International Journal of Engineering & Technology, 7 (3.7) (2018) 171-173

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

Community Perception on Mangrove Change Issue in Southwest Johor, Malaysia

Noor Shaila Sarmin[12*], Mohd Hasmadi Ismail[1*], Pakhriazad Hassan Zaki[1], Khairil Wahidin Awang[3], Monjurur Rahman[4], Khalid Imran[5]

[1]*Faculty of Forestry, Universiti Putra Malaysia, UPM 43400, Serdang, Malaysia*
[2]*Faculty of Agriculture, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur1706, Bangladesh*
[3]*Faculty of Hospitality, Tourism and Wellness, Universiti Malaysia Kelantan, 16100 Kota Bharu, Kelantan, Malaysia*
[4]*First Security Islami Bank Limited Bangladesh, Tangail, Bangladesh*
[5]*Department of Economics, Hajee Mohammad Danesh Science and Technology University, Dinajpur 5200, Bangladesh*
**Corresponding author E-mail: noorshaila01@gmail.com; mhasmadi@upm.edu.my*

Abstract

Mangroves are important coastal resources that provide both tangible and intangible benefits to the locals as well as others. Rapid coastal development pressures the mangroves to decline continuously. The objective of the study was to comprehend the perception of the locals on mangrove change issue and also to analyze the differences of perceptions among selected socioeconomic factors. Research conducted with a questionnaire survey with 5 point likert type answering options among 196 local respondents from three mukims namely Jelutong, Tanjung Kupang and Serkat. Mean perception score was 3.67 which indicated respondents agreement with the mangrove change issue. The Anova shows the perception score significantly differed among different age groups however there was no difference of perceptions among the rest variables such as race, marital status or education level. The findings of the study concluded that regardless of socioeconomic factors (except age) the respondents were concurred with the situation of mangrove loss in the studied mukims.

Keywords: *Mangroves, Community; Perception; Malaysia*

1. Introduction

Malaysia is a maritime nation by geography and blessed with invaluable coastlines [1]. Total length of coastlines is approximately 4800 km including Peninsular Malaysia, Sabah and Sarawak which is about 73% of the length of Malaysia border [2]. In Peninsular Malaysia state Johor has the largest coastline. Johor is the only state that has exposure to both South China Sea and Strait of Malacca.

Mangroves are the important ecological and economic resources in the coastal ecosystem. By providing different tangible and intangible benefits to the ecosystem it acts as a belt of protection to the landwards from strong waves such as tsunami [3]. The Sungai Pulai mangroves located in southwest Johor is the second largest mangrove in Peninsular Malaysia. Local community depends to the ecosystem for their livelihoods and economic activities. Besides supplying of pole and fuel wood for charcoal it is the nursery and breeding ground of many important marine species of fish, crabs, shellfish, birds, reptiles and mammals [4]. Out of six RAMSAR sites in whole Malaysia three (Sungai pulai, Kukup and Tanjung Piai) are located in the southwest Johor. Internationally important wetlands are reported as RAMSAR sites as an output from the treaty held in Ramser city in Iran [5].
Despite having invaluable importance, the mangroves in southwest Johor facing threats from different anthropogenic sources like land use change for agriculture, aquaculture, developments, coastal erosion and pollution of water and oil spills [6-8]. [9] reported that mangroves of this area are facing different large scale and small scale projects for developments. If the mangrove coverage continues decreasing at the area, the RAMSAR sites might be affected from those pressures which might affect the existence of those RAMSARs.

The indigenous peoples and local forest communities of the adjacent 38 villages depend on the mangroves ecosystem for their livelihoods, income generation, socio-cultural, and spiritual link [10]. Their livelihood might be affected due to change of income source as a result of mangrove deforestation [11], [2]. Local community's perception is very important in this regards. Their views and opinions about the mangrove change issue and its impacts may guide the managers, planners or researchers for better understanding the situation and for taking better decision about further steps. Based on the above discussions the study was conducted to assess local community's perception on mangrove change issue in the study area. The study also aims to identify if there any difference of mean perception score among selected socioeconomic variables.

2. Materials and Methods

To get the information about community's perception on mangrove changes a field survey was conducted with a structured questionnaire in 3 mukims (Mukim Serkat, Tanjung Kupang and Jelutong) in the southwest Johor. A number of 196 respondents were interviewed randomly. Questionnaire prepared following [12]. The questionnaire is divided into two sections. Section A is to get respondents background information and socioeconomic

conditions and section B is for their perceptions on mangrove change issue comprised of 8 statements which together represent mangrove change issue in the study area. Five point likert scale used for answering from strongly disagree (1) to strongly agree (5) of the statements. Both descriptive and inferential analysis used to answer the research questions.

3. Results and Discussion

3.1 Respondents Demography

More than 80 percent of the respondents were male. Majority of the respondents were Malay followed by Orang asli and Chinese. About 96.4% respondents were Muslim and only 2.6% and 1% were Buddha and Christian respectively. About 90% were literate. Majority of the respondents (50.5%) had secondary level education followed by primary (30.1%). Only 8.7% respondents had tertiary level of education (Table 1).

Table 1. Respondents' demographic characters

Variable		Number	%
Gender	Male	158	80.6
	Female	38	19.4
Marital Status	Single	23	11.7
	Married	168	85.7
	Widow	3	1.5
	Divorced	2	1.0
Race	Malay	171	87.2
	Chinese	4	2.0
	Orang asli	21	10.7
Religion	Islam	189	96.4
	Christian	2	1.0
	Buddha	5	2.6
Education level	No education	21	10.7
	Primary	59	30.1
	Secondary	99	50.5
	College/University	17	8.7

From the occupational background it is seen that about 50% of the respondents were fishermen followed by 14.8% business and 10.7 % service (Table 2). The findings indicated that still fishing is the main occupation of majority of the respondents. However business and service found two new emerging sources of employment. The results also shows that only 9.7% respondents were engaged in farming among them 7.1% were engaged in agriculture and 2.6% in aquaculture which indicates that the percent of respondents in farming (both agriculture and aquaculture) is reducing as a main source of income.

Table 2 Occupational background

Occupation	Frequency	Percent
Charcoal production	1	0.5
Fishermen	98	50.0
Aquaculture	5	2.6
Agriculture	14	7.1
Tourism	1	0.5
Business	29	14.8
Service	21	10.7
Others	27	13.8
Total	198	100

Table 3 Other source of income

	Frequency		Percent
Secondary occupation	Yes	51	26.0
	No	145	74.0
Occupation changed	Yes	56	28.6
	No	140	71.4
Receiving loan	Yes	59	30.1
	No	137	69.9

Table 4 Monthly mean income

Income (RM)	Frequency	Percent
No income	8	4.1
Below RM1000	40	20.4
RM1001-RM3000	131	66.8
RM3001-RM5000	12	6.1
RM5001-RM7000	4	2.0
RM7001 and above	1	0.5
Total	196	100.0

About 26% respondents informed that they have secondary source of income and 28.6% informed that they have changed their occupation during the last ten years (Table 3). This finding also indicated that mangrove change might affect their sources of income in the study area. However 30.1% respondents received loan from different organizations such as Persatuan nelayan, JHEOA and AIM. From the Table 4 majority of the respondents mean monthly income was between RM1001 to RM3000 followed by 20.4% income below RM1000. Less than 10% respondents income was above RM3000.

3.2 Respondents Perception on Mangrove Change

The Cronbach's alpha for the statements of mangrove change scale was .822 which indicates the internal consistency of the scale was accepted according to[13]. The mean score of the eight statements together was 3.67 which indicates the respondents agreement with the mangrove change scale (Table 5). Separately the mean scores (above 3) of all the eight statements indicated their acceptance by respondents with mangrove change issue in the study area. The highest mean score 4.08 was for the statement 'mangrove coverage reducing' and the lowest was 3.30 for the statement 'shoreline changeing due to wave damage'.

Table 5. Respondents perception on mangrove change

Item of mangrove change		Scale					Mean score
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Mangrove coverage of SP area is declining	Frequency	-	9	28	97	62	4.08
	Percent (%)	-	4.6	14.3	49.5	31.6	
Decreasing in area of mangrove coverage is caused by human activities	Frequency	2	25	23	101	45	3.83
	Percent (%)	1.0	12.8	11.7	51.5	23.0	
The biodiversity of the ecosystem is being threatened	Frequency	1	25	46	100	24	3.61
	Percent (%)	0.5	12.8	23.5	51.0	12.2	
Habitats and species reducing	Frequency	1	16	34	111	34	3.82
	Percent (%)	0.5	8.2	17.3	56.6	17.3	
Income from the mangrove ecosystem is reducing	Frequency	7	34	38	90	27	3.49
	Percent (%)	3.6	17.3	19.4	45.9	13.8	
Production from the mangrove ecosystem is reducing	Frequency	5	34	37	94	26	3.52
	Percent (%)	2.6	17.3	18.9	48.0	13.3	
Shoreline changing due to wave damage	Frequency	2	53	39	88	14	3.30
	Percent (%)	1.0	27.0	19.9	44.9	7.1	
Mangroves are being replaced by new infrastructural developments	Frequency	2	16	34	124	20	3.73
	Percent (%)	1.0	8.2	17.3	63.3	10.2	
Mean score							3.67

Cronbach's alpha	.822

3.3 Study of Mean Differences of Perception Score among Selected Socioeconomic Factors

Table 6 shows the mean differences of perception scores among selected socioeconomic variables such as marital status, race, education level and age group. Only age group was found significant (F= 3.541, p= .008). This finding indicated that the perception score didn't varied according to their socioeconomic factors except age groups.

Table 6. Anova test results

Socioeconomic variable	F value	P value
Race	1.497	.226
Marital status	.609	.610
Education level	1.864	.137
Age group	3.541	.008**

**Significance at 1% level

4. Conclusion

This study concluded that still fishing is the main occupation in the study area however business and service found two new emerging sources of employment. The percent of respondents in farming (both agriculture and aquaculture) is reducing as a main source of income. Tourism and charcoal production also found very poor percent of respondents' occupation. About one-fourth respondents had changed their main occupation during the last ten years. The findings of the study indicated that the respondents were concurred with the situation of mangrove loss in the studied mukims which didn't differ based on their socioeconomic factors except age.

Acknowledgement

First of all the authors would like to acknolowledge to OWSD, the funding body of this research work. The authors wish to acknowledge to the mukim heads, village heads, respondents, and the fishermen community chairman for their friendly support during the survey.

References

[1] Asmawi, M. Z. & Ibrahim, A. N. The perception of community on coastal erosion issue in Selangor, Malaysia. Journal of Clean Energy Technology, 2013. 1(3): p.164-168.

[2] Hassan, M. I. & Rahmat, N. H. The effect of coastline changes to local community's social-economic. *The International Archives of the Photogrammetry, RemoteSensing and Spatial Information Science*, 2016.Volume XLII-4/W1-25.

[3] Kamaruzaman, J. Malaysian Mangrove Forests and their Significance to the Coastal Marine Environment. *Pol. J. Environ. Stud*. 2013. 22(4): p.979-1005.

[4] Mohd Hasmadi, I., et al., Remote Sensing for Mapping RAMSAR Heritage site at Sungai Pulai Mangrove Forest Reserve, Johore, Malaysia. J. Sains Malaysiana, 2011. 40(2): p.83-88.

[5] Aminu, M., et al., A framework for sustainable tourism planning in Johor Ramsar sites, Malaysia: A geographical information system (GIS) based analytic network process (ANP) approach. Research Journal of Applied Sciences, Engineering and Technology, 2013. 6(3): p.417-422.

[6] Hamdan, O., 2012. Mangroves Threats and Changes. In *Status of Mangroves in Peninsular Malaysia*. Hamdan, O., Khali Aziz, H., Shamsudin, I. & Raja Barizan, R.S. (eds.). Forest Research Institute Malaysia, Malaysia, 2012. pp 89-109.

[7] Kasturi, D. K., et al., Satellite Images for Monitoring Mangrove Cover Changes in a Fast Growing Economic Region in Southern Peninsular Malaysia. Remote Sensing , 2015. 7: p. 14360-14385.

[8] Sarmin, N. S., et al., Land Cover Dynamics of Sungai Pulai Mangrove Forest Using Remote Sensing and GIS- Preliminary Results. Journal of Engineering and Applied Sciences, 2016. 11(3): p. 441-445.

[9] Che Hashim H., et al., Management and conservation of mangroves: Johor experience. *In:* Sustainable Management of Matang Mangroves: 100 Years and Beyond. Eds, M. I. Shaharuddin, M. Azahar, U. Razani, A. B. Kamaruzaman, K. L. Lim, R. Suhaili, Ujang, M. S. Jalil & A. Latiff. Forestry Department Peninsular Malaysia. 2005.

[10] Yong, C., et al., Deforestation Drivers and Human Rights in Malaysia a national overview and two sub-regional case studies. *Report of International workshop on Deforestation Drivers and the Rights of Forest Peoples, held in Palangka Raya, Indonesia.2014.*

[11] MOSTI, 2000. Malaysia Initial National Communication. United Nation Framework Convention on Climate Change. Ministry of Science, Technology and Environment.

[12] Withana, N. R. P. & Auch, E., 2014. Perceptions of Climate Change Risk to Forest Ecosystems: A Case Study of Patale Community Forestry User Group, Nepal. International Journal of Environmental, Chemical, Ecological, Geological and Geophysical Engineering, 8(8): 579-586.

[13] DeVellis, R. F., Scale Development: theory and applications. Applied Social research methods series, SAGE 2012. V. 26. 3rd ed. Thousand Oaks, Calif.