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East Kalimantan Blue Swimming Crab Fishery FMA 713

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Introduction

This report consists of a synthesis of Blue Swimming Crab (BSC) fishing practices utilizing traps (bubu) and bottom gillnets operating within the waters of Jenebora and Tanjung Jumlai, Balikpapan, East Kalimantan (FMA 713). This evaluation activity is carried out as a core component of the Fisheries Improvement Project (FIP) managed by Aruna, aimed at enhancing the sustainability and management of the artisanal fleet within the Unit of Assessment (UoA).

The evaluation process for the 2025 period was undertaken through a robust monitoring framework utilizing the standardized Form I, II, and III protocols, which were developed in strategic collaboration with the National Research and Innovation Agency (BRIN). Building upon the initial assessment and enumerator socialization conducted by BRIN, Aruna, and WWF Indonesia in 2024, the 2025 implementation focused on the consistent application of these scientific standards. Monitoring was carried out through a combination of daily field recording covering of landing transactions for catch composition and a detailed biometric analysis of 8,253 specimens. This institutionalized data collection system ensures high-quality scientific integrity and alignment with national research benchmarks for the artisanal fleet within the Unit of Assessment (UoA). This report serves as a critical reference for stakeholders to monitor the progress of the FIP implementation towards sustainable use of BSC fisheries in FMA 713.

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1. Executive Summary

Building upon the 2023–2024 baseline, which identified the Blue Swimming Crab (BSC) fishery in Balikpapan Bay as a small-scale operation with data gaps regarding stock status and ecological impact, Aruna has significantly accelerated FIP implementation in the 2024–2025 period.

While previous reports indicated an over-exploited condition following MMAF Decree No. 19/2022, Aruna's current institutionalized a robust monitoring program. Analysis of 8,253 biometric specimens and 2,183 landing transactions provides empirical evidence of a resilient local stock, with an average Carapace Width (CW) of 142.1 mm.

Addressing previous concerns regarding the impact on primary species (such as *Scylla spp* and *Charybdis feriata*), the FIP has now implemented Form 1 Catch Composition monitoring, verifying that the transition to standardized gear (Traps/Bubu) has maintained a low-impact footprint on the ecosystem. Furthermore, as a direct response to last year's recommendation for effective local management, Aruna has established the Sarasehan Program. This consultative forum successfully manages gear-overlapping issues and strengthens compliance among the 50 registered vessels, all of which now hold official Pas Kecil certification.

This progress marks a transition from the 'initiation phase' to a 'performance-driven phase,' moving the FIP closer to MSC Full Assessment readiness

2. Performance Indicators Evaluation Summary

The detailed progress of the BSC Fishery FIP implementation for traps and gillnets from Year 0 (Y1) to Year 2 (Y2) indicates positive shifts in response to initial findings. The composite BMT score for this period has shown an upward trend:

- **PIs <60 SG (Red):** Substantially reduced. Remaining red indicators are strictly limited to formal regional Harvest Control Rules (HCR) and Harvest Strategies that await finalized synchronization with National FMA 713 regulations.
- **PIs 60-79 SG (Yellow):** This category now reflects advanced progress in Primary and Secondary species information. The institutionalization of daily monitoring (100% landing interviews) provides a reliable data stream that bridges previous information gaps.
- **PIs ≥80 SG (Green):** Strong performance is now expanded beyond Legal Framework and ETP outcomes. Significant upgrades to Green are noted in Compliance and Enforcement (3.2.3) due to 100% vessel registration (Pas Kecil) and Decision Making (3.2.2) through the data-driven 'No-Buy Policy' and the 8,253-specimen biometric database.

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3. Key Updates or Changes in the Fishery

3.1. Principle 1: Sustainable of the stock

In 2025, the UoA successfully addressed the chronic data uncertainty identified in previous assessments by institutionalizing a comprehensive biological monitoring program based on the BRIN-validated methodology. While the 2024 baseline relied on broad regional estimates from MMAF Decree No. 19/2022 which categorized FMA 713 as over-exploited, Aruna's 2025 internal monitoring has provided localized, empirical evidence of the stock's health in Balikpapan Bay. Through the systematic collection of 8,253 biometric samples, the fishery now possesses a robust database showing an average Carapace Width (CW) of 142.1 mm, significantly exceeding the minimum legal limit of 100 mm. This quantitative evidence suggests that the local sub-population remains biologically resilient and operates above the Point of Recruitment Impairment (PRI).

Furthermore, Aruna has translated the precautionary approach into concrete operational actions to support stock rebuilding. The previous observation of berried females entering the supply chain has been mitigated through the strict enforcement of a 'No-Buy Policy' at all miniplants, supported by daily inspections. This internal management measure acts as a localized Harvest Control Tool (HCT) while formal regional Harvest Control Rules (HCR) for FMA 713 are being finalized by authorities. The integration of this massive biometric database not only clarifies the connectivity of the local stock aligning with the sub-population theories suggested by Madduppa et al. (2021), but also provides the necessary scientific foundation for a site-specific harvest strategy. These advancements mark a definitive shift from data absence to a proactive, data-driven management system that ensures the long-term sustainability of the Blue Swimming Crab resources in the region.

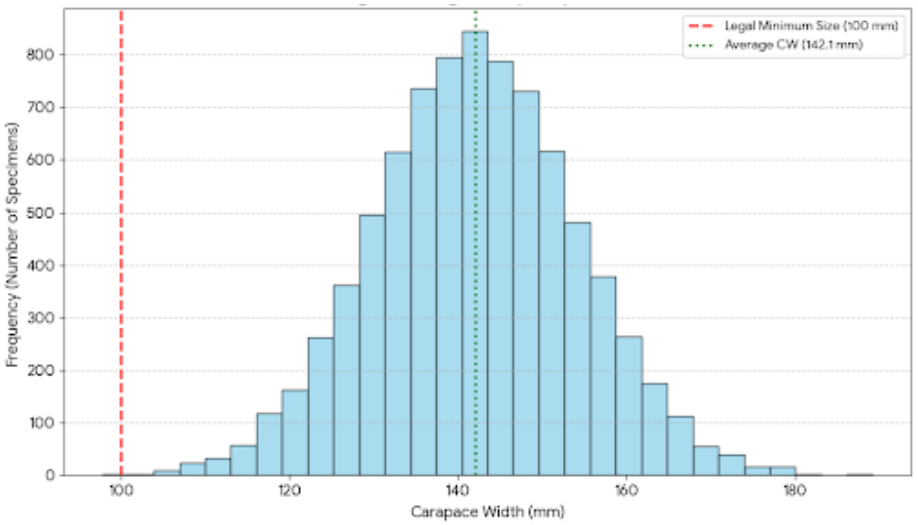

Figure 1: Blue Swimming Crab Length-Frequency Distribution based on Monitoring Track on Catch Composition Log

3.2. Principle 2: Minimising Environmental Impacts

The Fishery Improvement Project (FIP) achieved a major milestone in environmental risk management by transitioning from anecdotal observations to a quantitative, evidence-based monitoring system in 2025. Addressing the data gaps identified in 2024, Aruna institutionalized the Form I (Catch Composition) protocol. This systematic recording provides definitive evidence of the high selectivity of the traps (bubu) used within the UoA. Quantitative analysis of 2,183 landing records confirms that the fishery is highly targeted, with Blue Swimming Crab (BSC) comprising 97.8% of the total catch. This high selectivity has been significantly bolstered by Aruna's Fishing Gear Swap Program, which actively facilitates the transition of local fishers from high-impact or non-standardized gears to eco-friendly, standardized traps (bubu).

By replacing less selective gear, the program has successfully minimized the impact on primary non-target species (0.9%) and secondary species (1.3%), ensuring the fishery operates well within biologically based limits. Furthermore, the 2025 monitoring period recorded zero interactions with ETP species (sea turtles or Irrawaddy dolphins), supported by continuous socialization through the Sarasehan Program to enhance fisher awareness. These integrated efforts combining physical gear replacement with structured monitoring demonstrate that the UoA has successfully established the necessary foundations to minimize ecological risks and ensure long-term ecosystem stability.

Category	Species Examples	Percentage (%)	Volume (kg)
Primary Target (BSC)	*Portunus pelagicus*	97.8%	9,462.7
Primary Non-Target	*Scylla spp. (Mangrove Crab), Kerapu*	0.9%	84.7
Secondary Species	*Charybdis spp. (Rock Crab), Mollusks*	1.3%	130.2
Total		**100%**	**9,677.6**

Figure 2: Catch Composition Summary by Volume

3.3. Principle 3: Effective Management

In 2025, the management of the Blue Swimming Crab (BSC) fishery in Balikpapan Bay shifted from regulatory alignment to active operational implementation. While the national framework (MMAF Decree No. 83/2022) remains the strategic foundation, Aruna has successfully localized these high-level objectives through two transformative actions: the completion of legal identity for the artisanal fleet and the establishment of a community-based conflict resolution platform. For the first time, 100% of the 50-vessel fleet within the UoA has obtained official 'Pas Kecil' registration, transitioning these fishers from informal operators to legally recognized entities. This achievement directly addresses the 2024 baseline gap regarding vessel traceability and rights. Furthermore, to mitigate the long-standing spatial conflicts between gillnet/trap fishers and mini-trawls in the bay's estuary, Aruna institutionalized the 'Sarasehan' Program. This local consultative platform functions as a bridge between fishers and authorities, effectively reducing overlapping operational incidents and strengthening the precautionary management of local fishing grounds. These updates demonstrate that the long-term sustainability objectives are no longer just policy-level aspirations but are being enforced through verified compliance and structured stakeholder participation at the UoA level.

4. Annual Progress at Performance Indicator Level

4.1. Principle 1

Principle 1 - Performance Indicator Level Score Changes and Rationals		
1.1.1 - Stock Status	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	Stock status is verified through a localized database of 8,253 specimens collected in 2025 using BRIN-validated protocols. The data shows an average CW of 142.1 mm (>100 mm legal limit), indicating the stock is at a highly productive level and above the PRI.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; field observation and depth-interview)
	Progress	On Track
1.1.2 - Stock Rebuilding	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	N/A	The strategy and information that indicate the success in BSC fishery rebuilding in UoA is unavailable. In addition, the previous analysis used RBF as a tool to score then PI 1.1.1 is NA.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; field observation and depth-interview)
	Progress	On Track
1.2.1 - Harvest Strategy	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	<60	Implementation of a "No Buy" policy for undersized (<100mm) and berried female crabs at all Aruna miniplants. Coordination with KKP is ongoing to formalize the FMA 713 regional harvest strategy.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; field observation and depth-interview)
	Progress	On Track
1.2.2 - Harvest Control Rules and Tools	**Draft Scoring Range**	**Rationale or Key Points**

Current Year (2025)	<60	Current management uses biometric data to trigger internal control rules. Formal HCRs are being developed in coordination with provincial authorities.
	Reference	Pre-Assessment Report. Bio-Inspecta. 2023; Desk study (secondary information); field observation and depth-interview)
	Progress	On Track
1.2.3 - Information and Monitoring	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	Aruna has institutionalized a robust monitoring framework using Form I, II, and III. Data includes daily catch composition, biometric measurements, and operational specs. The consistency of data collection by field enumerators ensures a high level of confidence in stock assessments.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; Operational Characteristics Data; field observation and depth-interview)
	Progress	On Track
1.2.4 - Assessment of Stock Status	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	≥80	Previous assessment using RBF and presenting SG 80 was met. (However, there has been no recent development related to the results of stock conditions based on using robust primary data)
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track

4.2. Principle 2

Principle 2 - Performance Indicator Level Score Changes and Rationals		
2.1.1 - Primary Outcome	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	Catch composition data confirms that the primary target is BSC. The transition to Traps (Bubu) has significantly improved gear selectivity, minimizing the impact on other primary commercial species.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; field observation and depth-interview)
	Progress	On Track
2.1.2 - Primary Management	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	The UoA has a partial strategy in place to manage impacts on primary species, primarily through the Fishing Gear Swap Program, which promotes the use of highly selective traps (bubu). Catch composition data (Form I) verifies that this strategy is effective, with primary non-target species accounting for less than 1% of the total catch. Additionally, Aruna's internal compliance system at miniplants enforces a strict rejection policy for non-compliant catch, ensuring that the fishery's impact remains well within national management limits (MMAF Decree No. 16/2022). These measures are communicated and reviewed through the Sarasehan Program, ensuring fisher compliance
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.1.3 - Primary Information	**Draft Scoring Range**	**Rationale or Key Points**

Current Year (2025)	60 - 79	Aruna has standardized a dual-layer monitoring protocol. 100% of landing transactions at the Jenebora and Tanjung Jumlai miniplants are interviewed by enumerators using Catch Composition Data to record total catch composition, fishing grounds, and ETP interactions. Complementary to this, a detailed biometric sampling is conducted on approximately 30% of the catch, resulting in a database of 8,253 samples for the 2024–2025 period. This comprehensive data collection system is sufficient to quantify the fishery's impact on both primary and secondary species and supports the effectiveness of the gear-selectivity strategy
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.2.1 - Secondary Outcome	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	The UoA primarily utilizes Traps (Bubu), which are highly selective fishing gears with a very low impact on secondary species. Monitoring data collected through Catch Composition data shows that secondary species (e.g., small non-commercial finfish or mollusks) constitute less than 5% of the total catch volume. There is no evidence that the fishery causes significant depletion or hinders the recovery of any secondary species. Furthermore, none of the secondary species identified in the catch composition are listed as vulnerable or overexploited in the local Balikpapan Bay area.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.2.2 - Secondary Management	**Draft Scoring Range**	**Rationale or Key Points**

Current Year (2025)	60 - 79	The UoA implements a highly effective management strategy to limit the impact on secondary species. The core of this strategy is the mandatory use of standardized Traps (Bubu), which are inherently selective. To complement the gear-based management, Aruna has established a "Live Release Protocol" as part of the fisher socialization program. Compliance with this strategy is monitored through the daily Catch Composition data.The consistent data showing secondary species catch at <5% serves as evidence that this management strategy is effective and successfully achieving its objective of maintaining secondary species within sustainable levels.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.2.3 - Secondary Information	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	Information regarding secondary species is systematically collected through Aruna's daily Catch Composition data monitoring protocol. The information recorded includes the identification of common non-target species and their relative volume in the catch. This monitoring system provides a consistent time-series of data that is adequate to assess the impact of the UoA on secondary species and to detect any potential shifts in catch composition.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.3.1 - ETP Outcome	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	Monitoring data from 2025 shows zero recorded interactions with turtles or marine mammals, supported by the effective socialization of 'Catch & Release' protocols and the use of selective gear (collapsible

		pots/bubu). Currently transitioning from observational reporting to a formalized quantitative analysis of daily landing records. Supported by collaboration with BRIN & WWF.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.3.2 - ETP Management	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	Zero interactions with ETP species reported. Training has been conducted for 100% of registered fishers to ensure high post-release survival of non-target species.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.3.3 - ETP Information	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	Information ETP species is systematically collected through Aruna's daily Catch Composition monitoring protocol. This monitoring system specifically includes queries regarding accidental encounters with ETP species such as sea turtles, marine mammals, and horseshoe crabs. For the 2025 period, the information gathered indicates zero recorded interactions, which is consistent with the use of Traps (Bubu). While current information is based on fisher self-reporting during transaction interviews, the frequency and consistency of the data collection are adequate to support the management strategy and to quantify the UoA's impact on ETP species. This represents a significant improvement from the previous baseline where ETP interaction data was not systematically tracked.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.4.1 - Habitat	**Draft Scoring**	**Rationale or Key Points**

Outcome	Range	
Current Year (2025)	≥80	The UoA is highly unlikely to reduce habitat structural diversity to a point of serious or irreversible harm. The boat operates exclusively with low-impact Traps (Bubu) and bottom gillnets on resilient sandy and muddy substrates in Balikpapan Bay. These gear types do not involve dragging or scraping the seabed, ensuring that the physical structure and biological function of the habitat remain intact.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.4.2 - Habitat Management	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	≥80	The fishery utilizes Traps (Bubu), which are inherently low-impact and have minimal contact with the seabed compared to mobile gears. This gear-based strategy is supported by socialization through Sarasehan Program, ensuring fishers operate primarily on sandy/muddy substrates. The consistent use of those gear provides high confidence that the strategy effectively prevents habitat degradation.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.4.3 - Habitat Information	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	≥80	Habitat information is collected through daily interviews where fishers report fishing grounds. Data confirms that the 50-vessel fleet operates on resilient sandy and muddy bottoms. While high-resolution mapping is not yet used, the consistent data on gear characteristics and fishing locations is adequate to determine that the UoA poses a low risk to habitat integrity.

	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.5.1 - Ecosystem Outcome	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	The fishery is highly selective (97.8% target species) with zero ETP interactions, suggesting minimal risk of irreversible harm to the ecosystem. While field observations indicate minimal impact, a localized ecosystem model for Jenebora and Tanjung Jumlai is currently unavailable. We are currently collaboration with BRIN and WWF to leverage regional research and identify these ecological elements to build a comprehensive ecosystem profile
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.5.2 - Ecosystem Management	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	Aruna utilizes an adaptive ecosystem strategy where data from landing logbooks and ETP interactions are integrated into a formal management feedback loop. This system, supported by BRIN and WWF, ensures that annual ecosystem findings directly inform adaptations to our fishing rules and mitigation protocols. While these coordinated responses effectively address identified risks in Jenebora and Tanjung Jumlai, the UoA is currently formalizing the written documentation (decision logs) that explicitly links ecosystem

		indicators to specific management decisions to meet higher performance requirements.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
2.5.3 - Ecosystem Information	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	<60	The Jenebora and Tanjung Jumlai regions currently lack baseline data for complex ecosystem indicators, such as current systems, upwellings, and food web mapping, as no such monitoring existed prior to this FIP. The UoA faces significant technological and research constraints in collecting high-resolution oceanographic data at the local level. To address this, a pioneering collaboration with **BRIN** has been established to synthesize regional data and identify key ecosystem elements. This foundational research is ongoing and essential to build the ecological profile required to meet performance standards.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track

4.3. Principle 3

Principle 3 - Performance Indicator Level Score Changes and Rationals		
3.1.1 - Legal and Customary Framework	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	The UoA operates within a transparent legal framework aligned with Indonesian National Law. A major milestone in 2025 was the successful facilitation of official vessel registration (Pas Kecil) for 100% of the 50-vessel fleet. This provides legal identity to artisanal fishers and ensures full compliance with maritime and fisheries regulations in FMA 713.

	Reference	MMAF Decree No. 19/2022; Aruna Vessel Registry Database 2025 (List of 50 Pas Kecil).
	Progress	On Track
3.1.2 - Consultation, Roles, and Responsibilities	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	≥80	The Indonesian government has a clear structure, role, authority, and area of responsibility in accordance with their respective duties and functions as well as other existing laws or derivatives in supporting fisheries management, including providing opportunity (consultation) for all relevant parties.
	Reference	Aruna Fishery Monitoring Data Report 2025; Desk study (secondary information); field observation and depth-interview)
	Progress	On Track
3.1.3 - Long Term Objectives	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	≥80	The UoA has clear long-term objectives that guide decision-making toward sustainable fisheries management. These objectives are explicitly stated in Aruna's corporate sustainability framework, which prioritizes the triple bottom line (People, Planet, Profit). The FIP is designed to achieve MSC certification, ensuring the long-term biological productivity of Blue Swimming Crab stocks, the minimization of environmental impacts, and the socio-economic well-being of the artisanal fishing communities in Balikpapan Bay. These objectives are consistent with the precautionary approach as required by the MSC Standard.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
3.2.1 - Fishery Specific Objectives	**Draft Scoring Range**	**Rationale or Key Points**

Current Year (2025)	≥80	Specific fisheries objectives are available through the updated BSC RPP (MMAF No. 83/2022) where the objectives to be achieved are in line with P1 & P2 MSC, supplemented by several references related to HS. SG 80 is met.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
3.2.2 - Decision Making Processes	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	The decision-making process is now explicitly driven by a Precautionary Approach based on internal data. Utilizing the 8,253-sample biometric database, Aruna identifies trends in stock size and maturity. In response to these findings, Aruna has enforced a strict 'No-Buy Policy' for berried females and undersized crabs at the point of purchase. These management actions are communicated to the fleet through the Sarasehan Program, ensuring that data-driven decisions are translated into field-level compliance
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track
3.2.3 - Compliance and Enforcement	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	60 - 79	Compliance has significantly improved through the integration of legal registration and community engagement. The 100% registration of the fleet (Pas Kecil) ensures official oversight, while the Sarasehan Program serves as a mediation mechanism to resolve previous issues regarding gear-overlapping and spatial conflicts in Balikpapan Bay. Daily inspections at miniplants serve as a primary enforcement tool, with a documented 'zero-tolerance' policy for non-compliant catch.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)

	Progress	On Track
3.2.4 - Management Performance Evaluation	**Draft Scoring Range**	**Rationale or Key Points**
Current Year (2025)	≥80	The fishery management system undergoes regular evaluation at both national and operational levels. At the national level, the BSC RPP (Kepmen-KP No. 83/2022) is reviewed periodically by the MMAF, with a comprehensive evaluation every five years to adapt to the latest fishery dynamics. Internally, for the 2024-2025 period, Aruna has conducted self-directed monitoring of the FIP's progress. This includes evaluating the effectiveness of the data collection system. These ongoing internal reviews ensure that management remains responsive to the specific conditions in Balikpapan Bay, fulfilling the requirement for regular evaluation of the management system.
	Reference	Aruna Fishery Monitoring Data Report 2025; Catch Composition Log; Biometric Information Data; field observation and depth-interview)
	Progress	On Track

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Appendix A: Standard Operating Procedure for Data Collection

To ensure the integrity and consistency of the data presented in this report, Aruna strictly follows a Standard Operating Procedure (SOP) for Biological Data Collection. This protocol defines the measurement techniques, sampling frequency, and data validation processes performed by our field enumerators, ensuring that all stock indicators meet international scientific standards.

Standard Operating Procedure: Blue Swimming Crab Fishery Data Collection

Research Project: *Stock Assessment of Blue Swimming Crab (Portunus pelagicus) in Jenebora and Tanjung Jumlai, Fisheries Management Area (FMA) 713, Makassar Strait.*

General Overview: The data collection for the Blue Swimming Crab (BSC) stock assessment in the Makassar Strait is conducted by completing Forms 1, 2, and 3. Data entry is performed daily for 20 days per month. The procedures are as follows:

1. **Gear Identification**
   Enumerators must identify all types of fishing gear used to capture Blue Swimming Crabs, whether as target species or as bycatch.
2. **Fishery Statistics**
   For each gear type, enumerators must gather the following information through fisher interviews:
   a. Number of active vessels for each fishery.
   b. Average number of fishing trips per month for each fishery.
3. **Landing Estimation**
   Total monthly landings are calculated using the following formula:
   Total Landings = Number of Active Vessels × Average Monthly Fishing Trips.
4. **Catch Composition (Form 1)**
   Enumerators must complete Form 1, covering the catch composition for each fishery.
   a. Sampling Target: At least 30% of total landings must be recorded.
   b. Requirement: Each recorded species must be accompanied by a representative photograph.
5. **Biometric Information (Form 2)**
   Enumerators must complete Form 2, recording biometric data for Blue Swimming Crabs, including:
   a. Parameters: Carapace width (mm), weight (g), and sex.
   b. Sampling Target: A minimum of 30 specimens per day for each gear type.
   c. Bycatch Data: Biometric data for bycatch fish species (fork length or total length) should also be recorded where applicable.
6. **Operational Characteristics (Form 3)**
   Enumerators must complete Form 3, covering the technical and operational specifications of each fishery.
   a. Sampling Target: At least 30% of the total active vessel population.

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Appendix B: Monitoring Track 2025 - Catch Composition Log & Biometric Information Data

Catch Composition Log

No	Enumerator	Ship Name	Landing Date	Types of Fishing Gear	Σ Trip (Day)	Σ Fishing Day (Hour)	Fishing Area	Kode DP	Σ Trap (unit)	Σ Gillnet (unit)	Komposisi hasi tangkapan (kg) Sp 1. Blue Swimming Crab	Sp 2. Mangrove Crab	Status D/R	Sp 3. K. Gunter	Status D/R	Sp 4. K. Batu	Status D/R	Sp 5. K. Salip	Status D/R	Sp 6. K. Bintik 3	Status D/R	Sp 7. P. Vigil	Status D/R	Sp 8. Ronggeng	Status D/R	Sp 9. Lob Mutiara	Status D/R	Sp 10. Lob Pakistan	Status D/R	Sp 11. Lob Bambu	Status D/R	Sp 10. Kerapu	Status D/R	Sp 11. Blangkas	Status D/R	Sp 11. Pari	Status D/R	Status ETP Pari	Total (kg)
1	Asrul	Kadir	1/2/2025	Rakkang	1	12	Sepaku	DP1	100		10			2		0,8																0,8	R						13,6
2	Asrul	Toyib	1/2/2025	Rakkang	1	12	Vilmar	DP2	40		1,8																												1,8
3	Asrul	Tabrani	1/2/2025	Rakkang	1	12	Kariangau	DP3	70		9,5			1		0,5																							11
4	Asrul	Kamal	1/2/2025	Rakkang	1	12	Vilmar	DP2	50		3																												3
5	Asrul	Jadil	1/2/2025	Jaring	1	12	Vajen	DP3		21	2																												2
6	Asrul	Mambi/Padlik	1/2/2025	Rakkang	1	12	PLTU	DP2	50		0,8																												0,8
7	Asrul	Syamsuddin	1/3/2025	Rakkang	1	12	Ilir Jenebora	DP2	70		7,5			0,3	D	0,3	D																						8,1
8	Asrul	Sito	1/3/2025	Rakkang	1	12	Ilir Jenebora	DP2	60		2			0,1	D	0,1	D																						2,2
9	Asrul	Ahyar	1/3/2025	Rakkang	1	12	Vajen	DP3		21	2,3																												2,3
10	Asrul	Tabrani	1/3/2025	Rakkang	1	12	Kariangau	DP3	70		9,5			1	D	0,5	D																						11
11	Asrul	Kamal	1/3/2025	Rakkang	1	12	Kedompet	DP2	50		4			0,1	D	0,1	D																						4,2
12	Asrul	Hendra	1/3/2025	Rakkang	1	12	PLTU	DP2	50		7			0,3	D	0,1	D																						7,4
13	Asrul	Jadil	1/3/2025	Jaring	1	12	Vajen	DP3		21	2																												2
14	Asrul	Kadir	1/3/2025	Rakkang	1	12	Mentaver	DP1	100		12			1,5	D	0,5	D																						14
15	Asrul	Saidan	1/4/2025	Rakkang	1	12	Kampung baru	DP3	50		5,7			0,3	D	0,1	D																						6,1
16	Asrul	Ahmad Baidawi	1/4/2025	Rakkang	1	12	Kampung baru	DP3	70		9,5			1	D	0,3	D																						10,8
17	Asrul	Abd Malik	1/4/2025	Rakkang	1	12	kedompet	DP2	60		8			0,8	D	0,2	D																						9
18	Asrul	Latif	1/4/2025	Rakkang	1	12	kedompet	DP2	50		2,3			0,2	D	0,1	D																						2,6
19	Sahibe	Ahmad	12/22/2024	Rakkang	2	48	Perairan Pejala, Saloloang	DP4		45	0,5															0,25	R	0,2	R							1	D		1,95
20	Sahibe	Kamaruddin	12/24/2024	Rakkang	2	48	Perairan Pejala, Saloloang	DP4		45	1,7															0,35	R												2,05
21	Asrul	Latif	12/25/2024	Rakkang	1	12	Vilmar	DP2	50		2,1			0,3	D	0,2	D																						2,6
22	Asrul	Abd Malik	12/25/2024	Rakkang	1	12	MMP	DP2	50		4			0,8	D	0,2	D															0,8	R						5,8
23	Asrul	Putra	12/25/2024	Rakkang	1	12	Sungai Donghva	DP2	80		6			1	D	0,3	D																						7,3
24	Asrul	Rusli	12/25/2024	Rakkang	1	12	Kedompet	DP2	50		2,9			0,2	D	0,1	D																						3,2
25	Sahibe	Tajudin	12/28/2024	Jaring	2	48	Perairan Pejala, Saloloang	DP4		55	2,3																									1	D		3,3
26	Sahibe	Tunru	12/28/2024	Jaring	2	48	Perairan Pejala, Saloloang	DP4		36	0,6																	0,35	R							1	D		1,95
27	Sahibe	Anwar	12/28/2024	Jaring	2	48	Perairan Pejala, Saloloang	DP4		80	3,3																									1	D		4,3
28	Sahibe	M. Said	12/28/2024	Jaring	2	48	Perairan Pejala, Saloloang	DP4		55	4,1																									1	D		5,1
29	Sahibe	Kali	12/29/2024	Jaring	2	48	Perairan Pejala, Saloloang	DP4		45	2,3																									1	D		3,3
30	Sahibe	Rahman	12/30/2024	Jaring	2	48	Perairan Pejala, Saloloang	DP4		50	2,8																									1	D		3,8
31	Sahibe	Heli	1/2/2025	Jaring	2	48	Perairan Pejala, Saloloang	DP4		65	3,4															0,85	R												4,25
32	Sahibe	Kali	1/2/2025	Jaring	2	48	Perairan Pejala, Saloloang	DP4		45	2,6																									1	D		3,6
33	Sahibe	M. Said	1/2/2025	Jaring	2	48	Perairan Pejala, Saloloang	DP4		55	3,6																												3,6
34	Sahibe	Kamaruddin	1/2/2025	Jaring	2	48	Perairan Pejala, Saloloang	DP4		45	1,3																												1,3
35	Sahibe	Rahmadi	1/2/2025	Jaring	2	48	Perairan Pejala, Saloloang	DP4		90	4,8															0,25	R			0,2	R								5,25
36	Sahibe	Samsuddin	1/4/2025	Jaring	2	48	Perairan Pejala, Saloloang	DP4		45	5															1,4	R									1	D		7,4
37	Sahibe	Burhan	1/4/2025	Jaring	2	48	Perairan Pejala, Saloloang	DP4		60	4,7																									1	D		5,7
38	Sahibe	M. Said	1/4/2025	Jaring	2	48	Perairan Pejala, Saloloang	DP4		55	3,5																									1	D		4,5
39	Asrul	Kadir	1/2/2025	Rakkang	1	12	Sepaku	DP1	100		10			2	D	0,8																0,7	R						13,5
40	Asrul	Toyib	1/2/2025	Rakkang	1	12	Pitu	DP2	40		1,8																												1,8
41	Asrul	Tabrani	1/2/2025	Rakkang	1	12	Kariangau	DP3	70		9,5			1	D	0,5																							11
42	Asrul	Kamal	1/2/2025	Rakkang	1	12	Kedompet	DP2	50		3																												3
43	Asrul	Jadil	1/2/2025	Rakkang	1	12	Vajen	DP3		21	2																												2
44	Asrul	Mambi/Padlik	1/2/2025	Rakkang	1	12	Vilmar	DP2	50		0,8																												0,8
45	Asrul	Syamsuddin	1/3/2025	Rakkang	1	12	Ilir Jenebora	DP2	70		7,5			0,3	D	0,3																							8,1
46	Asrul	Sito	1/3/2025	Rakkang	1	12	MMP	DP2	60		2			0,1	D	0,1																							2,2
47	Asrul	Ahyar	1/3/2025	Rakkang	1	12	Vajen	DP3		21	2,3																												2,3
48	Asrul	Tabrani	1/3/2025	Rakkang	1	12	Kariangau	DP3	70		9,5			1	D	0,5																							11
49	Asrul	Kamal	1/3/2025	Rakkang	1	12	Ilir Jenebora	DP2	50		4			0,1	D	0,1																							4,2
50	Asrul	Hendra	1/3/2025	Rakkang	1	12	Vilmar	DP2	50		7			0,3	D	0,1																							7,4
51	Asrul	Jadil	1/3/2025	Rakkang	1	12	Vajen	DP3		21	2																												2
52	Asrul	Kadir	1/3/2025	Rakkang	1	12	Sepaku	DP1	100		12			1,5	D	0,5	D																						14
53	Asrul	Saidan	1/4/2025	Rakkang	1	12	Sungai Kapau	DP2	50		5,7			0,3	D	0,1	D																						6,1

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Biometric Information Data

No	Enumerator	Landing Date	Ship Name	Type of Fishing Gear	Species	Length (TL/FL)/Width carapace (CL) (mm)	Weight (gr)	Gender (J/B)	TKG
0	Sahibe	1/2/2025	Heli	Jaring	Rajungan	155	275	B	M
1	Sahibe	1/2/2025	Heli	Jaring	Rajungan	160	330	B	M
2	Sahibe	1/2/2025	Heli	Jaring	Rajungan	150	289	J	
3	Sahibe	1/2/2025	Heli	Jaring	Rajungan	145	235	J	
4	Sahibe	1/2/2025	Heli	Jaring	Rajungan	134	178	B	B
5	Sahibe	1/2/2025	Heli	Jaring	Rajungan	100	74	B	M
6	Sahibe	1/2/2025	Heli	Jaring	Rajungan	135	162	B	M
7	Sahibe	1/2/2025	Heli	Jaring	Rajungan	144	214	J	
8	Sahibe	1/2/2025	Kali	Jaring	Rajungan	142	211	J	
9	Sahibe	1/2/2025	Kali	Jaring	Rajungan	112	103	J	
10	Sahibe	1/2/2025	Kali	Jaring	Rajungan	115	126	B	M
11	Sahibe	1/2/2025	Kali	Jaring	Rajungan	122	119	J	
12	Sahibe	1/2/2025	Kali	Jaring	Rajungan	125	122	J	
13	Sahibe	1/2/2025	Kali	Jaring	Rajungan	110	99	J	
14	Sahibe	1/2/2025	Kali	Jaring	Rajungan	105	90	J	
15	Sahibe	1/2/2025	Kali	Jaring	Rajungan	135	186	B	M
16	Sahibe	1/2/2025	Rahmadi	Jaring	Rajungan	100	74	B	M
17	Sahibe	1/2/2025	Rahmadi	Jaring	Rajungan	128	147	J	
18	Sahibe	1/2/2025	Rahmadi	Jaring	Rajungan	155	313	B	M
19	Sahibe	1/2/2025	Rahmadi	Jaring	Rajungan	160	315	B	M
20	Sahibe	1/2/2025	Rahmadi	Jaring	Rajungan	140	239	B	M
21	Sahibe	1/2/2025	Rahmadi	Jaring	Rajungan	150	263	B	M
22	Sahibe	1/2/2025	Rahmadi	Jaring	Rajungan	135	157	B	M
23	Sahibe	1/2/2025	Rahmadi	Jaring	Rajungan	138	166	B	M
24	Sahibe	1/2/2025	Rahmadi	Jaring	Rajungan	141	252	B	B
25	Sahibe	1/4/2025	Samsuddin	Jaring	Rajungan	148	225	B	M
26	Sahibe	1/2/2025	Samsuddin	Jaring	Rajungan	150	282	J	
27	Sahibe	1/2/2025	Samsuddin	Jaring	Rajungan	136	192	B	M
28	Sahibe	1/2/2025	Samsuddin	Jaring	Rajungan	167	277	B	M
29	Sahibe	1/2/2025	Samsuddin	Jaring	Rajungan	151	262	B	M
30	Sahibe	1/2/2025	Samsuddin	Jaring	Rajungan	160	282	B	M
31	Sahibe	1/4/2025	Samsuddin	Jaring	Rajungan	148	227	B	M
32	Sahibe	1/4/2025	Samsuddin	Jaring	Rajungan	170	394	B	M
33	Sahibe	1/4/2025	Samsuddin	Jaring	Rajungan	150	300	B	B
34	Sahibe	1/4/2025	Samsuddin	Jaring	Rajungan	155	284	B	M
35	Sahibe	1/4/2025	Burhan	Jaring	Rajungan	163	388	B	B
36	Sahibe	1/4/2025	Burhan	Jaring	Rajungan	154	358	B	B
37	Sahibe	1/4/2025	Burhan	Jaring	Rajungan	149	226	B	M
38	Sahibe	1/4/2025	Burhan	Jaring	Rajungan	150	261	B	M
39	Sahibe	1/4/2025	Burhan	Jaring	Rajungan	151	261	B	M
40	Sahibe	1/4/2025	Burhan	Jaring	Rajungan	160	352	B	B
41	Sahibe	1/4/2025	Burhan	Jaring	Rajungan	145	289	B	B
42	Sahibe	1/4/2025	Burhan	Jaring	Rajungan	158	291	B	B
43	Sahibe	1/4/2025	Burhan	Jaring	Rajungan	167	316	J	
44	Sahibe	1/4/2025	Burhan	Jaring	Rajungan	154	270	J	
45	Sahibe	1/4/2025	M. Said	Jaring	Rajungan	143	251	J	
46	Sahibe	1/4/2025	M. Said	Jaring	Rajungan	133	215	J	
47	Sahibe	1/4/2025	M. Said	Jaring	Rajungan	156	205	B	M
48	Sahibe	1/4/2025	M. Said	Jaring	Rajungan	154	202	B	M
49	Sahibe	1/4/2025	M. Said	Jaring	Rajungan	130	150	B	M
50	Sahibe	1/4/2025	M. Said	Jaring	Rajungan	150	260	B	M
51	Sahibe	1/4/2025	M. Said	Jaring	Rajungan	143	220	J	
52	Sahibe	1/4/2025	M. Said	Jaring	Rajungan	163	292	B	M
53	Sahibe	1/4/2025	M. Said	Jaring	Rajungan	140	198	B	M

Ket	
M	Mature (rajungan betina yang sudah dewasa atau setidaknya pernah bertelur sekali)
I	Immature (rajungan betina yang belum dewasa atau belum pernah bertelur)
B	Berried (rajungan yang sedang bertelur)
J	Male
B	Female

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Appendix C: Monitoring Track - Operational Characteristics Data

No	Enumerator	Fishers Name	Date	Type of Fishing Gear	Target Species	Landing Site	Ship Material	Length Ship	Weight Ship	Ship Price	Ship Engine	Engine Price	Number of Crew's Ship	Number of fishing gear operated	Price of 1 unit of Fishing Gear	Soaking Time	Mesh Size	Fishing Rod Size	Bait Type	Average monthly rate	Number of days per trip	Fishing season	Average price of target fish	Fuel Per Trip	Fuel Price (per trip)	Total Cost per trip (Excluding
1	Asrul	Kamal	1/2/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
2	Asrul	Sito	1/3/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
3	Asrul	Kadir	1/3/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
4	Asrul	Sardun	1/4/2025	Rokkang	Rajungan	H. Kadir	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
5	Asrul	Latif	1/4/2025	Rokkang	Rajungan	H. Kadir	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
6	Asrul	Manjo	1/6/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
7	Asrul	Didi	1/6/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
8	Asrul	Mistar	1/6/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
9	Asrul	Ading Ali	1/6/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
10	Asrul	Toyib	1/6/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
11	Asrul	Basir	1/7/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
12	Asrul	Broto	1/7/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
13	Asrul	Sanuddin	1/8/2025	Rokkang	Rajungan	H. Kadir	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
14	Asrul	Saddam	1/8/2025	Rokkang	Rajungan	H. Kadir	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
15	Asrul	Yahya	1/8/2025	Rokkang	Rajungan	H. Kadir	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
16	Asrul	Herman	1/9/2025	Rokkang	Rajungan	H. Kadir	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
17	Asrul	Rudi	1/10/2025	Rokkang	Rajungan	H. Kadir	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
18	Asrul	Burhan	1/13/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
19	Asrul	Hanfi	1/15/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
20	Asrul	Rijab	1/16/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
21	Asrul	H. Nasir	1/16/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
22	Asrul	Hasan	2/5/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
23	Asrul	Hadi Santoso	2/5/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
24	Asrul	Adam	2/5/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
25	Asrul	Tio	2/6/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
26	Asrul	Afid	2/7/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
27	Asrul	Ocid	2/8/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
28	Asrul	M. Sahli	2/24/2025	Rokkang	Rajungan	H. Kadir	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000
29	Asrul	Fadli	2/25/2025	Rokkang	Rajungan	H. Sanusi	Kayu		1		24	Rp5.000.000	1		Rp125.000	24			Tembang, Selangat, Puput, Gulama	15-20	1	11-8		5	Rp11.000	Rp35.000

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Appendix D: Documentation socialization Sustainable Fisheries Practice & Fishing Gear Swap Program