Egyptian Journal of Aquatic Biology & Fisheries
Zoology Department, Faculty of Science,
Ain Shams University, Cairo, Egypt.
ISSN 1110 – 6131
Vol. 29(4): 2069 – 2085 (2025)
www.ejabf.journals.ekb.eg

Integrative Approach: Production, Development, and Specialization Index of Capture Fisheries to Determine Leading Commodities in Tanjung Jabung Barat Regency, Indonesia

Farhan Ramdhani[1*], M. Hariski[1], Yoppie Wulanda[1], Septy Heltria[1], Wulandari[1], Ester Restiana Endang Gelis[1], Sri Novianti[2]

[1]Department of Fisheries, Faculty of Animal Science, Universitas Jambi, Jambi, 36361. Indonesia
[2]Department of Animal Science, Faculty of Animal Science, Universitas Jambi, Jambi, 36361. Indonesia

***Corresponding Author:** farhanramdhani@unja.ac.id

ARTICLE INFO

Article History:
Received: Oct. 24, 2024
Accepted: July 9, 2025
Online: Aug. 2, 2025

Keywords:
Economic growth,
Fisheries management,
Leading commodities,
Small scale fisheries

ABSTRACT

Small-scale fisheries (SSF) play an important role in food security and regional economic growth. The fulfilment of fisheries data is crucial in supporting sustainable and targeted SSF management policies, one of which is through determining leading commodities. This study applied an integrative approach based on the criteria of Location Quotient (LQ) (>1), Shift Share Analysis (SSA) (>0), and Specialization Index (SI) (>1). The analysis is strengthened by data validation through interviews with relevant stakeholders, capture and processing fisheries actors, distributors, and coastal communities in Tanjung Jabung Barat Regency. The results showed that there were 7 leading commodities from 46 species caught in the research location, including *Sphyraena barracuda, Pampus argenteus, Pomadasys andamanensis, Macolor niger, Anadara granosa, Sardinella fimbriata,* and *Metapenaeus dobsoni*. These leading commodities are managed according to fish characteristics and market demand such as export commodities, product diversification, and community food needs. Categorization as leading commodities suggested that these species have a great potential to be developed in the region. Therefore, this study would become a basis for developing sustainable fisheries management strategies in this area.

INTRODUCTION

The fisheries sector of Tanjung Jabung Barat Regency is dominated by small-scale fisheries (SSF), which hold immense potential to support regional economic development. In 2023, the total volume of caught fish reached 22,989.61 tons, comprising 46 species. The top three captured species were *Eleutheronema tetradactylum* (3,816.66 tons), *Acetes indicus* (2,157.72 tons), and *Anadara granosa* (1,991.63 tons) **(Fishery Service of Tanjung Jabung Barat Regency; Marine and Fishery Service of Jambi Province, 2024)**.

From an economic perspective, SSF plays a vital role in contributing to food security, regional income, and livelihood stability **(Liu *et al.*, 2022)**. The economic and social potential of SSF serves as an essential benchmark for designing a fisheries policy development framework in the region.

Efforts to intensify the capture fisheries sector are expected to significantly improve the prosperity of local communities, particularly fishers. This aligns with Law Number 25 of 1999 and Law Number 32 of 2004 concerning Regional Government, which grant regional authorities the mandate to develop marine and fishery resources as a key driver of economic growth and community welfare **(Suryawati, 2021)**. This initiative is further supported by Presidential Instruction Number 7 of 2016 concerning the acceleration of the national fishery industry, aimed at improving the livelihoods of fishers, cultivators, processors, and distributors, as well as boosting employment and foreign exchange earnings **(Hidayat, 2018)**.

However, marine and fisheries management in Indonesia has increasingly shifted toward the adoption of sustainable fishery practices. This presents a significant challenge for policymakers: to design policies that optimize both capture volume and economic profit while minimizing ecological and social risks **(Hilborn, 2007; Campling *et al.*, 2012; Rossetto *et al.*, 2015)**. The sustainability paradigm is still evolving to strike a balance among ecological, social, and economic dimensions, particularly since the marine and fisheries sector plays an integral role in the broader socio-economic stability of coastal nations **(Cisneros-Montemayor *et al.*, 2019)**.

Due to the persistent issue of insufficient data in many developing countries' SSF sectors, attention must shift toward generating reliable and comprehensive data that policymakers can use to make informed decisions. Identifying leading commodities within the capture fisheries sector is one viable approach to producing essential data for effective fisheries management **(Einarsson & Óladóttir, 2020)**. This identification helps evaluate which species among various catches hold the greatest strategic economic value **(Irham & Iksan, 2021)**.

Leading commodity criteria are typically based on factors such as high production volume, year-round availability, established market share, and production value exceeding that of other economically important species landed at fishing ports **(Mustofa, 2018)**. These commodities should possess high competitiveness, enabling them to contribute more substantially to regional economic growth **(Irnawati *et al.*, 2011; Ridwan *et al.*, 2018)**. However, the development of capture fisheries based on leading commodities must be underpinned by strong fishery management frameworks, as weak governance can lead to policy inefficiencies and resource depletion **(Bediye, 2022)**.

In Tanjung Jabung Barat, several aspects of capture fisheries remain under-documented, including the identification of leading commodities. This lack of information hampers the ability of both regional authorities and fishers to prioritize effectively in fishery management planning. Access to such data is also crucial for shaping targeted policies that expand market access and enhance the management of the capture fisheries processing industry.

Integrating comprehensive data analytics has proven to be a crucial asset in fisheries management, enabling near real-time stock monitoring and agile responses to environmental changes. Successful examples in Indonesia, such as Pidie District's use of Location Quotient (LQ) analysis to identify leading species like marlin and tuna, and Situbondo Regency's commodity-based fishery strategy, demonstrate the value of data-driven approaches for guiding sustainable and economically viable fisheries policies. Incorporating fishers' local knowledge into data systems further enriches the decision-making process, while balancing high-value species with sustainable management of lesser-known catches ensures inclusive economic and food security benefits **(Pahlewi & Handayani, 2023; Purnama *et al.*, 2023)**.

Unfortunately, both governments and fishers often focus narrowly on high-selling commodities, overlooking those that may serve as catalysts for long-term, community-based economic revitalization **(Wibowo, 2021)**. Fishing is also not the sole livelihood for many residents of the area, and thus, the development of capture fisheries based on leading commodities must be approached with consideration for multiple dimensions—ecological, economic, social, ethical, institutional, technological, and legal **(Alder *et al.*, 2000; Hertati *et al.*, 2023)**.

Recognizing the urgent need for credible data, this study aimed to determine the leading commodities in the capture fisheries sector that should be prioritized in formulating a sustainable fisheries management strategy for Tanjung Jabung Barat Regency, Jambi Province, Indonesia.

MATERIALS AND METHODS

Data were collected from Kampung Nelayan, Tungkal Ilir, Tanjung Jabung Barat Regency, Jambi Province (Fig. 1). The survey and observation method were carried out from June until September 2024 to collect primary and secondary data. Primary data covered the identification of fish species, prices, and current condition of capture fishery areas. Using certain criteria related to intended information, a purposive sampling method was applied to reveal the primary data **(Ferdian *et al.* 2012)**.

The information was also gathered from observation and interviews with several parties including 1) Staff of the Capture Fisheries Division of Fisheries Service of Tanjung Jabung Barat Regency, (2) Head of Capture Fisheries Division of Fisheries Service of Tanjung Jabung Barat Regency, (3) Head of Fisheries Service of Tanjung Jabung Barat Regency, (4) Fisheries Extension Officer of Tanjung Jabung Barat Regency, (5) Local Fishermen with different fishing gears, (6) Producers of fisheries product, (7) Kuala Tungkal Coastal Fisheries Port, and (8) Head of Kuala Tungkal Fish Landing Warehouse.

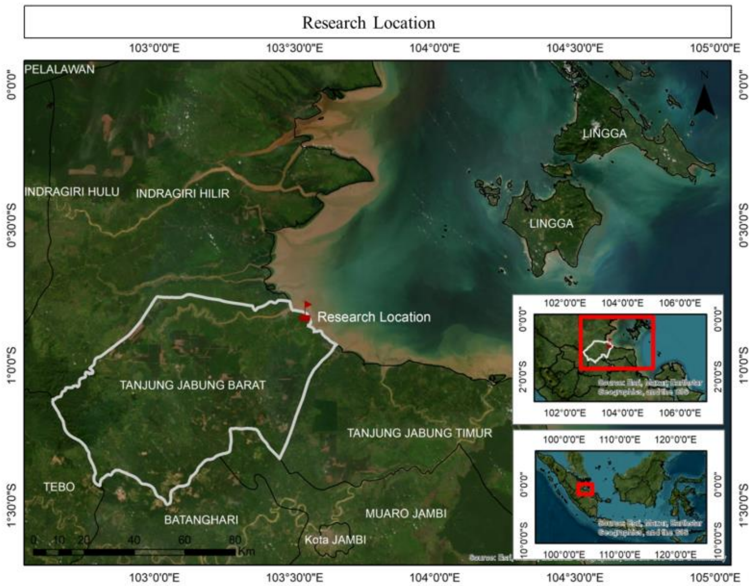

Fig. 1. Research location

Meanwhile, the secondary data were collected from the archives of Tanjung Jabung Barat Regency Fisheries Services and Jambi Province Marine and Fishery Service. The data covered the number of production and production value of catches per species in Tanjung Jabung Barat Regency and Jambi Province in 2019-2023. The data were then analyzed by using several methods namely:

1. Location quotient analysis (LQ)

Location quotient analysis is a statistical analysis that compares the concentration of an industry in a region to its concentration across a larger geographic area, usually the nation. LQ are calculated by dividing the share of an industry in a region's economy by the same industry's share in the national economy. The data helps to identify whether a sector or commodity is a basis or non-basis **(Sirait, 2013)**. Regarding basis economy theory, LQ technique is relevant to decide the leading commodities, especially viewed from supply (production and population) **(Bakti & Herlina, 2020)**. The LQ analysis was calculated using the following equation **(Baer & Brown 2006; Fadillah & Yusalina, 2011)**:

$$LQ = (vi/vt)/(Vi/Vt)$$

vi = Production of fish type A at Tanjung Jabung Barat Regency,
vt = Total Production at West Tanjung Jabung Barat Regency,
Vi = Production of fish type A at Jambi Province,
Vt = Total Production at the level of Jambi Province,

**LQ < 1 = Non- Basis Commodity, LQ > 1 = Basis Commodity*

2. Shift share analysis (SSA)

Shift share analysis (SSA) is an analysis that compares a developing sector in an area with a larger scope (regional/national). SSA reveals the leading commodity in

Tanjung Jabung Barat Regency compared to Jambi province. SSA was calculated using the following equation **(Kohar & Paramartha, 2012; Irham & Iksan, 2021)**:

$$SSA = \underbrace{(Xn(t1)/Xn(t0)-1)}_{A} + \underbrace{(Xi(t1)/Xi(t0)-Xn(t1)/Xn(t0)}_{b} + \underbrace{(Xij(t1)/Xij(t0)-Xi(t1)/Xi(t0))}_{c}$$

a = Regional share component,
b = Proportional shift component,
c = Differential shift component,
Xn(t1) = Total marine fisheries production in Jambi Province in 2023,
Xn(t0) = Total marine fisheries production in Jambi Province in 2019,
Xi(t1) = Total fish production of commodity A in Jambi Province in 2023,
Xi(t0) = Total fish production of commodity A in Jambi Province in 2019,
Xij(t1) = Fish production of commodity A in Tanjung Jabung Barat Regency in 2023,
Xij(t0) = Fish production of commodity A in Tanjung Jabung Barat Regency in 2019,
Xi(t1) = Total production of commodity A in Jambi Province in 2023,
Xi(t0) = Total production of commodity A in Jambi Province in 2019,

**SSA < 0 = Fisheries growth in Tanjung Jabung Barat Regency is slower than in Jambi Province*
**SSA > 0 = Fisheries growth in Tanjung Jabung Barat Regency is faster than in Jambi Province*

3. Specialization index analysis (SI)

Specialization analysis is responsible for monitoring the specialization of fishery production in a regency or a city toward a particular species **(Sari *et al.*, 2020)**. SI was calculated using the following equation:

$$SI = (zi/zt) - (Zi/Zt) \times 100\%$$

zi = Species A production in Tanjung Jabung Barat Regency,
zt = Total fishery production in Tanjung Jabung Barat Regency,
Zi = Species A Production in Jambi Province,
Zt = Total fishery production in Jambi Province,

**SI < 1 = Commodity that has no specialization*
**SI > 1 = Commodity that has specialization*

4. Overlay analysis

Overlay analysis is applied to analyze leading commodities by combining Location Quotient and Shift Share analysis **(Bakti & Herlina, 2020; Irham & Iksan, 2021)**. To strengthen the data, a specialization analysis was also conducted. The criteria for specialization include an LQ value greater than 1 (LQ > 1), a positive SSA value (SSA > 0), and an SI value greater than 1 (SI > 1) **(Mustofa *et al*. 2018)**.

RESULTS

There is a gradual improvement in total fishery production in Tanjung Jabung Barat from 2019-2023. The total productions in order are 21,079.99 tons (2019), 21,506.59 tons (2020), 22,371.71 tons (2021), 22,680.17 tons (2022), and 22,989.61 tons (2023). This enhancement is followed by a growth of fishing vessels in the fishing area (Fig. 2).

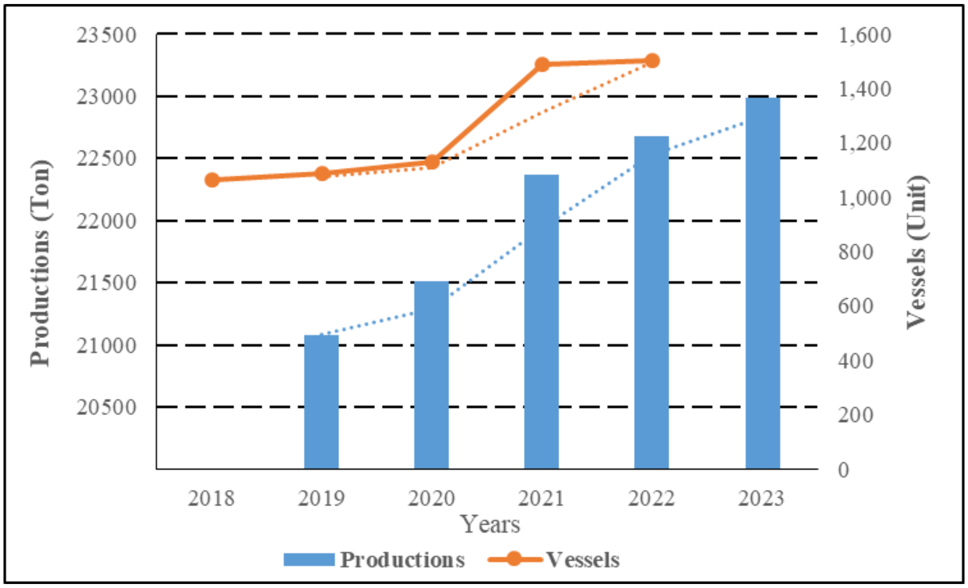

Fig. 2. Productions and Numbers of Fishing Vessels in Tanjung Jabung Barat Regency

LQ analysis revealed that 29 species are categorized as base commodities of marine fishery products. The highest LQ is 2.06 referring to *Harpadon nehereus, Herklotsichthys dispilonotus, Loligo chinensis, Johnius amblycephalus, Macolor niger, Pseudorhombus malayanus, Anodontostoma chacunda, Selaroides leptolepis, Plotosus canius, Amphidromus javanicus, Pharaoh cuttlefish, Priacanthus hamrur,* and *Sardinella fimbriata*, *Metapenaeus dobsoni*, respectively. Those species are base commodities with LQ>1 **(Gumilang & Susilawati, 2020)**. Base-fishery commodities are capable of becoming comparative superiorities. Moreover, they also have the potential to be leading commodities whose stocks are enough to fulfill local needs while the excess stocks are exported to the outside region **(Irham & Iksan, 2021)**.

SSA shows that 24 species perform a positive growth (SSA>0) based on catch production **(Bakti & Herlina, 2020)**. The species with the highest production growth, indicated by an SSA of 11.72, is *Harpadon nehereus*, followed by *Macolor niger* with an SSA of 7.00, and *Epinephelus amblycephalus* with an SSA of 5.74. SSA can measure structure changes of economic growth in a region compared to a larger area such as a province or national. The main function of this analysis is to comprehend the performance of economic productivity in one area to a larger one (regional/national) **(Yusrizal *et al.*, 2019)**.

Meanwhile, SI analysis indicated nine species having production specialization. This means that there is fishery production specialization of a particular species in Tanjung Jabung Barat Regency relatively compared to Jambi Province. The highest SI reached 1.89 for *Parastromateus niger* then 1.85 for *Anadara granosa*, and 1.79 for *Sphyraena barracuda*. The commodity that has production specialization is indicated by SI>1 **(Ridwan, 2018)**.

To determine the leading commodity, overlay analysis was applied using the following criteria; LQ>1, SSA>0, and SI>1 (Table 1). Completing analysis in different ways was done to gather accurate information in determining the leading commodities in which becoming a main key to successful and effective fishery management **(Curtis & Carretta, 2020)**.

Table 1. Analysis of leading commodities based on integrative approach (LQ, SSA, SI)

No	Local name (Species)	LQ	SSA	SI	Status
1	Acang-acang Bombay (*Harpadon nehereus*)	2.06	11.72	0.89	
2	Alu-alu Besar (*Sphyraena barracuda*)	1.88	0.17	1.79	Leading Commodity
3	Bawal Hitam (*Parastromateus niger*)	1.55	-0.11	1.89	
4	Bawal Putih (Pampus argenteus)	2.00	0.81	1.58	Leading Commodity
5	Belanak (*Chelon subviridis*)	0.73	-0.73	-0.93	
6	Bilis (*Herklotsichthys dispilonotus*)	2.06	-0.31	0.55	
7	Cumi-cumi (*Loligo chinensis*)	2.06	0.18	0.29	
8	Gerot-gerot (*Pomadasys andamanensis*)	2.04	1.06	1.40	Leading Commodity
9	Golok-golok (*Chirocentrus dorab*)	0.00	3.51	0.72	
10	Gulamah (*Johnius amblycephalus*)	2.06	-0.25	1.14	
11	Kakap Hitam (*Macolor niger*)	2.06	7.00	1.05	Leading Commodity
12	Kakap Merah (*Lutjanus bitaeniatus*)	2.00	4.91	0.84	
13	Kakap Putih (*Plectorhinchus gibbosus*)	1.66	4.05	0.39	
14	Kembung (*Rastrelliger faughni*)	0.82	0.15	-1.18	
15	Kepiting (*Carpilius maculatus*)	0.20	-0.96	-1.83	
16	Kepiting Bakau (*Scylla olivacea*)	0.00	-	0.03	
17	Kerang Darah (*Anadara granosa*)	1.35	0.12	1.85	Leading Commodity
18	Kerapu Lumpur (*Epinephelus amblycephalus*)	0.54	5.74	-1.61	
19	Kuro (*Eleutheronema tetradactylum*)	0.96	0.63	-0.14	
20	Layur (*Trichiurus lepturus*)	1.09	-0.11	0.09	
21	Lidah (*Cynoglossus puncticeps*)	1.45	0.37	0.17	
22	Manyung Besar (*Netuma thalassina*)	1.46	0.20	0.78	
23	Pari Burung (*Aetomylaeus nichofii*)	0.19	-1.00	-1.06	
24	Pari Kembang (*Neotrygon kuhlii*)	0.64	-0.31	-2.22	
25	Rajungan (*Portunus pelagicus*)	0.69	-0.27	-0.23	
26	Remang (*Congresox talabon*)	1.59	-0.80	0.63	
27	Sebelah (*Pseudorhombus malayanus*)	2.06	1.68	0.40	
28	Selanget (*Anodontostoma chacunda*)	2.06	0.98	0.84	
29	Selar Kuning (*Selaroides leptolepis*)	2.06	1.21	0.71	
30	Sembilang Betul (*Plotosus canius*)	2.06	1.23	0.50	
31	Serinding (*Priacanthus macracanthus*)	0.00	-	0.02	
32	Siput (C*erithidae obtusa*)	2.06	-0.88	0.45	
33	Sotong (*Pharaoh cuttlefish*)	2.06	-0.54	0.21	
34	Swanggi (*Priacanthus hamrur*)	2.06	-0.95	0.06	
35	Talang-talang (*Scomberoides lysan*)	1.14	-0.33	0.32	

36	Tembang (*Sardinella fimbriata*)	2.06	0.88	1.08	Leading Commodity
37	Tenggiri (*Scomberomorus commerson*)	1.09	-0.72	0.52	
38	Teri Bulu Ayam (*Setipinna taty*)	0.85	-0.75	-0.01	
39	Tetengkek (*Megalaspis cordyla*)	0.00	-	0.00	
40	Udang Dogol (*Metapenaeus endeavouri*)	0.00	-	0.05	
41	Udang Grogo (*Acetes indicus*)	1.32	2.05	0.54	
42	Udang Jerbung (*Penaeus merguiensis*)	0.00	-	-0.96	
43	Udang Kapur (*Metapenaeus dobsoni*)	2.06	4.36	1.15	Leading Commodity
44	Udang Krosok Kuning (*Megokris granulosus*)	0.75	-0.24	-1.26	
45	Udang Mantis (*Harpiosquilla raphidea*)	0.40	-0.08	-9.43	
46	Udang Putih (*Metapenaeus eboracensis*)	1.64	1.30	0.62	

Footnotes:

(yellow)	:	*LQ>1; SSA>0; SI>1*	= *Leading Commodities*
(green)	:	*LQ<1/ SSA<0/ SI<1*	= *Not Leading Commodities*
(white)	:	*LQ>1/ SSA>0/ SI>1*	= *Not Leading Commodities*

There are seven out of 46 species being identified as the leading commodities in Tanjung Jabung Barat namely *Sphyraena barracuda*, *Pampus argenteus*, *Pomadasys andamanensis*, *Macolor niger*, *Anadara granosa*, *Sardinella fimbriata*, and *Metapenaeus dobsoni*. The identification of leading commodities would become a database for decision-making in developing fisheries based on facts. Fishery management absolutely needs accurate data regarding fishery operations, including the type of species in one area **(Bradley *et al*. 2019)**.

DISCUSSION

SSF has become a major provider of food, contributing 40% of the total global fishery production (178 million tons) for food in 2020. In developing countries, SSF serves as a key pillar of employment and income within the marine fisheries sector **(Teh & Sumaila, 2013; FAO, 2022; Garcia-Lorenzo *et al.*, 2024)**. This is evidenced by the increase in the number of fishers in the study area—from 3,329 in 2020 to 4,216 in 2022—reflecting a growth rate of 21.03%. Therefore, obtaining comprehensive SSF data, especially in identifying leading commodities, is crucial for successful fisheries development in any region **(Irnawati *et al.*, 2011)**. Planning and developing fishery production must be grounded in accurate data. However, in regions like Tanjung Jabung Barat Regency, collecting such data remains a significant challenge **(Ramdhani *et al.*, 2023)**.

Between 2019 and 2023, the average production of leading commodities in Tanjung Jabung Barat Regency included: *Sphyraena barracuda* (852.35 tons), *Pampus argenteus* (707.02 tons), *Pomadasys andamanensis* (614.67 tons), *Macolor niger* (456.88 tons), *Anadara granosa* (1,630.83 tons), *Sardinella fimbriata* (467.59 tons), and *Metapenaeus dobsoni* (497.03 tons) **(Marine and Fishery Service of Jambi Province, 2024)**. These species are caught using various fishing gears such as gillnets, trammel nets, liong bun, and trawls. Notably, *Anadara granosa* is harvested specifically with a clam rake.

Fishing operations in the area are dominated by traditional vessels under 30 GT: 1,381 units fall into the 0–10 GT category, 14 units in the 10–30 GT category, and only 10 units exceed 30 GT. The prevalence of 0–10 GT vessels indicates that most fishing activities are still artisanal or small-scale in nature. Fishers typically use wooden boats for single-day fishing trips **(Wijyanto, 2016)**. In developing countries like Indonesia, SSF plays a critical role in supporting food systems, food security, environmental stewardship, cultural identity, and livelihoods. As such, SSF significantly contributes to sustainable development in coastal regions **(Srinivasan *et al.*, 2010; FAO, 2015; Golden *et al.*, 2016; Zeller & Pauly, 2019; Vianna *et al.*, 2020; Golden *et al.*, 2021; Annida & Baihaqi, 2025)**.

Regarding market potential, three of Tanjung Jabung Barat’s leading commodities—*Pampus argenteus*, *Anadara granosa*, and *Metapenaeus dobsoni*—are categorized as export commodities. In 2022, the number of export instances for each was 867, 248, and 107 times, respectively. Singapore is a primary export destination **(Fish Quarantine, Quality Control, and Safety of Fishery Products Agency, Jambi Province, 2023)**. These figures underscore the region's potential to contribute to international fish trade **(Zeller *et al.*, 2023)**. Beyond exports, these commodities also support domestic needs and contribute significantly to national development and foreign exchange earnings **(Wibowo, 2021)**.

Locally, some species are used in value-added fishery products. For instance, *Metapenaeus dobsoni* is the main raw material for prawn crackers. According to the Fishery Service of Tanjung Jabung Barat Regency (2023), 118 MSMEs are active in the prawn cracker business. Despite annual production reaching 497.03 tons, it is insufficient to meet local demand. Interestingly, many fishers and distributors prefer exporting their products rather than supplying local businesses. This suggests an absence of specific regulations governing catch distribution by fisheries stakeholders.

The lack of raw materials continues to pose challenges for MSMEs engaged in fish processing. Contributing factors include declining fish stocks, overfishing **(Pauly *et al.*, 1998; FAO, 2018)**, climate change **(Cheung *et al.*, 2009; Barange *et al.*, 2018)**, distribution inefficiencies **(FAO, 2011; Love *et al.*, 2015)** and changes in fishery policy **(Gutiérrez *et al.*, 2011; Hilborn & Ovando, 2014)**. Understanding these factors is key to formulating solutions that address raw material shortages in the local fish processing sector.

Other species such as *Sphyraena barracuda*, *Pomadasys andamanensis*, and *Macolor niger* are widely consumed locally, typically served as fillets or steaks in restaurants. *Sphyraena* species, in particular, are recognized for their high nutritional value, making them crucial for food security **(Reksten *et al.*, 2020)**. Meanwhile, *Sardinella fimbriata* is commonly processed into salted and smoked fish. Its diverse applications positively impact the local economy by increasing income for both fishers and MSME entrepreneurs. However, exploitation must be carefully managed to avoid overfishing, as seen in Egypt's Suez Gulf. In that case, overexploitation of *Sardinella* species led to sustainability concerns, with mortality rates exceeding biological reference points **(El-Betar & Osman, 2021)**.

The utilization and management of these seven leading commodities can be further optimized for both market value and resource sustainability. Implementing strategic and sustainable fisheries management will help maximize economic benefits while ensuring long-term ecological viability.

International examples offer useful comparisons. In the U.S., *Oncorhynchus tshawytscha* (Chinook salmon) is a high-value commodity managed through hatchery programs that support wild populations. Demographic data are regularly monitored to maintain sustainable harvest levels **(Ohlberger *et al.*, 2018)**. Norway's management of *Gadus morhua* (cod) involves a strict quota system and collaboration between government and scientists to assess stock conditions and set annual limits **(Höffle *et al.*, 2014)**. Enforcement measures ensure regulatory compliance. In tropical countries like Malaysia, *Rastrelliger kanagurta* is managed via gear restrictions, fishing regulations, and population monitoring **(Amin *et al.*, 2014)**. While Norway exemplifies strict regulation, Malaysia illustrates the complexity of balancing socio-economic conditions with compliance and enforcement **(Maroni, 2000; Saadon *et al.*, 2020; Rogstad, 2022)**. These lessons are relevant for Indonesia and Tanjung Jabung Barat, where unsustainable practices threaten marine resources, livelihoods, food security, and economic development.

Tanjung Jabung Barat falls under Fisheries Management Area (FMA) 711, which spans 358,530 km² and includes the Natuna and South China Seas. In 2022, total fish capture in this area reached 1,306,379 tons **(Ministry of Marine Affairs and Fisheries of the Republic of Indonesia, 2022)**. There remains potential to optimize catches. One strategy is upgrading vessels to above 30 GT, enabling longer fishing trips and wider coverage. Larger vessels support greater efficiency, but must be paired with sustainable practices. Fishing gear also needs scrutiny. While increased capacity is beneficial, it must not come at the cost of environmental harm. Unfortunately, destructive gear such as trawls is still used in the region. Stakeholders must urgently replace such gear with environmentally friendly alternatives like gillnets.

These efforts fall under comprehensive fisheries management, which includes setting catch limits, regulating gear types, and establishing marine protected areas **(Pauly & Froese, 2021)**. Effective management also requires communicating scientific findings to stakeholders and local communities. As shown by **Hargiyatno *et al.* (2018)**, knowledge-sharing promotes acceptance of sustainability practices. Regulatory tools like conservation zones and gear restrictions are essential components of Indonesia's Fisheries Management Plan (FMP) and broader marine policy frameworks **(Khan *et al.*,**

2024). Community involvement in enforcement also strengthens governance through collaboration among authorities, NGOs, and fishers **(Pravina & Radhika, 2024)**. A relevant model is the FMP for tuna, skipjack, and mackerel under Ministerial Decree No. 107/KEPMEN-KP/2015, which provides national guidelines for sustainable tuna fisheries.

Despite these frameworks, persistent issues remain. These include the uncontrolled growth of fishing fleets that prioritize quantity over efficiency **(Beddington *et al.*, 2007)**, conflicts over gear types and fishing zones, and rampant illegal, unreported, and unregulated (IUU) fishing **(Palma, 2009)**. The enactment of Law No. 23/2014, which shifted fisheries governance from district to provincial authorities, has also created institutional ambiguities and weakened coordination, especially regarding port management, berthing permissions, and catch reporting.

CONCLUSION

The leading commodities of capture fisheries in the research field consist of seven species, namely *Sphyraena barracuda*, *Pampus argenteus*, *Pomadasys andamanensis, Macolor niger, Anadara granosa*, *Sardinella fimbriata*, and *Metapenaeus dobsoni*. Therefore, it is expected that local stakeholders will formulate fisheries management policies aimed at optimizing the potential of these leading commodities, with the ultimate goal of enhancing community welfare and increasing regional revenue through the implementation of sustainable fishing practices in Tanjung Jabung Barat Regency, Jambi Province, Indonesia.

ACKNOWLEDGEMENTS

This research was funded by the Faculty of Animal Science, Universitas Jambi on fundamental research schemes through the Institute for Research and Community Service (LPPM), under grant number SP DIPA-023.17.2.677565/2024.

REFERENCES

Alder, J.; Pitcher, T. J.; Preikshot, D.; Kaschner, K. and Ferriss, B. E. (2000). How good is good? A rapid appraisal technique for evaluation of sustainability status of fisheries of The North Atlantic. In Pauly and Pitcher (eds). Methods for evaluation of the impact of fisheries on the North Atlantic Ecosystem. *Fisheries Research Report* 8(2):136-182.

Amin, S. M. N.; Azim, M. K.; Fatinah, S. N. J.; Arshad, A.; Rahman, M. A. and Jalal, K. C. A. (2014). Population Parameters of Rastrelliger kanagurta (Cuvier, 1816) in the Marudu Bay, Sabah, Malaysia. *Iranian Journal of Fisheries Sciences*, 13(2), 262-275. Doi: https://jifro.ir/article-1-1562-en.pdf

Annida, S. and Baihaqi, F. (2025). Capture Fisheries Business Analysis of Handline Fishing Fleet at Palabuhanratu Nusantara Fishing Port, Indonesia. *Egyptian Journal of Aquatic Biology and Fisheries*, 29(3), 685-696. Doi: https://10.21608/ejabf.2025.427982

Arkema, K. K. and Ruckelshaus, M. (2017). "Transdisciplinary Research for Conservation and Sustainable Development Planning in the Caribbean," in Conservation for the Anthropocene Ocean (Academic Press) USA, 333–357. Doi: https://10.1016/B978-0-12-805375-1.00016-7

Baer, C. and Brown, T. (2006). Location Quotients: A Tool for Comparing Regional Industry Compositions. Indiana (US): Advanced Economic and Market Analysis Group-SRD, Department of Workforce Development. *Incontext*, 7(3), 1-3.

Bakti, S. and Herlina, H. (2020). Identifikasi Komoditas Unggulan Perikanan Laut di Kecamatan Tungkal Ilir Kabupaten Tanjung Jabung Barat. *Ekonomis: Journal of Economics and Business*, 4(2), 241-248. Doi: http://dx.doi.org/10.33087/ekonomis.v4i2.155

Barange, M.; Bahri, T.; Beveridge, M. C. M.; Cochrane, K. L.; Funge-Smith, S. and Poulain, F. (Eds.). (2018). Impacts of climate change on fisheries and aquaculture: Synthesis of current knowledge, adaptation and mitigation options. FAO Fisheries and Aquaculture Technical Paper, 627. Rome, FAO. Retrieved from FAO.

Beddington, J.; Beddington, J.; Agnew, D. J.; Agnew, D. J.; Clark, C. W. and Clark, C. W. (2007). Current Problems in the Management of Marine Fisheries. *Science*, 316(5832), 1713–1716. Doi: https://doi.org/10.1126/SCIENCE.1137362

Bediye, D. T. (2022). Challenges and Prospects of Capturing Fisheries and the Ways Forwards in Developing Countries. J Fisheries Livest Prod 10(7): 355. Doi: https://10.4172/2332-2608.1000355

Bradley, D.; Merrifield, M.; Miller, K. M.; Lomonico, S.; Wilson, J. R. and Gleason, M. G. (2019). Opportunities to improve fisheries management through innovative technology and advanced data systems. *Fish and fisheries*, 20(3), 564-583. Doi: https://doi.org/10.1111/faf.12361

Campling, L.; Havice, E. and McCall Howard, P. (2012). The political economy and ecology of capture fisheries: market dynamics, resource access and relations of exploitation and resistance. *Journal of agrarian change*, 12(2-3), 177-203. Doi: https://doi.org/10.1111/j.1471-0366.2011.00356.x

Cheung, W. W. L.; Lam, V. W. Y.; Sarmiento, J. L.; Kearney, K.; Watson, R. and Pauly, D. (2009). Projecting global marine biodiversity impacts under climate change scenarios. *Fish and Fisheries*, 10(3), 235-251. Doi: https://10.1111/j.1467-2979.2008.00315.x

Cisneros-Montemayor, A. M.; Moreno-Báez, M.; Voyer, M.; Allison, E. H.; Cheung, W. W.; Hessing-Lewis, M. and Ota, Y. (2019). Social equity and benefits as the nexus of a transformative Blue Economy: A sectoral review of implications. *Marine Policy*, 109, 103702. Doi: https://doi.org/10.1016/j.marpol.2019.103702

Curtis, K. A. and Carretta, J. V. (2020). ObsCovgTools: assessing observer coverage needed to document and estimate rare event bycatch. *Fisheries Research*, 225, 105493. Doi: https://doi.org/10.1016/j.fishres.2020.105493

Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number 19 of 2022 Concerning Estimation of Fish Resources Potential, Allowable Fish Catch Amount, and Level of Fish Resources Utilization in the Fisheries Management Area of the Republic of Indonesia

Einarsson, Á. and Óladóttir, Á. D. (2020). Fisheries and Aquaculture: The Food Security of the Future (Academic Press). London. Doi: https://10.1016/B978-0-12-821056-7.00017-2

El-Betar, T. A. and Osman, M. H. (2021). Population structure of Sardinella gibbosa (Bleeker, 1849) with special reference to spawning ground in the Gulf of Suez, Egypt. *Egyptian journal of aquatic biology and fisheries*, 25(3), 353-365. Doi: https://10.21608/ejabf.2021.175579

Fadillah, A. and Yusalina, Y. (2011). Analisis daya saing komoditas unggulan perikanan tangkap Kabupaten Sukabumi. *Forum Agribisnis: Agribusiness Forum*, 1(1), 39-57. Doi: https://doi.org/10.29244/fagb.1.1.39-57

FAO. (2011). Global food losses and food waste – Extent, causes and prevention. Food and Agriculture Organization of the United Nations. Retrieved from FAO.

FAO. (2015). Voluntary Guidelines for Securing Sustainable Small-scale Fishery in The Context Food Security and Proverty Eradication. Rome. Italy.

FAO. (2018). The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals. Food and Agriculture Organization of the United Nations. Retrieved from FAO.

FAO. (2022). The State of World Fisheries and Aquaculture 2022. Towards Blue Transformation. Rome. Italy.

Ferdian, F.; Maulana, I. and Rosidah. (2012). Analisis Permintaan Ikan lele (*Clarias gariepinus*) Konsumsi di Kecamatan Losarang Kabupaten Indramayu. *Jurnal Perikanan dan Kelautan*. 2(4), 93-98. Doi: https://jurnal.unpad.ac.id/jpk/article/view/2549

Fish Quarantine, Quality Control, and Safety of Fishery Products Agency, Jambi Province. 2023. Traffic Data of Export Commodities of Jambi Province 2022. Jambi (unpublished).

Fisheries Service of Tanjung Jabung Barat Regency. (2023). Recapitulation of Marine Fisheries Production Results of Tanjung Jabung Barat Regency (unpublished).

García-Lorenzo, I.; Varela-Lafuente, M.; Garza-Gil, M. D. and Sumaila, U. R. (2024). Social and solidarity economy in small-scale fisheries: An international analysis. *Ocean and Coastal Management*, 253, 107166. Doi: https://doi.org/10.1016/j.ocecoaman.2024.107166

Golden, C. D.; Allison, E. H.; Cheung, W. W.; Dey, M. M.; Halpern, B. S.; McCauley, D. J. and Myers, S. S. (2016). Nutrition: Fall in fish catch threatens human health. *Nature*, 534(7607), 317-320. Doi: https://doi.org/10.1038/534317a

Golden, C. D.; Koehn, J. Z.; Shepon, A.; Passarelli, S.; Free, C. M.; Viana, D. F.; ... and Thilsted, S. H. (2021). Aquatic foods to nourish nations. *Nature*, 598(7880), 315-320. Doi: https://doi.org/10.1038/s41586-021-03917-1

Gumilang, A. P. and Susilawati, E. (2020). Penentuan Komoditas Unggulan Perikanan Laut Pelabuhan Perikanan Cirebon dan Peranannya Dalam Pembangunan Ekonomi Wilayah. *Barakuda'45*, 2(1), 10-19. Doi: https://doi.org/10.47685/barakuda45.v2i1.55

Gutiérrez, N. L.; Hilborn, R. and Defeo, O. (2011). Leadership, social capital and incentives promote successful fisheries. *Nature*, 470(7334), 386-389. Doi: https://10.1038/nature09689

Hargiyatno, I. T.; Utomo, S. W. and Sue, R. A. (2018). Tuna fisheries sustainable management: Assessing of Indonesia fish aggregating devices (FADs) fisheries. *In E3S Web of Conferences* (Vol. 68, p. 04019). EDP Sciences. Doi: https://doi.org/10.1051/e3sconf/20186804019

Hertati, R.; Zakaria, I. J.; Dahelmi, D. and Novarino, W. (2023). Conceptual model of integrated capture fisheries management on conservation area (WKPPT2) in Batang Bungo River, Bungo Regency, Jambi Province, Indonesia. AACL Bioflux 16(4): 2002-2015. Doi: http://bioflux.com.ro/docs/2023.2002-2015.pdf

Hidayat, A. F.; Baskara, Z. W.; Werdiningsih, W. and Sulastri, Y. (2018). Financial feasibility analysis of agroindustry fish abon in Tanjung Karang Mataram City. *Jurnal Ilmiah Rekayasa Pertanian dan Biosistem*, 6(1), 69-75. Doi: https://doi.org/10.29303/jrpb.v6i1.77

Hilborn, R. (2007). Defining success in fisheries and conflicts in objectives. *Marine Policy*, 31(2), 153-158. https://doi.org/10.1016/j.marpol.2006.05.014

Hilborn, R. and Ovando, D. (2014). Reflections on the success of traditional fisheries management. *ICES Journal of Marine Science*, 71(5), 1040-1046. Doi: https://10.1093/icesjms/fsu034

Höffle, H.; Solemdal, P.; Korsbrekke, K.; Johannessen, M.; Bakkeplass, K. and Kjesbu, O. S. (2014). Variability of northeast Arctic cod (Gadus morhua) distribution on the main spawning grounds in relation to biophysical factors. *ICES Journal of Marine Science*, 71(6), 1317-1331. Doi: https://doi.org/10.1093/icesjms/fsu126

Irham, I. and Iksan, K. H. (2021). Excellentcommodities-based development of capture fishery In Sula Archipelago Regency. *Jurnal Ilmu Kelautan Kepulauan*, 4(2), 435-445. Doi: https://doi.org/10.33387/jikk.v4i2.3883

Irnawati, R.; Simbolon, D.; Wiryawan, B.; Murdiyanto and Nuraini, T.W. (2011). Leading Commodity Analysis of Capture Fisheries in Karimunjawa National Park.

Jurnal Saintek Perikanan, 7(1), 1-9. Doi: https://doi.org/10.14710/presipitasi.v%25vi%25i.648-663

Khan, A. M.; Jiang, M. G.; Yang, X. Q.; Apriliani, I. M.; Purba, N. P.; Wiryawan, B.; ... and Pasaribu, B. (2024). Illegal fishing threatens the sustainability of future tuna commodities in Indonesia. Marine Policy, 159, 105936. Doi: https://doi.org/10.1016/j.marpol.2023.105936

Kohar, A. and Paramartha, D. (2012). Analisis Komoditas Unggulan Perikanan Tangkap di Kabupaten Rembang. *Jurnal Harpodon Borneo*, 5(2), 161-171. Doi: https://doi.org/10.35334/harpodon.v5i2.92

Liu, H.; Peng, D.; Yang H-J.; Mu, Y. and Zhu, Y. (2022) A Proposed Scheme of Fishing Quota Allocation to Ensure the Sustainable Development of China's Marine Capture Fisheries. *Frontier in Marine Science*, 9:881306. Doi: https://10.3389/fmars.2022.881306

Love, D. C.; Fry, J. P.; Milli, M. C. and Neff, R. A. (2015). Wasted seafood in the United States: Quantifying loss from production to consumption and moving toward solutions. *Global Environmental Change*, 35, 116-124. Doi: https://10.1016/j.gloenvcha.2015.08.013

Marine and Fisheries Service of Jambi Province (2024). Recapitulation of Marine Fisheries Production Results from Ports and Non-Ports in Jambi Province (unpublished).

Maroni, K. (2000). Monitoring and regulation of marine aquaculture in Norway. *Journal of Applied Ichthyology*, 16(4-5), 192-195. Doi: https://doi.org/10.1046/j.1439-0426.2000.00256.x

Mustofa, N. R.; Mudzakir, A. K. and Kurohman, F. (2018). Excellent Commodity-Based Development of Capture Fisheries in Pekalongan Regency. *Journal of Fisheries Resources Utilization Management and Technology*, 7(2), 68-77. Doi: https://ejournal3.undip.ac.id/index.php/jfrumt/article/view/20528

Ohlberger, J.; Ward, E. J.; Schindler, D. E. and Lewis, B. (2018). Demographic changes in Chinook salmon across the Northeast Pacific Ocean. *Fish and Fisheries*, 19(3), 533-546. Doi: https://doi.org/10.1111/faf.12272

Pahlewi, A. D. and Handayani, C. (2023). Kajian Komoditas Unggulan Perikanan Tangkap Kabupaten Situbondo Berdasarkan Data Penangkapan Ikan. *Jurnal Manajemen Pesisir dan Laut*, 1(01), 1-7. Doi: https://doi.org/10.36841/mapel.v1i01.2753

Palma, M. A. (2009). Combating IUU Fishing: International Legal Developments. Navigating Pacific Fisheries, 71.

Pauly, D. and Froese, R. (2021). MSY needs no epitaph—but it was abused. *ICES Journal of Marine Science*, 78(6), 2204-2210. Doi: https://doi.org/10.1093/icesjms/fsaa224

Pauly, D.; Christensen, V.; Dalsgaard, J.; Froese, R. and Torres, F. (1998). Fishing Down Marine Food Webs. *Science*, 279(5352), 860-863. Doi: https://10.1126/science.279.5352.860

Pravina, X. A. and Radhika, R. (2024). Analysing the Factors Influencing the Inclusive Development of Fisher Folk Concerning Southern Districts of Tamil Nadu. *Journal of Information & Knowledge Management*, 23(05), 2450064. Doi: https://doi.org/10.1142/S0219649224500643

Purnama, N. R.; Aprilla, R. M.; Zulfahmi, I. and Akbar, S. A. (2023, August). Analysis of leading capture fisheries commodities in Pidie district, Aceh, Indonesia. *In IOP Conference Series: Earth and Environmental Science* (Vol. 1221, No. 1, p. 012042). IOP Publishing. Doi: https://doi.org/10.1088/1755-1315/1221/1/012042

Ramdhani, F.; Heltria, S.; Gelis, E. R. E.; Nofrizal, N.; Jhonnerie, R. and Zidni, I. (2023). Spatial Distribution of Mantis Shrimp (*Harpiosquilla raphidea*) in Small-Scale Gillnet Fishery: A Case Study in Kuala Tungkal, Tanjung Jabung Barat Regency, Jambi. *Jurnal Kelautan Tropis*, 26(1), 85-94. Doi: https://doi.org/10.14710/jkt.v26i1.16159

Reksten, A. M.; Somasundaram, T.; Kjellevold, M.; Nordhagen, A.; Bøkevoll, A.; Pincus, L. M., and Aakre, I. (2020). Nutrient composition of 19 fish species from Sri Lanka and potential contribution to food and nutrition security. *Journal of Food Composition and Analysis*, 91, 103508. Doi: https://doi.org/10.1016/j.jfca.2020.103508

Ridwan, M.; Kasmi, M. and Putri, A. R. S. (2018). Determining Excellent Commodity of Marine Fisheries in The Polewali Mandar District based on Statistical Data of 2016. *Jurnal IPTEKS Pemanfaatan Sumberdaya Perikanan*, 5(10), 98-105. Doi: https://doi.org/10.20956/jipsp.v5i10.6203

Rogstad, A. (2022). Om vannressurslovens betydning for bruk og forvaltning av vassdrag, grunnvann og overvann. Taubøll (red.) Vann, juss og samfunn–Rettigheter og regulering i utvikling, 47-74. Doi: https://doi.org/10.23865/noasp.176.ch2

Rossetto, M.; Bitetto, I.; Spedicato, M. T.; Lembo, G.; Gambino, M.; Accadia, P. and Melià, P. (2015). Multi-criteria decision-making for fisheries management: A case study of Mediterranean demersal fisheries. *Marine Policy*, 53, 83-93. Doi: https://doi.org/10.1016/j.marpol.2014.11.006

Saadon, M. S. I.; Jahuria, S.; Othman, M. R.; Nor, D. A. M.; Mokhtar, F. S.; Nordin, N.; ... and Nording, L. (2020). An Analysis on the Effect of Illegal, Unreported & Unregulated (IUU) Fishing towards the Quality & Sustainability of Malaysia Marine Resources and Security. *Journal of Critical Reviews*, 7(8), 1128-1131. Doi: http://dx.doi.org/10.31838/jcr.07.07.01

Sari, R. P.; Gigentika, S. and Pramesthy, T. D. (2020). Identification of Fisheries Superior Commodities in East Lombok District. *Aurelia Journal*, 1(2), 71-82. Doi: http://dx.doi.org/10.15578/aj.v1i2.8948

Sirait, M. (2013). Kajian Pengembangan Perikanan Berbasis Komoditas Unggulan di Kabupaten Muna. Jurnal Kelautan: *Indonesian Journal of Marine Science and Technology*, 6(2), 150-156. Doi: https://doi.org/10.21107/jk.v6i2.789

Srinivasan, U. T.; Cheung, W. W.; Watson, R. and Sumaila, U. R. (2010). Food security implications of global marine catch losses due to overfishing. *Journal of Bioeconomics*, 12, 183-200. Doi: http://doi.org/10.1007/s10818-010-9090-9

Suryawati, S. H. (2021). Analysis of potential and role of the fishery sector in Majene Regency, West Sulawesi Province. *Prosiding Simposium Nasional Kelautan dan Perikanan*,8,347-358. https://journal.unhas.ac.id/index.php/proceedingsimnaskp/article/view/14953

Teh, L. C. and Sumaila, U. R. (2013). Contribution of marine fisheries to worldwide employment. *Fish and Fisheries*, 14(1), 77-88. Doi: https://doi.org/10.1111/j.1467-2979.2011.00450.x

Vianna, G. M.; Zeller, D. and Pauly, D. (2020). Fisheries and policy implications for human nutrition. *Current Environmental Health Reports*, 7, 161-169. Doi: https://doi.org/10.1007/s40572-020-00286-1

Wibowo, B. A.; Aiman, A. M. A. and Setyawan, H. A. (2021). Strategy for Developing Fish Catching Main Commodities in Sinjai Regency. *Journal of Marine Research*, 10(4), 481-492. Doi: https://doi.org/10.14710/jmr.v10i4.31570

Yusrizal.; Wiyono, E. S.; Simbolon, D. and Solihin, I. (2019). Prime fish commodities as industrial raw materials in fish processing in Northern Coast of Java, Indonesia. *Aquaculture, Aquarium, Conservation and Legislation*, 12(3), 918-935. Doi: http://www.bioflux.com.ro/docs/2019.918-935.pdf

Zeller, D. and Pauly, D. (2019). Back to the future for fisheries, where will we choose to go?. *Global Sustainability*, 2, e11, 1-8. Doi: https://doi.org/10.1017/sus.2019.8

Zeller, D.; Ansell, M.; Andreoli, V. and Heidrich, K. (2023). Trends in Indian Ocean marine fisheries since 1950: synthesis of reconstructed catch and effort data. *Marine and Freshwater Research*, 74(4), 301-319. Doi: https://doi.org/10.1071/MF22148