



COMMUNITY-BASED COLLABORATIVE MANAGEMENT: IMPACTS AND CHALLENGES OF SEA TURTLE CONSERVATION ON THE SOUTH COAST OF CENTRAL JAVA, INDONESIA

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ABSTRACT

The use of community-based collaborative management has shown promising results in addressing the complex issues surrounding sea turtle conservation. However, the legal implications and barriers associated with this method have not been thoroughly investigated. This study seeks to examine legal policies governing conservation institutions that influence community-based turtle protection along the southern coast of Central Java, Indonesia. The focus of this study is on two specific case studies: a conservation group at Pantai Sodong and another at Pantai Kembar. Employing a qualitative research design, this study incorporated semi-structured interviews with conservation group administrators, government officials, and other relevant stakeholders. Apart from that, this research also involves analysis of legal and regulatory documents and policies which is complemented by field observations. These findings indicate that community-based conservation policies significantly increase legal behavior that is in line with conservation law provisions. However, this report also underscores the legal and institutional challenges faced by local community-based conservation groups. These challenges include the necessity of legal collaboration between community groups and the government, the availability of healthcare facilities such as quarantine centers and clinics, and the need for a permanent workforce with appropriate skills. This study emphasizes the need for more flexible standards regarding conservation institutional requirements and government support to encourage the fulfillment of the validity and legal certainty of conservation institutions. This study adds to the growing body of literature on legal approaches to community-based collaborative management, and offers important insights for policymakers and legal practitioners who wish to increase support for community-based conservation programs in Indonesia and other countries.

1. Introduction

Indonesia's waters are home to six of the seven sea turtle species found globally, with the olive ridley turtle (*Lepidochelys olivacea*) and green sea turtle (*Chelonia mydas*) being the most prevalent species along the southern coast of Java. Both species are classified as Appendix I species by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which means that their capture and trade are strictly prohibited. In Indonesia, sea turtle populations are still under substantial threat despite legislative safeguards at both national and international levels.¹ These concerns mostly arise from human activities, including poaching, habitat loss, and unintentional capture in fishing gear.² The current dispute on the efficacy of conservation endeavors and the continuous illicit commerce of sea turtles and their goods emphasize the immediate requirement for more extensive and cooperative strategies for sea turtle conservation in Indonesia.³

The significance of community-based collaborative management in tackling the intricate problems associated with animal conservation has been highlighted in recent research.⁴ This strategy acknowledges the crucial importance of local communities in the management of natural resources and seeks to promote collaborations between government agencies and local stakeholders.⁵ Community-based initiatives have become a potential technique in Indonesia for sea turtle conservation, serving as a supplement to the government's ongoing efforts.⁶ Nevertheless, the legal guidelines that regulate these cooperative agreements are still ambiguous, and local conservation organizations frequently encounter substantial obstacles in fulfilling the rigorous standards established by governmental legislation.⁷ Consequently, there is an increasing inclination to analyze the legal components of community-based conservation and find ways to remove the obstacles that impede successful cooperation between government agencies and

¹ Martina Kurniarum, Wahyu Prihanta, and Sri Wahyuni., Pengetahuan dan sikap masyarakat terhadap konservasi penyu dan ekowisata di Desa Hadiwarno Kabupaten Pacitan sebagai sumber belajar biologi, *JPBI (Jurnal Pendidikan Biologi Indonesia)*, Vol.1, no.2, 2015, page.291; See to, Rudianto Rudianto, and Gatut Bintoro., Future Turtle Management: Opportunities for Habitat Restoration Governance in East Java, Indonesia, *International Journal of Environment, Agriculture and Biotechnology*, Vol.3, no.5, 2018, page.265257.

² Mirna Mirna, Mohamad Gazali, and M. Ali Sarong., Pendampingan Teknik Konservasi Penyu Lekang (*Lepidochelys olivacea*) Di Pesisir Pantai Lampuuk Aceh Besar, *Marine Kreatif*, Vol.5, no.1, 2021, page.198.

³ Atikah Nurhayati, Titin Herawati, Isni Nurruhwati, and Indah Riyantini., Tanggung jawab masyarakat lokal pada konservasi penyu hijau (*Chelonia mydas*) di Pesisir selatan jawa barat, *Jurnal Perikanan Universitas Gadjah Mada*, Vol.22, no.2, 2020, page.79.

⁴ Lars Carlsson, and Fikret Berkes., Co-management: concepts and methodological implications, *Journal of environmental management*, Vol.75, no.1, 2005, page.65; See to, Lily Sri Ulina Peranginangin., Partisipasi masyarakat dalam pengelolaan kawasan konservasi, *JKAP (Jurnal Kebijakan Dan Administrasi Publik)*, Vol.18, no.1, 2014, page.68.

⁵ Grazia Borrini-Feyerabend, and Grazia Borrini., *Co-management of natural resources: Organising, negotiating and learning-by-doing*, Heidelberg, Kasperek Verlag, 2000, page.86.

⁶ Atikah Nurhayati, Titin Herawati, Isni Nurruhwati, and Indah Riyantini., Tanggung jawab masyarakat lokal pada konservasi penyu hijau (*Chelonia mydas*) di Pesisir selatan jawa barat, *Jurnal Perikanan Universitas Gadjah Mad*, Vol.22, no.2, 2020, page.78.

⁷ Eska Nia Sarinastiti, and Muhamad Sidiq Wicaksono., Komersialisasi Dan Pariwisata: Manajemen Theme Park Berbasis Konservasi Di Wilayah Yogyakarta Dan Jawa Tengah, *Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan (Journal of Natural Resources and Environmental Management)*, Vol.11, no.1, 2021, page.72.

local communities.⁸

Wildlife conservation efforts in Indonesia are regulated through both *in situ* and *ex situ* approaches. This division represents the dichotomy of conservation in natural environments versus captivity. *In situ* conservation is defined as conservation within a wild location, while *ex situ* refers to conservation practices that occur outside of natural habitats, often in captivity.⁹ *Ex situ* management may only be implemented by the government or through collaboration between the government and the community. Such partnerships represent a legitimate form of collaborative management in the conservation of turtles as protected wildlife. This regulatory framework is outlined in Law Number 5 of 1990 on the Conservation of Natural Resources and Ecosystems, Government Regulation Number 7 of 1999 concerning the Preservation of Plant and Animal Species, and the Regulation of the Minister of Environment and Forestry Number P.22/MENLHK/SETJEN/KUM.1/5/2019 regarding Institutional Conservation.

The necessity for *ex situ* conservation institutions in Indonesia is becoming increasingly vital, particularly as conflicts between human activities and wildlife escalate. Such institutions complement *in situ* conservation efforts by providing safe havens for species that cannot be adequately protected in their natural habitats due to environmental degradation, poaching, or human encroachment. However, the success of these institutions hinges on their integration with broader conservation strategies that include habitat restoration and community engagement.¹⁰ The existing legal frameworks, such as those defined by Law Number 5 of 1990 and Government Regulation Number 7 of 1999, need to be enhanced to support the expansion and effectiveness of *ex situ* facilities. This involves not only the creation of more such facilities but also ensuring they operate under standards that promote the best practices in animal welfare, genetic diversity, and reintroduction capabilities. Strengthening these aspects is essential to form a cohesive conservation strategy that addresses both immediate and long-term challenges.¹¹

The purpose of this essay is to examine the legal implications and obstacles associated with community-based efforts to conserve sea turtles along the southern coast of Central Java, Indonesia. Through an analysis of the legal frameworks governing two conservation organizations operating in the region, this essay aims to critically assess how collaborative management influences compliance and enforcement of laws pertaining to sea turtle conservation. Additionally, it seeks to identify legal barriers that may impede the effectiveness of these strategies. This legal perspective will explore the interplay between statutory provisions and conservation efforts, examining how legislation supports or constrains the practical

⁸ Sri Nurhayati Qodriyatun., Peran dan partisipasi masyarakat dalam pengelolaan kawasan konservasi secara kolaboratif, *Kajian*, Vol.24, no.1, 2020, page.45.

⁹ Irus Braverman., Conservation without nature: the trouble with *in situ* versus *ex situ* conservation, *Geoforum*, Vol.51, no.4, 2014, page.49.

¹⁰ Farid Rifaie, Eko Sulistyadi, and Yuli Sulistya Fitriana., A review of patterns and geographical distribution of human-wildlife conflicts in Indonesia, *Berkala Penelitian Hayati Journal Of Biological Researches*, Vol.27, no.1, 2021, page.47.

¹¹ Wiguna Rahman, Joana Magos Brehm, Nigel Maxted, Jade Phillips, Aremi R. Contreras-Toledo, Mariam Faraji, and Mauricio Parra Quijano., Gap analyses of priority wild relatives of food crop in current *ex situ* and *in situ* conservation in Indonesia, *Biodiversity and Conservation*, Vol.30, no.3, 2021, page.2828.

implementation of community-driven conservation initiatives. Our study focuses on analyzing the impact of community-based initiatives on increasing turtle numbers and public awareness. Additionally, we investigate the barriers and challenges posed by the current regulatory framework and socio-economic issues. This analysis seeks to add to the ongoing discussion regarding local community involvement in wildlife conservation and offers insight into the changes needed to improve collaboration between government agencies and community-based conservation organizations.

In our view, community-based collaborative management can improve community legal behavior in conserving sea turtles, but its implementation requires removing institutional and regulatory barriers that currently hinder productive collaboration between local communities and government organizations. We propose that Indonesia can foster a more supportive environment for community-based turtle conservation by revising the legal framework that governs collaborative management arrangements. By ensuring that conservation institutions provide greater flexibility for local conservation groups, the institutional validity of community participation can be increased thereby increasing institutional legal certainty. This article aims to augment the existing literature on community-based conservation with evidence from the southern coast of Central Java. Additionally, it seeks to offer practical advice to legal policymakers and conservation practitioners in Indonesia and other regions.

2. Literature Review

The idea of community-based collaborative management in animal conservation has received considerable focus in recent years, as conventional top-down methods have frequently proven ineffective in dealing with the intricate difficulties encountered by endangered species.¹² The shift towards more participatory and inclusive conservation strategies has been motivated by the acknowledgment that local communities have a pivotal role in the management of natural resources, and that their knowledge, practices, and livelihoods are closely connected to the well-being of ecosystems.¹³

The legal foundation for collaborative management in Indonesia was established with the enactment of Government Regulation Number 7 of 1999 concerning the Preservation of Plants and Animals, which allows for the management of protected animals by the government in collaboration with the community. This initiative was further supported by the issuance of the Regulation of the Minister of Environment and Forestry Number P.22/MENLHK/SETJEN/KUM.1/5/2019 concerning Institutional Conservation. This framework complements the robust provisions of Law Number 5 of 1990 on the Conservation of Biological Natural Resources and

¹² Alison L. Greggor., Oded Berger-Tal, Daniel T. Blumstein, Lisa Angeloni, Carmen Bessa-Gomes, Bradley F. Blackwell, Colleen Cassady St Clair., Research priorities from animal behaviour for maximising conservation progress, *Trends in ecology & evolution*, Vol.31, no.12, 2016, page.961; See to, Angela M. Guerrero, Ryan RJ Mcallister, and Kerrie A. Wilson., Achieving cross-scale collaboration for large scale conservation initiatives, *Conservation Letters*, Vol.8, no.2, 2015, page.111; See to, Ashish Kothari, Philip Camill, and Jessica Brown., Conservation as if people also mattered: policy and practice of community-based conservation, *Conservation and society*, Vol.11, no.1, 2013, Page.11.

¹³ Derek R. Armitage, Ryan Plummer, Fikret Berkes, Robert I. Arthur, Anthony T. Charles, Iain J. Davidson-Hunt, Alan P. Diduck, Adaptive co-management for social-ecological complexity, *Frontiers in Ecology and the Environment*, Vol.7, no.2, 2009, page.100.

their Ecosystems. Together, these laws provide a comprehensive legal structure that outlines stringent measures for the management and protection of wildlife, distinguishing between protected and unprotected species and emphasizing sustainable use of wildlife in both natural (in situ) and controlled (ex situ) environments. The regulations explicitly prohibit the capture, injury, killing, and trade of protected species, except under specific conditions such as research and scientific purposes.¹⁴ Nevertheless, the introduction of community-based collaborative management has sparked debate due to lingering doubts regarding its efficacy, fair allocation of advantages, and the necessary legal structures to uphold it.¹⁵

Community-based projects have become a potential approach to tackle the ongoing threats to endangered sea turtles, including poaching, habitat loss, and accidental capture in fishing gear.¹⁶ An instance of this may be seen in Brazil, where the TAMAR Project has effectively included coastal communities in the preservation of sea turtles by employing a combination of environmental education, the creation of alternative sources of income, and participatory monitoring.¹⁷ Similarly, the Turtle Islands Heritage Protected Area in the Philippines has shown how community-based conservation may effectively promote both the protection of biodiversity and sustainable development.¹⁸ These stories demonstrate how community-based collaborative management can effectively meet the pressing need for more efficient tactics in sea turtle conservation, with the potential to bring about significant changes.

Community-based sea turtle conservation projects, however, are not always successful, and many have encountered major obstacles in their quest to meet their goals.¹⁹ An important problem is the absence of well-defined legislative frameworks and administrative structures to facilitate collaborative management. This can result in conflicts between government agencies and local populations, as well as an

¹⁴ Lathifah Hanim, Munsharif Abdul Chalim, and Jawade Hafidz., Pelaksanaan perlindungan satwa liar yang dilindungi menurut Hukum Indonesia dan Hukum Internasional, In *Prosiding Seminar Nasional Penelitian Dan Pengabdian Kepada Masyarakat*, Vol.1, no.1, 2020, page.166.

¹⁵ Ignacio Palomo, Berta Martín-López, Cesar López-Santiago, and Carlos Montes., Participatory scenario planning for protected areas management under the ecosystem services framework: the Doñana social-ecological system in southwestern Spain, *Ecology and Society*, Vol.16, no.1, 2011, page.297.

¹⁶ Lisa M. Campbell, Bethany J. Haalboom, and Jennie Trow., Sustainability of community-based conservation: sea turtle egg harvesting in Ostional (Costa Rica) ten years later, *Environmental conservation*, Vol.34, no.2, 2007, page.123; See to, Lisa M. Campbell, Use them or lose them? Conservation and the consumptive use of marine turtle eggs at Ostional, Costa Rica, *Environmental Conservation*, Vol.25, no.4, 1998, page.309.

¹⁷ Maria Ângela Marcovaldi, and Guy Guagni Dei Marcovaldi., Marine turtles of Brazil: the history and structure of Projeto TAMAR-IBAMA, *Biological conservation*, Vol.91, no. 1 (1999): 35-41.

¹⁸ Heidi Gjertsen., Can habitat protection lead to improvements in human well-being? Evidence from marine protected areas in the Philippines, *World Development*, Vol.33, no.2, 2005, page.207; See to, White, Alan T., and Helge P. Vogt., Philippine coral reefs under threat: lessons learned after 25 years of community-based reef conservation, *Marine Pollution Bulletin*, Vol.40, no.6, 2000, page.539.

¹⁹ Lisa M. Campbell, Bethany J. Haalboom, and Jennie Trow., Sustainability of community-based conservation: sea turtle egg harvesting in Ostional (Costa Rica) ten years later, *Environmental conservation*, Vol.34, no.2, 2007, page.123.

uneven distribution of benefits.²⁰ In Indonesia, the legal framework that regulates community-based conservation is ambiguous, and local conservation groups frequently face difficulties in fulfilling the strict criteria established by government laws.²¹ There is an increasing focus on analyzing the legal components of community-based conservation and finding ways to address the obstacles that prevent efficient cooperation between government agencies and local groups.²²

Conservation objectives with the socio-economic demands of local communities are another problem faced in community-based sea turtle conservation.²³ The economic well-being of coastal communities often relies on the exploitation of sea turtles and their eggs. However, shifting towards more sustainable practices can be challenging without sufficient support and incentives.²⁴ Costa Rica's Ostional Wildlife Refuge has faced challenges in balancing conservation and sustainable use. The legal harvesting of olive ridley turtle eggs has become a vital source of revenue for local communities.²⁵ This case emphasizes the significance of creating solutions that are tailored to the individual circumstances, including the intricate social, economic, and cultural elements that influence relationships between humans and wildlife.

Despite these obstacles, mounting data indicates that, in the correct circumstances, community-based collaborative management may be a successful tactic for the conservation of sea turtles.²⁶ An illustrative instance is the recent investigation conducted,²⁷ which revealed that community-based monitoring initiatives in Venezuela have substantially enhanced the success of sea turtle nesting and the survival rates of hatchlings. Additionally, these programs have effectively fostered heightened public awareness and involvement in conservation endeavors. In the same vein, a study conducted,²⁸ emphasized the capacity of community-based

²⁰ Kirk Emerson, Tina Nabatchi, and Stephen Balogh., An integrative framework for collaborative governance, *Journal of public administration research and theory*, Vol.22, no.1, 2012, page.20.

²¹ Eska Nia Sarinastiti, and Muhamad Sidiq Wicaksono., Komersialisasi Dan Pariwisata: Manajemen Theme Park Berbasis Konservasi Di Wilayah Yogyakarta Dan Jawa Tengah, *Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan (Journal of Natural Resources and Environmental Management)*, Vol.11, no.1, 2021, page.48.

²² Sri Nurhayati Qodriyatun., Peran dan partisipasi masyarakat dalam pengelolaan kawasan konservasi secara kolaboratif, *Kajian*, Vol.24, no.1, 2020, page.45.

²³ Alan F. Rees, J. Alfaro-Shigueto, P. C. R. Barata, Karen A. Bjorndal, Alan B. Bolten, Jerome Bourjea, A. C. Broderick., Are we working towards global research priorities for management and conservation of sea turtles?, *Endangered Species Research*, Vol.31, no.6, 2016, page.338.

²⁴ Lynne Eagle, Mark Hamann, and David R. Low., The role of social marketing, marine turtles and sustainable tourism in reducing plastic pollution, *Marine pollution bulletin*, Vol.107, no.1, 2016, page.329.

²⁵ Lisa M. Campbell, Bethany J. Haalboom, and Jennie Trow., Sustainability of community-based conservation: sea turtle egg harvesting in Ostional (Costa Rica) ten years later, *Environmental conservation*, Vol.34, no.2, 2007, page.123.

²⁶ Andrés García, Gerardo Ceballos, and Ricardo Adaya., Intensive beach management as an improved sea turtle conservation strategy in Mexico, *Biological Conservation*, Vol.111, no.2, 2003, page.256.

²⁷ Myriah L. Cornwell, and Lisa M. Campbell., Co-producing conservation and knowledge: Citizen-based sea turtle monitoring in North Carolina, USA, *Social Studies of Science*, Vol.42, no.1, 2012, page.102.

²⁸ M. M. P. B., M. R. Fish Fuentes, and J. A. Maynard., Management strategies to mitigate the impacts of climate change on sea turtle's terrestrial reproductive phase, *Mitigation and Adaptation Strategies for Global Change*, Vol.17, no.2, 2012, page.56.

conservation to yield many advantages, such as greater governance, bolstered social capital, and heightened economic prospects for local communities.

To summarize, the research on community-based collaborative management in sea turtle conservation shows an intricate and changing situation, marked by noteworthy possibilities and ongoing difficulties. The effectiveness of involving local communities in conservation efforts relies on the establishment of explicit legal structures, fair distribution of benefits, and tailored solutions that strike a balance between conservation goals and the desires and requirements of local communities. Given the pressing need to save endangered animals and their dependent ecosystems, it is expected that community-based collaborative management will have a growing significance in determining the future of sea turtle conservation.

3. Methods

This research focuses on the legal ramifications and difficulties of community-based sea turtle conservation initiatives along Central Java's southern coast in Indonesia. The main focus of the study is to analyze the collaborative management arrangements between local conservation groups and government agencies in the region. The study specifically examines two case studies: the conservation group in Pantai Sodong, Cilacap Regency, and the conservation group in Pantai Kembar, Kebumen Regency. The selection of these case studies was based on their active participation in community-based sea turtle conservation and their geographical proximity to the southern coastal region of Central Java, which is recognized as a significant nesting habitat for olive ridley and green sea turtles.

The study employs a qualitative research methodology, utilizing both primary and secondary data sources to gain a comprehensive understanding of the legal attitudes of the community, legislative frameworks, institutional arrangements, and inhibiting factors that impact compliance with conservation laws in the region. This approach aligns with the broader research goals of examining the legal implications and barriers associated with community-based collaborative management for sea turtle conservation along the southern coast of Central Java, Indonesia. The qualitative approach enables a thorough investigation of the experiences, viewpoints, and difficulties encountered by local conservation groups and government agencies in implementing collaborative management strategies. It also examines the effects of these initiatives on sea turtle populations and coastal communities.

Purposive sampling was the method used in this research to identify key informants from two conservation groups, as well as from significant government and non-government organizations involved in turtle protection in the area. Interviews were conducted with the head of the conservation group at Pantai Sodong and the management team at Pantai Kembar. Additionally, officials from the Central Java Natural Resources Conservation Agency and other relevant stakeholders were interviewed. The objective of these interviews was to gather data on the organizational structure of conservation groups, their management cooperation agreements with government agencies, their understanding of the laws governing their activities, and the challenges and opportunities they encounter in advancing turtle conservation.

The study also included the gathering and examination of secondary data sources, such as reports from governmental and non-governmental organizations, legislative

and policy papers, and the records of conservation groups, in addition to the interviews. The materials offered significant contextual information regarding the legislative and administrative frameworks that regulate community-based sea turtle conservation in the area. They also provided data on the effects of these programs on sea turtle populations and coastal communities. Field observations were additionally carried out at the two case study sites to acquire a direct comprehension of the conservation actions, facilities, and obstacles encountered by the local organizations.

Data obtained from interviews, documents and observations were examined using thematic content analysis methodology. Interview transcripts and field notes were analyzed and organized based on emerging themes and patterns regarding legal impacts, difficulties, and possibilities for community-based sea turtle conservation. Analysis was conducted of legal and policy documents to identify key provisions and deficiencies in the regulatory framework governing collaborative management arrangements. Additionally, the implications of this framework for the effectiveness and sustainability of community-based conservation projects are examined. The results obtained from the case studies are then analyzed and combined to produce valuable insights and policy recommendations to increase institutional legal support and certainty for community-based turtle conservation in the region and beyond.

4. Results

4.1. The Impact of Community-Based Conservation Regulations on Turtle Conservation

The impact in this research is seen as a positive impact on the legal behavior of communities along the southern coast of Java, as an impact of turtle conservation activities. Legal behavior is about whether or not a legal rule applies in society, if a legal rule applies, the extent to which it applies and the extent to which society obeys it.²⁹ This legal behavior occurs either because of education or legal counseling carried out by conservation groups. Conservation education includes community involvement in conservation activities, while outreach is carried out through discussions and meetings. Apart from this, the discussion also covers factors that hinder law-abiding behavior by the community, so that several socio-cultural and economic factors are considered in this discussion.

There are several articles in Government Regulation No. 7 of 1999 which provides opportunities for collaboration between the government and the community to carry out maintenance both in situ and ex situ. Provisions regarding in situ protection efforts can be found in Articles 9 to 14. In Articles 10 paragraph (3) and 11 paragraph (3) the Government can cooperate with the community in carrying out surveys and observations to determine population conditions and development trends of plant species and animal. Government cooperation with other communities at the in-situ stage is carried out through efforts to save, study, research and develop plant and animal species, this is in accordance with Article 13 paragraph (3) and Article 14 paragraph (3).

The regulatory section regarding management outside the habitat itself can be found

²⁹ Soerjono. Soekanto, Kesadaran hukum dan kepatuhan hukum, *Jurnal Hukum & Pembangunan*, Vol.7, no.6, 1977, page.462.

in Articles 15 to 21 of Government Regulation No. 7 of 1999. More specifically, there are two articles that provide opportunities for community involvement, namely Article 18 paragraph (2) which allows the rehabilitation of animals outside their habitat to be carried out by involving the community and Article 20 paragraph (2) which provides the government with the opportunity to carry out management activities types of plants and animals outside their habitat.

Article 20 (2) of Government Regulation Number 7 of 1999 could be consider as the legal basis that opens the door to community-based conservation activities. The objective of these endeavors has resulted in heightened public consciousness, engagement, and endorsement of sea turtle preservation.³⁰ This effectiveness is attributable to the active involvement of conservation groups in various educational activities, include involving the community in patrolling and collecting turtle eggs, relocating nests, distributing awards, and releasing hatchlings. The significance lies in the fact that these actions are essential for the preservation of sea turtles, especially throughout the important phases of their life cycle.³¹ Sea turtles encounter multiple perils, including poaching, habitat degradation, and predation, which greatly diminish their likelihood of survival. The efficacy of these conservation strategies is demonstrated by the notable rates of successful hatching and the progressive augmentation of turtles reintroduced into their natural habitat.³²

Field data indicates a significant increase in the number of eggs collected and hatched at Pantai Sodong, rising from 150 eggs in 2019 to 472 eggs in 2022, an increase of 314.66 percent. Similarly, at Pantai Kembar, there was an increase from 124 eggs in 2020 to 888 eggs in 2022, representing a 716.1 percent increase. These figures demonstrate growing community support for conservation efforts. Additionally, the data from Pantai Sodong reveals an increase in the number of turtles and hatchlings released, from 32 in 2019 to 294 in 2022, an increase of 918.75 percent. At Pantai Kembar, the number of hatchlings and turtles released rose from 41 in 2020 to 492 in 2022, marking a 1200 percent increase.

Local community participation in patrolling and collecting turtles and their eggs is a primary tactic employed by conservation organizations. The main aim of this method is not only to contribute to conservation efforts but also to foster a sense of ownership and responsibility among local residents. Public awareness of the importance of protecting turtles and their ecosystems is growing through active involvement in conservation efforts. This enhances awareness, support, and compliance with regulations, making community involvement a crucial factor in promoting participation in turtle conservation. Legal awareness within the community can develop from a desire to protect biodiversity. This involves an understanding of conservation law, support for existing regulations, and awareness of the legal consequences of non-compliance.

³⁰ Didit Darmawan., The Effect of Customer Satisfaction on Trust and Customer Loyalty, *Management & Accounting Research Journal Global*, Vol.3, no.2, 2019, page.27.

³¹ Evander E. Aiba., Billy Th Wagey, Ping A. Angmalisang, Anneke V. Loho, Deslie Kumampung, and Farnis B. Boneka., Penyu dan Warga Pulau Siau, *Jurnal Pesisir dan Laut Tropis*, Vol.8, no.1, 2020, page.65.

³² T. Z. A. E., I. Nyoman Yoga Parawangsa Harnino, Luthfiana Aprilianita Sari, and Sulastri Arsad., Efektifitas pengelolaan konservasi penyu di turtle conservation and education center Serangan, Denpasar Bali, *Journal of Marine and Coastal Science*, Vol.10, no.1, 2021, page.245.

The conservation groups also offer awards or incentives to individuals who voluntarily give up sea turtles or their eggs. The purpose of this strategy is to promote public involvement and mitigate the illicit trade and consumption of sea turtle goods.³³ The conservation groups give awards as a means to provide an alternative source of money for local populations, thereby diminishing their reliance on the exploitation of sea turtles. The efficacy of this method is demonstrated by the distinct incentive structures adopted by the conservation organizations at Pantai Sodong and Pantai Kembar, resulting in heightened public engagement in conservation endeavors.

Releasing adult and adolescent turtles into their native environments is the last phase of conservation efforts. The purpose of this method is to preserve the equilibrium of the marine ecosystem and facilitate the restoration of sea turtle populations.³⁴ Conservation groups release turtles into the wild to support the natural reproduction and population increase of these species. The effectiveness of this technique is demonstrated by the growing number of turtles released by the conservation groups, resulting in a notable rise in public knowledge and involvement in conservation initiatives.

Apart from educational activities, conservation groups hold monthly meetings with group members and fishing or farming communities along the coast. The agenda for the meeting is to evaluate conservation activities and provide information on conservation regulations. The resource person is the head of the conservation group, or an instructor from the office of the Central Java Natural Resources Conservation Center, Region III Cilacap Conservation Branch. The positive impact of this activity was increased awareness and legal compliance in communities along the southern coast of Central Java. Conservation groups have effectively educated the public about the legal protections afforded to sea turtles and the impacts of participation in unlawful activities.³⁵

These organizations have increased the sense of responsibility and concern of local communities by increasing legal behavior in accordance with Law Number 5 of 1990 and similar legal regulations. Currently, people in general are afraid and know that turtles are protected by law. They began to act according to the law. Law is a means of providing protection to all parties, including animals and the environment, because the function of law itself is actually to protect society and improve society's welfare.³⁶ The legal framework for wildlife protection, anchored by Law No. 5/1990, integrates with the Constitution of 1945 to enforce measures against detrimental activities like wildlife trafficking and poaching. Article 21 of this law specifically

³³ Evander E. Aiba., Billy Th Wagey, Ping A. Angmalisang, Anneke V. Loho, Deslie Kumampung, and Farnis B. Boneka., *Penyu dan Warga Pulau Siau*, *Jurnal Pesisir dan Laut Tropis*, Vol.8, no.1, 2020, page.65.

³⁴ Putu Liza Kusuma Mustika, Riccardo Welters, Gerard Edward Ryan, Coralie D'Lima, Patricia Sorongon-Yap, Suwat Jutapruet, and Cindy Peter., *A rapid assessment of wildlife tourism risk posed to cetaceans in Asia*, *Journal of Sustainable Tourism*, Vol.25, no.8, 2017, page.1138.

³⁵ Hendriko Arizal, and Ahmad Iffan., *Analisis Tingkat Kepatuhan Hukum Pengguna Wisata Pantai Muaro Lasak Dalam Era New Normal Pandemi Covid-19*, *Jurnal Jurisprudencia*, Vol.5, no.2, 2022, page.11.

³⁶ Lilik Prihatini, Mustika Mega Wijaya, and Debby Novanda Romelsen., *Aspek Hukum Pidana Terhadap Penegakan Hukum Perlindungan Hewan di Indonesia*, *PALAR (Pakuan Law review)*, Vol.7, no.2, 2021, page.52.

prohibits actions like capturing, killing, possessing, and trading protected species, both alive and dead, with exceptions for scientific research and conservation efforts, which require government approval, alongside Government Regulation No. 7/1999 and Ministerial Regulations such as P.20/Menhut-II/2018, establishes robust procedures for the sustainable use and conservation of flora and fauna, ensuring activities comply with sustainability requirements and effectively reinforcing Indonesia's commitment to protecting its biodiversity.³⁷

Although community support along the southern coast of Central Java for turtle conservation efforts has significantly increased, the practice of exploiting and trading turtles and turtle eggs persists, even though it has greatly reduced. These practices are driven by socio-cultural and economic factors that have been entrenched in coastal communities for a long time. The cultural tradition of consuming turtle meat, passed down from generation to generation, remains challenging to eradicate. Consumption typically occurs under two conditions: during periods of '*paceklik*' when fish catches are low or during the traditional '*sedekah laut*' ceremony. The practice of '*sedekah laut*' is particularly prevalent among fishing groups, where it is held as part of a tradition that has been passed down through generations among the fishing communities of the south coast of Java.

In the end, the involvement of local communities in turtle conservation and protection can be said to be successful thanks to community-based conservation projects along the southern coast of Central Java. The active involvement of local communities in various conservation activities not only helps the recovery of turtle populations but also fosters a sense of ownership and legal awareness among the general public.³⁸ The rationale for this effort is to increase legal awareness and community involvement as important factors for sea turtle survival. Effectiveness of these activities is demonstrated by a significant increase in the number of protected turtles and their eggs, impressive hatching success, and an increase in the number of turtles released into their natural habitat. The community-based conservation strategy at Pantai Sodong and Pantai Kembar proven to provide a concrete example of how government collaboration with local communities is able to encourage recognition of legal provisions, community respect for legal provisions, and increase local community legal compliance in conservation. turtles and their ecosystems.

4.2. The Institutional Challenges of Community-Based Turtle Conservation

Community-based turtle conservation at Pantai Sodong and Pantai Kembar Central Java faces a number of challenges in its activities. These challenges relate to the criteria outlined in Government Regulation Number 7 of 1999, which stipulates that community conservation activities can only be conducted through institutions that collaborate with the government. Additionally, Article 8 of the Minister of Environment and Forestry Number P.22/MENLHK/SETJEN/KUM.1/5/2019 stipulates 8 (eight) criteria that must be met by conservation institutions, namely:

³⁷ Gracia Leslie, and Mella Ismelina Farma Rahayu.. Tantangan Dalam Menerapkan Undang-Undang Perlindungan Satwa Di Indonesia, *Kertha Semaya: Journal Ilmu Hukum*, Vol.11, no.8, 2023, page.1766.

³⁸ Didit Darmawan., The Effect of Customer Satisfaction on Trust and Customer Loyalty, *Management & Accounting Research Journal Global*, Vol.3, no.2, 2019, page.26.

- a. types of protected animals and/or foreign animals;
- b. management that is temporary or not permanent;
- c. facilities for the maintenance and care of animals, including:
 1. rearing cage;
 2. habituation cage;
 3. transport cage suitable for the type of animal;
 4. shade; and
 5. supporting infrastructure for other animal management such as food warehouses;
- d. health facilities that function as quarantine and clinics;
- e. A permanent workforce according to their field of expertise, consisting of:
 1. veterinarian;
 2. paramedics;
 3. animal caretaker;
 4. security personnel; and
 5. administrative staff;
- f. management office facilities; and
- g. waste management facilities.

The survey and analysis of document data on the two conservation groups identified two main challenges: the availability of cooperation as a basis for the legality of conservation institutions and health facility and health worker availability (as shown in Table 1).

Table 1. The Institutional Legal Challenges of Community-Based Conservation Institutions

No	Conservation Institutional Based on Minister of Environment and Forestry Regulation	Conservation Group	
		Pantai Sodong	Pantai Kembar
1	cooperation with the government	✓	x
2	protected species or foreign animals	✓	✓
3	management is temporary	✓	✓
4	animal care and maintenance facilities	✓	✓
5	health facilities as quarantine and clinics	x	x
6	permanent labor facilities according to expertise	x	x
7	management office facilities	✓	x
8	waste management facilities	✓	✓

Firstly, there is a necessity for government cooperation with the community as a conservation institution. Among the two conservation groups studied, only the

Pantai Sodong Cilacap group has collaborative support. However, the existing cooperation does not fulfill the requirements for collaborative management as prescribed in Article 20 of Government Regulation No. 7 of 1999. The cooperation documents reveal that the parties involved include the Central Java Natural Resources Conservation Center, the Ministry of Environment and Forestry, and Fuel Terminal Maos PT. Pertamina (Persero), a state-owned enterprise. The agreement, outlined in Numbers PKS.04/K21/TU/REN/02/2020 and 008/224047/II/2020-30 dated 12 February 2020, pertains to 'Strengthening the Function and Conservation of Living Natural Resources through Saving Wild Animals Protected in support of Area Management and Community Empowerment in Bubungga Village in the Gunung Selok Nature Tourism Park'. This collaboration specifies the rights and obligations of both parties, where the Central Java BKSDA provides administrative and technical guidance on turtle rescue for conservation groups, while PT. Pertamina (Persero) provides funding through corporate social responsibility.

Document analysis identifies two primary elements in the collaboration: BKSDA Central Java as a governmental element, and PT. Pertamina (Persero) as a funding element. These two entities are the main drivers of the cooperation, with the conservation groups (local communities) being dependent parties. The current structure of cooperation places the conservation groups (local communities) as non-parties to the cooperation agreement. The BKSDA Central Java (government) and PT Pertamina (Persero) exert a more dominant influence over the conservation community groups. Meanwhile, Article 7 of Government Regulation No. 9 of 1999 requires at least minimal cooperation between the government and the community, raising concerns about the legality of the turtle conservation activities being conducted.

Collaborative management involves multiple social actors engaging in negotiations to establish and ensure an equitable distribution of management tasks, rights, and obligations for a particular territory, area, or pool of natural resources.³⁹ Facilitating the collaboration between managers and local populations in the management of conservation areas can be achieved by the implementation of a collaboration agreement that clearly defines the rights and responsibilities of each party involved.⁴⁰ Therefore, without a formal cooperation agreement, the activities of local community groups lack a legal basis for conducting conservation in accordance with Article 7 of Government Regulation No. 7 of 1999. To establish legal certainty regarding the rights, obligations, and responsibilities of each party involved, it is crucial to include local community groups as key participants in conservation initiative cooperation agreements. This is because the basic definition of a conservation area includes the protection and maintenance of biodiversity, and natural resources connected to related cultures, and managed through the application of law or other effective means.⁴¹

³⁹ Grazia Borrini-Feyerabend, and Grazia Borrini., *Co-management of natural resources: Organising, negotiating and learning-by-doing*, Heidelberg, Kasperek Verlag, 2000, page.81.

⁴⁰ Sri Nurhayati Qodriyatun., Peran dan partisipasi masyarakat dalam pengelolaan kawasan konservasi secara kolaboratif, *Kajian*, Vol.24, no.1, 2020, page.45.

⁴¹ Irma Minarti Harahap, Achmad Fahrudin, and Yusli Wardiatno., Pengelolaan kolaboratif kawasan konservasi penyu Pangebahan Kabupaten Sukabumi, *Jurnal Ilmu Pertanian Indonesia*, Vol.20, no.1, 2015, page.41.

Table 2. Health Facility and Health Worker Availability Challenges

No	Facility Availability Component Based Minister of Environment and Forestry Regulation	Conservation Group	
		Pantai Sodong	Pantai Kembar
1	health facilities as quarantine and clinics		
a.	clinic rooms;	x	x
b.	quarantine rooms.	x	x
2	permanent workers according to their field of expertise		
a.	veterinarian;	x	x
b.	paramedical staff;	x	x
c.	animal keeper;	x	x
d.	security staff; and	x	x
e.	administrative staff.	✓	✓

The next legal challenge pertains to the availability of health facilities and health worker. Inadequate conservation facilities, like clinics, quarantine rooms, and trained staff, present another difficulty (as shown in Table 4). The stringent restrictions and intricate bureaucracy pose significant challenges for conservation groups in achieving the mandated criteria. Based on the evidence, it appears that the human resources within these groups predominantly depend on individuals from the local community, and they have been unable to hire highly skilled personnel.⁴² Field surveys show that sick turtles are treated by the group itself using natural remedies, such as turmeric or similar compounds, which have natural antibiotic properties. The lack of veterinary health services at Pantai Kembar, as evidenced by the discovery of sick green turtles (*Chelonia mydas*). Even though the condition of the sick turtle had been reported more than 2 (two) months previously to the Central Java Natural Resources Conservation Agency (BKSDA), there had been no response regarding treatment. Meanwhile, treatment efforts carried out by community groups have not shown results. This situation illustrates the difficulty of the two conservation groups in meeting the facility requirements and the need for qualified medical personnel or animal guardians in accordance with the requirements stipulated in the Minister of Environment and Forestry Number P.22/MENLHK/SETJEN/KUM.1/5/2019 regarding Institutional Conservation.

5. Discussion

This study highlights the impact of managing community-based conservation activities on the legal behavior of fishermen and farmers regarding legal provisions prohibiting, capturing, selling and consuming turtles or turtle eggs along the southern coast of Central Java, Indonesia. These initiatives have increased legal compliance among local communities and improved conservation outcomes.⁴³ The

⁴² Eska Nia Sarinastiti, and Muhamad Sidiq Wicaksono., Komersialisasi Dan Pariwisata: Manajemen Theme Park Berbasis Konservasi Di Wilayah Yogyakarta Dan Jawa Tengah, *Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan (Journal of Natural Resources and Environmental Management)*, Vol.11, no.1, 2021, page.72.

⁴³ Didit Darmawan., The Effect of Customer Satisfaction on Trust and Customer Loyalty, *Management & Accounting Research Journal Global*, Vol.3, no.2, 2019, page.23.

success of community-based initiatives can be attributed to their ability to instill a sense of ownership and responsibility among local stakeholders that is critical to the long-term sustainability of conservation efforts.⁴⁴ The positive impact of community involvement can be seen from the increase in community legal behavior that is in accordance with statutory regulations.

Boosting legal compliance among fishermen and farmers through community-based conservation in southern part of Central Java illustrates the broader need for a legally aware society to ensure justice and cultural harmony. These efforts show how positive legal behaviors can be fostered within Indonesia's diverse societal fabric by tailoring laws to local cultural and social dynamics, deepening legal philosophy understanding to ensure fairness. However, maintaining this legal awareness is challenging, as shown by frequent minor legal breaches like unauthorized turtle egg collection. This gap between societal norms and legal stipulations underscores the need for continuous education and engagement.⁴⁵

This research also shows that a number of obstacles can interfere with the effectiveness and already high level of legal awareness. Obstacles mainly arise from deeply rooted social and cultural elements that have an impact on the attitudes and actions of local communities towards turtles.⁴⁶ Examples of activities that pose major challenges to conservation efforts are the consumption of turtle meat and eggs, the use of turtles in traditional ceremonies, and the continued belief in the healing powers of turtle products.⁴⁷ These activities are driven by the absence of alternative livelihoods and a lack of knowledge among certain community members about the ecological importance of sea turtles. These difficulties are evident from the continued illegal trade in turtles, which is often aided through personal networks and social media platforms.⁴⁸

It is imperative to develop contextual solutions that consider the complex social and cultural factors influencing human-wildlife interactions in order to overcome these challenges.⁴⁹ The essence of the issue is that conservation efforts should not only focus on the ecological aspects of protecting turtles but also address the needs and aspirations of indigenous groups. By offering alternative livelihood options and enhancing awareness of the importance of sea turtle conservation, these programs

⁴⁴ H., N. Espinoza-Rodríguez Barrios-Garrido, D. Rojas-Cañizales, J. Palmar, N. Wildermann, M. G. Montiel-Villalobos, and M. Hamann., Trade of marine turtles along the Southwestern Coast of the Gulf of Venezuela, *Marine Biodiversity Records*, Vol.10, no.12, 2017, page.10.

⁴⁵ Ellya Rosana., Kepatuhan hukum sebagai wujud kesadaran hukum masyarakat, *Jurnal Tapis: Jurnal Teropong Aspirasi Politik Islam*, Vol.10, no.1, 2014, page.68.

⁴⁶ Atikah Nurhayati, Titin Herawati, Isni Nurruhwati, and Indah Riyantini., Tanggung jawab masyarakat lokal pada konservasi penyu hijau (*Chelonia mydas*) di Pesisir selatan jawa barat, *Jurnal Perikanan Universitas Gadjah Mada*, Vol.22, no.2, 2020, page.78.

⁴⁷ Muhammad Abdurrohman., Memahami makna-makna simbolik pada upacara adat sedekah laut di desa Tanjungan Kecamatan Kragan Kabupaten Rembang, *Jurnal The Messenger*, Vol.7, no.1, 2016, page.27; See to, Khusnul Khotimah., Tradisi Sedekah Laut di Pantai Teluk Penyu Cilacap, *Ibda': Jurnal Kajian Islam dan Budaya*, Vol.16, no.1, 2018, page.352.

⁴⁸ Subandi Subandi., Deskripsi kualitatif sebagai satu metode dalam penelitian pertunjukan, *Harmonia journal of arts research and education*, Vol.11, no.2, 2011, page.62082.

⁴⁹ Agnese Mancini, Jesse Senko, Ricardo Borquez-Reyes, Juan Guzman Póo, Jeffrey A. Seminoff, and Volker Koch., To poach or not to poach an endangered species: elucidating the economic and social drivers behind illegal sea turtle hunting in Baja California Sur, Mexico, *Human Ecology*, Vol.39, no.4, 2011, page.747.

can garner greater support and participation from local stakeholders.⁵⁰ Case studies from Pantai Sodong and Pantai Kembar demonstrate successful community engagement, evidenced by increased support for conservation regulations, heightened reporting of unlawful activities, and greater participation of local residents in conservation initiatives.

Another challenge arises from the institutional and legal frameworks that regulate community-based conservation activities. The existing legal framework in Indonesia, especially Government Regulation no. 7 of 1999 and Minister of Environment and Forestry Number P.22/MENLHK/SETJEN/KUM.1/5/2019, sets strict criteria that can hinder efficient collaboration between government agencies and local conservation groups.⁵¹ These obstacles arise due to the absence of clear legal provisions and institutional arrangements that recognize and support the involvement of local communities in managing conservation efforts. The lack of an effective cooperative agreement between the Central Java BKSDA and community-based conservation groups in Pantai Sodong and Pantai Kembar is clear, as can be seen in Table 1.

Restructuring the administration and laws that oversee community-based conservation efforts in Indonesia is critical to addressing these challenges. Policymakers can create a climate that is more supportive of collaborative management by implementing flexible legal rules, efficient bureaucratic procedures, and adequate technical assistance.⁵² These revisions can improve the legal status and ability of community-based groups to participate in efficient conservation management by officially recognizing the rights, obligations and contributions of local communities in conservation activities.⁵³ The potential benefits of these reforms are supported by the success of community-based conservation initiatives in other areas. In these cases, clear legal frameworks and institutional arrangements have enabled fairer and more efficient cooperation between government agencies and local stakeholders.

The findings of this study emphasize the value of collaborative, community-based management in advancing sea turtle conservation in Central Java, Indonesia's southern coast. The findings of this study contribute to the existing literature on participatory conservation approaches by highlighting the successes, challenges, and opportunities of these initiatives. This information is valuable for legal policymakers and practitioners interested in improving the effectiveness and long-term sustainability of community-based conservation efforts. The main idea is that while community involvement is critical to achieving legally compliant behavior, it is also important to overcome legal and institutional challenges that can undermine the legitimacy and legal certainty of community groups that form conservation

⁵⁰ Lisa M. Campbell, Bethany J. Haalboom, and Jennie Trow., Sustainability of community-based conservation: sea turtle egg harvesting in Ostional (Costa Rica) ten years later, *Environmental conservation*, Vol.34, no.2, 2007, page.123.

⁵¹ Eska Nia Sarinastiti, and Muhamad Sidiq Wicaksono., Komersialisasi Dan Pariwisata: Manajemen Theme Park Berbasis Konservasi Di Wilayah Yogyakarta Dan Jawa Tengah, *Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan (Journal of Natural Resources and Environmental Management)*, Vol.11, no.1, 2021, page.82.

⁵² Grazia Borrini-Feyerabend and Grazia Borrini., *Co-management of natural resources: Organising, negotiating and learning-by-doing*, Heidelberg, Kasperek Verlag, 2000, page.97.

⁵³ Sri Nurhayati Qodriyatun., Peran dan partisipasi masyarakat dalam pengelolaan kawasan konservasi secara kolaboratif, *Kajian*, Vol.24, no.1, 2020, page.45.

institutions.

Conservation initiatives can produce long-term benefits for wildlife and human communities through creating an environment more conducive to community participation, providing adequate regulatory support and resources, and improving equitable partnerships between government agencies and local stakeholders. The potential for significant change can be seen from the increasing support and importance of local communities in managing conservation efforts and the widespread use of participatory methods in many parts of the world.⁵⁴ The case studies of Pantai Sodong and Pantai Kembar provide valuable insights that can be used to improve the development of more efficient and comprehensive legal and conservation policies in Indonesia and other regions.

6. Conclusion

Turtle conservation along the southern coast of Central Java, Indonesia, has encouraged legal behavior that complies with conservation laws, such as Law No. 5/1990, Government Regulation No. 7/1999 and Ministerial Regulations such as P.20/Menhut-II/2018. This compliance is a pivotal finding of this research. Case studies in Pantai Sodong and Pantai Kembar show that local community involvement in conservation activities has increased support for regulations and increased conservation efforts. However, this study also reveals that community-based conservation initiatives face several obstacles that may hinder the effectiveness and sustainability of sea turtle conservation in the long term. These obstacles stem primarily from socio-cultural and economic factors, while other difficulties relate to the legal and institutional framework governing conservation institutions.

The topics of participatory conservation and environmental governance benefit greatly from several significant contributions made by this research. First, presenting empirical data regarding the achievements, difficulties and prospects of community-based collaborative management in the field of turtle conservation in Indonesia. Second, this study is able to emphasize the importance of overcoming fundamental socio-economic, legal and institutional obstacles that can hinder the success of cooperation and its results. Additionally, this report provides significant perspectives and suggestions for policy makers and legal practitioners who wish to improve the efficiency and long-term sustainability of community-based conservation initiatives, not only in Indonesia but also in similar situations globally. This study adds to the existing literature on factors contributing to the success of participatory conservation programs by emphasizing the need for flexible legal provisions, efficient bureaucratic procedures, and adequate support and resources for local conservation groups.

It is important to recognize the limits of this study notwithstanding its contributions. The findings are derived from a somewhat limited sample size consisting of two case studies conducted in Central Java. As a result, the generalizability of the results to other regions or conservation contexts may be restricted. Further investigation should examine community-based conservation programs in alternative regions of Indonesia or Southeast Asia to gain a more holistic comprehension of the aspects that impact their effectiveness and long-term viability. Furthermore, the study

⁵⁴ Derek R. Armitage., Ryan Plummer, Fikret Berkes, Robert I. Arthur, Anthony T. Charles, Iain J. Davidson-Hunt, Alan P. Diduck., Adaptive co-management for social-ecological complexity, *Frontiers in Ecology and the Environment*, Vol.7, no.2, 2009, page.98.

predominantly utilizes qualitative data, such as interviews and observations, which could potentially be influenced by social desirability bias or the researcher's interpretation. In order to enhance the reliability of the conclusions, future studies could include other quantitative measurements, such as ecological surveys or socio-economic assessments, to corroborate the findings. Ultimately, the study offers a brief overview of the present condition of community-driven sea turtle conservation in Central Java. Regression research can be used to evaluate the interrelationships between legal compliance with regulations and increased community-based conservation initiatives, as well as their impact on broader conservation goals and the livelihoods of local communities.

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References

Books:

Borrini-Feyerabend, Grazia, and Grazia Borrini., *Co-management of natural resources: Organising, negotiating and learning-by-doing*, Heidelberg, Kasperek Verlag, 2000;

Journals:

Abdurrohman, Muhammad., Memahami makna-makna simbolik pada upacara adat sedekah laut di desa Tanjungan Kecamatan Kragan Kabupaten Rembang, *Jurnal the Messenger*, Vol.7, no.1, 2016;

Aiba, Evander E., Billy Th Wagey, Ping A. Angmalisang, Anneke V. Loho, Deslie Kumampung, and Farnis B. Boneka., Penyu dan Warga Pulau Siau, *Jurnal Pesisir dan Laut Tropis*, Vol.8, no.1, 2020;

Arizal, Hendriko, and Ahmad Iffan., Analisis Tingkat Kepatuhan Hukum Pengguna Wisata Pantai Muaro Lasak Dalam Era New Normal Pandemi Covid-19, *Jurnal Jurisprudentia*, Vol.5, no.2, 2022;

Armitage, Derek R., Ryan Plummer, Fikret Berkes, Robert I. Arthur, Anthony T. Charles, Iain J. Davidson-Hunt, Alan P. Diduck., Adaptive co-management for social–ecological complexity, *Frontiers in Ecology and the Environment*, Vol.7, no.2, 2009;

Barrios-Garrido, H., N. Espinoza-Rodríguez, D. Rojas-Cañizales, J. Palmar, N. Wildermann, M. G. Montiel-Villalobos, and M. Hamann., Trade of marine turtles along the Southwestern Coast of the Gulf of Venezuela, *Marine Biodiversity Records*, Vol.10, no.12, 2017;

Braverman, Irus., Conservation without nature: the trouble with in situ versus ex situ conservation, *Geoforum*, Vol.51, no.4, 2014;

- Campbell, Lisa M., Bethany J. Haalboom, and Jennie Trow., Sustainability of community-based conservation: sea turtle egg harvesting in Ostional (Costa Rica) ten years later, *Environmental conservation*, Vol.34, no.2, 2007;
- Campbell, Lisa M., Use them or lose them? Conservation and the consumptive use of marine turtle eggs at Ostional, Costa Rica, *Environmental Conservation*, Vol.25, no.4, 1998;
- Carlsson, Lars, and Fikret Berkes., Co-management: concepts and methodological implications, *Journal of environmental management*, Vol.75, no.1, 2005;
- Cornwell, Myriah L., and Lisa M. Campbell., Co-producing conservation and knowledge: Citizen-based sea turtle monitoring in North Carolina, USA, *Social Studies of Science*, Vol.42, no.1, 2012;
- Darmawan, Didit., The Effect of Customer Satisfaction on Trust and Customer Loyalty, *Management & Accounting Research Journal Global*, Vol.3, no.2, 2019;
- Eagle, Lynne, Mark Hamann, and David R. Low., The role of social marketing, marine turtles and sustainable tourism in reducing plastic pollution, *Marine pollution bulletin*, Vol.107, no.1, 2016;
- Emerson, Kirk, Tina Nabatchi, and Stephen Balogh., An integrative framework for collaborative governance, *Journal of public administration research and theory*, Vol.22, no.1, 2012;
- Fuentes, M. M. P. B., M. R. Fish, and J. A. Maynard., Management strategies to mitigate the impacts of climate change on sea turtle's terrestrial reproductive phase, *Mitigation and Adaptation Strategies for Global Change*, Vol.17, no.2, 2012;
- García, Andrés, Gerardo Ceballos, and Ricardo Adaya., Intensive beach management as an improved sea turtle conservation strategy in Mexico, *Biological Conservation*, Vol.111, no.2, 2003;
- Gjertsen, Heidi., Can habitat protection lead to improvements in human well-being? Evidence from marine protected areas in the Philippines, *World Development*, Vol.33, no.2, 2005;
- Greggor, Alison L., Oded Berger-Tal, Daniel T. Blumstein, Lisa Angeloni, Carmen Bessa-Gomes, Bradley F. Blackwell, Colleen Cassady St Clair., Research priorities from animal behaviour for maximising conservation progress, *Trends in ecology & evolution*, Vol.31, no.12, 2016;
- Guerrero, Angela M., Ryan RJ Mcallister, and Kerrie A. Wilson., Achieving cross-scale collaboration for large scale conservation initiatives, *Conservation Letters*, Vol.8, no.2, 2015;
- Hanim, Lathifah, Munsharif Abdul Chalim, and Jawade Hafidz., Pelaksanaan perlindungan satwa liar yang dilindungi menurut Hukum Indonesia dan Hukum Internasional, In *Prosiding Seminar Nasional Penelitian Dan Pengabdian Kepada Masyarakat*, Vol.1, no.1, 2020;
- Harahap, Irma Minarti, Achmad Fahrudin, and Yusli Wardiatno., Pengelolaan kolaboratif kawasan konservasi penyu Pangumbahan Kabupaten Sukabumi, *Jurnal Ilmu Pertanian Indonesia*, Vol.20, no.1, 2015;
- Harnino, T. Z. A. E., I. Nyoman Yoga Parawangsa, Luthfiana Aprilianita Sari, and Sulastris Arsad., Efektifitas pengelolaan konservasi penyu di turtle conservation and education center Serangan, Denpasar Bali, *Journal of Marine and Coastal Science*, Vol.10, no.1, 2021;

- Khotimah, Khusnul., Tradisi Sedekah Laut di Pantai Teluk Penyus Cilacap, *Ibda': Jurnal Kajian Islam dan Budaya*, Vol.16, no.1, 2018;
- Kothari, Ashish, Philip Camill, and Jessica Brown., Conservation as if people also mattered: policy and practice of community-based conservation, *Conservation and Society*, Vol.11, no.1, 2013;
- Kurniarum, Martina, Wahyu Prihanta, and Sri Wahyuni., Pengetahuan dan sikap masyarakat terhadap konservasi penyus dan ekowisata di Desa Hadiwarno Kabupaten Pacitan sebagai sumber belajar biologi, *JPBI (Jurnal Pendidikan Biologi Indonesia)*, Vol.1, no.2, 2015;
- Leslie, Gracia, and Mella Ismelina Farma Rahayu. Tantangan Dalam Menerapkan Undang-Undang Perlindungan Satwa Di Indonesia, *Kertha Semaya: Journal Ilmu Hukum*, Vol.11, no.8, 2023;
- Mancini, Agnese, Jesse Senko, Ricardo Borquez-Reyes, Juan Guzman Póo, Jeffrey A. Seminoff, and Volker Koch., To poach or not to poach an endangered species: elucidating the economic and social drivers behind illegal sea turtle hunting in Baja California Sur, Mexico, *Human Ecology*, Vol.39, no.4, 2011;
- Marcovaldi, Maria Ângela, and Guy Guagni Dei Marcovaldi., Marine turtles of Brazil: the history and structure of Projeto TAMAR-IBAMA, *Biological Conservation*, Vol.91, no.1, 1999;
- Mirna, Mirna, Mohamad Gazali, and M. Ali Sarong., Pendampingan Teknik Konservasi Penyus Lekang (*Lepidochelys olivacea*) Di Pesisir Pantai Lampuuk Aceh Besar, *Marine Kreatif*, Vol.5, no.1, 2021;
- Mustika, Putu Liza Kusuma, Riccardo Welters, Gerard Edward Ryan, Coralie D'Lima, Patricia Sorongon-Yap, Suwat Jutapruet, and Cindy Peter., A rapid assessment of wildlife tourism risk posed to cetaceans in Asia, *Journal of Sustainable Tourism*, Vol.25, no.8, 2017;
- Nurhayati, Atikah, Titin Herawati, Isni Nurruhwati, and Indah Riyantini., Tanggung jawab masyarakat lokal pada konservasi penyus hijau (*Chelonia mydas*) di Pesisir selatan Jawa Barat, *Jurnal Perikanan Universitas Gadjah Mada*, Vol.22, no.2, 2020;
- Palomo, Ignacio, Berta Martín-López, Cesar López-Santiago, and Carlos Montes., Participatory scenario planning for protected areas management under the ecosystem services framework: the Doñana social-ecological system in southwestern Spain, *Ecology and Society*, Vol.16, no.1, 2011;
- Peranginangin, Lily Sri Ulina., Partisipasi masyarakat dalam pengelolaan kawasan konservasi, *JKAP (Jurnal Kebijakan Dan Administrasi Publik)*, Vol.18, no.1, 2014;
- Prihatini, Lilik, Mustika Mega Wijaya, and Debby Novanda Romelsen., Aspek Hukum Pidana Terhadap Penegakan Hukum Perlindungan Hewan di Indonesia, *PALAR (Pakuan Law review)*, Vol.7, no.2, 2021;
- Qodriyatun, Sri Nurhayati., Peran dan partisipasi masyarakat dalam pengelolaan kawasan konservasi secara kolaboratif, *Kajian*, Vol.24, no.1, 2020;
- Rahman, Wiguna, Joana Magos Brehm, Nigel Maxted, Jade Phillips, Aremi R. Contreras-Toledo, Mariam Faraji, and Mauricio Parra Quijano., Gap analyses of priority wild relatives of food crop in current ex situ and in situ conservation in Indonesia, *Biodiversity and Conservation*, Vol.30, no.3, 2021;
- Rees, Alan F., J. Alfaro-Shigueto, P. C. R. Barata, Karen A. Bjorndal, Alan B. Bolten, Jerome Bourjea, A. C. Broderick., Are we working towards global research

- priorities for management and conservation of sea turtles?, *Endangered Species Research*, Vol.31, no.6, 2016;
- Rifaie, Farid, Eko Sulistyadi, and Yuli Sulistya Fitriana., A review of patterns and geographical distribution of human-wildlife conflicts in Indonesia, *Berkala Penelitian Hayati Journal of Biological Researches*, Vol.27, no.1, 2021;
- Rosana, Ellya., Kepatuhan hukum sebagai wujud kesadaran hukum masyarakat, *Jurnal Tapis: Jurnal Teropong Aspirasi Politik Islam*, Vol.10, no.1, 2014;
- Rudianto, Rudianto, and Gatut Bintoro. Future Turtle Management: Opportunities for Habitat Restoration Governance in East Java, Indonesia, *International Journal of Environment, Agriculture and Biotechnology*, Vol.3, no.5, 2018;
- Sarinastiti, Eska Nia, and Muhamad Sidiq Wicaksono., Komersialisasi Dan Pariwisata: Manajemen Theme Park Berbasis Konservasi di Wilayah Yogyakarta Dan Jawa Tengah, *Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan (Journal of Natural Resources and Environmental Management)*, Vol.11, no.1, 2021;
- Soekanto, Soerjono., Kesadaran hukum dan kepatuhan hukum, *Jurnal Hukum & Pembangunan*, Vol.7, no.6, 1977;
- Subandi, Subandi., Deskripsi kualitatif sebagai satu metode dalam penelitian pertunjukan, *Harmonia journal of arts research and education*, Vol.11, no.2, 2011;
- White, Alan T., and Helge P. Vogt., Philippine coral reefs under threat: lessons learned after 25 years of community-based reef conservation, *Marine Pollution Bulletin*, Vol.40, no.6, 2000.