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Local wisdom for mangrove conservation and ecotourism: Case study from Wringinputih, Muncar, Banyuwangi

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Abstract. In some areas of Indonesia, local wisdom of coastal communities becomes an important factor and even determines the conservation initiative and mangrove-based ecotourism destinations; Wringinputih, Muncar, Banyuwangi, for instance. As a matter of fact, shrimp farms in this particular area were developed through reclamation in the 1980's, and in consequence, many of the mangrove forest areas performed distinctly different functions. However, shrimp farming did not last long here as most shrimps suffered to death from white spot syndrome at the beginning of 1990's. Thus, as most businessmen went bankrupt, they just left the shrimp farms and let the environmental conditions not taken a good care. Hence, in 1997 a number of community leaders of Wringinputih expressed their concerns and initiated local wisdom in the form of mangrove forests in favor of ex-location of shrimp farms. The research data were collected through descriptive qualitative method and in-depth interviews with some community leaders, the management of mangrove forests, selected individuals to obtain valuable information on local wisdoms related to the conservation of mangrove forests and the making of ecotourism destination. As a result, Wringinputih village community eventually restored mangrove forests in favor of the shrimp farms, and this particular success can apparently be applied elsewhere. Hence, with mangrove forest restoration, other natural resources grow exponentially and many mangrove-based tourism resorts are developed. The coastal communities can accelerate through many activities and job vacancies that they eventually can improve their social welfare.

1. Introduction

Banyuwangi district is located at the eastern part Java island and well-known as 'The Sunrise of Java'[1], as it geographically becomes the earliest edge of East Java to meet the sunrise. In addition, Banyuwangi is also known as 'Using Region' (the area of Using; typical language of the local people) as it belongs to people of using ethnic. It is also popular as 'kota gandrung' (the city of Gandrung) with phenomenally beautiful dance[2]. Since 2002, the government of Banyuwangi district has put it as 'tourism city' (the city of tourism) as its vision. Since then, all components of Banyuwangi governments have built and developed a wide range of socio-culture based tourist resorts and the ones with natural resources. Being the city of tourism is merely the vision of Indonesia national government that all districts are suggested to be tourist destinations. In line with the vision of the national government, tourism office of Banyuwangi district becomes the pilot project tourism development in Banyuwangi as it provides a wide range of multiplier effects for the society[3]. Hence, The government of Banyuwangi and stakeholders have encouragingly built a lot of brand-new tourist destinations to attract many tourists. Tourism industry is developed due to strong confidence of Banyuwangi society as well as government that tourism provides double impacts to accelerate economic growth and improve the social welfare[4]. For instance, the people and the government of Wringinputih village of Banyuwangi district encouragingly develop creative and innovative destinations through mangrove forest-based ecotourism which attract local as well as international tourists[5].

Banyuwangi has actively participated in national as well as international tourism industry with many prospective tourist objects and destinations. Culture-based as well as nature-based tourist resorts such as Mount Ijen with its 'blue-fire' have been in the hearts of international tourists since a



long time ago[6], as well as mangrove forest and other natural resources at coastal areas. In short, with a wide range of prospective tourist resorts, Banyuwangi wants to attract many international tourists to visit. With many tourist resorts, the government of Banyuwangi district supported by the society publish all tourism activities through a wide range of media and 'Using Culture Festival' is one of the promotional annual occasions[7]. Such a festival becomes the most effective promotion to introduce the culture of 'Using' and attract many international tourists. Thus, all components of Banyuwangi government as well as society encourage supportive cooperation as such a festival becomes the important entry of tourism promotion of Banyuwangi district[8]. In addition, this particular festival also involves a wide range of stakeholders of all tourism industries all over the world due to support of information technology.

Therefore, for the past two years, the number of international tourists travelling to Banyuwangi have significantly grown. For instance: from 91.000 to 100.000 tourists in 2017 and 2018, whereas the number of local tourists has also significantly grown from 4,8 million to 5 million tourists[9]. Significant growing number of tourists in Banyuwangi encourages all components of the district as more tourist resorts will be established and many festivals will be held, and thus the economy of society will obviously be growing. Even more interestingly, people of coastal areas initiated mangrove conservation as one tourist destinations. People of Wringinputih village, Muncar subdistrict, for instance; they initiated and developed creative and innovative ecotourism through mangrove conservation which also attracts many tourists.

Previous studies on the conservation of mangrove forests based on local wisdom and ecotourism are two separate parts. The first part pays attention to mangrove forest conservation studies related to, for example, efforts to mitigate natural disasters[10]. In the second part, mangrove conservation is in line with coastal ecological issues and the importance of the socio-economic development of coastal communities[11][12]. On the other hand, the conservation of mangrove forests based on local wisdom and ecotourism is still inadequate. Studies of Hakim[13] and Fries[14] underlined mangrove forest-based ecotourism as an essential conservation tool. Nevertheless, both studies are still a developing perspective. In short, previous studies did not view mangrove and ecotourism as integrated aspects.

In the case of Wringinputih village, Muncar, Banyuwangi provides essential lessons about mangrove conservation and ecotourism based on local wisdom. This case study shows that conservation, ecotourism, and local wisdom can be somewhat integrated. The joining of these three aspects is relatively rare and few. Therefore, the study of mangroves and ecotourism based on local wisdom as a whole is relatively new and timely.

2. Research Methods

This is a qualitative research with phenomenological approach. The collected data are in the form of descriptions taken from in-depth interviews on local wisdom of mangrove conservation and creative-innovative ecotourism as alternative tourist destination. Interviews were conducted with key informants involved through purposive selection. The village of Wringinputih, Muncar sub-district, Banyuwangi district was selected as the research location. In the past ten years, the people of Wringinputih have conducted mangrove forest conservation by transforming ex-shrimp farms uncared for by the owners (investors). As shrimp farming went bankrupt due to the decrease of shrimps price caused by white spot syndrome, then some community leaders initiated mangrove conservation using the ex-shrimp farms. Mangrove conservation was then promoted to be ecotourism; one of tourist destinations in Banyuwangi.

During the research, data were collected through in-depth interviews with the decision makers of mangrove ecotourism, community leaders, and some tourists. Participant observation was also conducted through mangrove ecotourism activities. In addition, data were also collected from various media especially websites from the internet. The data were then used to describe the local wisdom implemented by the people of Wringinputih for mangrove forest conservation as a creative and innovative efforts to attract tourists.

Source, information, and data triangulation model was applied to support research analysis. The research analysis used 'human ecology approach' perspective [15] and 'ecosocial approach'[16]. Human ecology approach was used to describe the relation between human being and the

environment, whereas ecosocial approach was used to describe the relation between the environmental perspective of social problem solving resource system and the use of natural resources.

3. Result and Discussion

The village of Wringinputih, Muncar, Banyuwangi

The village of Wringinputih is relatively a 'new village' located in coastal area of Banyuwangi district. This village was firstly part of village of Sumberberas. The village of Wringinputih was officially administered as an independent village on 17 January 1995 under the decree of East Java Governor number 7, 1995, specifically on the preparation and the award of village Wringinputih to be a completely independent village located in Muncar subdistrict of Banyuwangi district. The village borderline are among others: village of Kedungringin in the north, Teluk Pang Pang in the east, village of Kedung Gebang in the south and village of Sumberberas in the west.

Wringinputih is located the south of Banyuwangi, 7 kms away from Muncar sub-district office and 45 kms from the district office. Wringinputih is an easily accessible village as it has asphalt streets. Wringinputih is coastal village with the area of 1.560 ha located at the low land. In the south-east part it is closed to Alas Purwo National Park. Wringinputih has 3.351 families with 12.696 population of 6.503 males and 6.193 females. The population mostly work as: farmers, fishermen, construction workers, and factory workers where they mostly work for canned fish manufacturer in Muncar subdistrict. Wringinputih has various educational institutions both state and private institutions such as school of early age, kindergarten, elementary schools, junior high schools, senior high schools, and university.

Mangrove Forest Conservation in the village of Wringinputih

Mangrove forests in the village of Wringinputih are mostly part of the community's local wisdom-based conservation. According to Vatria[17] mangrove forests throughout villages in Indonesia are part important coastal ecosystem, yet the growing number of population inhibits coastal areas development process, in fact mangrove forest conservation is inevitable as it determines the development growth of land and coastal areas. In other words, once mangrove forests are ruined, then coastal areas will obviously be arid and sea natural resources such as fish, shrimps, and other sea lives will be lost. Once, a number of serious attempts were made to improve exports beyond oil and gas, one of which through the export of shrimps especially when the international price of shrimp rocketed and increased Indonesian GDP. As a result, many mangrove forests in coastal areas were transformed into shrimp farm. However, since 1990's shrimp farming showed significant decrease due to white spot syndromes suffered by most shrimps. Most shrimp farming business owners got bankrupt and left their shrimp farms. Coastal areas were arid and were no more business activities. Thus, most workers were jobless and attempted to find another alternative jobs.

Hence, people and community leaders initiated to build and develop local wisdom through mangrove forest conservation on the ex-shrimp farm locations. Thus, the process of mangrove conservation started in 1997's, people planted mangrove seeds. Basically, people in coastal areas, including those of Wringinputih, are emotionally connected with mangrove forest natural resources[18]. As the consequence, people of coastal areas summoned the courage to develop local wisdoms by making the most use of natural resources one of which through mangrove forest conservation especially when mangrove forests were ruined[19].

The mangrove forest in the village of Wringinputih keep growing every year. Now in 2019, the mangrove forest has become the deepest ever covering almost all coastal areas in the village of Wringinputih with over 600 ha width and growing. As a matter of fact, more social organizations are established and developed and more mangrove trees are planted, also involved the communities. In fact, many local as well as international tourists also take parts in the efforts of mangrove conservation mostly in the form of ecotourism and edutourism. Mangrove forest ecosystem in Wringinputih coastal areas provides social and ecological functions. In terms ecology, most sea animals such as fish, shrimps earn their food, reproduce, nesting sites for birds and reptiles, and a large number of plasms[20].

Whereas, in terms of social function mangrove forest can be transformed into, among other, as ecotourism[21][22]. According to Walters[23] mangrove forest ecotourism has important and strategic function for environment and people of coastal areas. Beside as important ecosystem throughout the

coastal areas, it can also be transformed into tourist destination in the form of ecotourism and edutourism[24]. Moreover, mangrove forest can also be research location. As a matter of fact, some researchers (lecturers, university students) have visited this place. With ecotourism and edutourism mangrove forest does not only become researchers and tourists object of study but it can also be the media to preserve through education-based conservation model[25].

Edutourism in the mangrove forest of Wringinputih is environmental tourism with various activities such as: mangrove forest adventure based on zones and other natural resource diversities. In addition, a large number of floras and faunas in the ecosystem of mangrove forest such as all kinds of birds, lizards, crocodiles, snakes, fish, shrimps, corals, snails, crabs, and many more attract many tourists. This can also be one of strategies to develop ecotourism for mangrove forest conservation and preservation[26]. Other potential activities to carry out in mangrove forest in Wringinputih are outbonds, hiking, fishing, sailing, swimming and diving, birds observation and wild animal demonstration, photography, education, picnic and camping, culinary activities such as tasting rural cuisines and enjoying local custom and culture through their lives of mangrove forest[21].

Ecotourism and edutourism model provide added values and social as well as economic impacts to the people of coastal areas throughout Indonesia. In other words, mangrove forest in coastal areas with all developed potentials can improve incomes as well as social welfare of local people[27][28]. Through ecotourism and edutourism, tourists also have responsibilities for mangrove forest preservation. Thus, social-economy functions of mangrove forest can be well maintained and scientific knowledge based culture and local wisdom can also be preserved and developed[29].

Furthermore, edutourism means education for local people which also means eco-traveling encouraging people of coastal areas to conduct a better mangrove conservation. Edutourism of mangrove forest is also called green tourism[30]. This particular tourism refers to special interest tourism implying that the tourists are bored travelers and have travelled to many regular cultural traveling that they attempt to find other alternative tours based on environment and ecosystem. As a matter of fact, edutourism model combines various natural resources, environments, social-culture, and human resources. Edutourism appreciated by many tourists can increase national GNP as well as GDP. In the context of local impacts, such a model of tourism can accelerate social-economy activities of coastal people. Furthermore, ecotourism can be alternative model of tourism which can give impacts and increase job diversification, increase the incomes as well as the social welfare of coastal people[31].

Mangrove forest-based ecotourism in Wringinputih

Mangrove forest conservation is also conducted in Pang-Pang gulf where land and sea are spatially separated as the mangrove trees grow very tall and deep. Mangrove forest of Pang Pang gulf have twelve types of mangrove which grow very well. Mangrove forest density will determine a large number of mangrove types[32], such as *Rhizophora Apiculata*, *Rhizophora Mucronata*, *Bruguiera Gymnorhyza*, *Avicennia Marina*, *Avicennia Lanata*, *Cordia Bantamensis*, *Ceriops Tagal*, *Ceriops Decandara*, *Xylocarpus Granatum*, *Heritiera Littoralis*, *Sonneratia Alba*, dan *Sonneratia Caseolaris*. As mangrove forests in other coastal areas such as in the north of Java island, they have a wide range of mangrove types which grow well[33].

In addition, mangrove forest of Pang Pang gulf is also a place of wild animal habitat (fauna) such as waterbirds, among others: type of heron (*Leptoptilos Javanicus*), snake cormorant (*Anhingamelanogaster*), and white-belly sea eagle (*Haliaeetus Leucogaster*). Other mammals such as: long-tailed monkey (*Macaca Fascicularis*) normally coming from Alas Purwo National Park, though have seemingly disappeared for the past several years.

As also potential to attract many tourists to visit Banyuwangi district, mangrove forest of Pang Pang gulf has formally been administered as essential ecosystem of wet area / Mangrove area by the regent of Bupati Banyuwangi under the regent's decree No 1 88/1388/KEP/429.011/2011. Mangrove forest of Pang Pang gulf has a unique diversity compared to other mangrove forest ecotourisms especially those throughout Banyuwangi coastal areas. For instance, mangrove forest located in Bedul has become ecotourism but it was not developed through conservation based on the people's local wisdom. It grows naturally and not even a transformation of shrimp farms. Whereas, mangrove forest of Pang-Pang gulf is the result of conservation conducted by the community based on local wisdom.

The specialty of mangrove forest in Pang Pang gulf is the gulf morning beauty during the sunrise which is adopted as the motto of Banyuwangi district 'The Sunrise of Java[1]. In addition, other built-up ecotourism destinations are also available here, for instance: 'Pantai Cemara Cinta' (Cypress Beach of Love). The concept used to build this particular tourist destination is sets of 'cemara trees' which grow well in the coastal area before mangrove forest entrance. This particular location is also known as 'Kawang Cypress Beach', as the background for tourists to enter the area of mangrove forest. Tourists can enjoy the beauty of cypress trees with fresh air coming from all over the forest and many beautiful benches for a brief rest after adventuring the mangrove forest. In addition, Pang-Pang gulf also has tourist resort called symbol of love for photography spot. Mangrove forest of Wringinputih also has Kili-Kili panorama organised by the young people and supported by the office of fishery department based on some comparative studies. In this particular place, tourists can also view various types of birds especially white heron.

In addition, other tourist resorts called 'Pasir Putih' (White Sand) 'Laut Biru' (Blue Ocean) are also provided beyond mangrove-based ecotourism though both are parts of mangrove tourism in the village of Wringinputih. In blue gulf, tourists can do snorkling, diving, air skiing, swimming, and canoeing. 'Teluk Biru' (Blue Gulf) brings local as well as international tourists enjoy worldly 'paradise'.^[5] With mangrove-based ecotourism in the village of Wringinputih, people can involve in many promotional activities such as being tourist guide, canoe rental, homestay, a wide range of rural cuisines, some products of snacks, and some drinks.

Beside homestay, people can also introduce their traditional and environment-friendly cuisines, and at the same time promoting health and the use of natural resources. Tourists cannot rely on plastic bags, the use banana leaves instead. Moreover, to encourage creativity during cuisine service, they create hilarious names for the cuisines served such as nasi pepes tiram (oyster rice) is under the acronym 'sipetir'; nasi bungkus daun pisang (rice wrapped in banana leaf) is called 'sibunas'; nasi botok pepes kerang (rice mixed with mussels) is called 'siperang'; nasi botok kerang (rice-mussel mixture) called 'sibokir'.

Community ladies group of Wringinputih were also involved to create cuisine based on potential natural resources of mangrove forest. Thus, mangrove-leaf crisp was produced, also mangrove-leaf tea, mangrove fruit juice. Drinks created from mangrove fruit tastes quite delicious and are considered to heal any kinds diseases such as athma and heart failure, though medical test for that particular drink needs to be conducted. By, mangrove forest active conservation and development, coastal people have accelerated their economy development. Many more job vacancies are created as many more tourist destinations are established and many more tourist come visit, then coastal people's lives develops.

4. Conclusion

Some studies on the conservation of mangrove forests based on local wisdom and ecotourism, just only pays attention to mitigate natural disasters and of the socio-economic development of coastal communities. Mangrove forest-based ecotourism as an essential conservation tool and are still a developing perspective. In the case of Wringinputih village, Muncar, Banyuwangi provides essential lessons about mangrove conservation and ecotourism based on local wisdom. It has been continuously developed and has always attracted both local and international tourists. As a matter of fact, it has gone through time-consuming process and required strong commitment of all people in the village. It's eventually resulted in mangrove-based creative and innovative ecotourism which gained the community as well as government's genuine appreciation. All components such as the villagers, government, and social organization are committed to transforming all villages in Banyuwangi into new tourist resorts and destinations.

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References

- [1] Fikri H 2017 Inovasi Pemerintahan Kabupaten Banyuwangi Melalui *City Branding* “*The Sunrise of Java*” Sebagai Strategi Pemasaran Pariwisata. *Jurnal Aristo. Sosial Politik Humaniora*, Vol. 05 No. 02. <http://journal.umpo.ac.id/index.php/aristo/article/view/513/454>
- [2] Banyuwangi Tourism. Tari Gandrung – Banyuwangi: <https://www.eastjava.com/east-java/tourism/banyuwangi/ina/gandrung-dance.html>
- [3] Vianna G M S et al 2012 Corrigendum to ‘Socio-economic value and community benefits from shark-diving tourism in Palau: A sustainable use of reef shark populations’. *Biological Conservation*. 145 (2012) 267–277. <https://reader.elsevier.com/reader/sd/pii/S0006320712004752?token=D178224682A6F304A4AB938CC63F59E636FE40BF117F481A3A8281E267F31023949DA7ED630C3ACB0D9AEC5723FD4DC0>
- [4] Barlybaev et al 2009 Tourism as a Factor of Rural Economy Diversification. *Studies on Russian Economic Development*. Vol. 20, No. 6, pp. 639–643. <https://link.springer.com/content/pdf/10.1134/S1075700709060094.pdf>
- [5] Purwowibowo et al 2019 Wringinputih: Destinasi Desa Wisata Yang Memanjakan Sejuta Rasa Cinta Bagi Wisatawan Lokal dan Mancanegara. *Journal of Tourism and Creativity*. Vol. 3 No. 1, <https://jurnal.unej.ac.id/index.php/tourismjournal/article/view/13996/7280>
- [6] Zen M H and Wulandari D 2016 Development Strategy of The Tourism Industry in Banyuwangi Regency (Case Study: Natural Park Ijen Crater Banyuwangi). *IOSR Journal of Business and Management*. Volume 18, Issue 8 pp. 41-47 https://www.researchgate.net/profile/Dwi_Wulandari7/publication/306272434_Development_Strategy_of_The_Tourism_Industry_in_Banyuwangi_Regency_Case_Study_Natural_Park_Ijen_Crater_Banyuwangi/links/57f60a8a08ae91deaa5d65f9.pdf
- [7] Setiawan I et al 2017 Exertion of cultures and Hegemonic Power in Banyuwangi: The Midst of Postmodern Trends. *Karsa: Journal of Social and Islamic Culture*. Vol. 25. No. 1. <http://www.ejournal.stainpamekasan.ac.id/index.php/karsa/article/view/1118/998>
- [8] Avinda C B dkk 2016 Strategi Promosi Banyuwangi Sebagai Destinasi Wisata (Studi Kasus Pada Dinas Kebudayaan dan Pariwisata). *Jurnal IPTA*. ISSN : 2338 -8633. Vol. 4 No. 1, 2016. 55. <https://ojs.unud.ac.id/index.php/pariwisata/article/view/22527/14802>
- [9] BPS Kabupaten Banyuwangi 2018 <https://banyuwangikab.bps.go.id/publication/2018/08/16/ccfd2c6f7daf201b46fa028a/kabupaten-banyuwangi-dalam-angka-2018.html>
- [10] dasGupta R et al 2015 Environmental Recovery and Mangrove Conservation: Post Indian Tsunami Policy Responses in South and Southeast Asia. In R. Shaw (ed) *Recovery from the Indian Ocean Tsunami: A Ten-Year Journey*. https://link.springer.com/content/pdf/10.1007%2F978-4-431-55117-1_3.pdf
- [11] Sandilyan S and Kathiresan K 2012 Mangrove Conservation: A Global Perspectives. *Biodivers Conserv*. 21: 3523-3542. <https://link.springer.com/content/pdf/10.1007/s10531-012-0388-x.pdf>
- [12] Hakim L et al 2017 Mangrove Conservation in East Java: The Ecotourism Development Perspective. *The Journal of Tropical Life Science*. Vol. 7 No. 3. <https://media.neliti.com/media/publications/196268-mangrove-conservation-in-east-java-the-e-e5e56756.pdf>
- [13] Basyuni M et al 2018 Diversity and abundance of polyisoprenoid composition in coastal plant species from North Sumatra, Indonesia. *Biodiversitas*. Vol. 19 No. 1. <https://smujo.id/biodiv/article/view/2229/2072>
- [14] Friess D 2017 Ecotourism as a Tool For Mangrove Conservation. *Journal of Disaster, Geography and Geography Education*. Vol. 1. No. 1. <http://sjdgge.ppj.unp.ac.id/index.php/Sjdgge/article/view/32/20>
- [15] Dyball R and Barry Newell 2014 *Understanding Human Ecology*. A system approach to sustainability. Routledge. London. <https://www.taylorfrancis.com/books/9780203109557>

- [16] Norton C L 2012 Social work and the environment: An ecosocial approach. *International Journal of Social Welfare*. Volume 21, Issue 3. Pages 299-308.
<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1468-2397.2011.00853.x>
- [17] Vatria B 2010 Berbagai Kegiatan Manusia Yang Dapat Menyebabkan Terjadinya Degradasi Ekosistem Pantai Serta Dampak Yang Ditimbulkannya. *Jurnal Belian*. Vol. 9 No. 1 Jan. 2010: 47 – 54. <http://repository.polnep.ac.id/xmlui/handle/123456789/151>
- [18] Kusnadi 2006 *Filosofi pemberdayaan Masyarakat Pesisir*. Bandung: Humaniora Utama Press.
- [19] Lubis Z B 2005 Menumbuhkan (Kembali) Kearifan Lokal dalam Pengelolaan Sumberdaya Alam di Tapanuli Selatan. *Antropologi Indonesia*. Vol. 29, No.3.
<http://www.ijil.ui.ac.id/index.php/jai/article/view/3544/2815>
- [20] Kawaroe M 2001 Kontribusi Ekosistem Mangrove Terhadap Struktur Komunitas Ikan di Pantai Utara Kabupaten Subang Jawa Barat. *Jurnal Pesisir & Lautan*. Volume 3, No.3.
https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=%5B20%5D+Kawaroe%2C+M.+%282001%29.+Kontribusi+Ekosistem+Mangrove+Terhadap+Struktur+Komunitas+Ikan+di+Pantai+Utara+Kabupaten+Subang+Jawa+Barat.+Jurnal+Pesisir+%26+Lautan.+Volume+3%2C+No.3.&btnG=
- [21] Wardani M K 2011 Kawasan Konservasi Mangrove: Suatu Potensi Ekowisata. *Jurnal Kelautan*. Vol 4, No 1. <https://eco-entrepreneur.trunojoyo.ac.id/jurnalkelautan/article/view/891/784>
- [22] Satyanarayana B et al 2012 A Socio-Ecological Assessment Aiming at Improved Forest Resource Management and Sustainable Ecotourism Development in the Mangroves of Tanbi Wetland National Park, The Gambia, West Africa. *Ambio*. 14: 513-526.
<https://link.springer.com/content/pdf/10.1007/s13280-012-0248-7.pdf>
- [23] Walter P 2009 Local knowledge and adult learning in environmental adult education: community-based ecotourism in southern Thailand. *International Journal of Lifelong Education*. Volume 28. Issue 4. pp 513-532.
<https://www.tandfonline.com/doi/full/10.1080/02601370903031363?scroll=top&needAccess=true>
- [24] Indrayanti M D et al 2015 Penilaian Jasa Ekosistem Mangrove di Teluk Blanakan Kabupaten Subang. *Jurnal Ilmu Pengetahuan Indonesia*. Volume 20. No. 2.
<http://journal.ipb.ac.id/index.php/jurnalagronomiindex.php/JIPI/article/view/9950>
- [25] Mawardi I 2006 Pengembangan Ekowisata Sebagai Strategi Pelestarian Hutan Mangrove. *Jurnal Teknik Lingkungan*. Vol 7. No. 3.
https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=Mawardi%2C+I.+%282006%29.+Pengembangan+Ekowisata+Sebagai+Strategi+Pelestarian+Hutan+Mangrove.+Jurnal+Teknik+Lingkungan.+Vol+7.+No.+3.&btnG=
- [26] Satria D 2009 Strategi Pengembangan Ekowisata Berbasis Ekonomi Lokal Dalam Rangka Program Pengentasan Kemiskinan di Wilayah Kabupaten Malang. *Journal of Indonesian Applied Economics*. Volume 3. No. 1 p 37-47.
<https://jiae.ub.ac.id/index.php/jiae/article/view/136/105>.
- [27] Mozumder M M H et al 2018 Socio-Economic Characteristics and Fishing Operation Activities of the Artisanal Fishers in the Sundarbans Mangrove Forest, Bangladesh. *Turkish Journal of Fisheries and Aquatic Sciences* 18: 789-799.
https://helda.helsinki.fi/bitstream/handle/10138/238416/pdf_1220.pdf?sequence=1&isAllowed=y
- [28] Hussain S A and Badola R 2010 Valuing mangrove benefits: contribution of mangrove forests to local livelihoods in Bhitarkanika Conservation Area, East Coast of India. *Wetlands Ecol Manage* (2010) 18:321–331. <https://link.springer.com/content/pdf/10.1007/s11273-009-9173-3.pdf>
- [29] Sudarmin et al 2015 Scientific Knowledge Based Culture and Local Wisdom in Karimunjawa for Growing Soft Skill Conservation. *International Journal of Science and Research*. Vol 4 No. 9. <http://staff.unila.ac.id/priyambodo/files/2018/11/Kelompok-11-Karimunjawa.pdf>
- [30] Lita R P et al 2013 Green Attitude and Behavior of Local Tourists towards Hotels and Restaurants in West Sumatra, Indonesia. *Procedia, Invironmental Sciences*. 4th International Conference on Sustainable Future for Human Security, SustaiN.

<https://reader.elsevier.com/reader/sd/pii/S1878029614000346?token=F3616F8D3942C2E956B5871834773FAB341D17E26E2FEC342F1851A3ABD661BFE0235A3C41914316F8B6C6AF8C5CBB2E>

- [31] Supriadi B 2016 Pengembangan Ekowisata Pantai Sebagai Diversifikasi Matapencaharian. *Jurnal Pesona*. Vol. 28, No. 1. <http://jurnal.unmer.ac.id/index.php/jpp/article/view/369/141>
- [32] Setiawan H 2013 Status Ekologi Hutan Mangrove Pada Berbagai Tingkat Ketebalan. *Jurnal Penelitian Kehutanan Wallacea*. Vol. 2 No. 2, : 104 – 120. <https://jurnal.balithutmakassar.org/index.php/wallacea/article/view/23/27>
- [33] Martuti NKT 2013 Keanekaragaman Mangrove di Wilayah Tapak, Tugurejo, Semarang. *Jurnal MIPA*. 36 (2): 123-130. <https://journal.unnes.ac.id/nju/index.php/JM/article/view/2971/3007>