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Articles, comments, and books for review should be addressed to:

MAST
Anthropological-Sociological Center
University of Amsterdam
O.Z. Achterburgwal 185
1012 DK Amsterdam
The Netherlands

Business correspondence should be addressed to:

Het Spinhuis Publishers
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Community-Based Fisheries Management Institutions in Indonesia

Conner Bailey
Auburn University

Charles Zerner
Woodrow Wilson International Center for Scholars

ABSTRACT Problems and prospects associated with community-based management of tropical fisheries resources are examined through a comparative case study based on field research conducted in Indonesia during 1990 and 1991. The argument is made that the central government lacks both the detailed knowledge of local ecosystems and the enforcement capability necessary to effectively manage highly diverse fisheries resources in this large archipelagic nation.

Community-based fisheries management systems have a long history in Indonesia and under certain conditions have proven effective not only in managing fishery resources on a sustainable basis, but also in fairly allocating access to these resources among local users. The dynamics of such systems are illustrated by comparing community-based management of a freshwater fishery in West Kalimantan Province with systems used for managing marine fisheries in Maluku Province.¹ In both cases, long-standing management systems are shown to be based on detailed local knowledge and consensus among community members. These systems are shown to be dynamic and adaptive, but whether they can adapt to new pressures, created by rapidly changing market conditions and the efforts of local government authorities to gain control over resource allocation as a means of increasing tax revenues, is left as an open question. The case study materials are followed by a critical examination of the opportunities and problems associated with community-based fisheries management. The paper concludes with a set of specific policy recommendations that would encourage recognition of local rights to resources, decentralization of responsibility for fisheries management, and a recapitulation of the reasons for doing so.

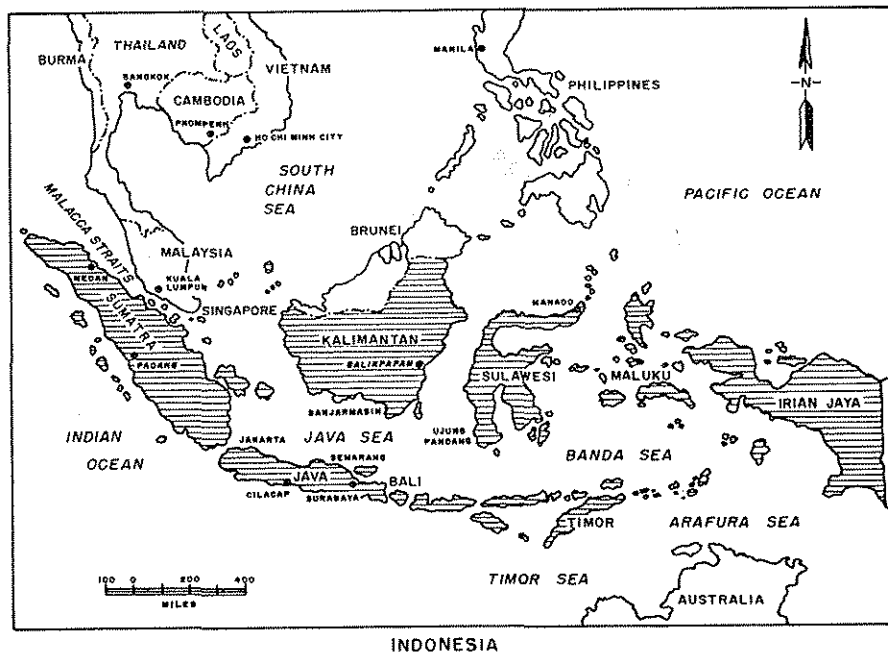
Introduction

Indonesia's marine fisheries sector is characterized by rapid adoption of new production technologies in a context of finite resource availability (Bailey et al. 1987). Opportunities for expanded harvests from the sea exist, but most important fishing grounds are heavily exploited and in some cases overexploited. During the next 25 years, resource management will become the key to fisheries development.

Fisheries management often is assumed to be a governmental responsibility (Gordon 1954). However, the effective capacity of government agencies to regulate what goes on in widely scattered fishing grounds is distinctly limited. This is particularly true in Indonesia, which has 81,000 kilometers of coastline and more than one million fishers. Compared to the scope of the problem facing government agencies attempting to control fishing activities, administrative and technical capacities are relatively weak (Bailey 1988b; Marlessy 1991a, 1991b; Zerner 1991b). Under these conditions, devolution of major resource management and allocation decisions to the local level may be more effective than management efforts which distant and understaffed government agencies can provide.

Community-based management systems offer the opportunity to allocate resource rights and benefits in a more sustainable and effective manner. Compared to these systems, government attempts to manage fisheries resources based on available scientific data are recent in origin and unproven in effectiveness. Results of our research indicate that the Indonesian government should resist the temptation to extend bureaucratic control over fisheries resources. Instead, the government should work in partnership with local management systems where they exist, and foster their extension into new areas wherever possible.

Throughout this paper we emphasize the dynamic, historically conditioned nature of community management institutions and their embeddedness in the larger context of political and economic forces. Community management institutions in Indonesia, like those elsewhere in Southeast Asia and the Pacific, exhibit great variation in their social-distributive designs, environmental consequences, and reliance on indigenous environmental knowledge. They also differ greatly in their cultural construction of



ideas of nature, resources, and habitat dynamics. These institutions should not be understood as if they were outside of time and place. They must be understood as human creations, situated in, made of, and shaped by the historical contexts in which they are embedded.

In this paper, the positive prospects as well as problems of local resource management in Indonesia are presented through recent case studies in Kalimantan and the Maluku Islands. These case studies are preceded by a general discussion which lays out the rationale for local management of common property fisheries resources. Following the case studies, the paper concludes with a discussion of the opportunities and limitations associated with local fisheries management and with specific legal and policy recommendations for encouraging effective local management of fisheries resources in Indonesia.

Community-Based Fisheries Management Institutions

The advantages of local management of fisheries resources has been well documented in various parts of the world, including the United States (Acheson 1975), Japan (Commitini 1966; Ruddle 1985, 1989), the South Pacific (Iwakiri 1983; Johannes 1981; Ruddle and Johannes 1985); and Indonesia (Zerner in press). A growing literature on local common property resource management systems dealing with forestry, graze lands, and other biologically renewable resource systems also is available (e.g. Agarwal 1991; Berkes 1989; Bromley and Cernea 1989; McCay and Acheson 1987; National Research Council 1987; Poffenburger 1990; Runge 1986).

Recent research in Eastern Indonesia (Abrahamsz 1991; Khouuw and Simatauw 1991; Zerner 1989a, 1989b, 1991a, 1991c) as well as historical surveys throughout the archipelago (Polunin 1984) suggest that local resource management systems may serve to effectively manage and allocate inshore fisheries resources. The efficacy of coastal community management institutions appears to depend on a number of factors, including relatively low population density, homogeneity of kin- or territorially-based communities, and the use of relatively simple extractive technologies.

However, many of these conditions are changing. Indeed, the viability of local management institutions is under assault by a variety of forces including the rapid expansion of global markets for marine products, the expansion of state control over local resource systems, the often misguided efforts of international agencies to promote fisheries development, and the increasing efforts of private sector investors to gain control over coastal and marine resource systems (Bailey 1988a, 1992). The cumulative effects of this tide of forces have undermined many community management institutions, economically and spatially marginalized local coastal communities, and led to overexploitation and degradation of coastal fisheries resources (Zerner, in press).

At the core of local management is the issue of property rights. Property rights are rights to a secure stream of benefits from the territory or the particular resource in question. The existence or absence of property or control rights is a matter of fundamental importance in conceptualizing fishery management policy issues. In fisheries, problems of over-exploitation generally are attributed to the lack of clear property rights and the consequent efforts of individual fishers, in an open access

situation, to maximize benefits even at the expense of resource sustainability and long-term societal good (Gordon 1954). In open access systems, there are no effective boundaries around the resource, no limits are placed to the entry of individuals who wish to share in exploitation of the resource, and no restrictions on how the resource is to be exploited. In the absence of clear and enforceable property rights, resource competition becomes a mad scramble that often leads to resource depletion and local impoverishment. Governmental regulations to control levels of fishing effort are imposed to forestall the 'tragedy of the commons' (Hardin 1968).

Part of the problem has been conceptual: governments frequently fail to conceive of or recognize the existence of local community management institutions which may effectively manage access to local resources. The 'tragedy of the commons' may not simply result from the fishers' inability or lack of desire to restrain themselves from overexploitation. The 'tragedy' outcome may also result from a governmental failure to recognize local community institutions, rules, and intentions to successfully manage resources.

In Indonesia, government fisheries policy is based on the assertion of total state management authority over marine resources and waters. Indonesian fisheries laws and regulations, moreover, do not explicitly recognize local community tenures or property rights, although this does not amount to the proposition that such rights do not exist. Lack of explicit government recognition of community tenures in inshore territories and resources continues despite mounting evidence that local fisher communities will fiercely defend their economic interests and territorial rights against economic injustice and outsider access (Bailey 1988b; Zerner 1991b). The contrast with landholders' rights could not be more striking. On land, the Basic Agrarian Law of 1960, which governs terrestrial environments, recognizes customary law (*hukum adat*) and community territorial rights (*hak ulayat*), allowing customary land owners and/or historic users the basis for legal claims.

The potential advantages of local management institutions include effectiveness and equity. They may be effective because local fishers are knowledgeable regarding the resource. Local fishers are likely to be motivated to protect their resource from overexploitation. In operation, these systems may be based on broadly accepted local notions of social justice, ensuring the legitimacy of the management system in the eyes of local residents. Local communities are in the best position to monitor compliance with regulations. In most rural fishing communities, informal social sanctions can be imposed on individuals who transgress collectively established restrictions.

The combination of physical presence and the application of informal means of social control is far more efficient than dependence on government agencies to enforce regulation. The cost of enforcing regulations along thousands of kilometers of coastline is prohibitive and in practice rarely occurs. In practice, government attempts to centralize fisheries management authority have resulted in *de facto* open access conditions throughout much of Indonesia. This is so due to the limited capacity of the central government to enforce fisheries regulations. The failure to recognize local community resource rights and responsibilities undermines community capacity to manage local resources and local incentives to comply with fisheries laws. Empowering fishermen to manage local resources is no panacea for the increasingly complex problems of coastal resource management. It is difficult to visualize achieving the goal of effective resource management, however, without the active involvement of those who will be most affected.

Case Studies from Kalimantan and the Maluku Islands

In this section we discuss the functioning of local fisheries management systems in a lake and river system of West Kalimantan Province, and management systems found to operate in the Maluku Islands. Both Moluccan and Kalimantan cases demonstrate the flexibility of community management institutions responding to rapid changes in the values of locally available resources. While the Kalimantan case demonstrates an attempt to wisely manage resources in the context of increasing market-generated pressures for exploitation, the Moluccan case demonstrates the relative weakness of community management structures and the potential for 'take-overs' by non-local, private sector or local government elites. The two case studies demonstrate that local management systems are dynamic and under significant commercial and political pressure. The case studies also demonstrate that such systems are both dynamic and variable.

Kapuas Hulu

The Kapuas River of West Kalimantan Province is the longest in Indonesia. The Kapuas River fishery is one of the most important freshwater capture fisheries in Indonesia. The fishery can be characterized as multi-species, multi-gear, and highly seasonal. Giesen (1987:133-134) reports 112 fish species associated with the upriver lake system. He notes that 19 of these species were present in at least 20% of the 25 catches (from three different gear types) he examined in 1986. Fishing activity takes place along the entire length but approximately 70% of the catch comes from the upper reaches of the River and is associated with a series of lakes of varying sizes connected to the River and each other by a series of waterways. Giesen (1987:26-27) counted a total of 83 distinct lakes, 14 of which were over 600 ha in size. During peak flood season, however, boundaries often become meaningless as the area resembles an inland sea.

Peak fishing seasons are associated with rainfall patterns. The highest catch occurs at the start of the rainy season (October-November) when the lakes begin to flood. At this time, many species of fish migrate into the lake district. A second peak in catch occurs during the months of lowest rainfall (June-July), when fish migrate from the lakes. As they migrate, fish are concentrated into known channels. At this time, they are vulnerable to being caught by fishers intimately familiar with the behavior of local species.

The lake district appears to be a key to management of the Kapuas River fishery due to its role as spawning and nursery ground for numerous fish species that inhabit the river. Giesen (1987) reports that since the early 19th century, local restrictions on fishing activities have been enforced to protect the resource from overexploitation. Subsequent field work during 1989 and 1990 showed that fishers in this area continued to control their own fishing activities as a means of ensuring sustainable harvests from the river and lake system (Bailey et al. 1990; Pollnac and Malvestuto 1992). Approximately 65 communities of fishers are located in the upper Kapuas River and lake district. The fishers themselves are organized along residential units associated with a particular body of water. Each of these groups is led by a head fisher (*ketua nelayan*). Each community has effective control over a particular area. Fishers from each community have exclusive use rights to operate within a particular area in the lake district. Fishers from one community can ask to operate in the area of another community, but must first receive permission from the local head fisher. The head fisher

