The Perspective of Local Community's on Mangrove Resilience

by Z. Zulkifli

Submission date: 07-Oct-2021 07:55AM (UTC+0700)
Submission ID: 1667301045
File name: Zulkifli_C44.pdf (375.35K)
Word count: 2386
Character count: 13493

ResearchGate

See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/326353934

Community Perspective on Mangrove Resilience and Needs Conservation at a Along the Southern Coast of Lombok Island, Indonesia

Conference Paper · July 2018

DOI: 10.5220/0007547805990603

CITATIONS
4

READS
243

3 authors, including:

Abdul Syukur
University of Mataram
59 PUBLICATIONS **134** CITATIONS

SEE PROFILE

Lalu Zulkifli
University of Mataram
67 PUBLICATIONS **328** CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:

MOLECULAR, BIOCHEMICAL AND BIOLOGICAL CHARATERIZATION OF RED AND BROWN MACRO ALGA IN WEST NUSA TENGGARA FOR ANTI-CANCER PROPERTIES View project

Seagrass ecology View project

All content following this page was uploaded by Abdul Syukur on 18 December 2019.

The user has requested enhancement of the downloaded file.

The Perspective of Local Community's on Mangrove Resilience and Needs Conservation Along the Southern Coast of Lombok Island, Indonesia

Agil Al Idrus, Abdul Syukur and Lalu Zulkifli
Postgraduate Program and Department of Sciences Education, Faculty of Teacher Training and Education, Universitas Mataram, Jalan Majapahit No 56 Mataram Nusa Tenggra Barat, Indonesia

Keywords: Community's perspectives, resilience of mangrove, conservation.

Abstract: Mangroves are well known by local communities as plants. They are essential for coastal protection of marine organisms, habitats, resouches, and their livelihood. This study formulates the value of resilience and vulnerability of mangrove from the perceptive of local communities as the basis of conservation. The collected data through from direct observation, questionnaires, interviews and discussions were analyzed using descriptive statistical analyses. The results showed that the most important value of mangrove resilience is from the local people perspectives. The development of mangroves are straight forward and could grow on their own. Mangrove plants can restore environmental conditions for the habitat of marine organism. The local people can look for organisms that had economic value for a source of livelihood. Therefore, the consideration of conservation for magrove could become of great benefit for suronding communities on a grand scale.

SCITEPRESS SCIENCE AND TECHNOLOGY PUBLICATIONS

1 INTRODUCTION

Resilience has provided a way for thinking about policies for the future, an important consideration in a world characterized by unprecedented environmental change (Chapin et al, 2009). The main elements of the resilience approach includes attention to drivers and change processes, treating social-ecological systems as complex adaptive systems characterized by cycles and uncertainty, and social systems and ecosystems as coupled and co-evolving (Berkes, 2010). The issues of resilience and vulnerability are likely to become more important in the framing of resource management questions in the future. Therefore it is possible to develop strong local support for sustainable management of mangrove forests in areas where a positive attitude towards mangrove conservation prevails (Badola et al., 2012). In addition, the ecological knowledge's understanding has huge potention for local communities and can be a component in the protection of coastal ecosystems for the sustainability of biodiversity (Syukur, 2013). However, the local community's ecological potential has not been formulated in conservation formulas, such as mangrove conservation. The local communities need the ecological knowledge in order to be able to identify the needs mangrove conservation at local levels. Therefore, the objective of this research is to see the recovery of mangrove vegetation and biotas in the ecosystem playing a role as an indicator of resilience.

2 MATERIALS AND METHODS

The study was conducted from April to October 2017 on the southern coast of East Lombok. The study conducted and involved the people in Tanjung Luar, Ketapang Raya and Jerowaru (Figure 1) with geographic position 116 ° 27'0"- 116 ° 30'0 " LU and - 8 ° 48'0 "-8 ° 51'0). Research sample was determined proportionally to take into account the length of stay of minimum 20 residents. They factored in education level, livelihood and distance of residence in the mangrove location. In addition, snowball sampling technique is used to gain depth of information about the ecological knowledge structure of local communities (Aswani and Lauer 2006;). The research data was analyzed by a discrete statistic method that

Al Idrus, A., Syukur, A. and Zulkifli, L.
The Perspective of Local Community's on Mangrove Resilience and Needs Conservation Along the Southern Coast of Lombok Island, Indonesia.
DOI: 10.5220/0007547805990603
In *Proceedings of the 2nd International Conference Postgraduate School (ICPS 2018)*, pages 599-603
ISBN: 978-989-758-348-3
Copyright © 2018 by SCITEPRESS – Science and Technology Publications, Lda. All rights reserved

to get conceptual pictured about society, ecology, knowledge, structure, and description in a ecological perspective (Few 2009).

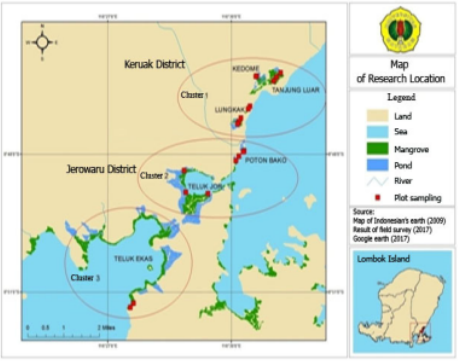

Figure 1. Research location

3 RESULTS AND DISCUSSION

3.1 Diversity of Mangrove Species and Diversity of Fauna Species

The vegetation of mangrove in the study area represents the potential of mangroves on the southern coast on Lombok Island (Table 1). The mangrove species found on all the location are *Avicennia marina*, *Rhizophora stylosa*, *Sonneratia alba* and *Xylocarpus moluccenis*. In addition, the species of mangrove found in two locations are *Avicennia lanata* dan *Bruguiera cylendrica*. The different number of mangrove species on each sampling area may reflect environmental conditions. Furthermore, the dominant mangrove species found in Tanjung Luar is *Rhizophora stylosa*, *Avicennia lanata* in Kedome, *Avicennia marina* and *Sonneratia alba* in Lungkak, *Sonneratia alba* in Teluk Jor and also *Sonneratia alba* in Teluk Ekas. The mangrove species are lower, compared to other locations such as in Gili Sulat where the number of species totaled eleven (Agil et al., 2015).

Table 1. The diversity of mangrove species in the study area.

Species	Tanjung Luar	Kedome	Lungkak	Poton Bakau	Teluk Jor	Teluk Ekas
Avicennia marina	√	√	√	√	√	√
Avicennia lanata		√	√			
Bruguiera cylendrica		√				√
Ceriops decandra			√			√
Lumnitzera rasemosa						√
Rhizophora apiculata				√		√
Rhizophora mucronata			√	√		√
Rhizophora stylosa	√	√	√	√		√
Sonneratia alba	√	√	√	√		√
Xylocarpus moluccenis	√	√	√	√		√
Total Number of Species	4	6	7	6	9	

The mangrove species in each sampling area have ecologically contributed to the sustainability of the biota diversity. In this study, we found a diversity of animals associated with mangroves (Table 2). The types of animals associated with mangroves are a form of mangrove ecological services. The diversity of fauna species that can be found within the areas such as crustacean, insects, fish, vertebrates (*Varanus* sp, *Chrysopelea* sp, *Cerberus* sp.), mamalia ((*Lutrogale* sp dan*Callosciurus* sp.), primate groups and birds (Agil et al., 2015), mangrove can be referred to the home for biodiversity (Ellison, 2008; Nagelkerken et al., 2008;). Furthermore, the environmental service from mangrove plays a role in the regulation of gas for the balance of CO_2 and O_2 in the atmosphere. As well as climate regulation, genetic resources, regulator of species and biophysical dynamics and increase biodiversity value (Larkum et al., 2006).

Table 2. The diversity of fauna in the study area.

Class	Species	Location					
		Tanjung Luar	Kedome	Lungkak	Poton Bakau	Teluk Jor	Teluk Ekas
Gastropoda	*Cerithidea cingulata*	+	+	+	+	+	+
	Cerithidea quadrata	+	+	+	+	+	+
	Chicoreus capucinus	-	-	-	+	-	-
	Chicoreus sp.	+	+	+	+	+	+
	Litoria scabra	+	+	+	+	+	+
	Littoraria melanosto	+	+	+	+	+	+

	ma						
	Murex sp.	-	-	-	+	-	-
	Nerita undata	+	+	+	+	+	+
	Oliva sp.	-	-	-	+	-	-
	Pomacea canalicula ta	+	+	+	+	+	+
	Strombus sp.	+	+	+	-	-	-
	Sulcospira sp.	+	+	+	+	+	+
	Telescopi um telescopium	-	-	+	-	-	-
	Terebralia sulcata	.	.	.	.	.	.
	Volema myristica	.	.	.	.	.	.
Crust a cea	*Uca* sp.	+	+	+	+	+	+
	Scylla serrata	+	+	+	+	+	+
Rep ti lia	*Varanus salvator*	-	+	-	-	-	-
	Cryptophis boschmai	.	.	.	.	.	.

3.2 Assessment of Local Communities on the Ecological Function of Mangrove

The diversity of mangrove services in the perspective of local communities is the value of environmental services obtained from the presence of mangroves. The communities interviewed as respondents can distinguish between species of mangroves based on morphological characteristics, such as; life spots and fruit types Furthermore, they stated that mangrove are important for many habitats, such as; fish holothuroidea, mollusca, birds and reptile. The local knowledge of mangroves represents its ability to describe it is many services ((Table 3).

Distribution of scores on the results of respondents assessment (Table 3), it shows that the number of respondents who choose the benefits from the mangrove in the category are useful and very useful, was prominent.

Table 3. The distribution of respondents based on the results of an assessment of the ecological role and benefits of mangroves for the community's, n= 100.

Description	Results of respondents' assessment				
	no benefit	less	quite	Benefit	very benefit
Habitat and fish feeding ground	0	12	15	30	40
The small fish habitat	0	3	13	31	45
Habitat of marine life other fish	0	0	14	44	42
The sources of marine fertility	0	0	15	20	65
Provisioning services material outputs					
Foods	80	20	0	0	0
Wood	0	0	5	10	85
Cegulating and maintenance					
Purification of water	0	0	20	25	55
Flood control	0	0	15	20	65
Regulation of the climate via carbon sequestration	0	5	25	35	30
River flow	0	0	10	20	70
Cultural services (non-material)					
Cognitive development	0	15	15	25	45
Recreation	0	0	5	10	85
Aesthetic experiences	0	0	10	20	70

3.3 The Perspective of Local Community's on the Resilience of Mangrove

Resilience is a parameter for assessing ecosystem changes to recover after receiving a disturbance. Resilience is the observation of a disturbance to the system that can absorb and retain the same function, structure, and identity and it is the ability to self organize as well as its capacity in adapting toward environmental change and social-ecological systems as complex adaptive systems (Walker et al. 2008; Chapin et al, 2009; Berkes, 2010). Moreover, resilience is a property of a system, and in Social-Ecological Systems (SES), humans have the added capacity to anticipate change to some degree and influence future paths.

The local communities in the study area have adequate knowledge of mangrove services (Table 3). In this case, they can identify changes in mangrove conditions as an object of assessment of the mangrove resilience and associated biota. However, resilient objects are extensive and complex in mangrove ecosystems, so this study used mangrove resilience indicators of cover value and mangrove density, using example such as species of biota ;fish, shrimp, crab and molluscs. The assessment of mangrove resilience, respondents were given choice in several

categories namely (e.g., mangrove category has recovered between 75% - 100%, the mangrove category has recovered between 50% - 75%% and the mangrove category has recovered <50%. Here is the results of respondents' assessment of mangrove resilience in the study area (Figure 2).

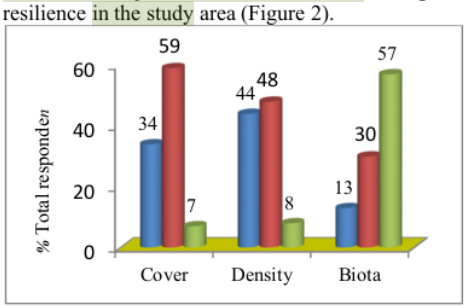

Figure 2. Respondent's assessment of mangrove resilience, n = 100.

The results of the respondents' assessment presented in Figure 2, are the mangrove condition has not recovered to 50% which is quite limited compared with those who have recovered above 50% -100%. However, the condition of biota (e.g., fish, shrimp, crabs and mollusks), more than 50% of respondents said, has not recovered to 50%. It explains the reason of mangrove has a faster recoverey compared to the biota associated with the location, or biota of economic value in the location. Those who are exploited have a slower recovery.. Nevertheless, the findings of this study were indicators of mangrove resilience from a community perspective in accordance with the concept of ecological resilience.

The respondents are able to identify mangrove resilience and formulate conservation efforts for its preservation. This in turn generates their social awareness and views regarding management options. It can be stated that they desire the mangrove area to be protected, especially from the effort to change the mangrove land into pond land, salt fields and new settlement. Furthermore, they are also expected the mangroves used in an environmentally friendly manner through the development of eco-friendly cultivation and tourism.

4 CONCLUSION

The local people's perspectives on the mangroves resilience are significant. The knowledge of local people on mangrove enviromental service is extremely relevant in the effort to maintain a balance ecosystem. The local people's knowledge about the natural system is a great value to scientific research and understanding leading to better conservation efforts by all who are involved.

ACKNOWLEDGEMENT

The authors are thankful to the Directorate General of Strengthening Research and Development, Directorate of Research and Community Service, Ministry of Research, Technology and Higher Education of Indonesia for providing the funding for carrying out this study. The authors would also like to thank Dr. Alifman Hakim, a scien from the University of Mataram Indonesia, for his constructive criticism and comments during the preparation of this article.

REFERENCES

Agil Al-I, Hadiprayitno G, Hamdi L dan Mertha IG. 2015. Potensi Vegetasi dan Arthropoda diKawasan Mangrove Gili Sulat Lombok Timur. *Biologi Tropis*, 15 (2): 62-70.

Aswani S, Lauer M. 2006. Incorporating fishers' local knowledge and behavior into geographical information systems (GIS) for designing marine protected areas in Oceania. *Human Organization*,. 65:80–101.

Badola, R., Barthwal, S., and Hussain, S.A.2012. *Attitudes of local communities towards conservation of mangrove forests: A case study from the east coast of* India. *Estuarine, Coastal and Shelf Science*, 96: 188-196

Berkers, F. 2010. Shifting perspectives on resource management: Resilience and the Reconceptualization of 'Natural Resources' and 'Management. *MAST*. 9(1): 13-40.

Chapin, F.S., Kofinas G.P. and Folke, C. 2009 *Principles of Ecosystem Stewardship: Resilience-based Resource Management in a Changing World.* New York: Springer-Verlag

Ellison A M. 2008. Mangrove ecology – applications in forestry and costal zone management. *Aquatic Botany*, (89): 77.

Few R. 2009. Conservation, participation, and power: protected-area planning in the coastal zone of belize. *Journal of Planning Education and Research*,. 19: 410 – 408.

Larkum AWD. Robert JO dan Carlos M. Duarte. 2006. Seagrasses *: Biology, Ecology and Conservation*. Springer. Netherlands

Nagelkerken, I., Blaber, S.J.M., Bouillon, S., Green, P., Haywood, M., Kirton, L.G., Meynecke, J.-O., Pawlik, J., Penrose, H.M., Sasekumar, A., Somerfield, P.J., 2008. The habitat function of mangroves for terrestrial and marine fauna: A review. Aquatic. Botany. 89: 155–18.

Syukur, A. 2013. Pengetahuan Ekologi Masyarakat Lokal sebagai Indikator Penilaian Potensi Lamun (*Seagrass*) di Tanjung Luar Lombok Timur. Jurnal Biologi Tropis, 13 (2): 209-217

Walters, B.B., Ronnback, P., Kovacs, J.M., Crona, B., Hussain, S.A., Badola, R., Primavera, I.H., Barbier, E., and Dahdouh-Guebas, F. 2008. Ethnobiology, socio-economics and management of mangrove forests: A review. *Aquatic Botany*, 89: 220–236

SCITEPRESS
SCIENCE AND TECHNOLOGY PUBLICATIONS

View publication stats

The Perspective of Local Community's on Mangrove Resilience

ORIGINALITY REPORT

24%	22%	13%	9%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	thescipub.com Internet Source	3%
2	www.marecentre.nl Internet Source	3%
3	www.scribd.com Internet Source	3%
4	www.longdom.org Internet Source	2%
5	www.iss.nl Internet Source	1%
6	krishi.icar.gov.in Internet Source	1%
7	Suvaluck Satumanatpan, Richard Pollnac. "Factors influencing the well-being of small-scale fishers in the Gulf of Thailand", Ocean & Coastal Management, 2017 Publication	1%
8	Submitted to Universitas Sebelas Maret Student Paper	1%

9	worldwidescience.org Internet Source	1 %
10	media.neliti.com Internet Source	1 %
11	www.akademisains.gov.my Internet Source	1 %
12	Submitted to University of Exeter Student Paper	1 %
13	biodiversitas.mipa.uns.ac.id Internet Source	1 %
14	www.fisheriesjournal.com Internet Source	1 %
15	Saif Ullah, Ali Abid, Waqas Aslam, Rana Shahzad Noor, Muhammad Mohsin Waqas, Tian Gang. "Predicting Behavioral Intention of Rural Inhabitants toward Economic Incentive for Deforestation in Gilgit-Baltistan, Pakistan", Sustainability, 2021 Publication	<1 %
16	mafiadoc.com Internet Source	<1 %
17	Fikret Berkes, Huei-Min Tsai, Mucahid Mustafa Bayrak, Yih-Ren Lin. "Indigenous Resilience to Disasters in Taiwan and Beyond", Sustainability, 2021 Publication	<1 %

18	L Zulkifli, A Syukur, L R Patech. "Seagrass conservation needs based on the assessment of local scale economic value on the diversity of its associated biota in the South Coast East Lombok, Indonesia", IOP Conference Series: Earth and Environmental Science, 2021 Publication	<1 %
19	ael-environnement.nc Internet Source	<1 %
20	etheses.whiterose.ac.uk Internet Source	<1 %
21	id.123dok.com Internet Source	<1 %
22	scialert.net Internet Source	<1 %
23	Mangrove Ecosystems of Asia, 2014. Publication	<1 %

Exclude quotes	On	Exclude matches	< 5 words
Exclude bibliography	On		