



Technical Report

Stakeholder Consultation for Harvest Strategy of the Snapper and Groupers Fisheries in Indonesia FMA 713

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ENABLING TRANSBOUNDARY COOPERATION
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(O.2.1.2). National Context: Developing Fisheries Improvement Program for Demersal and Mud Crab Fishery in FMA 712 and 713



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List of Acronyms

CPUE	: Catch Per Unit Effort
HS	: Harvest Strategy
MLS	: Minimum Legal Size
FMARI	: Fisheries Management Area of the Republic of Indonesia
FMP	: Fisheries Management Plan
SPR	: Spawning Potential Ratio
BRP	: Boundary Reference Points
TRP	: Target Reference Points
WRP	: Warning Reference Points

SUMMARY

The harvest strategy in exploiting snapper and grouper fisheries in WPPNRI 713 is very important in the framework of sustainable fisheries management. The main prerequisite for the preparation of the document is the availability of information on catch data and fish reproductive capacity. In conditions of poor fishery data, a length-based spawning potential ratio analysis is used as a proxy to determine stock status of snapper and grouper fisheries in the Fishery Management Area of the Republic of Indonesia (FMARI) 713. Based on this information, harvest strategy and harvest control rules are developed for better fishery management.

There are 3 species of snappers and 4 species of groupers that are included as priority for the harvest strategy document. For snapper, the SPR value of 3 priority species (Malabar red snapper (*Lutjanus malabaricus*), Rusty jobfish (*Aphareus rutilans*) and Goldbanded jobfish (*Pristipomoides multidens*)) are relatively on under-exploited threshold (SPR > 30%). And for the grouper, there is only 1 priority species (White-edged lyretail (*Variola albimarginata*) that still on the under-exploited threshold (SPR>30%). For the Orange-spotted grouper (*Epinephelus coioides*) species is on *fully moderate exploited* threshold (20% ≤ SPR ≤ 30%); the other 2 priority species (Spotted grouper (*Epinephelus areolatus*) and Leopard-coral grouper (*Plectropomus leopardus*) are on *over exploited* threshold (SPR<20%).

Management strategy for snapper fisheries is to maintain and improve the status of fish stocks, as well as conduct monitoring. Whereas for groupers fisheries are based on fully-moderately exploited to over exploited conditions, we need to make recovery strategy as soon as possible to prevent a decline in stock and to restore stocks quickly to reach biomass above the limit reference point in the harvest strategy. The stock status of the two fisheries in WPPNRI 713 imply to a variety of management measures through input and output control. Good data collection is best for analysis and estimation on stock status through monitoring and evaluation process.

This Technical Report describes the Stakeholder Consultation for Harvest Strategy Document of Snapper and Grouper FMARI 713 organized with the support from FAO/ISLME project closely working with the Ministry of Marine Affairs and Fisheries

CHAPTER 1. INTRODUCTION

Background

Snappers (Family Lutjanidae) and groupers (Family Serranidae) are both ecologically and economically important fishery resources for Indonesia. By species level, the number of snapper and grouper species in Indonesia are considered to be the highest

in the world. Based on www.fishbase.org (downloaded on November 21, 2022) the species diversity of these two families composed by 60 and 145 species, respectively. Economically, snappers and groupers fishery are important contributor to employment and food security (Sadovy et al. 2013). Indonesia contributes around 45% of the supply of snapper traded in the world (Cawthorn & Mariani 2017), and for groupers it reaches 30%, with annual production of 115,805 tons per year in this decade (FAO 2021). In 2018, Indonesian grouper exports reached 41.4 million dollars (BPS 2019). National production was 180,755.70 tons, with an average increase of 11.4%/year during the 2010-2018 period (KKP 2020). The most beneficiaries who derived benefit from snapper and grouper fisheries in this FMARI are small scale fisheries which accounting to more than 90%, so the fisheries are directly linked to majority of fishing communities and coastal areas who generally use fleets of <5 GT. Based on the information above, the sub-sector capture fisheries from snapper-grouper resources contribute significantly both to GDP and the people's economy.

The Fishery Management Area of the Republic of Indonesia (FMARI) No. 713 is one of 11 FMARIs in Indonesia covering waters of the Makassar Strait, Bone Bay, Flores Sea and Bali Sea. This water area is considered as an important fishing area for snapper and grouper fishes. In general, the utilization status of demersal fish and reef fish resources, including various types of snappers and groupers of this FMARI 713 vary between moderate ($E < 0.5$) to over exploited ($E > 1.0$) for snappers and groupers, respectively (Ministerial Decree KP No. 19/2022). Further increase in fishing level would come to the situation where fishing pressure exceeds the ability of fish populations to recover.

The catch data recorded from snapper and grouper fisheries in Indonesia needs to be improved, therefore, it is still categorized into the fishery limited data. This is due to the high diversity of species, a variety of fishing grounds typology, fishing gears, as well as lack of infrastructure for data collection. As mandated in Ministerial Decree KP No 19 of 2022, another approach is needed in determining stock status. The analytical approach is in the form of a length-based spawning potential ratio (LB-SPR), to obtain stock status in terms of the reproductive capacity of fish resources (Hordyk et al. 2014; Komnas KAJISKAN 2015). The limit reference point used in determining stock status is 20%, where at this limit value fish resources can be sustainable (Ault et al. 2008).

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closely working with the ministry of Marine Affairs and Fisheries. This activity is a continuation from the previous public consultations held in Semarang, Yogyakarta, and Makassar. This activity is an implementation of the National Context Activity: Developing Fisheries Improvement Program for Demersal and Mud Crab Fishery in FMA 712 and 713 which is part of the GEF/FAO Project No. FAO-supported GCP/RAS/289/GFF.

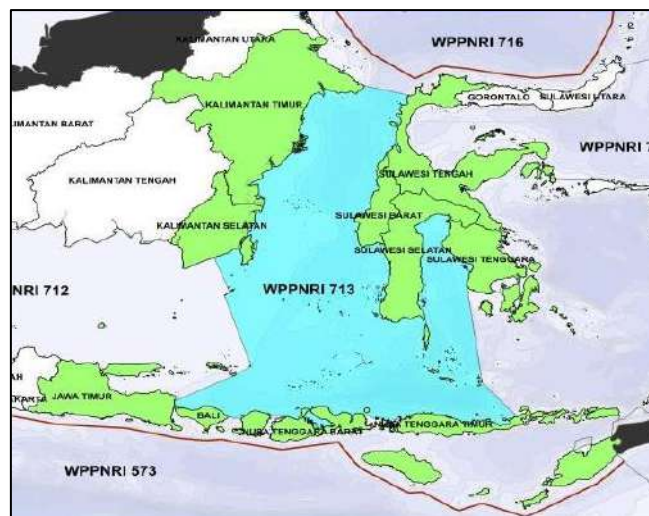
Goal

The purpose of the stakeholder consultation on the harvest strategy of snapper and grouper at FMARI 713 was to produce the final version of the Document of Harvest Strategy which will be ready for formalization, socialization, and implementation.

CHAPTER 2. RESUME OF THE DRAFT OF HARVEST STRATEGY DOCUMENT FOR SNAPPER AND GROUPEL FISHERIES IN FMARI 713

The preparation of the current harvest strategy document for snapper and grouper is a must as a technical guidance in managing responsible and sustainable fishery. This is clearly mandated in the Fisheries Law No. 31 of 2004 which renewed by Law No. 45 of 2009 in conjunction with Law No. 11 of 2020 (Article 1 Paragraph 7) and Government Regulation No. 27 of 2021 (Article 1 Paragraph 55). In essence, these laws and regulations explicitly mandate the need for a Fisheries Management Plan (FMP) document. The FMP has been ratified through the Decree of the Minister of Maritime Affairs and Fisheries Number 123 of 2016 concerning Snapper and Grouper Fisheries Management Plans. As an operational step of the regulations above and their derivatives, this utilization strategy document is prepared in accordance with the Technical Guidelines for Preparing Harvest Strategy Documents (Regulation of the Director General of Capture Fisheries No. 17/PER-DJPT/2017).

The domain area for the implementation of this harvest strategy document is FMARI 713, whose territory includes the Makassar Strait, Bone Bay, Flores Sea, and Bali Sea. Administratively, WPPNRI 713 covers water areas managed by 10 provinces in Indonesia (Figure 1).



(Source: Directorate of Fisheries Management – DGCF)

Figure 1. Map of the Republic of Indonesia's Fisheries Management Area (FMARI) 713

The diversity of snapper and grouper species in Indonesian waters is considerably high. For better management practice in an effective and on targeted manner, the species being prioritized must meet several criteria. The first criterion, the snapper and grouper species are the main catch of this fishery with more than 60% of the total catch composition and are the dominant trade commodity. Next, information regarding the

utilization status and vulnerability of these fish stocks is available, where identification of species, geographical boundaries and stock units as management units are known. Another important consideration is the ease and practicality in monitoring once the utilization strategy has been determined.

Based on those considerations above, both prioritized snappers and groupers species (presented in local names in Indonesian, trade names (common names), and scientific names) are the principal object to be managed through harvest strategy are as follows (Figure 2):

1. Kakap bambangan/kakap merah; *Malabar blood snapper* (*Lutjanus malabaricus*)
2. Kakap anggoli; *goldbanded jobfish* (*Pristipomoides multidens*); dan
3. Kurisi perak; *rusty jobfish* (*Aphareus rutilans*).

Whereas for grouper species, the target for management measures are as follows (Gambar 1):

1. Kerapu lumpur; *orange spotted grouper* (*Epinephelus coioides*)
2. Kerapu ekor putih; *spotted grouper* (*Epinephelus areolatus*)
3. Kerapu ekor gunting; *white edge lyretail* (*Variola albimarginata*)
4. Kerapu sunu; *leopard coral grouper* (*Plectropomus leopardus*)



(Source: Marine Fisheries Research Center – 2021)

Figure 2. Types of snappers (code S) and grouper (code G) which are the objects in the preparation for the harvest strategy document at FMARI 713

The current status of the snapper-grouper fishery is the basis of information for developing a harvest strategy document. Some of the status components required in preparing the document are the status of the snapper-grouper fishery in MPPNRI 713 which includes stock conditions, catch production volume, price fluctuations, export value, fishing fleet, and the impact of fishing activities on fisheries.

Unit stock is the main prerequisite in fisheries management. It was explained in the draft document on the snapper-grouper harvest strategy, that the stock status of these two fisheries has been analysed by mean length-based spawning potential ratio (LB-SPR) method. Parameters needed in SPR analysis were natural mortality (M), growth coefficient (k), asymptotic length (L_{∞}), and average length at first maturity (L_m). The LB-SPR analysis requires the distribution of fish length frequencies as input. SPR values range from 0-1 or in percentage 0-100%. The SPR value of fish before fishing activities reaches 100% of its natural potential and will decrease if there is fishing activity. The length frequency distribution graph contains information on the minimum size traded (Trade Limit), the size of the gonads at maturity (L_m), the asymptotic length of fish (L_{∞}), and the maximum size of fish from the sample (L_{max}).

The SPR value for priority snapper species in WPPNRI 713 was >20%. This indicates that the status of the three lutjanids species are still under-exploited (Table 1). This condition is different from grouper species, where there are 2 species whose SPR values are even less than 20% (over-exploited conditions). Different SPR conditions determine the management actions taken.

Table 1. SPR values for three snapper species in FMARI 713

Species		SPR (%)				
		2016	2017	2018	2019	2020
1.	Bambangan/kakap merah, <i>malabar red snapper</i> , (<i>Lutjanus malabaricus</i>)	39 (33-45)	36 (31-41)	20 (18-22)	35 (33-36)	36 (35-37)
2.	Kakap anggoli, <i>goldbanded jobfish</i> (<i>Pristipomoides multidens</i>)	44 (42-46)	46 (43-50)	30 (28-31)	43 (37-45)	61 (57-64)
3.	Kurisi perak, <i>rusty jobfish</i> , (<i>Aphareus rutilans</i>)	NA	19 (5-33)	31 (28-34)	44 (36-52)	56 (53-60)

Source: BRPL (2021)

Tabel 2. SPR values for four grouper species in FMARI 713

No	Species	SPR (%)				
		2016	2017	2018	2019	2020
Grouper						
1.	Kerapu Lumpur, <i>orange-spotted grouper</i> , (<i>Epinephelus coioides</i>)	NA	47 (32-61)	58 (51-65)	39 (34-44)	27 (25-29)
2.	Kerapu Ekor Putih, <i>spotted grouper</i> , (<i>Epinephelus areolatus</i>)	19 (18-20)	18 (17-18)	11 (10-11)	12 (12-12)	17 (16-17)
3.	Kerapu Sunu Ekor Gunting, <i>white-edged lyretail</i> , (<i>Variola albimarginata</i>)	20 (17-22)	35 (30-40)	29 (24-33)	30 (24-37)	44 (39-49)
4.	Kerapu Sunu, <i>leopard coral grouper</i> , (<i>Plectropomus leopardus</i>)	10 (8-11)	14 (12-16)	9 (8-10)	11 (10-11)	11 (8-13)

Source: BRPL (2021)

Remarks:

- SPR < 20% : Over-exploited
- 20% ≤ SPR ≤ 30% : Fully-Moderately exploited
- SPR > 30% : Under-exploited
- NA : Not Available

The utilization status is the core for snapper and grouper harvest strategy document at FMARI 713. This section presents the conceptual and operational objectives of the utilization strategy. There are 3 important indicators that serve as benchmarks for implementation, namely the Spawning Potential Ratio (SPR), the percentage of catch size below the size of the total catch, and the value of Catch Per Unit Effort (CPUE). As a reference point in the utilization strategy used Boundary Reference Points (BRP), Target Reference Points (TRP), and Warning Reference Points (WRP).

The reference point used in the snapper-grouper utilization strategy in FMARI 713 only BRP and TRP. The BRP limit is 20% SPR for all species, while the TRP is applied differently for each species depending on the existing SPR conditions. As shown in Tables 1 and 2 above, SPR values for snapper-grouper in FMARI 713 vary. The snapper fishery shows an under-exploited and fully-moderately exploited status, while for grouper the status is over-exploited and fully-moderately exploited. This condition is an indication (proxy) of stock status which determines the decision rule (harvest control rule) for its utilization (Tables 3 and 4).

Table 3. Fishery status and general management strategy for snapper fishery at FMARI 713

No	Fishery status	Management strategy
1	<i>Under – exploited</i>	At least maintain or improve the status of fish stocks, as well as conduct monitoring
2	<i>Fully – moderately exploited</i>	The recovery strategy is as soon as possible to prevent a decline in stock

Table 4. Fishery status and general management strategy for grouper fishery at FMARI 713

No	Fishery status	Management strategy
1	<i>Fully-moderately exploited</i>	The recovery strategy is as soon as possible to prevent a decline in stock
2	<i>Over exploited</i>	The recovery strategy is designed to restore stocks quickly to reach biomass above the limit reference point in the harvest strategy

Based on these conditions, the control measures are presented in Tables 5 and 6.

For an effective catch data collection mechanism, all stakeholders are involved with the division of work areas, and the main duties and functions of the work. A flow chart of the monitoring mechanism is presented in Figure 3.

Table5. Input, Output and Technical Control in Snapper Fishery Management at FMARI 713

Snapper species		Input control	Output control	
1.	Bambangan/ kakap merah, <i>malabar red snapper</i> , (<i>Lutjanus malabaricus</i>) SPR: < 40	Technical Control 1. Encouraging the implementation of the use of API with hook sizes for basic longline and handline (target snapper) \leq number 5 (SNI) (smaller and the same) * gap size of 18 mm and a diameter of 2.5 mm (SNI number 8794:2019); 2. Optimizing existing permits for Snapper fishing by not adding new permits; 3. Reducing the number of hooks in the bottom longline API (percentage will be determined later) Spatial and Temporal Setting 1. Reducing 25% fishing operation days from current conditions (4 days a month) 2. Enforcement of zoning rules in conservation areas (complete list of conservation areas in FMARI 713)	1. Application of the Allocation of Snapper fishing in FMARI 713 by the Regional Government and the Central Government in accordance with their authority; and: 2. Promote, encourage, and recommend the minimum legal size (MLS) or the minimum size of snapper fish that may be caught in FMARI 713	MLS: Length 41.00 cm, Weight 800 g
2.	Kakap anggoli, <i>goldbanded jobfish</i> , (<i>Pristipomoides multidens</i>) SPR: > 40			MLS: Length 43.00 cm, Weight 1000 g
3.	Kurisi perak, <i>rusty jobfish</i> , (<i>Aphareus rutilans</i>) SPR: > 40			MLS: Length 54.00 cm, Weight 1000 g

Tabel 6. Input, Output and Technical Control in Grouper Fishery Management at FMARI 713

Grouper species		Input Control	Output Control	
1.	Kerapu lumpur, <i>orange-spotted grouper</i> , (<i>Epinephelus coioides</i>) SPR: < 40	Technical Control: 1. Encouraging the implementation of the use of API with hook sizes for basic longline and handline (target snapper) \leq number 5 (SNI) (smaller and the same) * gap size of 18 mm and a diameter of 2.5 mm (SNI number 8794:2019); 2. Optimizing existing permits for Snapper fishing by not adding new permits; 3. Reducing the number of hooks in the bottom longline API (percentage will be determined later)	MLS : Length 40 cm Weight 1000 g	
2.	Kerapu ekor putih, <i>spotted grouper</i> , (<i>Epinephelus areolatus</i>) SPR : < 20		1. Application of the Allocation of Grouper fishing in FMARI 713 by the Regional Government and the Central Government in accordance with their authority; and:	MLS : Length 34 cm Weight 500 g
3.	Kerapu sunu ekor gunting, <i>white-edged lyretail</i> , (<i>Variola albimarginata</i>) SPR : > 40		2. Promote, encourage, and recommend the minimum legal size (MLS) or the minimum size of snapper fish that may be caught in FMARI 713	MLS : Length 28 cm Weight 500 g
4.	Kerapu sunu, <i>leopard coral grouper</i> , (<i>Plectropomus leopardus</i>) SPR : < 20		Spatial and Temporal Setting 1. Reducing 25% fishing operation days from current conditions (4 days a month)	MLS: Length 32 cm Weight 500 g

		2. Enforcement of zoning rules in conservation areas (complete list of conservation areas in FMARI 713)		
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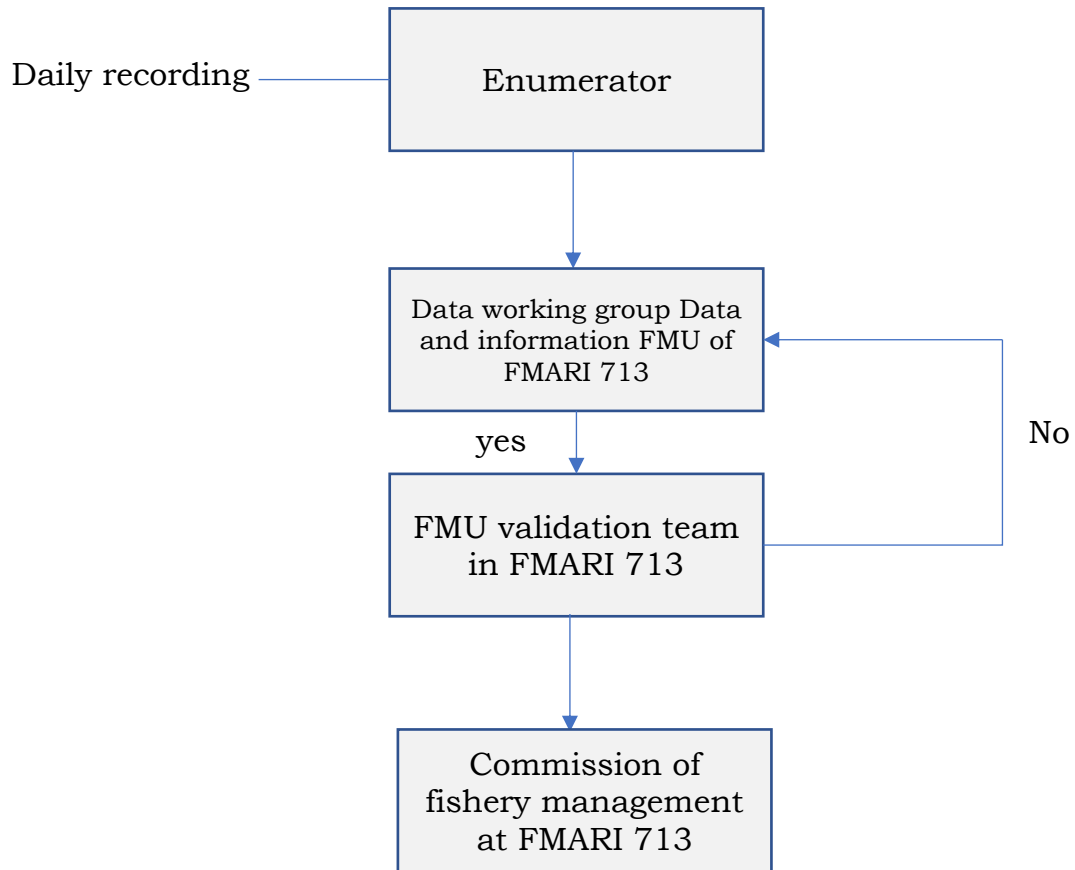


Figure 3. Data collection and analysis for monitoring and evaluation

CHAPTER 3. STAKEHOLDER CONSULTATION MECHANISM FOR HARVEST STRATEGY DOCUMENT SNAPPER AND GROUPER FISHERIES AT FMARI 713

The 4th stakeholder consultation for the preparation of the Grouper Snapper Harvesting Strategy Document at WPPNRI 713 was held on 9-11 November 2022. The location of the public consultation was Hotel Santika Premier Gubeng, Surabaya.

The invited stakeholders represent a variety of important and competent parties. The representatives from 10 provinces whose waters are included in FMARI 713 are involved, in this case the parties involved are the Marine and Fisheries Service at the Provincial level, where those present are the Head of Provincial Agency of MMAF (Capture Field). The industry representatives invited were primarily individuals and companies belonging to the Indonesian Demersal Association (ADI) and several companies under the auspices of YKAN (National Nature Conservation Foundation). The universities that were invited were especially the universities whose research areas were in FMARI 713. Likewise, the researchers who in this case were represented by BRIN (National Research and Innovation Agency), as well as from Fisheries Research Center. Other parties that were invited and fully involved were NGOs, including YKAN, WCS, and Rekam Foundation which have been overseeing the data collection and analysis of catches. The KKP institution that is the vocal point is the Directorate of Fish Resources Management, DGCF MMAF.

The implementation of the stakeholder consultation was made by hybrid meeting system (online and offline), in which some of the participants attended at the Santika Hotel, some of them took part online. Overall, the majority of all invited participants attended, and the discussion proceeded in two directions. Technical obstacles related to the network during the implementation of the conflict were said to be minimal, so that the event could be followed properly until it was finished by all participants.

The rundown of the first day of the event (9 November 2022) began with directions delivered by the Director of PSDI, Dr Ridwan Mulyana. Several pointers were conveyed regarding the urgency of sustainable fisheries management, and various policies that underlie it. Then it is narrowed down to the importance of harvest strategy documents that are relevant to the context of sustainability. Next, Dr. Ferry Sutyan explained the draft harvest strategy document. He is the Coordinator of Management of Inland, Territorial and Archipelagic Sea Fish Resources of the Directorate of Fish Resource.

Dr M Mukhlis Kamal became the facilitator in the discussions and consultations. After Dr. Ferry's presentation was finished, before further discussion, Dr. Irfan Yulianto (Rekam Foundation) and Glaudy Harjaperdana (YKAN) gave a detailed and clear explanation regarding the determination of SPR so that all participants could understand. Because this SPR will be the basis for determining harvesting strategies, specifically regarding input control and output control. Furthermore, various questions

and comments and suggestions were recorded, and discussed which led to the agreement on several matters for the snapper harvesting strategy document in FMARI 713.

On the second day (November 10, 2022), the event was the same as the first day, but the focus has been on grouper harvesting strategies. The most striking difference is the SPR condition for snapper where all species have $SPR > 20\%$, while grouper has $<20\%$. The results of the discussion on the second day led to several fundamental changes in input and output control. Invited participants in this conflict only participated until the second day.

The last day (11 November 2022) is more of an internal meeting for improvement of documents, especially related to institutional mechanisms in data monitoring.

CHAPTER 4. RESPONSES RECEIVED IN STAKEHOLDER CONSULTATION PROCESS FOR HARVEST STRATEGY DOCUMENT OF SNAPPER AND GROUPEL AT FMARI 713

Day 1:

Document of Harvest Strategy for Snapper Fishery at FMARI 713

(9 November 2022; 09.00 – 15.00 WIT)

a. Discussion

- Mr Guruh – The Provincial Agency of MMAF, East Kalimantan
 1. Real conditions in the field shows that the majority of fishing community is small scale who grades the commodity locally and kept the small catch in net floating cage system prior be sold to local market.
 2. The majority of fishermen caught fish less than 500 g per individual (plate size).
 3. The common fishing gears used for snapper (and grouper) is hook line. The proposed hooked no. 5 is difficult to apply, and even no.7 has been refused by the fishermen. They prefer hook number 8 and 9.
 4. Input for harvest strategy document: need to be reviewed to have larger positive impact for fishermen.

- Mr Sasi – The Provincial Agency of MMAF, West Nusa Tenggara
 1. A stronger monitoring and surveillance are required to enforce the harvest strategy.
 2. Alternative approach may be required such as the application of fish apartment and artificial reef and restocking program.

- Mr Budi – The Provincial Agency of MMAF, East Java
 1. In proposing the minimum legal size is recommended to be more realistic with the actual condition.

- Mr Agus – The provincial agency of MMAF, East Nusa Tenggara
 1. Minimum size of Malabar blood snapper caught by fishermen < 800 g
 2. Hook size is currently not regulated in East Nusa Tenggara
 3. The rusty job fish is daily traded in East Nusa Tenggara with weight > 1 kg
 4. Regarding spatial fishing restriction, East Nusa Tenggara has already local knowledge especially on octopus fishery (that might be copied by snapper fishery)

- Miss Candra – The Provincial Agency of MMAF, Bali
 1. To ease surveillance and monitoring, it is agreed to control minimum legal size rather than using hook numbering

- Mrs. Firna– The Provincial Agency of MMAF, Southeast Sulawesi
 1. Agree to control MLS rather than hook number

- Mr Thomas– BRIN
 1. It is important to investigate the habitat quality of snapper (and grouper) in each location

- Dr Irfan Yulianto – REKAM
 1. The analysis showed that the minimum legal size for Malabar blood snapper in harvest strategy document is 800 g. This size actually remains below the size of length at first maturity (L_m);
 2. Although the minimum legal size 800 g, there is approximately 10% of catch is allowed less than 800 g.

- Mr. Glaudy – YKAN
 1. Malabar blood snapper is the dominant species being caught at FMARI 713
 2. The traders/businessman could normally catch this species with weight > 800 g, so that it should be optimistic that the catch of Malabar blood snapper size with > 800 g is affordable.

- Prof Musbir – Hasanuddin University
 1. South Sulawesi is surrounded by four marine waters, i.e., Makassar Strait, Northern Bali Sea, Flores Bay, and Bone Bay.
 2. The snapper is caught using a variety of fishing gears not only hook and line. Traps and other fishing gears are also applicable.
 3. Though the minimum legal size is enforced, the red snapper will be caught for its economic value

After conducting discussions with all participants, the most important part of the Snapper Harvesting Strategy Document in FMARI 713 presented in Table 5 previously underwent changes and was agreed to be implemented (Table 7).

Table 7. Input, Output and Technical Control in Snapper Fishery Management (Post Stakeholder Consultation)

Snapper species		Input Control	Output Control	
1.	Bambangan/ kakap merah, <i>malabar red snapper</i> , (<i>Lutjanus malabaricus</i>) SPR : < 40	<p>Technical Setting New permits is not allowed</p> <p>Spatial and Temporal Setting Reducing fishing operation days from current conditions, namely 4 days a month;</p>	<p>1. Determination of fishing quotas in accordance with the applicable laws and regulations;</p> <p>2. Promote, encourage and recommend the minimum legal size (MLS) or the minimum size of snapper that may be caught.</p>	MLS : Length 41.00 cm or Weight 800 g
2.	Kakap anggoli, <i>goldbanded jobfish</i> , (<i>Pristipomoides multidens</i>) SPR : > 40			MLS : Length 43.00 cm or Weight 1,000 g
3.	Kurisi perak, <i>rusty jobfish</i> , (<i>Aphareus rutilans</i>) SPR : > 40			MLS : Length 54.00 cm or Weight 1,000 g

Day 2:

**Document of Harvest Strategy for Grouper Fishery at FMARI 713
(10 November 2022; 09.00 – 15.00 WIT)**

1. Mr. Glaudy – YKAN

- The condition of grouper fisheries in deep sea waters is still relatively better, but for grouper fisheries in coastal waters already have low SPR values.
- Therefore, it is time to reduce pressure on grouper fishing in coastal areas.
- Closing grouper spawning areas for a certain time is quite effective in reducing pressure on grouper fisheries
- With regard to size, the decision on the minimum legal size must be made carefully, because the trade limits for several species are already to the right of Lm. This shows that for this grouper the management is more focused on controlling grouper fishing;

2. Mr. Rengga Permana – PT Sukses Lautan Indonesia

- From legal size point of view, there would be no problem for business actors because companies usually produce larger sizes (mud grouper can reach 2 kg);
- The business actors support on MLS;
- Grouper fisheries tend to decrease.

3. Dr Mukhlis Kamal – Indonesian Demersal Association

- Based on data collected by ADI, grouper production has a larger size than the specified minimum legal size, so there is no problem with the MLS;

4. Mr Agus – The Provincial Agency of MMAF East Nusa Tenggara

- Grouper Fishery at FMARI 713 in his working area is less
- The average weight of grouper fish caught by fishermen is under 1 kg, some are even under 500 grams and taken by fishing companies
- Grouper fishes reproduce slower than other species
- Many temporary fishermen from Southeast Sulawesi and South Sulawesi regions

5. Pak Budi – DKP Jawa Timur

- Because The SPR Value was < 20%, are there any punishment for the fisherman or any stakeholder who disobey these rules?

6. Mr Sasi Effensi – The Provincial Agency of MMAF, West Nusa Tenggara

- We recommend that the settings are the same as the HS snapper, because the API for snapper and grouper is the same.
- With this policy, it is hoped that the condition of grouper fisheries will improve in the future.

7. Mrs Maria – FAO

- The requirement for awareness rising is a must for effective fishing towards sustainable fishery.

8. Mrs Firna – The Provincial Agency of MMAF, Southeast Sulawesi

- Agrees on MLS and input control implementation
- Related to the rule of reducing fishing operation days by 25% from current conditions (4 days a month), further attention is needed

9. Miss Candra – The Provincial Agency of MMAF, Bali

- The high catch in her area is the humpback grouper,
- Consumable of grouper in Bali is generally 300 grams, but seeing the SPR value and considering sustainability, she agrees to 500 grams

10. Mrs Nurlindah – The Provincial Agency of MMAF, South Sulawesi

- The normal grouper size consumed by people at 300 g weight

11. Rizal Rifai – Directorate of Fish Resource, MMAF

- The reduction in fishing operation has significantly improved on stock conditions for snapper and grouper fisheries

12. Dr. Irfan Yulianto – REKAM

- The grouper species spawn every year
- The business practices agree for January fishing closures
- The closure of the spawning areas in the Liukang Tanggaya Islands and in the Selayar Islands Regency during January is possible because according to the MMAF at the time of the public consultation in Jogja, during that month coincides with high waves and hinder the fishing activities.

After conducting discussions with all participants, the most important part of the Snapper Harvesting Strategy Document in FMARI 713 presented in Table 6 previously underwent changes and was agreed to be implemented (Table 8).

Table 8. Input, Output and Technical Control in Grouper Fishery Management (Post Stakeholder Consultation)

Grouper Species		Input Control	Output Control	
1.	Kerapu lumpur, <i>orange-spotted grouper</i> , (<i>Epinephelus coioides</i>) SPR : < 40	Technical Setting: New fishing permits is not allowed.	1. Application of fishing quotas based on applicable laws and regulations; and 2. Promote, encourage and advocate for the Minimum Legal Size (MLS) or the minimum size of grouper fish that may be caught	MLS : Length 40 cm or Weight 1,000 g
2.	Kerapu ekor putih, <i>spotted grouper</i> , (<i>Epinephelus areolatus</i>) SPR : < 20			MLS : Length 34 cm or Weight 500 g
3.	Kerapu sunu ekor gunting, <i>white-edged lyretail</i> , (<i>Variola albimarginata</i>) SPR : > 40			MLS : Length 28 cm or Weight 500 g
4.	Kerapu sunu, <i>leopard coral grouper</i> , (<i>Plectropomus leopardus</i>) SPR : < 20			MLS: Length 32 cm or Weight 500 g

Day 3:

Team Internal Discussion on the Harvest Strategy Document for Snapper and Grouper Fisheries at FMARI 713 (11 November 2022: 09.00 – 11.30 WIB)

Mechanisms for implementing monitoring and evaluation, particularly in data collection on catches, in previous draft documents did not adequately describe the involvement of all stakeholders. Based on the results of the discussion on day 3, a new diagram was obtained as follows (Figure 4). In essence, nothing has changed, except that the institutions/working group being involved are clearly mentioned/shown in the flow chart.

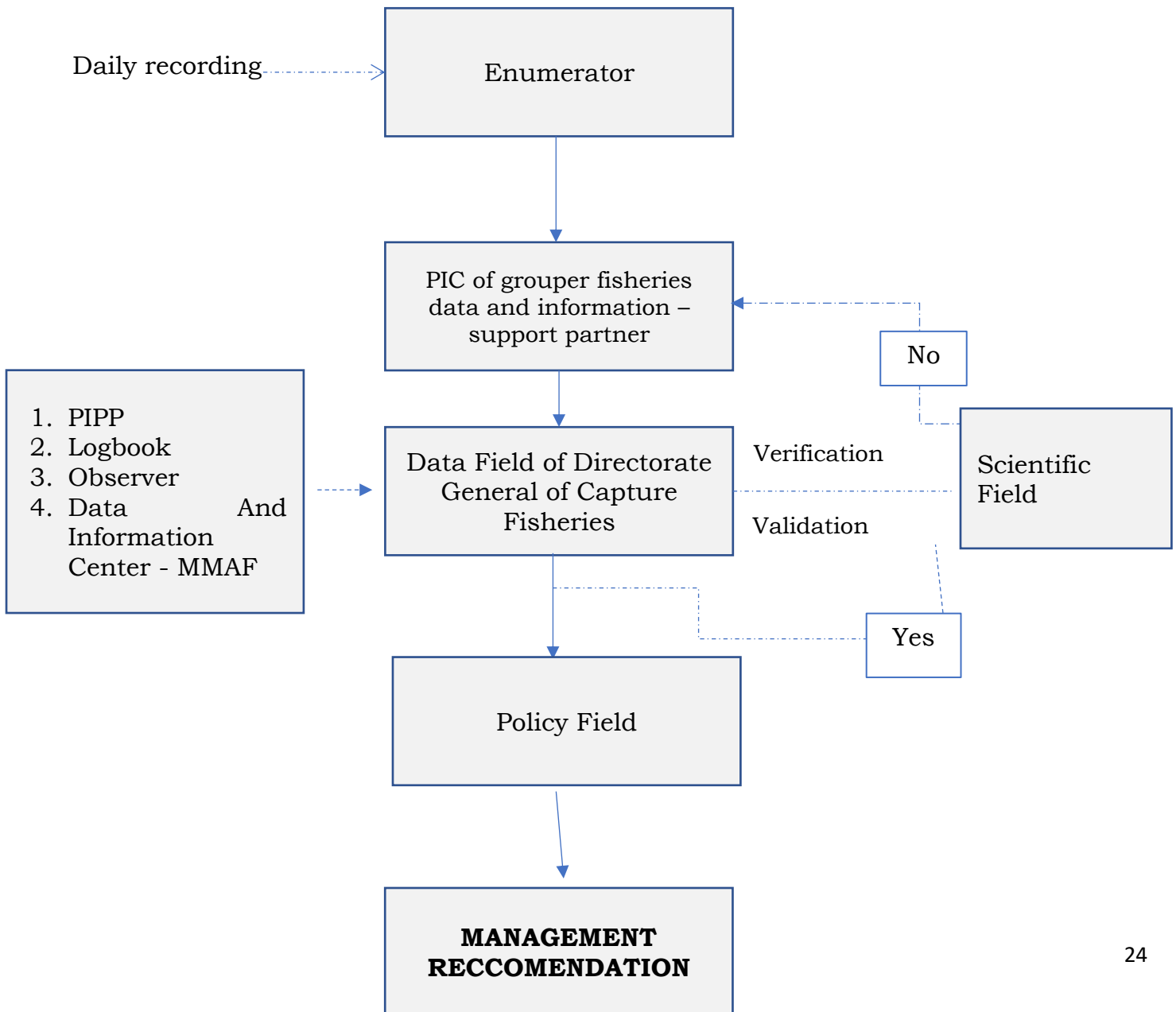


Figure 4. Flow of data recording and analysis for monitoring and evaluation

CHAPTER 5. CONCLUSIONS AND NEXT STEP

Conclusions

The results of the 4th public consultation regarding the Harvest Strategy Document on Snapper and Grouper at FMARI 713 were attended by the government, local government, industry, fisherman representatives, NGOs, university, and researchers. So that it has represented all existing stakeholders.

The agreement that has been reached will be set forth in the Final Draft of the Harvest Strategy Document for Snapper and Grouper an FMARI 713.

Next Step

The final draft of the Harvest Strategy Document for Snapper and Grouper Fisheries at FMARI 713 which has been refined during 4 public consultations, will then be brought to the DGCF General Bureau to seek approval from the Director General of Capture Fishery.

The next stage is the dissemination of the Grouper Snapper Harvest Strategy Document prior to implementation in the field.

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- Ault, J.S., Smith, S.G., Luo, J., Monaco, M.E., Appeldoorn, R.S., 2008. Length-based assessment of sustainability benchmarks for coral reef fishes in Puerto Rico. *Environ. Conserv.* 35 (3), 221–231.
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- Sadovy Y *et al.* 2013. Fishing groupers towards extinction: a global assessment of threats and extinction risks in a billion-dollar fishery. *Fish Fish.*

APPENDICES

Appendix 1. Invitation for Stakeholder Consultation Meeting for Harvest Strategy Document of Snapper and Grouper Fisheries at FMARI 713



KEMENTERIAN KELAUTAN DAN PERIKANAN
DIREKTORAT JENDERAL PERIKANAN TANGKAP

JALAN MEDAN MERDEKA TIMUR NOMOR 16
JAKARTA 10110 KOTAK POS 4130 JKP 10041
TELEPON (021) 3519070 (LACAK), FAKSIMILE (021) 3521782
LAMAMAN www.kkp.go.id

Nomor : B. 998/DJPT.2/TU.330/XI/2022 2 November 2022
Lampiran : 1 (satu) berkas
Hal : Undangan

Yth.
(Daftar Terlampir)
di-
Tempat

Dalam rangka pengelolaan perikanan kakap dan kerapu yang berkelanjutan di WPPNRI 713, maka telah dilakukan penyusunan rancangan dokumen *Harvest Strategy* (HS) Perikanan Kakap dan Kerapu di WPPNRI 713. Sehubungan dengan hal tersebut, Direktorat Pengelolaan Sumber Daya Ikan akan melaksanakan Konsultasi Publik untuk penyempurnaan rancangan dokumen *Harvest Strategy* dimaksud yang akan diselenggarakan:

pada hari, tanggal : Rabu - Jumat, 9 – 11 November 2022
waktu : Tentative Agenda Terlampir
tempat : Hotel Santika Premiere Gubeng
Jl. Raya Gubeng No.54, Gubeng, Kec. Gubeng,
Kota SBY, Jawa Timur 60281

Sehubungan dengan hal tersebut, kami mengharapkan kehadiran Saudara atau dapat menugaskan pejabat/staf yang berkompeten pada acara dimaksud tepat pada waktunya. Bahan untuk pertemuan tersebut dapat diunduh pada tautan: <https://bit.ly/HSKAKER713>. Konfirmasi kehadiran dan informasi lebih lanjut dapat menghubungi Sdr. Dinar Putralaksana dengan nomor Handphone/WA +62-856-9734-3175 atau Sdr. Mely Shara dengan nomor handphone/WA +62 812-9713-5317.

Demikian disampaikan, atas perhatian dan kerja sama Saudara diucapkan terima kasih.

a.n Direktur Jenderal Perikanan Tangkap
Direktur Pengelolaan Sumber Daya Ikan,

Ditandatangani Secara
Elektronik

Ridwan Mulyana

Participant

- Offline Participant

No.	Institution	Number
1	Directorate of Fish Resource Management, DGCF - MMAF	10
2	Marine and Fisheries Office (DKP) of East Java Province	1
3	Marine and Fisheries Office (DKP) of Bali Province	1
4	Marine and Fisheries Office (DKP) of West Nusa Tenggara Province	1
5	Marine and Fisheries Office (DKP) of East Nusa Tenggara Province	1
6	Marine and Fisheries Office (DKP) of South Kalimantan Province	1
7	Marine and Fisheries Office (DKP) of East Kalimantan Province	1
8	Marine and Fisheries Office (DKP) of South Sulawesi Province	1
9	Marine and Fisheries Office (DKP) of Central Sulawesi Province	1
10	Marine and Fisheries Office (DKP) of West Sulawesi Province	1
11	Marine and Fisheries Office (DKP) of Lamongan District, East Java Province	1
12	Yayasan Konservasi Alam Nusantara (YKAN)	1
13	REKAM Nusantara	1
14	Industries Sector of Snapper Fisheries and Supply Chain (incl. fishing, trading, and market sectors)	25
15	FAO ISLME Project	3
16	Facilitator	1
	Total	53

Participant











- Online Participant

No.	Institution
1.	Secretariat General of MMAF
2.	Directorate of Fisheries Surveillance MMAF
3.	Directorate of Marine Conservation MMAF
4.	Directorate of Marketing, MMAF
5.	Fisheries Research Center (PUSRISKAN) - BRIN
6.	Universities, inter alia, UNMUL, UNHAS, ULM, UHO, UNRAM, Trunojoyo, Airlangga, and IPB University.
7.	Other potential stakeholders (open)

Appendix 2. List of meeting attendance on Stakeholder Consultation Meeting for Harvest Strategy Document of Snapper and Grouper Fisheries at FMARI 713

ONLINE PARTICIPANT REGISTRATION DAY #1

Daftar Hadir Konsultasi Publik Penyusunan Rancangan Dokumen HS Kakap Dan Kerapu Di WPPNR 713 Report
 Nama Daftar Hadir Konsultasi Publik Penyusunan Rancangan Dokumen HS Kakap dan Kerapu di WPPNR 713

Nama Lengkap	Jenis Kelamin	Jabatan	Instansi/Instansi	No. HP	Email	Signature	Attend Time
Misbahul Umam	Laki - Laki	Subkoordinat Pengendalian SCI dan Pengendalian Persempitan Ikan	Dinas Kelautan dan Perikanan Prov. NTB	081237304433	umam_misbahul@yahoo.com		08-Nov-2022 22:22:02
Erind Murni	Laki - Laki	Revisi	BRRI	08119860256	erindog@gmail.com		08-Nov-2022 22:31:07
FAHRI: MALIK SAMUDIN	Laki - Laki	GERAK BANGSA PPK	PT. INTI LUPUR FLUJA ABADI	08125232068	ganzum100199@gmail.com		08-Nov-2022 21:38:20
Urip Rahmadi	Perempuan	Dosen	Universitas Satek Nagara Indonesia (USNI)	08138517332	urip_rahmadyahoo.com		08-Nov-2022 21:53:43
Riz Fajran	Perempuan	Asisten Koordinator Madya	Pusat Riset Perikanan	08156567160	rizfan_rdg@gmail.com		08-Nov-2022 20:52:43
Beno F. Tezzza	Perempuan	Dosen	Universitas Satek Nagara Indonesia	0818201885	benofuza28@gmail.com		08-Nov-2022 20:47:51
DESI FATMAWATI	Perempuan	QC	PT ALAM JAYA	081388055514	desifata21@gmail.com		08-Nov-2022 20:48:30
Ridwaninggit	Perempuan	Revisi Ahli Madya	Pusat Riset Perikanan, BRRI	081217546987	riding_top@gmail.com		08-Nov-2022 20:28:16
Riky Agung Kurnawan	Laki - Laki	QA	PT Rakta Laut Nusantara	081386533330	rikyagung@gmail.com		08-Nov-2022 19:59:29
Dr. H. Ariel Anji, MP	Perempuan	Wakil Ditjen ITab, Perikanan dan Ilmu Kelautan	Universitas Maulana Indonesia	08529921757	andean2@gmail.com		08-Nov-2022 19:04:47
V Gede Bayu Sedana	Laki - Laki	Asisten Data dan Informasi	Pusat Riset Perikanan, BRISAMP, KKP	08129811011	bayu.vastri@gmail.com		08-Nov-2022 18:53:15
Maria Ester Huppi	Perempuan	Communication consultant	FAO	8282124353434	maria.huppi@fao.org		08-Nov-2022 18:50:49
Rahil Thomas Marsette	Laki - Laki	Revisi	Pusat Riset Perikanan	081215265479	rjeast15@gmail.com		08-Nov-2022 18:39:26
Dwi Ermawati	Perempuan	Dosen	Universitas Satek Nagara Indonesia	08139675012	dwiernawati@gmail.com		08-Nov-2022 18:38:15

Nama Lengkap	Jenis Kelamin	Jabatan	Unit Kerja/Instansi	No. HP	Email	Tanda Tangan	Added Time
Hadji Wajid	Laki - Laki	Direktur	PT. BAHAN BAKU NASUTAMA	0816330488	hadjiganura.net		08-Nov-2022 18:37:28
Juwahar Fajar Nugroho	Laki - Laki	DA	INTILIAHR PUJA ABADI	0852482552	juwahar.fajar@gnk.com		08-Nov-2022 18:38:11
Yohan Wija Negara	Laki - Laki	Dosen	Fakultas Kehutanan dan Perikanan, Universitas Udayana	0812803257	yohanwija@unsw.ac.id		08-Nov-2022 18:38:01
MOH FAZAL MUNIR	Laki - Laki	QC	PT. INTILIAHR PUJA ABADI	08123886538	munir@intiaharfood.com		08-Nov-2022 18:38:18
TRI TONO SUBANDI	Laki - Laki	JFU Analisa Pengawasan S2F	Dinas Kelautan dan Perikanan Prov. Kaltim	08158814850	tritonosubandi@yahoo.co.id		08-Nov-2022 18:38:05
Mita Gustawan	Perempuan	Partnerhip Koordinator	YKAN	0811800068	gustawan@gmail.com		08-Nov-2022 18:38:03
Mega Ti Ratihari	Perempuan	SDP Inventory	Bah. Samsudhar Seafood	08233842038	inventory.dn@gmail.com		08-Nov-2022 18:38:28
YUHA EBANO	Laki - Laki	PROCURER	PT. INTILIAHR PUJA ABADI	08123882573	yuha@intiaharfood.com		08-Nov-2022 18:38:51
ROSDIANTO	Laki - Laki	WAKIL KETUA (BORDING AKADSIKEM & KSRUKASAMA)	SEKOLAH TINGGI PERTANIAN KUTAWA TUNJA	0818798544	rosdi_anta@yahoo.com		08-Nov-2022 18:38:45
Muhammad Alimul Bagli Prasasti	Laki - Laki	QC	PT. GOSHA DESAN SEAMTEKA	08110000564	bagas.prasasti@gnk.com		08-Nov-2022 18:39:21
Anthony Sisco Paogabeai	Laki - Laki	Phisist	Pusat Riset Perikanan - BIRRI	08158160445	antonsip@yahoo.co.id		08-Nov-2022 18:39:28

OFFLINE PARTICIPANT REGISTRATION

8 – 12 November 2022

Daftar Hadir

Konsultasi Publik Harvest Strategy Perikanan Kakap dan Kerapu di WPPNRI 713

No	Nama	Unit Kerja	No HP	Email	Tanda Tangan	
					9 Nov 2022	10 Nov 2022
1.	Furoni	Dkp Dalin	081246205	gper.katanggaja		
2.	EDI sularno	"	081347368566	edisularno@gmail.com		
3.	Mr. Ihsan Nugroho	DKP Prov. Kaltim	081347166466	ihsannugroho1980@gmail.com		
4.	Dedi Sukarto	PT. Alon Jaya	08123280571	alonyaya.g@gmail.com		
5.	Muhammad Arit	YKAN	085260011460	ariculus@gmail.com		
6.	Glaudy perdimahardja	YKAN	0811361950	gperdimahardja@gmail.com		
7.	Prasasti	Phisist	08158160445			
8.	M Mulihs Kuml	PPIK - ADI	08111214568	m_mulihs_kuml@yahoo.com		
9.	Renyani Permawati	PT. Suka Lestari	085220618	renyanipermawati@gmail.com		
10.	Irfan Fikri	IPD	0811103226			
11.	Suska Agustina	WCS	08285663041	sagustina@wcs.org		
12.	Sasi Ruzani	Dishub. NTB	08123461672	sasirus201@gmail.com		

No	Nama	Unit Kerja	No HP	Email	Tanda Tangan	
					9 Nov 2022	10 Nov 2022
13.	Firna	DKP Inv. Sultro	082281339208	firmawaty38@gmail.com		
14.	Budi Teguh S.	DKP Jatim	087855822924	denbudi.teguh@gmail.com		
15.	Rizal Rifai	Dit. PSDI	087872293499	rizalrifai.pri@gmail.com		
16.	Mely Shara	PSMJ	081292133317	melyshara@gmail.com		
17.	Faisera M	PT. ILUFA	081252330264	fausera11041096@gmail.com		
18.	HANDANI	PT Alaujah	0811372330			
19.	Dinar P.	Dit. PSDI	08891342175	dinaputolohm@gmail.com		
20.	Agustinus W	DKP NTT	085239411111	agustinus0968gze@gmail.com		
21.	Ridwan Mulyana	Dit. PSDI				
22.	Fery Sutyawan	Dit. PSDI		sutyawan@guh.co.com		
23.	Martini D. Indrayanti	Dit. PSDI		sdidipt@gmail.com		
24.	Iham Serfansyah	Dit. PSDI	085629170746	sdidipt@gmail.com		
25.	NI Pt Sri Cahya Bawanti	DKP Baci	082340826583	bawanti.cahya@gmail.com		
26.	Hartaty L	GK Jambu	081332325701	hualbatah@gmail.com		
27.	Nur Meza M	OP Jambu	082232291893	sgogachi@gmail.com		

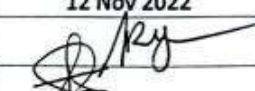

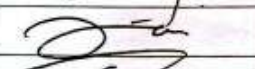

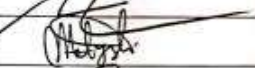


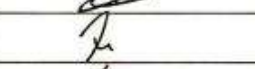




No	Nama	Unit Kerja	No HP	Email	Tanda Tangan	
					9 Nov 2022	10 Nov 2022
28.	Uyuni Hastuti	EO	0856102455	uyuni.hastuti@esnl.co.id		
29.	ROBBY ZORIZ	EO	0816985388			
30.	Santi S.	EO	089777456198	sssafeproduction@gmail.com		
31.	ADE SS	PSDI	08126868780	januar.ade@gmail.com		
32.	Yusron Alifi	DTP Jatim	085721210810	alifiyusron@gmail.com		
33.	Karto Pully	PSDI	08562709229	kartopully@gmail.com		
34.	G M. Rayhan	Sekolah PT	085695748448	gmrayhan@gmail.com		
35.	Yaya Hudaaya	PSDI	081310660619	redzambe@gmail.com		
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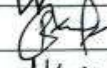
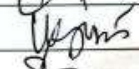

Daftar Hadir
Konsultasi Publik Harvest Strategy Perikanan Kakap dan Kerapu di WPPNRI 713

No	Nama	Unit Kerja	No HP	Email	Tanda Tangan	
					8 Nov 2022	11 Nov 2022
1.	Ridwan Mulgona	Dit. PSDI	0815 2811 6212			
2.	FERY SUTAWAN	Dit PSDI	082299326885	sutawan@yahava		
3.	Ist. Yuliet	WD	08111105236			
4.	Karto Pulung	PSDI	0856 2209 229	kartopulung@gmail.com		
5.	Rizal Refai	Dit. PSDI	087872293499	rizalrefai.pul@gmail.com		
6.	ROBBY ZORIN	Eksterna	0816 985 387			
7.	Dinar Putra Lakom	Dit. PSDI	08119709125	dinaputra@smi.go.id		
8.	Mely Shara Bangun	PSDI DJPT	081297155319	melyshara@gmail.com		
9.	Martini Dwi	PSDI	08111167774	martini.dwi@gmail.com		
10.	ILHAM SERFIANSYAN	PSDI	085694170740	serfiansyan@gmail.com		
11.	Uyuni Hastuti		0856102459	uyunihastuti@gmail.com		
12.	Santia S.		089774561498	ssantia@production@gmail.com		

No	Nama	Unit Kerja	No HP	Email	Tanda Tangan	
					8 Nov 2022	11 Nov 2022
13.	M Muehlis Kamel	FPK-ADI	08111214568	muehliskamel@ppr.ipb.ac.id		
14.	Sista Agustina	NCS	08128663441	sagustina@ncs.org		
15.	Muhammad Aris	YKAN	085260011460	aris@csdce.com		
16.	Glaudy Parnahardis	YKAN	0811901950	gpaudarnahardis@gmail.com		
17.	ADE SJ	PSDI	08126868780	ade.sj@gmail.com		
18.	Q M. Rayhan	Siddiqin PT	0856 9574 8448	qmrshon@gmail.com		
19.	Tayca Hudaya	PSDI	081310660615	red@nbe@gmail.com		
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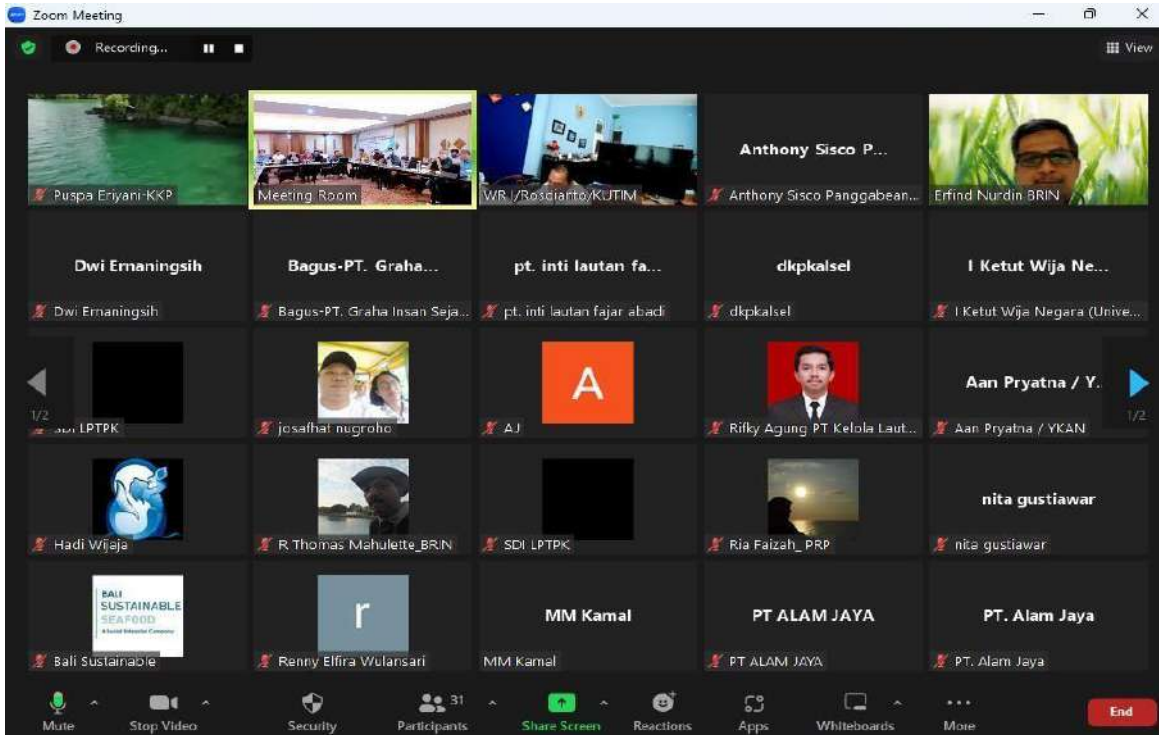
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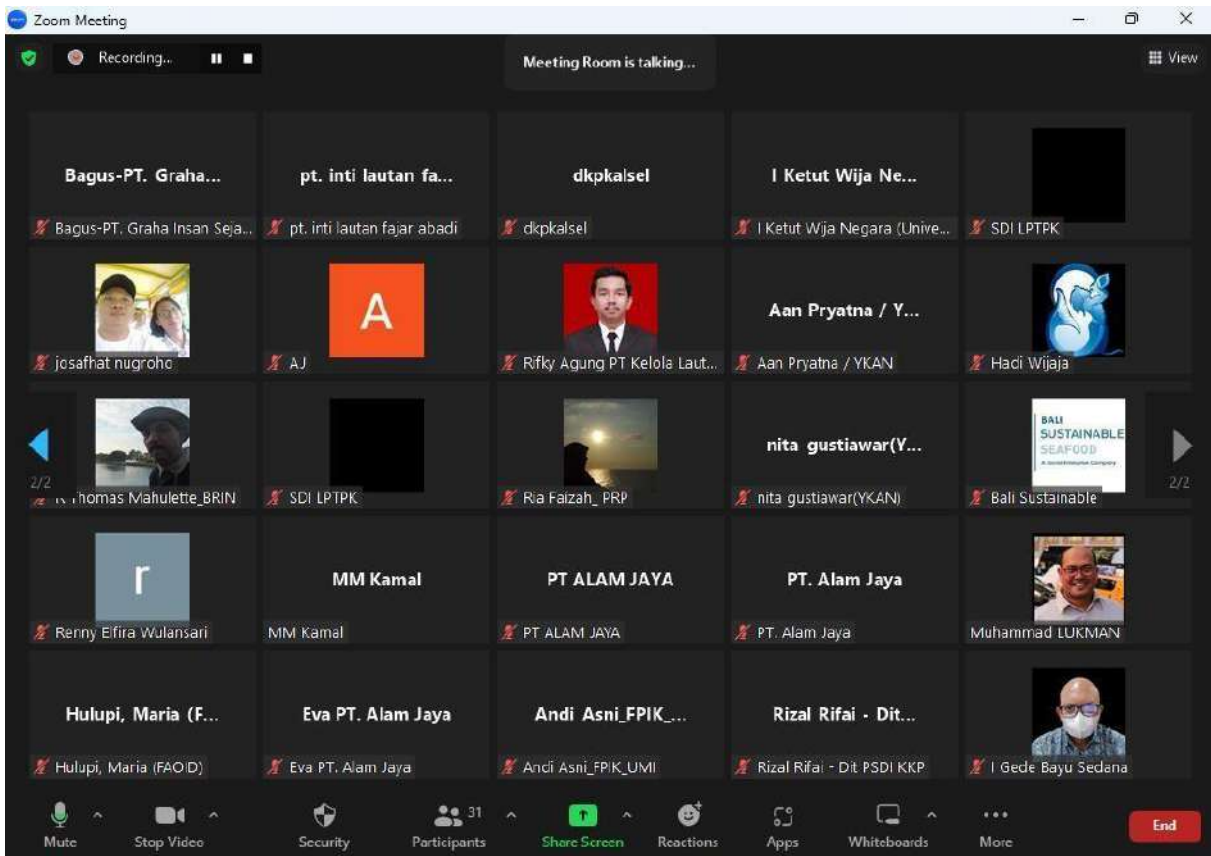
No	Nama	Unit Kerja	No HP	Email	Tanda Tangan
					12 Nov 2022
1.	Ridwan Mulyana	PSDI			
2.	Fery Sutycawan	PSDI		sutycawan@sahoo.com	
3.	Rizal Refai	PSDI	087872293499	rizalrefai.pul@gmail.com	
4.	ILHAMA SERFIANSYAH	PSDI	085604170740	Serfiansyah@gmail.com	
5.	Dinar P.	DA PSDI	08519734175	dinarputradhiana@gmail.com	
6.	Martni	PSDI	08111169774		
7.	Melyshara Bangsun	PSDI	08292135319	melyshara@gmail.com	
8.	T. An Yuli d	IPD	08111109236		
9.	M. Mulhoro Kamel	FPIK ADI	0811214968	mml_kamel@gmail.com	
10.	Karte Pulung	PSDI	0856 909 229	kartepulung@gmail.com	
11.	ADE SJ	PSDI	08126868780	januar.ade@gmail.com	
12.	G M Rayhan	PSDI PT	085695748440	gmrayhan@gmail.com	

No	Nama	Unit Kerja	No HP	Email	Tanda Tangan
					12 Nov 2022
13.	Yaya Hudaaya	PSDT	081710660615	redsmbe@gmail.com	
14.	ROBBY ZORIEA	Karna	0816585988		
15.	Uyuni	Karma	08561012409		
16.	Santi S.	Karma	0777456998		
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Appendix 3. Documentation during the Stakeholder Consultation Meeting for Harvest Strategy Document of Snapper and Grouper Fisheries at FMARI 713

DOCUMENTATION DAY #1











Documentation Day #2

Recording... You are viewing SDJ LPTPK's screen View Options

Urgensi Mengelola Perikanan Kerapu Berkelanjutan

Tingkat Pemanfaatan sudah "Fully Exploited" dan "Over Exploited"

Perlu RPP (Reduksi Perikanan)

Perlu MS (Manajemen Sumberdaya)

Memiliki potensi lastari ikan karang sebesar 829.051 Ton/Tahun (Kepmen KP Nomor 19/2022)

50% dilakukan oleh nelayan-nelayan kecil (jenis alat tangkap: Rewai Dasar, Bubu, dan Pancing Ulur)

Indonesia sebagai pemasok utama perikanan Kakap dan Kerapu dunia sebesar 45% (FAO dalam Cawthom, DM & Mariani S 2017)

Tahun 2019 mempunyai nilai ekspor kerapu sebesar USD 26 millions

Salah satu komoditas prioritas untuk sertifikasi MSC

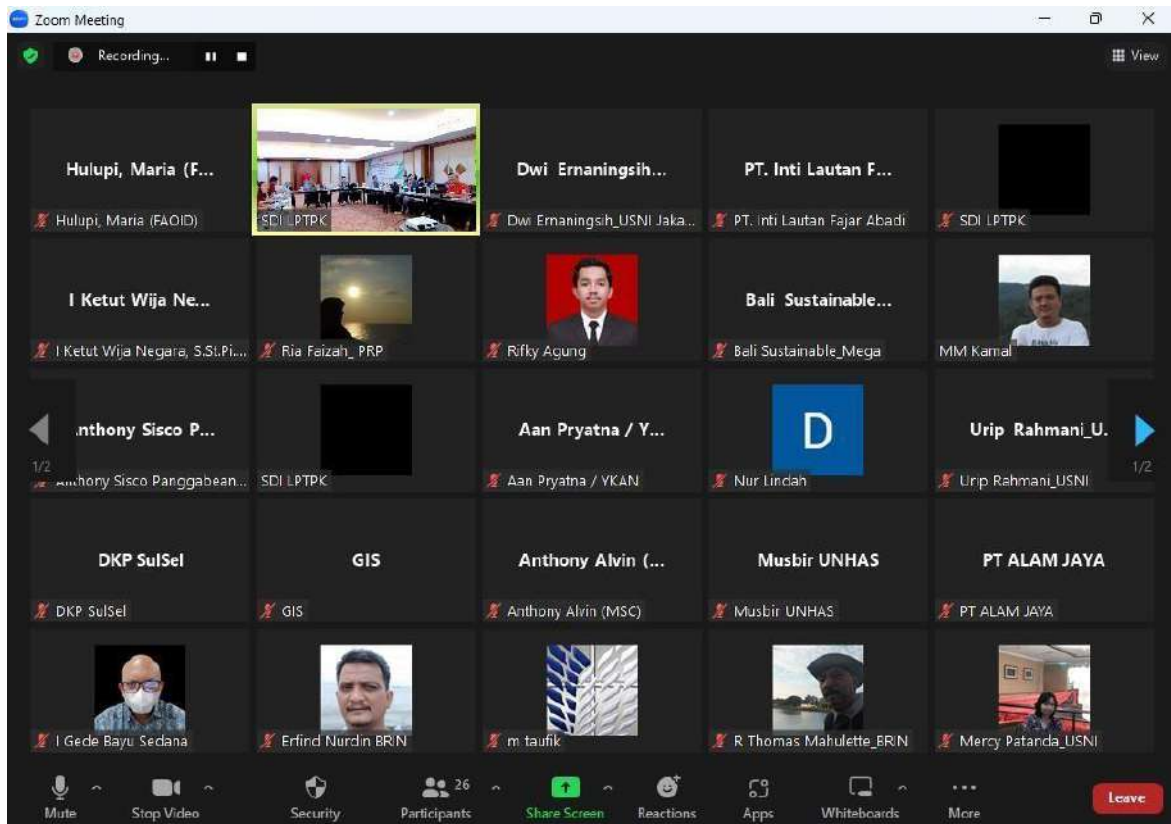
Pengaturan permintaan pasar khususnya terhadap ukuran layak tangkap (trade limit 50% dibawah 1m)

Perikanan Kakap dan Kerapu Berkelanjutan

Remove Spotlight

SDJ LPTPK

Mute Stop Video Security Participants Share Screen Reactions Apps Whiteboards More Leave













Documentation Day #3







Appendix 4. Presentation material for Harvest Strategy Document of Snapper and Grouper Fisheries at FMARI 713 (by Dr. Fery Sutyanawan)



Strategi Pemanfaatan (*Harvest Strategy*) Perikanan Kakap di WPPNRI 713

Dr. Fery Sutyawan, S.Pi, MPP, M.T

Koordinator Kelompok SDI Laut Pedalaman,
Teritorial, Perairan Kepulauan, Perairan Kepulauan,
dan Kelembagaan WPPNRI di Perairan Laut
Direktorat Pengelolaan Sumber Daya Ikan

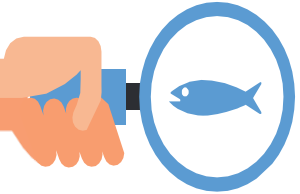
November 2022

Add a Footer



URGENSI PENYUSUNAN *HARVEST* *STRATEGYKAKAP*

Urgensi Mengelola Perikanan Kakap Berkelanjutan



Memiliki potensi lestari ikan karang sebesar 829.051 Ton/Tahun (Kepmen KP Nomor 19/2022)



90% dilakukan oleh nelayan-nelayan kecil (jenis alat tangkap: Rawai Dasar, Bubu, dan Pancing Ulur)



Indonesia sebagai pemasok utama perikanan Kakap dan Kerapu dunia sebesar 45% (FAO dalam Cawthorn, DM & Mariani S 2017)

Perlu RPP

Tingkat Pemanfaatan sudah **“Fully Exploited”** dan **“Over Exploited”**

Perlu HS



Tahun 2019 mempunyai nilai ekspor: kakap sebesar USD 8 millions



Salah satu komoditas prioritas untuk sertifikasi MSC



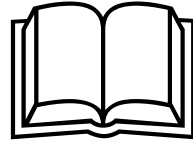
Pengaturan permintaan pasar khususnya terhadap ukuran layak tangkap (*trade limit* 50% dibawah 1m)



Perikanan Kakap dan Kerapu **Berkelanjutan**



Urgensi Penyusunan *Harvest Strategy*



Dokumen HS

Dokumen RPP


Pengelolaan perikanan
(UU No. 31 Tahun 2004
jo UU11 Tahun 2020
Pasal 1 Ayat 7) dan PP
27 Tahun 2021 (Pasal 1
Ayat 55)

Amanah Penyusunan RPP

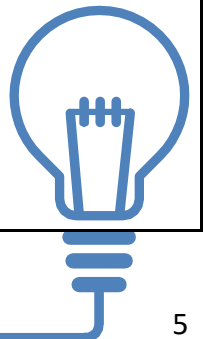
1. (UU No.31 Tahun 2004 Pasal 7 ayat (1) huruf a.) jo UU 11 Tahun 2020 :
"Dalam rangka mendukung kebijakan pengelolaan sumber daya ikan, Menteri menetapkan:
a.rencana pengelolaan perikanan;"
2. PP 27 Tahun 2021
"Dalam rangka pengelolaan sumber daya ikan yang berkelanjutan, Pemerintah menetapkan **Rencana Pengelolaan Perikanan.**"

- Dengan diterapkannya RPP, maka perlu disusun dokumen **harvest strategy** perikanan sebagai pendukung operasional implementasi RPP
- Juknis Penyusunan Dokumen **Harvest Strategy** (Peraturan Dirjen PT No 17/PER-DJPT/2017)
- Strategi Pemanfaatan (*harvest strategy*) :
 - a. Komponen penting dari kerangka pengelolaan perikanan yang lebih luas di dalam RPP;
 - b. Berfungsi sebagai pelengkap operasional bagi sebuah RPP;
 - c. Menjadi basis dari siklus pengelolaan yang adaptif;
 - d. Menyediakan pendekatan yang formal dan konsisten bagi proses pengambilan keputusan pengelolaan.

Amanat Penyusunan *Harvest Strategy* Kakap dan Kerapu dalam Kepmen KP 123/2021

	
<p>KEPUTUSAN MENTERI KELAUTAN DAN PERIKANAN REPUBLIK INDONESIA NOMOR 123 TAHUN 2021 TENTANG RENCANA PENGELOLAAN PERIKANAN KAKAP DAN KERAPU DENGAN RAHMAT TUHAN YANG MAHA ESA MENTERI KELAUTAN DAN PERIKANAN REPUBLIK INDONESIA,</p>	
Menimbang :	<p>bahwa untuk melaksanakan ketentuan Pasal 22 ayat (2) Peraturan Menteri Kelautan dan Perikanan Nomor 22 Tahun 2021 tentang Penyusunan Rencana Pengelolaan Perikanan dan Lembaga Pengelola Perikanan di Wilayah Pengelolaan Perikanan Negara Republik Indonesia, perlu menetapkan Keputusan Menteri Kelautan dan Perikanan tentang Rencana Pengelolaan Perikanan Kakap dan Kerapu;</p>
Mengingat :	<p>1. Pasal 17 ayat (3) Undang-Undang Dasar Negara Republik Indonesia tahun 1945;</p>

No	Sasaran	Rencana Aksi	Penanggung Jawab	Waktu Pelaksanaan
a.	<p>Tujuan: Mewujudkan pengelolaan sumber daya ikan Kakap dan Kerapu secara berkelanjutan.</p>			
1	<p>Tercapainya status tingkat pemanfaatan minimal pada level fully-exploited di WPPNRI khususnya WPPNRI 573, WPPNRI 711, WPPNRI 712, WPPNRI 713, WPPNRI 716, dan WPPNRI 718 dalam jangka waktu 5 (lima) tahun.</p>	<p>11.Menyusun dan mengimplementasikan strategi pemanfaatan (<i>harvest strategy</i>) perikanan Kakap dan Kerapu.</p>	DJPT	2022-2026



- Pembagian Perikanan
- Penentuan Indikator Kinerja
- Penentuan elemen pada HS

- Penentuan SPR dan CPUE
- Penentuan Limit Reference Point
- Penentuan Target Reference Point

Kesepakatan untuk technical worksop pembahasan data



Penentuan Target Spesies dan Tujuan Operasional

Penentuan:

- Tujuan Konseptual
- Tujuan Operasional
- Titik Acuan Batas
- Target Reference Point
- Kesepakatan Mekanisme Monitoring



HARVEST STRATEGY KAKAP

Konsultasi Publik I : Semarang, 2 Maret 2022

Konsultasi Publik II : Jogja, 16 Juni 2022

Konsultasi Publik III : Makassar, 11 Agustus 2022

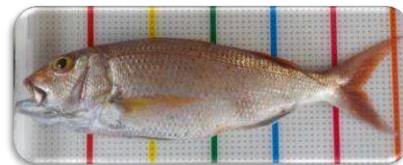
Unit perikanan yang dikelola di dalam dipertimbangkan berdasarkan kriteria:

- 1) Merupakan hasil tangkapan dominan (>60% dari komposisi hasil tangkapan);
- 2) Status pemanfaatan dan kerentanan stok;
- 3) Kemudahan dalam melakukan monitoring;
- 4) Jenis dominan yang diperdagangkan; dan
- 5) Identifikasi spesies sasaran, batas geografis (unit pengelolaan), dan stok biologi.

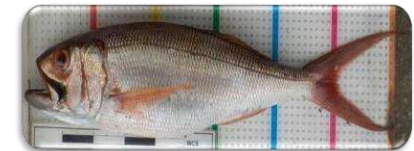
maka, unit perikanan kakap yang dikelola adalah di WPPNRI 713 dengan 3 (tiga) jenis ikan prioritas yaitu:



Bambang/kakap merah,
malabar red snapper,
(*Lutjanus malabaricus*)



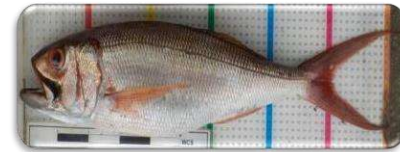
Kakap anggoli,
goldbanded jobfish
(*Pristipomoides multidens*)



Kurisi perak,
rusty jobfish ,
(*Aphareus rutilans*)

Sumber : KEPMEN KP Nomor 37 Tahun 2021 tentang Struktur Basis Data Ikan dan Data Induk Ikan

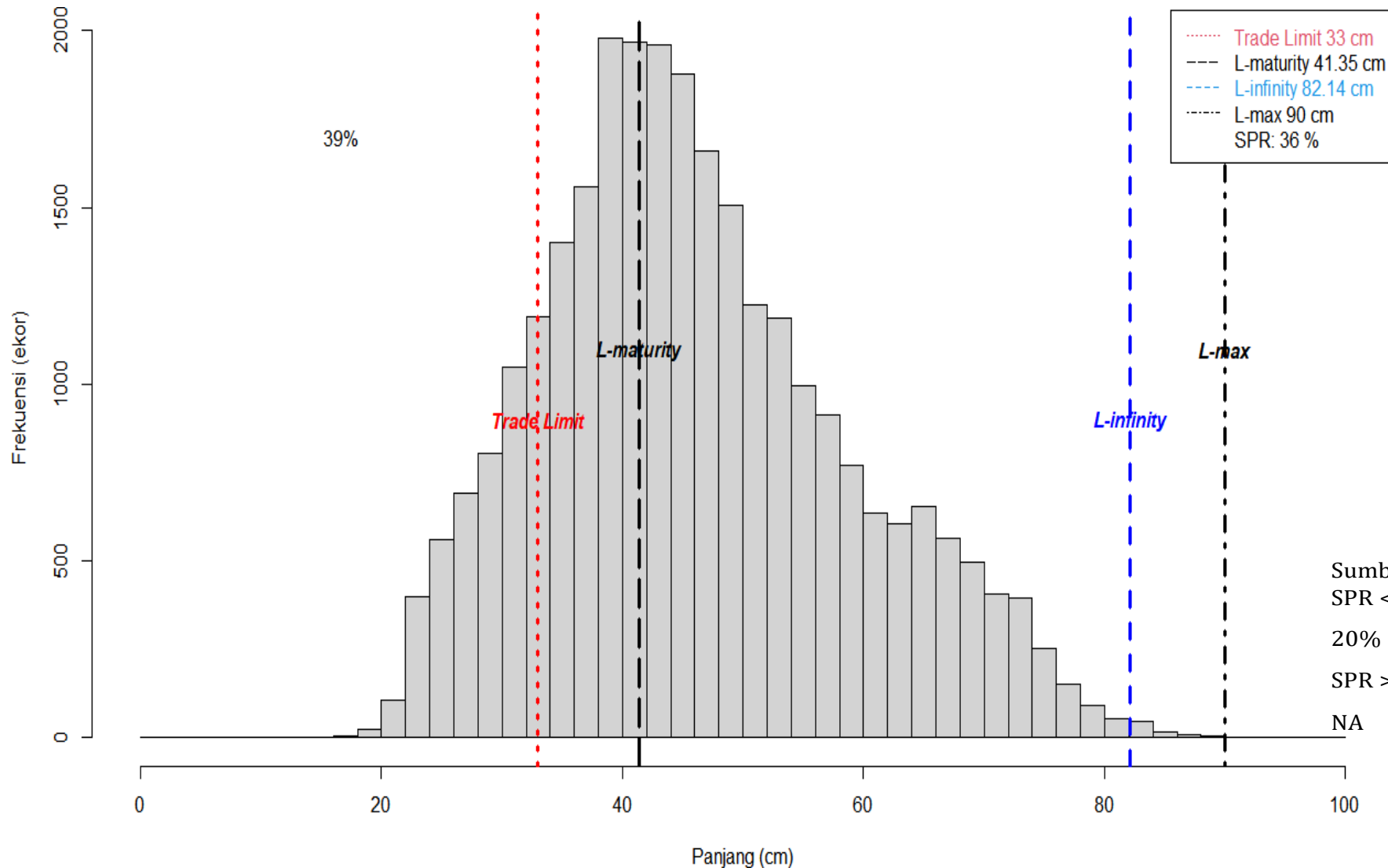
Spawning Potential Ratio Kakap di WPPNRI 713



No.	Spesies	Nilai SPR (%)				
		2016	2017	2018	2019	2020
1	Bambangan/kakap merah, <i>malabar red snapper</i> , (<i>Lutjanus malabaricus</i>)	39 (33-45)	36 (31-41)	20 (18-22)	35 (33-36)	36 (35-37)
2	Kakap anggoli, <i>goldbanded jobfish</i> (<i>Pristipomoides</i>)	44 (42-46)	46 (43-50)	30 (28-31)	43 (37-45)	61 (57-64)

	<i>multidens</i>)					
3	Kurisi perak, <i>rusty jobfish</i> ,(Aphareus <i>rutilans</i>)	NA	19 (5-33)	31 (28-34)	44 (36-52)	56 (53-60)

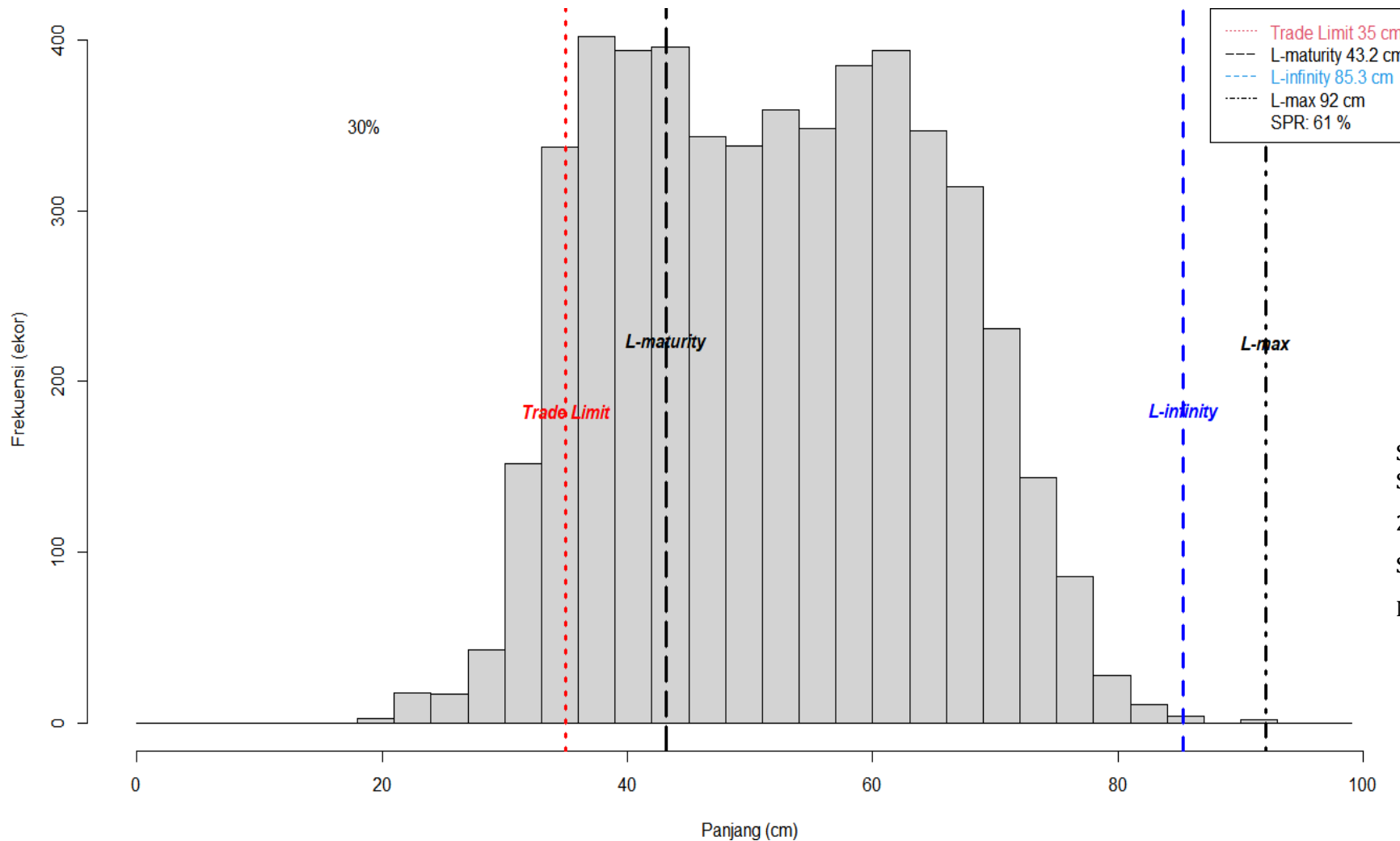
Trade Limit Bambang/kakap merah, malabar red snapper, (*Lutjanus malabaricus*)



Sumber : Data diolah oleh BRPL (2021)

SPR < 20% : *Over-exploited*
 20% ≤ SPR ≤ 30% : *Fully - Moderately exploited*
 SPR > 30% : *Under-exploited*
 NA : *Not Available*

Trade Limit Kakap anggoli, goldbanded jobfish (*Pristipomoides multidens*)



Sumber : Data diolah oleh BRPL (2021)

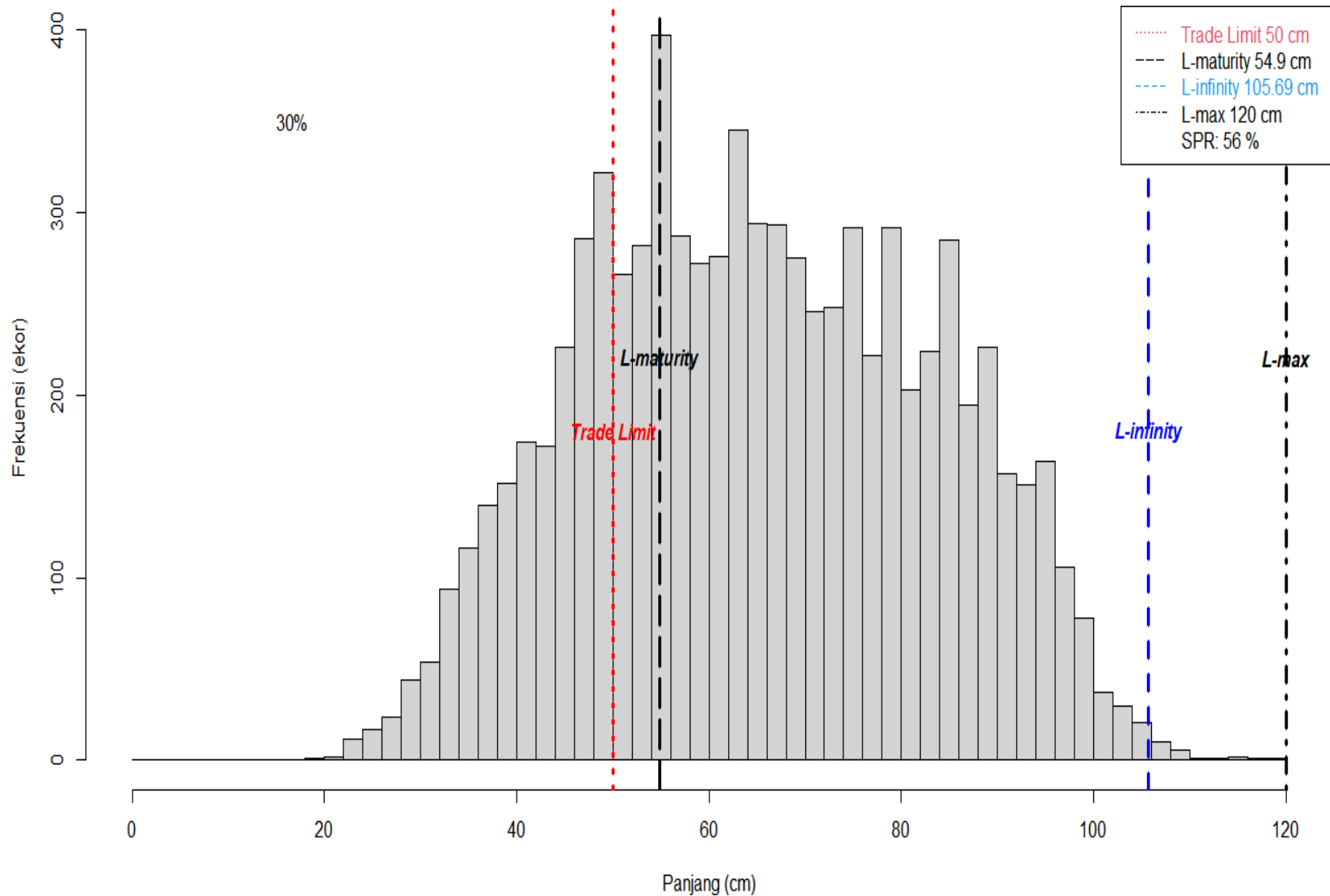
SPR < 20% : *Over-exploited*

20% ≤ SPR ≤ 30% : *Fully - Moderately exploited*

SPR > 30% : *Under-exploited*

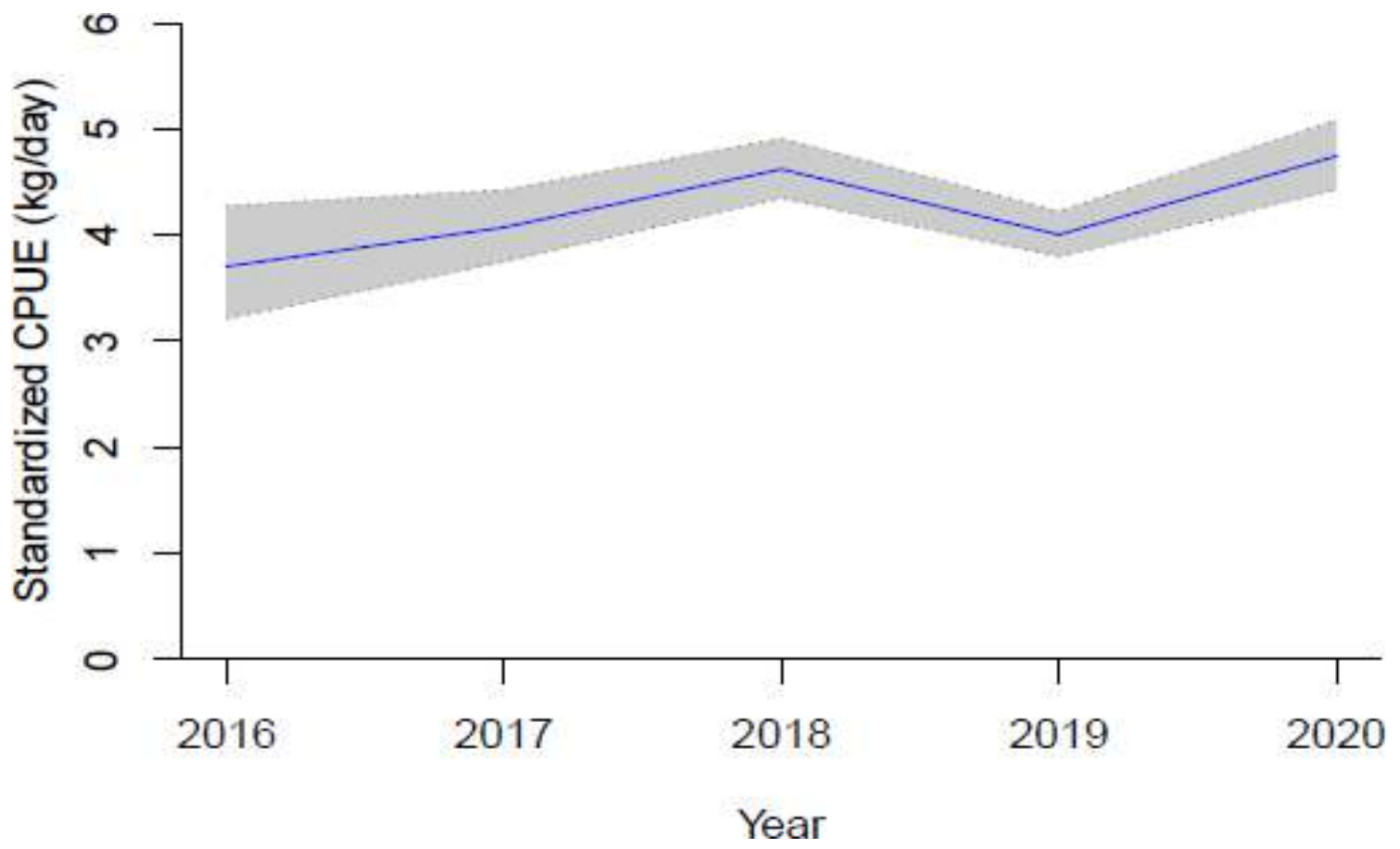
NA : *Not Available*

Trade Limit Kurisi perak, *rusty jobfish* (*Aphareus rutilans*)



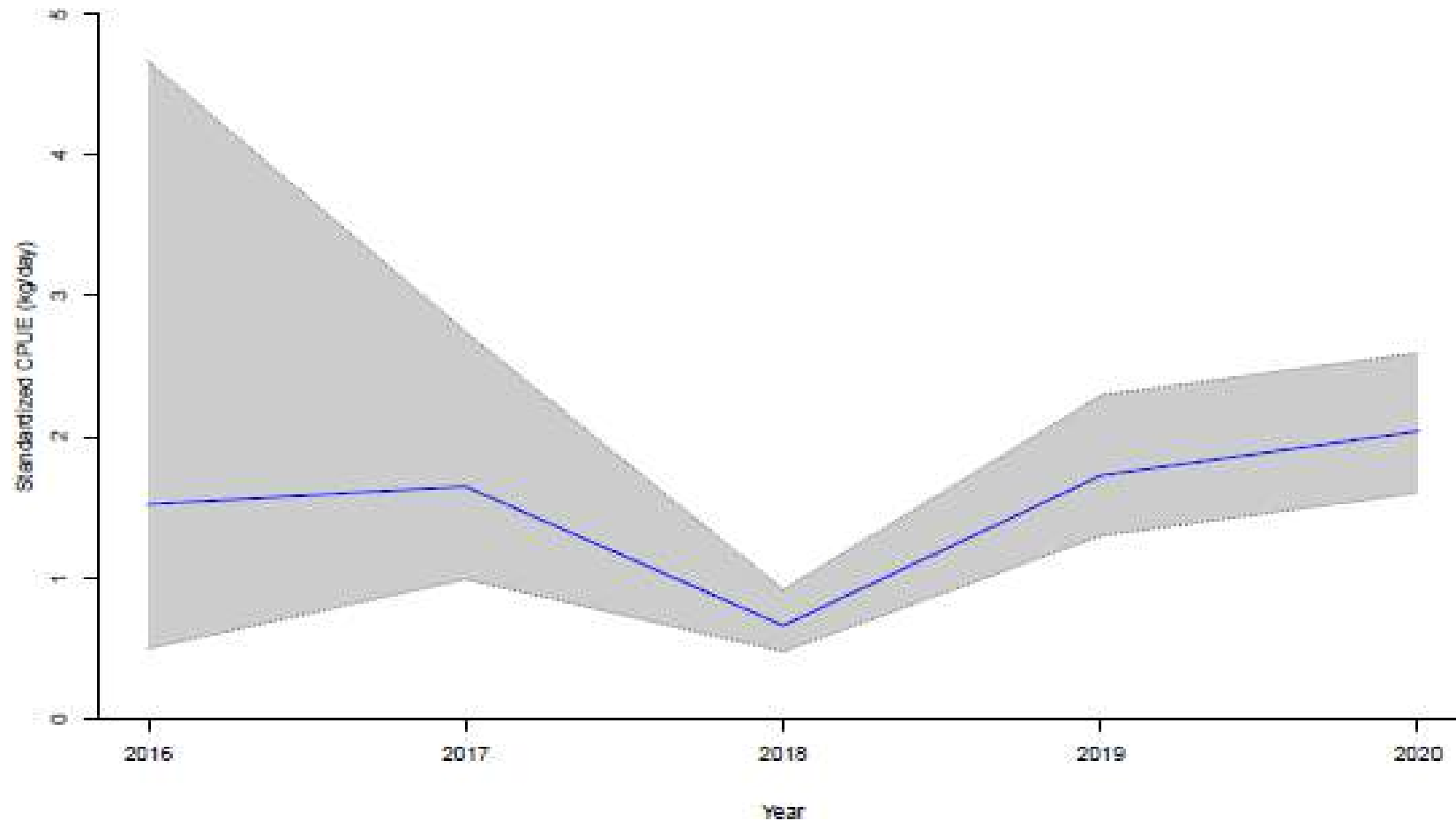
Sumber : Data diolah oleh BRPL (2021)
 SPR < 20% : *Over-exploited*
 20% ≤ SPR ≤ 30% : *Fully - Moderately exploited*
 SPR > 30% : *Under-exploited*
 NA : *Not Available*

Nilai tingkat kelimpahan (CPUE) Bambang/kakap merah, *malabar red snapper*, (*Lutjanus malabaricus*) tahun 2016-2020



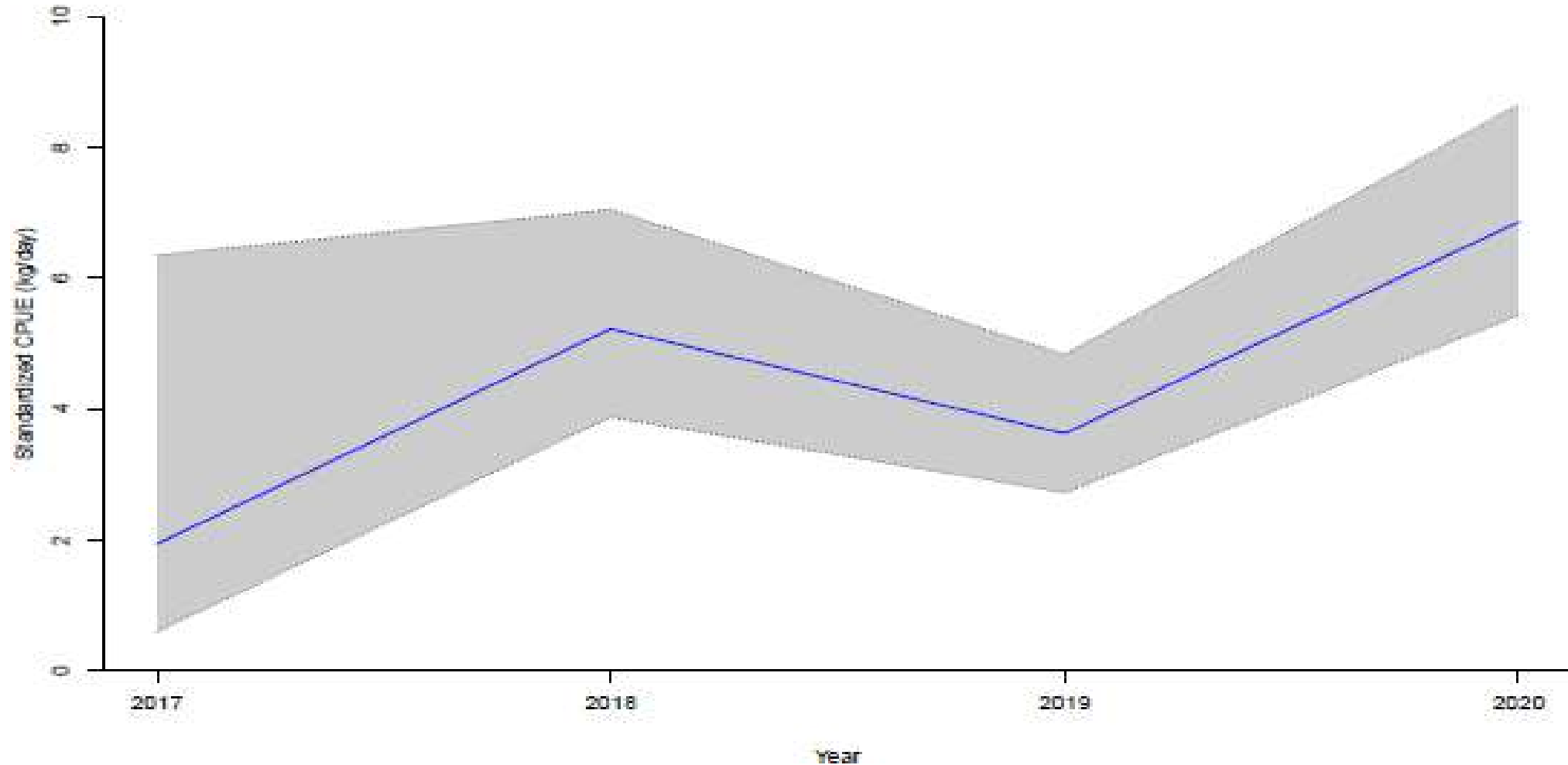
Catatan : distandarisasi menggunakan Generalized

Nilai tingkat kelimpahan (CPUE) Kakap anggoli, *goldbanded jobfish* (*Pristipomoides multidens*) tahun 2016-2020



Catatan : distandarisasi menggunakan Generalized Linear Model (GLM) dengan confident interval 95%

Nilai tingkat kelimpahan (CPUE) Kurisi perak, *rusty jobfish* (*Aphareus rutilans*) tahun 2016-2020



Catatan : distandarisasi menggunakan Generalized Linear Model (GLM) dengan confident interval 95%

Harvest Strategy Kakap di WPPNRI 713



Tujuan Konseptual

Memastikan keberlanjutan sumber daya ikan Kakap di WPPNRI 713

Tujuan Operasional

- a. Meningkatkan rasio potensi pemijahan (SPR) pada spesies prioritas Bambang/Kakap merah, *malabar red snapper*, (*Lutjanus malabaricus*) di atas 40% dan
- b. Mempertahankan rasio potensi pemijahan (SPR) pada spesies prioritas Kakap anggoli, *goldbanded jobfish* (*Pristipomoides multidens*) dan Kurisi perak, *rusty jobfish*, (*Aphareus rutilans*) di atas 40%

Titik Acuan Batas

Titik acuan batas atau limit reference point untuk perikanan Kakap dengan indikator SPR sebesar 20%

Target Reference Point

- a. Indikator rasio potensi pemijahan (SPR) pada spesies prioritas Bambang/Kakap merah, *malabar red snapper*, (*Lutjanus malabaricus*) ditingkatkan di atas 40%;
- b. Indikator rasio potensi pemijahan (SPR) pada spesies prioritas Kakap anggoli, *goldbanded jobfish* (*Pristipomoides multidens*) dan Kurisi perak, *rusty jobfish*, (*Aphareus rutilans*) di pertahankan di atas 40%

PENGENDALIAN INPUT

Pengaturan Teknis

- ~~1. Mendorong implementasi penggunaan API dengan ukuran mata pancing rawai dasar dan pancing ulur (target kakap) \leq (lebih kecil dan sama)* nomor 5 dengan ukuran celah 18 mm dan diameter 2,5 mm (SNI nomor 8794:2019)~~
2. Mengoptimalkan ijin yang sudah ada saat ini (eksisting) untuk API penangkap Kakap dengan tidak menambah ijin baru;
- ~~3. Mengurangi Jumlah mata pancing pada API rawai dasar (persentase akan ditentukan kemudian)~~

Pengaturan Area dan Waktu

1. Mengurangi hari operasi penangkapan 25% dari kondisi saat ini (4 hari dalam sebulan)
2. Penegakan aturan zonasi didalam Kawasan konservasi (lengkapi daftar Kawasan konservasi di WPPNRI 713)

PENGENDALIAN OUPUT

1. Penerapan Alokasi penangkapan ikan Kakap di WPPNRI 713 oleh Pemerintah Daerah dan Pemerintah Pusat sesuai kewenangannya; dan:
2. Mempromosikan, mendorong, dan menganjurkan *minimum legal size* (MLS) atau ukuran minimum ikan Kakap yang boleh ditangkap di WPPNRI 713

Spesies	SPR	Lm (cm)	L (cm)	W (gr)
Bambangan/kakap merah, <i>malabar red snapper</i> , (<i>Lutjanus malabaricus</i>)	36	41,35	41,00	800

Kurisi perak, <i>rusty jobfish</i> , (<i>Aphareus rutilans</i>)	56	53,50	54,00	1000
Kakap anggoli, <i>goldbanded jobfish</i> (<i>Pristipomoides multidens</i>)	61	43,20	43,00	1000

Skenario	Pengaturan
Jika SPR berada dibawah 20%	<ul style="list-style-type: none"> · Tidak ada penambahan kapal penangkap ikan
	<ul style="list-style-type: none"> · Jumlah unit kapal penangkap ikan dikurangi sebesar 10% (opsi relokasi)
	<ul style="list-style-type: none"> · Penerapan sanksi atas pelanggaran ukuran legal minimum
	<ul style="list-style-type: none"> · Penutupan area penangkapan selama musim pemijahan / <i>spawning season</i> (bulan Januari) di Kepulauan Liukang Tanggayadan di Kabupaten Kepulauan Selayar

· Penerapan sanksi terhadap pelanggaran penangkapan ikan di lokasi pemijahan

Mekanisme Monitoring *Harvest Strategy* Kakap di WPPNRI

Aktivitas monitoring terhadap implementasi Strategi Pemanfaatan perikanan ini akan dilakukan secara periodik, paling sedikit setiap 6 (enam) bulan sekali. Mekanisme monitoring dilakukan melalui:

1. Pelaporan dan pendataan hasil tangkapan kakap dilakukan secara kontinyu dengan memperkuat dan meningkatkan sistem pendataan untuk hasil tangkapan sesuai sistem pendataan yang ada dan untuk pendataan biologi sesuai dengan form terlampir;
2. Pemantauan dan evaluasi pendataan melibatkan pemerintah dan pemerintah daerah yang didukung oleh lembaga penelitian, perguruan tinggi, mitra pendukung, pelaku perikanan terkait yang ada di WPPNRI 713;
3. Evaluasi dilakukan minimal satu tahun sekali;
4. Pemantauan dan evaluasi terutama dilakukan pada 3 (tiga) spesies ikan Kakap prioritas yang dikelola, namun pemantauan regular dapat dilakukan untuk spesies-spesies lainnya.



An underwater scene with sunlight rays filtering through the water, illuminating a coral reef. The text 'TERIMA KASIH' is centered in a white box with a black border and green accents.

TERIMA KASIH



Strategi Pemanfaatan (*Harvest Strategy*) Perikanan Kerapu di WPPNRI 713


Dr. Fery Sutyan, S.Pi, MPP, M.T

Koordinator Kelompok SDI Laut Pedalaman,
Teritorial, Perairan Kepulauan, Perairan Kepulauan,
dan Kelembagaan WPPNRI di Perairan Laut
Direktorat Pengelolaan Sumber Daya Ikan

10 November 2022

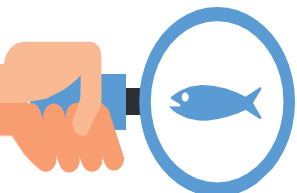


Add a Footer



URGENSI PENYUSUNAN *HARVEST* *STRATEGY* KERAPU

Urgensi Mengelola Perikanan Kerapu Berkelanjutan



Memiliki potensi lestari ikan karang sebesar 829.051 Ton/Tahun (Kepmen KP Nomor 19/2022)



90% dilakukan oleh nelayan-nelayan kecil (jenis alat tangkap: Rawai Dasar, Bubu, dan Pancing Ulur)



Indonesia sebagai pemasok utama perikanan Kakap dan Kerapu dunia sebesar 45% (FAO dalam Cawthorn, DM & Mariani S 2017)

Perlu RPP

Tingkat Pemanfaatan sudah **“Fully Exploited”** dan **“Over Exploited”**

Perlu HS

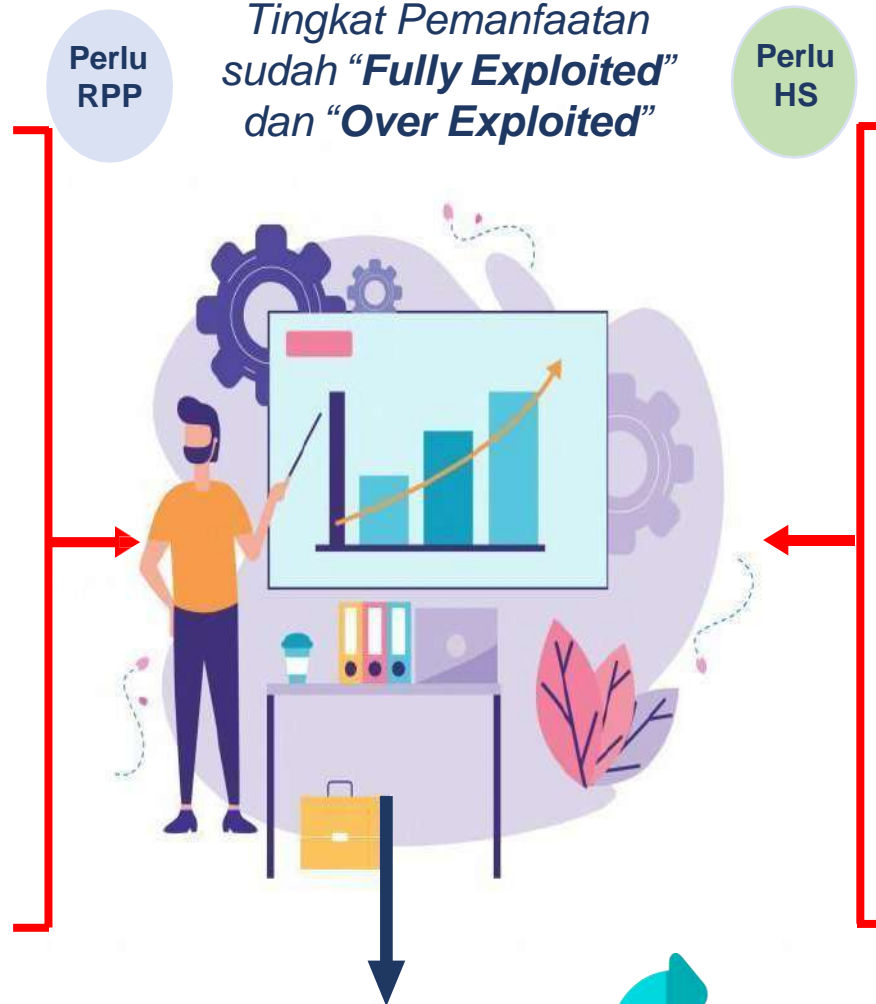
Tahun 2019 mempunyai nilai ekspor kerapu sebesar USD 26 millions



Salah satu komoditas prioritas untuk sertifikasi MSC



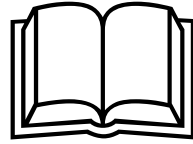
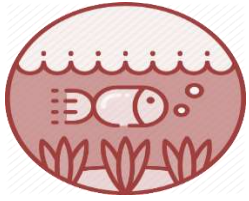
Pengaturan permintaan pasar khususnya terhadap ukuran layak tangkap (*trade limit* 50% dibawah 1m)



Perikanan Kakap dan Kerapu **Berkelanjutan**



Urgensi Penyusunan *Harvest Strategy*



Dokumen RPP



Dokumen HS

Pengelolaan perikanan


(UU No. 31 Tahun 2004 jo UU11 Tahun 2020 Pasal 1 Ayat 7) dan PP 27 Tahun 2021 (Pasal 1 Ayat 55)

Amanah Penyusunan RPP

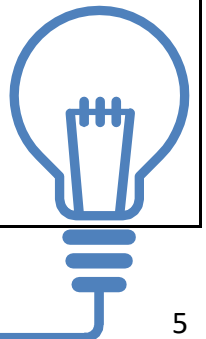
1. (UU No.31 Tahun 2004 Pasal 7 ayat (1) huruf a.) jo UU 11 Tahun 2020 :
"Dalam rangka mendukung kebijakan pengelolaan sumber daya ikan, Menteri menetapkan:
2. PP 27 Tahun 2021
"Dalam rangka pengelolaan sumber daya ikan yang berkelanjutan, Pemerintah menetapkan **Rencana Pengelolaan Perikanan** "

- Dengan diterapkannya RPP, maka perlu disusun dokumen **harvest strategy** perikanan sebagai pendukung operasional implementasi RPP
- Juknis Penyusunan Dokumen **Harvest Strategy** (Peraturan Dirjen PT No 17/PER-DJPT/2017)
- Strategi Pemanfaatan (*harvest strategy*) :
 - a. Komponen penting dari kerangka pengelolaan perikanan yang lebih luas di dalam RPP;
 - b. Berfungsi sebagai pelengkap operasional bagi sebuah RPP;
 - c. Menjadi basis dari siklus pengelolaan yang adaptif;
 - d. Menyediakan pendekatan yang formal dan konsisten bagi proses pengambilan keputusan pengelolaan.

Amanat Penyusunan *Harvest Strategy* Kakap dan Kerapu dalam Kepmen KP 123/2021

	
<p>KEPUTUSAN MENTERI KELAUTAN DAN PERIKANAN REPUBLIK INDONESIA NOMOR 123 TAHUN 2021 TENTANG RENCANA PENGELOLAAN PERIKANAN KAKAP DAN KERAPU DENGAN RAHMAT TUHAN YANG MAHA ESA MENTERI KELAUTAN DAN PERIKANAN REPUBLIK INDONESIA,</p>	
Menimbang :	<p>bahwa untuk melaksanakan ketentuan Pasal 22 ayat (2) Peraturan Menteri Kelautan dan Perikanan Nomor 22 Tahun 2021 tentang Penyusunan Rencana Pengelolaan Perikanan dan Lembaga Pengelola Perikanan di Wilayah Pengelolaan Perikanan Negara Republik Indonesia, perlu menetapkan Keputusan Menteri Kelautan dan Perikanan tentang Rencana Pengelolaan Perikanan Kakap dan Kerapu;</p>
Mengingat :	<p>1. Pasal 17 ayat (3) Undang-Undang Dasar Negara Republik Indonesia tahun 1945;</p>

No	Sasaran	Rencana Aksi	Penanggung Jawab	Waktu Pelaksanaan
a.	<p>Tujuan: Mewujudkan pengelolaan sumber daya ikan Kakap dan Kerapu secara berkelanjutan.</p>			
1	<p>Tercapainya status tingkat pemanfaatan minimal pada level fully- exploited di WPPNRI khususnya WPPNRI 573, WPPNRI 711, WPPNRI 712, WPPNRI 713, WPPNRI 716, dan WPPNRI 718 dalam jangka waktu 5 (lima) tahun.</p>	<p>11. Menyusun dan mengimplementasikan strategi pemanfaatan (<i>harvest strategy</i>) perikanan Kakap dan Kerapu.</p>	DJPT	2022-2026



- Pembagian Perikanan
- Penentuan Indikator Kinerja
- Penentuan elemen pada HS

- Penentuan SPR dan CPUE
- Penentuan Limit Reference Point
- Penentuan Target Reference Point

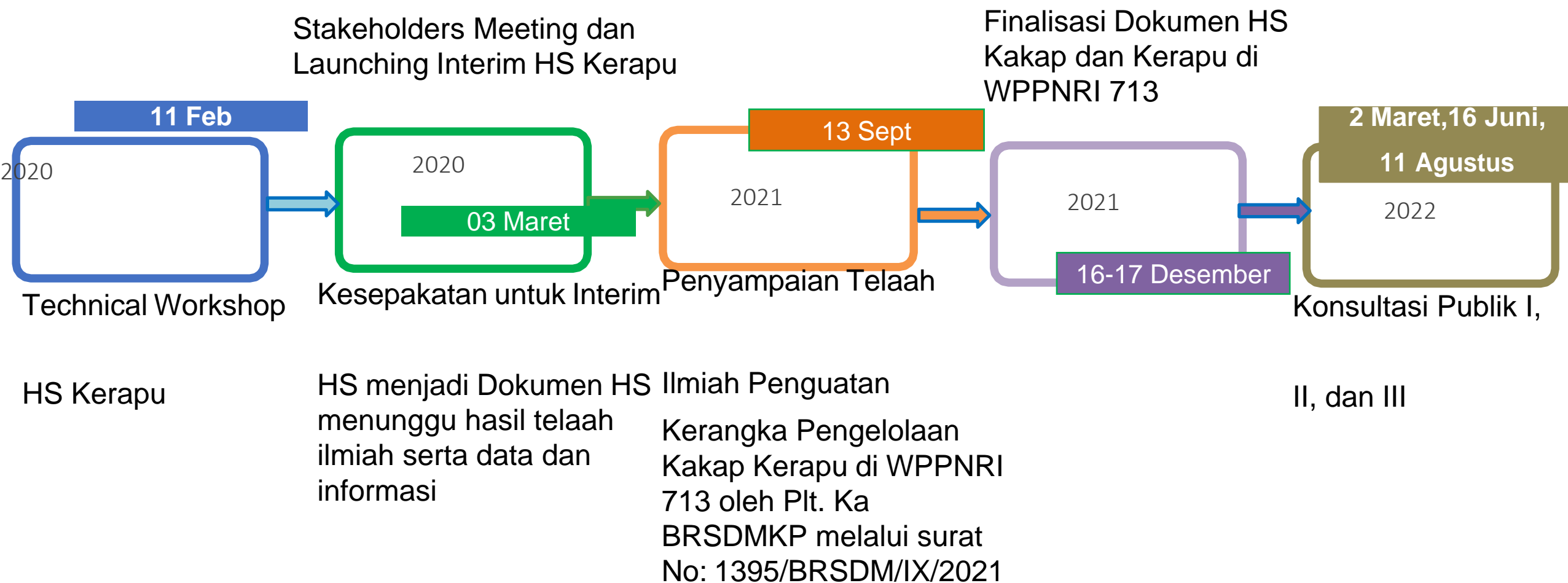
Kesepakatan untuk technical worksop pembahasan data



Penentuan Target Spesies dan Tujuan Operasional

Penentuan:

- Tujuan Konseptual
- Tujuan Operasional
- Titik Acuan Batas
- Target Reference Point
- Kesepakatan Mekanisme Monitoring



HARVEST STRATEGY KERAPU

Konsultasi Publik I : Semarang, 2 Maret 2022

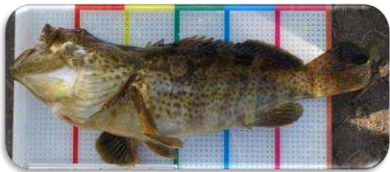
Konsultasi Publik II : Jogja, 16 Juni 2022

Konsultasi Publik III : Makassar, 11 Agustus 2022

Unit perikanan yang dikelola di dalam dipertimbangkan berdasarkan kriteria:

- 1) Merupakan hasil tangkapan dominan (>60% dari komposisi hasil tangkapan);
- 2) Status pemanfaatan dan kerentanan stok;
- 3) Kemudahan dalam melakukan monitoring;
- 4) Jenis dominan yang diperdagangkan; dan
- 5) Identifikasi spesies sasaran, batas geografis (unit pengelolaan), dan stok biologi.

maka, unit perikanan kerapu yang dikelola adalah di WPPNRI 713 dengan 4 (empat) jenis ikan prioritas yaitu:



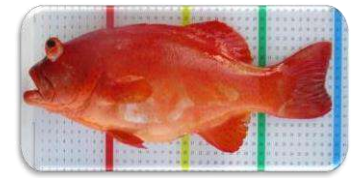
Kerapu Lumpur,
orange spotted grouper,
(*Epinephelus coioides*)



Kerapu Ekor Putih,
spotted grouper;
(*Epinephelus areolatus*)



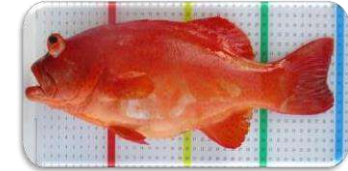
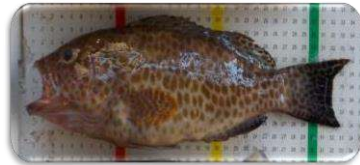
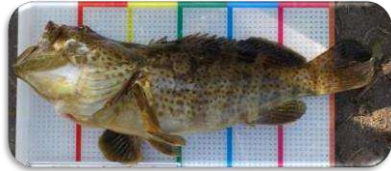
Kerapu Ekor Gunting,
white-edged lyretail,
(*Variola albimarginata*)



Kerapu Sunu,
leopard coral grouper
(*Plectropomus leopardus*)

Sumber : KEPMEN KP Nomor 37 Tahun 2021 tentang Struktur Basis Data Ikan dan Data Induk Ikan

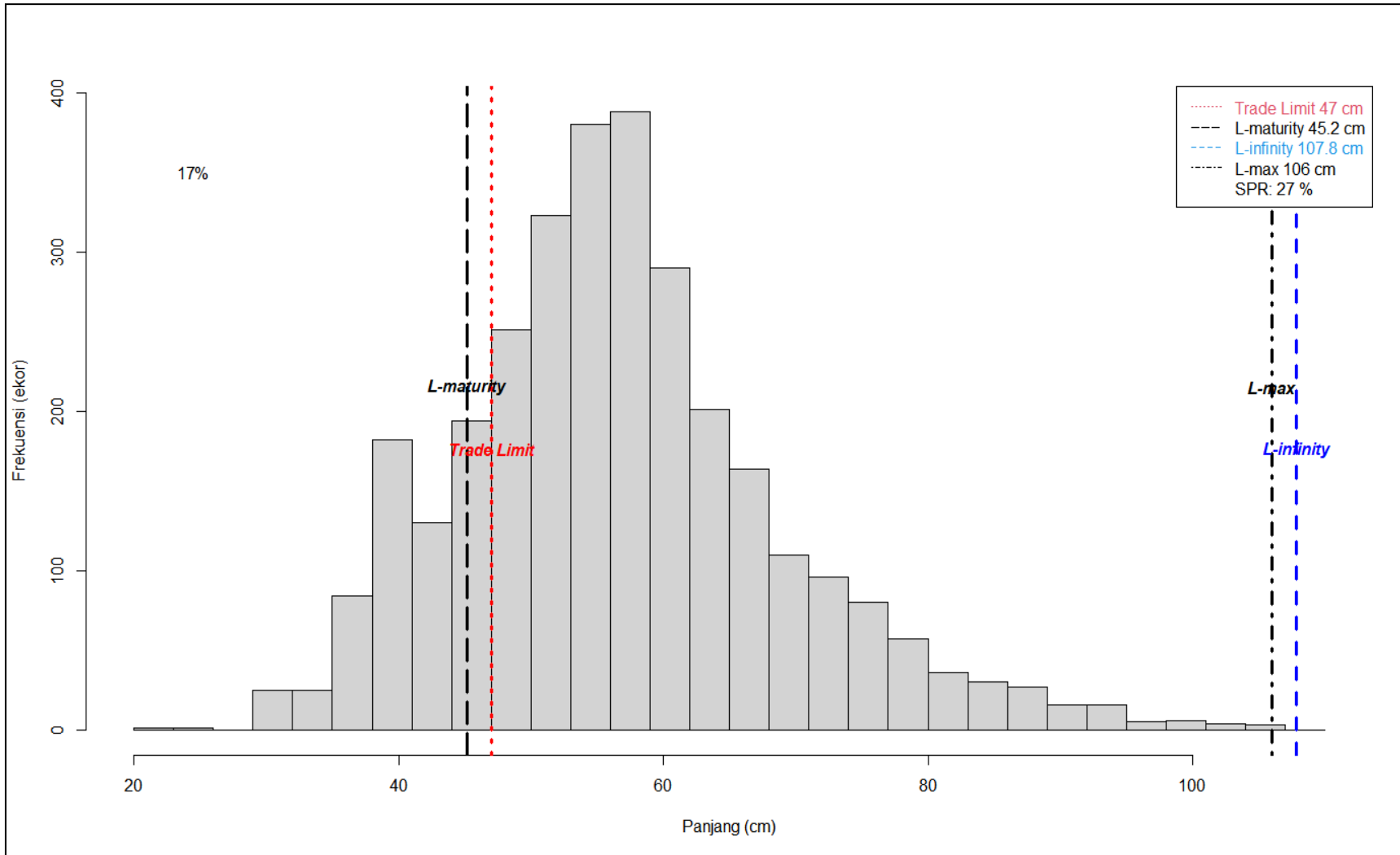
Spawning Potential Ratio Kerapu di WPPNRI 713



No.	Spesies	Nilai SPR (%)				
		2016	2017	2018	2019	2020
1	Kerapu Lumpur, <i>orange spotted grouper</i> ; (<i>Epinephelus coioides</i>)	NA	47 (32-61)	58 (51-65)	39 (34-44)	27 (25-29)
2	Kerapu Ekor Putih, <i>spotted grouper</i> ; (<i>Epinephelus areolatus</i>)	19 (18-20)	18 (17-18)	11 (10-11)	12 (12-12)	17 (16-17)

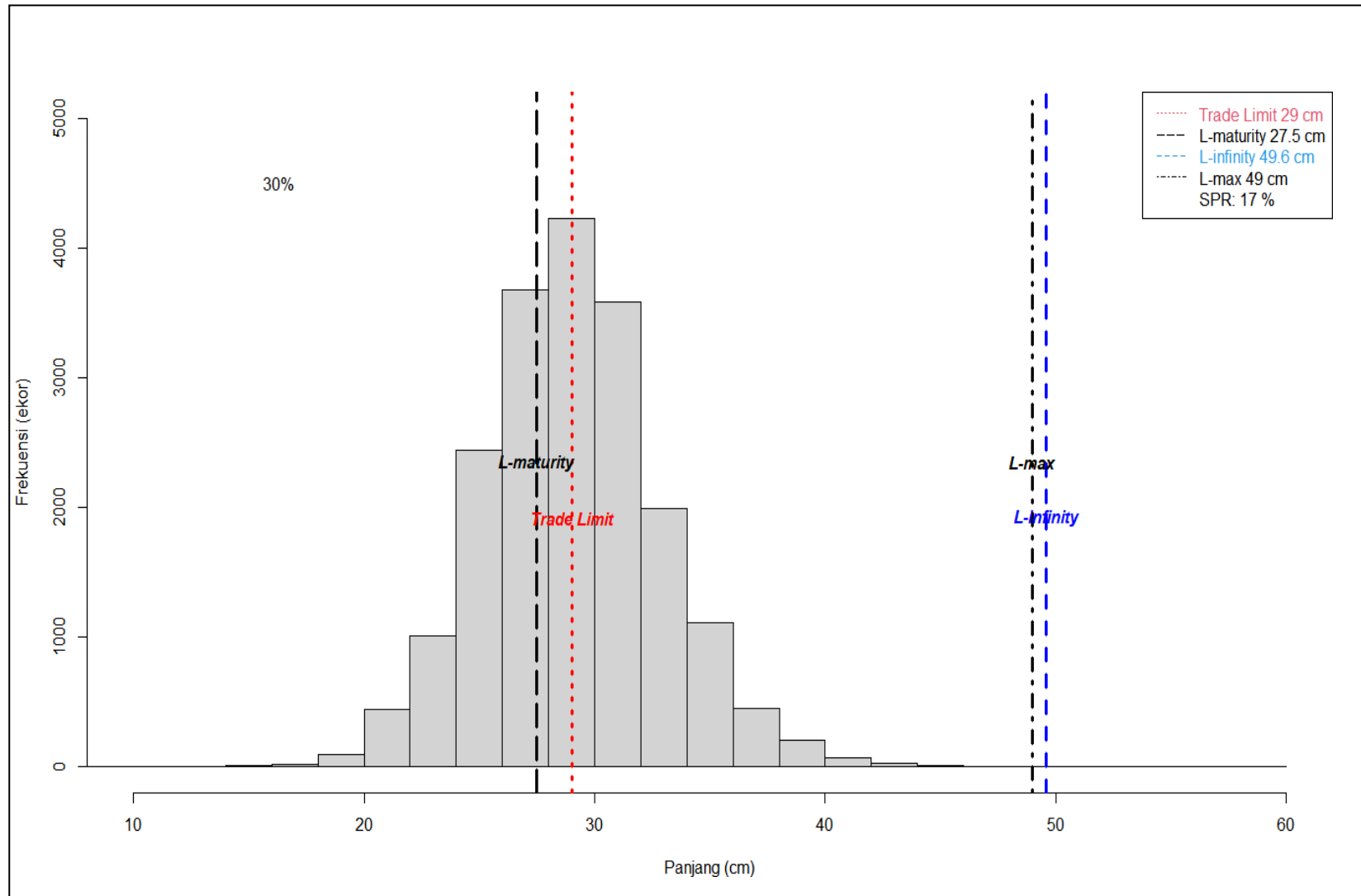
3	Kerapu Ekor Gunting, <i>white-edged lyretail, (Variola albimarginata)</i>	20 (17-22)	35 (30-40)	29 (24-33)	30 (24-37)	44 (39-49)
4	Kerapu Sunu, <i>leopard coral grouper (Plectropomus leopardus)</i>	10 (8-11)	14 (12-16)	9 (8-10)	11 (10-11)	11 (8-13)

Trade Limit Kerapu lumpur, orange spotted grouper, (*Epinephelus coioides*)



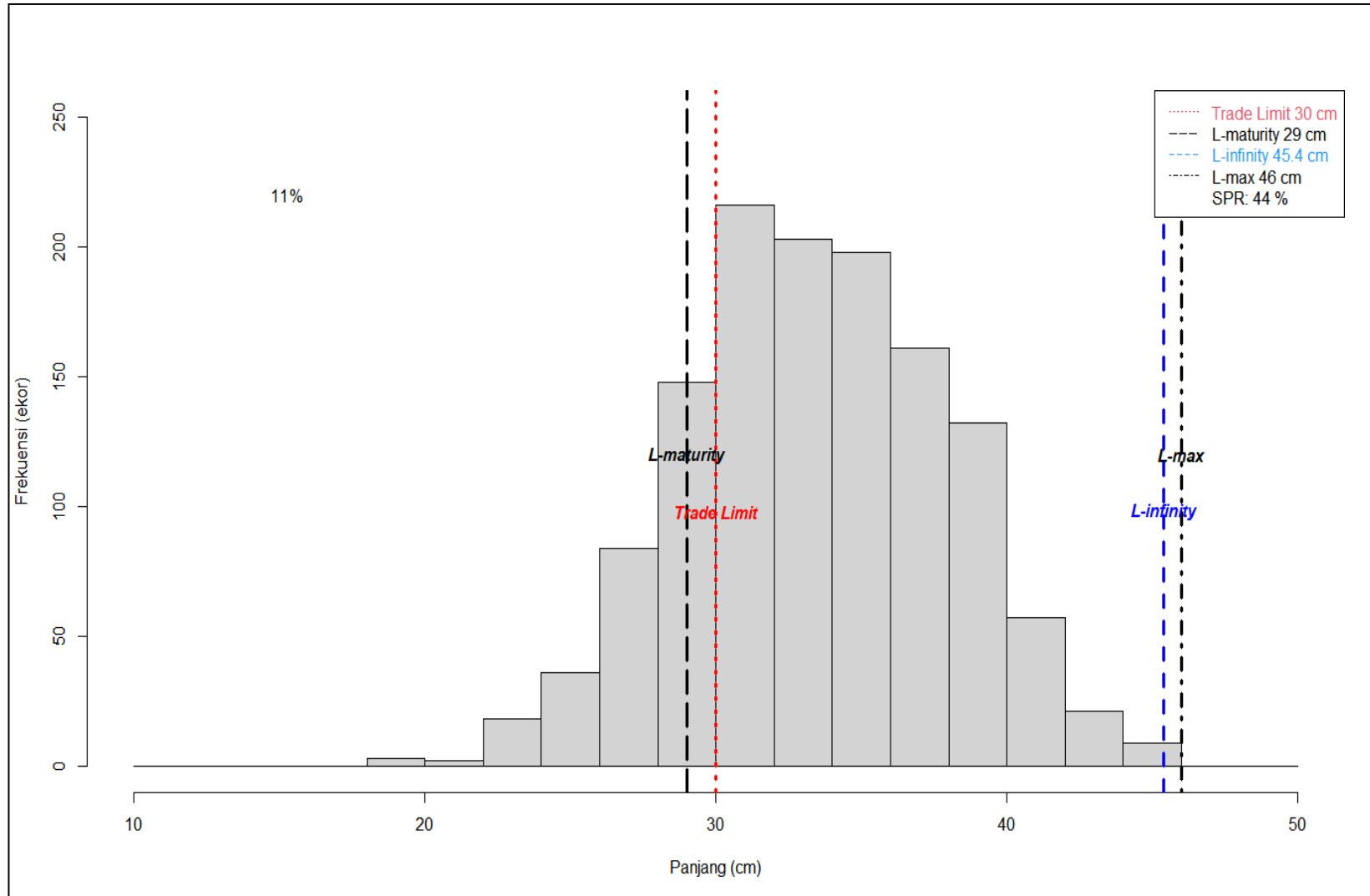
Sumber : Data diolah oleh BRPL (2021)
 SPR < 20% : *Over-exploited*
 20% ≤ SPR ≤ 30% : *Fully - Moderately exploited*
 SPR > 30% : *Under-exploited*
 NA : *Not Available*

Trade Limit Kerapu ekor putih, spotted grouper (*Epinephelus areolatus*)



Sumber : Data diolah oleh BRPL (2021)
SPR < 20% : *Over-exploited*
20% ≤ SPR ≤ 30% : *Fully - Moderately exploited*
SPR > 30% : *Under-exploited*
NA : *Not Available*

Trade Limit Kerapu sunu ekor gunting, *white-edged lyretail*, (*Variola albimarginata*)



Sumber : Data diolah oleh BRPL (2021)

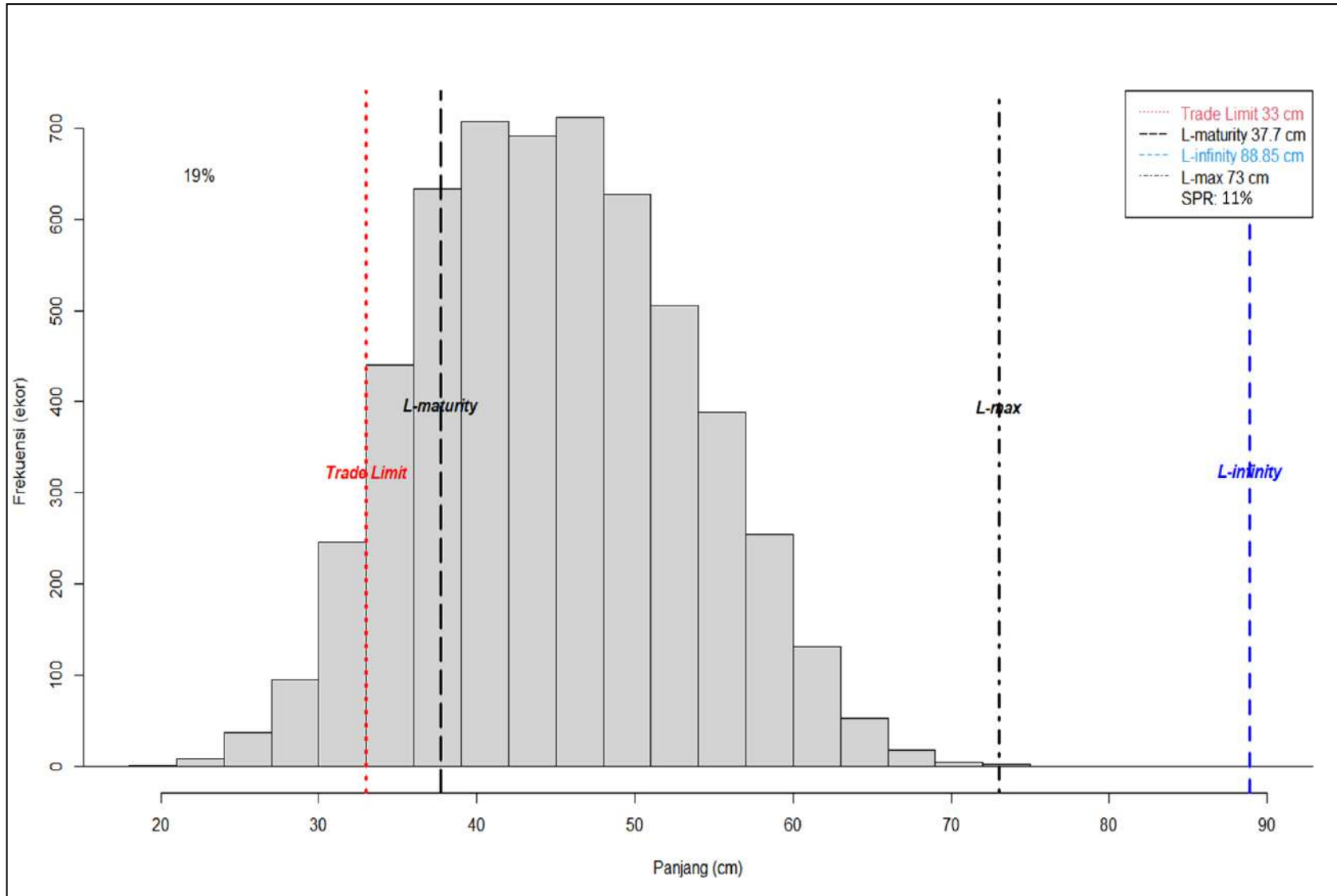
SPR < 20% : *Over-exploited*

20% ≤ SPR ≤ 30% : *Fully - Moderately exploited*

SPR > 30% : *Under-exploited*

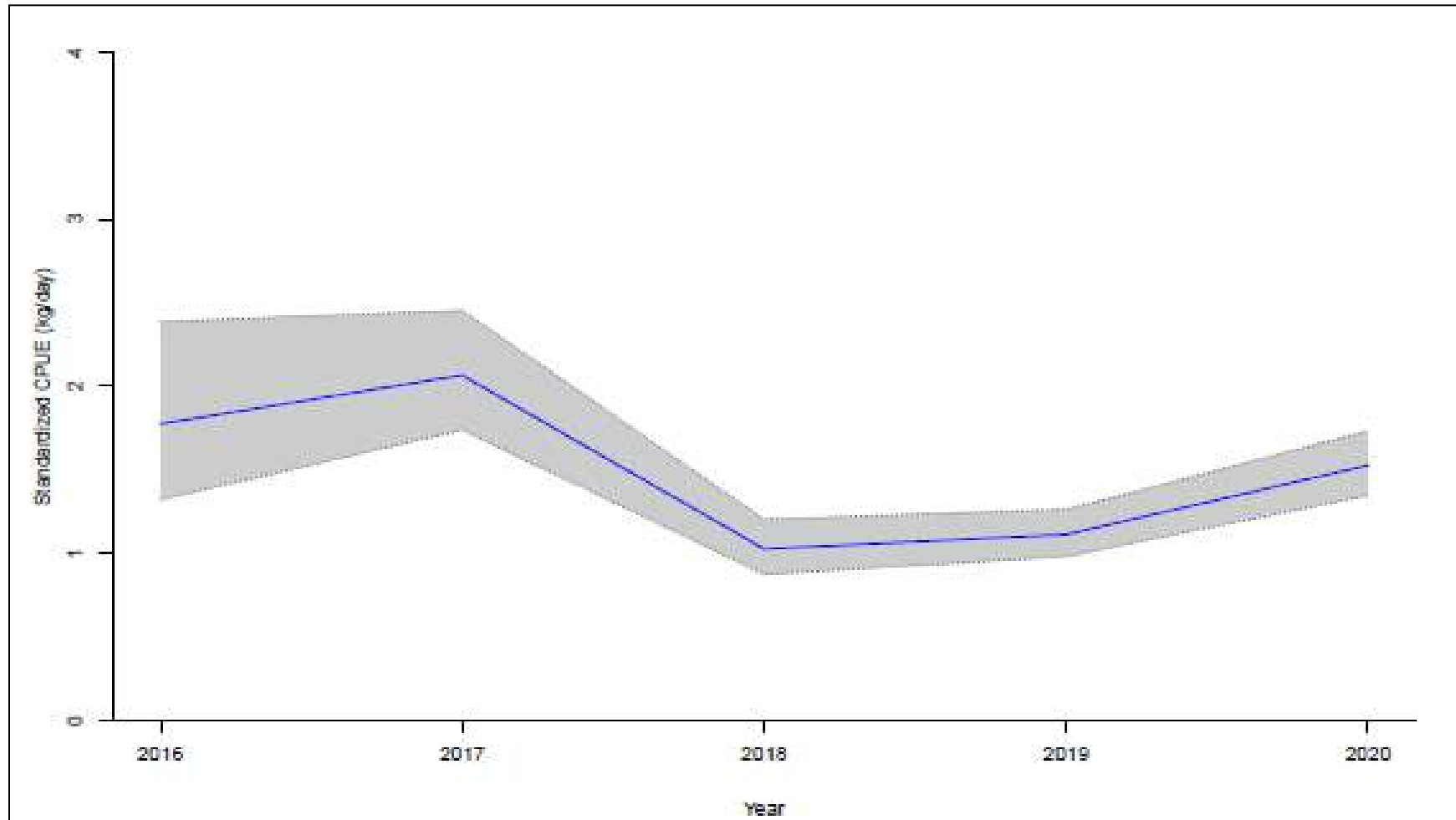
NA : *Not Available*

Trade Limit Kerapu sunu, leopard coral grouper (*Plectropomus leopardus*)



Sumber : Data diolah oleh BRPL (2021)
SPR < 20% : *Over-exploited*
 $20\% \leq \text{SPR} \leq 30\%$: *Fully - Moderately exploited*
SPR > 30% : *Under-exploited*
NA : *Not Available*

Nilai tingkat kelimpahan (CPUE) Kerapu lumpur, *orange spotted grouper*, (*Epinephelus coioides*) tahun 2016-2020

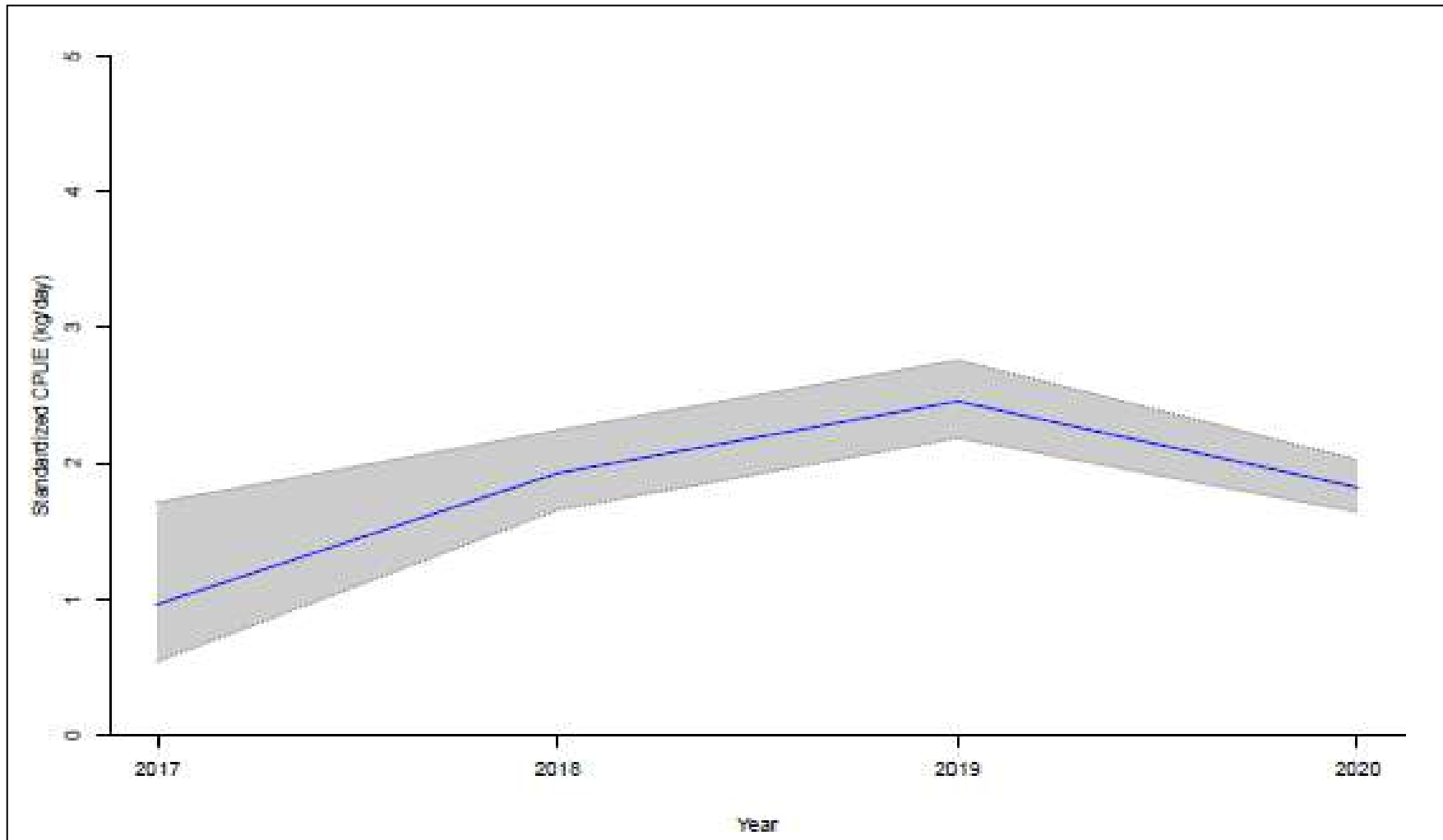


Catatan : distandarisasi menggunakan Generalized Linear Model (GLM) dengan confident interval 95%

Nilai tingkat kelimpahan (CPUE) Kerapu ekor putih, *spotted grouper* (*Epinephelus areolatus*) tahun 2016-2020

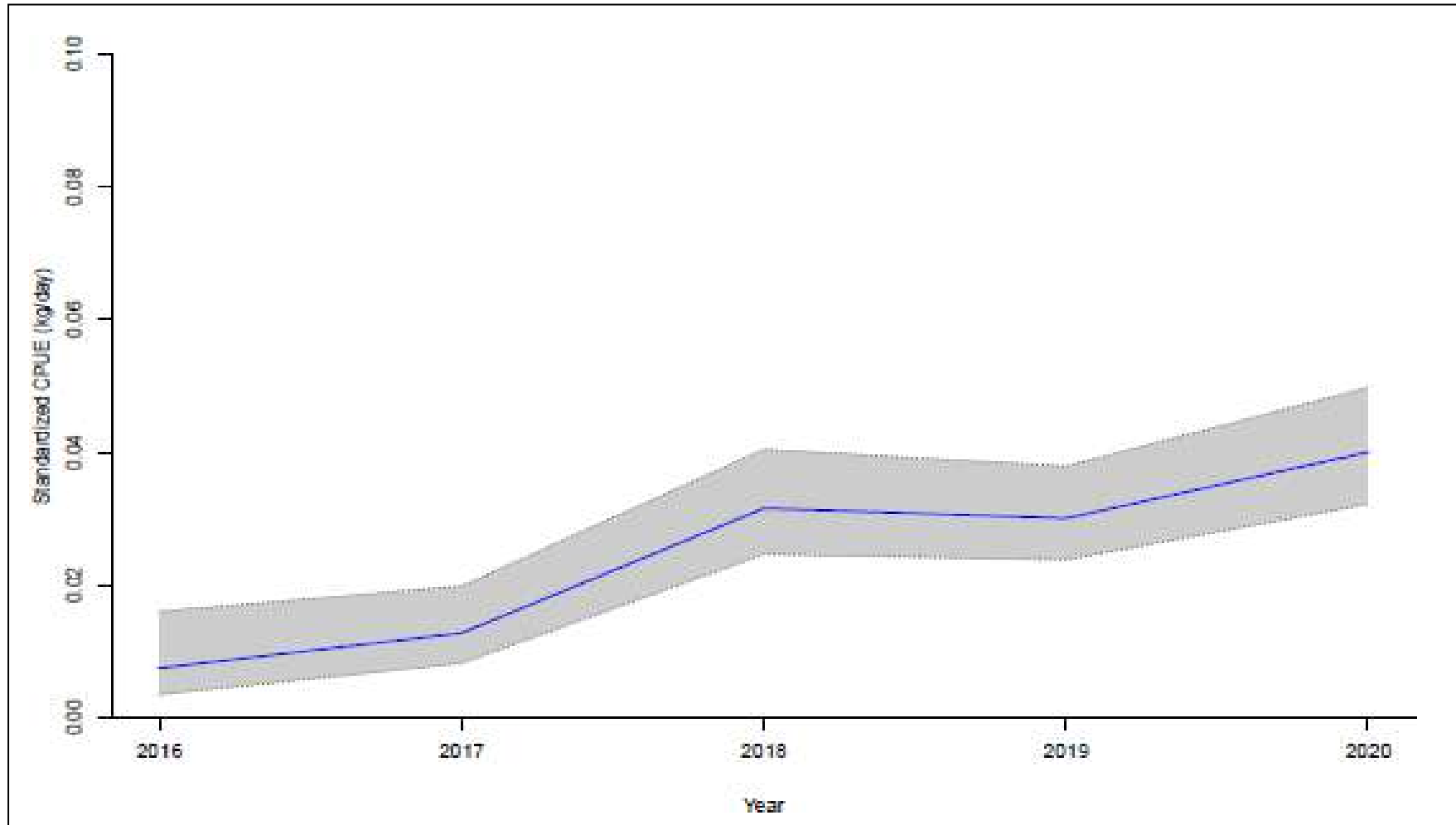


Catatan : distandarisasi menggunakan Generalized
Linear Model (GLM) dengan confident interval 95%



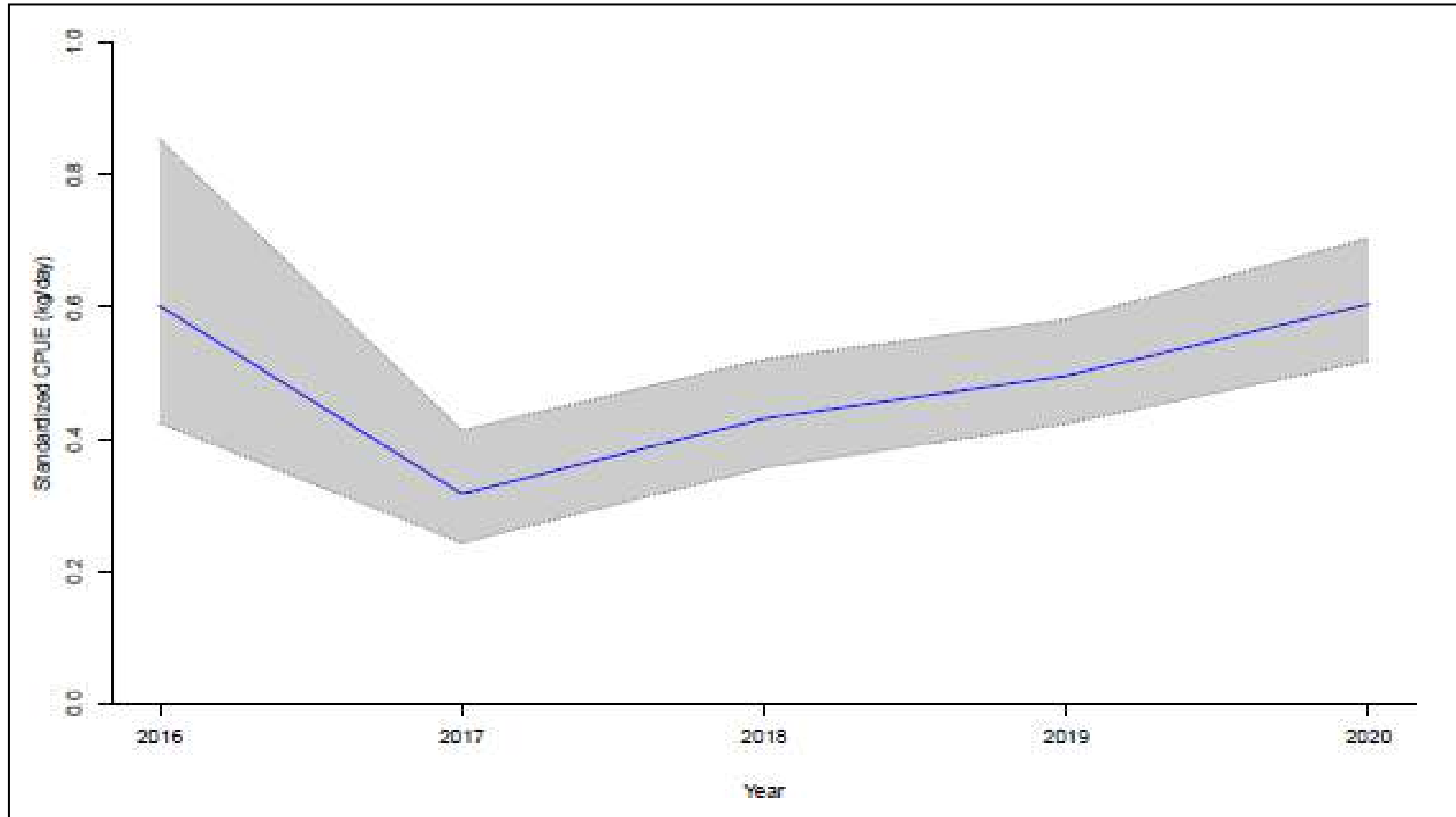
Catatan : distandarisasi menggunakan Generalized
Linear Model (GLM) dengan confident interval 95%

Nilai tingkat kelimpahan (CPUE) Kerapu sunu ekor gunting, *white-edged lyretail*, (*Variola albimarginata*) tahun 2016-2020



Catatan : distandarisasi menggunakan Generalized Linear Model (GLM) dengan confident interval 95%

Nilai tingkat kelimpahan (CPUE) Kerapu sunu, *leopard coral grouper* (*Plectropomus leopardus*) tahun 2016-2020



Catatan : distandarisasi menggunakan Generalized Linear Model (GLM) dengan confident interval 95%

Harvest Strategy Kerapu di WPPNRI 713

Tujuan Konseptual

Memastikan keberlanjutan sumber daya ikan Kerapu di WPPNRI 713

Tujuan Operasional

- Meningkatkan rasio potensi pemijahan (SPR) pada spesies prioritas Kerapu Ekor Putih, *spotted grouper* (*Epinephelus areolatus*) dan Kerapu Sunu, *leopard coral grouper* (*Plectropomus leopardus*) mencapai minimal 20%;
- Memperbaiki rasio potensi pemijahan (SPR) pada spesies prioritas Kerapu Lumpur, *orange spotted grouper* (*Epinephelus coioides*) mencapai minimal 30%; dan
- Mempertahankan rasio potensi pemijahan (SPR) pada spesies

Titik Acuan Batas

Titik acuan batas atau limit reference point untuk perikanan Kerapu dengan indikator SPR sebesar 20%

Target Reference Point

- indikator rasio potensi pemijahan (SPR) Kerapu Ekor Putih, *spotted grouper* (*Epinephelus areolatus*) dan Kerapu Sunu, *leopard coral grouper* (*Plectropomus leopardus*) mencapai minimal 20%;
- indikator rasio potensi pemijahan (SPR) Kerapu Lumpur, *orange spotted grouper* (*Epinephelus coioides*) mencapai minimal 30%; dan
- indikator rasio potensi pemijahan (SPR) Kerapu Sunu Ekor Gunting, *white-edged lyretail*, (*Variola Albimarginata*) dipertahankan di atas 40%.

PENGENDALIAN INPUT

Pengaturan Teknis

- ~~1. Mendorong implementasi penggunaan API dengan ukuran mata pancing rawai dasar dan pancing ulur (target kakap) \leq (lebih kecil dan sama) nomor 5 dengan ukuran celah 18 mm dan diameter 2,5 mm (SNI nomor 8794:2019);~~
2. Mengoptimalkan ijin yang sudah ada saat ini (eksisting) untuk API penangkap kerapu dengan tidak menambah ijin baru;
- ~~3. Mengurangi Jumlah mata pancing pada API rawai dasar (persentase akan ditentukan kemudian)~~

Pengaturan Area dan Waktu

1. Mengurangi hari operasi penangkapan 25% dari kondisi saat ini (4 hari dalam sebulan)
2. Penegakan aturan zonasi didalam Kawasan konservasi (lengkapi daftar Kawasan konservasi di WPPNRI 713)

PENGENDALIAN OUPUT

1. Penerapan Alokasi penangkapan ikan kerapu di WPPNRI 713 oleh Pemerintah Daerah dan Pemerintah Pusat sesuai kewenangannya; dan
2. Mempromosikan, mendorong, dan menganjurkan *Minimum Legal Size* (MLS) atau ukuran minimum ikan Kerapu yang boleh ditangkap di WPPNRI 713

Spesies	SPR	Lm (cm)	L (cm)	W (gr)
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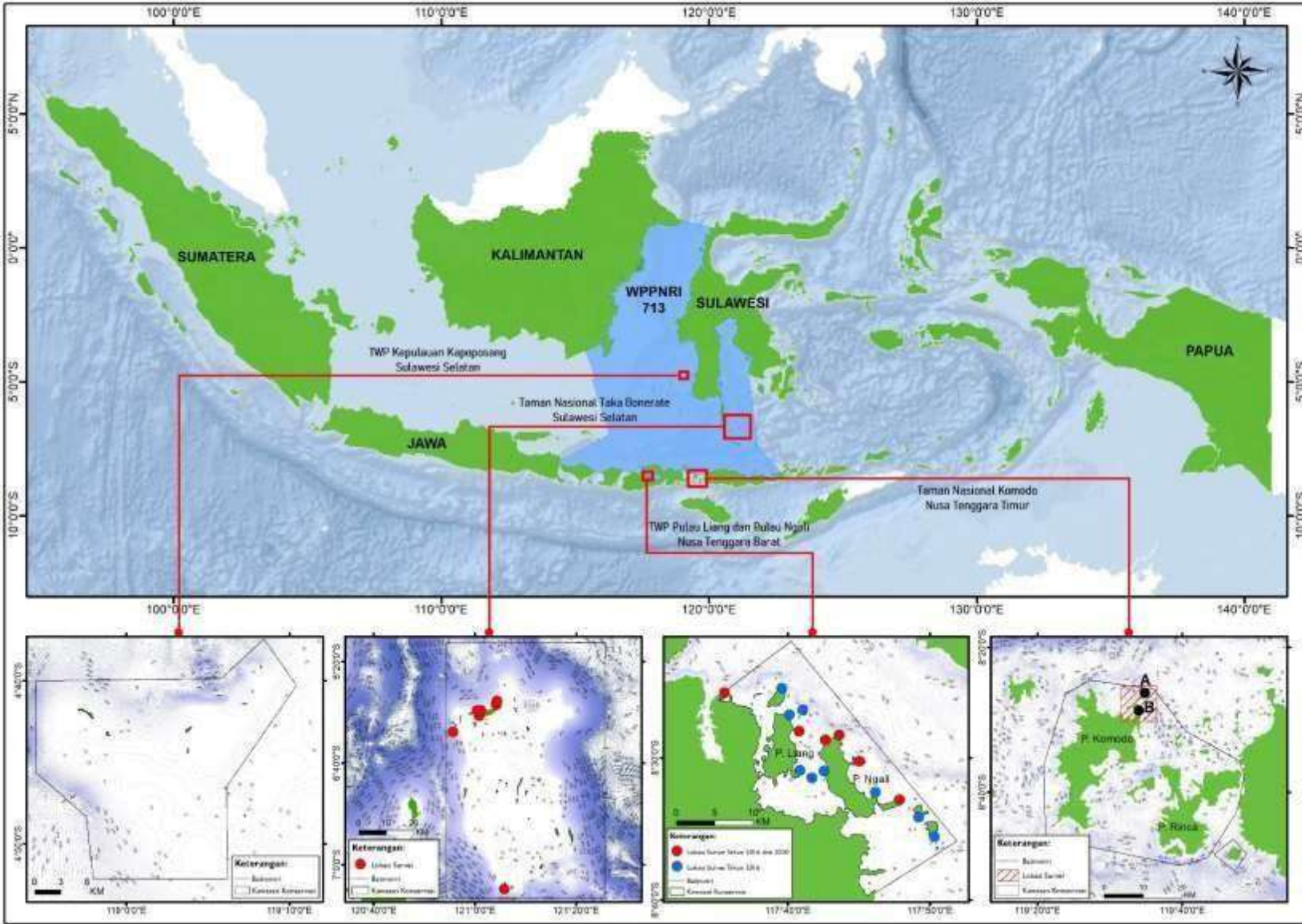
Kerapu Lumpur, <i>orangespotted grouper</i> ; (<i>Epinephelus coioides</i>)	27	45,20	40,00	1000
Kerapu Ekor Putih, <i>spotted grouper</i> ; (<i>Epinephelus areolatus</i>)	17	27,51	34,00	500
Kerapu Sunu Ekor Gunting, <i>white-edged lyretail</i> , (<i>Variola albimarginata</i>)	44	29,00	28,00	500
Kerapu Sunu, <i>leopard coral grouper</i> (<i>Plectropomus leopardus</i>)	11	37,70	32,00	500

Skenario	Pengaturan
	<ul style="list-style-type: none"> <li data-bbox="606 448 2415 662">• Tidak ada penambahan armada kapal pancing rawai dasar dan pancing ulur <li data-bbox="606 662 2415 805">• Penerapan ketentuan pelarangan penangkapan ikan di bawah ukuran legal minimum dan penyebarannya <li data-bbox="606 805 2415 991">• Menetapkan ketentuan pelarangan penangkapan ikan dibawah ukuran legal minimum

Jika berada di bawah 20% SPR

- Penutupan area penangkapan selama musim pemijahan / *spawning season*. Contohnya penutupan area pemijahan di Kepulauan Liukang Tanggaya dan di Kabupaten Kepulauan Selayar selama bulan Januari.
- Penutupan area penangkapan selama musim pemijahan juga dapat dilaksanakan di daerah lainnya sesuai dengan kesepakatan bersama dengan nelayan menggunakan kearifan local (local wisdom).
- Mengurangi hari operasi penangkapan ~~8~~ 4 hari dalam sebulan (~~setiap hari Jumat dan Sabtu~~ atau disesuaikan dengan kearifan lokal masing-masing daerah)

Peta lokasi potensial pemijahan massal ikan kerapu yang tersebar di WPPNRI 713



Mekanisme Monitoring *Harvest Strategy* Kerapu di WPPNRI

Aktivitas monitoring terhadap implementasi Strategi Pemanfaatan perikanan ini akan dilakukan secara periodik, paling sedikit setiap 6 (enam) bulan sekali. Mekanisme monitoring dilakukan melalui:

1. Pelaporan dan pendataan hasil tangkapan Kerapu dilakukan secara kontinyu dengan memperkuat dan meningkatkan sistem pendataan untuk hasil tangkapan sesuai sistem pendataan yang ada dan untuk pendataan biologi sesuai dengan form terlampir;
2. Pemantauan dan evaluasi pendataan melibatkan pemerintah dan pemerintah daerah yang didukung oleh lembaga penelitian, perguruan tinggi, mitra pendukung, pelaku perikanan terkait yang ada di WPPNRI 713;
3. Evaluasi dilakukan minimal satu tahun sekali;
4. Pemantauan dan evaluasi terutama dilakukan pada 4 (empat) spesies ikan Kerapu prioritas yang dikelola, namun pemantauan regular dapat dilakukan untuk spesies-spesies lainnya.





TERIMA KASIH

