

2015

(2)

ACRS 2015-36th Asian
Conference on Remote
Sensing : Fostering
Resilient Growth in Asia,
Proceedings

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.742.764&rep=rep1&type=pdf>

ISSN : 2355-4398

Nur Indah Sari Arbit, Nurjannah Nurdin,
Suparjo Razasli Carong

Hasil Turnitin

Title:

Transformation Analysis of Mangrove to Traditonal Pond Culture on
West Sulawesi, Indonesia

grove_to_Traditonal_Pond_Cultu
re_on_West_Sulawesi,_Indonesi
a.pdf
by

FILE	GROVE_TO_TRADITONAL_POND_CULTURE_ON_WEST_SULAWESI_INDONESIA.PDF (563.65K)		
TIME SUBMITTED	05-FEB-2021 05:54PM (UTC+0700)	WORD COUNT	1988
SUBMISSION ID	1502255166	CHARACTER COUNT	10305

TRANSFORMATION ANALYSIS OF MANGROVE ECOSYSTEM TO TRADITIONAL POND CULTURE ON WEST SULAWESI, INDONESIA

Nur Inda² Sari Arbit (1), Nurjannah Nurdin (2)(3), Suparjo Razasli Carong (4)

¹Aquaculture Department, Sulawesi Barat University, Jl. Prof. Dr. Baharuddin Lopa, SH. Talumung Majene Sulbar, 9412, Indonesia

Email: adinda.2013@gmail.com

²Center for Regional Development and Spatial Information, Hasanuddin University, Jl. Perintis Kemerdekaan km 10, Makassar, 95245, Indonesia

Email: nurj_nurdin@yahoo.com

³Marine Science Department, Hasanuddin University, Jl. Perintis Kemerdekaan km 10, Makassar, 95245, Indonesia

⁴Forestry Department, Sulawesi Barat University, Jl. Prof. Dr. Baharuddin Lopa, SH. Talumung Majene Sulbar, 9412, Indonesia

Email: suparjo_razasli@yahoo.com

KEY WORDS: Mangrove, Landsat, Traditional pond culture.

ABSTRACT: Mangrove is a natural resource that has double role, in terms of economic and ecological aspects. The research objective are to analyze the changes in mangrove area to Traditional pond culture, the causes of these changes and how to overcome them. This research was carried out on the Mampie coastal, Wonomulyo, West Sulawesi, Indonesia. Transformation analysis method using spatial analysis, Landsat multi temporal and ground survey. There has been area transformation of mangrove to Traditional pond culture. The results showed the total area of mangrove in 2008 of 26.82 hectares while the area of mangrove area in 2015 amounted to 17.68 Ha so that the reduction in the number of mangroves during the interval of 7 years of 9.14 ha. This is due to lack of extension of the local government that how importance of mangrove area for ecosystem and the survival of the community.

1. INTRODUCTION

1.1 Background

Indonesia is the largest archipelago in the world that consists of 13 466 islands with ³coastline of 99 023 km². Indonesian coastal region famous for the richness and diversity of its natural resources. Coastal ecosystems such as coral reefs, seagrass beds, and mangrove forests are very broad and diverse in the country. Indonesian mangrove forest ecosystem is the largest in the world. Based on data from Mangrove National Working Group in 2013 showed that the Indonesian mangrove forest area around 3.2juta ha. This amount is very much decreased (in 1982 the number of Indonesian mangrove forest around 4.25juta ha) as most of mangrove forests in Indonesia, many converted into residential areas, tourism, palm oil, and ponds.

Polewali Mandar is one of the districts in West Sulawesi province has a total length of 89.07 km coastline. Sempa and coastal area stretching from the coastal area bordering the District Binaung Pinrang South Sulawesi province to the coast bordering the District Tinambung Majene West Sulawesi. Coastal is a connection between land and sea, so that the coastal region of Polewali Mandar greatly influenced by processes that exist on land and in coastal laut. Sepanjang this area are found various types of mangrove vegetation.

Spatial Plan Data Polewali Mandar in 2008 showed the extent of mangrove forests in this area is ± 635 ha, while the data RTRW of 2013 was reduced to ± 237 ha. Hal shows that in the last 5 years in Polewali Mandar there has been a decline in cotton area more of 50% as many as 398 ha. Penuruankuantitas mangrove forest ecosystems is inseparable from the transformation of the region into a region of mangrove forest ecosystem pond.

Area of mangrove forest ecosystems in the District Mampie Wonomulyo Polewali Mandar as a test site is a part area of Wildlife Lampoko-Mampie. This region in the set as a protected area by the Minister of Agriculture in 1978 with No. 699 / Kpts / Um / 78. Mampie uniqueness to be determined Wildlife area because this area is the habitat of water birds (waterfowls habitats) such as birds endemic Sulawesi Mandar Aramidopsis plateni and as a stopover place Pelecanus conspicillatus migrant bird species. This type of bird is derived from the Australian continent and is often found in areas of mangrove forest ecosystems Mampie.

Mampie is one area that is important to stay preserved because it supports aquatic living beings indirectly will affect the economy of the surrounding community. Community activity that converts into a mangrove area of traditional

farms cause a reduction in mangrove area. Therefore this study was conducted to analyze how much change in mangrove area Mampie region due to the activity of the surrounding community.

1.2 Aim

This study aimed to analyze changes in mangrove area into land traditional ponds.

2. METODEDELOGY

2.1 Time and Location

The research was conducted throughout the month of Februari 2015 in Mampie Shore, Wonomulyo District, Polewali Mandar Regency. including: data preparation, sosial data. The geographical boundary of the study area was between $119^{\circ}15'38''48''$ East and $3^{\circ}27'18.75''$ South (Figure 1)

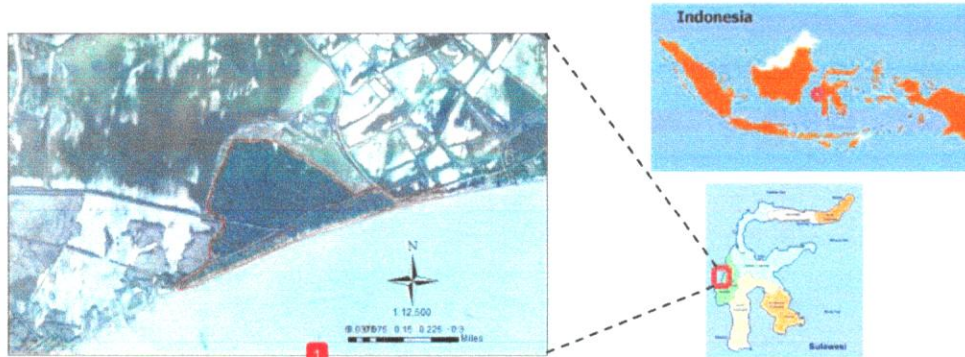


Figure 1 Map of the study area, Mampie Shore

2.2 Metode

To identify the mangrove forest with Landsat satellite image data 8 refers to the exploration RGB composite image 453. While the Landsat images used composite RGB 8 564 in which three bands included in the visible and infrared range of the spectrum - wavelengths close and has a length corresponding to wave band 4, band 5 and band 3 on satellite images Landsat 8.

The flow chart shown by the study (Figure 2).

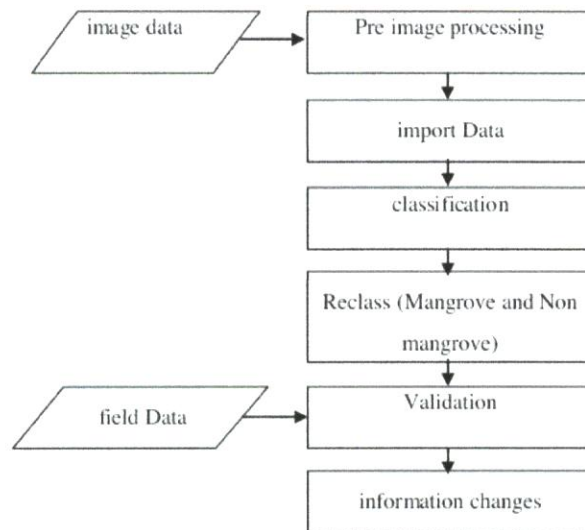


Figure 2. Flow diagram of the study

2.4 Analysis

The study was conducted in two ta-hap, which analyzes image data and ground check. Tools and materials used in this study consists of two kinds, namely for processing image data and field surveys. Visual observations are also carried out on the presence of mangroves within the limits of the coordinates.

This study is based on data analysis of Landsat 8 satellite imagery. Location ground check observation points purposively mangrove vegetation is determined based on the representation of the location of the study, according to the results of the initial image processing to areas of mangrove changes.

3. RESULTS AND DISCUSSION

3.1 Image processing

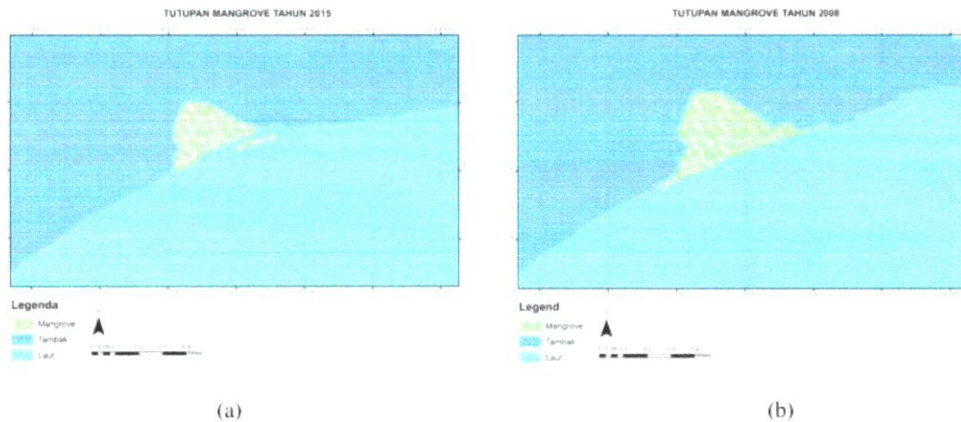


Figure 3. Condition of Mangrove cover in Mampie shore (a) Mangrove cover in 2015, (b) Mangrove cover in 2008

The results showed the total area of mangrove in 2008 of 26.82 hectares while the area of mangrove area in 2015 amounted to 17.68 Ha so that the reduction in the number of mangroves during the interval of 7 years of 9.14 ha. According to Tommy, 2010 changes the mangrove land area during an interval of 10 years has decreased in result of the settlement and the manufacture of Traditional pond.

3.2 Mangrove condition

In 1978, the Wildlife Lampoko total area of 115 ha and Mampie is at 860 Ha. Especially for the Mampie shore in 2015 has an area of 17.68 ha. These conditions indicate that the mangrove ecosystems area in the Mampie shore has decreased the amount of area that is very significant. The extent of the decline can not be separated from the pressure by coastal communities as well as the direction of development in this area that are not focused on aspects of sustainable development. Therefore is the destruction of mangrove forests to be continue.

Generally, Society prefer traditional pond clearing by cutting down mangrove forests. This is because the economic value that is obtained by opening a traditional farm land is considered more promising. Many cases in the community who do intensive pond only benefit in the short term was prone in the long term because it will cause damage to nature that will have an impact on the economy. (Sigit R., 2013)



a



b



c



d

Figure 3. some pictures on the field survey of mangrove area: a – d mangrove changes cover to traditional ponds

Mangrove forest area degraded both quantitative and qualitative caused various factors. One of the factors in question is the conversion of the area into a region of mangrove forest ecosystems tambak. Analisis ArcGIS 2014 (Razasli, 2014), shows the pond area in District Wonomulyo covering 2612 ha. Surely activity that is not based on the concept of ecology will result in damage to the coastal ecosystem ecological disasters such as abrasion, sea water intrusion, or flooding rob. Kondisi This course will provide the balance rhadap ifte negat impact coastal ecosystems, people who live in the coastal area (coastal area), and of course the ongoing sustainable development endorsed by the local government.

Environmental impact and management strategy

Decline in mangrove forest area that is caused by changes in area use into ponds tradiosional so that Mampie region that has made the area wildlife refuges no longer function properly. Bird endemic birds dead and can no longer be stopped in this area. This is in tandem with menurutnya environmental quality caused by felling mangrove forests to be used as a traditional farm land. No more spawning marine animals such as crabs and fish that will have an impact on the number of fishermen catch fewer and fewer. No less important function of mangroves as a buffer waves and wind for housing can no longer be implemented. If the review is much more far that the gains of open land on the embankment no more than the mangrove preserve well. It shall in the presence of the mangrove pond remain preserved, because mangroves and ponds interconnected with each other. Mangrove always side by side with aquaculture, to preserve the mangrove nursery pond production will increase (Zavalloni M., 2014).

According Santos, 2014 to a strategy that can be done so that mangrove lands is maintained which provide rule of law for the cultivation of fish and run a cooperative for the community to enable them to carry out sustainable cultivation. All stakeholders such as local governments, private coastal communities, NGOs, and academia (researchers) need to take concrete steps for the prevention and management of mangrove ecosystems Mampie day early ini. Langkah very urgent to do is multiply science studies related Mangrove forest beside Mampie certainly mereh abilitasi hutan. Oleh region, therefore, related research "mangrove ecosystem Transformation Analysis Being Traditional Farming region in Mampie, Polewali Mandar" became one of the contributions of mind in keeping the mangrove forest ecosystems in order to remain sustainable.

4. CONCLUSION

Conclusions of this study showed a decrease in the area of mangrove in the area Mampie due to the activities of the community, especially the manufacture of traditional ponds. decrease occurred from 2008 covering an area of 26.82 hectares and become an area of 17.68 hectares in 2015 so that the reduction in the number of mangroves during the interval of 7 years of 9.14 ha. Due to the decrease in mangrove land area causes a decreased quality of strategy Management of the environment so it is expected that the government's strict rules dr, counseling on the importance of mangroves for economic and survival.

Acknowledgments

We would like to thank to **Regional Development and Spatial Information Hasanuddin University**, Indonesia, for funding support.

REFERENCES

- Razasli S., 2014. Mangrove Forest Ecosystem damage assessment due to human activities in the framework of environmental protection in the case of beach Mampie Polewali Mandar regency. Thesis: Gajah Mada University.
- Santos L. C. M., Humberto R. M., Yara S. N., Marflia C. L., Marisa D. B., Nico K., Farid D. G. 2014. Anthropogenic activities on mangrove areas (São Francisco River Estuary, Brazil Northeast): A GIS-based analysis of CBERS and SPOT images to aid in local management. *Journal Ocean & Coastal Management* 89 (2014) pp 39-50.
- Sigit R., 2013. Economic environment select mangrove or pond, Retrieved Agustus 20, 2015. From <http://www.mongabay.co.id>
- Tommy E., 2010. Analysis of Changes in Land Area Mangrove Pohuwato In Gorontalo Province Using Landsat Imagery. *Journal of marine fisheries* . VI (2) pp 79-84.
- Zavalloni M., Rolf A. G., Paul A.M., Zwieten. The role of spatial information in the preservation of the shrimp nursery function of mangroves: A spatially explicit bio-economic model for the assessment of land use trade-offs. *Journal of Environmental Management* 143 (2014) pp 17-25

ORIGINALITY REPORT

% **2**

SIMILARITY INDEX

%

INTERNET SOURCES

% **2**

PUBLICATIONS

%

STUDENT PAPERS

PRIMARY SOURCES

- 1** Nurdin, Nurjannah, M. Akbar, and Farida Patittingi. "Dynamic of mangrove cover change with anthropogenic factors on small island, Spermonde Archipelago", Remote Sensing of the Ocean Sea Ice Coastal Waters and Large Water Regions 2015, 2015. % **1**

Publication
- 2** Amran Yahya, Nur Wahidah Bakri. "Pengaruh model pembelajaran kooperatif tipe teams games tournament (TGT) dengan aplikasi QR code terhadap hasil belajar matematika", Jurnal Math Educator Nusantara: Wahana Publikasi Karya Tulis Ilmiah di Bidang Pendidikan Matematika, 2019 % **1**

Publication
- 3** Bertness, Mark. "Marine Community Ecology and Conservation", Oxford University Press % **1**

Publication
- 4** M S Thalib, N Nurdin, A Aris. "The Ability of Lyzenga's Algorithm for Seagrass Mapping using Sentinel-2A Imagery on Small Island, <% **1**

Spermonde Archipelago, Indonesia", IOP Conference Series: Earth and Environmental Science, 2018

Publication

EXCLUDE QUOTES ON
EXCLUDE ON
BIBLIOGRAPHY

EXCLUDE MATCHES < 5
WORDS