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The regulation and policy models of pekalongan local government toward mangrove conservation

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Abstract

Author keywords

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Abstract

Offshore developments increasingly threaten coastal ecosystems, and the mangrove forest is one of the tropical ecosystems possessed by Indonesia in most offshore areas. This study aims to identify and analyze the Pekalongan City government's policies and principles related to mangrove conservation. The method used is empirical with descriptive-analytics interpretation. This study uses primary and secondary data and analyses them using qualitative methods. Research objects include data and information on regulations and policies concerning mangroves conservation accompanied by other legal materials. The results are expected to provide a framework outlook for policymakers, both the local government and communities engaged in mangrove conservation. The results of the qualitative analysis show that the provincial government regulates the damage prevention of coastal activities by establishing conservation areas. The Pekalongan Government established a mangrove forest conservation area in Kandang Panjang that was initially an unproductive shrimp farm owned by the Office of Fisheries and Marine Affairs. Mangrove forests are managed by the Department of Tourism, the Office of Fisheries and Marine Affairs, and the Office of the Environment. Functionally, the coordination team sets responsibilities and capacities to build collaboration and encourage community involvement together with the Tourism Awareness Group and the Community Monitoring Group.

Author keywords

Coastal ecosystem; Conservation; Local government; Mangrove; Pekalongan City

AACL Bioflux

Instructions to authors

Submission letter

Model of paper

Reviewer information pack

Editorial Board Expanded

Coverage / databases

Volume 16(6)/2023 (December, 30)

Volume 16(5)/2023 (October, 30)

Volume 16(4)/2023 (August, 30)

Volume 16(3)/2023 (June, 30)

Volume 16(2)/2023 (April, 30)

Volume 16(1)/2023 (February, 28)

Volume 15(6)/2022 (December, 30)

Volume 15(5)/2022 (October, 30)

Volume 15(4)/2022 (August, 30)

Volume 15(3)/2022 (June, 30)

Volume 15(2)/2022 (April, 30)

Volume 15(1)/2022 (February, 28)

Volume 14(6)/2021 (December, 30)

Volume 14(5)/2021 (October, 30)

Volume 14(4)/2021 (August, 30)

Volume 14(3)/2021 (June, 30)

Volume 14(2)/2021 (April, 30)

Volume 14(1)/2021 (February, 28)

Volume 13(6)/2020 (December, 30)

Volume 13(5)/2020 (October, 30)

Volume 13(4)/2020 (August, 30)

Volume 13(3)/2020 (June, 30)

Volume 13(2)/2020 (April, 30)

Volume 13(1)/2020 (February, 28)

Volume 12(6)/2019 (December, 30)

Volume 12(5)/2019 (October, 30)

Volume 12(4)/2019 (August, 30)

Volume 12(3)/2019 (June, 30)

Volume 12(2)/2019 (April, 30)

Volume 12(1)/2019 (February, 28)

Volume 11(6)/2018 (December, 30)

Volume 11(5)/2018 (October, 30)

Volume 11(4)/2018 (August, 30)

Volume 11(3)/2018 (June, 30)

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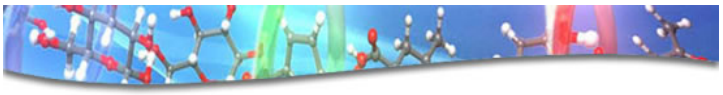

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Instructions to authors

Submission letter

Model of paper

Reviewer information pack

Editorial Board Expanded

Coverage / databases

Volume 16(6)/2023 (December, 30)

Volume 16(5)/2023 (October, 30)

Volume 16(4)/2023 (August, 30)

Volume 16(3)/2023 (June, 30)

Volume 16(2)/2023 (April, 30)

Volume 16(1)/2023 (February, 28)

Volume 15(6)/2022 (December, 30)

Volume 15(5)/2022 (October, 30)

Volume 15(4)/2022 (August, 30)

Volume 15(3)/2022 (June, 30)

Volume 15(2)/2022 (April, 30)

Volume 15(1)/2022 (February, 28)

Volume 14(6)/2021 (December, 30)

Volume 14(5)/2021 (October, 30)

Volume 14(4)/2021 (August, 30)

Volume 14(3)/2021 (June, 30)

Volume 14(2)/2021 (April, 30)

Volume 14(1)/2021 (February, 28)

Volume 13(6)/2020 (December, 30)

Volume 13(5)/2020 (October, 30)

Volume 13(4)/2020 (August, 30)

Volume 13(3)/2020 (June, 30)

Volume 13(2)/2020 (April, 30)

Volume 13(1)/2020 (February, 28)

Volume 12(6)/2019 (December, 30)

Volume 12(5)/2019 (October, 30)

Volume 12(4)/2019 (August, 30)

Volume 12(3)/2019 (June, 30)

Volume 12(2)/2019 (April, 30)

Volume 12(1)/2019 (February, 28)

Volume 11(6)/2018 (December, 30)

Volume 11(5)/2018 (October, 30)

Volume 11(4)/2018 (August, 30)

Volume 11(3)/2018 (June, 30)

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Volume 11(2)/2018 (April, 30)
Volume 11(1)/2018 (February, 28)
Volume 10(6)/2017 (December, 30)
Volume 10(5)/2017 (October, 30)
Volume 10(4)/2017 (August, 30)
Volume 10(3)/2017 (June, 30)
Volume 10(2)/2017 (April, 30)
Volume 10(1)/2017 (February, 28)
Volume 9(6)/2016 (December, 30)
Volume 9(5)/2016 (October, 30)
Volume 9(4)/2016 (August, 30)
Volume 9(3)/2016 (June, 30)
Volume 9(2)/2016 (April, 30)
Volume 9(1)/2016 (February, 28)
Volume 8(6)/2015 (December, 30)
Volume 8(5)/2015 (October, 30)
Volume 8(4)/2015 (August, 30)
Volume 8(3)/2015 (June, 30)
Volume 8(2)/2015 (April, 30)
Volume 8(1)/2015 (February, 28)
Volume 7(6)/2014 (December, 30)
Volume 7(5)/2014 (October, 30)
Volume 7(4)/2014 (August, 30)
Volume 7(3)/2014 (June, 30)
Volume 7(2)/2014 (April, 15)
Volume 7(1)/2014 (February, 15)
Volume 6(6)/2013 (November, 15)
Volume 6(5)/2013 (September, 15)
Volume 6(4)/2013 (July, 25)
Volume 6(3)/2013 (May, 15)
Volume 6(2)/2013 (March, 15)
Volume 6(1)/2013 (January, 15)
Volume 5(5)/2012 (December, 30)
Volume 5(4)/2012 (September, 30)
Volume 5(3)/2012 (July, 30)
Volume 5(2)/2012 (June, 30)
Volume 5(1)/2012 (March, 15)
Volume 4(5)/2011 (December, 30)
Volume 4(4)/2011 (October, 30)
Volume 4(3)/2011 (July, 30)
Volume 4(2)/2011 (April, 30)
Volume 4(1)/2011 (January, 30)
Volume 3(5)/2010 (December, 5)
Volume 3(4)/2010 (December, 1)
Volume 3(3)/2010 (November, 15)
Volume 3(2)/2010 (July, 30)

AACL Bioflux

Instructions to authors

Submission letter

Model of paper

Reviewer information pack

Editorial Board Expanded

Coverage / databases

Volume 16(6)/2023 (December, 30)

Volume 16(5)/2023 (October, 30)

Volume 16(4)/2023 (August, 30)

Volume 16(3)/2023 (June, 30)

Volume 16(2)/2023 (April, 30)

Volume 16(1)/2023 (February, 28)

Volume 15(6)/2022 (December, 30)

Volume 15(5)/2022 (October, 30)

Volume 15(4)/2022 (August, 30)

Volume 15(3)/2022 (June, 30)

Volume 15(2)/2022 (April, 30)

Volume 15(1)/2022 (February, 28)

Volume 14(6)/2021 (December, 30)

Volume 14(5)/2021 (October, 30)

Volume 14(4)/2021 (August, 30)

Volume 14(3)/2021 (June, 30)

Volume 14(2)/2021 (April, 30)

Volume 14(1)/2021 (February, 28)

Volume 13(6)/2020 (December, 30)

Volume 13(5)/2020 (October, 30)

Volume 13(4)/2020 (August, 30)

Volume 13(3)/2020 (June, 30)

Volume 13(2)/2020 (April, 30)

Volume 13(1)/2020 (February, 28)

Volume 12(6)/2019 (December, 30)

Volume 12(5)/2019 (October, 30)

Volume 12(4)/2019 (August, 30)

Volume 12(3)/2019 (June, 30)

Volume 12(2)/2019 (April, 30)

Volume 12(1)/2019 (February, 28)

Volume 11(6)/2018 (December, 30)

Volume 11(5)/2018 (October, 30)

Volume 11(4)/2018 (August, 30)

Volume 11(3)/2018 (June, 30)

Volume 13(5)/2020

First pages, 2020 AACL Bioflux 13(5):i-x.

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Volume 11(1)/2018 (February, 28)
Volume 10(6)/2017 (December, 30)
Volume 10(5)/2017 (October, 30)
Volume 10(4)/2017 (August, 30)
Volume 10(3)/2017 (June, 30)
Volume 10(2)/2017 (April, 30)
Volume 10(1)/2017 (February, 28)
Volume 9(6)/2016 (December, 30)
Volume 9(5)/2016 (October, 30)
Volume 9(4)/2016 (August, 30)
Volume 9(3)/2016 (June, 30)
Volume 9(2)/2016 (April, 30)
Volume 9(1)/2016 (February, 28)
Volume 8(6)/2015 (December, 30)
Volume 8(5)/2015 (October, 30)
Volume 8(4)/2015 (August, 30)
Volume 8(3)/2015 (June, 30)
Volume 8(2)/2015 (April, 30)
Volume 8(1)/2015 (February, 28)
Volume 7(6)/2014 (December, 30)
Volume 7(5)/2014 (October, 30)
Volume 7(4)/2014 (August, 30)
Volume 7(3)/2014 (June, 30)
Volume 7(2)/2014 (April, 15)
Volume 7(1)/2014 (February, 15)
Volume 6(6)/2013 (November, 15)
Volume 6(5)/2013 (September, 15)
Volume 6(4)/2013 (July, 25)
Volume 6(3)/2013 (May, 15)
Volume 6(2)/2013 (March, 15)
Volume 6(1)/2013 (January, 15)
Volume 5(5)/2012 (December, 30)
Volume 5(4)/2012 (September, 30)
Volume 5(3)/2012 (July, 30)
Volume 5(2)/2012 (June, 30)
Volume 5(1)/2012 (March, 15)
Volume 4(5)/2011 (December, 30)
Volume 4(4)/2011 (October, 30)
Volume 4(3)/2011 (July, 30)
Volume 4(2)/2011 (April, 30)
Volume 4(1)/2011 (January, 30)
Volume 3(5)/2010 (December, 5)
Volume 3(4)/2010 (December, 1)
Volume 3(3)/2010 (November, 15)
Volume 3(2)/2010 (July, 30)

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Volume 3(1)/2010 (February, 28)

Volume 2(4)/2009 (October, 30)

Volume 2(3)/2009 (July, 30)

Volume 2(2)/2009 (April, 30)

Volume 2(1)/2009 (January, 30)

Volume 1(2)/2008 (December, 30)

Volume 1(1)/2008 (September, 30)

Volume Pilot/2007 (December, 30) - available printed only

Pontus Euxinus, Volume 1 (1980) - Parent Journal

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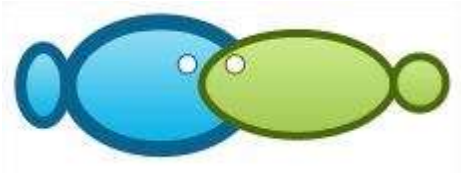

The regulation and policy models of Pekalongan Local Government toward mangrove conservation

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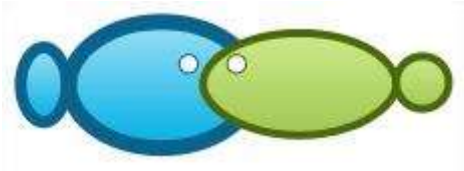
Abstract. Offshore developments increasingly threaten coastal ecosystems, and the mangrove forest is one of the tropical ecosystems possessed by Indonesia in most offshore areas. This study aims to identify and analyze the Pekalongan City government's policies and principles related to mangrove conservation. The method used is empirical with descriptive-analytics interpretation. This study uses primary and secondary data and analyses them using qualitative methods. Research objects include data and information on regulations and policies concerning mangroves conservation accompanied by other legal materials. The results are expected to provide a framework outlook for policymakers, both the local government and communities engaged in mangrove conservation. The results of the qualitative analysis show that the provincial government regulates the damage prevention of coastal activities by establishing conservation areas. The Pekalongan Government established a mangrove forest conservation area in Kandang Panjang that was initially an unproductive shrimp farm owned by the Office of Fisheries and Marine Affairs. Mangrove forests are managed by the Department of Tourism, the Office of Fisheries and Marine Affairs, and the Office of the Environment. Functionally, the coordination team sets responsibilities and capacities to build collaboration and encourage community involvement together with the Tourism Awareness Group and the Community Monitoring Group.
Key Words: coastal ecosystem, local government, mangrove, conservation, Pekalongan City.

Introduction. Based on the Law of the Republic of Indonesia No. 1/2014 concerning the Management of Coastal Zones and Small Islands, Article 1 paragraph 7, coastal waters are the seas bordering the land as far as 12 nautical miles measured from the coastline; this area connects beaches and islands, estuaries, bays, shallow waters, swamps, and lagoons. As regulated in Law Number 24/1992, Article 9 paragraph 2 concerning Spatial Planning, the control policy of coastal areas (both the sea and air) is organized by the central government.

Law Number 23/2014, Article 27 (1, 2, and 3) concerning the Regional Government states that the provinces are granted the local autonomy to govern natural resources in their respective sea territories. Provincial regions are given authorization in the management of marine resources (excluding oil and gas), administrative organizations, and spatial arrangements by performing exploration, exploitation, and conservation. In managing these resources, the local government can reach the area as far as 12 nautical miles measured from the coastline to the open sea and/or towards archipelago waters.

According to Law Number 23/2014 regarding Regional Government, regional governments are obliged to maintain Government Affairs related to Basic Services such as the implementation of spatial planning. As pointed in Article 21 (2), Law Number 3/2010 concerning Environmental Protection and Management of Pekalongan City, the local government is commanded to establish instruments to prevent pollution and monitor the quality of the coastal ecosystem.

Cities located in coastal areas have independence in the management and utilization of the coastal regions. Coastal areas are rich in marine and waterfront resources and have the potential to be developed as a tourism site. Areas with extremely high levels of biodiversity (natural biodiversity) are the source of ecotourism activities.



Fully controlled experimental recirculating aquaculture system (RAS) for experimental studies with mussels (*Mytilus edulis*-like), focusing on temperature and salinity regimes

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Abstract. Recirculating aquaculture systems (RAS) allow controlled cultivation of bivalves. RAS offer adjustable environmental conditions such as water temperature, salinity and stable water quality. In such systems, microalgae for mussel feeding are unfortunately filtered out by the common RAS techniques in use (regular biofilter, protein skimmer). We designed a new pilot RAS with an airlift biofilter and tested it with *Mytilus edulis*-like mussels under different temperature and salinity regimes, presenting a standardized technique for long term mussel studies under controlled conditions. In the first trial (12 weeks under feeding conditions), we found a significant decrease (3–43%) of the mussel condition indices (CI) with increasing temperatures (5-25°C). In a second trial (8 weeks), we verified earlier results under doubled feeding (twice a day). Significant differences were found between the temperatures 5°C to 20°C and 10°C to 20°C, however, no significant influence was seen at the tested salinities (10 PSU, 15 PSU, 20 PSU).We demonstrate that the presented small-scale RAS, including the part time use of an airlift biofilter, enabled long-time availability of introduced microalgae feed under experimental conditions, with filter feeders (*M. edulis*-like), excluding erratic influences of inadequate feeding during long term experiments with mussels and possibly other bivalves.
Key Words: blue mussel, condition index, temperature, bivalves, biofilter.

Introduction. Blue mussels (*Mytilus edulis*) are the favored consumed bivalve in Europe and cultivated for human consumption in aquaculture. Filtration of water suspended particles and plankton enables *M. edulis* nutrition (Storch & Welsch 2004) and growth. In the Baltic Sea, *M. edulis* and *M. trossulus* sympatric occur, which are considered as *M. edulis*-like (Stuckas et al 2017). The quantity of filtered seawater amounts 5-15 L (individual day)$^{-1}$, and is influenced, apart from feed concentration itself, mainly by salinity and temperature of the surrounding seawater (Gosling 2003). Nowadays, bivalve cultures are kept in the natural sea, flow-through systems or in recirculating aquaculture systems (RAS). In flow-through systems the introduced algae feed is removed by constant water exchange. There have been several studies upon bivalves in RAS, but such systems are not yet in commercial use (Blanco & Kamermans 2015; Joaquim et al 2014; Magnesen & Jacobsen 2012; Merino et al 2009; Pfeiffer & Rusch 2000; Suantika et al 2000; Xiongfei et al 2005).

Several advantages for the cultivation in RAS were identified, such as a stable water quality and a higher concentration of microbiota (Blancheton et al 2013), an increased biomass production, growth and survival at comparable costs compared to flow-through systems. Temperature control of the water further enabled independency from season and weather condition (Dunning et al 1998; Martins et al 2010; Besson et al 2014). The highest disadvantage of RAS was identified in the removal of introduced feed and the adjustment of predefined concentrations of microalgae, influenced by RAS techniques, e.g. regular biofilter and/or protein skimmer (Kamermans et al 2016). The method is costly, and contrasts the effort to mimic nature conditions in RAS such as the long-time availability of suspended feed for the bivalves to guarantee best feed supply.