

Sustainable Fisheries Empowerment Strategies for Blue Swimming Crab Fishers by the Environmental Defense Fund in Margasari Village

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Abstract

Rajungan (Portunus pelagicus) is one of Indonesia's leading fishery commodities with a high export value. However, the high demand and the use of destructive fishing gear have caused a decline in rajungan stocks in various location in Java sea including the East coast of Lampung. This condition impacts the sustainability of the livelihoods of rajungan fishers. This study describes the sustainable fishery empowerment strategies for rajungan fishers by the Environmental Defense Fund (EDF) through a qualitative approach presented descriptively. Data were collected through observation, document studies, in-depth interviews with 16 informants, and focus group discussions. The results show that EDF's empowerment strategies for fishers in Margasari Village include involving them in policy development and planning in drafting sustainable rajungan management action plans and establishing conservation areas; encouraging social and political actions by strengthening rajungan fisher groups in Margasari Village and conducting community-based monitoring to protect rajungan conservation zones; as well as raising awareness about the importance of sustainable rajungan management and providing training such as data collection, fishery product processing, and citizen journalism. The study suggests that EDF should involve the industry in sustainable fishery empowerment strategies to support the protection of rajungan conservation areas.

Keywords: crab, empowerment, fisheries, fishermen, sustainable, strategy



INTRODUCTION

Indonesia is a maritime country endowed with abundant fisheries resources. Several sources indicate that approximately 37 percent of the world's fish species are found in Indonesian waters (USAID NOAA, 2023). According to the 2023 Performance Report of the Ministry of Marine Affairs and Fisheries (KKP), the fisheries sector contributed 2.66% to the national GDP, amounting to IDR 290.6 trillion. This figure is higher than the 2022 achievement of IDR 275.5 trillion. Among the various fishery commodities, five have emerged as leading commodities: shrimp, crab-blue swimming crab, seaweed, lobster, and tilapia (KKP, 2024a).

The blue swimming crab (*Portunus pelagicus*), as one of Indonesia's flagship fishery commodities, holds significant export value. According to statistics from the Ministry of Marine Affairs and Fisheries (KKP), the export value of blue swimming crab reached US\$ 447.6 million, making it the second largest after shrimp, which reached US\$ 1.73 billion (PDSPKP, 2024). Over the past 5 years, the export value of blue swimming crab is shown in the table below:

Table 1. Export Value of Blue Swimming Crab 2019–2023

Year	Value (USD)	Volume (tons)
2019	393.497.770	25.942.91
2020	367.519.710	27.616.33
2021	613.245.480	32.183,31
2022	484.227.860	29.177,61
2023	447.651.200	29.371,29

Source : (KKP, 2024b) has been reworked

The increasing export value of blue swimming crab has continued into 2024. Based on data released by the Directorate General of Strengthening the Competitiveness of Marine and Fishery Products (PDSPKP), during the period January–November 2024, the export value of blue swimming crab reached US\$ 471.28 million, marking a 15.91 percent increase year-on-year (PDSPKP, 2024). This export value positions Indonesia as the world's second-largest exporter of blue swimming crab after Canada, with the United States as the main export destination, accounting for US\$ 254.40 million or 53.98 percent of Indonesia's total blue swimming crab exports.

The high economic value of blue swimming crab has encouraged many to increase its capture (Kusuma & Dewi, 2017). Unfortunately, the fishing methods employed by fishers often



involve environmentally unfriendly gear, such as trawl boats or trawl nets (Hafinuddin & Edwarsyah, 2017). The use of such gear is a significant factor endangering the sustainability of blue swimming crab resources (Huda et al., 2022). This situation has resulted in resource degradation and a decline in the availability of blue swimming crab in the wild.

Declining blue swimming crab stocks have been observed in several regions, such as the coasts of Java and Lampung. Overfishing has impacted the success of blue swimming crab growth and spawning, potentially threatening the sustainability of its population in Betahwalang Waters, Demak (Edi, Djunaedi & Redjeki, 2018). Similar declines have been reported on other parts of the Java coast, including Pati, Pemalang, and Rembang (Rizal et al., 2023). Meanwhile, in coastal Lampung, the decline is indicated by reduced average weight and size of the blue swimming (Ekawati, Adrianto & Zairion, 2019).

Such declines in blue swimming crab stocks can affect fishers' incomes, as the depletion of sustainable resource potential leads to reduced earnings (Triarso, 2012). This is particularly concerning since most blue swimming crab fishers are small-scale, capture-based fishers whose livelihoods are vulnerable due to their dependence on marine and fishery resources (Elanda & Alie, 2020; Hikmah & Nasution, 2017; Imron, 2003). A recent study by ECONUSA, KNTI, and FEB UI in 2024 confirmed that disruptions in fishing areas—including those caused by fishing gear—are among the sources of vulnerability for fishers, based on case studies in South Aceh, Pemalang, Pangkep, and Ambon (Djamaluddin, Saragih, & Hasly, 2024).

Various stakeholders have responded to these conditions by supporting blue swimming crab fishers through empowerment programs, one of which is the Environmental Defense Fund (EDF) in collaboration with the Ministry of Marine Affairs and Fisheries (KKP) since 2019 in Margasari Village, East Lampung Regency, Lampung Province. The condition of blue swimming crab in Margasari Village from 2019 to 2022 experienced a decline in catch volume, as indicated by the Catch Per Unit Effort (CPUE) value based on net fishing data (KPPRB, 2022). The CPUE in Margasari Village, calculated as the average kg/pis/day, was 0.60 in 2019, dropped significantly to 0.12 in 2020, 0.03 in 2021, and slightly increased to 0.14 in 2022. Such low CPUE values indicate overfishing or that the population being harvested exceeds sustainable utilization levels (Kristiana, Malik & Anwar, 2021; Rahayu et al., 2019).

Previous studies on the empowerment of blue swimming crab fishers have extensively discussed aspects of empowerment stages (Masyhadi, Mauluddin & Lathif, 2024; Saputri et al., 2023; Sunarto et al., 2022; Suwandi & Prihatin, 2020) and empowerment approaches (Effendi et al., 2022; Lebang, Ridwan & Mahyuddin, 2020; Yuliana et al., 2024). Additionally, earlier research



has highlighted aspects of local wisdom (Sunartiningih & Larasati, 2020) and women's involvement in empowerment (Dini, 2023; Indrawasih & Pradipta, 2021). However, considering the declining blue swimming crab stocks are closely related to fisheries sustainability issues, empowerment should not only focus on sustainable yields but also on overall sustainability, encompassing both human and ecosystem sustainability, and aiming for a balance between conservation and welfare (Charles, 2023). Therefore, this article describes the sustainable fisheries empowerment strategies for blue swimming crab fishers implemented by EDF in Margasari Village, East Lampung.

EMPOWERMENT

The Relationship Between Power and Disadvantage in Understanding the Concept of Empowerment (Ife, 2013). The concept of empowerment is fundamentally linked to the relationship between power and conditions of disadvantage. Disadvantaged conditions refer to communities categorized as structurally disadvantaged primary groups, other disadvantaged groups, and individuals experiencing disadvantaged personal circumstances. This framework helps to understand empowerment as a process aimed at addressing power imbalances and social inequities. Aligned with this perspective, Solomon (1976) defines empowerment as a process to overcome feelings of powerlessness arising from negative evaluations of stigmatized groups (structurally) (Lee, 2001). This process involves identifying barriers to power that cause problems and designing and implementing strategies to mitigate the impacts of these barriers, whether direct or indirect.

In the fisheries sector, social empowerment encompasses two key dimensions: the cultural dimension and the structural dimension (Satria, 2015). The cultural dimension involves empowerment aimed at changing economic behavior, educational orientation, attitudes toward technological development, and habitual practices. This dimension is closely related to issues of cultural poverty, such as consumptive lifestyles, low saving capacity, subsistence attitudes, and other patterns of cultural poverty. Meanwhile, the structural dimension focuses on empowerment efforts to improve social structures in order to achieve vertical mobility among fishers, specifically the enhancement of their social status.

Empowerment in fisheries provides fishing communities with opportunities to influence their own future, addressing the impacts of globalization, competition for freshwater and coastal environmental use, and other fisheries-related issues (Raakjær Nielsen et al., 2003). According to this view, an empowerment process is considered successful when individuals and communities



are able to assume responsibility and act effectively to maintain or implement changes in their environment (Jentoft, 2005). This perspective underscores the importance of competence and authority in enhancing fishers' empowerment. Competence, in this context, relates to capacity building, while authority pertains to institutional development.

EMPOWERMENT STRATEGY

The meaning of empowerment varies according to its intended objectives, such as economic, social, environmental, political, and other purposes (Adi, 2024). Furthermore, empowerment is understood as the expansion of assets and capabilities of poor communities to participate, negotiate, influence, control, and hold accountable institutions that affect their lives (Narayan, 2002). The empowerment process within communities can be approached through consensus (local community development), compliance (social planning and policy), and conflict (social action) frameworks (Adi, 2024). Consensus does not merely imply accepting the majority's will or compromise but involves a process where all members can contribute effectively and feel ownership of the decisions made (Ife, 2013).

Self-determination in the community context is a hallmark of empowerment in the form of community development (Glenn, 1993). This approach engages communities in the identification, planning, and implementation of solutions to social and economic problems they face. It requires broad participation from various local groups to set goals and take necessary actions (Rothman et al., 1995). The local aspect in community development refers to the use of approaches and techniques in programs that utilize the local community as the unit of action (Ross, 1995). This process integrates external assistance with organized self-determination efforts and aims to foster local initiatives and leadership, which are considered essential means to achieve desired change.

Conversely, the conflict approach focuses on winning or defeating opponents, which can result in marginalization and alienation of the losing party (Ife, 2013). Conflict approaches, such as social action, become necessary when structural barriers exist. There are three main strategies to achieve empowerment for disadvantaged groups: policy and planning, social and political action, and education and consciousness-raising (Ife, 2013).

a. Empowerment Through Policy and Planning

Empowerment via policy and planning is achieved by developing or reforming structures and institutions to realize more equitable access to resources, services, and opportunities for participation in community life (Ife, 2013). For instance, economic policies aimed at reducing



unemployment can be viewed as empowerment, as they enhance community resources, access, and employment opportunities. Additionally, providing adequate and secure resources to communities reflects a critical empowerment strategy to ensure the availability of means for income generation.

Policy is a relatively stable course of action intended to be followed by an actor or a set of actors in addressing issues or matters of concern (Anderson, 2003). This perspective focuses on what is actually done rather than what is proposed, distinguishing policy as a specific choice among alternatives, and viewing policy as something that unfolds over time.

When elaborated further, empowerment strategies through policy and planning require policymakers to be responsive and to set priorities aligned with community needs. To strengthen community involvement, it is important to encourage broader participation and ensure opportunities for such participation (Glenn, 1993). A concrete form of this can be through partnerships aimed at identifying community needs. This view aligns with opinions emphasizing the importance of inclusion and participation in empowerment (Narayan, 2002). In brief, inclusion focuses on determining who is involved, while participation addresses how people engage and have roles in the process of setting priorities and making decisions.

Policy is crucial because it can regulate the actions of all actors within society (Narayan, 2002). Findings indicate that poor people are generally excluded from decision-making and resource management processes that affect their lives. Achieving inclusion and participation requires changes in rules that provide space for communities to discuss and participate directly or indirectly in determining local and national priorities, budgeting, or basic services.

Planning can be understood from two perspectives: planning of change and planning for change (Subianto, 2020). Planning of change relates to managerial issues and is defined as changes emerging from within or under the control of an organization, which may involve direction, development, or timing. In contrast, planning for change requires a more adaptive approach in its implementation, as it deals with externally imposed or unforeseen changes. In social planning, referring to Rothman and Tropman (1987), achieving change requires strategies that include gathering facts related to the problems faced before determining rational and feasible actions to be implemented (Adi, 2024).

Appropriate organizational forms for planning change can be semi-bureaucratic or organic (Subianto, 2020). Semi-bureaucratic structures focus more on task details and relationships among tasks, usually hierarchical. Organic structures, on the other hand, are considered more capable of adapting quickly and effectively due to their ability to process information, especially



compared to the limitations of traditional bureaucratic organizations that emphasize formal channels and vertical communication. Equally important to policy is its implementation, which not only concerns the responsibilities of administrative bodies but also involves networks of political, economic, and social power that directly or indirectly influence the behavior of stakeholders involved, ultimately affecting the expected or unexpected impacts.

Based on the above discussion, empowerment strategies through policy and planning fundamentally focus on ensuring that decision-making for community interests considers participation. This means there must be access and participatory roles for the community so that the resulting policies are relevant to the targets desired by the community. In the context of fisheries, this strategy also enables the government to regulate local fishing activities through fisheries management systems such as community-based management (Satria & Matsuda, 2004).

Community-based fisheries management can be conducted through ecosystem management, conservation, and rehabilitation (Charles, 2023). From a policy perspective, the government must consider community impacts, as well as the diversity and complexity of local situations, and the value of objectives for those involved in decisions regarding fishery resources. This relates to rights encompassing collective community access and use rights, as well as management rights at the local level. To achieve the objectives of such policies, at least local knowledge, participatory approaches, and institutions supporting communities in enhancing the sustainability of conservation efforts must be taken into account.

b. Empowerment Through Social and Political Action

Empowerment through social and political action emphasizes the importance of struggle and political change to increase effective power. This approach aligns with activist strategies and seeks to encourage communities to enhance their power through various forms of direct action or by supporting their effectiveness in the political arena (Ife, 2013). In line with this, within the context of empowerment, social action is intended to enable communities to have an equal position with decision-making institutions or to possess political power to influence decisions made (Rothman et al., 1995). Social action is one model of community intervention aimed at creating fundamental changes in society, including the redistribution of power and resources as well as gaining access to decision-making for disadvantaged groups (Rothman et al., 1995). Social action is generally carried out through confrontational approaches by mobilizing masses to oppose targets that cause political or economic harm. However, social or community action encompasses several tactics, including collaborative, campaign, and coercive approaches (Glenn, 1993). Collaborative tactics, such as information disclosure and sending representatives or



delegations, are employed when the target (decision-makers/organizations) is perceived to have the authority to make relevant policy decisions regarding resource allocation and is responsive. Campaign tactics (petitions, mass letter writing, public meetings) are used when the target is perceived to have limited decision-making power. Meanwhile, coercive tactics essentially involve direct confrontation, such as strikes.

There are several forms of coercive tactics in the form of blocking maneuvers, including sit-ins, creating obstacles or barriers to the efforts of the targeted group, direct intervention with parties requested to change, boycotts, and destructive demonstrations (Zander, 1990). Nonetheless, the use of this approach must ensure that change agents remain aware that their actions fundamentally aim to improve the welfare of the communities they seek to assist (Adi, 2024). Therefore, change agents in social action are usually professional organizers experienced in organizing movements, mobilization, and agitation, as well as understanding the issues of concern within the group's action. Organizers must allocate time to provide information, educate, and persuade the community to engage in the intended movement.

To encourage community action, local organizational capacity is required to enable people to cooperate, self-organize, and mobilize resources to solve common problems (Narayan, 2002). According to Narayan (2002), poor people, including fishers, are often marginalized from formal systems and must seek mutual support and strength to address everyday problems. In such situations, communities may form informal or formal organizations, such as fisher groups, to meet their needs. Organized communities are more likely to have their voices heard and demands fulfilled compared to less organized communities. In other words, empowering strong local organizations can help fishing communities improve their bargaining position and advocate for their rights.

Empowerment through social and political action plays a crucial role in enhancing the power of marginalized communities to influence decision-making that impacts their lives. By building local organizational capacity, communities can unite to overcome challenges and mobilize resources to achieve shared interests. The confrontational approach adopted in social action enables communities to demand the redistribution of power and greater access to decisions affecting their lives. Therefore, community organizing, such as fisher groups, becomes essential to strengthen their bargaining position and advocate for fundamental rights and needs.

One of the most important rights for fishers is the right to fish. Based on records from the International Collective in Support of Fishworkers (ICSF) and the World Forum of Fisher Peoples (WFFP) in 2009, there are five fishing rights: the right to fish for food; the right to fish as a



livelihood; the right to a healthy household, community, and culture; the right to live and work in a healthy ecosystem to support future generations of fishers; and the right to participate in decisions affecting fishing activities (Charles, 2023). Rights-based empowerment of fishers can be achieved through various means, such as utilizing management institutions and pressure groups at the local level to create incentives for conservation and help prevent premature fishing (rush for fish); improving management efficiency; and enhancing the implementation of law enforcement instruments at the local level.

c. Empowerment Through Education and Consciousness-Raising

Empowerment via education and consciousness-raising highlights the significance of an educative process (broadly defined) in supporting communities to enhance their capacity (Ife, 2013). This form of empowerment helps individuals understand societal structures and oppression, providing knowledge and skills to work effectively toward change.

Awareness enhancement is fundamentally a dialectical process, in which poor and oppressed groups become increasingly conscious of their situation and take efforts to change their conditions (Moenawar, Priatna & Santoso, 2019). The stages in developing awareness include self-identification (mimesis), seeking ways to atone for mistakes (guilt-expiation rituals), developing modes of thinking that separate oneself from reality and action (psychological withdrawal), creating new realities based on historical conditions, recognizing similarities and differences, building solidarity within their group (social withdrawal), and alternative recognition of the situation involving collective action to assert dominance, after individuals experience commonality and share experiences that can mobilize action (contraversion) (Moreau, 1990).

The levels of awareness are as follows: *first*, semi-intransitive awareness, which is magical in nature, linking situations to superior powers or external agents, where obedience is required due to lack of control. *Second*, naive awareness, which regards problems as coincidental, although it is capable of questioning and understanding reality. *Third*, transitive critical awareness fundamentally no longer views problems as coincidental but as structural issues. Critical awareness integrates the self with reality. Transitive critical awareness can analyze problems, hold convictions in discussions, and is able to accept or reject ideas (Freire, 2001).

Achieving critical awareness requires critical education to help develop human capacity to perceive obstacles. Such education needs to encourage individuals to courageously discuss environmental issues and engage actively in their environment, warn against contemporary threats, and provide confidence and strength to face these threats (Freire, 2001). Consistency in reassessment, analysis of findings, application of scientific methods and processes, as well as



viewing oneself in a dialectical relationship with social reality, is necessary. The process toward critical awareness requires active, dialogical, and critical methods; changes in educational content; and the use of specific techniques such as theme selection and codification.

Education in the context of empowerment can assist communities in acquiring knowledge that enables them to understand how to utilize their various capacities, such as defining needs, thinking critically, accessing and utilizing resources, and controlling reproduction, which is closely related to women's empowerment (Ife, 2013). Education is also associated with human capacity to influence, negotiate, control, and hold others accountable to improve welfare (Narayan, 2005).

Education can also be delivered through training. Training is a form of education for community development (Ife, 2013). It is more specific as it teaches practical skills to community members. Training is most effective when requested by the community itself, as the outcomes are considered more productive. Equally important, learning is more effective when experience-based; for example, in coastal communities, resource users possess extensive traditional knowledge (Pomeroy et al., 2006).

Building knowledge in the fisheries context can be achieved through various means and obtained from diverse institutions such as local communities, government, NGOs, and academic institutions. Traditional and local knowledge can provide insights that complement scientific knowledge in terms of scope, content, and ways of managing social-ecological systems and alternative approaches (Tengö et al., 2017). Knowledge in fisheries can be used to address socio-cultural and institutional issues by encouraging participation in decision-making and research by fishers, such as community-based management and co-management, as well as policies to ensure fishers have secure and permanent access to fisheries resources necessary to sustain knowledge bases continuously.

Knowledge can also be used to address management problems, for example, the lack of scientific information to support management, thereby requiring local knowledge as a basis, such as mapping fishing ground distribution, estimating fishing effort intensity, and developing management recommendations. Therefore, collaboration between fishers and researchers is essential to co-produce knowledge.

RESEARCH METHOD

This research employs a qualitative approach. Qualitative research is necessary to comprehensively examine the various efforts undertaken by EDF to empower the blue swimming crab fishing community in Margasari Village, Labuhan Maringgai District, East Lampung Regency,



Lampung Province, through multiple, complementary perspectives. This study is descriptive in nature, aiming to illustrate the subject matter in detail.

Data collection methods include document study, observation, in-depth interviews, and focus group interviews. Informant selection in this research utilized purposive sampling, ensuring the acquisition of information aligned with specific criteria. The informants in this study comprised 16 individuals representing key stakeholders: EDF staff; blue swimming crab fishers from Margasari Village, including members of the Fishers Forum, Community Surveillance Group (Pokmaswas), and Processing and Marketing Group (Poklahsar); government representatives from the Lampung Province Marine and Fisheries Department (DKP), Margasari Village Government, and Extension Workers from the Ministry of Marine Affairs and Fisheries (PPL); and program partners from Mitra Bentala.

RESULT AND DISCUSSION

The abundance of blue swimming crab resources does not guarantee the welfare of fishers in Margasari Village. EDF identified this situation as a consequence of the open access policy in fisheries, which results in open competition among fishers to catch blue swimming crabs. Those with more powerful fleets and more advanced fishing gear are able to reap greater benefits, while small-scale fishers with limited fleets and simple gear are often marginalized. Open access encourages the exploitation of fisheries resources, threatening the long-term sustainability of the fishery system (Charles, 2023).

Since 2016, EDF has established cooperation with the Ministry of Marine Affairs and Fisheries (KKP) to support the sustainable management of blue swimming crab in Lampung. Margasari Village was selected as one of the program implementation sites because fishers in this area are among the most intensive users of blue swimming crab resources in the eastern coastal waters of Lampung. The area also has a significant presence of migrant (andon) fishers and the use of environmentally destructive fishing gear such as trawls. Various efforts undertaken by EDF to empower blue swimming crab fishers in Margasari Village include:

Facilitation of Action Plan Development and Establishment of Blue Swimming Crab Conservation Zones

EDF has been involved in the development of the Sustainable Blue Swimming Crab Fisheries Management Action Plan since 2017. EDF facilitated a series of meetings to draft the action plan document, involving various stakeholders such as government agencies, experts,



fisheries business actors, NGOs, and blue swimming crab fishers. Identifying who is involved and how people participate in decision-making is a crucial aspect of empowerment (Narayan, 2002). In this regard, EDF encouraged the participation of blue swimming crab fisher groups from Margasari Village as stakeholders to ensure equal input in the formulation process of the Sustainable Blue Swimming Crab Fisheries Management Action Plan in Lampung. Providing space for the community to discuss and directly participate in policy-making is an essential approach for regulatory change (Narayan, 2002).

Inputs from fisher groups were incorporated into the formulation of issues/problems, objectives, targets, indicators, and strategic plans within the Action Plan development process. This aligns with the importance of considering community impacts, as well as the diversity and complexity of local situations, and the value of objectives for those involved in decision-making regarding fisheries resources (Charles, 2023). The action plan document was developed over one year and was officially established by Lampung Governor Decree No. G/164/V.19/HK/2018 concerning the Action Plan for Sustainable Blue Swimming Crab Fisheries Management in the Eastern Coastal Waters of Lampung. Subsequently, to accommodate current conditions, EDF facilitated a review process of the action plan, which was incorporated into Lampung Provincial Regulation No. 47 of 2022 on the Implementation of the Sustainable Blue Swimming Crab Fisheries Management Action in the Eastern Coastal Waters for the 2022–2027 period.

EDF also advocated for the establishment of a permanent juvenile blue swimming crab protection zone in the Way Kambas Waters, with its southern part bordering Margasari Village. EDF supported the Lampung Marine and Fisheries Department (DKP) in proposing the blue swimming crab conservation area within the Way Kambas conservation area, conducting a series of public consultations starting with fisher groups in Margasari Village. EDF utilized scientific data and the experiential knowledge of blue swimming crab fishers in Margasari Village to identify key fishing areas within the Way Kambas waters. The importance of local knowledge, participatory approaches, and supportive institutions are critical considerations in fisheries policy (Charles, 2023).

As a result, the Way Kambas Aquatic Conservation Area was designated by the Minister of Marine Affairs and Fisheries Decree No. 2 of 2023, covering 60,421 hectares. The conservation area is divided into core zones and limited-use zones. The core zone is designated for absolute protection of juvenile blue swimming crab habitats (with no fishing activities permitted), while the limited-use zone, especially its capture fisheries subzone, allows small-scale fishers to catch blue swimming crabs only with environmentally friendly fishing gear.



EDF's efforts in action plan development and conservation area establishment represent empowerment through policy and planning. Empowerment via policy and planning is achieved by developing or reforming structures and institutions to ensure more equitable access to resources, services, and opportunities for community participation (Ife, 2013). The establishment of management and conservation areas for blue swimming crab can be seen as an important empowerment strategy to ensure the availability of resources that can be utilized to generate income.

Strengthening Blue Swimming Crab Fisher Groups

Since 2019, EDF has been strengthening fishing groups formally organized as Joint Business Groups (Kelompok Usaha Bersama, KUB) in Margasari Village. EDF supported the revitalization and mentoring of fisher groups in Margasari Village, involving Mitra Bentala, Community Organizers (CO), the Marine and Fisheries Department (DKP), and Fisheries Extension Workers (PPL). These efforts included active participation in fisher group meetings in Margasari Village to discuss various issues, particularly blue swimming crab management, the importance of organization, and the development of work plans for the fisher groups. In parallel, EDF encouraged the involvement of Margasari Village fisher groups as stakeholders in the Sustainable Blue Swimming Crab Fisheries Management Team, ensuring the community has an equal standing with decision-making institutions and political power to influence decisions (Rothman et al., 1995).

EDF also supported the revitalization of the "Jaya Bahari" Community Surveillance Group (Pokmaswas) in Margasari Village to participate in monitoring the Way Kambas fisheries conservation zone. Pokmaswas received guidance and training to better understand their duties and functions, such as regulations on prohibited fishing gear, destructive fishing activities, and surveillance reporting SOPs. Additionally, EDF and DKP Lampung produced the Pokmaswas Pocket Book in 2023, serving as a guide for all Pokmaswas members in conducting surveillance within their jurisdiction. This is particularly important given threats to Pokmaswas from trawl users. The actions of Margasari Village's Pokmaswas include sea patrols, direct outreach to fishers violating conservation zone regulations (such as the use of non-environmentally friendly vessels or gear, and the capture of juvenile or berried blue swimming crabs). These actions demonstrate that organized communities are more likely to have their voices heard and their demands met compared to less organized communities (Narayan, 2002).

EDF, together with Mitra Bentala, CO, and PPL, also facilitated fisher group aspirations through meetings with various stakeholders, such as the Chair and Members of Commission 2 of



the Lampung Provincial Parliament and the Directorate of Water Police (Pol Airud) of Lampung Regional Police. Such community actions employ collaborative tactics, which can be effective when decision-makers are responsive (Glenn, 1993). To date, Pokmaswas Jaya Bahari of Margasari Village has reported several violations to law enforcement, particularly the use of trawl gear in the Way Kambas conservation zone.

EDF's efforts to strengthen blue swimming crab fisher groups in Margasari Village constitute empowerment through social and political action. This approach is activist in nature, aiming to encourage communities to increase their power through various forms of direct action or by supporting their effectiveness in the political arena (Ife, 2013). Over time, blue swimming crab fisher groups in Margasari Village, consisting of KUB and Pokmaswas, have formed the East Lampung Traditional Fishers Communication Forum (Forkom Netral) as a platform for collective action. This aligns with the notion that to encourage community action, local organizational capacity is required, enabling individuals to collaborate, self-organize, and mobilize resources to address issues of common interest (Narayan, 2002).

Enhancing Knowledge and Awareness Among Fisher Groups

EDF provides training on sustainable fisheries management to stakeholders, particularly fisher groups. EDF utilizes simulation methods to convey the issues of open access, where one participant acts as a collector with a certain amount of money, while others act as fishers free to catch fish with their chosen gear. The results demonstrate that fishery resources can be depleted without regulation, whereas management leads to better outcomes.

EDF supports a scientific basis for sustainable blue swimming crab management through monitoring stock health using the Spawning Potential Ratio (SPR) indicator and the prohibition of destructive fishing gear. EDF has conducted Data-Limited Fisheries Management training, covering best practices in fisheries data collection, data-limited analysis methods, development of harvest control rules and management actions, and the design of communication strategies for managers and stakeholders, especially blue swimming crab fishers. Monitoring (data collection), fisheries problem studies (gear violations), and science-based assessments for decision-making are examples of functional knowledge production (Charles, 2023).

The data collected is used, among other purposes, to raise awareness of the importance of blue swimming crab conservation. Conservation is necessary because utilization data from eastern coastal Lampung indicates overfishing and declining blue swimming crab stocks. In order to provide an understanding of the necessity of conservation, EDF, together with DKP Lampung,



conducted a series of public consultations starting with discussions with fisher groups. In these consultations, many Margasari Village fishers shared similar experiences of increasing difficulty in catching blue swimming crabs, catching smaller-sized crabs, and having to travel farther offshore. This demonstrates that traditional and local knowledge can provide insights that complement scientific knowledge (Tengö et al., 2017).

In addition to awareness-raising, EDF and CO have organized several training sessions for women fishers in the Processing and Marketing Group (Poklahsar) in Margasari Village. EDF-supported training for Poklahsar includes financial literacy, business bookkeeping, fish product processing, and marketing. One notable training was on packaging and labeling for Household Industrial Food (PIRT). While some Poklahsar members already produced processed fish products such as crackers and shrimp paste, they were not yet aware of the importance of labeling. This training aimed to enhance product branding and ensure quality.

Other training activities included citizen journalism, photography, and social media, delivered by EDF to improve technical skills in journalism and social media among blue swimming crab fishers and women fishers in Margasari Village. These trainings raised awareness among Margasari fishers of the importance of citizen journalism and social media in the digital era. Citizen journalism and social media can be used as tools for fishers to communicate issues or aspirations regarding sustainable blue swimming crab management. One video produced by the fisher group in Margasari Village, documenting the loss of nets due to trawl gear, attracted the attention of the central government, specifically KKP and the Governor of Lampung.

All of these efforts by EDF to enhance the understanding of blue swimming crab fishers represent empowerment through education and consciousness-raising. Empowerment through education and consciousness-raising requires an educative process (Ife, 2013), which EDF implements through simulations, scientific approaches, and public consultations. Additionally, training in processing, marketing, citizen journalism, and social media provides knowledge and skills necessary for effective participation in change.

CONCLUSION

EDF's sustainable fisheries empowerment strategies include: *first*, a strategy through policy and planning, encompassing EDF's involvement in the development of a sustainable blue swimming crab management action plan and support for the designation of the Way Kambas waters as a blue swimming crab conservation zone; *second*, a strategy through social and political action, including strengthening groups by enhancing the participation of fisher groups in decision-



making, revitalizing community conservation surveillance groups, and facilitating the communication of aspirations to local officials; and *third*, a strategy through awareness-raising and education, including increasing understanding of the importance of blue swimming crab fisheries management through simulations, discussions, public consultations, and enhancing knowledge with training in processing and marketing, as well as citizen journalism and social media.

FUTURE DIRECTIONS

The sustainable fisheries empowerment strategy implemented by EDF has yet to extensively reach or involve the industry in the protection of conservation areas. This is significant, considering that the industry is a key component in the blue swimming crab supply chain; therefore, the sustainability of the blue swimming crab fishery will also impact the continuity of the industry's business itself. Involving the industry in the protection of blue swimming crab conservation areas could serve as a strategic approach to encourage financial contributions from the industry to support the preservation of blue swimming crab resources, such as operational support for community-based monitoring (Pokmaswas).

ACKNOWLEDGEMENT

This research was made possible with the support of all involved parties, particularly the EDF staff, the Margasari Village Fishermen Group, Mitra Bentala, Group Facilitators (CO), as well as government elements including the Lampung Provincial Marine and Fisheries Service, Margasari Village Government, and Fishery Extension Officers from the Ministry of Marine Affairs and Fisheries. The support of family and academic supervisors was also a crucial factor in facilitating the completion of this thesis research.

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