skilled and knowledgeable crew members, resulted in a labor shortage for the beach seines, with the result that women and

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<sup>5</sup> The power structure in Prigi has changed over the last 50 years as fisheries has developed. The old elites in Prigi derived their power from control over the irrigated rice lands and access to the resources of the forests. Most of these people (and their descendants) have maintained control over these resources, but the power that control over these resources provides has decreased with the development of the fishing industry.

<sup>6</sup> Little capital was required for these early beach seines which were made of locally-available materials. Innovators introduced the skill and knowledge for making them rather than the actual gear. Local people then followed suit and profited. Beach seines continued to be made of these local materials until the 1960's.

old men and people from nearby inland villages began to work on the beach seines. Introduction of purse seines also fueled the creation of secondary industries, particularly fish processing. Prior to purse seine introduction, very little fish was processed other than for home consumption.

Since the first purse seines were introduced, purse seine operations in Prigi have become increasingly more capital intensive. As catches have declined, boats have become bigger, and larger and more expensive nets have been purchased. Most costly of all has been the transition from small outboard motors (mesin tempel) to inboard engines. These were initially made from modified truck engines, but increasingly specially-designed marine engines are used by those able to afford this technology. In order to compete for the best crew members and to guarantee an adequate catch, boat owners must continually upgrade their gear, requiring more and more capital input.

Increasing capitalization has resulted in the increasing marginalization, through competition and probable resource depletion, of small scale, less capital-intensive fishing activities such as small gill nets, hook and lines, and stationary lift nets (bagan), but even including the beach seines and original, smaller versions of the purse seine. The degree of attention paid to the various activities by the TPI and Fisheries officials in terms of production data and tax collection provides some evidence of this. Purse seines account for such a large percentage of the total local catch that there is little effort devoted to monitoring and collecting tax on these other gear types.

#### History of conflict and institutional responses

In the 1920's a Japanese resident of Java introduced the first beach seine to Prigi. Within a few years a Dutch colonial official and a Chinese immigrant from Surabaya were also operating beach seines in the area. These early seines were woven from locally-available tree fibers. Labor for pulling in the seines was recruited from among the strong young males of the local agricultural population. Early catches in these nets were large because the bay's resources were as yet relatively untapped.<sup>7</sup>

Within a few years many local people, including the locally-powerful landowners, had also invested in the beach seines. As more and more nets were acquired by local people, conflicts developed over access to the limited areas of beach suitable for placing and pulling the nets. These conflicts were resolved

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<sup>7</sup> A photograph from the 1930's showed five large sharks hauled in by the beach seines, whereas today large sharks are rarely found inside the bay.

through the institution of a rotation system worked out by the beach seine owners themselves. This rotation system still operates with no involvement of local Department of Fisheries or other government officials.

The beach seines exercised relative dominance in the local fishery into the 1970's. The introduction of all subsequent gear types threatened their position and was met with strong, and sometimes violent, opposition.<sup>8</sup> Out of these conflicts, local institutions developed for managing access to the resources of Prigi Bay which are still strongly adhered to, and enforced, by local fishers.

In the 1950's people of Madurese descent migrated to the area and introduced the payang, a simple seine operated from a wood-hulled boat called a perahu. There was initial conflict with the beach seine owners over right of access to fishing within the bay, but once certain guidelines were established regarding where the perahu could operate their nets so as not to interfere with the beach seines, the two gear types were able to co-exist in the bay fishery for a few decades. The payang fleet in the bay increased but never involved more than about twenty boats, primarily operated by Madurese immigrants.

Around 1970 a group of Buginese men came to Prigi with the intent of fishing, bringing with them very little other than their fishing skills and knowledge of the sea. They bought bamboo from local farmers and used it to build bagan, floating fishing platforms. The bagan were anchored near shore, in the same areas where the beach seines traditionally operated. Serious conflicts developed over the bagan, regarding not only their placement but also the contention of the beach seine owners that the bagan, which used lights at night to attract schools of fish, were attracting the fish away from the beach seines, reducing their catch. Inter-ethnic tensions further fueled the disputes, which at points became

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<sup>8</sup> In the end, however, technology prevailed, and beach seines lost out to the purse seines due to competition for crew, lower prices effected by the greater volume of fish caught by the purse seines, and ultimately, resource depletion as the catch in the area near shore where beach seines are confined to operate declined. Today in Prigi, beach seines still operate, especially during particular seasons, but their ownership no longer provides great local power or wealth. One measure of this decline is the fact that the "coolies" who pull in the nets are now recruited from among the women and old men of nearby farming households. Able-bodied young men are recruited as crewmembers for the purse seiners, and the pulling in of the beach seines has such a low status that most members of the fishing community shun it. Work on the beach seines is the only type of fishing labor in Prigi which is paid a wage rather than a share of the catch.

violent and required police intervention. In the end, the bagan were incorporated into the local fishery. Today bagan are still owned primarily by people of Buginese descent, although they employ crews of mostly Javanese background.<sup>9</sup>

These early conflicts over the entry of new gear were primarily mediated by the local desa (village-level administrative unit) officials, called "pamong." These officials were appointed, often for life, and were inhabitants of the community. They received payment in the form of rice land for their own cultivation, and thus formed part of the old agriculture-based village elite, and as such commanded much respect in the village.

In the mid to late 1970's a series of violent protests by small scale fishers over the use of trawlers occurred in several fishing ports around Java (Bailey, 1992). Trawlers had never operated out of Prigi Bay primarily because the rock and coral on the bay's floor and the narrow continental shelf make trawling unfeasible. Word of the protests over trawling had spread to Prigi, and it was in this context that the first small purse seiner was introduced into Prigi Bay in 1973, by a fisher of Buginese ancestry.

The purse seiner immediately aroused a protest from the beach seiners and other fishers threatened by the competition from this new technology. In the context of heightened political tension over the trawlers in other parts of Java, the language of this protest reflected the "traditional vs. modern" distinction associated with the trawler protest. The conflict turned violent at times.

By the time of the introduction of the first purse seiner, however, there was a Provincial Fisheries Department (Dinas Perikanan) agent assigned to Prigi. As a representative of national government policy on fisheries, he worked with the local police chief to defuse the conflict, assuring the beach seiners that this new gear was legal, that the government was encouraging "modernization" in fishing, and that they would just have to accept the purse seines' presence in the bay. The same local guidelines concerning non-interference with the beach seines were applied to the purse seines as had been established for the payang earlier.

With the introduction of the purse seine, the local fishing economy boomed. Gradually opposition to the purse seines by the

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<sup>9</sup> One of the reasons that the bagan are still controlled by the Buginese immigrants is that they have been banned by the provincial government. Local fisheries officers have accommodated the bagan owners by allowing those which already existed at the time of the ban to remain, but prohibiting new bagan entering the local fishery.

beach seine owners abated as more and more of them, and other local people, invested in purse seines themselves. Bank credit was available, and by 1978 the size of the purse seine fleet operating out of Prigi Bay peaked at 67 units. Opposition from the payang, hook and line, and other fishers was defused as they were hired to work on the purse seines as captains and crew.

These early purse seiners were small and relatively low-cost compared to the purse seiners in use in 1990. They used smaller boats, but most importantly, the original purse seiners used small (25 H.P.) outboard engines known locally as tempel. As competition in the bay increased, these motors were inadequate for going farther and staying longer out at sea, increasingly necessary in order to get an adequate catch. Gradually, the smaller boats with outboard motors were completely replaced by larger units using inboard engines made from modified truck engines. The number of purse seine units operating out of Prigi Bay declined as many of the early investors could not afford to maintain and upgrade their old equipment as necessary to remain competitive. By 1980 the number of purse seining units operating in the bay had declined to only 43.

In the early 1980's people from outside the bay area began to invest in fishing in Prigi. Most of these outside investors were from the big towns and small cities of East Java, but a few came from further away. These people could afford to invest in the best, most up to date purse seine technologies, including specially-designed marine engines, further increasing competition and costs for the local purse seine operators. Purse seine numbers gradually increased again, reaching 58 units by 1990.

Conflicts over access to the fishery have continued in Prigi even after the purse seines became the dominant gear in the bay. In 1988, and again in 1990, large numbers of ethnically Madurese payang fishers from the north coast of Java migrated to Prigi during the peak fishing season, bringing their boats and gear overland by truck. This type of seasonal migration is allowed by the Indonesian government as long as permission and forms are obtained from the home district's Department of Fisheries officials as well as those at the destination. On both occasions the presence of these fishers created immediate unrest in Prigi. The primary complaint was that the payang fishers did not "conform to the local rules" regarding interference with the operation of beach seines and bagan. It was alleged that the payang fishers would drop their nets too near the bagan or purse seines in operation, and would even drop their nets within the area where a beach seine had been cast and was being pulled to shore. However, much of the conflict apparently also had to do with inter-ethnic tensions and activities on shore.

On both occasions the presence of the payang fishers caused the local fishers to protest to the Fisheries Department officials

in the area, and the local police. Meetings were held to discuss the "local rules" (sometimes referred to as "adat" by the local people) which the payang fishers were supposed to follow. The conflicts continued, however, and on the first occasion the payang fishers were asked to leave the area by the local police chief. In 1990, however, the right of those with proper permits to remain in the bay was upheld by the regency level authorities.

In early 1991 another near-violent conflict over the fishery occurred in response to the presence of a group of divers, mostly from outside the area, who were allegedly using cyanide to catch spiny lobsters. These divers operated at night in groups of 3 or 4 from small boats using compression air tanks attached to a long hose and face mask to dive, picking up the lobsters with their hands, supposedly stunned by their lights. Huge catches of over 100 tons per night per boat were reported, which the local fishers argued were not possible without the use of chemicals to slow the lobsters. Local fishers, led by the purse seiner captains and crews, organized in response to this activity, and carried out a "citizen's arrest" of four of the small boats at sea, turning the individuals over to the local and district police. The protesters were not satisfied with the resolution of the case, however, as the lobster fishers were let go and told to return to their homes in Banyuwangi. Threats of violence followed, including burning of the boats and gear of the lobster fishers, but did not materialize because most of the lobster divers themselves stopped operation.

Only one major fishing technology that has been introduced into the Prigi fishery has not generated significant opposition. This is the gill net, used in conjunction with long lines, for deep sea fishing. These units, called hanyut locally, stay three or four days at sea, fishing primarily for sharks and various types of tuna. The fact that there has been no protest over their use, despite the fact that most of these boats, together with their crew, come from the Banyuwangi area, helps to illuminate the principles underlying the informal rules which govern resource access. Because these boats operate exclusively outside the bay, there has been no concern voiced by local fishers over their operation. Clearly, a proprietary claim of rights to the bay's resources is a fundamental part of the conflicts that have erupted over fishing technologies.

These later conflicts since the 1970's, differ from the earlier conflicts over the introduction of new gear in that rather than being resolved by fishers themselves, or local desa level officials, through new rules and arrangements for resource access, these conflicts were mediated by representatives of national, provincial, and district levels of government: Department of Fisheries officers, police, and even the military. Since the 1970's village officials (desa) have not been involved in the resolution of fisheries conflicts in Prigi, other than as an organ for disseminating information and decisions. This reflects their

declining power in the highly centralized government of New Order Indonesia.

The Directorate General of Fisheries, and its provincial counterpart, the Department of Fisheries, have actively encouraged modernization and capitalization in the fishing industry, with the goal of increased production. At the same time, the Indonesian state under the Suharto government has placed a high priority on maintaining stability, especially in heavily-populated Java. This concern for stability has in a few instances caused the Indonesian government to disregard its technology and capital-bias and take the side of the small scale fishers using more "traditional" technology, as in the famous case of the trawl ban (Bailey, 1988 and 1992). This has been the exception, rather than the rule, however. Fisher protests in Prigi and surrounding communities have for the most part not been resolved in favor of the small scale, low-technology fishers. The violent incidents in Muncar, Cilacap, and other fishing ports in Java in the late 1970's and again in the late 1980's, have made government authorities wary of these large, volatile fishing communities, and the fishers in these places know that. They also know the power and willingness of the Indonesian government to put down protests, however, so that show of strength on the part of fishers in opposition to government policy or government-supported technologies is a dangerous and delicate balancing act.

The new investors in fishing in Prigi, affluent entrepreneurs from the cities of East Java, have a much greater ability to influence fisheries policy and enforcement at the district, provincial and national level than do the small scale fishers of Prigi. With a shift away from local institutions and desa-level enforcement to a legal-political structure at the provincial and national level, the small, and even medium scale investors in fishing technology do not have the means to influence policy and enforcement decisions in their favor, other than through threats to political stability. While so far the financial and political power of the outside investors in Prigi's fishery have not been wielded directly against the local fishers, the potential exists.

#### LOCAL INSTITUTIONS AFFECTING POST-HARVEST RESOURCE ACCESS

Conflicts and institutions regulating access to the bay's fishery resources at sea, however, are only a small part of the local institutions and customary practices relating to fishery resources operating in Prigi, and probably elsewhere in Java. In Prigi, the strongest local institutions relating to the fishery have to do not with limiting access to the fishery resources, but with re-allocation of that catch once it reaches shore. Perhaps because of an inability to restrict access to the bay's resources, the locus of control may have shifted to land, where strong local institutions do exist for redistributing the catch of fish post-harvest. Most local people cannot compete for access with capital-

intensive gear such as beach and purse seines, and have no access to these gears. A concern with equity and fairness underlies these redistributive institutions. Access is open, but local institutions of equity and fairness demand that a large catch must be shared widely among the community.

Redistribution of the catch takes many forms, from simply asking for a few fish to an elaborately detailed and uniformly enforced share system. Three distinct forms that can be considered "institutions" exist in Prigi which reallocate access to the fish catch: (1) the share system used on purse seiners, (2) a system of taking on extra temporary crew members for the purse seiners' peak season, known as ngadim, and (3) various institutionalized mechanisms for "taking" or "stealing" the fish before it reaches the auction site.

When purse seines were first introduced, each boat owner established his own system for paying the crew members, with most of them paying a set wage for each day's work, regardless of the catch. After a while, the laborers began to lobby the boat owners for a share of the catch rather than wages as payment, arguing that they should share in the luck of the catch. The crew members wanted to have greater access to the frequent (in those early days) windfalls, too, and if that meant that on the days that they got no catch they received no pay, they felt it was worth the risk. A meeting was held in 1977, attended by all the purse seine owners, captains, and crew members, as well as the local police, military officers, and fisheries officials. The present share system was decided upon at this meeting, (1/3 of net profits to the crew and 2/3 to the owner), codified, and imposed on all subsequent purse seines operating in Prigi Bay. There is almost no deviation from this system on any purse seiners.

A crew member's income has two major components: his share of the 1/3 of the monthly net profit divided among the crewmembers (calculated each month around full moon when purse seines cease operations for a few days), and a daily lawuhan (literally daily food), a small number of fish from the day's catch. This was originally intended to be taken home for the family meal, but is now often quite a substantial amount to be sold for a few thousand rupiah per fisher.

A second institution operates to provide those individuals without permanent positions on purse seiners an opportunity to share in the harvest during peak fishing season. Purse seiners operate with set crews of 14 to 15 people; however, during peak season one may see purse seiners going out with as many as 30 to 35 people on board. These additional laborers ngadim, or go along, to help pull in the nets. In return they get fish as lawuhan (for daily food) in the same amount as permanent crew members, but no share in the monthly division of the profits. In this way, almost every able-bodied man or youth from Prigi who wants to is able to

work on a purse seiner during the peak season, and brings home a good day's income from the sale of his "lawuhan." In this way youths are trained and acquire skills that help them get permanent positions on purse seiners. The primary purpose of allowing people to ngadim, however, is to provide greater access to the catch. Captains and boat owners all say that the presence of these additional hands decreases rather than increases operating efficiency on the boat, yet they are "forced" to allow them to go along when crew members appear with a brother, cousin or friend who wants to ngadim. The institution of ngadim has originated within the last five years in Prigi, and apparently does not exist much in other fishing ports in Java.

A third institution which operates to redistribute the catch are a number of ways of taking fish after it has been caught but before being sold; some of these are known as "ngetrawl." Small boys and old women, in particular, can be seen at the beach and auction site going from basket to basket of fish, taking a handful of small fish and stuffing them into a pocket or a sarong, or in some cases even a small bucket or plastic bag. These activities are almost completely ignored, as the people who do it are considered needy and the activity shameful. To call attention to it would create more shame for all involved. A much more blatant form of "ngetrawl" are the strong young men who operate sotho, or push scissor nets, in the area around where the purse seiners land. Prigi has no working pier or jetty, so boats are anchored near shore and coolies are employed by each boat to carry the catch in large baskets from the boat to the auction site for weighing, sometimes in shoulder-high waves. Many fish fall out of the baskets in the process, and the men with sotho nets scrape up the fish that "fall" back into the water. In the chaos of many boats unloading large catches in high waves, in reality the fish are often "helped" out of the baskets. Captains and boat owners are watchful and try to stop this, but are basically powerless. Security officers of the Fishing Port of Prigi are responsible for guarding the fish once it reaches the shore, but the fish are the responsibility of the boat's captain and crew until it reaches shore.

Less blatant, but more significant in terms of volume of fish redistributed, are the various forms of giving fish away. Every employee of a purse seiner feels he has the right to give some fish to his friends and relatives. As soon as the boats land near shore, young men and boys can be seen wading up to the boats and being handed plastic bags filled with fish. These are fish being given to them by crew members. Similarly, the "pemikul" or coolies who carry the baskets of fish to the auction site can be seen pulling fish out of each basket they carry and piling it in a corner, watched over by a female fish vendor or small boy. When a boat comes in empty during a time when most other boats have received a good catch, the captain and crew of the unlucky boat will be given fish by the captains of the other boats, creating a

reciprocal obligation. Reciprocity clearly underlies many of these redistributive institutions.

All of these means of redistributing the catch occur before the fish is weighed at the auction site: thus this fish is not included in official production data, and has no tax paid on it to the KUD. Once the fish is weighed and sold to a fish dealer there appears to be an unwritten rule against taking it. The fish taken are either consumed locally or make their way into "black market" fish sales, untaxed by the government KUD.

This redistribution of the catch is not insignificant. Purse seine owners estimated between 10 and 30 percent of the catch disappears through these various forms of redistribution. The owners are concerned about the loss, but complain that there is nothing anyone can do about it. For a while the Fishing Port of Prigi implemented a "security" system to eliminate the taking of fish, for which the purse seine owners were assessed an additional 1% of the catch as payment for the service. After a few months purse seine owners refused to pay the fee because the system was totally ineffective, and it was abandoned.

Despite complaints from boat owners about the loss, no one in the community ever refers to any of these redistributive mechanisms as "stealing," and if I used the words "stealing" or "theft" in this context they displayed discomfort.<sup>10</sup> In fact, people tried to ignore that these things were going on at all, and showed great reluctance to talk about them except in private. People with long histories in the community, including purse seine owners, tended to minimize the significance of these redistributive mechanisms when asked about them, whereas outsiders and relative newcomers, whether fisheries officials or purse seine owners, were more likely to see it as a significant problem.

The only other gear for which significant redistribution of the catch occurs is the beach seine. When a beach seine brings in a good catch, a free-for-all ensues as small children and the beach seine laborers themselves run about grabbing fish and stuffing it in pockets, inside sarongs, and buried in the sand marked by their pointed bamboo hats. Those who are not bold enough to simply take it congregate to watch the hauling in of the nets and to ask for some fish to take home.

Of course some giving away of fish to neighbors and kin when a fisher gets a good catch occurs with all fishing methods, but with no other gears is it so blatant or so significant as with the

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<sup>10</sup> The only person I ever heard use the word "stealing" (curi) in reference to any of these activities was a purse seine investor from a major city who said he had to stay in Prigi to supervise during peak fishing season in order to minimize his loss.

beach seines and purse seines. These two types of gear have three things in common: a typically large catch, a large number of laborers relative to other types of gear, and a labor force that is predominated by people of Javanese ethnicity. Loss of fish through redistributive mechanisms is not a problem for gear operated by crews recruited from outside the local community, such as the shrimp gill net fishers and the combination gill net/long line boats (called hanyut locally), because these crews do not have a network of kin and social obligations in the local community. The type of fish caught also is a factor. Small schooling pelagic species, such as are usually caught in the purse seines, lend themselves more easily to redistribution than do larger species such as large tuna, marlins, and sharks. Most significantly, redistribution occurs only when the catch is abundant, again pointing to the concern with equity and luck which underlies it. During the off season, when a purse seiner might bring in only a hundred kilograms or so of fish if it has a catch at all, no one dares take, or even ask for, any of the catch, and there are no extra crew members as "ngadim." Lawuhan is still given to the crew, however, and in fact, the entire catch is likely to be given as lawuhan when the catch is small.

#### CONCLUSIONS

Local institutions of resource management do exist in Java. However, as this case study illustrates, with the increasing penetration of the Indonesian state's political and legal apparatus into the rural coastal areas of Java, local institutions for regulating access to fisheries resources have been weakened and had less and less opportunity to develop, as conflicts which might have given rise to local management institutions have been mediated in accordance with national level policy. At the same time, however, other, more informal local institutions have been rapidly evolving which do not attempt to limit access to the fishery resources, but rather redistribute those resources after they have been harvested, in accordance with cultural norms related to equity and fairness. Efforts to establish fisheries co-management in areas without strong, well-recognized institutions of local resource management should recognize that such institutions may not have had the opportunity to develop because of a strong government presence in the community, but also that in looking for evidence of local management institutions one should look beyond institutions regulating resource exploitation to other, related cultural institutions which may exist to affect resource use in more indirect ways.

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