Maritime Intelligence in Countering Destructive Fishing as a Threat to Maritime Security in Coastal Areas and Small Islands

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Abstract

Destructive fishing has been identified as a major threat to maritime security, particularly in coastal areas and small islands. This practice, as a form of illegal fishing, results in adverse economic impacts, damage to ecosystems, threats to resource sustainability, and impacts on national security. This research aims to examine the role of maritime intelligence in overcoming destructive fishing as a maritime security threat in coastal areas and small islands in Indonesia. The method used in this research is qualitative, with a comprehensive literature review and case study approach. This research integrates national security theory, maritime security theory, intelligence role theory and literature study to analyze the data. The results show that maritime intelligence plays an important role in identifying and intervening in destructive fishing practices. This role includes early detection and response to illegal activities, as well as the generation of more effective prevention and mitigation measures. The conclusion of this study confirms that optimizing the role of maritime intelligence can improve the effectiveness of monitoring and countering destructive fishing, thereby reducing negative impacts on the economy, ecosystems and national security. Recommendations from this study include improving the implementation and coordination of maritime intelligence and involving local communities in monitoring to increase the effectiveness and efficiency of destructive fishing prevention and mitigation efforts.

Keywords: *Destructive fishing; Maritime intelligence; Maritime security.*

Introduction

Efforts to harness marine and fisheries resources for national interests are often thwarted by destructive exploitation practices, which cannot be underestimated due to their significant impacts. Unsustainable fisheries management profoundly affects maritime security in Indonesia's coastal areas and small islands. Maritime security threats generally manifest as recurrent issues in marine waters, including illegal activities that jeopardize marine ecosystems and the communities reliant upon them. Among the challenges in marine resource utilization, illegal fishing stands out as a primary concern for maritime security, drawing attention due to its substantial economic losses, ecological damage, resource sustainability challenges, and national security implications. One prominent form of illegal fishing posing a significant threat to marine resource management is "destructive fishing."

Destructive fishing involves the use of substances, equipment, or methods that harm fish resources and their environment, such as explosives (dynamite fishing), toxins (cyanide fishing), electro-fishing, and other environmentally detrimental fishing gear (Willer et al., 2019). These practices result in interconnected sectoral impacts, including extensive ecosystem degradation and threats to coastal communities dependent on marine resources, leading to reduced incomes and increased operational costs due to distant fishing grounds (Lestari et al., 2020). Local economies suffer from elevated consumer fish prices due to

diminished supplies. From a human security perspective, depleted fish stocks affect a significant portion of Indonesia's population, which relies on fish as a primary protein source, exacerbating food insecurity. The use of substances like cyanide and fish bombs in fishing also poses risks of poisoning and fatal accidents (Maser et al., 2023). Nationally, destructive fishing undermines economic resilience, ecological stability, and resource sustainability, thereby impacting national security (Nauen & Boschetti, 2022; Dao, 2023). Typically, destructive fishing practices occur in Indonesia's coastal and small island areas.

Coastal areas and their natural resources hold strategic importance for Indonesia's economic development, serving as a pillar of the national economy (Dao, 2023; Prasetyo, 2023). These transitional land-sea areas with unique ecosystems are crucial within the context of sustainable development goals (SDGs), necessitating special attention for their development. Coastal areas and small islands possess potential for various fisheries activities, making them susceptible to damaging practices like destructive fishing. Addressing these issues requires comprehensive and sustainable responses, including enhanced maritime intelligence efforts.

Based on the aforementioned discussion, this research aims to thoroughly examine how maritime intelligence can effectively address destructive fishing as a maritime security threat in Indonesia's coastal and small island areas. This study seeks to optimize and streamline governmental oversight efforts to mitigate the impacts of destructive fishing.

In practice, maritime intelligence in Indonesia involves various governmental institutions that support policy formulation and operational tasks. Maritime intelligence encompasses activities such as data collection, analysis, interpretation, and dissemination related to maritime aspects (Pudyo, 2022). Its primary goal is to provide deep insights into maritime situations and threats, supporting effective decision-making concerning maritime security and resource sustainability. Institutions involved in maritime intelligence include the Indonesian Navy, the Maritime Security Agency (Bakamla), the Ministry of Maritime Affairs and Fisheries (KKP), and other law enforcement agencies. Maritime intelligence activities span from monitoring illegal activities at sea, such as illegal fishing and smuggling, to addressing maritime terrorism threats. Data collection methods include sea patrols, satellite monitoring, and reports from coastal communities.

Previous studies have highlighted the impact of maritime intelligence on maritime security in specific areas, emphasizing its role in ensuring security amidst high vessel traffic (Hartawan & Yudho, 2021). Additionally, intelligence communities contribute significantly to reviving Indonesia's maritime culture through their investigative, counterintelligence, and espionage functions (Moeljadi et al., 2022). Effective collaboration among governmental agencies supported by robust strategic intelligence is crucial in detecting and anticipating various threats in Indonesian waters (Sutisna, 2022). However, research focusing on maritime intelligence in combating destructive fishing as a maritime security threat in coastal and small island areas remains limited, underscoring the novelty of this study.

This research offers a new contribution to maritime security by examining the role of maritime intelligence in addressing destructive fishing. By integrating national security theory, maritime security theory, intelligence role theory, and literature studies, this research provides a comprehensive and innovative perspective. The justification for this study lies in the urgency to enhance surveillance and mitigation of destructive fishing in Indonesia, ultimately contributing to fisheries resource sustainability and community welfare in coastal and small island areas.

Literature Review

National Security Theory

National security is a critical foundation for a nation to safeguard its sovereignty and interests, both domestically and internationally. As defined by Praditya (2016), national security means the need to protect and preserve national interests using various strengths such

as politics, economics, and military capabilities to confront any potential threats. This is also affirmed by Darmono (2010), who emphasizes that national security involves efforts to maintain the state's existence by utilizing political, economic, and military resources, alongside robust diplomacy. The concept underscores the government's capability to safeguard the territorial integrity of the nation from both internal and external threats. Thus, national security serves as a primary foundation in ensuring the stability and prosperity of a nation. Applying this theory to the context of destructive fishing highlights its implications for environmental sustainability, economic stability, food security, and national security, particularly in coastal areas and small islands. National security theory provides a framework for understanding and responding to these threats.

Maritime Security Theory

Maritime security plays a crucial role in the effective management of marine resources and fisheries in Indonesia, as an archipelagic state with vast marine territories rich in natural resources. Maritime security encompasses several key concepts focusing on various aspects of maritime security and safety. According to Bueger (2015), maritime security consists of four dimensions: national security, human security, economic development, and maritime safety. In the maritime context, national security involves protection from threats such as arms trafficking and terrorist activities that can affect national stability. Human security includes protection from threats such as human trafficking, piracy, and illegal fishing practices. Economic development encompasses efforts to ensure that economic activities at sea, such as fisheries and maritime trade, are free from piracy and illegal fishing threats. The use of this theory enables research to examine and identify threats to the sustainability of marine resources as maritime security threats in coastal and small island regions, and to design mitigation strategies through the role of maritime intelligence in protecting the security and sustainability of these resources.

Role Theory

Role can be understood as the orientation and concept arising from the part played by a party in a social context, where actors, whether individuals or organizations, behave according to the expectations of others or their environment (Riyadi, 2002). Meanwhile, according to Soekanto (2002), role is the dynamic aspect of position (status); when someone fulfills their rights and obligations according to their position, they are performing a role. Intelligence roles in security are diverse and crucial for effective governance and national interest protection. Intelligence serves as the foundation in state governance by providing critical information that aids decision-making and policy implementation to enhance national security (Lebakeng, 2023). The intelligence process involves the collection, processing, analysis, and dissemination of information, crucial in alerting decision-makers to potential threats and ensuring they have the necessary data to protect national interests (Johnson, 2006). Applying this theory to examine and identify the role of maritime intelligence in combating destructive fishing, and in optimizing functions to address the constraints of marine and fisheries resource monitoring in coastal and small island regions.

Method

This research employs a qualitative approach using literature study, interpreting and describing existing data based on current circumstances. The research design is descriptive, aiming to depict the researched object as it is, in line with the situation and conditions during the study period (Sugiono, 2020). This approach provides a detailed overview of the conceptual analysis of maritime intelligence and its role in mitigating the threat of destructive fishing in coastal and small island areas. The study relies on secondary data obtained through an in-depth review of literature and interpretation of various materials found in scientific research journals.

The research design focuses on content analysis of existing literature to identify, analyze, and synthesize information related to the role of maritime intelligence in mitigating the

impact of destructive fishing as a maritime security threat in coastal and small island areas. Data collection involves literature review to gather theories and concepts from various sources such as books, government regulations, journals, and other relevant scientific publications. The collected data are then analyzed using content analysis methodology. According to Elo and Kyngäs (2008), content analysis is a technique for making replicable and valid inferences from data to their context. It enables researchers to identify themes, patterns, and relationships within the data, which are essential for understanding the role of maritime intelligence in combating destructive fishing. By integrating national security theory, maritime security theory, intelligence role theory, and literature studies, the research aims to provide a comprehensive analysis and recommendations that stakeholders can use to enhance the effectiveness of maritime intelligence in maritime security.

Results and Discussion

Analysis of Destructive Fishing Practices Data

Based on data analysis, the number of destructive fishing practices in Indonesia from 2013 to 2019 was obtained. The Fisheries Supervision of the Ministry of Maritime Affairs and Fisheries, along with local fisheries agencies and relevant institutions, successfully handled 653 cases of destructive fishing in Indonesia. These practices include the use of explosives, cyanide, electro-fishing equipment, and other damaging fishing gear. The results of this analysis are depicted in the following graph.
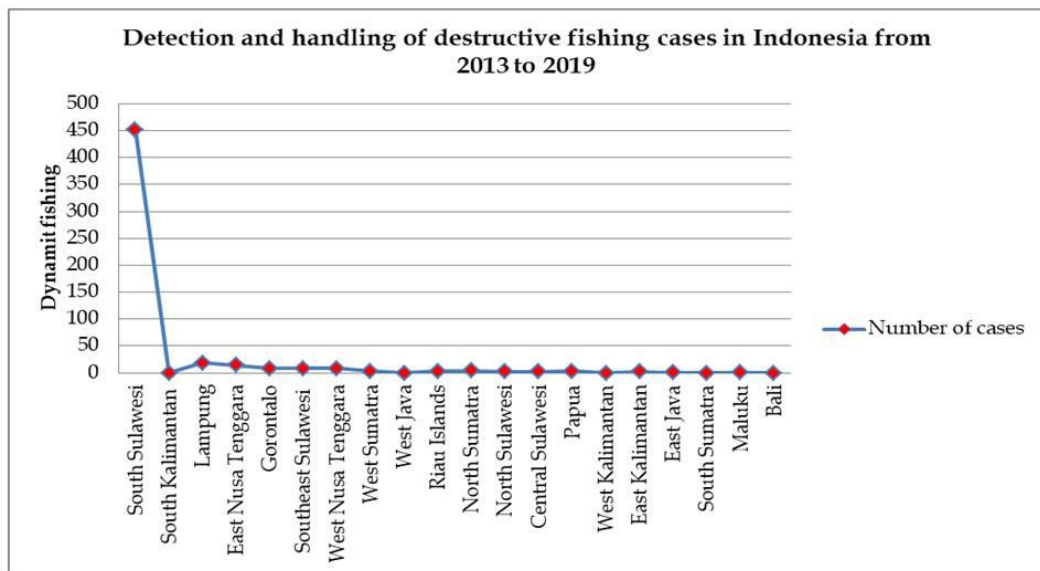

Figure 1. Chart of Destructive Fishing Practices with Dynamite Fishing

Figure 1 illustrates the number of dynamite fishing cases across various provinces in Indonesia. South Sulawesi recorded the highest number of cases (451 cases), followed by other provinces such as Lampung (19 cases), East Nusa Tenggara (14 cases), Gorontalo (8 cases), West Nusa Tenggara (8 cases), and Southeast Sulawesi (8 cases). The use of explosives in fishing practices leads to significant damage to coral reef ecosystems and threatens the sustainability of fish resources.
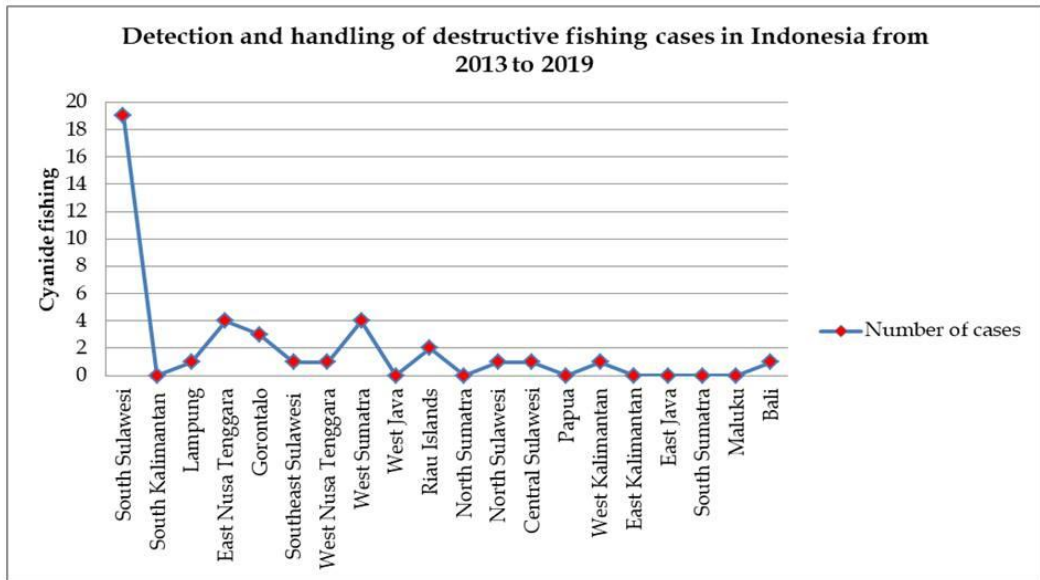
Figure 2. Chart of Destructive Fishing Practices with cyanide fishing

Figure 2 depicts the number of cyanide fishing cases across various provinces in Indonesia. South Sulawesi also leads in cyanide use cases (19 cases), followed by East Nusa Tenggara (4 cases), West Sumatra (4 cases), and Gorontalo (3 cases). The use of cyanide in fishing poses significant risks as the poison can spread through water, damaging broader marine habitats, and endangering human health through consumption of contaminated fish.
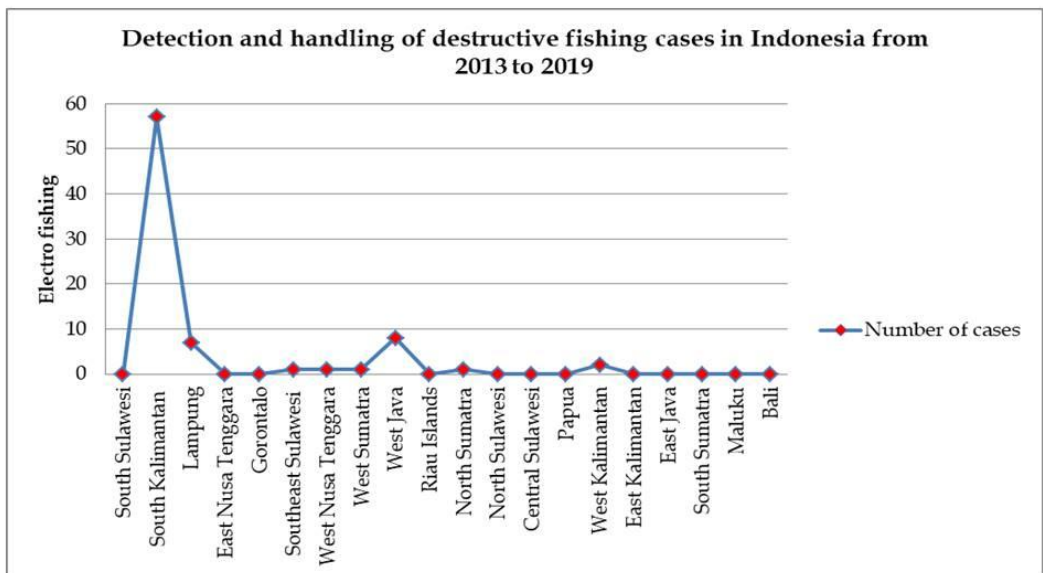

Figure 3. Chart of Destructive Fishing Practices with Electro fishing

Figure 3 illustrates the number of electro fishing cases across provinces in Indonesia. The highest number of cases was found in South Kalimantan (57 cases), followed by West Java (8 cases), and Lampung (7 cases). Electro fishing induces shock effects on fish, including small fish, thereby damaging fish populations and marine ecosystem sustainability.
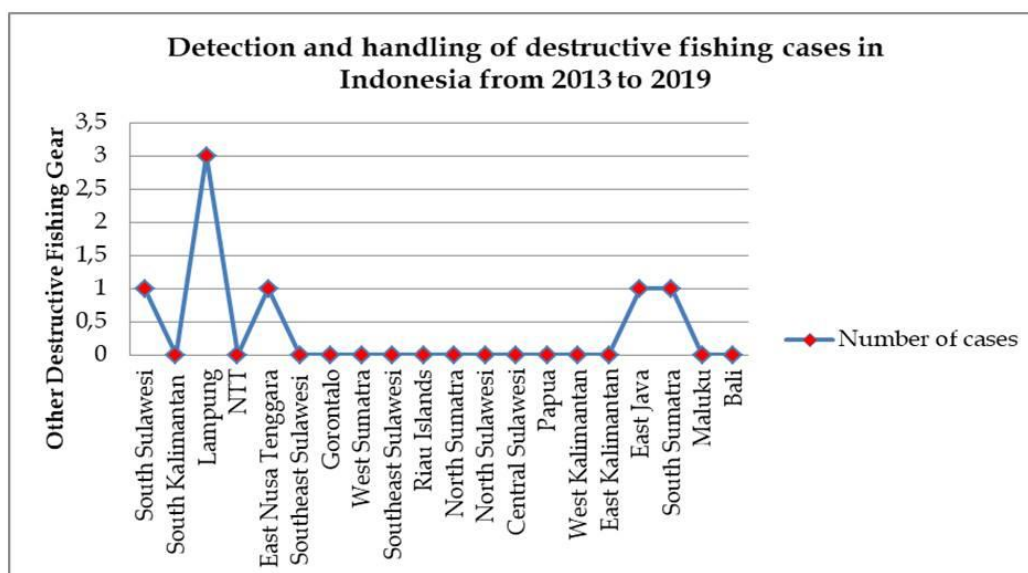
Figure 4. Chart of Destructive Fishing Practices with Other Destructive Fishing Gear

Figure 4 encompasses the use of other environmentally damaging fishing gear across various provinces in Indonesia. Different provinces are recorded using diverse methods of destructive fishing, including various types of unsustainable fishing gear. This practice highlights the variation in methods used by fishermen to capture fish in unsustainable ways that harm marine ecosystems.

The analysis of the above diagrams indicates that destructive fishing practices are widespread across various regions of Indonesia, employing diverse methods, especially in coastal and small island areas. Provinces such as South Sulawesi, South Kalimantan, Lampung, East Nusa Tenggara, Gorontalo, Southeast Sulawesi, West Nusa Tenggara, and West Sumatra are noted for having the highest number of cases for each method of destructive fishing. This underscores the need for stricter supervision efforts and enhanced maritime intelligence roles to detect and intervene in these practices. The variation in tools and materials used by fishermen in different regions is influenced by the types of fish targeted, the location of fishing grounds, and the characteristics of each region. The use of explosives, toxins, and electro-fishing allows fishermen to operate with lower capital and achieve larger catches. While beneficial in the short term, these practices have long-term impacts by depleting fish resources and harming the marine environment.

Analysis of Destructive Fishing as a Maritime Security Threat in Coastal and Small Island Areas

According to Law No. 1 of 2014, amending Law No. 27 of 2007 on the Management of Coastal Areas and Small Islands, coastal areas are defined as transitional regions between terrestrial and marine ecosystems influenced by changes in both environments. Small islands are defined as islands with an area less than or equal to 2,000 square kilometers, including their entire ecosystem.

In this context, the management of coastal areas and small islands encompasses the transitional zone between land and sea ecosystems, influenced by changes both on land and at sea. Landward, this area includes district administrative regions, while seaward; it extends up to 12 nautical miles in accordance with national jurisdiction limits (Tenri et al., 2022). The transition between land and sea in coastal areas forms diverse and highly productive ecosystems, providing significant economic value that supports the livelihoods of coastal communities.

Coastal areas and small islands have value that extends beyond ecological aspects; these areas also play a crucial role as economic hubs at both regional and national levels, particularly in countries with extensive coastlines, such as Indonesia (Pinto et al., 2022). The geomorphology of coastal zones, which includes river deltas, lowlands, wetlands, beaches, dunes, coral reefs, mangrove forests, lagoons, and other coastal features, is a key factor determining the interaction between marine and terrestrial processes (Pertami et al., 2022). The interaction between these processes creates highly complex ecological systems that are vulnerable to various internal and external influences, making these coastal zones highly sensitive to changes and significant challenges (Lacava&Ciancia, 2020). The importance of coastal areas in supporting biodiversity, economic development, and human livelihoods underscores the need for concerted efforts in managing and protecting these areas from various threats, especially from destructive fishing practices.

Destructive fishing practices are one of the main threats to the management of Indonesia's fisheries potential. Destructive fishing involves activities that use materials, tools, or methods that harm fish resources and their environments, such as explosives (dynamite fishing), poisons (cyanide fishing), electric shocks (electro fishing), and other environmentally harmful fishing gear. Data from the World Bank (1996) shows that fish bombing with a 2000-gram bomb can destroy approximately 12.56 square meters of coral reefs. Additionally, the use of electric fishing devices causes shock effects that can kill or stun target fish, including juvenile fish, compromising the sustainability of fish populations. The use of toxins for catching fish, especially ornamental fish, has more severe impacts compared to fish bombs, as toxins can spread more widely through water currents and affect more coral. It can also pose health risks to humans consuming contaminated seafood. Thus, these practices significantly impact maritime security in managing marine and fisheries potential in coastal areas and small islands.

Maritime security encompasses several key concepts focusing on various aspects of sea safety and security. According to Bueger (2015), maritime security consists of four dimensions: national security, human security, economic development, and marine safety. Referring to this theory, it can be analyzed that destructive fishing significantly impacts the marine environment, economy, human security, and national security. Suarthawan et al. (2022) and Willer et al. (2022) describe how these practices lead to massive marine ecosystem degradation, create voids in the food chain, and threaten marine resource sustainability. From an economic dimension, these impacts affect the income of fishermen, the most vulnerable profession. The decline in fish populations reduces fishermen's income, increases operational costs, and raises the price of consumption fish, potentially leading to poverty (Saragih& Trencher, 2020; Suarthawan et al., 2022). From a human security perspective, many coastal communities dependent on the fishing industry face the loss of their primary livelihood and food insecurity, especially as half of the world's population relies on fish as a protein source (Dao, 2023). Physical threats, such as the use of cyanide and fish bombs, also pose poisoning and severe injury risks (Maser et al., 2023). Through theoretical analysis, ultimately, these illegal practices impact national security, contributing to significant losses in the economy, ecosystems, human lives, and national resilience. Therefore, destructive fishing practices are a security threat in coastal and small island waters in Indonesia.

The National Action Plan for Surveillance and Control of Destructive Fishing Activities for the 2019-2023 periods, through Minister of Marine Affairs and Fisheries Decree No. 114 of 2019, demonstrate the government's seriousness in addressing destructive fishing issues threatening marine resource sustainability and various dependent sectors. This action reflects the government's commitment to protecting marine ecosystems and safeguarding the welfare of coastal communities.

Furthermore, the government has issued the Minister of Marine Affairs and Fisheries Regulation No. 26 of 2021 on the Prevention of Pollution, Damage Prevention, Rehabilitation, and Enhancement of Fish Resources and their Environment. This regulation explains that the damage to fish resources and their environment is a decline in the potential of fish resources that can endanger their sustainability in certain waters, caused by actions disrupting the biological balance or life cycle of fish resources.

Overall, the varied impacts of destructive fishing in Indonesia highlight the need for an integrated approach. This approach must combine strict law enforcement, active community involvement, and the implementation of sustainable fishing practices. These efforts aim to protect marine biodiversity and support the livelihoods of coastal and small island communities. With collaboration between the government, communities, and stakeholders, it is hoped that destructive fishing practices can be minimized, enabling better and sustainable management of marine resources for future generations.

The limitations of surveillance resources and infrastructure significantly contribute to the persistence of destructive fishing practices. The extensive geographical area of coastal and small islands does not match the available surveillance resource needs. The lack of community involvement in surveillance has been identified as a major issue, with current efforts heavily reliant on punitive measures rather than proactive community-based management (Shafira& Anwar, 2021). The effectiveness of fishery resource monitoring is hindered by the limited number of supervisory personnel, inadequate data integration systems, and insufficient operational budgets and time. Overall, addressing the limitations of surveillance resources and infrastructure is crucial for effective management in combating destructive fishing practices, including the role of maritime intelligence.

Role of Maritime Intelligence in Combating Destructive Fishing

Role can be defined as the orientation and concept that emerges from the part played by a party in a social context. Individuals or organizations behave according to the expectations within their environment (Riyadi, 2002). Soekanto (2002) explains that role is a dynamic aspect of one's position or status; when someone fulfills their rights and obligations according to their position, they are performing a role.

Based on Law Number 17 of 2011, intelligence roles involve early detection and warning efforts aimed at preventing, denying, and recovering from various forms of threats. This law defines threats as any effort, task, activity, and action originating from domestic or foreign sources that are deemed or can be proven to endanger the nation's safety and security, sovereignty, integrity, and national interests. Assessments of these threats are conducted through various aspects including ideology, politics, economics, socio-culture, defense, and security.

The changing nature of threats to national security, from traditional threats such as inter-state wars to non-traditional threats from non-state actors outside the context of war, demonstrates the multidimensional nature of these threats. Moeljadi et al. (2022) emphasize that this shift enhances the role of intelligence as the front line in national security systems. Intelligence must be capable of identifying traditional, non-traditional, and hybrid threats, with this identification process being crucial in effectively carrying out its duties. In this context, the role of intelligence becomes increasingly important and complex. Success in fulfilling this role depends not only on technical capabilities but also on a deep understanding of the social, political, and economic dynamics that influence national security. Thus, the role of intelligence as the front line in safeguarding national security is essential in addressing evolving threats and ensuring the stability and prosperity of the nation.

Theoretically, roles begin with a series of normative expectations that define a particular position or status within social structure. Understanding the role of individuals or organizations in a social context involves analyzing existing normative expectations and how these expectations shape social interactions. While national intelligence laws do not specifically mention maritime intelligence, practically, the role of maritime intelligence in Indonesia is performed by various institutions. Maritime intelligence involves the collection, processing, analysis, production, and distribution of various types of intelligence such as Humint, Techint, Masint, Sigint, Osint, Geoint, and CI within the broader maritime scope. Institutions such as the Indonesian Navy, Directorate General of Customs and Excise, Ministry of Marine Affairs and Fisheries of the Republic of Indonesia, Indonesian National Police, Directorate General of Sea Transportation, Maritime Security Agency, and the Maritime Industry are involved in maritime intelligence activities in Indonesia (Moeljadi et al., 2022). The term "maritime intelligence" is not new but has gained renewed popularity with the vision of becoming a global maritime axis (Pudyo, 2022). Therefore, maritime intelligence can be defined as intelligence that operates in the maritime domain, referring to activities involving the collection, analysis, interpretation, and distribution of information related to maritime or naval aspects. The primary goal of maritime intelligence is to provide a deep understanding of the situation and threats in the maritime domain and support effective decision-making related to the security and sustainability of maritime resources.

In the context of combating destructive fishing, the Indonesian government currently prioritizes maritime assets, especially marine and fisheries resources, as key drivers of national development programs. Therefore, threats to the utilization of these resources in a destructive manner pose threats to maritime security and national security. Laruelle & Peyrouse (2012) assert that focusing on security that prioritizes development factors to combat societal hardship is more urgent. Thus, the relevance of the role and function of maritime intelligence in addressing the impacts of destructive fishing practices in coastal areas and small islands becomes increasingly important.

Intelligence has several main functions: investigation, security, and mobilization. The two main actions undertaken by intelligence, namely collection and analysis, must be viewed from a broader perspective that connects these activities with the needs of decision-makers and the use of finished intelligence products. This is achieved through the concept of the intelligence cycle, where information is obtained, transformed into intelligence products, and presented to policymakers (Johnson, 2002). In the investigative function, the intelligence cycle includes stages such as planning and direction, collection, processing and exploitation, analysis and production, as well as dissemination and integration (Johnson, 2006; Phythian, 2013; Lebakeng, 2023). In implementing these functions, the involvement of affected coastal communities is crucial as part of a surveillance network and as a source of information due to their deep local knowledge of the maritime environment. In these efforts, coastal communities can act as "local monitors" or "community partners" who contribute directly to maritime authorities through reporting and monitoring activities in coastal and small island areas. This can contribute to monitoring local waters and providing rapid feedback on illegal or damaging activities.

Referring to the intelligence cycle in the investigative function (Johnson, 2006; Phythian, 2013), the maritime intelligence cycle in combating destructive fishing can be described as follows:
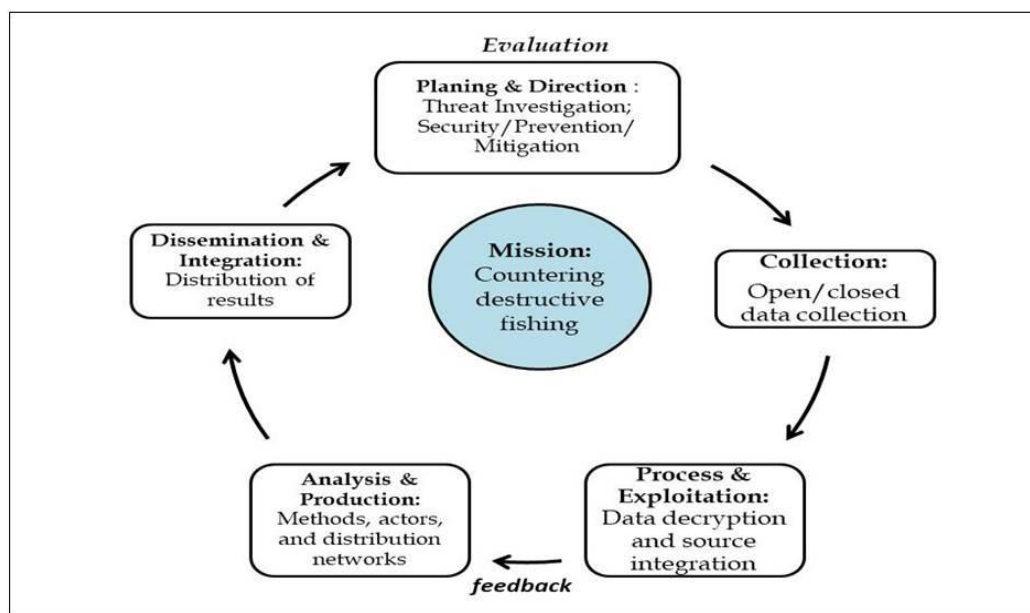
Figure 5. Maritime intelligence cycle in countering Destructive Fishing

Based on the functions of maritime intelligence and its cycle (Figure 5), the analysis of the role of maritime intelligence in combating destructive fishing can be formulated as follows:

1. Investigation Function

Based on the maritime intelligence cycle, namely: 1). Planning & Direction: In the context of destructive fishing, maritime intelligence can identify areas that are frequent sites of illegal activities. This includes analyzing trends, patterns, and predicting illegal activities based on historical data and current information. For example, intelligence can identify areas vulnerable to the use of explosives or cyanide that damage marine environments; 2). Collection: Maritime intelligence gathers data from open and closed sources. Open sources may include reports from the public or publicly available data, while closed sources involve activities such as satellite observations (Geoint), communication interceptions (Sigint), or even undercover operations by intelligence personnel. Data collection includes information on suspected vessels, crews, navigation routes, and activities in vulnerable areas; 3). Process & Exploitation: Collected data is processed to ensure that the information can be effectively used in field operations. This process includes decrypting data and integrating various intelligence sources; 4). Analysis & Production: Maritime intelligence analysis related to destructive fishing will produce detailed intelligence products on methods, perpetrators, and distribution networks involved in destructive fishing practices. This will assist in formulating appropriate enforcement strategies and tactics; and 5). Dissemination & Integration: Analyzed information is then distributed to relevant parties, including law enforcement and policy makers. This allows for coordinated and swift action against the threat of destructive fishing.

Integrating intelligence across agencies strengthens efforts to combat destructive fishing. In this regard, coastal communities can serve as agents of education and advocacy by disseminating information about the dangers of destructive fishing, organizing and participating in workshops or training programs that enhance awareness of sustainable fishing practices.

2. Security Function

Maritime intelligence plays a role in securing marine resources by preventing illegal access and violations of fishing regulations. Relevant agencies can utilize intelligence to establish effective zoning policies and patrol placements based on known risks. In this regard, synergy among supervisory agencies (Indonesian Navy, National Police, Ministry of Marine Affairs and Fisheries, and other institutions) must be optimized for effective oversight. The goal is to detect and prevent destructive fishing activities before significant damage occurs. Routine patrols by maritime authorities help enforce laws and ensure compliance with fisheries regulations. In this function, coastal communities can be involved as local security through the formation of community monitoring groups that collaborate with local authorities to monitor fishing activities and support investigative functions in data collection and information gathering. In addition to reacting to illegal activities, the security function also includes prevention and mitigation efforts. These involve crafting policies that support sustainable fishing practices and avoid harmful methods. Education, training, and empowerment for fishermen on responsible fishing methods are crucial parts of prevention strategies. Implementation of effective and responsible security strategies is key to maintaining the balance between marine resource utilization and preservation of maritime environments.

3. Gathering Function

The gathering function in maritime intelligence is a critical aspect of a comprehensive strategy to address destructive fishing. This function involves activities to garner support and cooperation from various stakeholders, not limited to governmental agencies but also encompassing local communities, private sectors, and non-governmental organizations (NGOs). Public and collaborative education can be strengthened through the use of intelligence to demonstrate the negative impacts of destructive fishing on the economy, environment, and human security. Encouraging local coastal communities and wisdom to actively engage in monitoring efforts and reporting suspicious activities is a crucial part of gathering. This not only enhances the coverage and frequency of monitoring but also reinforces the community's ownership and responsibility for its natural resources. Through a coordinated and inclusive approach, these efforts strengthen response networks that can effectively address the complex issues of destructive fishing as an anthropogenic practice, ensuring sustainability and justice in marine resource management.

Based on the above analysis, the role of maritime intelligence in combating destructive fishing is crucial and complex. Maritime intelligence must focus on high-incidence areas and utilize data from various sources to identify patterns and trends in destructive fishing. Collaboration among government agencies, law enforcement, local communities, and the use of various types of intelligence are crucial to enhancing oversight and mitigation efforts. Furthermore, community-based approaches and education on sustainable fishing practices must be reinforced to reduce dependency on destructive fishing methods.

Through effective data integration and analysis, as well as optimal synergy among institutions, maritime intelligence can assist in planning and implementing more effective and efficient strategies. Thus, resource constraints can be optimized to achieve goals. These efforts not only reduce destructive fishing practices but also contribute to the sustainability of marine resource management. Further alignment among government institutions, enhanced technological capacity, and strengthened cooperation will support the reduction of destructive fishing practices as a maritime security threat in coastal and small island areas.

Conclusion

Destructive fishing constitutes an illegal practice that is highly damaging and poses a significant maritime security threat in coastal areas and small islands. The impacts of destructive fishing endanger the sustainability of fisheries resources and lead to degradation of marine ecosystems, thereby jeopardizing the livelihoods of coastal communities, economies, and food availability and security. Consequently, it represents a threat to national security.

In addressing this issue, maritime intelligence plays a crucial role as a strategy against destructive fishing, given its capacity to gather, analyze, and disseminate information that supports policy-making and law enforcement operations in coastal areas. Maritime intelligence functions significantly in identifying and intervening in destructive fishing practices, including early detection and response to related illegal activities. Collaboration among intelligence roles from various monitoring institutions in coastal areas, alongside the involvement of coastal communities in these efforts, enhances the effectiveness of monitoring policies and operations, fostering more efficient preventive and mitigative actions.

Recommendations from this study include enhancing the implementation and coordination of maritime intelligence to better detect and prevent destructive fishing activities. This involves mobilizing support from local communities, who can act as local monitors and provide crucial information on coastal activities. Furthermore, enhancing surveillance technology and integrating data among institutions are essential to bolster mitigation efforts. Integrating preventive and proactive strategies into national and global maritime security policies is imperative for effectively addressing this threat.

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