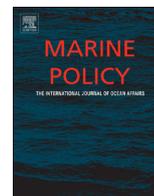




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# Why local people do not support conservation: Community perceptions of marine protected area livelihood impacts, governance and management in Thailand<sup>☆</sup>

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## ABSTRACT

Conservation success is often predicated on local support for conservation which is strongly influenced by perceptions of the impacts that are experienced by local communities and opinions of management and governance. Marine protected areas (MPAs) are effective conservation and fisheries management tools that can also have a broad array of positive and negative social, economic, cultural, and political impacts on local communities. Drawing on results from a mixed-methods study of communities on the Andaman Coast of Thailand, this paper explores perceptions of MPA impacts on community livelihood resources (assets) and outcomes as well as MPA governance and management. The area includes 17 National Marine Parks (NMPs) that are situated near rural communities that are highly dependent on coastal resources. Interview participants perceived NMPs to have limited to negative impacts on fisheries and agricultural livelihoods and negligible benefits for tourism livelihoods. Perceived impacts on livelihoods were felt to result from NMPs undermining access to or lacking support for development of cultural, social, political, financial, natural, human, physical, and political capital assets. Conflicting views emerged on whether NMPs resulted in negative or positive marine or terrestrial conservation outcomes. Perceptions of NMP governance and management processes were generally negative. These results point to some necessary policy improvements and actions to ameliorate: the relationship between the NMP and communities, NMP management and governance processes, and socio-economic and conservation outcomes.

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## 1. Introduction

Marine protected areas (MPAs) are an important instrument for conservation and fisheries management. MPAs can protect habitats, ecosystem structure, functioning and integrity, and species diversity, richness, size and density [1–3]. These conservation and fisheries benefits are particularly evident in “no-take” MPAs [4]. Their import as a management tool has led to increasing numbers of MPAs around the world – more than 6800 MPAs covering ~2.86% of Exclusive Economic Zones in 2010 [5] – and global commitments to scale up the coverage of MPAs to 10% aerial coverage by 2020 [6].

The management and conservation benefits of MPAs can also lead to positive outcomes for local communities through spillover of fish into local fisheries [7–12], mitigation of climatic and environmental threats [13], and tourism livelihood benefits [14–17]. Yet MPAs have also been criticized for leading to negative social, economic, cultural and political impacts for local people and communities (see literature review below). This is problematic since support for and the success of MPAs is predicated on positive local perceptions of socio-economic and ecological outcomes in many locations [18–21]. Support is also dependent on perceptions of the effectiveness and quality of management and governance policies, institutions, and processes [22–25].

Situated between Malaysia and Myanmar and facing the Bay of Bengal, the Andaman coast of Thailand is an area of high biodiversity and ecological importance [26]. Within the 116,000 km<sup>2</sup> of marine area, there are important areas of seagrass, coral reefs, and mangroves [27,28]. However, the ecological health of the area is threatened by overexploitation and destructive fishing, degradation and loss of habitats, and pollution and fisheries are in decline [28–30]. There are a number of MPAs in the area, including several smaller community-based MPAs [31], one

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non-hunting area, several environmental protected areas, 12 fisheries sanctuaries, and 16 established and 1 proposed National Marine Parks (NMPs) that are under the jurisdiction of the Department of National Parks, Wildlife and Plant Conservation (DNP) of Thailand [32]. The NMPs cover a total area of 483,990 ha and have a threefold mandate: conservation, education/research, and tourism/recreation. However, the region is highly populated (> 2 million inhabitants in 6 provinces) and reliant on fisheries, and the NMPs are situated in areas near or around many of the 621 small-scale fishing communities along the coast [30].

It is important that community perceptions of NMP impacts on local livelihood outcomes and assets as well as of governance and management are examined so that NMP processes can be adapted and outcomes improved. This paper presents results of a multiple case study of 7 communities situated near 4 NMPs on the Andaman coast of Thailand. The analysis of perceptions is framed around various aspects of the sustainable livelihoods [33–35], governance [23,36], and management [22,37] literatures. The paper proceeds with a review of literature on the impacts of MPAs on local communities and the theories that frame the analysis prior to describing sites and methods and presenting results.

## 2. Review and theory

### 2.1. MPAs and local communities

MPAs can benefit local communities. Proponents have long suggested that MPAs can lead to empowerment, improved governance, alternative livelihoods, improved fisheries, and social, educational, and cultural benefits [3,14,38–40]. In practice, however, MPAs have led to quite divergent outcomes (Table 1). For example, one study [17] revealed that MPAs can lead to poverty reduction through tourism jobs, better governance, health improvements, and empowerment of women. Pacific island MPAs improved fisheries landings, governance, community organization, resilience and adaptation, health, integration, traditional management measures, and security of tenure [41]. On the other hand, Christie [42] demonstrated that MPAs in Philippines and Indonesia were “biological successes and social failures” through limiting participation, inequitably sharing economic benefits, and lacking in conflict resolution mechanisms. Cayos Cochinos MPA in Honduras has restricted livelihoods without providing alternatives and limited access to traditional areas that are now open to tourists [43]. Bavinck et al. [44] showed that the Gulf of Mannar National Park and Biosphere Reserve in India has exacerbated pre-existing conflict and led to violence against officials. Even in the flagship Apo Island

Marine Protected Area in the Philippines, support for the MPA has declined due to a switch from community-based to centralized national management and governance [24]. What all of these studies and broader more integrative studies confirm is the importance of considering community livelihoods, particularly when “no-take” MPAs are employed, as well as governance and management for the success of MPAs [22,45–47].

### 2.2. Framework for analysis

The sustainable livelihoods literatures provided a frame of reference for our research and analysis. Sustainable livelihoods frameworks proposed by Carney [33], DFID [72], Scoones [34] and Ellis [35] suggest that there are a number of micro to macro-level contextual factors – including trends and shocks as well as policies, institutions, and processes – that transform and mediate access to assets and have impacts on livelihood strategies or portfolios and the resultant socio-economic and environmental outcomes (Fig. 1). Central to the sustainable livelihoods frameworks are a number of capitals or assets that are the platform for livelihood strategies. These assets include natural, social, human, physical, financial, cultural, and political capitals – definitions of each provided in Table 2. In the context of this framework, a marine protected area can be seen as a social institution that is comprised of a series of laws, policies and processes that are enacted by various levels of government (as well as private sector and civil society actors) through applied governance and management. It has been suggested elsewhere that the SL framework is useful as a tool for analyzing the impacts of protected areas on livelihood outcomes and assets and the role of protected area policies, institutions, and processes (i.e., management and governance) in producing these outcomes with the ultimate goal of improving conservation practice [73,74].

Since the sustainable livelihoods literatures provided little guidance on management and governance, literatures on protected areas governance [23,36] and management [22,37] were also used when analyzing results of this study. Good governance is promoted through legitimacy, transparency, accountability, inclusiveness or participation, fairness or equity, integration or coordination, capability, and adaptability. Effective MPA management requires adequate capacity and resources, effective communication of rules and regulations (e.g., boundaries), extensive programs of education and outreach, participatory processes of creation and management structures, consideration of the values of all stakeholders, relationships built on trust, coordination with other management institutions, integration of scientific and traditional knowledge, and mechanisms for conflict resolution and to ensure

**Table 1**  
Potential socio-economic impacts of marine protected areas on local communities [7,15–17,24,43,44,48–71].

| Benefits  | Consequences  |
|---|---|
| <ul style="list-style-type: none"> <li>● Increased food security</li> <li>● Increased wealth</li> <li>● More household assets</li> <li>● Higher levels of employment</li> <li>● Diversified livelihood options</li> <li>● Greater access to health and social infrastructure</li> <li>● Revitalized cultural institutions</li> <li>● Improved governance</li> <li>● Greater community organization</li> <li>● More participation in natural resource management</li> <li>● Increased empowerment of women</li> <li>● Reinvigorated common property regimes</li> <li>● Increased resilience</li> </ul> | <ul style="list-style-type: none"> <li>● Decreased food security</li> <li>● Increased restrictions</li> <li>● Decreased power and alienation from NRM</li> <li>● Forced migration</li> <li>● Loss of assets</li> <li>● Increased poverty</li> <li>● Loss of social and educational facilities</li> <li>● Inequitable distribution of benefits</li> <li>● Loss of tenure</li> <li>● Increased social tension</li> <li>● Increased conflict and political struggles</li> <li>● Exacerbated vulnerabilities</li> <li>● Negative socio-cultural changes</li> <li>● Reduced adaptive capacity</li> </ul> |

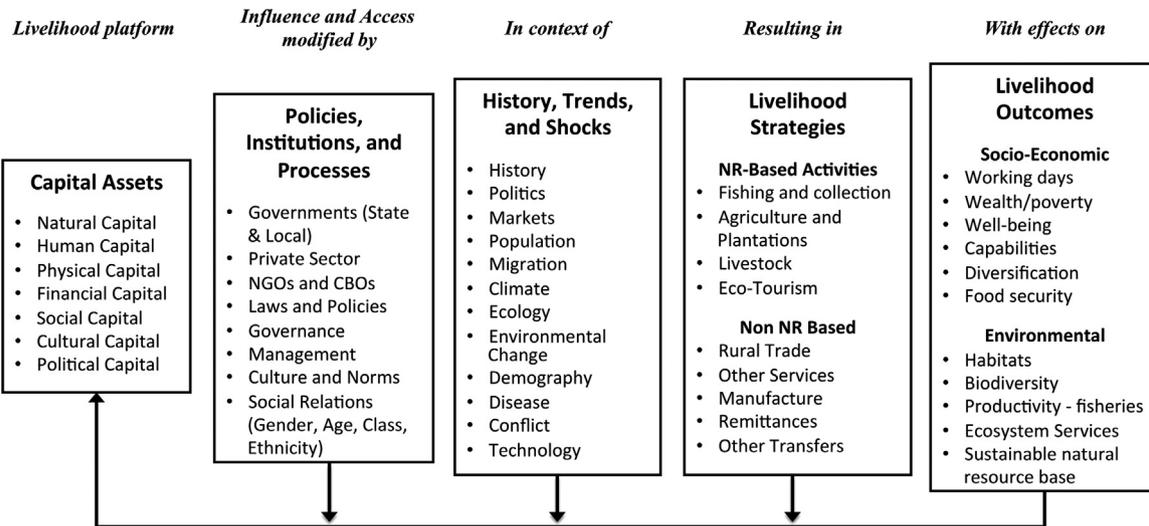


Fig. 1. Modified sustainable livelihoods framework (adapted from [33–35]).

Table 2  
Definitions of the capital assets (adapted from [33,34,75]).

| Capital assets           |   |
|--------------------------|---|
| <b>Natural capital</b>   | The natural resource stocks from which resource flows useful for livelihoods are derived (e.g., land, water, wildlife, biodiversity, environmental resources)                           |
| <b>Social capital</b>    | The social resources (networks, membership of groups, relationships of trust, access to wider institutions of society) upon which people draw in pursuit of livelihoods                 |
| <b>Human capital</b>     | The skills, knowledge, ability to labor and good health important to the ability to pursue different livelihood strategies  |
| <b>Physical capital</b>  | The basic infrastructure (transport, shelter, water, energy, and communications) and the production equipment and means that enable people to pursue their livelihoods                  |
| <b>Financial capital</b> | The financial resources which are available to people (whether savings, supplies of credit or regular remittances or pensions) and which provide them with different livelihood options |
| <b>Cultural capital</b>  | The practices, traditions, and resources that are central to a people's identity and the means and processes to maintain these  |
| <b>Political capital</b> | The policies and legislations, political supports, governance processes, and formalized institutions that facilitate or hinder the transformation of the other capital assets           |

transparency and accountability. Effective management also relies on monitoring, evaluation and adaptation of actions based on a management plan.

### 3. Site description and methods

#### 3.1. Study sites

Seven communities, situated near 4 different MPAs, were chosen for the purposes of this study. The communities included in this study were Baan Tha Khao and Baan Koh Panyee near Ao Phang-Nga NMP and Than Bhok Khorani NMP, Baan Lions and Baan Tapae Yoi near the proposed Koh Phrathong NMP, and Baan Koh Chang, Baan Moken and Baan Ko Sin Hi near Mu Koh Ranong NMP (Fig. 2; Note: Baan=Village; Koh=Island). The NMPs under question were all located on the northern Andaman coast of Thailand. They each contain important areas of seagrass, mangroves, or coral reefs and all have forested islands within their boundaries. Tourism visitations varied significantly across the sites with Ao Phang Nga NMP (202,808 visitors) receiving the highest average visitation between 2002 and 2007, followed by Than Bhok Khorani (84,506), Mu Koh Ranong (3267), and Mu Koh Rah-Koh Phrathong (355) [26]. The communities were chosen for diversity – of livelihoods, population, ethnicity, geography, and marine habitat dependencies – but also for feasibility. Livelihoods in the

communities consisted primarily of fisheries, agriculture and plantations, tourism, and migration for wage labor. Populations ranged from 57 to 1775 people. Ethnic groups in the communities included Thai Muslim, Thai Buddhist, indigenous Moken [76,77], as well as Malaysian and Thai diaspora.

#### 3.2. Methods, analysis and limitations

A mixed-methods approach, including interviews and household surveys, was chosen to examine perceptions of the MPA impacts on neighboring communities as well as perceptions of governance and management processes. This study was part of a broader study that also focused on environmental change, vulnerability, and adaptive capacity. Exploratory and in-depth individual interviews (total=85) were conducted with community leaders (n=22), community group leaders (n=5), community members (n=35), government employees (n=3), NGO representatives (n=7), academics (n=3), and government agency representatives (n=10). The sample included 24 females and 61 males. In addition, 23 interviews were facilitated with groups of 2–5 community members. Surveys were completed with 237 households in the 7 communities representing between 21% and 47.7% of households in each community. Households were selected randomly from community maps by selecting every *n*th house. Survey participants were 40.9% male and were an average of 42.1 years old. The majority of the survey was focused on adaptive capacity;

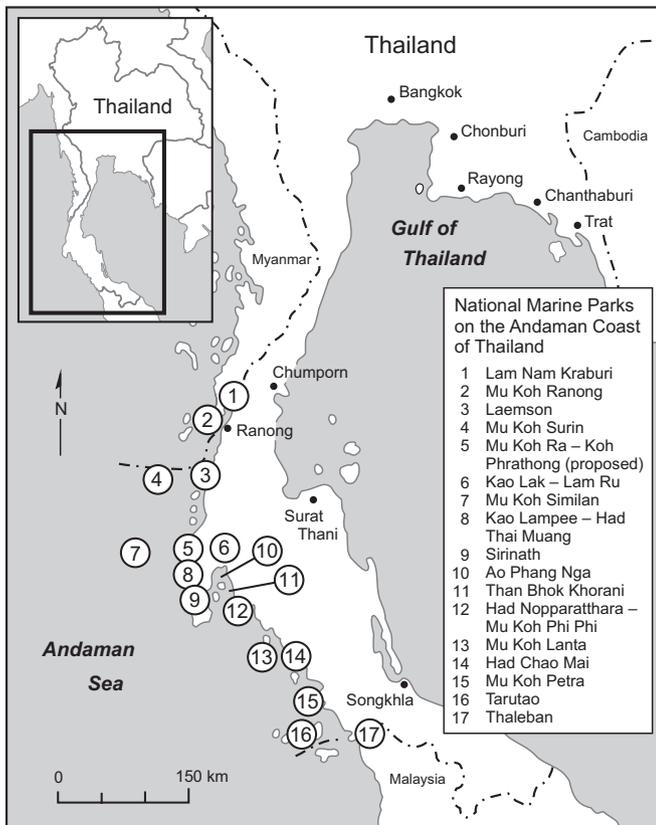


Fig. 2. Map of MPAs on the Andaman Coast of Thailand.

however, several sections also focused on perceptions of the NMPs. In particular, participants were asked whether they agreed, disagreed, or were neutral on questions related to the impact of the MPA on marine conservation, terrestrial conservation, participation in management, knowledge or nature and support for conservation, tourism jobs and benefits, and access to livelihood resources.

Trained research assistants translated interviews as they were conducted. Field notes were taken, transcribed, and uploaded into NVivo qualitative research software. Analysis was conducted in an inductive fashion and then thematically organized under the various components of the sustainable livelihoods framework: livelihood strategies, livelihood outcomes, livelihood resources (i.e., capital assets), and policies, institutions and processes (i.e., governance and management). Survey data was analyzed in SAS and SPSS quantitative research software.

Limitations of this study include a gender bias in the interview sample and potential cultural misunderstandings or language mistranslations. The selective sampling of communities means that results are not generalizable to all communities and NMPs but provide important insights.

## 4. Results

### 4.1. Livelihood strategies and socio-economic outcomes

Across all of the sites, the most discussed and worrying effect of the creation of the NMPs was the impact on livelihood strategies and outcomes. Opinions about observed or possible outcomes varied depending on livelihood strategies (Table 3). Participants were most often concerned about the exclusion of fishers and subsistence harvesters from the area. This was more of a concern in the communities near the proposed Koh Ra-Koh Phrathong

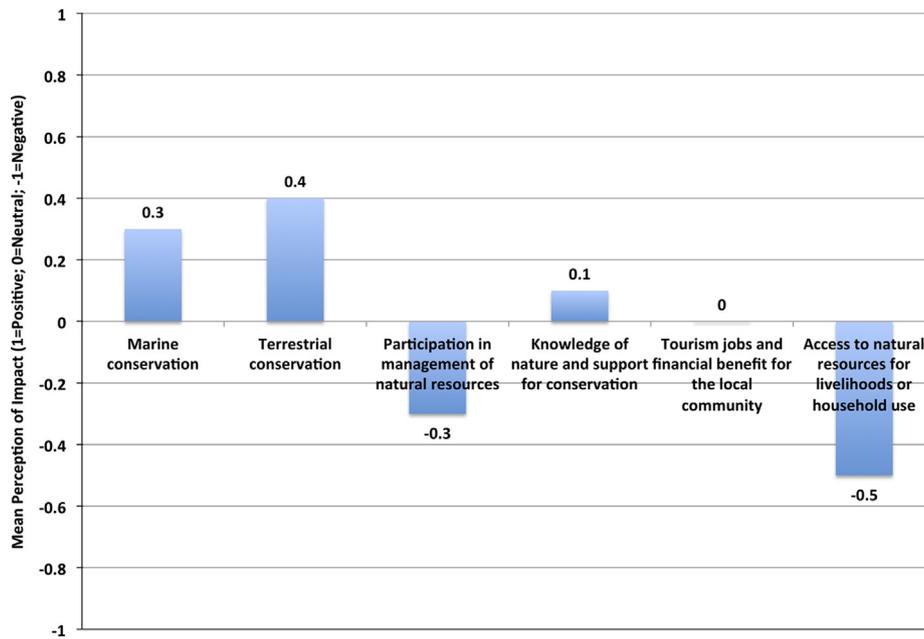
NMP where a commonly expressed opinion was “if there is a demarcation of a controlled zone then people cannot make a living from fishing and collecting shells”. In the NMPs that had already been created, participants also discussed the negative impact on fishers and gleaners. However, many participants in these areas observed that there had been minimal impact on fishers because either (a) DNP regulations allowed small-scale fishing in the NMP as long as fishers followed Department of Fisheries (DoF) regulations or (b) DNP regulations did not technically allow fishing in the NMP but the managers did not enforce the regulations. A fisher from Koh Panyee in Ao Phang-Nga said “Locals can still fish there with no problems.” Fishers near Mu Ko Ranong MNP would express sentiments such as “I did not hear anything about any new rules. I have not changed anything from the past.” Lower level management and staff in the DNP offices showed empathy towards local fishers – “As long as the gear is not against the [DoF] law we don’t intervene, because it is people’s livelihoods.” – and said that this was the reason that rules were not enforced for local fishers. Participants often said that it was only in areas where there were tourists that the DNP enforced the rules. For example, in Than Bhok Khorani “DNP does not allow you to collect shells on some islands. It is restricted. On some touristy islands they do not allow [harvesting] but on the [islands] that are not so well known it is allowed.” Quantitative survey results showed that participants were more likely to feel that the MNP would decrease access to natural resources for livelihoods and household use (Fig. 3).

Perceived livelihood outcomes of the potential loss of access to fish and harvest for livelihoods and subsistence were varied, ranging from that the NMP would (a) have no impact on incomes or households if the rules were not enforced to (b) concerns that the loss of rights to fish and harvest would result in increased poverty, decreased well-being, increased conflict, and declining food security. Participants from near Koh Ra-Ko Phrathong NMP often discussed the example of Mu Koh Surin MNP where the DNP stopped the traditional Moken community from fishing and harvesting in the area without providing other livelihoods options. They felt that this had made traditional local fishers into criminals: “They have to steal from the sea to make a living. They have lived there for 10 generations, but they have no choice...Everything they do is illegal, they cannot even collect seashells in their own home. They become worthless.” Participants discussed arrests that had happened in the past and were apprehensive that this would continue to happen. Both in the communities and amongst NGO and academic representatives, there was a deep sense of injustice that “poor”, “local”, “traditional”, and “small-scale” fishing and gleaning practices would be excluded from the area. In Koh Ra-Koh Phrathong NMP, this had lead locals to protest the creation of the NMP and to burn down the national parks office.

Other extractive livelihood strategies that could be impacted by the NMP included aquaculture and plantations. Interviews showed that locals did not have any involvement – either as owners or laborers – in pond aquaculture so there were no perceived impacts in this area. Participants understood that fish cage aquaculture was not allowed in the NMP but showed that the DNP did not enforce this rule. However, since the cages were illegal this meant that owners could not get insurance from fisheries for the fish cages in case of disease or failure. This meant increased risk and vulnerability for these households. The NMPs, it was felt, had more of an impact on plantations. In communities near Ao Phang Nga NMP, locals often discussed how the DNP came to cut down plantations that were owned by local people and that have been there since long before the park: “Rubber plantations is an occupation that was passed on from my grandfather’s generation which dated back to 70 years ago. My plantation is inside the park. They often come to cut them down”. In several communities, it was perceived that the rules were not applied judiciously to plantations owned by

**Table 3**  
Perceived impact of NMP on livelihood strategies and outcomes.

| Livelihood strategy                                | Relative perceived impact          | Perceived outcomes  |
|--|------------------------------------|---|
| Fishing and harvesting (for income or subsistence) | Neutral to very negative           | <ul style="list-style-type: none"> <li>• No impact to increased poverty</li> <li>• No impact to decreased food security</li> <li>• No impact to decreased well-being (e.g., traditions, culture, social, conflicts)</li> <li>• No impact to decreased access</li> </ul>   |
| Plantations  | Neutral to very negative           | <ul style="list-style-type: none"> <li>• No impact to less diverse livelihood options</li> </ul>  |
| Aquaculture – Pond                                 | None                               | <ul style="list-style-type: none"> <li>• None as no local involvement</li> </ul>  |
| Aquaculture – Cages                                | Slight negative                    | <ul style="list-style-type: none"> <li>• More vulnerable to risks</li> </ul>  |
| Management   | Slight negative to slight positive | <ul style="list-style-type: none"> <li>• Minimal increases in employment</li> <li>• Minimal increases in wealth</li> <li>• Decreased well-being (e.g., dignity)</li> </ul>  |
| Tourism  | Fairly positive to fairly negative | <ul style="list-style-type: none"> <li>• Increased employment to minimal and seasonal employment</li> <li>• Increased wealth to decreased wealth</li> <li>• Inequitable distribution of wealth</li> <li>• Rising costs and expenses</li> <li>• Decreased well-being (e.g., social impacts of tourism)</li> <li>• Displacement from accessing or using some areas</li> </ul> |



**Fig. 3.** Perceived impacts of the national marine parks on selected conservation, management, and livelihoods indicators (mean score where 1=positive, 0=neutral, -1=negative).

“outside businessmen” even though they were the ones who were often encroaching and trying to expand their plantations. In the more recent Mu Ko Ranong and Koh Rah-Koh Phrathong NMPs, boundaries were created to try to exclude plantations and areas that were owned by local people. Participants in Koh Chang felt that the national park had done a reasonable job of excluding plantations so there would be no impact on local plantation owners. In Koh Ra-Koh Phrathong, however, DNP attempts to consider plantations and ownership did not seem to assuage local people’s concerns that plantations would be included within the boundaries of the national park thus undermining local livelihood options for diversification both now and in the future.

Two potential alternatives to these extractive livelihood strategies that could emanate from the creation of the NMP were related to tourism and management. For tourism, survey results indicated an overall neutral perception of whether NMPs would “improve tourism jobs and financial benefit for the local

community” (Fig. 3). These results were the result of highly polarized views with 39.2% of participants disagreeing and 38.0% agreeing that “the park has or will improve tourism jobs and financial benefit”. Results varied significantly (Chi square  $p$ -value = ~0.004) across communities suggesting that perception of the benefits from tourism were spatially segregated, which was matched by survey data and observations. In Ao Phang Nga NMP, Ko Panyee received high visitation from tourists but the next community (Koh Mai Pai) only 5 km away had no visitors. Similarly, Koh Chang had a growing tourism industry while Koh Sin Hi did not receive any visitors. Though tourism jobs were perceived to be a likely outcome of NMPs many participants discussed how there were limited benefits to most locals because of elite capture of financial benefits, outside ownership of businesses and resorts, hiring of outside laborers, or because the DNP managers owned restaurants and tourism businesses and were keeping the benefit for themselves. There was a general feeling

that the NMP would result in increased sales of crafts and souvenirs, which would bring some benefit to communities. Many participants were also concerned that a growing tourism industry would also result in increased household costs (e.g., for food, water, and electricity) but also rising costs for land because of increased demand by outside business people. Finally, tourism development was seen to have significant social costs – including cultural appropriation and displacement. Participants discussed how the Moken community on Koh Surin was moved close to the national parks office so that they could charge tourists to go to the Moken community: “The national park thinks that the Moken belong to them and they are a selling point for tourists. Tourists want to see the traditional fishermen in their environment.” However, collected fees are not re-directed towards the Moken community. Interviewees also discussed how areas with resorts or that were used by tourists were no longer accessible to local people.

There were several ways that locals could be employed in management: as rangers, as managers, as contractors, and as maintenance staff. Yet participants felt that only a minimal amount of additional employment in management would result from the NMPs and they were concerned both about the amount of pay and the potentially demeaning nature of the job. Overall it was perceived that there was limited hiring of locals into management positions and as one participant stated “I doubt that this would happen.” The exception to this was on Koh Panyee where “4–5 people from Panyee are working at Ao Phang Nga NP out of 40 staff.” One interviewee who had previously worked as a ranger for the DNP in Ao Phang Nga had quit because they did not pay well enough and even neglected to pay employees sometimes. Few people expressed willingness to work as maintenance staff because they felt that the NP did not pay enough and also that it was demeaning work. Referring to Mu Koh Surin, one participant told us: “The NP pays them 100 baht per day to cook, clean and

run boat service. It is not enough.” In addition, some participants saw the maintenance positions as undignified: “Maybe in 20 to 30 years, I will be collecting garbage like the Moken on Surin.”

#### 4.2. Livelihood resources

Assets form the basis of livelihoods. Livelihood assets were felt to be influenced by the NMPs in two ways. First, the policies, institutions and processes of the NMPs directly influenced access to assets. Second, livelihood outcomes could further support or undermine future access to assets. For example, the wealth earned from tourism development could promote further local development and gains or be centralized with a wealthy external elite. Due to length restrictions, it is beyond the purview of the current paper to provide specific narratives or examples but an overview of perceptions of how livelihood resources are impacted by the NMP is provided in [Table 4](#). In summation, while NMPs are perceived to undermine access to resources necessary for traditional livelihoods, it appears that DNP and NMP managers do not consider adequately the means (assets) that are required to ensure that locals benefit from alternative livelihoods. For example, according to community respondents DNP management and policies fail to consider local values and development needs, support local capacity building, or promote local businesses.

#### 4.3. Conservation outcomes

Qualitative and quantitative perceptions of participants differed on the perceived conservation outcomes of the NMPs, particularly regarding the marine environment. It was agreed across all sites that terrestrial conservation was part of the mandate of the DNP. However, qualitative perceptions of the effectiveness of terrestrial conservation differed amongst areas. Interviewees in villages in Mu Koh Ranong and Ao Phang Nga

**Table 4**  
Perceived influence of the national marine park on livelihood resources.

| Capital asset     | Perceived influence of NMP  |
|-------------------|---|
| Natural capital   | <ul style="list-style-type: none"> <li>● Positive impacts on terrestrial resources</li> <li>● Mixed impacts on marine resources</li> <li>● Undermines access to marine resources</li> <li>● Undermines local land ownership</li> </ul>  |
| Social capital    | <ul style="list-style-type: none"> <li>● Conflictual relationships with managers and governors</li> <li>● Creation of inter-community conflicts</li> <li>● Undermines community relationships with other agencies and organizations</li> </ul>  |
| Human capital     | <ul style="list-style-type: none"> <li>● Interferes with social programs or alternative livelihood programs initiated by outside organizations</li> <li>● No provision of training or capacity building for local people to participate in tourism or management</li> </ul>   |
| Physical capital  | <ul style="list-style-type: none"> <li>● Creation of NMP related tourism infrastructures (e.g., piers, campsites, bathrooms, restaurants)</li> <li>● Does not support the development of social (health, education) or basic (transportation, water, communications) infrastructures</li> <li>● Limits the growth of houses and community boundaries</li> <li>● Confiscates and destroys illegal fishing gears</li> </ul> |
| Financial capital | <ul style="list-style-type: none"> <li>● No additional access to finances to support local development</li> <li>● National park fees are centrally administered</li> <li>● Minimal economic benefit from tourism to be redirected towards development</li> <li>● Economic capital retained by elite, outside business people, or managers</li> </ul>  |
| Cultural capital  | <ul style="list-style-type: none"> <li>● Undermines traditional livelihoods and cultural practices</li> <li>● Lack of support for maintenance and use of traditional knowledge</li> </ul>   |
| Political capital | <ul style="list-style-type: none"> <li>● The DNP mandate for national parks supports tourism development</li> <li>● Lack of policies and mechanisms to incorporate local values and knowledge</li> <li>● Minimal provisions for participation in management processes</li> <li>● Lack of policies to ensure local benefit and to support local development</li> </ul>   |

NMPs all thought that the national park would result in protection of forested areas on the islands. Conversely, the majority of interview participants near the proposed Koh Rah-Koh Phrathong NMP believed that the national park would not protect the forested area effectively. This belief was alleged to be true for two reasons: there would be encroachment by outside businessmen for plantations and there would be illegal logging and hunting by the protected area superintendents and managers. Interviews revealed widespread confusion about whether the DNP mandate included the protection or management of the marine environment. Many interviewees expressed sentiments such as “The islands are under DNP, but there is no control over the sea” or “If there were new rules, we would know”. A minority of participants did recognize that the NMPs were also intended to protect marine habitats and resources. Yet even these participants were often skeptical that the NMP would actually result in marine conservation benefits because of lack of active management or enforcement. Even upper level management in one of the parks admitted that the DNP has “...no knowledge of the condition of the fisheries resources. The DNP only really manages the land.”

In brief, interview participants were split on whether NMPs were effective in protecting the terrestrial environment and largely in agreement that they would not effectively protect the marine environment. Survey results regarding perceived terrestrial and marine conservation outcomes were somewhat positive overall but views varied significantly (Fig. 3). Approximately fifty four percent (53.6%) of participants felt that the NMP would improve marine conservation compared with only 24.9% who thought it would worsen (Chi square  $p$ -value =  $< 0.001$ ). Slightly more (57.8%) were in agreement that terrestrial conservation would be improved by the NMP while 22.4% disagreed (Chi square  $p$ -value =  $\sim 0.003$ ).

#### 4.4. Institutions and organizations: management and governance

Beliefs about livelihood and conservation outcomes were intricately linked with perceptions of management and governance. Overall, perceptions of participants on the quality and effectiveness of management and governance were quite critical.

The legitimacy of DNP governance was broadly questioned on the grounds that governors and managers were not personally invested in local community or conservation outcomes and that the NMPs did not meet their lawful obligation to manage the resource. According to one participant “The park managers don't have any investment in the area. They have somewhere to escape to afterwards, a house in Bangkok, no relationships or social ties in the area.” Participants often mistrusted the DNP and felt that local people would do a better job of protecting the area. According to one NGO representative, though Thai law grants the authority to manage the resource to the DNP “...they misuse the authority. They don't take care of the resource, they just act as if they own it.” The inability to manage the area was attributed to lack of capacity within the agency and coordination with other agencies by NGO representatives, academics, and individuals from other government agencies. An often discussed issue that led to a lack of capacity was the political appointment of superintendents by each subsequent government rather than hiring based on skills and knowledge. In Thailand's uncertain political climate, this happened often, leading to a lack of trust and uncertainty in communities about whether “the rules are going to change under the next superintendent”. The DNP was also noted for being particularly challenging to work alongside by interview participants from the Navy, the Department of Marine and Coastal Resources, the Department of Fisheries, regional Tambon Administration Offices, and the Ministry of the Interior. They noted a lack of willingness to coordinate activities, which was partially related to unclear or

overlapping jurisdictions. One upper level NMP manager noted “A key conflict between DNP and other government departments is that other agencies bring development.”

Lack of coordination may be partially due to the centralized and top-down governance structures and processes that participants felt had also resulted in a lack of consideration and participation during creation and ongoing management of the NMPs. In recent years, DNP policies did require that national parks create committees for participation in management to increase coordination with other agencies and inclusion of local people and values. Yet DNP managers and one academic who sit on a committee told us that these committees consisted largely of regional business people and politicians and included few people from local communities. Furthermore, one participant who was on one of these committees suggested that they were ineffective and that superintendents did “not know what to do with them.” In several instances, we learned that the DNP was trying to engage with communities more during creation and management but local elites and politicians in the communities would not allow NMP officials to enter their communities to meet and discuss ideas. Interviewees suggested that these individuals felt that their personal interests and/or those of their communities were threatened. On the other hand, in Koh Chang local leaders had allowed the DNP onto the island leading to a locally acceptable arrangement for land allocation. Overall, a somewhat negative perception ( $-0.3$ ) was held by survey participants about the impact of the NMP on levels of participation in management of natural resources (Fig. 3).

Several additional governance concerns were transparency, accountability, and fairness or equity. Participants felt that there was a lack of transparency in the DNP about programs of work, management plans, park fees and funding allocations, park creation processes, and appointment of superintendents. One NGO representative likened the DNP to “a twilight zone” where the reasons for decisions were not clear and one could not get answers to questions: “It is hard for locals to understand what is going on.” This also led to challenges in holding managers accountable for their actions. There were widespread perceptions that the DNP and superintendents were corrupt. This often extended from anecdotes about managers extorting money from locals and business people, making financial claims for extra staff who were non-existent, logging and fishing in the area, and claiming a portion of park entrance fees. Local people felt that NMPs were inequitable in two ways: they were only accessible to wealthy tourist who could afford the fees and financial benefits went mostly to those who already had money or power. Finally, participants noted that the DNP was not adaptable or open to feedback and that managers were “not interested in improving themselves” so governance was unlikely to change. Moreover, as one participant said referring to conversations that he had had with people from communities near several different NMPs: “Everywhere it is the same. The feeling is not good.”

Management shortcomings were largely seen to extend from these issues with governance. There had never been programs of education or outreach in any of the communities that we visited. Despite this, there was a slightly positive perception ( $+0.1$ ) that the NMP would increase knowledge of nature and support for conservation (Fig. 3). Yet communities lacked knowledge of rules and regulations, the locations of boundaries, or even the existence of a park because there was little communication emerging from management offices. Access to park management plans was denied to our research team in all but one of four park offices that we visited without a letter from the DNP head office. If it occurred, enforcement of rules and regulations was seen to be inconsistent – due to minimal and seasonal monitoring – and inequitable – favoring outside business and landowners and

commercial fishers over local people. Participants often discussed how there were no mechanisms for participation in creation or management, for consideration of local values and development considerations, for transparency and accountability, for resolving conflicts, or for integrating local and traditional knowledge into management. The one exception was on Koh Chang, where locals had been consulted extensively during the creation of Mu Koh Ranong. Still it was felt by many participants that park managers did not understand local communities in large part because the “superintendent and assistant superintendent never come out into the park”.

## 5. Discussion

This paper makes a contribution to the literature on the impacts of conservation and MPAs in a particular context. This study suggests that local perceptions of NMPs, under the jurisdiction of the DNP, are fairly negative in coastal communities in Thailand. Perceived impacts of NMPs on livelihood strategies and outcomes are mixed. Fishing and harvesting livelihoods are generally seen to be negatively impacted by NMPs except in cases where rules were misunderstood or not applied. Participants felt there were no impacts or negative impacts for plantation owners or laborers. NMPs were seen to lead to marginal employment or monetary benefits from tourism for most except for a select elite who would gain significantly. There was perceived to be little potential for benefit from employment in NMP management. Negative impacts were seen to stem from reduced access to or lack of development of social, cultural, human, political, natural, physical, and financial assets. Conservation outcomes were perceived to be mostly positive for terrestrial environments and quite mixed for marine environments. Opinions of DNP governance and management were quite negative. Moreover, the NMPs provided little incentive for local people to participate in, or support, conservation [78,79].

Perceived impacts are not the same as actual (or even intended) impacts but they are instructive nonetheless. The results presented in this paper point to a problematic relationship between NMPs and local communities that is likely to undermine the success of marine conservation initiatives in Thailand. While these results cannot be assumed to be representative of the situation in all communities near all NMPs, interviews with those familiar with other areas and site visits by members of our research team suggest that many of the critiques are applicable to other NMPs on the Andaman coast of Thailand. Furthermore, the critical nature of these results are largely consistent with those presented elsewhere regarding Thai NMP governance, management, and impact on communities (e.g., [65,80]) but provide a much more nuanced perspective. Cheung et al. [81] also suggest that in Thailand “management of MPAs is generally weak...”.

Yet, despite current shortcomings and the negative sentiments of local communities towards the NMPs, we contend that they remain an important policy mechanism for marine management and conservation in Thailand. MPAs have the potential to conserve the environment and increase fisheries while contributing positively to social and economic development in local communities if (a) local development considerations are taken into account and (b) they are effectively managed and governed. If applied judiciously, support for MPAs may also increase over time as benefits are realized. However, the effective application of MPAs requires that they are not islands of protection but situated within a suite of management actions and frameworks [82–84]. In the Thai context, this includes local community institutions for fisheries and natural resource management, broader-scale fisheries management actions through the Department of Fisheries, and Integrated

Coastal Zone Management through the Department of Marine and Coastal Resources. However, these other conservation and management initiatives may not boast the additional benefits of MPAs, can also be met with local resistance and are also ineffectively applied or enforced in Thailand e.g., [85]. Similarly, these initiatives benefit from local support and require attention to management, governance, and local development to ensure effectiveness.

Rather than dwell on the deleterious situation it is more useful to reflect on how to overcome the issues presented herein through recommending well-acknowledged policy improvements and concrete actions. Though livelihood and rights trade-offs are an inherent part of implementing successful conservation initiatives [86], the relative balance of negative consequences to benefits can be overcome through specific attention to livelihoods, governance, and management [22,23,37,45–47,71].

First, concrete changes should be made at the policy level to address fundamental issues with the overall system of governance by cultivating DNP wide mechanisms to increase transparency, accountability, participation, coordination, legitimacy and adaptability. Transparency could be improved through making annual reports and management documents freely available in park offices and online and accountability through regularly conducted external audits and reviews of management effectiveness. Effective participation requires new processes and equitable involvement of all stakeholders. Enhanced inter-agency coordination – with the Department of Marine and Coastal Resources and Department of Fisheries – could facilitate integrated coastal management [22,38]. Legitimacy might be improved through increasing the presence of local people in management and ensuring that trusting relationships are built with long-term and respected managers who demonstrate attachment to the place and socio-economic and conservation outcomes. The current policy of re-appointing NMP superintendents after each election should be reconsidered. The performance of park managers should be monitored and corrective actions taken accordingly. Implementation of ongoing programs of monitoring and evaluation of ecological, governance, and socio-economic indicators could improve adaptability [22].

Secondly, fairness or equity could be increased through creating means to share benefits of conservation locally, particularly by supporting local economic and tourism development, capacity building programs, and hiring practices. Specific consideration should be given to how to support the development of alternative livelihoods and increase access to assets, which will likely require partnering with other governmental and non-governmental organizations.

Third, management capacity needs to be enhanced through cultivating managerial skills – such as facilitation, communication, education, and conflict resolution. Management in each NMP will also need to engage in: programs to effectively communicate rules and regulations (e.g., marking boundaries), programs of outreach and education, processes to improve participation in management and incorporate local values and knowledge, and activities to increase trust and resolve conflicts. Actions should be taken to improve transparency in each individual NMP and accountability in each park management unit. These management actions will require adequate capacity, resources and massive changes in DNP’s organizational culture.

These changes and actions should build on several defunct or ongoing policy initiatives in Thailand’s system of NMPs that offer glimmers of hope. The first is the Joint Management of Protected Areas (JoMPA) Program – a co-management pilot project that was initiated in Laem Son National Park between 2004 and 2006. Even though this project was seen to have had a positive impact on NMP-community relationships, it was abandoned after donor

funding from Danida was completed [26,87]. The second is the Strengthening Andaman Marine Protected Areas Network (SAM-PAN) Project that is a partnership between the DNP and World Wildlife Fund with funding from the French Development Agency. One of the project's aims is to “develop a model for co-management and implement it using participatory principles and management effectiveness framework” [88]; however, few of their activities are focused at the community level. There was also a recent evaluation of the management effectiveness of Thailand's NMPs with the goal of improving their management [89]. Yet the management effectiveness document is not publicly available, potentially undermining accountability, and additional concrete steps will need to be formulated and taken to address identified shortcomings. There are also ongoing attempts to address corruption within the NMPs on the Andaman coast and the agency overall [90,91]. Yet these current initiatives are limited in scope, scale, and longevity and have the potential to be undermined by previous issues with governance and management, particularly corruption, lack of accountability and ineffective mechanisms for participation.

## 6. Conclusion

Thailand has an extensive system of MPAs that is unlikely to achieve its conservation potential without significant improvements to governance and management and increased attention to local development. Enhanced NMP governance and management processes could build trust and ameliorate relationships with local communities and might lead to improved conservation outcomes through engendering support and compliance. However, improving conservation outcomes will require that the broader array of issues, and their root causes are taken into account and that management actions are coordinated between agencies and across the Andaman coastal zone. Bettering socio-economic development processes and outcomes will also necessitate partnerships with organizations that are better equipped to address development issues. These initiatives would oblige DNP governors and managers to cast a much broader net – to be amenable to coordinating with other governmental and non-governmental organizations and to including local communities more fully in NMP management and related initiatives.

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