Jurnal Dr. Endang

by Dosen Akuakultur

Submission date: 21-Jun-2024 11:58AM (UTC+0700)
Submission ID: 2227738284
File name: 61581-211456-1-PB.pdf (416.85K)
Word count: 4217
Character count: 24165

ILMU KELAUTAN: Indonesian Journal of Marine Sciences June 2024 Vol 29(2):254-260 e-ISSN 2406-7598

Managing Mangrove Resources in Conflict of Interest Zones in Bangka Island's Eastern Coast

Endang Bidayani[1]*, Lucas O. Vieira[2], Fitri Sil Valen[1]

[1]Aquaculture Department, Agriculture Fisheries and Biology Faculty, Universitas Bangka Belitung Balun Ijuk, Merawang, Bangka, Kepulauan Bangka Belitung 33172 Indonesia
[2]Universidade Federal do Maranhão, Centro de Ciências de Chapadinha, Campus de Chapadinha, Programa de PósGraduação em Ciências Ambientais, BR 222, KM 04, Boa Vista, CEP: 65500-000, Chapadinha, Brazil
Email: endangbidayani@gmail.com

Abstract

The east coast of Bangka Island is an area prone to conflicts of interest, due to the use of the coast for tin mining and fishing by traditional fishermen. The threat of destruction of mangrove forests due to community tin mining on the east coast of Bangka Island has caused a decline in the crab population as the main catch of local fishermen.The study aimed to analyze efforts to manage mangrove ecosystems in conflict zones. The study was conducted from June to October 2023. The primary data was obtained through interviews fishermen community, direct observation, and documentation. The data analysis methods employed utilize a descriptive approach. Based on the survey results, the impact of tin mining activities causes a decrease in the area of mangrove forests. Reporting that the income of traditional fishermen in the productive fishing season is around IDR 65,000/day or IDR 980,000/month. Meanwhile, in the bad season, the income of traditional fishermen is IDR 13,000/day or IDR 205,000/month. Efforts to manage mangrove resources in conflict zones include mangrove restoration and mangrove forest educational tourism. The government's enforcement of regulations regarding the prohibition of tin mining in mangrove forest areas must be more massive so that mangrove resources remain sustainable. The government must significantly enhance the enforcement of legislation pertaining to the prohibition of tin mining in mangrove forest regions in order to ensure the long-term sustainability of mangrove resources.

Keywords: *Mangrove, conflict, tin mining, managing, Bangka*

Introduction

The Bangka Belitung Islands Province is one of the world's tin producers (Maia *et al.*, 2019). However, the presence of tin mining has a significant impact on the degradation of coastal ecosystems (Adibrata *et al.*, 2021), especially mangrove forest ecosystems (Sari *et al.*, 2023), and biodiversity (Hasan *et al.*, 2023a; Syarif *et al.*, 2023a; Valen *et al.*, 2023; Kusumah *et al.*, 2023). The area of mangrove forests on the east coast of Bangka Island decreased, from 1,104.3 hectares (2002) to 964.4 hectares (2017) (Savira *et al.*, 2018).

The remaining tin mining activities produce tailings that are released into the waters. Waste from mining activities is generally in the form of waste containing heavy metals (Adibrata *et al.*, 2021; Bidayani and Reniati, 2021). Tin mining waste, whether from large-scale industrial operations like suction boats and dredges or from small-scale unconventional mining (TI), has high concentrations of heavy metals, specifically lead (Pb), cadmium (Cd), zinc (Zn) and Chromium (Cr) (Okewale and Grobler, 2023). However, the natural process of enhancing water quality requires a time frame of 20 to 30 years.

Depositing tailings in a landfill can harm colonies of benthic organisms (Trannum *et al.*, 2020) and disrupt breeding spots for other aquatic organisms (Paquet *et al.*, 2019; Hasan *et al.*, 2023b). Suspended soil particles will cover habitats, including aquatic plants, soil surfaces and eggs of aquatic organisms, hindering appropriate development of the eggs. This phenomenon will result in a significant decrease in population, ultimately leading to a reduction in aquatic biodiversity (Robin *et al.*, 2022; Syarif *et al.*, 2023b; Hasan *et al.*, 2023c; Prianto and Husnah, 2017). Tailings waste that enters coastal waters can cause negative influences, including concentration and accumulation in aquatic ecosystems (Bidayani *et al.*, 2023a; Beck *et al.*, 2020).

Mining activities have had a detrimental impact on the ecology, specifically on mangrove habitats. These activities have resulted in environmental degradation, which is characterized by diminished water quality, pollution, and silt accumulation (Henri *et al.*, 2022). In the last ten years, over 767.33 hectares of mangrove resources on Bangka Island have been depleted as a result of coastal erosion or human activity (Sari *et al.*, 2023).

*) Corresponding author

https://ejournal.undip.ac.id/index.php/ijms
DOI: 10.14710/ik.ijms.29.2.254-260
Received : 10-01-2024
Accepted : 30-03-2024

Mangrove forests play a significant role in their physical, biological, and economic contributions (Supandi *et al.,* 2023; Matatula *et al.,* 2023). They generate an annual ecosystem service value of around 21,100 USD.hectares^{-1} (Getzner and Islam, 2020; Sari *et al.,* 2023).

The east coast of Bangka Island is an area that is prone to conflicts of interest, due to coastal use for tin mining and fishing purposes by traditional fishermen (Bidayani *et al.,* 2020; Bidayani *et al.,* 2023b). The issue of environmental damage due to mining activities affects the decline of fishermen's main commodities (Bidayani and Priyambada, 2022). Therefore, this study aims to examine efforts to manage mangrove resources in the tin mining conflict zone on the east coast of Bangka Island.

Materials and Methods

The research was carried out in June–October 2023 in Central Bangka Regency, including Kebintik Village Pangkalan Baru District, Baskara Bhakti Village Namang District, and Kurau Village Koba District, Central Bangka Regency. Site selection techniques were carried out deliberately (purposive sampling), considering that unconventional mining (illegal mining) activities are found in this location. See Figure 1.

The research methodology employed in this study is the survey method, which relies primarily on obtaining data and information from respondents through the use of questionnaires as instruments for data collection, observation, and documentation. According to Fink (2003), a survey's objectives are considered to measurable if two or more people can easily agree on all the words and terms used to describe the survey's purposes. The survey was conducted once during the research period. The population in this study were traditional fishermen who were affected by illegal tin mining activities.

Survey research is carried out by collecting information from a sample by asking through open questionnaires or interviews so that it can describe various aspects of the population. The survey was conducted in two coastal villages affected by illegal tin mining activities, namely Kebintik Village and Baskara Bakti Village. The survey was conducted once during the research period. Interviews with respondents were conducted using the snowball technique. The minimum sample size is 30 according to Yulianah (2022) to ensure the representativeness of the sample taken so that it can produce wider generalizations to a larger population.

Observation is a way to get important information about someone, because what is said does not necessarily match what is done. Observations are carried out directly by visiting the location then recording the results of the observations and documenting them as the results of the observations. The documentation method, basically,

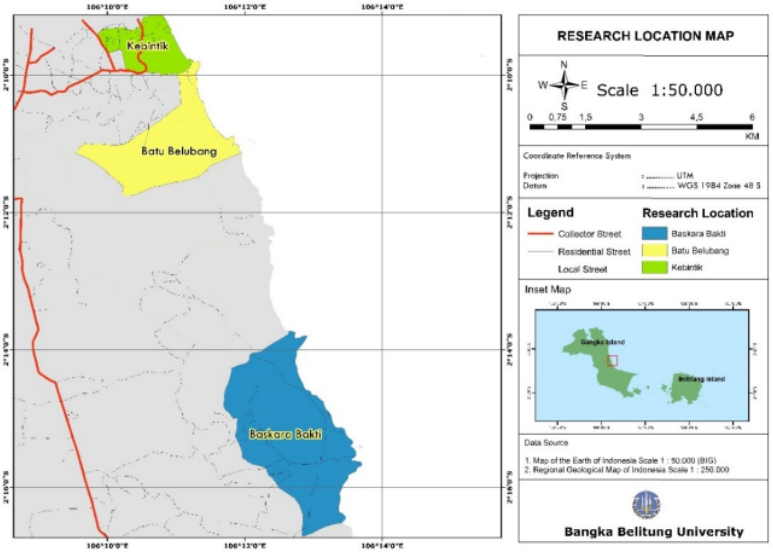

Figure 1. Map of Research Location in Central Bangka Regency

involves recording various sources such as interviews, observations, and materials relevant to the research. More than just recording what is said, this method allows researchers to reach the meaning behind words and understand more deeply a context. Data in the form of documentation such as personal notes or official documents by institutions.

Sample withdrawal

The sampling method uses purposive sampling technique. This method is carried out by selecting samples/respondents based on certain predetermined characteristics, namely traditional fishermen who have more than 20 years of experience. The reason for selecting respondents was because they were considered aware of environmental changes. The number of respondents was 30 people.

Data collection

Data types include primary data and secondary data. Primary data collection uses questionnaires, observation and documentation tools. Interviews with respondents were carried out directly using a questionnaire guide. Secondary data collection through literature study. Observation requires the researcher to spend considerable time in the field with the possibility of adopting various roles in order to gain a more comprehensive understanding of the people being studied. Observations were made on respondents in the research. While documentation aims to document interview activities.

Data analysis

The data analysis method used is a qualitative descriptive method, which describes the circumstances that occur systematically and factually to explain and solve research problems. Descriptive method to measure attitudes, opinions, and perceptions of traditional fishermen. According to Dey (2003), qualitative research method is a research method based on post positivism philosophy which is used to examine objects in natural conditions (real conditions, not set or in experimental conditions) where the researcher is the key instrument.

Result and Discussion

Impact of mining activities on traditional fishermen

The impact of tin mining activities causes a decrease in the area of mangrove forests. According to Savira *et al.* (2018), mangrove area decreased by 139.9 hectares in the 2002-2017 period on the east coast of Bangka Island has caused the population of crabs and other animals whose habitat in mangrove forests to decrease.

The study revealed that traditional fisherman in Kebintik Village, Pangkalan Baru District, using distinct fishing equipment compared to the fishermen in Baskara Bhakti Village, Namang District. The majority of fishermen in Kebintik Village, Pangkalan Baru District, employ the fishing method known as "Bagan Tancap" and primarily catch Ciu and Tamban fish. The fisherman of Baskara Bhakti Village employs shrimp nets and crab traps. The fishing boat uses a 3 GT outboard engine. During the famine time, traditional fisherman in both communities earn approximately IDR 300,000 per month. However, during the fish season, their income increases to IDR 800,000 per month.

The fishing effort of traditional fishermen in the productive seasons, which are in March, May, June, August, and October, indicates that all respondents (100%) are efficient. Meanwhile, in the bad season (besides the peak.productive seasons[1]), 57% of fishermen break even (Revenue cost ratio = 1), 33% (Revenue cost ratio<1) are inefficient, and 10% (Revenue cost ratio>1) are efficient. The implementation of resource efficiency is presented in Figure 2.

Survey result show that as many as 90% of fishermen can still conduct fishing activities by changing locations, particularly in conflict zones. The fishermen experience difficulty in getting fish, which encourages them to change the catching location. According to Daris *et al.* (2022), traditional fishermen have a limited area of operation around coastal waters, as they use boats without motors.

Based on statistical data from the Fisheries and Marine Service (DKP) of Bangka Belitung Islands Province (2022), the capture fisheries sector dominates more than 90% of overall regional fisheries production in Bangka Belitung Islands Province. Fishermen in Bangka Belitung Islands Province are dominated by motor boats < 5 GT as much as 51.16%.

Traditional fishermen have individual characteristics for resilience, including: Insight, independence, relationships, initiative, creativity, humor and morality. Insight, this attitude is shown from their ability to manage businesses ranging from 20-40 y. According to (Sisto *et al.,* 2019), resilience is the ability that exists in individuals to recover from stressful circumstances, able to adapt and survive in these conditions. Resilience as the ability to adapt positively when conditions are unpleasant and full of risks (Dantzer *et al.,* 2018).

Fishermen manage the issue of coastal pollution in their region by maintaining a rational and unemotional approach. However, we are seeking a

collective solution that allows us to cohabit together with the non-traditional tin miners, who happen to be members of the local community as well. According to Fletcher and Sarkar (2013), the elements that contribute to resilience can be categorized into three groups: 1) individuals, such as intelligence, coping ability, emotional regulation and optimism; 2) family factors, such as support from family members; and 3) community components, such as environmental assistance in managing stress.

The interpersonal relationship between fishermen and unconventional tin miners in coastal communities is exceptionally positive. Therefore, reducing the frequency of conflicts of interest. Community initiatives to deal with problems are shown through attitudes, among others, dividing coastal areas using wood planted as far as one kilometer towards the sea, for fishing and tin mining activities such as in Baskara Bhakti Village. Meanwhile, in Kenoda Village, there is no division of fishing areas and unconventional tin mining. Suhartono (2007) categorizes survival strategies against economic shocks into three distinct groups, each encompassing diverse approaches: 1) Active strategies, specifically maximizing the potential of the family by increasing working hours; 2) Implementing a passive strategy, which involves reducing family expenses, such as on clothing and food; and 3) Utilizing a network strategy, which is to establish relationships with their social environment, For example, obtaining funds from neighbors, banks, vendors, or usurious lenders.

The ingenuity of fishermen is demonstrated through their pursuit of additional sources of revenue through endeavors unrelated to fishing, such as horticulture, miscellaneous tasks, and boat rentals. The challenge of humor, encountered by fishermen, does not diminish their sense of contentment. Engaging in recreational pursuits can encompass activities such as enjoying music through a robust audio system at the fisherman's abode, capable of projecting sound waves across a considerable radius of several meters, as well as embarking on guided excursions to the nearby island.

Their moral character is demonstrated by their adeptness in effectively managing the household. Individuals facing economic challenges often seek supplementary sources of income in response to their low earnings. In addition, government assistance programs such as fishing gear and ship engines, can help reduce production costs. According to Woods (2017), resilience can be divided into four stages: 1) Yield, which is the condition of giving in or surrendering after facing a pressing threat; 2) Survival, which is a condition in which the individual is unable to restore psychological function and positive emotions after a stressful condition; 3) Recovery, which is the condition of individuals who recover and are able to adapt from stressful conditions; and 4) Thrive, i.e. able to face and cope with stressful conditions.

Management of mangrove in conflict zones

The mangrove forests impacted by mining operations are the mangrove forests in Baskara Bhakti Village, Namang District, and Kurau Village, Koba District. The community of Baskara Bhakti Village engages in the rehabilitation of mangrove resources through the practice of mangrove planting. According to Arifanti *et al.* (2022), coastal communities play an important part in the restoration of mangrove forests as they rely on the presence of sustainable mangrove ecosystems. According to Sukarmen *et al.* (2023), the act of planting mangroves in coastal areas is conducted as a means of mitigating environmental damage. Mangroves function as natural barriers against tidal waves, hence reducing the extent of damage caused on land.

Technical procedures that support the success of mangrove rehabilitation refer to the technical guidelines for *blue forest* rehabilitation namely: 1) Understanding autecology, namely the ecological properties of each type of mangrove in the location, especially reproductive patterns, seed distribution, and successful growth of seedlings; 2) Understand the normal hydrological patterns governing the distribution and growth of mangrove species; 3) Examining changes that occur in the mangrove environment that inhibit natural regeneration; 4) Design a hydrological restoration program to enable natural mangrove growth; and 6) Seeding and planting only if the above four steps have been carried out but do not produce growth as expected.

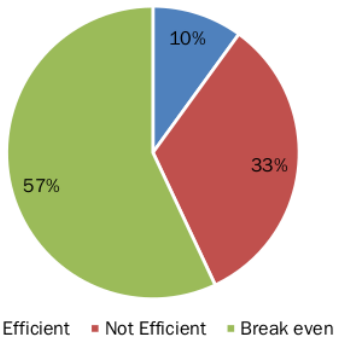

Figure 2. The Implementation of Resource Efficiency

The management of mangrove forests in Kurau Village is carried out by the 01 GEMPA Group (Young Nature Lovers Movement) as an educational tour. Rehabilitation activities were carried out with BPDASHL Baturusa Cerucuk covering an area of 20 hectares. The dominant types of mangroves are *Rhizophora apiculata* (mangrove), *Avicennia lannata* (api-api), *Avicennia marina* (white api-api), *Soneratia alba* (perepat), and *Nypah frutican* (nipah). According to Farhaby and Henri (2023), mangrove cover is between 77.22±2.64% to 88.89±1.71%, and the dominant species is *Rhizophora apiculata* with an important value index value of 148.13% to 191.02%.

Conclusion

Traditional fishermen in tin mining conflict zones have limited income and are not prosperous. Effective management of mangrove resources is essential, including efforts in mangrove restoration and education centered on mangrove forests. The government must substantially enhance the enforcement of laws and regulations banning tin mining activities in mangrove forests to ensure the long-term sustainability of these important ecosystems.

Acknowledgment

The authors would like to thank the fishermen community in Central Bangka Regency as research respondents and the Research and Community Service Institute (LPPM) of the Universitas Bangka Belitung for facilitating research and publications.

References

Adibrata, S., Yusuf, M., Irvani. & Firdaus M. 2021. Contamination of Heavy Metals (Pb and Cu) at Tin Sea Mining Field and Its Impact to Marine Tourism and Fisheries. *Ilmu Kelautan: Indonesian Journal of Marine Sciences*, 26(2): 79-86. https://doi.org/10.14710/ik.ijms.26.2.79-86

Arifanti, V.B., Sidik, F., Mulyanto, B., Susilowati, A., Wahyuni, T., Subarno., Yulianti., Yuniarti, N., Aminah, A., & Suita, E. 2022. Challenges and Strategies for Sustainable Mangrove Management in Indonesia: A Review. *Forests.,* 13: p.695. https://doi.org/10.3390/f13050695

Beck, K.K., Mariani, M., Fletcher, M.S., Schneider, I., Aquino-López, M.A., Gadd, P.S., Heijnis, H., Saunders, K.M. & Zawadzki, A. 2020. The impacts of intensive mining on terrestrial and aquatic ecosystems: A case of sediment pollution and calcium decline in cool temperate Tasmania, Australia. *Environ. Pollut.,* 265: p.114695. https://doi.org/10.1016/j.envpol.2020.114695

Bidayani, E., Reniati, R. & Valen, F.S. 2023a Local wisdom of coastal communities in management of fishery resources in conflict areas of unconventional tin mining in Central Bangka Regency. *AACL Bioflux.*16(3): 1277-1283.

Bidayani, E. & Reniati. 2021. Traditional fisherman resilience strategy to coastal pollution pressure impact of tin mining in central Bangka district. *IOP Conf. Ser. Earth Environ. Sci.*, 741(1): p.012071. https://doi.org/10.1088/1755-1315/741/1/012071

Bidayani, E. & Priyambada, A. 2022. Blue Economy Pengelolaan Perikanan Tangkap Tradisional. Uwais Inspirasi Indonesia.

Bidayani, E., Kurniawan, K., Anggeraini, L. & Aisyah, S. 2020. Utilization conflict analysis of fisheries resources with tin mining and marine tourism in east coast of Bangka Island. Proceedings of the 13th International Interdisciplinary Studies Seminar, IISS 2019, 30-31 October 2019, Malang, Indonesia. https://doi.org/10.4108/eai.23-10-2019.2293011

Bidayani, E., Reniati, R. & Priyambada, A. 2023b. The application of the blue economy concept for traditional fisheries management in a conflict zone. *Indo Pac. J. Ocean Life,* 7(2): 143-147. https://doi.org/10.13057/oceanlife/o070203

Dantzer, R., Cohen, S., Russo, S.J., & Dinan, T.G. 2019. Resilience and immunity. *Brain Behav. Immun.,* 74: 28-42. https://doi.org/10.1016/j.bbi.2018.08.010

Daris, L, Massiseng, A.N.A., Fachri, M.E., Jaya, & Zaenab, S.T. 2022. The impact of fishermen's conflict on the sustainability of crab (*Portunus pelagicus*) resources in the coastal areas of Maros District, South Sulawesi, Indonesia. *Biodiversitas.,* 23: 5278-5289. https://doi.org/10.13057/biodiv/d231037

Dey, I. 2003. Qualitative data analysis: A user friendly guide for social scientists. Routledge. https://doi.org/10.24114/jbio.v5i2.13157

Farhaby, A. M. & Henri, H. 2023. Analisis Produksi Karbon Serasah Mangrove di Hutan Mangrove Desa Kurau Timur Kabupaten Bangka Tengah. *Bioma: Berkala Ilmiah Biologi*, 25(1): 11-19. https://doi.org/10.14710/bioma.25.1.11-19

Fink, A. 2003. How to design survey studies. Sage Publication. United Kingdom, 96 pp.

Fletcher, D., & Sarkar, M. 2013. Psychological resilience. European psychologist.

Getzner, M. & Islam, M.S. 2020. Ecosystem Services of Mangrove Forests: Results of a Meta-Analysis of Economic Values. *Int. J. Environ. Res. Public Health*, 17: p.5830. https://doi.org/10.3390/ijerph17165830

Hasan V., Vieira L.O., South J. & Ottoni F.P. 2023b. First record of Mastacembelus notophthalmus (Actinopterygii: Synbranchiformes: Mastacembelidae) for Belitung Island, Indonesia. *Acta Ichthyol. Piscat.*, 53: 123-127. https://doi.org/10.3897/aiep.53.105318

Hasan, V., South, J., Valen, F. S., & Andriyono, S. 2023a. Endangered Black Marsh Turtle, Siebenrockiella crassicollis (Gray, 1831) (Reptilia, Testudines, Geoemydidae): distribution extension and first record from Belitung Island, Indonesia. *Check List.,* 19(4): 505-508. https://doi.org/10.15560/19.4.505

Hasan, V., Swarlanda, Katz, A.M., South, J., Ottoni, F.P., Nurjirana. & Gani, A. 2023c. First record of the uncommon spiny eel Mastacembelus notophthalmus Roberts, 1989 (Synbranchiformes: Mastacembelidae) for Bangka Island, Indonesia. *Cybium,* 7(2): 189-191. https://doi.org/10.26028/cybium/2023-008

Henri., Syafa'ati, R. & Randiansyah. 2022. Species Composition and Vegetation Structure of Mangrove Forest in Baskara Bakti Village, Central Bangka Regency, Bangka Belitung. *IOP Conf. Ser. Earth Environ. Sci.,* 1108: p.012004. https://doi.org/10.1088/1755-1315/1108/1/012004

Kusumah, W., Hasan, V. & Samitra, D. 2023. Rediscovery of the Billiton Caecilian, Ichthyophis billitonensis Taylor, 1965, on Belitung Island, Indonesia, after more than five decades. *Herpetology Notes*, 16: 95-97.

Maia, F., Veiga, M.M., Stocklin-Weinberg, R., Marshall B. G., Constanzo, C., Hariojati N. & Villegas, C. 2019. The need for technological improvements in Indonesia's artisanal cassiterite mining sector. *Extr. Ind. Soc.,* 6(4): 1292-1301. https://doi.org/10.1016/j.exis.2019.07.010

Matatula, J., Wirabuana, P.Y.A.W., Yasin, E.H,E. & Mulyana, B. 2023. Species Composition and Carbon Stock of Rehabilitated Mangrove Forest in Kupang District, East Nusa Tenggara, Indonesia. *Environ. Res. Eng. Manag.*, 79(3): 24-34. https://doi.org/10.5755/j01.erem.79.3.33123

Okewale, I. A. & Grobler, H. 2023. Assessment of heavy metals in tailings and their implications on human health. *Geosystems and Geoenvironment.,* 2(4): p.100203. https://doi.org/10.1016/j.geogeo.2023.100203

Paquet, N., Indiketi, N., Dalencourt, C., Larivière, D., Roberge, S., Gruyer, N., Triffault-Bouchet, G. & Fortin, C. 2019. Toxicity of tailing leachates from a niobium mine toward three aquatic organisms. *Ecotoxicol. Environ. Saf.*, 76: 355-363. https://doi.org/10.1016/j.ecoenv.2019.03.065

Prianto, E., & Husnah, H. 2017. Penambangan timah inkonvensional: dampaknya terhadap kerusakkan biodiversitas perairan umum di Pulau Bangka. *Bawal: Widya Riset Perikanan Tangkap,* 2(5): 193-198. http://doi.org/10.15578/bawal.2.5.2009.193-198

Robin., Insani L., Swarlanda., Prananda M. & Valen FS. 2022. Range extension of Spanner barbs, *Barbodes lateristriga* (Valenciennes, 1842) (Cypriniformes: Cyprinidae) to Bangka Island, Indonesia. *Iran. J. Ichthyol*., 9(3): 149–157. https://doi.org/10.22034/iji.v9i3.901

Sari, S. P., Koedam, N., Pamungkas, A., Muftiadi, M.R. & Van Coillie, F. 2023. Unveiling the Diversity of Bangka Island's Mangroves: A Baseline for Effective Conservation and Restoration. *Forests,* 14: p.1666. https://doi.org/10.3390/f14081666

Savira, N., Hartoko, A., & Adi, W. 2018. Perubahan luasan mangrove pesisir timur Kabupaten Bangka Tengah menggunakan citra Satelit ASTER. *Akuatik: J. Sumberdaya Perairan*, 12(1): 53-60

Sisto, A., Vicinanza, F., Campanozzi, L.L., Ricci, G., Tartaglini, D., & Tambone, V. 2019. Towards a Transversal Definition of Psychological Resilience: A Literature Review. *Medicina*, 55(11): p.745. https://doi.org/10.3390/medicina55110745

Sukarmen, A., Mubarak., Chairilsyah, D., Yoswati, D. & Hamidy, R. 2023. Community-Based Mangrove Protection to Mitigate Climate Change: A Socio-Ecological Approach. *Int. J. Sustain. Dev. Plan.,* 18(8): 2473-2480. https://doi.org/10.18280/ ijsdp.180818

Supandi., Saputra, Y.H.E., Nugroho, Y., Suyanto., Rudy, G.S. & Wirabuana, P.Y.A.P. 2023. The influence of land cover variation on soil erosion

vulnerability around coal mining concession areas in South Borneo. *J. Degraded Min. Lands Manag.,* 10(2): 4289-4295. https://doi.org/10.15243/jdmlm.2023.102.4289

Syarif, A.F., Valen, F.S. & Herjayanto, M., 2023a. First DNA barcoding and phylogenetics of wild Betta edithae (Anabantiformes: Osphronemidae) from Belitung Island, Indonesia. *AACL Bioflux,* 16(5): 2626-2636.

Syarif, A.F., Kurniawan, A., Robin, R., & Valen, F.S. 2023b. First genetic record and phylogenetic relationship of *Rasbora einthovenii* (Bleeker, 1851) (Cyprinidae : Danioninae) from Bangka Island, Indonesia. IOP Conf. Series: Earth Environ. Sci., 1260(1): p.012002. https://doi.org/10.1088/1755-1315/1260/ 1/012002

Trannum, H.C., Næss, R. & Gundersen, H. 2020. Macrofaunal colonization of mine tailings impacted sediments. *Sci. Total Environ.,* 708: p.134866. https://doi.org/10.1016/j.scitotenv.2019.134866

Valen, F.S., Notonegoro, H., Pamungkas, A., Swarlanda. & Hasan, V., 2023. Revolutionary Breakthrough: Unveiling the first DNA Barcoding of the Endemic wild *Betta burdigala* (Kottelat and Ng 1994) (Anabantiformes: Osphronemidae): A Critically Endangered Wild Betta from Bangka Island, Indonesia. *Int. J. Agric. Biol.,* 30(4): 269-275. https://doi.org/10.17957/IJAB/15.2084

Woods, D.D. 2017. Essential characteristics of resilience. Resilience engineering. pp. 21-34. CRC Press.

Yulianah, S.E. 2022. Metodelogi Penelitian Sosial. CV.u l Rey Media Grafika.

Jurnal Dr. Endang

ORIGINALITY REPORT

21%	12%	13%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	E Bidayani, Reniati. "Traditional Fisherman Resilience Strategy to Coastal Pollution Pressure Impact of Tin Mining in Central Bangka District", IOP Conference Series: Earth and Environmental Science, 2021 Publication	11%
2	smujo.id Internet Source	5%
3	Submitted to Universitas Jenderal Soedirman Student Paper	3%
4	www.bioflux.com.ro Internet Source	2%

Exclude quotes	On	Exclude matches	< 2%
Exclude bibliography	On		