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Evaluation of social and ecological outcomes of fisheries co-management in Tam Giang Lagoon, Vietnam

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ABSTRACT

Evaluation is considered crucial for every co-management system to improve its outcomes, modify its implementation, celebrate its achievements and to achieve long term effectiveness. This study evaluates the social and ecological outcomes of the newly created fisheries co-management system in Tam Giang Lagoon, Vietnam. The data was gathered from six fishing communities and included a survey ($n = 252$), 12 focus groups and 12 in-depth interviews with fishers and 15 in-depth interviews with resource managers, policy makers, co-management experts and practitioners. The study investigates the social and ecological changes associated with the presence of the co-management system. Although there was insufficient evidence to conclude that there was an increase in fish yield in the lagoon since co-management commenced in the mid-2000s, there was a measurable improvement in fish stocks with no further collapse in the lagoon fishery. The presence of co-management has contributed to a considerable reduction in the violation of regulations and conflict between lagoon resources users. However, these positive social and ecological outcomes were reported only in some parts of the lagoon. The study indicated that if compliance with the regulations is not achieved, and especially if the number of Chinese Lu (a bottom fishing trap) is not controlled effectively, fishery degradation may recur in the future. Consistency in the co-management system and improvements in government policies and practices in support of the community in handling violators and enforcing regulations, are vital for the future of the lagoon system.

1. Introduction

During the last two decades, there has been a transformation in the management of common pool resources towards development of co-management systems in fisheries management. In many places co-management has evolved as a response to the decline of fisheries resources and "fish wars" in different continents (Pomeroy et al., 2007; Wilson et al., 2003). Co-management is seen as a measure to halt the degradation of fisheries resources, improve equity and improve the effectiveness and appropriateness of fishery management (Pinkerton, 1989; Pomeroy and Ahmed, 2006). There has been considerable research on fisheries co-management. Alongside research on theories of, and practices in, fisheries co-management arrangements, evaluations of fisheries co-management systems have been reported (Pomeroy and Ahmed, 2006).

Assessment of co-management systems is important for a number of reasons. Firstly, it helps to confirm whether or not co-management systems work and are beneficial. Secondly, evaluation results show the strengths and weaknesses of specified co-management systems, and so help stakeholders to improve their systems. Thirdly, evaluation is one way to celebrate and appreciate any achievements by the stakeholders—"Evaluation of the broad dynamics of co-management are therefore key to long term effectiveness" (Hauck and Sowman, 2001, p. 182). As co-management is a contextually based system and it is an adaptive, continuous and iterative process (Armitage et al., 2007; Pomeroy, 2006), evaluation is necessary for every co-management system, especially newly created systems.

The effectiveness and impacts of fisheries co-management systems have been evaluated with respect to co-management process and co-management outcomes. The evaluation of process has focused on activities such as collaboration, learning, and communication (Evans et al., 2011) or the assessment of the fulfillment of co-management agreements and success of co-management (Napier et al., 2005). The outputs of co-management arrangements have been evaluated according to three dimensions: efficiency, equity and sustainability (Pomeroy and Ahmed, 2006). The most

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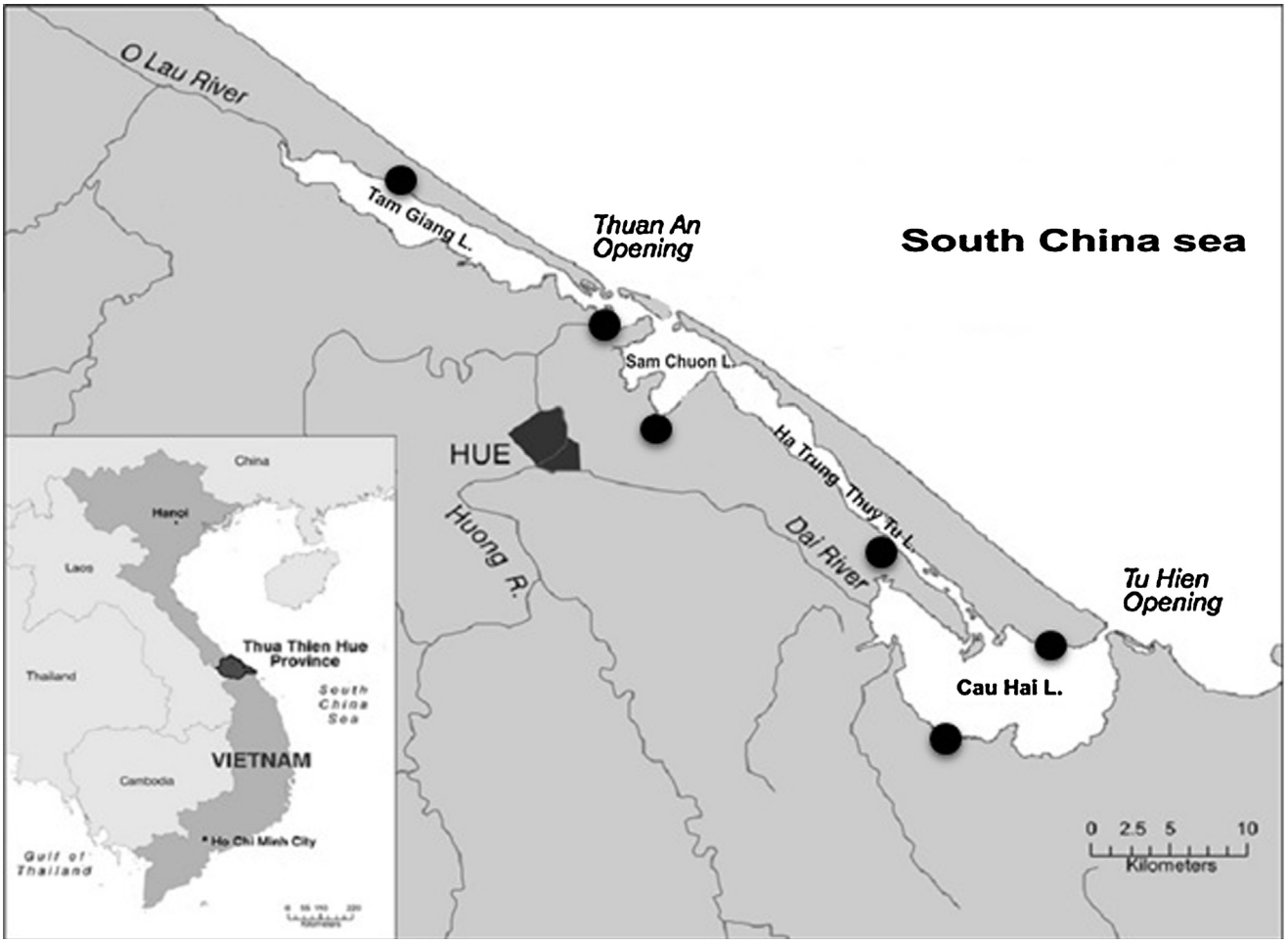

Fig. 1. Study area and study cases (black circles), Tam Giang Lagoon, Viet Nam. Adapted from Armitage et al. (2011).

frequently used indicators of efficiency are optimal rate of use of a fishery and the transaction cost (the cost of establishing and maintaining co-management arrangements). Equity can be measured through the degree of equitable distribution of benefits and the pattern of redistribution of those benefits. The measurements of sustainability that have been used are stewardship towards the resource, resilience of the management system and compliance with rules. Some assessments have measured the impact of co-management on fishers' incomes and livelihoods (Evans et al., 2011).

According to Pomeroy and Ahmed (2006) the success of co-management projects can be measured by indicators at three levels: individual, community and project levels. At the individual level, some important indicators are: involvement, capacity, control, access, skills, and personal change. Indicators at community level include communication, representation, collaboration, trust, and support. At the project level, success is measured in terms of material output (resources production), human involvement, project benefits, management structure and participation. Izurieta et al. (2011) have developed 27 indicators to measure the effects of co-management. These indicators were classified into five groups based on a capital asset framework (Jeffrey et al., 2007): financial, human, natural, physical and social. At a broader level, the impact of long term and short term co-management arrangements can be evaluated using several indicators. The following indicators are most used: (i) overall well-being of household; (ii) overall well-being of the resources; (iii) local income; (iv) access to resources; (v) control over resources; (vi) ability to participate in community affairs; (vii) ability to influence community affairs (viii) community conflicts; (ix) community compliance with resource management; and (x) amount of resources harvested (Evans et al., 2011; Pomeroy et al., 1997).

The performance of co-management arrangements can also be evaluated by using a "with" and "without" method (Pomeroy and Ahmed, 2006). This assesses the advantages of co-management compared to other management mechanisms such as centralized management or self-management. Others have used a "before" and "after" method to measure the changes resulting from co-management arrangements, by comparing changes in indicators (Pomeroy et al., 1997). Some studies test hypotheses relating to the advantages of co-management including: better compliance with rules; lower transaction costs; more adaptability and capability to manage and respond to change; and greater community participation in resource management (Pomeroy and Ahmed, 2006).

In general, the social, ecological and economic impact of co-management appears positive in the evaluations reported. A meta-analysis of the impact of fisheries co-management in 90 sites across 29 case-studies in developing countries conducted by Evans et al. (2011) showed a positive trend in fishery yield, household income, household well-being and control of conflict. Pomeroy and Ahmed (2006) have presented evaluations from co-management case studies in Asia which showed a positive correlation between enforcement of regulations and compliance. These studies also con-