

## Sibu Island Local Community's Perception towards the Establishment of Marine Park Areas (Persepsi Masyarakat Tempatan di Pulau Sibu terhadap Penubuhan Kawasan Taman Laut)

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### ABSTRACT

*This paper aims at examining the acceptability and perception of local communities in Sibu Island towards the Marine Park Conservation policy. Information on acceptability and locals' attitudes towards the conservation efforts contributes to our understanding on the effectiveness of MPA policies for the successful implementation of conservation policies depend largely on the readiness and willingness of local communities to participate in such program. We found that Sibu Island community members show high degree of understanding on the conservation regulations and also willingness to support and participate in conservation activities. These findings suggest a satisfactory degree of acceptability among local community members. We also found that the acceptability index is influenced by education level. A comparison made between Sibu, Redang, and Tioman islands suggest that the acceptability of Sibu island community members is relatively higher compared to Redang Island. We attribute this difference to the differences in economic conditions between these islands.*

Keywords: Marine Park Areas, acceptability, perceptions, conservation

### ABSTRAK

*Kajian ini melihat kepada penerimaan dan persepsi masyarakat setempat di Pulau Sibu terhadap polisi Pemeliharaan Taman Laut. Maklumat berkaitan penerimaan dan persepsi penduduk setempat terhadap usaha-usaha pemeliharaan menyumbang kepada kefahaman terhadap keberkesanan polisi taman laut kerana kejayaan pelaksanaan polisi pemeliharaan amat bergantung kepada kebersediaan dan kesanggupan komuniti setempat untuk menyertai program tersebut. Kami mendapati bahawa komuniti Pulau Sibu menunjukkan tahap pemahaman yang tinggi terhadap peraturan pemeliharaan yang ditetapkan serta tahap kesanggupan yang tinggi untuk menyokong dan menyertai aktiviti-aktiviti pemeliharaan. Dapatan ini mencadangkan bahawa tahap penerimaan yang memuaskan di kalangan penduduk setempat. Satu perbandingan yang dibuat di antara komuniti Pulau Sibu, Redang, dan Tioman mendapati bahawa penerimaan di Pulau Sibu adalah lebih tinggi secara relatifnya berbanding di Pulau Redang. Kami mencadangkan bahawa perbezaan ini wujud kerana terdapat perbezaan dalam keadaan ekonomi pulau-pulau ini.*

Katakunci: Kawasan Taman Laut, penerimaan, persepsi, pemeliharaan

## INTRODUCTION

The establishment of marine parks has been increasingly recognized as an important tool to protect marine biodiversity. Due to the absence of market mechanisms governing common goods such as marine lives or coral reefs, a more directive control is often an option available to regulators. The increasing number of marine park establishments around the world reflect, first, the increasing concern over environmental issues especially the erosion of marine ecosystem, and second, the importance of ecotourism to the participating countries' economies.

However, at the micro level, the story is different. Conflict often arises in managing these protected areas between protecting the marine biodiversity and managing people's expectations and acceptability of the marine conservation policies. Issues related to managing protected areas usually have to do with their economic impact on local communities, particularly the people who have direct contact with the resources being protected. This is especially true in the case of small communities which economic activities depend heavily on marine resources (Hoehn & Thapa 2009).

Previous research (Charles & Wilson 2009, Ferraro 2008, Chaigneau 2006, Hoehn & Thapa 2009, Fatimah Kari et al. 2011) highlight the importance of human dimension in managing the MPAs. According to Charles & Wilson (2009), MPAs are fundamentally created and function in the context of societal and/or community objectives, which inherently reflect human aspirations and values. However, local communities are often exposed to certain economic risks such as income loss and being marginalized from the island development. Thus, the implementation of the marine conservation policies create different reactions from local communities and failure to incorporate such reactions leads to the failure of the policies at the implementation level due to the rejection of local communities. Many of previous studies (Hoehn & Thapa 2009, Chaigneau 2006, Epps & Benbow 2007, Sesabo et al. 2006) recognized the importance of local acceptability as one of the important factors determining the effectiveness of a conservation policy. Therefore, studies on local communities' perception and attitude towards MPAs have received a lot of attention. Most of the studies looked at different socio-economic and demographic characteristics influencing attitudes and perception towards conservation policies. Risk of losing income, information on the protection policy, as well as participation level in decision-making and implementation of the MPAs also play important roles in determining the acceptance of local communities towards the conservation policies.

Thomassin et al. (2010)'s study on the social acceptability of an MPA in Reunion Island found that those who were highly educated and of non-island origin were more likely to accept the MPA compared to less educated, island-origin residents. The likelihood of accepting the idea of an MPA is also influenced by their perception of the health of marine biodiversity. Apart from that, social acceptability also depends on the geographic location of residences in relation to the MPA, frequency of resource use, perception of the marine environment, socio-economic parameters, and underlying values towards marine protection (Thomassin et al. 2010). This suggests that the willingness to accept the protection policy depends on the priority put by the local communities. For example, Epps & Benbo (2007) argued that the willingness of local community in southwest Madagascar to support the conservation policy depends on whether the policy is able to demonstrate significant economic improvement because it is the most important matter in the community.

A case study in the Mombasa Marine Park, Kenya found an extremely negative attitude towards the establishment of the marine park due to lack of alternative income options for the communities displaced from the area managed as a Marine Park. There was also no compensation given to the fishermen in the area after they were prohibited from fishing. The fishermen traditionally do not invest in additional capital and Ngugi argued that the restricted area made the situation worse for the fishermen. However, the situation of course would be different if there is a substantial spillover from the marine park into the marine reserve (Ngugi, undated).

Other than economic factors, the perception and attitudes towards MPAs are also influenced by demographic characteristics such as gender, education, and location. For instance, Ebbs & Benbo (2007) found that women have higher acceptability towards MPAs because they are more concerned over future generation. Lack of acceptance is also attributed to the lack of communication and information regarding the marine management issues. The information can come from formal and informal education process. Communities with higher level of formal education often exhibit better awareness towards the protection policies (Ebbs & Benbo 2007, Hoehn & Thapa 2009). Proximity to protected areas and the understanding on the dependency among different marine species contribute positively to the awareness on marine protection (Ebbs & Benbo 2007). There is also a need to recognize the heterogeneity among the affected communities. The level of acceptance and perceptions towards the conservation policies are different for different communities because they are not homogenous in characteristics (Hoehn & Thapa 2009, Epps & Benbo 2007, Chaigneau 2006).

Nonetheless, the research on perception and attitudes on local communities do not suggest a total rejection on the conservation ideas. Koehn & Thapa (2009) examined attitudes and perception of indigenous fishermen in Kuna Yala, Panama found that most of the fishermen agreed that the overall marine conditions had changed due to fishing practices and rapid increase in numbers of divers. Chaigneau (2006) found positive attitude towards MPAs regardless whether the communities live at the adjacent of well-manage and ill-managed MPAs.

In Malaysia, local communities express their concern over the effect of restrictions imposed on activities that affect their income. But the establishment of an MPA may be an advantage for those involved in the tourism industry. To examine the welfare impact of the establishment of an MPA is to take into account the different impacts it poses on the overall community. Fatimah Kari et al. (2011) suggest vulnerability of local island communities in Malaysia in terms of loss in economic opportunities due to lack of assess to tourism sector. There is still lack of research that examine the acceptability and perception of these vulnerable communities towards the establishment of MPAs. Therefore, this paper aims to contribute to the understanding of local communities' attitudes towards MPAs by focusing on Sibu island community.

## **MATERIALS AND METHODS**

The data was based on a survey conducted during a community meeting during workshop sessions with the local community. Several workshops have been conducted as part of a consultative management approach adopted by the Department of Marine Parks Malaysia

(DMPPM) in collaboration with the United Nation Development Program (UNDP). Sampling was done using the convenient sampling method. The analysis was based on questionnaires distributed among community members that participated in the marine park workshops conducted from July 2009-February 2010. Summary statistics on socio-economic information of our respondents in Pulau Sibu is presented in Table 1.

The sample is represented by 66% males and 34% females. Majority of the respondents are originally from the island (78% or 25 respondents) while the remaining 7 (22%) stated that they are not. The share of island-origin respondents is reflected in the number of years lived on the island in which a majority of them have lived on the island for more than 10 years. Only 12 percent (4 respondents) have stayed on Sibu Island for less than 10 years. In terms of occupational sector, only 7 respondents out of 32 are involved in the tourism sector, while out of 32 respondents 18 have alternative jobs mainly in fishery and the small businesses sector. The small share of respondents with income generated from the tourism sector suggests that they are heavily dependent on the fishery sector and thus indicates that they are economically vulnerable.

Table 1: Socio-economic characteristics of the respondents

Variables		Frequency	Percentage
<i>Gender</i>	Male	21	66
	Female	11	34
<i>Age</i>	20 – 30	13	41
	31 – 40	6	18
	41 – 50	13	41
<i>Marriage status</i>	Single	14	44
	Married	18	56
<i>Education level</i>	Primary school	14	44
	Secondary school	15	47
	Diploma/Certificate	2	6

Respondents were also asked to provide their source of information about marine park regulations by indicating all relevant sources of information. Their major sources of information on marine park regulations are newspapers and the Marine Park Department. All of the respondents are fully aware of the MPA and this is not surprising as this study was conducted after more than a decade of the establishment of the MPA.

Table 2: Source of information

<b>Information channel</b>	<b>Yes</b>
Internet	1
News paper	32
Marine Park Department	29
Others	6

Income characteristics of the local community are presented in Table 3, 4, and 5. A majority of the respondents earned less than RM1, 000 a month in the non-tourism sector. Another important issue to note is that we often expect that local communities involved in tourism-related activities are less vulnerable than those in traditional sectors such as fishing. Most studies look at the impact of marine park establishment on resource users especially fishermen. But local communities connected to the tourism sector are also facing some degree of income vulnerability. This is because they are usually engaged in low end/low value tourism related activities. Just like fishermen, they are also lacking in terms of technology and financial support. Furthermore, this sector depends largely on tourist arrivals which are usually seasonal. Such cases should be evaluated on a case-by-case basis as conditions in other marine park areas are different.

Table 3: Assets owned by sector

<b>Asset</b>	<b>Tourism</b>	<b>Non-tourism</b>
Less than RM10000	1	8
RM10001-RM25000	0	12
RM25001-RM50000	3	0
RM50001-RM75000	0	0
RM75001-RM100000	0	1
More than RM100000	3	2

Table 4: Income from main activities by sector, numbers

<b>Main income</b>	<b>Tourism</b>	<b>Non-tourism</b>
Less than RM500	0	9
RM501-RM1000	1	10
RM1001-RM1500	0	2
RM1501-RM2000	3	0
RM2001-RM2500	0	0
RM2501-RM3000	1	1
More than RM3000	2	1

Table 5: Other income by sector

<b>Other income</b>	<b>Tourism</b>	<b>Non-tourism</b>
RM500-RM1000	3	15
RM1001-RM2000	2	5
RM2001-RM3000	0	1
RM3001-RM4000	2	0
RM4001-RM5000	0	0
More than RM5000	0	2

## RESULTS AND DISCUSSION

Respondents were asked about their willingness to join MPA activities and questions related to their understanding on the conservation regulations. We found that Sibul Island

community members are willing to participate in conservation activities and have clear understanding on the role of the Marine Park Department. In fact, they were willing to become volunteers in conservation activities sponsored by the Marine Park Department. We can infer from these responses that respondents are willing to accept the establishment of the MPA at their island. The respondents also expressed their willingness to adhere to the marine park regulations. The scores suggest that they are fully aware of the consequences of violating the regulations set under the conservation policies. Nonetheless, we have to bear in mind that this study was conducted more than 10 years after the establishment of the MPA. Therefore local communities have either already accepted and understood the objectives of MPAs or they are already used to all the rules set under MPA policy. There was no direct yes or no question on the local community's acceptance of the establishment of the marine park. The questionnaire included 9 questions related to local community perception and knowledge about the marine park.

Statistics on the relevant questions are presented in Table 6. The table compares the mean score of respondents in Sibul Island to those in Redang and Tioman islands. The fact that the lowest score is mostly recorded in Redang Island suggests that the degree of acceptability in Redang Island is less compared to other islands. The low score is likely to reflect the development of the community on the island itself. Compared to Sibul and Tioman islands, the development of the community in Redang is still relatively low.

Table 6: Social acceptability of Marine Park Areas establishment for Sibul, Redang, and Tioman islands.

No.	Description	Sibul	Redang	Tioman
e24	Jab Taman Laut perludiberitanggungjawabmenjagasumberlauta (Marine Park Dept has to be given the responsibility to protect the the marine resources)	4.290	3.69	4.09
e33	Sayabersediamematuhiperaturan Taman Laut (I am willing to follow the Marine Park regulation)	4.219	3.79	4.23
e26	Sayabersediaterlibatdenganaktivitikemasyarakatan Taman Laut (I am willing to participate in marine park's community activities)	3.968	3.58	3.86
e25	Sayabersediamenjadisukarelawanmembantu Jab. Taman Laut (I am willing to become a volunteer for Marine Park Dept)	3.844	3.52	3.91
e29	Sayaakandidendasekiranyamelanggarperaturan Taman Laut (I will be fine if I violate the Marine Park regulation)	3.844	3.25	4.19
e28	Peraturan yang dibuat di Taman Laut mudah dipatuhi (Marine Park regulation is easy to follow)	3.781	3.77	3.98
e17	Projek taman laut banyak memberikebaikankepadapenduduk (Marine park project benefitted local communities)	3.718	3.43	3.83
e23	Sayamemangterlibatdalamaktivitijanjurantamanlaut (I involve in any activity organized by the Marine Park Dept)	3.687	3.30	3.60
e27	Sayaadamenerima maklumat bertulis mengenai peraturan Taman Laut (I did received written information regarding Marine Park regulation)	3.687	3.28	3.29

We then examined the factors affecting the acceptability of local communities to marine park establishment. Due to the small sample size, we should be cautious about making inferences from the results. We expected that acceptability towards MPA establishment depended mainly on education and income. The establishment of MPAs is associated with restrictions on local communities' traditional marine activities, and will thus affect their traditional income especially that of fishermen. We consider education, age and gender for the first model and include income in the second model. The regression results are shown in the Appendix.

Only education was found to be affecting the level of acceptability among Sibuland community in the first model. Holding other determinant constant, education contributes positively to the acceptability level of local community towards the establishment of the MPA. Other determinants have expected sign but contribute insignificantly to the acceptability. In the second model, we found that income has a positive but insignificant contribution to acceptability. This indicates that the current level of community income still does not contribute to the acceptability of local communities towards the establishment of MPAs. We believe that the insignificance of partial correlation between acceptability and income is due to the low level of income of the Sibuland community.

Another interesting observation is that age is negatively related to the acceptability index for all models estimated. This finding suggests that community members who have lived on the island long enough and the elderly are less likely to accept the marine conservation policy. This suggests that young generation are more educated and exposed to environmental issues, and therefore are more aware of the importance of conservation policies. The finding also suggests that young generation depend less on the marine resources and probably more mobile compared to the older generation.

## CONCLUSION

The objective of this study is to examine the acceptability and perception of the Sibuland local community towards the establishment of the MPA. Using a 5-point likert scale, we found that the community in Sibuland has a relatively higher acceptability towards MPA compared to the community in Redang Island. This might be due to the better economic conditions in Sibuland. We also found positive relationship between education and the degree of acceptability among local community members. This finding is in concert with previous finding, suggests the importance of education as well as information on the impact of conservation policies towards future generation.

For a protected area to be successfully implemented, related authorities such as the Marine Park Department must make sure they clearly communicate the objectives of the marine park establishment to local communities. A failure to do so will create asymmetric information and false expectations from both sides i.e. the local communities and the authority involved in the management of the MPAs. Furthermore, the diversity of types of protected areas makes generalizations about the effect of protected areas elusive (Ferraro 2008). The acceptability of an MPA also plays an important role in determining the success or failure of a protected area. Non-acceptability will lead to a reduction in efficiency of the management of the MPA and creates conflicts in surrounding areas (Thomassin et al. 2010).

The cost of enforcement can be reduced with the consciousness that comes from acceptability.

Whethere or not the local community accepts the MPA, they have had to adapt or live with it since it has already been implemented. Whether their words or opinions count is not the question. The only concern for the policy maker is that they now have to help these societies adapt. Although the survey was conducted at a later stage of the implementation, it provides important feedback and information to the policy maker on how the establishments of MPAs have affected local communities. It gives the local community a chance to express their problems concerning the MPAs and its impact on their lives. Furthermore, a post-establishment study helps to create an understanding of the magnitude and extent of the conservation costs that local communities have to bear. In the medium and long term, the possibilities of sharing conservation costs should be well investigated and eventually made a reality (Ngugi, undated). Though acceptance may be difficult to achieve in the short run, it might be achieved by empowering local communities in ways that make them feel that they are partners in the conservation project.

One recommendation is to adopt inclusive development programs by integrating traditional sectors into the tourism sector besides continuous effort to increase the awareness and understanding of marine park establishment. Establishing cooperatives is an effort recently undertaken among the affected communities. Access to micro credit will provide assistance to these communities in enhancing the capabilities to involve in tourism sector or invest in more advanced fishing technology which will allow them to fish further out at the sea.

The collection and proper documentation of data overtime (Ngugi, undate) and the critical need to supplement biophysical and ecological data with people-oriented information (Charles & Wilson 2009) are the aspects that often overlooked by many developing countries. The importance of such data was also highlighted by Ferraro (2008). This study is limited in the sense that it used only post-establishment observations. Estimating the welfare effects of protected areas on neighboring communities requires pre- and post-establishment observations. In the case of Malaysian MPAs, however, there is unfortunately no pre-establishment study. Future research should include more observations or use qualitative method of collecting data especially in the case of island communities that have relatively low number of population.

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## Appendix A

Estimation results

Dependent variable: Accept

<b>Variable</b>	<b>Coefficient</b>	<b>Std error</b>	<b>t</b>	<b>Sig.</b>
Constant	3.469	.552	6.281	.000
Education	.196	.103	1.896	.068
Age	-.151	.121	-1.245	.224
Gender	8.543E-02	.192	.444	.660

Dependent variable: Accept

<b>Variable</b>	<b>Coefficient</b>	<b>Std error</b>	<b>t</b>	<b>Sig.</b>
Constant	3.596	.565	6.369	.000
Education	.146	.127	1.151	.265
Age	-.123	.136	-.906	.377
Gender	-3.071E-02	.211	-.145	.886
Income	2.467E-04	.000	1.462	.161