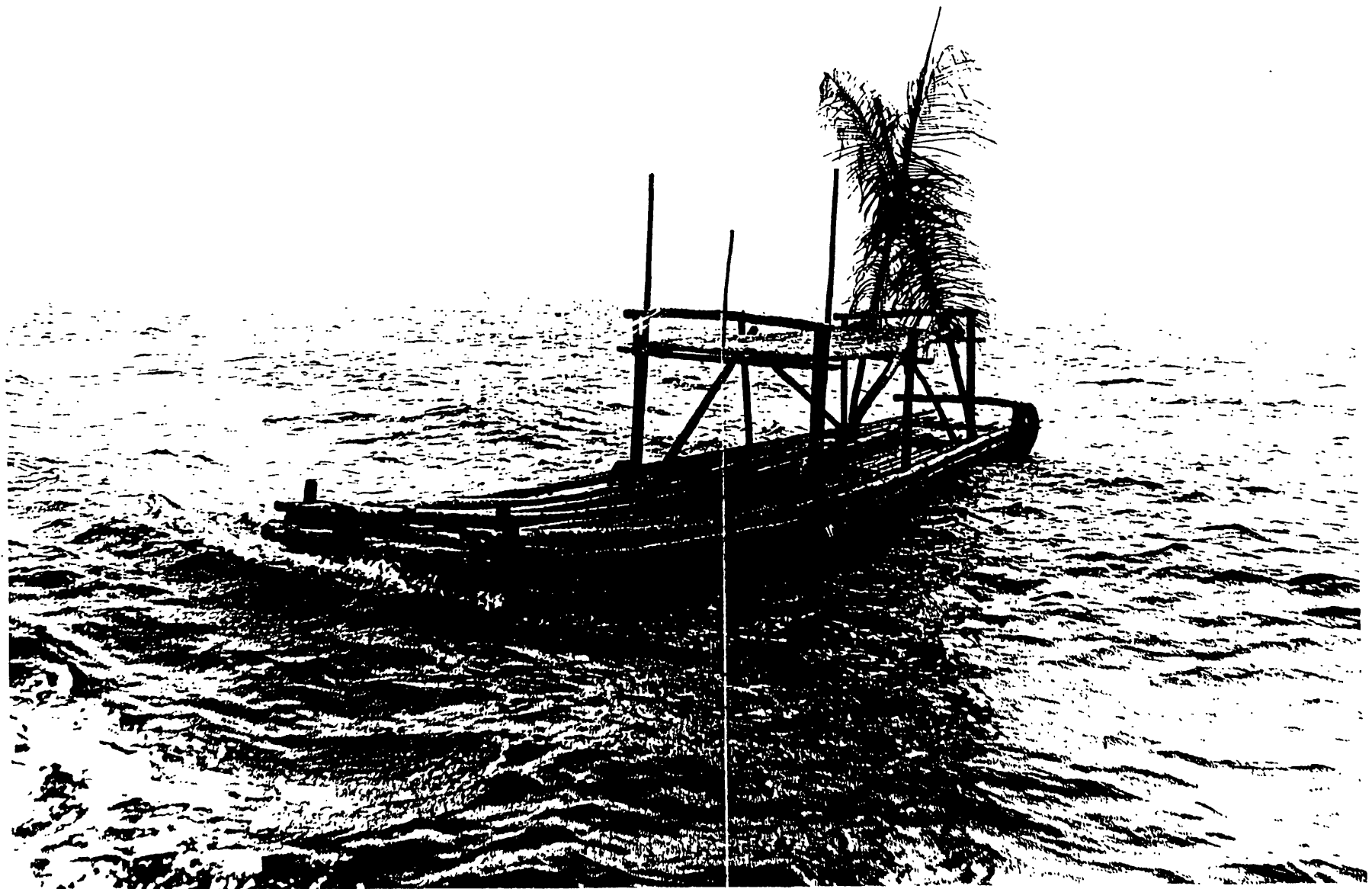


Marine Tenure in Indonesia's Makassar Straits The Mandar  
Raft Fishery

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NEW ROPONG

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**Abstract**

Although a diversity of contemporary common property marine resource management systems has been documented in the South Pacific (Johannes 1982, Johannes et al 1984; Ruddle and Johannes 1985; Cordell 1989), the existence and utility of marine cpr practices on the coasts and islands of Indonesia's vast archipelago of more than 13,000 islands have been questioned (Polunin 1984, 1985).

This paper reviews developments in one contemporary marine cpr system, the Mandar raft fishery, and briefly relates preliminary findings concerning another, the Balabalangan Islands' fishery. The role of these local resource management practices in regulating access to local environments is reviewed, as are their inadequacies. Both marine tenure systems are alive but under assault: they are being undermined and delegitimized by governmental administrative practices and judicial decisions. Adverse consequences of governmental interventions in these fisheries cprs probably entails diminished welfare of local communities and decreased capacity to limit emerging environmental pressures on local resource bases. Strategies for strengthening, focusing, and refining existing marine CPRs as viable resource-management institutions are suggested.

**Marine Tenure in the Makassar Strait: The Mandar Raft  
Fishery<sup>1, 2</sup>**

The fishers of Mandar, Indonesia, a region of poor farmers and fishers squinched between Sulawesi's infertile coastal hills and the Makassar Strait, have fashioned a diversity of technologies and social practices—including bamboo rafts, catch division and capitalization schemes, and property rights governing relationships among rafts (Kallo 1981, 1983, 1988, Zerner 1987, 1989a,b,c, 1990a,b)—to wrest a living from the sea.<sup>3</sup>

Since the late nineteenth century, and possibly earlier, Mandar fishers have constructed rafts known as roppong, which function as floating fish aggregating devices. Waving fronds of bright green banana leaves are attached to the undersides of roppong, their undulating presence attracting migrant schools of scad and tuna. Roppong are expensive constructions (about \$1500 US)<sup>4</sup> of lashed and layered bamboo, approximately 10 meters long and 2 meters wide, linked by long lines of rattan or polyethelene cables to massive anchors made of rocks and coralline limestone chunks.

Until the mid-1970s, roppong operations were seasonally limited by weather, waves and currents. During the East Monsoon (April to August), crews of 30 or more Mandar fishers rowed heavy boats known as bago' to roppong anchored 1 to 3 kilometers from the coast. At dawn the bago' crews circumnambulated the roppong, ringing it with a large seine

net. With luck, thousands of scads were caught in the sweep, hauled aboard, and distributed according to pre-determined systems of catch division (Zerner 1990a). When the crew returned to the Majene area of Mandar, the center of roppong construction and fish distribution, the catch was conveyed to fishermen's wives who usually sold it to traders. Until the mid-1970s, markets for the scad and tuna were strictly local. Traders or papallele (b.Mandar lele: to move), both men and women, carried baskets of fish on their heads or traveled by bicycle or horse-drawn buggy throughout a 10-15 kilometer area (Zerner 1990b; Volkman n.d). In addition to scad roppong (b. Mandar, roppong panjala: from jala:net) owned and operated by bago' crews on a daily basis, other roppong were fished for tuna.<sup>5,6</sup>

Before the late 1970s the number, density, and the spatial extent of scad roppong in the Mandar fishery was limited by traditional technologies as well as limits in labor, capital, and markets. The absence of motors and polyethelene cable placed strict limits on the distances and depths in which roppong could be installed. Moreover, scad roppong could not be located further than 1 to 3 kilometers from the Mandar coast because crews could not row to them, set and retrieve the nets, and return to shore the same or following day. Lack of ice, inadequate roads and social instability also limited fish distribution to the town of Majene and a few villages up and down the coast.<sup>7</sup>

### Who Owns the Roppong?

Roppong were and continue to be jointly held common properties (Kallo 1988; Zerner 1989b, 1990a). In general, prior to the late 1970s, a core community of crew, boat-boss and net boss were the capitalizers and owners of the roppong. Crew members contributed equal amounts of cash to build and launch individual roppong, and received in return, equal shares of the catch (Zerner 1990b).

Since the late 1970s however, roppong capitalization and ownership have become increasingly concentrated, as spiraling costs of motorization and polyethelene anchor cable forced boat bosses to seek capital contributions outside the working crew, for roppong construction, maintenance,<sup>8</sup> and launching rituals. In 1989, it was not uncommon for individual roppong to be capitalized and owned by a group of 3 or 4 wealthy investors, each entitled to shares of fish in proportion to their capital contribution.

### Who Will Own the Roppong?

By late 1989, questions of ownership, shares and the working fisher's relationship to rafts had become even more complex, as international markets had stimulated government and private sector initiatives to install "armadas" of government or privately capitalized roppong focused on tuna capture. One plan envisions small groups of Mandar tuna fishermen, called an "ant armada" (b. Indonesia: armada semut) living on privately capitalized roppong for weeks, where they would be periodically visited by speed boats to

whisk their freshly caught and bludgeoned tuna to a huge, iron-hulled "mother ship."

#### A Landscape at Sea

Traveling to a scad roppong with a net crew and their boat boss, it readily became apparent to me that the roppong-clustered seas of the Makassar Strait are a known and owned territory, not unlike gardens and farms on land. As one moves further and further out to sea and the majestic, cloved-studded hillsides and forested mountains of central Sulawesi recede, a lively seascape looms: the horizon is dotted with scores of individual roppong. Onto the sides or vertical posts of each roppong, spikey fronds of palm are lashed, gesticulating up, out, or down, like hands pointing out to sea. These green leaves, stems and trunks, twisted and tied to each roppong when newly launched, constitute an idiosyncratic marine alphabet, distinguishing one roppong from its neighbor and marking it with the unmistakable signs of individual or collective ownership.<sup>9, 10</sup>

#### Roppong Tenure Rules

Although roppong fishers espouse an explicit ideology of open access or free seas (b. Indonesia: laut bebas), in actuality the roppong fishery in Mandar is informed by practices, property rights and procedures regulating rights and disputes among raft fishers.<sup>11</sup> The primary rules practiced by Mandar roppong fishers are:

1. Site selection is open, subject to certain limitations, namely:

2. Once a roppong is successfully anchored and its position stabilized, it acquires priority rights, particularly the right to control a certain area around its location, and the right to exclude or destroy unstabilized or rogue roppong entangled in its anchor lines, or interfering in its operation.

3. Although never clearly calculated, distances between roppong until the mid-1970s are said to have averaged 3-5 kilometers (Saniaya, p.c. 1989). The informal practice was to install new roppong "as far away [from another stable roppong] as the eye could see."

These rules rewarded prudent, skillful, and lucky roppong launchers by vesting priority rights in their stabilized roppong. However, neither currents, winds, nor roppong on the Makassar Strait are as predictable as these rules imply. Strong gusts and violent storms may sever a roppong from its anchor; powerful, unseen currents may carry a stable roppong into the path of another; imprudent or unknowledgeable boat captains may launch rafts in currents that drag the roppong far from its intended location.<sup>12</sup>

When one roppong is carried into another's territory, the long lines of the unstable rogue raft frequently become entangled with the stable roppong's lines. The constant, mutual abrasion of these lines, under great tension, eventually severs both roppong from their moorings. This



event is a significant economic loss for all concerned.<sup>13</sup> It is to avoid such devastating economic losses and to allocate rights among the respective parties that Mandar fishers vest priority rights in successfully anchored roppong.

If an unstable roppong becomes entangled with a stable roppong, then the owners of the primary raft are empowered with the right to destroy the intruder by severing its lines and setting it adrift.<sup>14,15</sup> However, the right to destroy the rogue roppong in this way was limited. Primary owners could not unilaterally sever its lines unless they first convened a meeting at which they consulted with the intruding roppong's owners, boat bosses or capitalizers, and decided upon a solution (Kallo 1988; Saniaya, p.c. 1989; Dawar, p.c. 1989, Jalal, p.c. 1989; Hartono, p.c. 1989).<sup>16,17,18</sup>

Until the mid-1970s, the frequency of conflict between entangled roppong was probably insignificant because the density and numbers of roppong in the Majene area were limited. In the early 1900s there may have been fewer than five roppong operating off the Mandar coast (Nuri, p.c. 1989). By the mid-1970, there were only 20 roppong in the Mandar area (Saniaya, p.c. 1989; Jalal, p.c. 1989; Wahayuddin, p.c. 1989). By the early-1980s, a relative explosion was occurring in the numbers of scad roppong being built, launched, and fished in the waters off the Mandar coast (Zerner 1989a,b, 1990a).

In 1989 the Majene area of the Makassar Strait was populated by 200 or more roppong, fished daily by both scad and tuna fishermen.<sup>19</sup> In the Majene area, the fishery was showing signs of overfishing as scad yields, per roppong, were regarded by local fishers as steadily and dramatically diminishing since the 1970s. Roppong fishermen in the Majene harbor were describing the economic and ecological symptoms of a tragedy of the marine commons:

' Up through the 1960s, the longest we ever waited before we got fish was one week. Now you can wait up to a month and still not capture anything. What's the cause? Before, in the 1960s and 1970s, there were fewer fishers and many fish. Now there are more fishers, more boats, and fewer fish. What are we to do? Should we limit the number of roppong per fisher? (Roppong builder and Crew Boss, p.c. 6.15.89)

One roppong owner and boat-boss expressed his concern:

Roppong are our gardens, we get our fish from them and we own them. If only we could fertilize them as a farmer fertilizes his garden, then we could increase our yield (Saniaya, p.c. 1989)

Lacking marine fertilizer other than magic formulae, Mandar fishers' strategies have been simultaneously to increase the local density of roppong while searching for other areas of the Makassar Strait as yet uncrowded by raft fishers.

The precipitous rise in the number and density of roppong in the Majene area was spurred by a conjunction of events in the period 1970-1989. Motorization, in particular, dramatically enlarged the area in which roppong could be installed and reached within one day's time; moreover, more than one roppong might be operated by a

single crew. Resilient, longer lasting polyethelene line, in conjunction with the use of increasingly powerful outboard motors, stimulated the installation of a veritable flotilla of new roppong 10, 15, even 30 kilometers off the Mandar coast, rather than hugging the shore.

Among other factors were increased availability of credit for motorization; improved roads facilitating access to markets in the Sulawesi hinterlands as well as cities on the coasts; improved security as separatist rebellions were suppressed; and new markets.

In the Majene area, local practices regulating rights among adjacent owners apparently failed to prevent overcrowding, conflict and overfishing. Although the customary rule regulated claims to priority relationships between owners, it failed to establish clear boundaries and minimum distances between roppong.<sup>20</sup> The spiral of increasing roppong construction, density, and conflict increased.

#### A Roppong Court Case

These problems crystallized in the first roppong fisheries case to be brought into court, tried, and decided by the Pengadilan Negeri Majene (the equivalent of Federal District Court) in 1988. In March 1986, a crew of roppong panjala or seine net fishers towed a new raft, capitalized by a retired Mandar army officer living in Ujung Pandang,, out into the Strait of Makassar. They reached the productive vicinity of a previously launched roppong which

had been successfully anchored for many months. As they passed, the crew of the anchored roppong raised its flag, signaling danger and warning the new crew not to drop their anchor stones. The arriving crew noted the raised danger flag, ignored the warning, and launched the roppong 500-1000 meters away.

The new roppong, launched closer to the "eye of the current," over a period of months drifted closer to the primary roppong. Meanwhile, its crews caught bountiful quantities of fish while those on the primary roppong caught few. When the secondary roppong presented an imminent threat of entanglement with the primary roppong, the owner of the primary roppong attempted to convene a meeting with the launcher of the secondary roppong. No meeting ever took place. On the afternoon of June 16, 1986, following fishing and Ashar prayers, the crew of the primary roppong sailed the short distance to the rogue roppong, intentionally cut its anchor lines, and towed it out to sea (where it would not be carried back by the currents and destroy their own raft), setting it adrift on the Makassar Strait. It was never seen again.

At the insistence of the rogue roppong's capitalizer, these incidents were reported to the police and charges were filed in the Majene District Court. On February 15, 1988, the Majene court found the owner of the primary roppong and seven members of his crew, guilty of criminal acts of intentionally and wilfully using violence against the

property of another person and they were sentenced to two months in jail. The owner and his entire crew of 21 were also found guilty of intentional, wilfull destruction of another person's property and fined under civil tort claims for damages caused by the loss of the roppong.

The Majene court <sup>explicitly</sup> invalidated the Mandar fishers practice permitting severance of an intruding roppong's lines and described it as a custom that must be "nullified" or "abolished" (b. Indonesia:dihapuskan) (Putusan Pengadilan Negeri Majene No. 11, hereafter KPNM 1988). The language of the decision on this issue reveals how the judiciary in Mandar and Ujung Pandang (the appellate court affirmed the decision) regards this customary practice and other local systems of fisheries management in general. The court considered that these practices, "if tolerated....may become an obstacle to national development and also will threaten the laws and unity of the people" (KPNM 1988:73-74). The court further held that Mandar fishers' customary practices "will provide opportunities for individuals to play Judges themselves, and if this tendency is overlooked and continues to grow, it is not impossible that they would threaten national stability" (KPNM 1988:73-74).

The Majene court decision of 1988 constitutes a questionable judicial incision into the fabric of local resource management, in a fishery which was already under stress and rapid change. This decision opens access to the Makassar Strait raft fishery precisely at a time when steps

should be taken to limit, regulate, and rationalize access to this fishery. By insuring that claimants of unstable roppong are given access to the courts and afforded remedies under civil and criminal statutes, the decision constitutes an invitation to newcomers in the Makassar Strait roppong fishery to increase their roppong holdings in any locations they wish. At the same time, the decision deflates local confidence in traditional rules and local dispute resolution practices and institutions. The decision also send<sup>1</sup> a signal to government fisheries officials and judges, as well as the fishers of Mandar and other localities, that systems of justice, dispute resolution practices, and enforcement procedures are powers and instrumentalities under the complete and sole authority of the central government.

Judicial intervention in the Mandar roppong fishery will probably result in higher transaction costs in the court system and fisheries administration (Bailey et al 1990; Skladany 1990). By invalidating the right of stable roppong owners to sever the lines of rogue roppong, a relatively costless system of resource management and property relations is nullified.<sup>21</sup>

The Majene judiciary was supported in this decision by the local chief of the Department of Fisheries (Dinas Perikan Majene). This officials' open access vision of the Makassar Strait fishery also informs his perceptions of conflict between small-scale local tuna fishers and polling line boats. He argues against the validity of local

fishers' sense and sensibility of rights to specific areas of the Makassar Strait (Talle, p.c. 1989):

The ocean is not divided into regional governmental (Kabupaten) divisions as is the land. All the citizens have equal rights to access and are free to enter and fish in any of our territorial waters. I, for example, have the right to capture fish anywhere in the waters of the Makassar Strait as long as I do not destroy the natural environment. A person from Jakarta has just as much a right here.

Although local fishermen think that only they have authority to capture fish here, it isn't true. Local fishers think they control a district (b.Indonesia: wilayah) here. (Talle, p.c 1989)

Among the probable negative environmental consequences of the Majene raft case decision are increased density of roppong; overfishing of scad and other non-migratory species; decreased yields of individual roppong; incentive to build and operate greater numbers of roppong; increased pressure on stocks of bamboo and rattan in Majene and Mamuju areas; uncertainty of investor expectations; and increased transaction and enforcement costs. The decision, now on appeal in the Supreme Court, tacitly constitutes a governmental affirmation of the rights of remote investors, as distinguished from local capitalizers and fishers, in local fisheries.

#### Other Islands, Parallel Problems

Similar problems are probably occurring among many small-scale fisheries throughout Indonesia's far-flung archipelagic nation. A one-day field visit in 1989 to Ambo Island,<sup>22</sup> one of 12 Balabalangan Islands (Desa Gaya Baru, Kab. Mamuju) situated in the shallow waters of Kalimantan's

extensive coastal shelf in the Makassar Strait, suggested that this fishery's indigenous royalty system is being weakened by administrative appropriation of a disproportionate (100%) share of locally levied royalty fees (Zerner 1989c).

Ambo Island's 157 residents use the fringing reefs and coral shelves, extensive inshore seas as well as deep water fisheries of the Makassar Strait to provide protein and profits. In addition to a tuna and red snapper fishery<sup>23</sup>,<sup>24</sup> Ambo fishers have developed and, until recently, successfully practiced a marine resource royalty system.

On arrival within the Ambo lagoon, outsider fishers reported to the local village head, were informed of the rules of the fishery, and, if they agreed to comply, were granted permission to fish. The basic rule was that outsider fishers paid 10% of the market value of the dry weight of their catch, prior to departing from Ambo lagoon.<sup>25</sup>

Preliminary interviews suggest between 1950-1985 the Balabalangan fisheries royalty system was effectively enforced. Since 1985, however, the system has deteriorated. Apparently, one reason for the recent decline in enforcement is regional (Kabupaten) appropriation of 100% of the royalties, while the burdens of collection and enforcement remain on impoverished islanders.<sup>26, 27, 28</sup>

An expansion of regional, inter-island markets for deep water as well as inshore fish and marine products from the



Balabalangan Islands fishery also coincides with declining enforcement.<sup>29</sup> Since the 1950s, fishers from neighboring islands, particularly Sulawesi and Kalimantan, and as far away as Selayar Island, (about 400 miles southeast and an 8 day trip on wind-driven craft) have sailed to these islands to fish, trap, or collect high-priced sea-food products including shark, red snapper, and trochus.<sup>30,31,32</sup> Since the late 1980s, increasing numbers of outsider, mobile-gear fishers are apparently refusing to obey local reporting rules and decline to pay the royalty.<sup>33</sup>

#### Designing the Commons in Fisheries

The problems of the Mandar Balabalangan Islands fishers and fisheries—administrative erosion, judicial nullification, inadequacy of local rules, arrival of uncontrollable new-comers and new gear, increasing prices for marine products and increasing pressures on the environment from international as well as local and regional consumers—are symptomatic of a host of similar problems faced by local fisher communities and marine environments throughout the Indonesian archipelago, and, more broadly, insular and mainland Southeast Asia (Cordell 1989; White 1988a,b; Zerner 1990a).

From the perspective of sustainable resource management or biological diversity, it is clear that local CPR practices are frequently imperfect, incomplete instruments and institutions.<sup>34</sup> For example, one of the glaring gaps in the Mandar roppong tenure regime is absence of a rule

stipulating minimum allowable distances between adjacent roppong. If clear distances were agreed upon, the outermost limits of each roppong's territory could be clearly marked with flags, bouys or other property boundary signs.<sup>35</sup>

If cultures are invented, then marine common property practices may be refashioned and refined with contemporary needs in mind. In this way local institutions and practices shaped to suit other times may be adapted as instruments of contemporary policy, rather than being reified as antiques or nullified as threats to state authority.

State interventions in the Mandar raft fishery have, moreover, compounded existing imperfections by widening the window of opportunity for outsider fishers. The probable results of these interventions are diminishing economic well-being and confidence of local marine communities and the weakening of formerly vital common property institutions. In the Balabalangan Islands, the protection of local fishery stocks and marine habitat, particularly in reef and inshore fisheries, may also be negatively affected by state interventions.<sup>36</sup>

Research in Mandar, a brief visit to the Balabalangan Islands, and interviews with Indonesian non-governmental organizations, suggest that a variety of local, marine common property resource management institutions do continue to exist throughout the Indonesian archipelago. These practices, institutions, and legal sensibilities are under assault from outsider fishers, new markets, and state

interventions. My research suggests that existing Indonesian marine CPRs might be used as the armature of innovative, local coastal and marine management regimes.<sup>37</sup> Moreover, state fisheries development policy may be improved in particular cases by according local fishers more control, economic benefits, legal recognition and administrative support. If property is, as Hohfeld [ ] suggested, a bundle of rights, then an enlightened state would share at least a few twigs of power and responsibility with local fishers.

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#### NOTES

1 Research on the Mandar raft tenure system was conducted in Mandar, South Sulawesi (January-September 1989) with the support of a Fulbright research grant in law and sponsored by the Indonesian Institute of Sciences (LIPI). Research on the Balabalangan Island royalty system was conducted in October 1989 and supported by the Fisheries Research and Development Project, Department of Fisheries, Jakarta. The Balabalangan research findings are necessarily speculative and preliminary as they are based on a one-day trip to Ambo island and interviews with several Mandar fishers.

2 The analysis presented here is the result my research conducted in Indonesia as a Fulbright scholar and an consultant to the Fisheries Research and Development Project, Jakarta and does not represent the official views of the World Resources Institute.

3 See Zerner 1987 for a description of the Mandar flying fishery.

4 In 1989, the materials for a scad roppong raft cost about 700,000 rupiah or \$U.S. 470. Start up costs also include expenses for polyethelene cable (\$US 700 or 1,000,000 Rp.), rattan (\$US 300 or 450,000 Rp.) and an anchor (\$US 21). Total costs including the raft, anchor, and polythelene line in 1989 were approximately \$US 1,500 (2,200,000 Rp.). These are material coasts alone and do not include costs for launching rituals or periodic expenses incurred in replacing the raft, feeding the crew and providing for the the crews' families.

5 Tuna roppong (b.Mandar: roppo paroppo) are jointly owned and capitalized by as many as three to five crews sailing and fishing from fast-moving double-outriggers called sande. On the Makassar Strait, sande crews tie on to roppong and fish for days and ocasionally weeks using live bait or feathered lures. Like scad roppong, tuna roppong are now beginning to be capitalized by parastatal firms, regional fisheries departments and private entrepreneurs.

6 More than one sande may moor at the roppong and fish for tuna at the same time.

7 Besides the town of Majene, the provincial capital of Kabupaten Majene, other village centers of the roppong fishery include Pangale Tamo, Baurung, Cilallang, and Salabose.

8 The average life of the raft portion of the roppong (the roppon proper) is approximately six months. These rafts sustain the constant assault of waves, rain, and currents. Thus roppong capitalizers, whether crew or outside investors also contract to provide funds for roppong maintenance. Tuna fishing on tuna roppong (roppo paroppo), which is currently increasing, involves investing funds to provide food for the crews who may fish for weeks or even months.

9 Although these signs distinguish individual roppong from each other and stand for their owners, boat bosses claim (Sainiaya p.c. 1989) they can tie up and cast their

net on any unoccupied roppong. Crew bosses claim to inspect unoccupied roppong to see if fish have gathered under them, and to select the roppong with the most fish underneath it. If fish are caught at another's roppong, the custom is to provide the owner with a share of the catch.

10 Within the past 6-7 years, a new group of users and a new pattern of use of scad roppong has arisen. Tuna fishermen, using wind-driven boats known as sope (smaller versions of the sande), regularly depart from the Mandar coast at dawn to fish, until dusk, on or around unoccupied scad roppong. These fishers, who are known as pangoli, tie up to unused roppong, and fish with bait or, alternatively, they troll under and around the roppong for hours. Pangoli fishers depart from the roppong in the late afternoon, just before the arrival of the large bago' crews and their nets. Thus many roppong on the Makassar Strait are under constant, 24 hour use and surveillance. At sea, incidents at one roppong are often observed by other bago' netters or pangoli fishers, not unlike the way shepherds may observe, and make inferences about incidents occurring on distant mountains, among remote flocks and shepherds.

11 Mandar fishers with whom I worked do not speak of the rules and practices summarised here as custom (adat) or customary law (hukum adat). Rather, these principles constitute a summary of practices employed by Mandar fishers in the course of staking claims, settling disputes, etc. These practices are not explicitly described by Mandar fishers as the law (hukum) of the roppong fishery. Rather, it is the Pengadilan Negeri Majene or the National Court of Majene which speaks of these practices as constituting a customary or traditional law (hukum adat). By recasting these practices as an alternative source of law, the court situates these fishers' actions and beliefs within a counter-authority--which, in this opinion, is positioned as a potential threat to central Federal law, regulation, and authority.

12 This frequently happens: it may take more than an hour or two for the anchor to settle on the bottom and during this time, the roppong may be carried from its initial launching position. The boat-boss' knowledge of currents, bottom conditions, proximity to other roppong is there critical and consequently, highly valued.

13 Depending on the capitalization agreements, the investments of 30-40 persons may be implicated in the loss of a roppong or the expensive polyethylene anchor line. Since the 1970s, however, the tendency in roppong financing has been a consolidation and reduction in the number of capitalizers. Many roppong in the 1980s are financed by three or four investors rather than 30 working crew members (Zerner 1990).

14 Although Mandar fishers never articulated a clear and certain distance criterion establishing a minimal distance between adjacent roppong, the practice is basically territorial. A rogue or unstable roppong is invariably



treated as an infringing roppong whose fate is determined by the owners of the successfully anchored roppong.

15 In Blackstonian terms, the right to exclude rogue roppong from the vicinity of a successfully anchored roppong, by vesting the right to destroy the secondary roppong in the hands of the primary roppong owner is one of the primary indications of powers of property ownership. In Blackstonian discourse, we might say that the right of exclusion, through destruction, constitutes the primary roppong owner's right of dominion.

16 These meetings, however, were scarcely paradigms of democracy in action and the powers of the primary roppong owners were virtually unrestricted. Although primary owners could design solutions that obviated complete destruction of the offending roppong by severing its lines and setting it adrift, it was the latter course of action which almost always prevailed.

17 The primary roppong owners had the power to stop short of the destruction of the offending roppong and to adopt or devise alternative measures (Saniaya, p.c. 1989). The primary roppong owner could acquire ownership of both roppong, for example, and fish from both roppong. The primary owner might, alternatively, allow the owners of the offending, entangled roppong to fish on either roppong on days when the primary owner chose not fish; also, if the roppong were entangled but not too close, the primary owner could grant the secondary owner rights to fish on whichever roppong was not being fished by the primary owner. Usually, roppong which are located closest to the prevailing currents drew most, and sometimes all the fish to them. The owner of the primary roppong might assert his rights to fish on the secondary roppong if it was located further into the on-coming current. Finally, the owner of the primary roppong could send his men out to make a good faith effort to untangle the lines of both roppong. Usually, however, none of these alternative solutions were put into action and the offending roppong was cut loose.

18 The discretionary powers of the primary owner summarised above are roughly analogous to the power of a judge sitting in equity, in Western legal practice. In equity, a judge is not completely bound by the remedies prescribed by statute, code, or regulation. He may, under certain circumstances, devise or shape a remedy appropriate to the unique circumstances and factual pattern of the case before him or her.

19 By 1989, as many as 200 additional roppong, were being fished in the Mamuju portion of the Makassar Strait, due north of Majene (Kepala Dina Perikanan, Kab. Mamuju, p.c. 1989).

21 The Mandar raft fishery is not merely a compilation of rules and a structure of rights, as legal positivism might suggest, but also an invisible moral and legal sensibility which informs and, indeed, motivates acts. It

is this sensibility which moves the minds and hearts of local fishers in a system of justice which is, in certain circumstances, self-executing. A roppong fisher and charismatic boat-boss offers this narrative:

I once launched a roppong up-current from another nearby roppong. Within a few hours it was apparent that it was going to endanger the down-current roppong. What did I do? I cut the lines of my own roppong! I didn't go back to shore and tell him (the other owner) first. I didn't need to speak with him. Later, when I got back to shore, I went and told him what I had done. Out on the sea I knew what was wrong and I did something to rectify it. Later, on shore, I confessed (b. Mandar: mangaku) my wrong-doing. Saniaya, p.c. 1989.)

22 Interviews on the Ambo system were also conducted with several Mandar fishers who have fished in the Balabalangan Islands.

23 From January through August, Ambo fishers use swift, slender, seven meter long motorized boats to troll for tuna and fish for red snapper. They sell their catch, salted and sun-dried, in the increasingly lively markets of Balikpapan, Kalimantan. From September through December, Ambo fishers focus on gathering a variety of increasingly valuable sea-food products including sea cucumber, trochus, as well as fishing, with fixed and mobile gear, for red snapper. Gathering trochus and other marine animals take place in inshore waters up to 25 fathoms deep.

24 These expeditions use boats powered by expensive inboard engines and compressor gear financed by sea-products traders based in Balikpapan (Kalimantan) and Ujung Pandang.

25 Like many island-based marine tenure systems observed in the Pacific, the inshore waters of the Balabalangan islands are visually accessible to residents, permitting effective surveillance and subsequent enforcement. This system apparently worked very well, as this Mandar fisher's account suggests:

If you fish 2 or 3 kilometers from the islands, then you are a free man (orang bebas) and do not have to pay the royalty fee. But, if you fish within their waters, you have to get permission to fish and you have to pay. People watch the waters in front of their houses. If they see you, they will shout to you: have you already reported to the village head? If you say no, they ask you whether you intend to report. And then, they report you! Someone comes out in a boat to talk to you. (Pak Salama', p.c. 1989)

26 The day I arrived on Ambo, the shouts of the kepala desa to outsider fishermen anchoring in the Ambo lagoon could be heard for hours. Apparently the kepala desa was ordering a particular boat to leave the Ambo harbor because

they had fished, refused to pay the royalty, and were attempting to sell their dried fish to local Ambo fish traders (who would sell the fish in the Balikpapan market). Not all interactions between outsider fishers and Ambo government representatives are adverse. On the same day, I observed the late afternoon arrival of a wind-driven sailing boat from Selayar Island, a losenge shaped island approximately 400 miles southeast of Ambo, just below the tip of Sulawesi's southeast penninsula. The captain of the Selayar boat and his crew had made an eight-day journey to Ambo in search of shark, which they claimed were scarce in the Selayar waters. They anchored in the Ambo lagoon, waded ashore, negotiated for hours with the kepala desa, and agreed to pay the royalty on shark and other fish caught during their stay.

27 Formerly, the pooled yearly royalties of the islands were presumably distributed more equitably. Although figures on yearly royalties, and relative proportions of royalties surrendered to the regional purse and those funds allowed to remain within the Balabalangan district are not yet available, local officials on Ambo expressed blatant dismay and dissatisfaction with the way current royalty yields were apportioned. More research needs to be conducted on the history and current problems of the Ambo royalty cpr.

28 Recent regional appropriation of an extortionate proportion of fees apparently siphons monies from the periphery to the center, turning the pockets of local fishers inside out, at the same time as local hearts and minds--the keystones of enforcement--are drained of motivation.

29 Preliminary research suggests the Balabalangan Island fishery has acted as a magnet (a fisher aggregating device) drawing small-scale as well as capital-rich fishers and sea-food products entrepreneurs from Sulawesi, Selayar, Kalimantan and Java. The arrival of new outsiders, using mobile as well as stationary gear, and rising prices and markets, has placed increased pressure on the Balabalangan royalty system.

30 It is not clear how each island's contribution is determined. According to one Mandar fisher, each island's contribution is determined at a yearly meeting of village heads. The heads are asked how much they collected and their contribution to the regional government (Mamuju) is determined according to their estimate.

31 According to Mandar fishers (Salama', p.c. 1989), these funds are used for community goods such as building or repairing Mosques, supporting local schools, or improving the water supply.

32 According to the current head of Desa Gaya Earn, the formal access rule's of this fishery are:

a. If non-islander (outsider) boats anchor in the sheltered lagoon waters known as the "room" (b.Indonesia: ruangan) with the intent to fish in our waters, the crew

leader must report to the local district head, state their intention to fish, and agree to pay the royalty at the conclusion of the fishing trip.

b. Once the fishing period is completed, the outsider fishers must return to the island, report their catch, have it weighed, and surrender 10% of its estimated market value (i.e. current market price in Balipapapan).

c. A portion of the resource royalties collected by village headmen on the twelve Balabalakang islands is surrendered each year, to a representative of Mamuju regency (Kabupaten Mamuju) who makes a yearly tour.

33 Gear type, for example apparently determines who is and who is not a free rider in the Balabalakang fishery. Notorious are the mobile Mandar fishers of Luoar village, sailing wind or motor driven double outriggers. Ambo villagers complain that they now stay for a few weeks at a time, floating around and fishing continuously, without anchoring within the Ambo lagoon. These wily free-riders frequently avoid payment of royalties. Fixed-gear fishermen financed by distant, capital rich entrepreneurs, are, by comparison, law-abiding fishers who pay their fees. Since 1988, fishers financed by privately owned sea-food companies based in Java and Kalimantan have explored and tapped the rich potential of the Balabalakang red snapper fishery. They use enormous, woven bamboo traps (B. Mandar: dappo') which are weighted down and anchored in 25-50 fathoms and they pay their bills to local fishers: In 1988, the first dappo' yield was 6 tons of red snapper valued at 6,000,000 rupiah and the Ambo village head obtained a royalty of 300,000 rupiah (or half the formal fee) after negotiations with representatives of these fixed gear fishers.

34 The Ambo fishery only limited access (numbers) of fishers indirectly: if a fisher refused to pay the royalty, he was reportedly excluded, driven off or discouraged from entering. Among other questions are: to what extent were fishermen actually driven off or excluded from the Balabalangan fishery; how much revenue, over the past three decades, did each island obtain from the royalty system; what proportion of these revenues did the Kabupaten obtain; which fishers, using what kind of gear, from where, have arrived at the Balabalangan fishery during the past three decades.

35 See Johannes and McFarlane (1984) for a description of a Torres Strait system marking reef boundaries with poles.

35 This is especially true on the reefs and inshore waters of Balabalangan Islands which have been repeatedly subjected to dynamite fishing.

37 Where local cprs never or no longer exist, they should be invented. Experiments in the Philippine reef conservation (White et al 1987a,b) and in social forestry in Indonesia and the Philippines (Ford 1989a,b; Zerner 1990c) suggest useful models for innovative local fisheries management projects.