ISDCFM | IPB University Bogor Indonesia | Department of Aquatic Resources Management ARM | Faculty of Fisheries and Marine Sciences

2023

PROGRAM BOOK

WITH ABSTRACT

International Seminar on Demersal and Crustacean Fisheries Management

IPB University Bogor Indonesia | Directorate of Global Connectivity | Indonesian Demersal Association | APRI

International Seminar on Demersal and Crustacean Fisheries Management

2 - 3 August 2023, Bogor, Indonesia

FOREWORD

Dear Participants and Colleagues,

Welcome to International Seminar on Demersal and Crustacean Fisheries Management (ISDCFM), Bogor, Indonesia. The seminar hosted by Department of Aquatic Resources Management (MSP), Faculty of Fisheries and Marine Sciences (FPIK), IPB University. As the first international seminar on demersal and crustacean fisheries in Indonesia, some of the topics raised at ISDC 2023 include Ecology, habitat and species conservation; Product and technology diversification; Domestication and cultivation of species; Fisheries and ecolabeling certification; Social-ecological system and fisheries management; The blue economy of the fishing industry. The topics mentioned above are expected to be able to accommodate all scientific focuses on the management of demersal and crustacean fisheries resources. ISDCFM 2023 is also expected to be able to promote towards better management of demersal and crustacean fisheries in Indonesia, by gathering research results in various aspects, developing basic to applied science, to the policy and trade side. Scientists, researchers, practitioners, governments, NGOs, industry are expected to gain new insights in responding to the challenges of sustainable fisheries resource management. There will be six keynote presentations, 56 oral presentations, and 11 poster presentations in this two-day event. The seminar schedule can be seen in more detail in the following pages of this program book. We also thank to Directorate of Global Connectivity (IPB University), Indonesian Blue Swimming Crab Association (APRI), Indonesia Demersal Association (ADI), committee organizer, and all participants that have had gave their contribution in making this meeting happen.

Enjoy your seminar. Have a nice meeting!

Warm regards,

Dr. M. Mukhlis Kamal
Chairman of Organizing Committee

LIST OF ORGANIZING COMMITTEES

The organizing commmitte of International Seminar on demersal and Crustacea Fisheries Management (ISDCFM) 2023 is as follows:

Advisory Board	:	Prof. Dr. Ir. Hefni Effendi, M.Phil
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ZOOM MEETING

RULES OF INTERNATIONAL SEMINAR ON DEMERSAL AND CRUSTACEA FISHERIES MANAGEMENT (ISDCFM) 2023

1. Join the zoom meeting at least 10 minutes before the symposium starts
2. Please use IS-ARM virtual background (Download virtual background)
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Meeting ID: 951 7397 3872
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PROGRAM

GENERAL AGENDA OF INTERNATIONAL SEMINAR ON DEMERSAL AND CRUSTACEA FISHERIES MANAGEMENT (ISDCFM) 2023

DAY 1 – August 2, 2023
Zoom Meeting: https://ipb.link/isdcfm-join
Meeting ID: 951 7397 3872 Passcode: isdcfm2023

Time (GMT +7)	Activity
08.00 - 08.15	Participant Registration
08.15-08.20	Opening
08.20-08.30	Singing Indonesia Raya & Hymn of IPB
08.30-08.40	Report of the Head of ISDCFM 2023
08.40-08.50	Welcome from Head of Aquatic Resources Management Department
08.50-09.00	Welcome from Dean of Faculty of Fisheries and Marine Sciences
09.00-09.10	The IPB University Rector's Speech
09.10-09.20	Pray
09.20-09.25	MC reads the Moderator's CV
09.25-09.30	Introduction of moderator: Dr. Taryono – IPB University
09.30-10.00	Keynote Speaker 1 Dr. Agus Suherman – Directorate General of Capture Fisheries MMAF "Policy directions in management of demersal and crustacean fisheries in Indonesia"
10.00-10.30	Keynote Speaker 2 Prof. Dr. Luky Adrianto – IPB University "Social ecological system of lobster fisheries"
10.30-10.45	Discussion Session
10.45-11.45	Oral Presentation – 1st Session Moderator: Prof. Dr. Ario Damar
11.45-12.00	Discussion Session
12.00-13.00	Coffee Break and Poster Sessions
13.00-14.00	Oral Presentation – 2nd Session Moderator: Mrs. Inna Puspa Ayu
14.00-14.15	Discussion Session
14.15-15.15	Oral Presentation – 3rd Session Moderator: Charles P. H. Simanjuntak, Ph.D.
15.15-15.30	Discussion Session
15.30-15.35	Introduction of moderator: Dr. M. Mukhlis Kamal – IPB University
15.35-16.05	Keynote Speaker 3 Poly Burns – Marine Stewardship Council "Wild-caught seafood certification scheme to reward sustainable fishing and ensure certified sustainable seafood"
16.05-16.15	Discussion Session
16.15-16.30	Closing Day 1 and Announcement

PROGRAM

GENERAL AGENDA OF INTERNATIONAL SEMINAR ON DEMERSAL AND CRUSTACEA FISHERIES MANAGEMENT (ISDCFM) 2023

DAY 2 – August 3, 2023
Zoom Meeting: https://ipb.link/isdcfm-join
Meeting ID: 951 7397 3872 Passcode: isdcfm2023

Time (GMT +7)	Activity
08.00-08.25	Participant Registration
08.25-08.40	ADI, APRI, MSP Profile Video Playback
08.40-08.45	MC reads the Moderator's CV
08.45-09.00	Introduction of moderator: Dr. Mohammad Mukhlis Kamal – IPB University
09.00-09.30	Keynote Speaker Amber von Harten – Sustainable Fisheries Partnership "Fisheries business meet ecology and policy toward sustainability"
09.30-10.00	Keynote Speaker Dr. Petrus Johannes Mous – Yayasan Konservasi Alam Nusantara "Fisheries develompent system supporting sustainable fisheries in Indonesia"
10.00-10.30	Keynote Speaker: Kuncoro Catur Nugroho – Indonesian Demersal Association "Indonesia Blue Swimming Crab Association"
10.30-11.00	Discussion Session
11.00-12.00	Oral Presentation – 1st Session Moderator: Dr. Rahmat Kurnia
12.00-12.15	Discussion Session
12.15-13.15	Coffee Break and Poster Sessions Discussion Session
13.15-14.15	Oral Presentation – 2nd Session Moderator: Charles P. H. Simanjuntak, Ph.D.
14.15-14.30	Discussion Session
14.30-15.00	Coffee Break
15.00-15.30	Oral Presentation – 3rd Session Moderator: Mrs. Inna Puspa Ayu
15.30-15.45	Discussion Session
15.45-16.00	Closing ISDCFM 2023 and Announcement

ORAL PRESENTATION

DAY 1 – August 2, 2023
Zoom Meeting: https://ipb.link/isdcfm-join
Meeting ID: 951 7397 3872 Passcode: isdcfm2023

SESSION 1

Time (GMT +7)	Presenter	Title
10.45-11.45	Ananingtyas S Darmarini	Lenght-Weight Relationship and Morphometric aspect of Yellow Crabs (*Charybdis* sp.) from the Mangrove Ecosystem of Jaring Halus Island, North Sumatra
	Agus Alim Hakim	Morphological and molecular identification of spiny lobster in Indonesia
	Erfind Nurdin	Biology Reproduction and Population Dynamics of the Redbelly Yellowtail Fusilier (*Caesio cuning*) in Kendari Waters, Banda Sea, Indonesia.
	Heri Widiyastuti	Length-based assessment for squaretail coral grouper (*Plectropomus areolatus* Ruppell,1830) in Sinjai Waters, Indonesia
	James Abrahamsz	Mud crab (*Scylla* spp) resources status in Hoat Sorbay Bay, Southeast Maluku Regency
	Amila Fitri Salsabila	Biodiversity of Freshwater Stingrays in Musi River, Palembang City, South Sumatra
	Mohamad Natsir	Alternative Approaches to Determining Demersal Fisheries Status in FMA 712 in Data Limited Situation: Combining Length Based and Bayesian Surplus Production Model Estimation
	Siska Agustina	Assessment on demersal fisheries status in the FMA 573 under data-limited situation: a combination of statistic and CPUE data as inputs for Bayesian Surplus Production Model
	Moh Fauzi	The exploitation status and spawning potential ratio (SPR) of blue swimming crab (*Portunus pelagicus*) in North Natuna Sea, Indonesia
	Adrian Damora	Developing a harvest strategy of small-scale mud crab fishery: A lesson-learned from Hoat Sorbay, Southeast Maluku
11.45-12.00	Discussion Session	

ORAL PRESENTATION

DAY 1 – August 2, 2023
Zoom Meeting: https://ipb.link/isdcfm-join
Meeting ID: 951 7397 3872 Passcode: isdcfm2023

SESSION 2

Time (GMT +7)	Presenter	Title
13.00-14.00	Mohammad Bagus Satria	Sustainability analysis of demersal fish species utilized by surimi industry trough length-based spawning potential ratio (LB-SPR) approach
	Taufiq Ahmad Romdoni	Life history parameters and spawning potential ratio of *Upeneus> vittatus* (Forsskal, 1775) in the coastal Lebak and Sukabumi waters
	Imadiah Aulia	Analysis of blue swimming crab (*Portunus> pelagicus*) stock in banten bay waters based on spawning potential ratio
	Suharyanto	A Fox-model approach to skipjack fisheries at the Sadeng Coastal Fishing Port in Yogyakarta
	Ali Suman	Population dynamics and spawning potential ratio of banana prawn (*Penaeus> merguiensis*) in Merauke Waters, Papua, Indonesia
	Andy Azis	The different mesh sizes effect of gillnet for blue swimming crab catches in Lampung
	Muhamad Cardin	Seasonal effect on blue swimming crab fishing effort (CPUE) in Tiworo Strait Waters
	Navisa Fairuz	Species diversity and catch per unit effort (CPUE) of Portunidae in Batubara, North Sumatera
	M. Mukhlis Kamal	EAFM Plan initiative for sustainable snapper fisheries management in the Red Sea State, Republic of Sudan
	Mirna Dwirastina	Types of fishing gear in Salah Nama Island, Musi River, South Sumatra
14.00-14.15	Discussion Session	

ORAL PRESENTATION

DAY 1 – August 2, 2023
Zoom Meeting: https://ipb.link/isdcfm-join
Meeting ID: 951 7397 3872 Passcode: isdcfm2023

SESSION 3

Time (GMT +7)	Presenter	Title
14.15-15.15	Indra Jaya	TREKFISH Technology for conservation and management measure: Case of Blue Swimming Crab
	Suparman Sasmita	Technical Review of Encircling Ringed Gillnet for Gillnet Standardization in Indonesia
	Oktavianto Prastyo Darmono	Improving fisheries management through participatory data collection A case study from the Blue Swimming Crab fisheries in Central Java, Indonesia
	Rasyid Prasetyo Utomo	Connectivity of the social-ecological system of the blue swimming crab fisheries in Rembang
	Helman Nur Yusuf	Lobster Fisheries in the waters of West Aceh, Fisheries Management Area 572 : A Short Review
	Arinta Dwi Hapsari	The Red Snapper Fishery in the Eastern Java Sea and Its Fishery Management Recommendation
	Lailatul Qomariyah	The role of women in the blue swimming crab fisheries supply chain from gender perspective in Pamekasan
	Dicky Darmawan	Social Media to Promote Sustainable Fisheries Management: Insight from Indonesian Blue Swimming Crab
	Mukti Aprian	Unexpected social change: The transformation of the Pati Regency coastal community due to the Indonesian government's trawl restriction policy
	Barnabas Pablo Puente Wini Bhokaleba	Performance of Tuna Fisheries In The Sea of Sikka Regency
15.15-15.30	Discussion Session	

ORAL PRESENTATION

DAY 2 – August 3, 2023
Zoom Meeting: https://ipb.link/isdcfm-join
Meeting ID: 951 7397 3872 Passcode: isdcfm2023

SESSION 1

Time (GMT +7)	Presenter	Title
11.00-12.00	Cecep Kurniawan	Haplotype Diversity of Horseshoe Crab (*Tachypleus gigas*, Muller 1785) Based on 16S rRNA Gene Markers As a Basis for Conservation
	Dita Amalia Fitri	Genetic Diversity of Spotted Scat (*Scatophagus argus*) Based on 16S rRNA Gene Marker in Western of Fisheries Management Area 573 As a Basis for Management
	Yoanda Nafella	Food composition and trophic niches of blue swimming crab (*Portunus pelagicus* Linnaeus 1758) in the Madura Strait, Pamekasan, East Java.
	Farhan Ramadhan	Mapping the habitat distribution of horseshoe crabs (*Tachypleus gigas*) in Pamekasan Waters
	Alif Abdurrahman	Aquatic Insect Species Ephemeroptera from Cigambreng River, Bogor Based on 16S rRNA Gene as a Bioindicator
	Mita Aprilia	Demersal Branchiopoda and Copepoda communities response to the environmental changes in the Lower Ciliwung River, Indonesia
	Meitha Permata Sari	The construction impact of an integrated shell waste management site (TPLCT) on social, economic, and environmental aspects in Cirebon District
	Elvi Siska Mandiangan	Analysis of the Importance and Feasibility Index of Ecological-Based Mangrove Ecotourism in Talengen Bay
	Beginner Subhan	Coral Health of Transplantation Reef Area in Pulau Pramuka, Kepulauan Seribu
	Lusita Meilana	Potential conservation sites for horseshoe crabs in Indonesia: Marxan as a tool
12.00-12.15	Discussion Session	

ORAL PRESENTATION

DAY 2 – August 3, 2023
Zoom Meeting: https://ipb.link/isdcfm-join
Meeting ID: 951 7397 3872 Passcode: isdcfm2023

SESSION 2

Time (GMT +7)	Presenter	Title
13.15-14.15	Hefni Effendi	The Effect of Oil Spill Incidents on the Benthic Ecosystem in Coastal Waters
	Siti Khasanah	Community Structure Of The Macrozoobenthos As A Water Quality Indicator At Margagiri-Grenyang Coastal Waters, Banten Bay
	Surya Gentha Akmal	Climate match analysis: Advantages for wildlife managers in Indonesia
	Andi Irwan Nur	Biological Aspects of Crayfish (*Cherax quadricarinatus*) Population in Rawa Aopa Watumahoi National Park
	Yunita Magrima Anzani	Morphological Character of Horseshoe Crab (Tachypleus) at Mempawah Mangrove Park Coastal Area
	Wita Setioko	Export demand patterns for blue swimming crab: impact of fishing seasons in WPP 712 from 2018 to 2022
	Ervin Saiful Rizal	Susceptibility analysis of cuttlefish (*Sepia recurvirostra*) to blue swimming crab fisheries in Keboromo village, Pati
	Norbertus Citra Irawan	Developing the Blue and Circular Economy through Visionary Eco-Leadership in the Fish Waste Processing Agro-industry
	Pahad Maulana	Distance of fishing ground against caught blue swimming crab (*Portunus pelagicus*) using a gillnet in Gresik
	Kamal Mustabiq	The effectiveness of a floating apartment as a shelter for spawning blue swimming crabs (*Portunus pelagicus*) in Rembang
14.15-14.30	Discussion Session	

ORAL PRESENTATION

DAY 2 – August 3, 2023
Zoom Meeting: https://ipb.link/isdcfm-join
Meeting ID: 951 7397 3872 Passcode: isdcfm2023

SESSION 3

Time (GMT +7)	Presenter	Title
15.00-15.30	Niken Tunjung Murti Pratiwi	Increased Productivity of Vaname Shrimp Through the Application of Lime Formulations, Feed Additives, And Bacterial Remediation
	Sahabuddin	Feeding with Certain Protein Levels to Improve the Growth and Survival Performance of Prospective Tiger Shrimp (*Penaeus monodon*)
	Muh Welis	Weight loss analysis of blue swimming crabs due to steaming and stripping based on size and egg-berried females in Pangkajene and Islands, South Sulawesi
	Nur Arofah	Catch composition and fishing season of blue swimming crab using a collapsible trap in Pemalang coastal, Central Java
	Zainal Wassahua	Preliminary Study of On-board Handling of the Blue Swimming Crabs in Fisheries Fleet
15.30-15.45	Discussion Session	

POSTER PRESENTATION

GENERAL AGENDA OF INTERNATIONAL SEMINAR ON DEMERSAL AND CRUSTACEA FISHERIES MANAGEMENT (ISDCFM) 2023

Presenter	Title
Umi Chofifakh	Impact of Predigestion Nutrition Use on Growth and Frequency of Molting on Shell Enlargement (*Portunus pelagicus*)
Okky Rizal Kusuma	The Relationship between Coral Fish Resources Diversity and Ecosystem Services as an Added Value for the Sustainable Development of Special Economic Zone: Evidence in Tanjung Lesung, Banten Province
Grace Rika Manik	Social-Ecological System (SES) mapping and harvest strategy of lobster fisheries in Nasal coastal water, Bengkulu
Muhamad Ariston	The Dynamics of Social-Ecological Interactions in the PAAP Teluk Lasolo Region, North Konawe Regency, Southeast Sulawesi Province: A Comprehensive Approach to Sustainable Renewal
Elga Cahya Putra Nugraha	Multi scale analysis of social-ecological system of lobster (*Panulirus* spp.) fisheries activities in the Gunungkidul Coastal Waters, Special Region of Yogyakarta
Akhmad Nurhijayat	Exploring Uncertainty of Small-Scale Blue Swimming Crab Fishery (*Portunus pelagicus*) Toward Local Blue Economy: The Case of PATI Coastal Waters, Central Java, INDONESIA
Mat Fahrur	Estimation of TN and TP Waste on Increasing Kangkung Production Ipomoea reptans poir sp in Low Salinity Vaname Shrimp Aquaponics
Sulistiono	Study on the bioaccumulation of heavy metals (Cd, Cu) in the flesh of green mussel *Perna viridis* (linnaeus, 1758) in Banten Bay and Jakarta Bay
Laras NR	Diversity of macrozoobenthos and plankton in the estuary of the Sukabumi River, West Java as a basis for determining natural feed for Glass eel (*Anguilla* sp.)
Hani Fauziah	Macrozoobenthos community structure and its relation to banten bay water quality
Umi Chofifakh	Effect of supplement addition on transport media on the physiological condition and survival of freshwater crabs (*Parathelphusa convexa* De Man, 1879)

KEYNOTE SPEAKER

Dr. Agus Suherman

Directorate General of Capture Fisheries MMAF

(Topic: Policy directions in management of demersal and crustacean fisheries in Indonesia)

International Seminar on Demersal and Crustacean Fisheries Management

2 - 3 August 2023, Bogor, Indonesia

KEYNOTE SPEAKER

Amber von Harten

Sustainable Fisheries Partnership

(Topic: Fisheries business meet ecology
and policy toward sustainability)

International Seminar on Demersal and Crustacean Fisheries Management

2 - 3 August 2023, Bogor, Indonesia

KEYNOTE SPEAKER

Prof. Dr. Luky Adrianto
IPB University
(Topic: Socioecological lobster fishery)

International Seminar on Demersal and Crustacean Fisheries Management

2 - 3 August 2023, Bogor, Indonesia

KEYNOTE SPEAKER

Polly Burns

Marine Stewardship Council

(Topic: Wild-caught seafood certification scheme to reward sustainable fishing and ensure certified sustainable seafood)

International Seminar on Demersal and Crustacean Fisheries Management

2 - 3 August 2023, Bogor, Indonesia

KEYNOTE SPEAKER

Dr. Peter Mous

Yayasan Konservasi Alam Nusantara

(Topic: Fisheries development system supporting sustainable fisheries in Indonesia)

International Seminar on Demersal and Crustacean Fisheries Management

2 - 3 August 2023, Bogor, Indonesia

KEYNOTE SPEAKER

Kuncoro Catur Nugroho
Indonesia Blue Swimming Crab Association
(Topic: Blue economy implementation
blue swimming crab fisheries)

International Seminar on Demersal and Crustacean Fisheries Management

2 - 3 August 2023, Bogor, Indonesia

ABSTRACT OF ORAL PRESENTER

International Seminar on Demersal and Crustacean Fisheries Management

2 - 3 August 2023, Bogor, Indonesia

Lenght-Weight Relationship and Morphometric aspect of Yellow Crabs (*Charybdis* sp.) from The Mangrove Ecosystem of Jaring Halus Island, North Sumatra

Onrizal[1*], A. S. Darmarini[2] , A. C. Sihombing[3], N Najmi[3]

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Abstract. Reporting on yellow crab (*Charybdis* sp.) which is caught by non-target fishermen on Jaring Halus Island, Langkat, North Sumatra is very limited. These crabs have not been used by the community but have important ecological functions in the waters. Therefore this study aims to examine growth patterns and morphometric aspects to provide biological information for this type of crab. Sample collection was carried out in July 2022 in the waters around the natural mangrove ecosystem of Jaring Halus Island, Langkat, North Sumatra. The method used is random from the catch of fishermen with traditional ambai fishing gear. Carapace width and weight are used to calculate growth pattern and frequency distribution. The growth patterns of male and female crabs have a negative allometric pattern with a value of $b < 3$. The b value of male crabs is 2.6667 and that of female crabs is 2.3878. The morphometric aspect is carried out by measuring the morphometric characters of the crabs. Yellow crab morphometric measurements were carried out by analyzing the relationship between CL and CW, as well as the relationship between ICW and CL. This research forms the basis of information about the biology of Charybdis sp. fisheries, for consideration of sustainable coastal resource management.

Keywords: allometric, by catch, carapace, growth, portunid crabs

Morphological and molecular identification of spiny lobster in Indonesia

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[2]Molecular Invertebrate Systematics and Ecology Lab, Graduate School of Engineering and Science, University of the Ryukyus, 1 Senbaru, Nishihara, Okinawa 903-0213, Japan

[3]Senior Planning, Ministry of Maritime Affairs and Fisheries, 14430, Indonesia

[4]Director of Socioeconomic Research Center, Ministry of Maritime Affairs and Fisheries, 14430, Indonesia

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Abstract. Spiny lobster from the genus *Panulirus* is a high economic commodity in the domestic and export markets, usually served as a luxury food. Even though cultivating has developed, capture fisheries activities are still the main focus to meet market demand. The taxonomic certainty of spiny lobster in Indonesia must be investigated based on morphological and molecular to determine the appropriate management strategy. Based on morphology, all spiny lobsters with six local names were collected partially from Aceh, South of Java, Sulawesi, Seram, and Papua waters. Morphologically, seven species had distinctive characteristics, especially on the anterodorsally carapace and antennular plate. The findings were also validated molecularly using partial cytochrome oxidase subunit 1 (COI) genes. What is important to note is that *lobster batik* was cryptic species that identified as *P. femoristriga* and *P. longipes longipes*. Local naming is only based on the lobster's color, where the two species have a similar pattern. Miss identification can significantly impact reporting of fishing activities, affecting the data that will be used as the basis for lobster fisheries management.

Keywords: COI, management, morphological, molecular, Panulirus, spiny lobsters

Biology Reproduction and Population Dynamics of the Redbelly Yellowtail Fusilier (*Caesio cuning*) in Kendari Waters, Banda Sea, Indonesia

Prihatiningsih, E Nurdin, M Taufik, A S Panggabean, R T Mahulette, Nurulludin, Tirtadanu, U Chodrijah, N Muchlis

*Corresponding author:

Abstract The Redbelly yellowtail fusilier (*Caesio cuning*) is belong to a group of reef fishes distributed in the Indo-West Pacific waters. In Indonesia, it is an economically important fish and is dominantly caught by gill nets, traps and handlines. The intensity of fishing that is carried out continuously is feared to threaten the stock of the species in nature. This study aims to assess the reproductive biology and population dynamics so that it can be utilised sustainably. This research was conducted in April-December 2018 in Kendari waters, Banda Sea-Indonesia. The results showed that the length distribution of this fish ranged from 10.0-32.0 cmFL and the growth pattern was isometric with the length-weight relationship equation W=0.0201L3.0696. The sex ratio was not significantly different from 1:1 and the peak of spawning season occurred in October-November. The length at first capture (Lc =17.85 cm FL) was smaller than the length at first maturity (Lm = 21.05 cm FL) so the captured fish had not reproduced yet. The von Bertalanffy growth equation for yellowtail was Lt=30.45 [1-e^(-0.89(t+0.1786)]. The value of mortality due to capture (F = 1.81 per year) is greater than natural mortality (M = 0.59 per year) and the spawning potential ratio value is 0.23 per year. Based on these parameters, it indicates that the level of exploitation of the redbelly yellowtail fusilier in Kendari waters is in overfished so that management needs to be implemented by limiting the minimum size of fish that can be caught and to reduce fishing operations during the spawning season.

Keywords: biology, reproduction, growth, *Caesio cuning*, Banda Sea

Length-based assessment for Squaretail Coral Grouper (*Plectropomus areolatus* Ruppell, 1830) in Sinjai Waters, Indonesia

H Widiyastuti[1], Tirtadanu[1], K Wagiyo[1], B Nugraha[1]

[1] Research Center for Fishery, National Research and Innovation Agency, Bogor, Indonesia

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Abstract Squaretail coral grouper (*Plectropomus areolatus*) is vulnerable to fishing, particularly in South Sulawesi, Indonesia's fourth largest producer of coral grouper. The study's objectives were to determine the stock status and biological reference point for *P. areolatus* in Sinjai waters, South Sulawesi. The length-based assessment was applied using input length and weight data from January to November 2016. The uncertainty of natural mortality has been used to understand the variation outcome for its biological reference point. *P. areolatus* in Sinjai waters has an ideal body weight, and the lowest condition factor was found in October, indicating its spawning season. High fishing pressure was found based on its variation in exploitation rate. Light recruitment overfishing has occurred based on the spawning potential ratio of 37%. A reduction of 22% from the current fishing mortality is needed to reach the sustainable fishing level. Fisheries managers can apply Some management options, such as time and area closure, for the sustainability of grouper fisheries in Sinjai waters

Keywords:

Mud Crab (*Scylla* Spp) Resources Status In Hoat Sorbay Bay, Southeast Maluku Regency

J Abrahamsz[1,2], **M M Makailipessy** [2,3], **I M Thenu** [2,4]

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[2] Learning Center EAFM, Universitas Pattimura, Ambon
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Abstract Ohoi Evu fisherman is a fisherman who utilizes mangrove crab resources in the Hoat Sorbay Bay, but the lack of information related to catching mud crabs in the waters of Hoat Sorbay Bay also contributes to the difficulty of implementing sustainable management efforts or policies. This research was conducted for six months, from August 2021 to January 2022, in Hoat Sorbay Bay with the aim of determining the status of mangrove crab resources. Data were collected through observations, interviews, and direct surveys of fishing operations. The indicators observed included CPUE, size trends of mangrove crabs, proportion of juveniles caught, species composition, range collapse, and Enhanced, Threatened, Protected (ETP) species caught. Data analysis per indicator was performed using a multi-criteria analysis approach with composite index assessment and flag model visualization. The results showed that the rate of decrease in CPUE per month was 2%, the dominant catch size was at the carapace width of 18 cm and was relatively constant; no juvenile mangrove crabs were caught, and the fishing target consisted of two types of mangrove crabs, namely Scylla serrata, totaling 473 individuals (71,67%) and Scylla olivacea (187 individuals (28,33%). There was no change in the fishing grounds, but it was increasingly difficult to obtain catches, and no ETP species were caught. These results indicate that the mud crab resource is in the good category with a composite value of 76,67.

Keywords: *Scylla serrata*, *Scylla olivacea*; Hoat Sorbay Bay, Evu Village

Biodiversity of Freshwater Stingrays in Musi River, Palembang City, South Sumatra

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Abstract The Musi River has high biodiversity, such as several rare species freshwater stingrays, which until now have minimal information in Indonesia. This research was conducted for three months from February to May 2023 which aims to analyzing the diversity of freshwater stingray species in Palembang City, South Sumatra Province. A total of 42 freshwater stingrays were obtained, consisting of 1 family (Dasyatidae), 3 genera and 6 species, with the species *Fluvitrygon signifer*, *F. oxyrhyncha*, *F. kittipongi*, *Urogymnus lobostoma*, *U. polylepis*, and *Pastinachus stellurostris*. The value of the species diversity index and dominant index obtained show that the diversity of freshwater stingray species in the Musi River, Palembang City has moderate diversity with a value of H'= 1.3763 and no dominating species with an index value of C= 0.3163.

Keywords: Biodiversity, freshwater stingrays, Musi River

Haplotype Diversity of Horseshoe Crab (*Tachypleus gigas*, Muller 1785) Based on 16S rRNA Gene Markers As a Basis for Conservation

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Abstract *Tachypleus gigas* is one of horseshoe crab species in Indonesia, but does not yet have sufficient molecular biology information available with status conservation data deficient according to the IUCN Red List of Threatened Species. Study of haplotype diversity as a first step to conserve and manage horseshoe crab *T. gigas* in Indonesia. This research aims to identify and analyze the diversity of horseshoe crab *T. gigas* haplotypes originating from the waters of Jaring Halus, Langkat Regency; Tambak Lorok, Semarang City; and the waters of Gisi Village, Bintan Regency based on 16S rRNA gene markers. Total DNA isolated and extracted was amplified and then sequenced to obtain the nucleotide base sequence. BLASTn results show that the sample is validated Tachypleus gigas with an identification percentage of 99.08% - 99.81%. The results of low genetic distance from the three locations indicate a close kinship relationship. The results of haplotype diversity from Langkat and Semarang was indicated to be high, while the haplotype diversity at the Bintan was indicated to be low.

Keywords: Haplotype diversity, Tachypleus gigas, conservation, data deficient

Genetic Diversity of Spotted Scat (*Scatophagus argus*) Based on 16S rRNA Gene Marker in Western of Fisheries Management Area 573 As a Basis for Management

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Abstract. Spotted scat (*Scatophagus argus*) is a demersal fish that has important economic value, where this fish is used as consumption fish and ornamental fish. The Spotted scat is also an active migratory fish which allows for genetic transfer from different waters. This study aims to analyze the genetic diversity of Spotted scat in western of WPP 573, including Cilacap, Garut, and Palabuhanratu coastal waters, based on 16s rRNA gene markers as a sustainable resource management. The results of The BLASTn sequencing and validation showed that all Spotted scat samples belonged to the Scatophagus argus species with an identification percentage of 99.51-100%. The results showed that the Spotted scat samples of all locations had a very close kinship relationship, but the population of spotted scat was classified into the unfavorable category because of the low level of genetic diversity.

Keywords: Genetic diversity, *Scatophagus argus*, demersal fish, coastal waters

Food composition and trophic niches of blue swimming crab (*Portunus pelagicus* Linnaeus 1758) in the Madura Strait, Pamekasan, East Java

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Abstract Blue swimming crab (*Portunus pelagicus*) is the main fishery commodity in Madura Strait, Pamekasan Regency. The sustainability of the crab depends on the suitability of the habitat and the availability of food in the waters. This study aims to analyze the food composition and trophic niches of blue swimming crab in the Madura Strait, Pamekasan Regency. The study was conducted for six months from August 2022 to January 2023. The analysis included catch composition based on length frequency distribution, stomach fullness index, trophic niche area, food niche overlap, crab food composition, and growth (carapace width-weight relationship, and condition factor). The results showed that the fullness index of the female stomach was generally higher than that of the male. Small crabs are classified as carnivores whose main food is fish. The niche area of the male crab is 0.2107, while that of the female is 0.1137, with a niche overlapping value between the two of them of 0.932. Blue swimming crabs had a negative allometric growth pattern for 3 months of observation. The growth pattern of the male crab is negative allometric, while that of the female is positive allometric. The average value of the crab condition factor for each month of observation is generally greater than 0.5, thus indicating the availability of food and water conditions suitable for crab life.

Keywords: food composition, niche area, crab, Pamekasan

Mapping the habitat distribution of horseshoe crabs (*Tachypleus gigas*) in Pamekasan Waters

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Abstract. Belangkas, which is often known as the horseshoe crab or Mimi, is one of the marine animals whose existence is rarely known. Indonesia is one of the countries where horseshoe crabs can still be found in its territorial waters, including the islands of Sumatra, Java, Kalimantan, and Sulawesi, with protected animal status. Horseshoe crabs have their uniqueness in that their blood is generally red, but there is also blue, which contains amebocytes as a test material for the presence of endotoxin bacteria. Fishermen in the temple area, Polagan village, Galis sub-district, and Pamekasan district work as crab catchers, with horseshoe crabs sometimes being found as by-catch. This research was conducted in June 2023 using ArcGIS. The identification results showed that there was only one horseshoe crab of the Tachypleus gigas type in the waters of Polagan Village, Galis District, Pamekasan Regency. The condition of the waters in Polagan Village, Galis District, and Pamekasan Regency is relatively good. Habitat mapping is one way to protect these animals from the threat of extinction and support conservation efforts.

Keywords distribution, habitat, horseshoe crabs, mapping

Aquatic insect species Ephemeroptera from Cigambreng River, Bogor Based on 16S rRNA Gene as a Bioindicator

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Abstract. Ephemeroptera are benthic macroinvertebrates used as freshwater bioindicators. The limited identification of Ephemeroptera down to the species level is one of the problems for estimating the quality of water in the upper reaches of the Cigambreng River. This study aims to identify aquatic insects from the order Ephemeroptera to the species level using 16S rRNA gene markers as information for estimating water quality based on bioindicator organisms. The study was conducted from June 2022 to February 2023. The methods used included isolation and extraction, amplification and visualization, and 16S rRNA gene sequencing. Data analysis used included morphological analysis, nucleotide base alignment, phylogeny analysis, and genetic distance using MEGA 11. The validation results showed that samples from the Heptageniidae family had >98% similarity with Thalerosphyrus sinuosus, while samples from Baetidae were 83% with Pseudocloeon glaucum.

Keywords: baetidae, ephemeroptera, heptageniidae, macroinvertebrates, rRNA

Demersal Branchiopoda and Copepoda communities response to the environmental changes in the Lower Ciliwung River, Indonesia

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Abstract. Estuaries are significant ecosystems with great biological production. Estuarine arthropod communities have distinctive biological traits because they connect freshwater and marine habitats, and aquatic creature assemblages endure intense environmental changes. With increased human activity and pollution discharge, the strain on the Lower Ciliwung River's ecology is increasing, and its ecosystem functions and services are unavoidably impacted. We studied the associations of 10 species collected during the dry season (July 2022) to understand better the arthropod (Branchiopoda and Copepoda) population and its reaction to environmental changes. Our findings show that temperature, dissolved oxygen, nutrient availability, pH, salinity, and light availability were the most important factors influencing the existence of arthropods (Branchiopoda and Copepoda). The CCA findings reveal that the physico-chemical factors of the waters influence the distribution of Branchiopoda and Copepoda at observation locations along the Lower Ciliwung River in Indonesia.

Keywords: branchiopoda; copepoda; physico-chemical; river

The construction impact of an integrated shell waste management site (TPLCT) on social, economic, and environmental aspects in Cirebon District

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Abstract. The concept of a blue economy (including zero waste) encourages business growth and efficient investment while protecting the environment by making the most of spending and financing resources that will increase economic growth and improve people's lives. The shell is one of the industrial wastes of the pasteurization of crab meat, which is growing along with the demand for exports. Direct stockpiling of crab shells creates an unpleasant odor and makes access difficult for collectors of crab shells, so it is necessary to build an Integrated Shell Waste Treatment Site (TPLCT) as a manifestation of the blue economy principle, where all economic operations must be waste-free, clean, and efficient manufacturing processes. The purpose of this study is to ascertain the social, economic, and environmental impacts of TPLCT development in the Cirebon Regency. Data was collected through focus group discussions and interviews with eight miniplant owners and one supplier of crab shells. Qualitative descriptive techniques and triangulation were used for data analysis. The study findings show that the community supports the construction of the TPLCT because it employs many people, but the building must be carried out far from residential areas.

Keywords: blue swimming crab, shell, TPLCT, waste

Analysis of the Importance and Feasibility Index of Ecological-Based Mangrove Ecotourism in Talengen Bay

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Abstract. The mangrove forest in the Talengen Bay area has now been used for tourism and is a pioneer of mangrove forest ecotourism in Kepulawan Sangihe Regency which is managed by the village government by empowering local communities. However, there has never been any scientific research that supports the potential of the area. This research is explorative, to analyze the Important Value Index (INP) and the feasibility of ecotourism based on ecology in Talengen Bay, Sangihe Islands Regency. The method used is the Transect Line Plot method and the scoring is based on the suitability of the resource parameters for mangrove tourism. From the data obtained, the highest Important Value Index is Rhizophora mucronata with a value of 181.05%. Based on the parameter suitability of resources for mangrove tourism, mangrove thickness has a score of 1, Mangrove Density scores 3, mangrove species scores 2, tides score 2, and biota objects score 3. This means that the suitability of mangrove tourism in Talengen Bay is categorized as conditional. This kind of information is expected to be a consideration for policymakers in the management of mangrove ecotourism in Talengen Bay, Sangihe Islands.

Keywords: mangrove, ecotourism, Talengen Bay, management, small island

Coral Health of Transplantation Reef Area in Pulau Pramuka, Kepulauan Seribu

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Abstract. Coral reef ecosystems especially in tropical waters are facing various threats due to the impact of increasing sea water temperatures and ocean acidification which causes coral bleaching. The damage of coral reefs is also triggered by human activities such as pollution and tourism activities. The government and the communities in Pramuka Island have consciously and intensively carried out rehabilitation through coral reef transplantation.Transplanted reefs grow and become a habitat for associated organisms, especially reef fish. We assume that it is not only necessary to monitor the growth and coral cover but also asses the coral reef health. The data of coral and health indicator photos were collected using underwater camera in transplantation area. The coral in transplantation area of Pramuka Island is dominated by Acropora genus. According to Coral Watch the health condition is categorized to unhealthy dominated by scores 3 and 4 of color criteria. The colour square in coral watch chart corresponds to a concentration of symbionts contained in the coral tissue. The concentration of symbionts is directly linked to the health of the coral.

Keywords: coral bleaching, coral health, coral transplantation, coral watch

Potential conservation sites for Horseshoe Crabs in Indonesia: Marxan as a tool

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Abstract. Balikpapan Bay areas have been suggested as one of the optimal areas to establish MPAs for Asian horseshoe crabs under the climate change scenarios. To proposed MPAs on the local scale, we examined available data set through field surveys, previous studies, official governments, satellite imagery, and expert information. The biological and ecological data information was used to identify and create the spatial habitats of intertidal nursery/spawning habitat, distribution/adult foraging habitats, and feeding habitats. In order to ensure sustainability, the cumulative risk from human activities was involved together with baseline information in the site selection process. Those data are used as input in the site selection process by using Marxan as a tool. Based on the finding, we suggest that the highest overlapping scenarios (8.443 km2) are the best option to be a core area for protection due to less risk from human threats, meanwhile, other overlapping scenarios (58,456 km2) can be considered as a buffer area. These potential protected areas covered the representative habitats for horseshoe crabs' life cycle. However, exploration of the larval dispersal is needed for future studies to ensure the efficacy of the protection area.

Keywords: Horseshoe crab, conservation, threat, marine protected area, Indonesia

The Effect of Oil Spill Incidents on the Benthic Ecosystem in Coastal Waters

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Abstract. The oil and gas industry in Indonesia, especially those located in offshore waters, is prone to impacting coastal ecosystems due to oil spill incidents. This study aims to reveal the effect of oil spill incidents around the Java Sea on sediment conditions and benthos community structures. Assessment of the condition of aquatic sediments is carried out by comparing the concentrations of heavy metals and organic matter in the form of PAHs with the standard value of the toxic characteristic Total Concentration-C (TK-C) based on Appendix XIII of Government Regulation Number 22 of 2021. Assessment of ecological pressure in the form of disturbance conditions to benthos environmental habitats and determination of the status of environmental conditions based on the level of disturbance and macrozoobenthos community structure. The assessment uses the AZTI Marine Biotic Index (AMBI) method. The content of several heavy metals and PAHs indicates that in general there is no effect of incidents of oil pipe leaks on the quality of bottom sediments. Based on the results of AMBI and M-AMBI calculations, there is no significant difference between the locations found and not found oil layers on community structure, level of disturbance and ecological status of benthos.

Keywords: oil spill, sediment, benthic, level of disturbance, ecological status, AMBI

Community Structure of the Macrozoobenthos as a Water Quality Indicator at Margagiri-Grenyang Coastal Waters, Banten Bay

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Abstract Macrozoobenthos live sedentary at the bottom of the waters with slow movements and a relatively long life cycle, and they are able to respond continuously to changes in water conditions. The aim of this research was to analyze macrozoobenthic ecology as an indicator of water quality at Margagiri-Grenyang coastal waters, Banten Bay. The research was carried out in July-November 2022 with six stations. Macrozoobenthic samples were taken using Petersen Grab, and water quality was measured in situ and ex situ. Data were analyzed using abundeance, biological indices, PCA, similarity index, and AMBI and M-AMBI. The macrozoobenthos at the study site are composed of six phyla (Moluscs, Annelida, Echinodermata, Arthropoda, Hoplonemertea, and Nemertea). The highest density of marozoobenthos was found in July (3178 ind/m2), with moderate diversity (H') (2.535–2.758), medium-high evenness (e) (0.742–0.833), and low dominance (C) indices (0.157–0.241). Based on PCA, the distribution of macrozoobenthos is influenced by turbidity and TSS parameters. AMBI and M-AMBI analysis showed that macrozoobenthos undisturbed and indicated good-high water quality

Keywords: Banten Bay, community structure, macrozoobenthos

Climate match analysis: Advantages for wildlife managers in Indonesia

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Abstract Climate match analysis is a valuable tool for wildlife managers in Indonesia as it allows them to understand the impacts of climate change on wildlife and their habitats. By analyzing climate data, wildlife managers can identify vulnerable species and habitats, predict range shifts, and inform habitat restoration and management strategies. The methodology used in climate match analysis involves analyzing climate data to identify areas where current climate conditions match those projected under future climate scenarios. This analysis also supports adaptive management, enabling managers to monitor and adjust conservation strategies in response to changing climate conditions. Incorporating climate data into decision-making processes enhances the effectiveness of conservation efforts and contributes to the long-term conservation of Indonesia's rich biodiversity.

Keywords: complex interactions, conservation efforts, integrated approaches, invasive alien species, local communities, prevent.

Biological Aspects of Crayfish (*Cherax quadricarinatus*) Population in Rawa Aopa Watumahoi National Park

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Abstract The population of crayfish as an introduced species in the Rawa Aopa Watumohai national park has now spread widely so that it has become the main catch of local fishermen. Although it contributes greatly to the regional economy, caution is needed given the great potential of this species to become a competitor, predator, pathogen, or parasite carrier in a new ecosystem. However, information on the population of crayfish in this area is not yet available, so preliminary research is needed to determine its growth patterns and condition factors. Sampling was carried out at 3 stations using 24 traps with a total sample of 810 individuals. The analysis showed a carapace length range of 19.5-99.4 mm with a dominance of medium size, namely 44.4-60.9 mm length. Length-weight relationship analysis by month and by sex showed a negative allometric growth pattern with a value range of b:1.59-2.31. Furthermore, analysis of condition factors by month and by sex also showed the body of individuals was thin (K: 1.01-1.07). The study results indicate that the population is probably in a state of stress, so further research is needed on growth, mortality, and exploitation rates.

Keywords: crayfish, condition factors, growth pattern

Morphological Character of Horseshoe Crab (Tachypleus) at Mempawah Mangrove Park Coastal Area

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Abstract Horseshoe crabs which are protected animals are still often caught by fishermen in the Coastal area of Mempawah Mangrove Park (MMP). One of its genera is Tachypleus. This research aimed to assess the morphological character of Tachypleus from MMP Coastal area. A total of 14 parameters were measured from samples that were collected using a trammel net. The sampling frequency was three times from July to September. Physical and chemical parameters of the waters are also studied to support the ecological information. Two species of Tachypleus were found in these waters, i.e. *Tachypleus gigas* (8 males and 4 females) and *Tachypleus tridentatus* (6 males and 11 females). Both species vary in size, *T.tridentatus* (TL:31.8 - 49.7 cm; W:221-802 gr) was larger than *T.gigas* (TL:33.1 - 41.5 cm; W: 210 - 665 gr) in total length and weight. Based on morphometric comparison between *T.tridentatus* and *T.gigas* found that there were 6 out of 14 parameters that differed significantly ($p<0.05$). Those are total length, prosoma length, compound eyes distance, anal angle length, anterior occeli length, and body weight. Characteristics of the aquatic environment are suitable for the habitat of horseshoe crabs.

Keywords: coastal, horseshoe crab, mangrove, morphology, tachypleus

The effectiveness of a floating apartment as a shelter for spawning blue swimming crabs (*Portunus pelagicus*) in Rembang

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Abstract. Blue swimming crab is an Indonesian fishery commodity with high economic value for export to America, Asia, and Europe. The increase in crab fishing activities every year results in diminishing stocks in nature, in addition to predator attacks around spawning areas. The purpose of this study was to determine the growth of blue swimming crabs and the types of fish in the crab apartment shelters in Rembang Regency, Central Java Province, from March to May 2023. Technically, female TKG III (females crab with gray eggs) were put in a box of floating apartment crabs in early March 2023 and monitored every 2 weeks to determine the growth of the hatched crab eggs. The results of observations for 3 months obtained as many as 50 of the millions of eggs in broodstock with an average size of 8–10 centimeters and a weight of 40–65 grams. Fish that are around the shelter include sadar fish, shrimp, tromboso, and jambrung fish. Baronang fish and jambrung fish often result in reduced juveniles, but adding shelter to form a tight environment can prevent these fish from entering. It can be concluded that the use of shelter is very influential on the survival of crabs that hatch from predators.

Keywords: blue swimming crab, crab shelter, fish, floating apartment

Export demand patterns for blue swimming crab: impact of fishing seasons in WPP 712 from 2018 to 2022

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Abstract. Blue swimming crab (*Portunus pelagicus*) is a significant fishery export commodity from WPP 712. This study analyzes the relationship between export demand and fishing season in WPP 712 for the last five years (2018–2022) based on export volume data, prices, and fishing season information, which is classified as the west season starting from November to May (high rainfall) and the east season starting from June to October (low rainfall) using correlation and trend analysis. The results show that the export demand for blue swimming crab fluctuates with the fishing season. During west season, demand tends to increase due to abundant supply from a favorable fishing season, leading to decreased prices due to international market competition. Conversely, during the east season, demand declines due to reduced supply from an unfavorable fishing season, resulting in increased prices due to limited availability. To address fluctuations, market diversification, product quality improvement, and sustainable fishery resource management are essential to balancing profitable exports and marine preservation. Other variables that may influence export demand, such as global economic and political factors, were not included in this analysis.

Keywords: blue swimming crab, export demand, fishing seasons, fisheries management

Susceptibility analysis of cuttlefish (*Sepia recurvirostra*) to blue swimming crab fisheries in Keboromo village, Pati

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Abstract. Indonesia has great potential in the field of marine product exports because an archipelagic country where two-thirds of its territory consists of sea. The coast of Pati Regency and its surroundings are one of the crab sanctuaries on the north coast of Java that tended to increase in the last decade. The purpose of this study was to analyze the level of vulnerability of cuttlefish (*Sepia recurvirostra*) to crab fisheries in Keboromo Village, Pati. The sample used was the catch of cuttlefish by blue swimming crab fishermen in Keboromo Village during the research period of June 2023. Interviews and surveys were used in this research, which was analyzed using productivity and susceptibility analysis (PSA). The results of the analysis of productivity parameters were obtained from the literature, while the parameters of vulnerability were obtained from interviews with local fishermen. The smaller PSA value indicates the level of vulnerability is still relatively low, so fishing activity pressure has not had a serious impact on the potential sustainability of cuttlefish. While the results of the growth pattern showed that the average length of the cuttlefish found at the study site was 80–125 mm with a weight of 25–61.6 grams.

Keywords: blue swimming crab, cuttlefish, PSA, vulnerability

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Developing the Blue and Circular Economy through Visionary Eco-Leadership in the Fish Waste Processing Agro-industry

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Abstract The fishing industry in Indonesia has great potential to continue to grow and contribute to spurring national economic growth. This growth raises the problem of fish skin waste production, which can cause significant environmental damage if not appropriately managed. Therefore, fisheries and agro-industry companies must be able to process fish skin waste to consider sustainability and environmental performance in their operations. This concept is known as a circular blue economy. Leadership has an essential role in achieving this concept. This study aimed to evaluate the influence of leadership on the sustainability and environmental performance of the fish skin waste processing agro-industry and to understand the factors that influence the role of leadership in achieving this goal. This study used a survey method with a purposive sample of 60 from fish skin waste agro-industry companies in Boyolali, Central Java. The data were collected through questionnaires and analyzed using multiple linear regression techniques. The results showed that leadership positively and significantly affected sustainability and environmental performance in the fish skin waste agro-industry. In addition, company size and human resources also affect the role of leadership in achieving these goals. The policy implication of this research is the importance of leadership in achieving sustainability and environmental performance in the fish skin waste agro-industry. Companies need to pay attention to leadership in managing their waste, and the government needs to support building environmentally sound leadership in the industrial sector.

Keywords: eco-leadership, blue economy, circular economy, waste management, agroindustry

Distance of fishing ground against caught blue swimming crab (*Portunus pelagicus*) using a gillnet in Gresik

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Abstract. Information on fishing grounds is crucial in efforts to manage capture blue swimming crab fisheries. The further away the fishing location, the higher cost risk. The purpose of this study was to determine differences in catches and biological characteristics of crabs caught by fishermen in gillnets on 0–2 miles and 5-7 miles from November 2022 to January 2023 in the waters of Mengare Island, Bungah District, Gresik Regency, East Java Province. Descriptive analysis and multivariate analysis of variance (MANOVA) used to explain the biological characteristics of the blue swimming crabs and differences in the effect of fishing ground distance on crab catches. The results showed that the total yield of 2478 female crabs and 4360 male crabs with details at a distance of 0–2 miles was 1701 males and 925 females, while at a distance of 5-7 miles, there were 2659 males and 1553 females. Most crabs with TKG 2 were found at 0–2 miles and 5-7 miles. The distance to the fishing ground affects the average width, average weight, and number of male crabs. Distance and fishing ground differences can affect the diversity of crab biological characteristics.

Keywords: Blue swimming crab, biological characteristics, fishing ground, gillnet

Increased Productivity Of Vaname Shrimp Through The Application Of Lime Formulations, Feed Additives, And Bacterial Remediation

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Abstract New technologies and methods are always being pursued to increase shrimp productivity. This is generally done with greater emphasis on one of the shrimp's conditions or its living media environment. This study was conducted to increase shrimp productivity by directly combining the application of lime formulation (IPB-Stabilizer), feed additives (IPB-Boost), and remediation bacteria (IPB-Microbac). Activities are carried out in intensive ponds, in Cipatujah (West Java) and Sumenep (Madura). The results showed that the quality of pond water was relatively stable, shrimp looked healthy and grew well indicated by lowering FCR and resistant to disease, and the quality of waste disposal increased. The application of three IPB products shows the ability to increase the productivity of vaname shrimp farming up to three times compared to non-treated ponds and waste disposal that does not deteriorate the environment.

Keywords: biomass, buffer system, digestibility, environmental-friendly pond

Feeding with Certain Protein Levels to Improve the Growth and Survival Performance of Prospective Tiger Shrimp (*Penaeus monodon)*

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Abstract. The provision of feed containing certain protein levels is expected to support the availability of prospective parents who can produce quality seeds and overcome the dwindling scarcity of seeds from nature. This study aims to evaluate the growth and survival performance of prospective tiger shrimp broodstock by feeding different protein levels. The research was conducted at the Experimental Pond Installation of the Brackishwater Aquaculture Research Center and Fisheries Extension, Takalar Regency, South Sulawesi, using four pond plots measuring 2,500 m2. The treatment applied is the provision of commercial feed with different protein levels, namely protein content of 36% (A) and protein content of 32% (B). The stocking density used is three individual/m2 with an average starting weight of 1.43 g/head. The dose of feeding is 3-10% with the frequency of feeding conducted two times a day (morning and evening) for 112 days of maintenance. Observed variables include absolute growth, daily growth rate, tiger shrimp survival and water quality during rearing. The results showed that the growth performance of prospective tiger shrimp broodstock was higher in the treatment of feeding with a protein content of 36% (A) with a shrimp weight of 20.5 grams/individual compared to feeding with a protein content of 32% (B) with a shrimp weight of 18.6 grams/individual during the 112 days of maintenance. Tiger shrimp survival produced in this study ranged from 43.46-53.30%. Water quality during maintenance still supports the growth and sustainability of prospective tiger shrimp parents. The results of this study have implications for the provision of superior prospective tiger shrimp parents from ponds to support the sustainability of shrimp seed production in the hatchery.

Keywords: black tiger shrimp, broodstock, protein, growth, survival

TREKFISH Technology for conservation and management measure: Case of Blue Swimming Crab

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Abstract. As the fishing operations becomes more of a problem due to widespread and un-selective exploitation of fish stocks, there is an urgent need to leverage technology advancement to aid conservation and management efforts. We present and demonstrate how TREKfish technology can be used to meet this demand in this study. The TREKfish is designed to track a vessel's position by recording its position at regular intervals, and it generates data and information such as the vessel's position over time, from departure (leaving port), transit to the fishing grounds, and while carrying out fishing operations, and returning to port, allowing the overall footprint of the vessel to be traced from start to finish. In this study we installed TREKfish in vessels that catch Blue Swimming Crab. The distribution, abundance, and amount of catch per unit of effort (CPUE) can be mapped and computed based on the accumulation of fishing activity records. This CPUE information is critical for sustainable fisheries management. It will also be able to assist in understanding the state of targeted fish stocks (i.e. Blue Swimming Crab) and identifying conservation or limited areas in the fishing grounds.

Keywords: BSC, conservation area, management measures, TREKfish, sustainable fisheries

Technical Review of Encircling Ringed Gillnet for Gillnet Standardization in Indonesia

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Abstract. In proposed for fishing gear standardization based on fishing method is carried out the application of the theoretical formula to calculate fishing gear design for preparing fishing gear standardization in Indonesia. The result of the identification of encircling ringed gillnet belonging the local fishermen associated with the size of black pomfret (Parastromateus niger) as fished target is used for preparation of fishing gear standardization materials for the concerned by adjusting the size of fish target by measuring a fish length of about 150 up to 250 mm or a fish body circumference of about 300 up to 400 mm. As a result, the encircling ringed gillnet is made of nylon monofilament diameter 0.35 mm, and PE 380 d/6 mesh size 76.2 mm, ML = 2879 mesh, and MD = 218 mesh with an upper rope length of 120.65 m shorter than the lower rope 142.6 m. This Gillnet has a buoyancy of 173.6 grf/m and a sinking power of 124.7 grf/m or a buoyancy ratio of 1.39 sinking power. The gillnet is trapezoidal-shaped, operated by making circumference the net to fish closed around FAD nearby in the waters of more than 20 m depth with an attached net height of 13.30 m.

Improving fisheries management through participatory data collection: A case study from the Blue Swimming Crab fisheries in Central Java, Indonesia

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Abstract. Blue swimming crab (Portunus pelagicus), or BSC, is one of Indonesia's important seafood products. However, some issues remain, including the quantity and quality of the fishery data and the data collection process that still needs improvement. This paper presented the results of a project that engaged fishers, private sectors, and governments together in data collection and data analyses of BSC fisheries in Central Java, Indonesia. The work includes training and intensive assistance to fishers and private sectors to conduct biological data collection for BSC's fisheries harvest strategy. Length and catch data were collected from fishers participation and collected during 2019-2022 period. Based on the analysis, the F/M ratio and SPR values in 2019 were higher than their biological limit reference point. However, the SPR decreased in 2020 and was followed by an increase in the F/M ratio. In 2021; the SPR increased and the F/M ratio decreased. The F/M ratio in 2019-2020 was >1, meaning that mortality due to fishing was greater than their natural mortality. This showed that BSC fishing in 2019-2021 was led to fully-exploited condition. Fishing of BSC will be sustainable if the SPR can reach the biological target reference point (40%) and F/M <1.

Keyword: Citizen Science, Fisheries Data, Harvest Strategy, Stock Status.

Connectivity of the social-ecological system of the blue swimming crab fisheries in Rembang

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Abstract. The management of blue swimming crabs requires several aspects that need to be considered, such as social and ecological aspects for the welfare of the community and the sustainability of small crab fisheries. Fishery management is currently still focused on economic interests, so if this is allowed to continue, it will result in ecosystem degradation. This study aims to determine the components of the social-ecological system of the blue swimming crab fishery and the interrelationships of the crab management factors in Lasem District, especially in Gedongmulyo Village, Rembang. Data collection was carried out from March to June 2023 using a purposive sampling method, including socio-economic data and fishermen's interviews. Data analysis uses social-ecological connectivity based on Ostrom, which uses four resource systems (RG), resource units (RU), resource actors (RA), and resource governance (RG) subsystems, and then analyzes management variables using the participatory prospective analysis (PPA) method. Determining the variables used in the PPA method is carried out through discussions with fishermen and fisheries stakeholders involving the village government and the Rembang Maritime Affairs and Fisheries Service. The results showed the connectivity of the most influential social-ecological systems in Lasem, which will determine the appropriate and sustainable blue swimming crab processing strategy.

Keywords: blue swimming crab, ecology, participatory prospective analysis, social

Sustainability analysis of demersal fish species utilized by surimi industry trough length-based spawning potential ratio (LB-SPR) approach

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Abstract The surimi industry in Indonesia relies on demersal fish such as kurisi fish (*N. virgatus*), swangi (*P. macracanthus*), kuniran (*U. sulphureus*), and kapasan (P. longimanus), which are caught in the Sea of South China, Arafura, and Java. However, the sustainability of these fish resources is still unclear, so an LB-SPR analysis was carried out to obtain information about spawning potential and its sustainability through stocks in nature, including for the surimi industry. This research was conducted at the reception of raw materials for one of the surimi companies, namely PT Starfood International (SFI), in Lamongan Regency, using demersal fish caught from WPP712 (Java Sea). Biological data in length (mm), weight (grams), sex, and maturity level of the gonads were obtained from random observations of kurisi, swangi, kuniran, and kapasan received by PT SFI. The study results provide an overview of the stock status of the four demersal fish species, which have been the raw material for making surimi. Periodic monitoring is needed as the basis for management strategies. In addition, the search for alternative raw materials from other types of fish, both seawater and freshwater, is also an implementable solution for realizing appropriate and sustainable fisheries management.

Keywords: biology characteristic, demersal fish, LB-SPR, stock status, surimi industry

The Red Snapper Fishery in the Eastern Java Sea and Its Fishery Management Recommendation

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Abstract Red snapper fishery is one of the potential demersal fisheries in the eastern Java Sea for the last decades. The fluctuating fishing effort caused the biomass of red snapper has fluctuated every year. This study aims to analyze the changes condition of red snapper fishery in the eastern Java Sea as the materials to formulate the recommendations for fisheries management. The production and efforts data has been collected from Brondong Archipelagic Water Fishing Port from 2008 to 2021. The data was analyzed using a non-equilibrium surplus production model and depicted using Kobe Plot to know the change direction of red snapper fishery. The result shows that red snapper in the eastern Java Sea has been overfishing with the abundance of biomass has been overfished. The limitation of fishing efforts and the allowable catch are the recommendations for fisheries management from this study so that the red snapper fishery in the easter Java Sea will get better.

Keywords: Java Sea, Kobe Plot, red snapper, surplus production model

The role of women in the blue swimming crab fisheries supply chain from gender perspective in Pamekasan

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Abstract. The blue swimming crab (Portunus pelagicus) catch has led to coastal women finding livelihood opportunities due to their active involvement in various gender roles, both in preparation and post-capture processes as well as in the production chain. This study was conducted in June 2023 at Pagagan Village, Pademawu District, Pamekasan Regency. The research employed interview methods, field observation, and secondary data sources, including articles and journals. Six respondents participated in the study, representing fishermen's wives, mini-plant owners, crab pickers, and crab suppliers. The objective was to understand their roles in the crab fishing supply chain. The findings revealed that fishermen's wives play a significant role in marketing and selling the crab catch, as well as assisting their husbands in making and repairing fishing gear. In the case of crab suppliers, women contribute by weighing and boiling the crabs. At the mini-plant level, the crab sorting and stripping process is primarily carried out by pickers, while the mini-plant owner supervises the overall processing. The study highlighted the substantial contribution of coastal women to the local community, demonstrating a strong reliance on marine resources, which fluctuate with the seasons. Additionally, the income earned by coastal women significantly contributes to their families' finances, thereby enhancing their household's economic condition.

Keywords: crab fisheries, gender perpective, role, supply chain, women

Social Media to Promote Sustainable Fisheries Management: Insight from Indonesian Blue Swimming Crab

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Abstract. Social media's use has surged due to digitalization, becoming a crucial marketing strategy for maximizing business profits. However, its role in non-profit organizations for fisheries sustainability campaigns remains unexplored. Data was collected from 31 social media users (Instagram, Facebook, LinkedIn, and APRI's YouTube) over 14 days. SmartPLS 3.2.9 analyzed the effect of recall, recognition, alternative, and recalling on APRI programs (crab apartment, GTK 5 Minutes, crab cultivation, and APRI Youth Innovation) concerning consumer brand engagement (CBE) interaction and effectiveness. The most recognized programs were Crab Apartment and GTK 5 Minutes, while Crab Enlargement and APRI Youth Innovation were known through moment-open recruitment, especially for APRI Youth Innovation. Knowing and following APRI's social media significantly affected interaction and CBE effectiveness. Social media can be used as a marketing strategy to introduce sustainable programs, contributing to the promotion of sustainable fisheries management. In conclusion, social media's pivotal role in marketing for-profit businesses has prompted its exploration as a tool for non-profit organizations in fisheries sustainability campaigns. The research reveals its significance in fostering consumer engagement and promoting sustainable practices in fisheries management through effective marketing strategies.

Keywords: blue swimming crab, fisheries management, non-profit organization, social media

Unexpected social change: The transformation of the Pati Regency coastal community due to the Indonesian government's trawl restriction policy

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Abstract. The Constitution of Indonesia states that social justice is one of the core values of national development. This justice is achieved by ensuring a balanced management of natural resources. A derivative of this just resource management also emphasizes the importance of Indonesia as a strong maritime nation. However, achieving justice in managing maritime resources, primarily coastal and oceanic areas in Indonesia, has often been a serious problem. The development in Indonesia, which is predominantly centered on the island of Java, has eventually led to significant opportunities for the overexploitation of coastal and marine resources. In response to this issue, the Indonesian government initiated a limitation on fishing activities around the northern coast of Java in 2015. The Minister of Maritime Affairs and Fisheries, Susi Pujiastuti, enacted Ministerial Regulation No. 2 of 2015 concerning the Prohibition of Trawl and Seine Nets in the Indonesian Fisheries Management Area as a concrete measure to safeguard coastal and marine resources. After nearly eight years of implementing this policy, significant changes have occurred in the capture fishing industry in northern Java. Through in-depth interviews, observations, and documentary analysis conducted in the Pati Regency (particularly in the Juwana sub-district) of Central Java province, it is suspected that there have been social changes among the coastal communities, mainly the capture fishermen. The Social-Ecological Systems framework was used to analyze the impact of the government's restriction policy on the condition of the coastal community in the Juwana sub-district, especially the capture fishermen. Field research was conducted in April 2023, involving interviews with more than 20 key figures. The study resulted in several specific findings that pointed to social changes in the community over a relatively short period. The limitation on fishing gear has prompted fishermen to upgrade their fishing equipment to more modern and efficient ones. The culture and values of the community have evolved to be more collective and opportunistic in pursuing business opportunities. The fishing industry has significantly developed within less than eight years. However, these changes have led to social imbalances within the coastal community of the Juwana sub-district. The role of local government, especially the district administration, needs to be more active in ensuring that fishermen undergo a controlled transformation. Overall, the transformation from small-scale fishermen to commercial fishermen is highly likely to occur with the support of technological needs, financial assistance, collective and familial culture, and market accessibility.

Keywords: Social justice, Natural resources management, Maritime nation, Fishing activities limitation, Coastal community changes

Performance of tuna fisheries in the Sea of Sikka Regency

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Abstract. The high potential for tuna fisheries in the sea of Sikka Regency, East Nusa Tenggara results in high resource pressure as well. The research objective was to determine the performance of tuna fisheries in managing and utilizing sustainable tuna. The research was conducted for 3 months from December to March 2023 with research locations in Alok, West Alok, East Alok and Talibura Sub-district of Sikka Regency. The choice of research location decided by concentrated area for tuna fisheries. This research used primary and secondary data. Interviewed with 131 tuna fishermen showed the diversity of tuna fisheries in Sikka Regency including the characteristics of fishermen (age, education, number of family, marital status, side job, fishing business experience); targeted catch; vessel, fishing gear and fishing aids device; hauling time; fishing season; fishing grounds; fishing techniques; handling fish on board; and tuna processing company description.

Keywords: tuna, performance, fisherman characteristics, Sikka

EAFM Plan initiative for sustainable snapper fisheries management in the Red Sea State, Republic of Sudan

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Abstract. Snapper fishery is an important fisheries sub-sectors in the Red Sea waters where the richness of coral reefs provides habitats for various types of snapper species. In order to balance the ecological and human well-being through good governance, the Ecosystem Approach to Fishery Management (EAFM) has been introduced in the Red Sea State, Republic of Sudan, during 2019 - 2022. This study describes the stages of EAFM Plan through a series of human capacity building activities and piloting the EAFM plan at fishing community village in Mohammad Qol in Dungonab waters. A five days EAFM training were held at Port Sudan in February 2020, of which seven of 25 participants has been selected as trainers. The selected trainers were invited to extended virtual EAFM training in July 2020 and May 2021 coincided with the covid 19 pandemic. They led an EAFM training for local fishing communities at Muhammad Qol and Arakaki. In synchronizing the EAFM concepts, a half-day EAFM training for leaders was carried out at Port Sudan in May 2022, attended by approximately 20 participants representing academics, the navy, the police, NGOs, the Department of Animal Resources and Fisheries, researchers, and environmental activists. In November 2022, an assessment on the pilot site were conducted defining the fishery management area, digging information on issues and problems linked to fishery, and mapping the stakeholders. Due to political turmoil in Sudan, the planned EAFM implementation in May 2023 has been postponed. Although it is currently unclear when the process will resume, the EAFM initiative plan in Sudan has fundamental aspects for future snapper fishery management of the Red Sea. The main findings confirmed that the political situations, participatory, communication, and coordination are critical for EAFM initiative implementation.

Keywords: Red Sea, Snapper Fisheries, Port Sudan, EAFM Initiative, Sustainability

Types of Fishing Gear in Salah Nama Island, Musi River, South Sumatra

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Abstract. The Salah Nama Island is an island located in the Banyuasin 1 region of South Sumatra. This island is surrounded by the Musi Watershed, so fishing activities are using several fishing gear. This study aims to determine the types, materials, and how to operate fishing gear used on Salah Nama Island. The research was conducted in February-Mey 2023. The method used was a survey and interviews with fishermen around Salah Nama Island. The results of the survey indicated that the fishing gears used were Seluang nets, fixed/planted drift nets, nets, shrimp traps/sengkirai, pendam longlines, and tangkul. The fishing gear can be grouped into three groups, namely traps in the form of traps,nets (Seluang nets, drift nets, Tangkul and Jala), and fishing hooks (pendam longlines).

Keywords: Fishing gear, fish species, swamp, Salah Nama Island, South Sumatra

Weight loss analysis of blue swimming crabs due to steaming and stripping based on size and egg-berried females in Pangkajene and Islands, South Sulawesi

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Abstract. The blue swimming crab (*Portunus pelagicus*) is an important fishery resource in Indonesia because it has a high value and involves a lot of human resources. The pasteurized crab goes through several main stages, namely steaming, stripping, and canning. Steamed crabs will experience weight loss and, when peeled, produce a yield of meat in a certain amount and composition. This study aims to determine the weight loss during crab steaming, yield, and stripping processes on crabs of different sizes (carapace width <10 cm and >10 cm) and egg-berried female (EBF) crabs. Technically, the crabs are steamed for 20 minutes after the water boils, the steaming is done at 80–90 °C and allowed to stand for 60 minutes until the temperature adjusts to the room, peeled, and the meat is separated. Weight measurements were taken on fresh, warm (shortly after steaming), and cooked crab (adjusted to room temperature) to calculate weight loss due to steaming while considering temperature adjustments and total loss. Results revealed 16.75% shrinkage during steaming, 19.61% relaxation shrinkage, and 27.47% total shrinkage. The highest meat yield was from small crabs at 30.64%, followed by larger crabs at 27.25%, and laying crabs at 24.39%.

Keywords: blue swimming crab, crab meat, weight loss, yield

Catch composition and fishing season of blue swimming crab using a collapsible trap in Pemalang coastal, Central Java

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Abstract. The blue swimming crab (*Portunus pelagicus*) is an economically important fishery resource that has penetrated the export market that requires proper management. Pemalang Regency is still entirely dependent on natural catches, so information on seasonal patterns of blue swimming crab fishing is essential for fishermen to support the efficiency and effectiveness of the fishing activity. This research was conducted in Danasari village, Pemalang sub-district, in January–December 2022 with the aim of determining the composition of collapsible trap catches based on the crab fishing season in the waters of Pemalang Regency. Danasari fishermen classify the blue swimming crab fishing season into two, the west season starts in November–May (high rainfall), and the east season starts in June–October (low rainfall). The survey method, with the data catch of the blue swimming crab as the main target, bycatch, and carapace width of the blue swimming crab, was analyzed descriptively using Microsoft Excel 2010 software. The results showed that the catch composition of collapsible traps in Pemalang consisted of crustaceans, fish, and mollusks. The best season to catch blue swimming crabs is during the west season because the catch is more stable than during the east season.

Keywords: blue swimming crab, bycatch, collapsible traps, season

Preliminary Study of On-board Handling of the Blue Swimming Crabs in Fisheries Fleet

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Abstract. The operation of the Blue Swimming Crab (BSC) fleet so far lasted one day trip of fishing operations in waters not far from the coast, so that the handling of BSC was carried out on land. Target fishing grounds in waters more than 30 meters depth. Preliminary assessment to determine the type of vessel, cooling system, and handling by steaming at pasteurization temperature, and BSC storage that is suitable for improving the quality of BSC. The components of the BSC fishing facility unit that will be designed can be feasible and suitable for operational more than 3 up to 7 day trips in deeper waters and farther from the coast.

Alternative Approaches to Determining Demersal Fisheries Status in FMA 712 in Data Limited Situation: Combining Length Based and Bayesian Surplus Production Model Estimation.

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Abstract. Demersal fisheries in FMA 712 have been established since the early 1950's, industrialization in demersal fisheries was started on 1970's with the operation of trawl fleets in Java Sea. The exploitation continued until the 1980s when the Trawl Ban regulation was enacted. According to historical statical data from 1980 the number of demersal fishing fleets are still dominating and endangered the sustainability of demersal fish stock in FMA 712. This study presented alternatives approaches to determining demersal fisheries status in FMA 712 using the Bayesian surplus production model (cMSY) and Length-Based Spawning Potential Ratio (LBSPR). The cMSY analysis was conducted using time series production data and known CPUE represent the area in FMA 712 and the LBSPR model was conducted using the life-history parameters and the length frequency data. The results show that current demersal fisheries condition is overexploited, points of estimation of the Biomass condition based on 1980-2022 data: B/BMSY 0,803, F/FMSY 1,75 and MSY 323.000 ton. Additionally, the spawning potential ratio (SPR) of the dominant demersal fish species (Lutjanus malabarius and Portunus pelagicus) was lower than the limit reference point (<0,20), indicating overexploited. This study demonstrates that alternatives approaches could be applied to limited data fisheries and provide useful and robust recommendations.

Keywords: Demersal Fisheries, FMA 712, Fisheries Modelling, Spawning Potential Ratio

Assessment on Demersal Fisheries Status in the FMA 573 Under Data-limited Situation: a Combination of Statistic and CPUE Data as Inputs for Bayesian Surplus Production Model

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Abstract. Demersal stock potential, total allowable catch (TAC), and exploitation level status in the FMA 573 were assessed and determined by the National Commission of Stock Assessment (KOMNASKAJISKAN) through Ministerial Decree No. 19/2022. However, the fisheries status, i.e., the biomass level concerning the BMSY and the effort level compared to FMSY, was not yet completely determined. This study demonstrated the alternative approach in determining fisheries status under limited data situations. Statistical time series production and existing CPUE data were used to perform the Bayesian Surplus Production Model (cMSY). Based on the results, the stock of demersal fisheries in FMA 573 is overexploited, whereas the F/FMSY and B/BMSY are>1 and <1, respectively. The situation needs concern from all stakeholders. Rebuilding the stock formulation scheme through harvest strategy development for demersal fisheries in FMA 573 must be prioritized to ensure the sustainability of the stock and the fisheries business.

Keywords: Demersal fisheries, FMA 573, cMSY model, sustainability

The exploitation status and spawning potential ratio (SPR) of blue swimming crab (*Portunus pelagicus*) in North Natuna Sea, Indonesia

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Abstract. Because of its high selling value and potential as an export commodity, the Blue Swimming Crab (*Portunus pelagicus*) is exploited industrially in a variety of areas, including the North Natuna Sea. This intensive use necessitates research into the population status and spawning potential ratio (SPR), particularly in the North Natuna Sea. This scientific research was performed out with 4,960 small BSC (blue swimming crab) over three years, from April to December 2018, February to November 2019, and March to December 2020. The BSC caught ranged in size from 60 to 160 mm, with 115 mm being the most common. BSC exploitation in this water has reached E = 0.6, indicating that they have been overfished. However, the SPR value of 19 percent indicates that, despite the intense fishing pressure, the potential for crab spawning is high, so efforts to support spawning are required. These efforts include limiting the size of BSC suitable for catching to those larger than 121 mm and closing spawning areas.

Keywords: Blue Swimming Crab, Exploitation, Natuna, SPR

Developing a harvest strategy of small-scale mud crab fishery: A lesson-learned from Hoat Sorbay, Southeast Maluku

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Abstract Hoat Sorbay is a bay water that stretches from north to south in the coastal waters of Kei Kecil Island and is the largest mangrove ecosystem in the Kei Islands. Mud crab is a fisheries commodity that is caught quite intensively. For many tropical and sub-tropical countries in Asia, mud crabs, *Scylla* spp., are a valuable biological resource from small-scale coastal fisheries. Mud crab in Hoat Sorbay has been caught since the early 1980s with almost no sustainable fisheries management practices applied in this area. The high intensity of fishing due to economic dependence and the absence of fisheries management has resulted in unsustainable conditions. Mud crab production continues to decline compared to the previous 10 to 15 years. The Government of Maluku developed a fishery improvement program for mud crabs in Hoat Sorbay. One of the outcomes is the harvest strategy of mud crab based on fishery reference points. The agreed reference points are then formulated to develop harvest control rules and tools. The spawning potential ratio approach has been used to determine stock status and reference points. Stock rebuilding has also been prepared to rebuild unhealthy mud crab stock.

Keywords: reference points, harvest control rules, spawning potential ratio

Status exploitation of mud crab (*Scylla serrata*) in Aru Islands waters, Indonesia

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Abstract Mud crab (*Scylla Seratta*) from the Aru Islands is a commodity with high economic value, where it is shipped as far as Jakarta and Makassar. The high market demand has led to more intensive crab fishing, thus having an impact on the sustainability of the crab population. This study was carried out for 15 months, from March 2019 to September 2020, in the waters of the Aru Islands, with a total sample of 2,887 crabs. The result of fishing mortality analysis shows F2019 was 1.77 year-1 with an F40% of 1.56 year-1, while the F2020 was 3.0 year-1 year and F40% 1.32 year-1. The spawning potential ratio (SPR) in 2019 was 0.36% which decreased to 0.21% in 2020. This condition shows that the exploitation of mud crabs in these waters has experienced an increase leading to overfishing conditions. Management can do management by setting catch restrictions in the form of regulations regarding the optimal number of catches or setting catch quotas.

Keywords:

Life History Parameters and Spawning Potential Ratio of *Upeneus vittatus* (Forsskal, 1775) in the Coastal Lebak and Sukabumi Waters

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Abstract. The demersal fish *Upeneus vittatus* is found around the coastal Lebak and Sukabumi waters. There have been few information about life history parameters and stock of *U. vittatus* in the Sukabumi and Lebak Waters. The length-based spawning potential ratio (LB-SPR) is effective and efficient method for poor data fisheries and its management. The purpose of this study was to assess the status of *U. vittatus* in the coastal Lebak and Sukabumi waters according to their life history parameters and Length-based SPR. Total 874 samples were collected from three landing ports, PPI Binuangeun, PPN Palabuhanratu and PPI Ciwaru. The monthly length frequency data were obtained from July to December 2022. The result show that the Von Bertalanffy growth parameter for *U. vittatus* was $L_t = 258(1\text{-}e^{-(0,37(t+0,246)})$. The length of sexual maturity L_{50} and L_{95} were 152.3 mm and 231.48 mm respectively. Mortality values were estimated as follows, natural mortality (M) = 0.53, fishing mortality (F) = 2.04, total mortality = 2.57, meanwhile exploitation rate was (E) = 0.79. The SPR of *U. vittatus* was estimated 25% which was lower than the target reference point (40%). Therefore, the status of *U. vittatus* in the coastal Lebak and Sukabumi waters was fully exploited.

Keywords: *Upeneus vittatus,* LB-SPR, fully exploited

Analysis of Blue Swimming Crab (*Portunus pelagicus*) Stock in Banten Bay Waters Based on Spawning Potential Ratio

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Abstract. The increasing fishing pressure has led to decreasing in the average size of the Blue Swimming Crab (BSC) carapace width in Banten Bay. This situation indicated of overfishing of BSC and have negative effects on the stock of BSC. This study aimed to determine the stock and condition state of BSC in Banten Bay based on Spawning Potential Ratio (SPR). Research conducted from December 2021 to February 2022 in the waters around Banten Bay. The parameter measured was carapace width, sex and maturity of BSC which collected with simple random sampling from fisherman catchment in landing area. Number of BSC sample is 4448 males and 2796 females. Data analysis using the Fisat II and web-based application http://barefootecologist.com.au/. The results showed that the catch of BSC males was more than females with a ratio of 1.59:1. The carapace width at first capture (Lc) was 117.3 mm and the carapace width at first mature (Lm) was 103 mm. The carapace width at first capture size was greater than the carapace width at first mature which showed catch-worthy. The stock state of BSC in Banten Bay based on SPR value is showing value of 21% or below the sustainability target.

Keyword : Carapace Width, Maturity, Overfishing, Sustainability Fisheries, Sex Ratio.

A Fox-Model Approach To Skipjack Fisheries At The Sadeng Coastal Fishing Port In Yogyakarta

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Abstract. This study aims to estimate the fishing trips and catch of skipjack (Katsuwonus pelamis) in Sadeng Coastal Fishing Port under the conditions of Maximum Sustainable Yield, Maximum Economic Yield, and Open Access Equilibrium (OAE). The skipjack in the port comes from the Indian Ocean south of Yogyakarta and is caught with purse seines. Data on catch and the number of fishing trips from 2015 to 2021 were analyzed using the Fox bioeconomic model, which is a development of the Gordon-Schaefer model. Under MSY conditions, this model obtained CMSY 493,012 kg per year and EMSY 170 trips per year with a profit of IDR 4,768,675,442 per year. Meanwhile, the MEY condition obtained a CMEY value of 474,424 kg per year and EMEY worth 127 trips per year with a total profit of IDR 5,071,245,038 per year. Meanwhile, the OAE condition resulted in a COAE value of 337,761 kg, and an EOAE of 363 trips per year. The utilization rate based on Fox's model is 70% of the EMSY value. It is concluded that the skipjack fishery in these waters is not overfished.

Keywords: Purse seine, Skipjack, EMSY, Effort, Indian Ocean

Population Dynamics and Spawning Potential Ratio of Banana Prawn (*Penaeus merguiensis*) in Merauke Waters, Papua, Indonesia

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Abstract. The high market demand for banana prawn (P. merguiensis) has caused intensive fishing for this resources and tended to threaten their sustainability. Studies of population dynamics and spawning potential ratio are the main foundations for formulating a management for sustainable utilization. The purpose of this study was to determine the population dynamic and spawning potential ratio of banana prawn in Merauke waters, Papua. The study was conducted from 2017 to 2019 using a survey method. The study results revealed that the banana growth pattern was negative allometric and that the ratio of males and females was imbalanced. The spawning season of banana prawn in Merauke waters occurs throughout the year with one peak in August. Based on carapace length measurement, length at first capture (Lc) and length at first maturity (Lm) were 33.5 mm and 32.7 mm respectively. While growth rate (K) and maximum carapace length (L∞) valued 1.25 per year and 64.85 mm respectively. The estimate total mortality rate (Z) was 3.20 per year, the fishing mortality rate (F) and natural mortality rate (M) were 1.7 per year and 1.49 per year, respectively. The exploitation rate (E) was 0.53 per year and the spawning potential ratio (SPR) was 15 %. Therefore the stock status was categorized as overfishing. In order to ensure the sustainability of the banana prawn, precautionary approach such as reducing fishing effort by 6 % of the current situation is strongly needed to be applied.

Keywords: Banana prawn, population dynamic, spawning potential ratio, Merauke waters, Papua, Fisheries Management Area (FMA) 718

The different mesh sizes effect of gillnet for blue swimming crab catches in Lampung

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Abstract. The blue swimming crab is one of the targets of fishermen's catches that are carried out passively with fishing gear such as nets and traps. The fishermen on the East Coast of Lampung Province, especially in Margasari Village in East Lampung Regency, use gill nets with 3.5 inches of mesh size because they have a low level of selectivity, so crabs with immature gonads and sizes below 10 cm are also caught. This study compares crab catches using 3.5-inch nets with 4.5-inch nets. The research was conducted from September 2022 to May 2023 and was carried out in Margasari Village, East Lampung Regency, using experimental fishing methods. The data collected is carapace width and body weight. Data processing and analysis using One Way Anova using the SPSS 16 software. Results showed that the 4,5-inch gill nets caught a bigger crab than the 3,5-inch nets. Innovation in the form of increasing the size of the crab mesh to 4.5 inches can be a solution in efforts to manage sustainable crab resources.

Keywords: blue swimming crab, gill nets, 3.5-inch nets, 4.5-inch nets, sustainability

Seasonal effect on blue swimming crab fishing effort (CPUE) in Tiworo Strait Waters

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Abstract. The potential of crab resources is a resource commodity that has important economic value, so its utilization needs to be carried out sustainably. The existence of information on fishing season patterns is expected to increase the efficiency and effectiveness of blue swimming crabs. This study aims to determine the number and abundance of blue swimming crabs caught per unit effort (CPUE) in each season of crabs caught in the waters of the Tiworo Strait, South Konawe Regency, and West Muna Regency. The research was carried out in the cycle of seasons that occur in Indonesian territorial waters, from October 2021 to March 2022 (west season) and April to September 2022 (east season), with the blue swimming crab catch data per month and the seasonal cycle that occurs. The results showed that the western season had 2,771 trips with a catch of 7,417.5 kg and a CPUE value of 2.67 kg/trip, while the eastern season had 1,033 trips with 4,803 kg and a CPUE value of 4.65 kg/trip. The difference in catch and number of trips in each season is influenced by environmental and water conditions that occur in that season and the location of the fishing ground.

Keywords: blue swimming crab, season pattern, CPUE, Tiworo strait

Species diversity and catch per unit effort (CPUE) of Portunidae in Batubara, North Sumatera

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Abstract. The family of Portunidae is spread in Indonesian waters, and especially the abundance of blue swimming crabs is exploited to fully meet demand and as a target species for increasing the value of the capture fisheries sector. Portunidae are one of the catches that contribute a lot to the production of marine fisheries in Batubara Regency, North Sumatra. The purpose of this research was to determine the Species Diversity and Catch Per Unit Effort (CPUE) of Portunidae in January–March 2023 in Tanjung Tiram Waters, Batu Bara Regency, North Sumatra Province, directly opposite the Malacca Strait, which is congested with international shipping traffic. The descriptive method with the analysis of catch per fishing effort (CPUE) was used to analyze catch data using a gillnet at a size of 3,5 inches. The species diversity for Portunidae is only found in the type of Portunus pelagicus, or blue swimming crab. The results of the CPUE analysis obtained an average CPUE value from January to March 2023 of 8.8 kg/trip. The CPUE value of Portunidae, especially the type of Portunus pelagicus, tends to decrease, which means that it indicates that it is fully exploited in these waters.

Keywords: CPUE, Portunidae, Portunus pelagicus, species diversity

ABSTRACT OF POSTER PRESENTER

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Impact of Predigestion Nutrition Use on Growth and Frequency of Molting on Shell Enlargement (*Portunus pelagicus*)

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Abstract. Blue swimming crab is one of the leading fishery export commodities which occupies the 3rd largest position after tuna and shrimp. Crab maintenance so far uses trash fish feed which has several drawbacks, including inappropriate nutrition, depending on the season, and is difficult to handle. Therefore, simple artificial feed is needed to support crab growth. The purpose of this study was to determine the effect of artificial feeding supplemented with pancreatic extract on crab growth. The research design used in this study was RAL (completely randomized design) with different concentrations of pancreatic extract (0.3%, 6%, 9%). Parameters observed included water quality (temperature, dissolved oxygen, pH, salinity, and ammonia), feed proximate, crab biology. The results of this study indicate that the water quality in this study supports the life of swimming crabs. The feed proximate results show that the proximate value is in accordance with the crab's needs. The results of swimming crab biology showed that the highest growth of crab was owned by the artificial feed + 9% pancreas and the lowest was in the trash fish treatment. Based on the results it can be seen that the best treatment to support the life of the blue swimming crab is artificial feed + 9% pancreas. Predigestion feed with the help of pancreatic extract concentrations can increase crab growth compared to ordinary feed or trash fish feed.

Keywords: artificial feed, crab, pancreatic extract

The Relationship between Coral Fish Resources Diversity and Ecosystem Services as an Added Value for the Sustainable Development of Special Economic Zone:Evidence in Tanjung Lesung, Banten Province

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Abstract. This study aims to explore the relationship between the diversity of coral fish resources and ecosystem services as added value in the development of sustainable Special Economic Zones (SEZs). The existence of SEZs has become an economic focal point, making the balance of the natural environment increasingly crucial to support long-term economic growth. Data collection for this research was conducted through field surveys to assess the diversity of coral fish resources, including species, abundance, and distribution in Tanjung Lesung. The data was further analyzed to determine the added value of ecosystem services to SEZ development, which includes provisioning services and cultural services. The results of the study reveal a significant relationship between the diversity of coral fish resources and ecosystem services in the area. High levels of species and resources diversity positively contribute to food availability for communities, as well as enhancing cultural services, such as tourism. Additionally, coral fish naturally play a vital role in maintaining ecosystem balance and ensuring the survival of other species in the food chain. The findings of this research provide a deeper understanding of the importance of sustainability and management of coral fish resources in supporting the development of SEZs. This study also serves as a foundation for policy planning that focuses on responsible and sustainable utilization of coral fish resources to achieve balanced long-term economic development in harmony with environmental conservation.

Keywords: Relationship, Diversity, Ecosystem Services, Special Economic Zone

Social-Ecological System (SES) mapping and harvest strategy of lobster fisheries in Nasal coastal water, Bengkulu

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Abstract. Nasal coast is one of the areas with a fishing sector that includes lobster fishing and falls under the WPP 512 (Fisheries Management Area 512). This research aims to map the social-ecological system (SES) and determine the harvest strategy by establishing reference points, additionally, to formulate resource management using tactical strategies for the pronghorn spiny lobster (Panulirus penicillatus). The study was conducted from November 2022 to February 2023 in Nasal Subdistrict, Kaur Regency, using a social-ecological system (SES) approach. The study identifies 34 nodes and 55 edges in the lobster fisheries connectivity parameter. The main elements in the lobster fisheries network are fishermen, capture activity, weather, cost, fishing season, water quality, lobster, catch per unit effort, large-scale collectors, revenue, and catch. The result of catch per unit effort (CPUE) is 0.80 kg/trip. The CPUE analysis shows fluctuations leading to a decreasing trendline on the graph. The spawning potential ratio (SPR) is below the biological limit reference point at 9%. Additionally, the revenue per unit effort (RPUE) is Rp. 129,700/trip, with operational costs amounting to Rp. 138,150/trip. The suggested management plan includes periodic fishing area closures, promoting minimum legal size regulations, and optimizing fishing efforts for economic efficiency and resource sustainability.

Keywords: Lobster, Nasal, Harvest Strategy, Social-Ecological System (SES)

The Dynamics of Social-Ecological Interactions in the PAAP Teluk Lasolo Region, North Konawe Regency, Southeast Sulawesi Province: A Comprehensive Approach to Sustainable Renewal

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Abstract. This research aims to study the dynamics of social-ecological interactions in the PAAP (Fisheries Access Area Management) Teluk Lasolo Region, North Konawe Regency.The study employs a comprehensive approach to sustainable renewal using social-ecological network analysis (SENA). The PAAP Teluk Lasolo region is a complex environment with small-scale fisheries as a vital component of the coastal ecosystem. By utilizing the SENA method, this research analyzes the interactions between social and ecological dimensions within the context of rights-based fisheries management. Additionally, the study considers economic aspects, governance, and resource utilization within the social-ecological network. A case study is conducted in the Teluk Lasolo area to comprehend the complex dynamics among various stakeholders, fishing communities, and the coastal ecosystem. The findings of this research will provide in-depth insights and knowledge about the factors influencing the sustainability of small-scale fisheries and offer recommendations for sustainable renewal in fisheries resource management in the region. In conclusion, this study highlights the significance of a comprehensive approach involving social-ecological interactions in managing small-scale fisheries. The results of this study are expected to make a positive contribution to the development of sustainable fisheries management strategies in the PAAP Teluk Lasolo Region and other coastal areas.

Keywords: PAAP Teluk Lasolo Region, Social-Ecological Networks, Small-Scale Fisheries, Rights-Based Fisheries Management

Multi scale analysis of social-ecological system of lobster (Panulirus spp.) fisheries activities in the Gunungkidul Coastal Waters, Special Region of Yogyakarta

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Abstract. Lobster is a high value fisheries commodity in Gunungkidul Regency. Lobster resource management in the waters of Gunungkidul Regency has not been well identified in the social-ecological system (SES) framework. This study aims to describe and analyze the dynamics of interrelationships between the social-ecological system components of lobster fisheries in Gunungkidul Regency which consists of the subsystem of resource systems (RS), resource units (RU), resource actors (RA), and resource governance (RG) and their interrelationships within and between subsystems to formulate a sustainable lobster management strategies in the waters of Gunungkidul Regency. This research was conducted from November 2022 until January 2023. The results of this study have indicated that there was a dynamic interaction between the SES components of lobster fisheries. RS and RA are the SES components that have the highest influence so that the smallest changes that happen in RS and RA can cause co-evolutive changes to all the SES components of lobster fisheries in the waters of Gunungkidul Regency.

Keywords: Fisheries, Lobster, Management, Social-Ecological System

Exploring Uncertainty of Small-Scale Blue Swimming Crab Fishery (Portunus pelagicus) Toward Local Blue Economy: The Case of PATI Coastal Waters, Central Java, Indonesia

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Abstract. The social-ecological systems approach emphasises the integrated concept of human to resources, where social and ecological systems are interrelated and integrated. As is characteristic of small-scale fisheries in general, blue swimming crab/BSC fisheries have limited biological and socio-economic data (data-limited). Data limitations as management inputs become an important issue in realising the sustainability of BSC fisheries in coastal Pati Regency. This study aims to analyse fishery uncertainty. The research was conducted from December 2020 to March 2021 in Alasdowo Village, Dukuhseti District, Pati Regency. The type of data used was primary data, namely biological and socio-economic data. Data were sourced from the daily logbooks of 5 BSC suppliers, which included the catches of 368 individual fishers from January 2019 to March 2021 and structured interviews with 65 fishermen. The BSC fishery with trap-net gear type with daily trips in zone 2, has high uncertainty. The production value of BSC in zone 2 is about 724,6±889,7 kg/day with a coeff of variability 1,23 and the number of fishing effort is 188±137 trips with a coeff of variability 0,73. The productivity value is about 3,2±3,7 kg/trip with a coeff of variability 1,16. Sustainable fisheries management is expected to improve the economic conditions and Fishermen's welfare through optimal catches and keep BSC resources sustainable and productive.

Keywords: blue swimming crab, fishery uncertainty, social-ecological system

Estimation of TN and TP Waste on Increasing Kangkung Production Ipomoea reptans poir sp in Low Salinity Vaname Shrimp Aquaponics

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Abstract Low-salinity aquaponics of vannamei shrimp and kale are environmentally friendly cultivation with the advantage of processing cultivation waste into plants that have high economic value, land efficiency, clean water efficiency, and produce healthy food. This study evaluates the aquaponic system of vannamei shrimp farming in terms of TN and TP waste produced by shrimp, the role of water spinach in absorbing TN and TP, and water spinach production, and water quality. This study compared 3 treatments, namely Treatment A) shrimp density 1,000 ind/m3 + 20 net pot kankung; B) 2,000 ind/m3 + 20 net pots of kale; and C) 3,000 ind/m3 + 20 kangkung net pots. The container used for keeping the shrimp is 70 x 40 x 40 with a volume of 50 L, and the kangkung uses an aquarium measuring 50 x 40 x 30 cm or a volume of 50 L. Shrimp maintenance was carried out for 70 days, while kangkong was carried out twice with a rearing time of 25 days/cycle. To support the growth of shrimp, feed with a protein content of 30-40% using a feed dose of 10-5% of the weight of the shrimp biomass given in the morning, afternoon, and evening. The results showed that differences in shrimp density and the same density of scallops had no significant effect $P>0.05$ on final shrimp growth, absolute growth, and FCR, but had a significant effect on shrimp survival $P<0.05$. The highest kangkung production was in treatment B and the lowest was in treatment A. At the end of the study, the highest shrimp TN concentration was found in treatment D, while the highest shrimp TP was in treatment A. The highest TN and TP concentrations in treatments D and A were the lowest, so the TN and TP loading wasted into the environment in the highest treatment was D, followed by treatments B and A. The results of calculating the waste load gN/kg of shrimp and gP/kg of shrimp in this study showed that the higher the density of shrimp, the higher the waste produced. So that the role of kangkung in N and P was highest in treatment A, followed by treatments B and C

Study on The Bioaccumulation of Heavy Metals (Cd, Cu) in The Flesh of Green Mussel, Perna viridis (Linnaeus, 1758) in Banten Bay and Jakarta Bay

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Abstract. Banten Bay is ones of the waters that is quite busy with various activities, including fisheries, ports, settlements, industry, agriculture and brackish water aquaculture. This area is also known for their products namely green mussel (*Perna viridis*), and other marine biotas. The study was conducted in March-September 2019 in Banten Bay and Jakarta Bay, aiming to estimate the bioaccumulation of heavy metals (Cd and Cu) in the green mussel flesh in both waters, using the AAS method. According to the study, concentration of Cd and Cu in the green mussel flesh both in Banten Bay and Jakarta Bay were still below the quality standard of SNI (Standard National of Indonesia) 2009, Regulation of BPOM (Food and Medicine Monitor Bureau) No. 5 of 2018, and Health Ministry Decree of the Republic of Indonesia No. 03725 of 1989. The safety level consumption for the green mussels in Banten Bay and Jakarta Bay were 0.91 kg/week and 0.51 kg/week (for children) and 3.04 kg/week and 1.72 kg/week (for adults), respectively. Green mussel found in Banten Bay and Jakarta Bay was still suitable for consumption as long as it does not exceed the established limit.

Keywords: Mollusk, heavy metal, Jakarta-Banten Bays

Diversity of macrozoobenthos and plankton in the estuary of the Sukabumi River, West Java as a basis for determining natural feed for Glass eel (*Anguilla* sp.)

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Abstract The estuaries of the rivers in Sukabumi (Cimandiri, Cikaso, Cibuni, and Ciletuh) are the main routes of glass eels. Knowing the macrozoobenthos and plankton in that location provides information in the natural feeding of glass eel seeds in domestication or cultivation activities. The purpose of this study was to determine the diversity of macrozoobenthos and pankton at the estuary of the Sukabumi River. This research was conducted in 4 locations, namely the murara of the Cimandiri, Cikaso, Cibuni, and Ciletuh rivers. The results of this study show that the highest diversity of macrozoobenthos is found in the estuary of the Ciletuh river, while the highest diversity of phytoplankton is found in the estuary of the Cibuni river, while the highest diversity of zooplankton is found in the estuary of the Cimandiri river. The conclusion from this study is that macrozzobenthos found in river mouths include bivalves, coleoptera, diptera, gastropods. Nematodes, and polychaeta. While the plankton found in the estuary of the Sukabumi River are phytoplankton (bacillariophyceae, chlorophyceae, cyanophyceae, and euglenophyceae) and zooplankton (ciliates, malacostraca, nematodes, rhizopoda, rotifers).

Macrozoobenthos Community Structure and Its Relation to Banten Bay Water Quality

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Abstract. Banten Bay is located in Serang Regency of Banten Province, consisting of 7 river flows which carry sediment and sand that form the bottom substrate of the Banten Bay waters. The study aims to analyze the structure of macro-zoobenthos communities and their relationship with water quality in Banten Bay including composition, density, diversity, uniformity, dominance, similarity, and PCA. The observation was conducted from September 2022 to February 2023, at six stations using ekman grab. Water quality data were observed in-situ and ex-situ. The macro-zoobenthos collected during the study consisted of 6 classes, namely Bivalves, Gastropods, Polychaeta, Scaphopoda, Malacostraca, and Echinoid. Density of the macro-zoobenthos varied 906667-424333 ind./m^2. Index of diversity, evenness and dominance were 0.8772-2.9019, 0.6758-0.9128, and 0.4393-0.5827, respectively. According to PCA biplot analysis, the presence of macro zoobenthos was influenced by water quality. Positive correlations were found between bivalves and scaphopods with salinity and pH. The presence of polychaeta and gastropod were affected by transparency, while echinoid was affected by temperature and DO.

Keywords: Banten Bay, community structure, macrozoobenthos, PCA

Effect of Supplement Addition on Transport Media on the Physiological Condition and Survival of Freshwater Crabs (*Parahelphusa convexa* De Man, 1879)

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Abstract Cultivation of crabs throughout this time still has many obstacles such as transportation in living conditions. Crab survival rates during the transportation are still relatively low, which treatment before and after transportation is required by adding additional supplement ingredients. This study aims to analyze the effects of the supplement on pre- and post-transport freshness media on the physiological conditions, survival, and factors condition of freshwater crab (Parathelphusa convexa). The study used a complete random scheme with four supplement treatments. The observed parameters include aquatic physical and chemical parameters (temperature, alkalinity, pH, dissolved oxygen or DO, and ammonia), blood glucose, survival, and condition factors. Based on the ANOVA test, blood glucose and survival values in the four different treatments were significantly different. Condition factors had a real influence except for the final maintenance process in 5 days after post-transport discharge. Research results show that the application of a supplement of 10 ppm on pre- and post-transport freshness resulted in the best survival rates and physiological conditions of the crabs

Keywords: freshwater crab, physiological, supplementation, transportation

LOCATION

IPB International Convention Center

Botani Square, Pajajaran Raya, Tegallega, Center Bogor District, Bogor, West Java (16127)