

Seminar Transformasi Ekonomi Biru Menuju Indonesia Emas 2045

IDENTITAS DIRI

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Tempat / Tanggal Lahir : Kaima, 18 Maret 1965

PENDIDIKAN

Sarjana : Institut Pertanian Bogor
Magister : University of Western Brittany, France
Doktor : University of Western Brittany, France

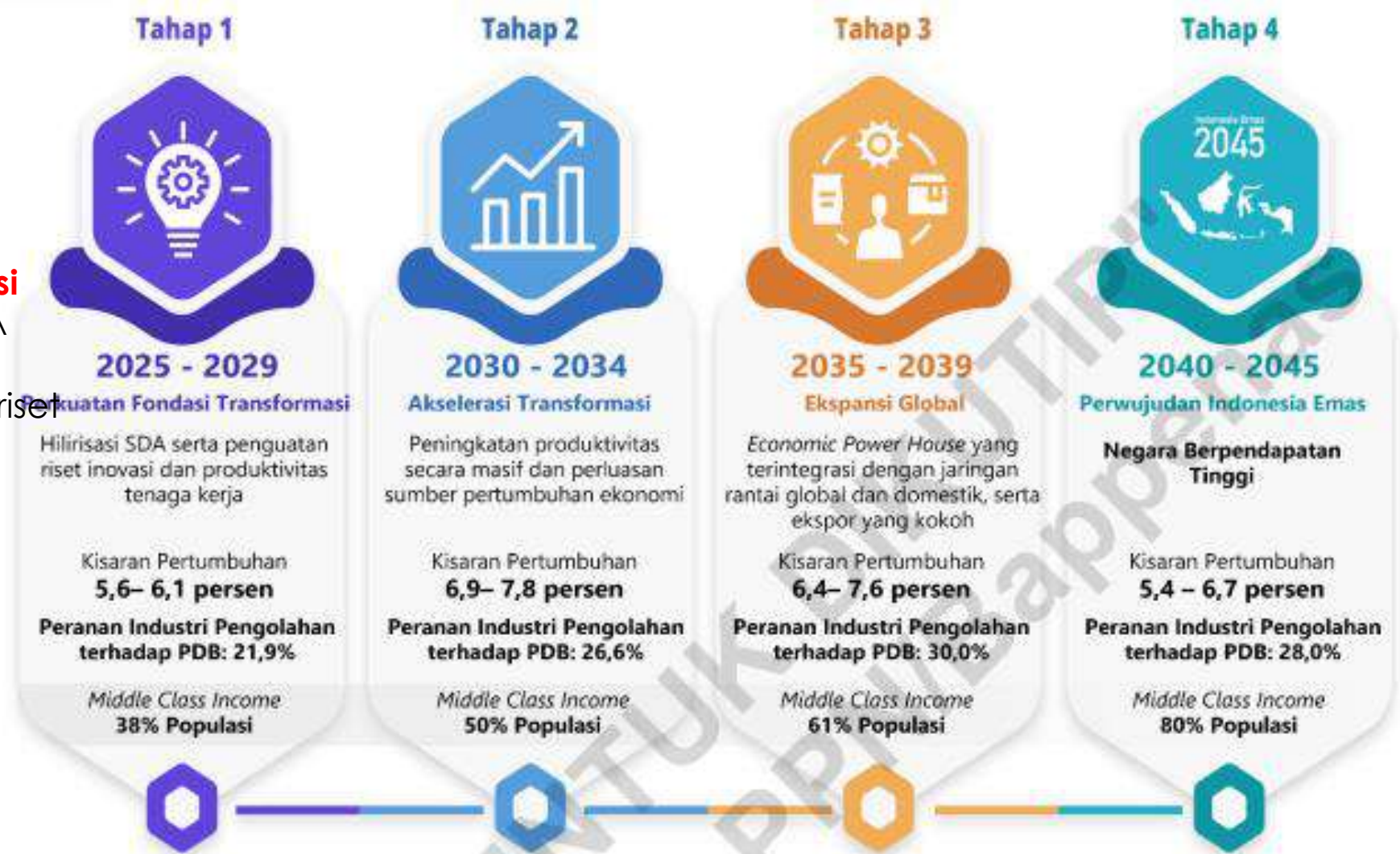
PEKERJAAN

Dosen Fakultas Perikanan dan Ilmu Kelautan,
Universitas Sam Ratulangi

TRANSFORMASI EKONOMI BIRU

RANCANGAN RPJPN 2025-2045: TAHAPAN TRANSFORMASI EKONOMI

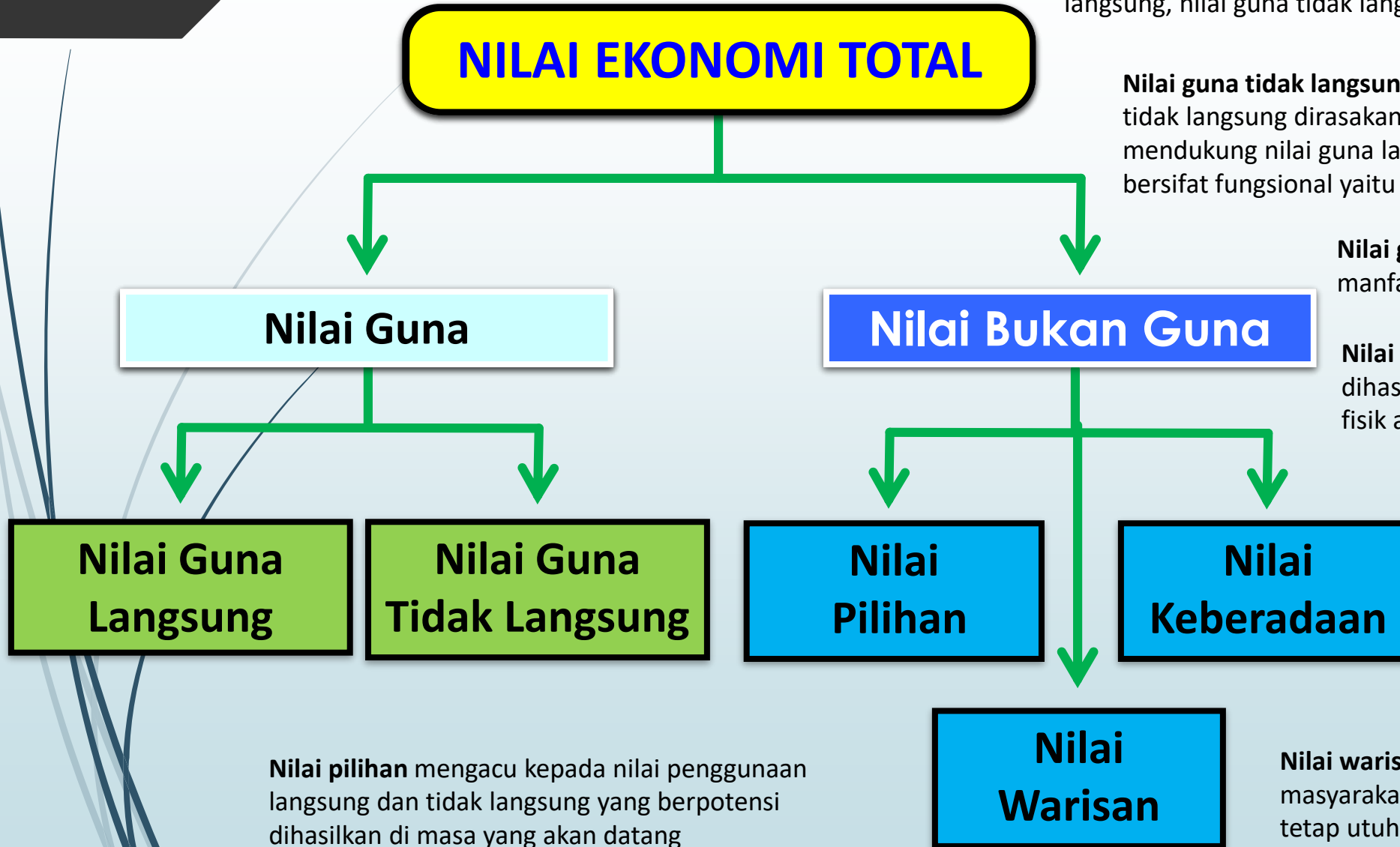
**Perkuatan
Fondasi
Transformasi**
hilirisasi SDA
serta
perkuatan riset
inovasi



Sumber: Kementerian PPN/Bappenas, 2023 (diolah)

KOMPONEN NILAI EKONOMI TOTAL EKOSISTEM ALAM

Nilai ekonomi total (NET) merupakan penjumlahan dari nilai guna langsung, nilai guna tidak langsung dan nilai bukan guna (Pearce, 1992)



Nilai guna tidak langsung, yaitu nilai dari manfaat yang secara tidak langsung dirasakan manfaatnya, dan dapat berupa hal yang mendukung nilai guna langsung, seperti berbagai manfaat yang bersifat fungsional yaitu berbagai manfaat ekologis

Nilai guna langsung merupakan nilai dari manfaat yang langsung dapat diambil dari SDA

Nilai bukan guna yaitu semua manfaat yang dihasilkan bukan dari hasil interaksi secara fisik antara SDA dan konsumen (pengguna)

Nilai keberadaan adalah nilai kepedulian seseorang akan keberadaan suatu SDA berupa nilai yang diberikan oleh masyarakat kepada suatu kawasan atas manfaat spiritual, estetika dan kultural

Nilai pilihan mengacu kepada nilai penggunaan langsung dan tidak langsung yang berpotensi dihasilkan di masa yang akan datang

Nilai warisan adalah nilai yang diberikan masyarakat yang hidup saat ini terhadap SDA, agar tetap utuh untuk diberikan kepada generasi akan datang

EKONOMI MERAH, HIJAU DAN BIRU



- **Gunter Pauli** menjelaskan perbedaan cara pandang dan bekerjanya *red*, *green* dan *blue economy*.
- **Ekonomi merah** (*red economy*) fokus pada pengambilan sumber daya alam dan menghabisi lingkungan
- **Ekonomi hijau** (*green economy*) fokus perhatiannya pada energi alternatif dan lingkungan yang berkelanjutan namun mahal dan eksklusif.
- **Ekonomi biru** (*blue economy*) bersifat ramah lingkungan dan bertujuan untuk mentransformasikan sistem ekonomi secara menyeluruh.

Konsep **EKONOMI BIRU** merupakan pemanfaatan sumber daya laut **berkelanjutan** bagi laju **pertumbuhan ekonomi**, dengan **tetap menjaga kesehatan ekosistem laut**. Model bisnis Ekonomi Biru dapat diterapkan penduduk Indonesia yang memanfaatkan sektor perikanan dan kelautan sebagai mata pencaharian mereka

EKONOMI BIRU

5 (lima) Kebijakan Ekonomi Biru

Mewujudkan keseimbangan antara dua aspek yang terkait dalam **ekosistem kelautan**, yaitu **ekologi** dan **ekonomi**.

Ekonomi biru tidak hanya melihat potensi kelautan sebagai komoditas ekonomi, tetapi sangat menekankan kepada pentingnya menjaga kelestarian lingkungan hidup di dalam ekosistem laut secara keseluruhan.



Perluasan Kawasan Konservasi Laut



Penangkapan Ikan Terukur Berbasis Kuota



Pengembangan Budidaya Pesisir, Laut, dan Darat yang Ramah Lingkungan



Pengelolaan Kawasan Pesisir dan Pulau-pulau Kecil



Pengelolaan Sampah Plastik di Laut

KONDISI SUMBER DAYA LAUT INDONESIA



Kondisi Saat Ini

- Angka Konsumsi Ikan Nasional meningkat **5,13% per tahun**, dan mencapai **55,37 kg/kapita (2021)**
- Volume ekspor perikanan mencapai **1,66 juta ton (2021)**
- **2,8%** dari **Pendapatan Domestik Bruto (PDB)** nasional berasal dari **sektor kelautan dan perikanan**
- **Interaksi dengan sektor lain** menjadi tantangan pemanfaatan sumber daya laut

POTENSI



Luas perairan **6,4 juta km²** dengan garis pantai sepanjang **108.000 km**, serta diapit dua samudera (Pasifik dan Hindia) dan dua benua (Asia dan Australia)

Potensi sumber daya ikan mencapai **12,01 juta ton/tahun**.



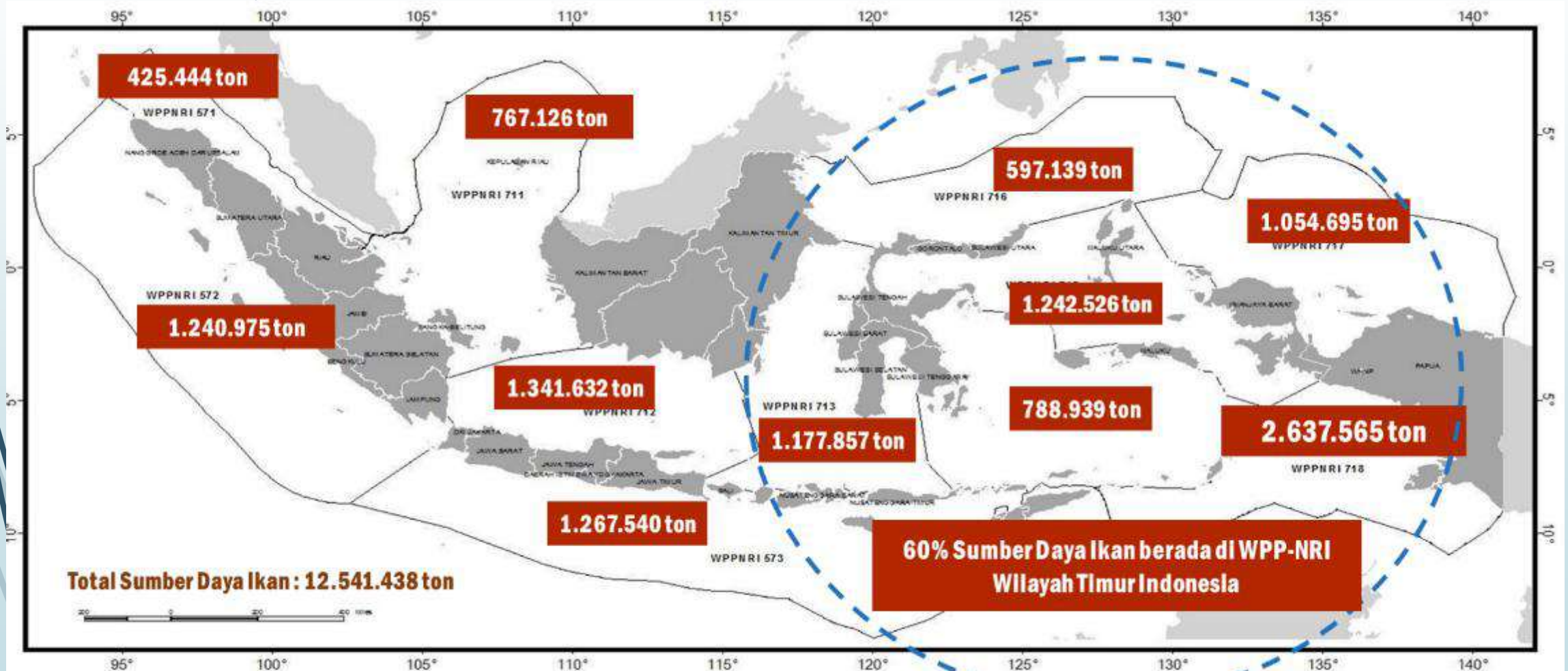
Memiliki 21% luasan mangrove dunia (**3,49 juta ha**)

Padang lamun terluas di dunia (potensi : **8,385 - 18,344 juta ha**)



POTENSI SUMBER DAYA IKAN DI INDONESIA

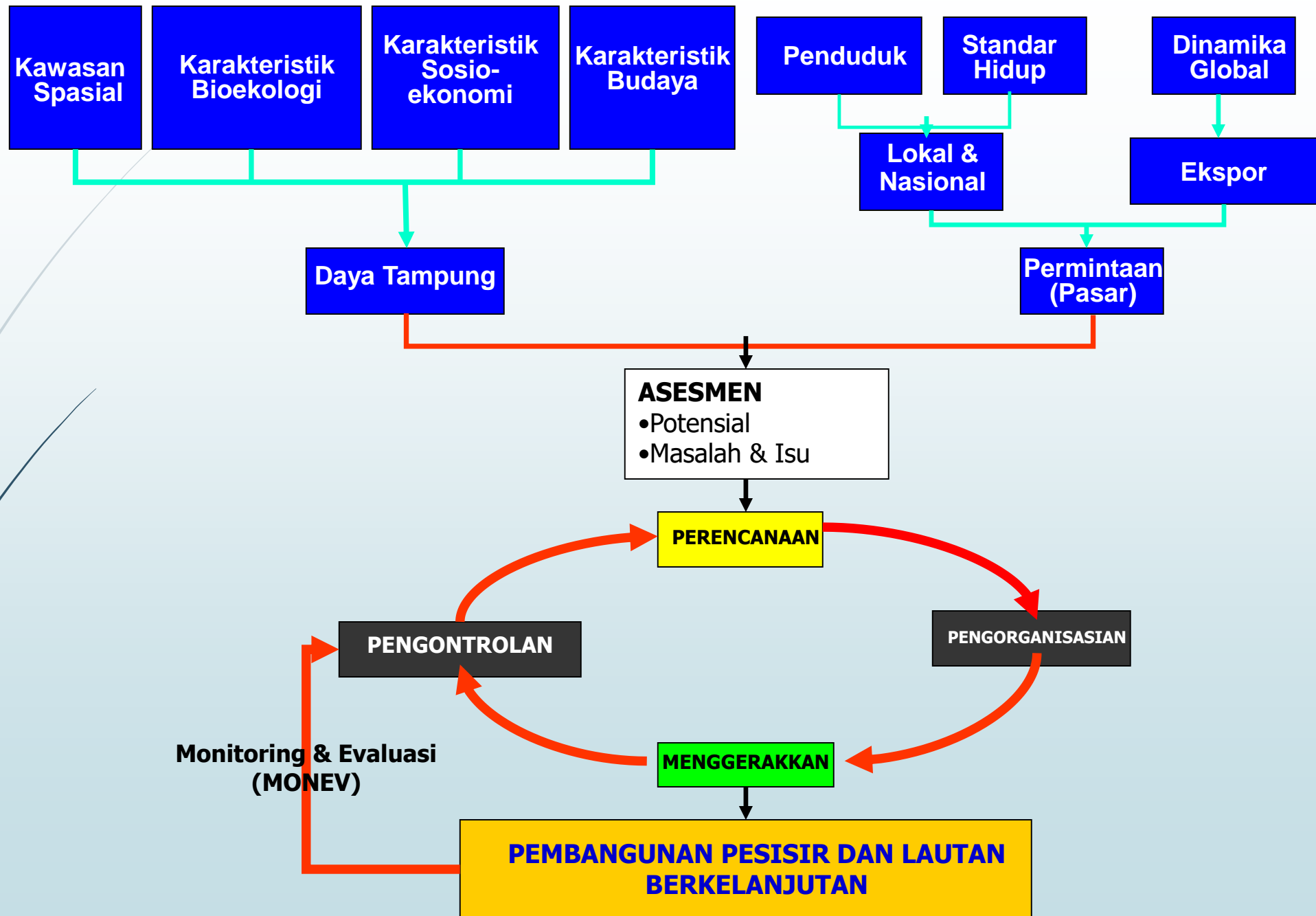
60% Sumber Daya Ikan berada di WPP-NRI Wilayah Timur Indonesia



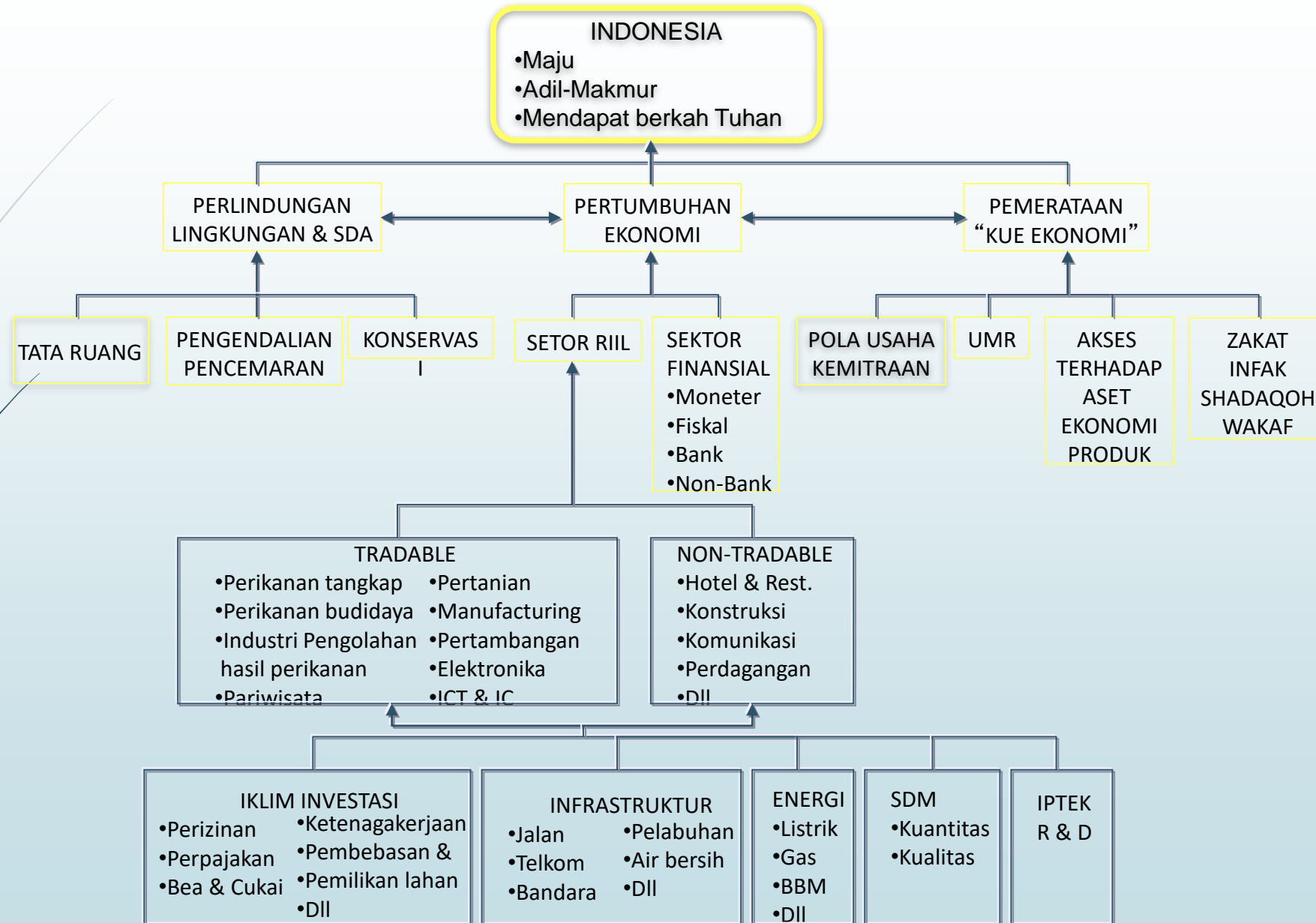
INDUSTRI BIOTEKNOLOGI KELAUTAN

1. Ekstraksi senyawa bioaktif (*bioactive substances*) dari biota laut untuk bahan baku industri makanan dan minuman, farmasi, kosmetika, bioenergi, industri kertas, film, dan industri lainnya.
2. Rekayasa genetik (*genetic engineering*) untuk menghasilkan bibit dan benih unggul.
3. Bioremediasi lingkungan.

PROSES PERENCANAAN UNTUK PEMBANGUNAN PESISIR DAN LAUT BERKELANJUTAN



SISTEM PERENCANAAN PEMBANGUNAN TERPADU MENUJU INDONESIA MAJU, ADIL MAKMUR DAN BERDAULAT



PENGEMBANGAN DATA LOGISTIK STELINA

Peraturan Menteri Kelautan dan Perikanan Nomor 29 Tahun 2021 tentang Sistem Ketertelusuran dan Logistik Ikan Nasional



Direktorat
Logistik, DJ
PDSPKP, KKP
(2021)

POTENSI SUMBERDAYA RUMPUT LAUT HIJAU

Sumber Kapur, Antibakteri
Antijamur, Antimikroba



Halimeda macroloba



Halimeda opuntia



Halimeda tuna

Antibakteri, Antibiotik
Antijamur, Menurunkan
tekanan darah



Caulerpa racemosa



Caulerpa sertularioides



Caulerpa serrulata

Antibakteri, Antitumor



Codium arabicum



Codium bartlettii



Codium edule

Anitbakteri, Antibiotik,
Antimikroba, Pencegah gondok



Ulva lactuca

Sumber Mineral



Valonia fastigiata



Chaetomorpha spiralis

POTENSI SUMBERDAYA RUMPUT LAUT COKLAT

Alginofit



Turbinaria ornata



Sargassum polycystum



Turbinaria conoides



Sargassum cristaefolium



Turbinaria decurrens



Sargassum turebinarioides

Antibakteri



Padina australis



Padina minor



Padina tetrastomatica

Antibakteri, Antibiotik Antijamur



Dictyota cervicornis



Dictyota dichotoma

Sayur dari laut



Hydroclathrus clathratus

POTENSI SUMBERDAYA RUMPUT LAUT MERAH

KaraginoFit



Kappaphycus alvarezii



Hypnea nidulans



Hypnea cervicornis

Agarofit



Gracilaria edulis



Gracilaria salicornia



Gracilaria verrucosa



Gracilaria arcuata



Gracilaria blodgettii



Gelidium pusillum

Antibakteri, Antibiotik,
Antijamur



Laurencia tronoi



Laurencia papillosa

HAMPARAN RUMPUT LAUT

Kabupaten Minahasa Utara

Pulau Bangka



Kabupaten Halmahera Selatan

Pulau Talimau



Kabupaten Minahasa

Desa Poopoh



Kabupaten Maluku Tenggara Barat

Pulau Larat



Kabupaten Maluku Tenggara

Pulau Kei Kecil



Kabupaten Minahasa Tenggara

Desa Tumbak Madani



Kabupaten Kepulauan Aru

Pulau Wokam



Kabupaten Teluk Wondama

Desa Windesi



Kabupaten Minahasa Selatan

Desa Blongko



RUMPUT LAUT DI ALAM

Codium sp. di Pulau Talise
Kabupaten Minahasa Utara



Padina sp. di Ohoiwa, Pulau Kei Kecil
Kabupaten Maluku Tenggara



Halimeda sp. di Teluk Totok
Kabupaten Minahasa Tenggara



Marine Field Station di
Likupang Timur,
Kabupaten Minahasa Utara



Sargassum sp.
dan *Galaxaura* sp.
di pantai Kora-kora,
Kabupaten Minahasa



BIODIVERSITAS RUMPUT LAUT

23 spesies

Kepel et al (2020)

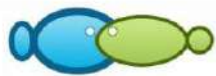
2

Semenanjung Minahasa Musim Kemarau

Community structure of seaweeds along the intertidal zone of Mantehage Island, North Sulawesi, Indonesia

Rene C. Kepel, Lawrence J. L. Lumingas, Preisy M. M. Watung, Desy M. H. Mantiri

Faculty of Fisheries and Marine Science, Sam Ratulangi University, Jln. Kampus Unsrat Bahu, Manado 95115, North Sulawesi, Indonesia. Corresponding author: R. C. Kepel, renecharleskepel65@gmail.com



1

Community structure of seaweeds in dry season in Minahasa Peninsula, North Sulawesi, Indonesia

Rene C. Kepel, Lawrence J. L. Lumingas, John L. Tombokan, Desy M. H. Mantiri

Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. Corresponding author: R. C. Kepel, renecharleskepel65@gmail.com

Gracilaria edulis



Acetabularia dentata



Caulerpa racemosa



Halimeda macroloba



Pulau Mantehage

Semenanjung Minahasa Musim Penghujan

35 spesies

Kepel et al (2019)



3

Biodiversity and community structure of seaweeds in Minahasa Peninsula, North Sulawesi, Indonesia

Rene C. Kepel, Lawrence J. L. Lumingas, John L. Tombokan, Desy M. H. Mantiri

Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. Corresponding author: R. C. Kepel, renecharleskepel65@gmail.com

Padina australis



Turbinaria ornata



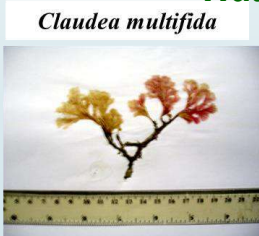
45 spesies Kepel et al (2019)

44 spesies

Wattimury et al (2012)



Caulerpa geminata



Cladea multifida



Eucheuma gelatinae



Halimeda incrassata f. triloba



Gelidiopsis intricata



Cryptonemia cranulata



Gelidiella acerosa

Boodlea composita



Laurencia papillosa



Boergesenia forbesii



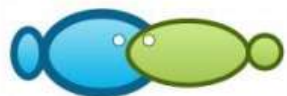
New record makroalga 7 spesies

BIODIVERSITAS RUMPUT LAUT

Jenis Rumput Laut pada Perairan dengan Kandungan Logam Berat yang berbeda

19 spesies

Tombokan et al (2020)



Comparison of seaweed communities in coastal waters with different heavy metals concentrations in Minahasa Peninsula, North Sulawesi, Indonesia

John L. Tombokan, Rene C. Kepel, Desy M. H. Mantiri, James J. H. Paulus, Lawrence J. L. Lumingas

Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. Corresponding author: R. C. Kepel, renecharleskepel65@gmail.com

4

Tanjung Merah, Rap-rap, Teluk Totok

16 spesies

Kepel et al (2023)

AIP Conference Proceedings

RESEARCH ARTICLE | APRIL 28 2023

Community structure of macroalgae in Tanjung Merah, rap-rap and Totok Bay, North Sulawesi, Indonesia

Rene Charles Kepel, Lawrence J. L. Lumingas, John L. Tombokan, ... et. al

Check for updates

AIP Conference Proceedings 2694, 060004 (2023)

<https://doi.org/10.1063/5.0120603>

View Online Export Citation CrossMark

5

Filogeni dan Identifikasi Molekuler Di Teluk Totok dan Blongko

Ulva prolifera

Kepel et al (2020)



Phylogeny and molecular identification of green macroalgae, *Ulva prolifera* (O. F. Müller, 1778) in Totok Bay, Maluku Sea, and Blongko waters, Sulawesi Sea, North Sulawesi, Indonesia

¹Rene C. Kepel, ¹Desy M. H. Mantiri, ²Femy M. Sahami

¹ Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia; ² Department of Aquatic Resources Management, Faculty of Fisheries and Marine Science, Gorontalo State University, Gorontalo City, Indonesia. Corresponding author: D. M. H. Mantiri, dmh_mantiri@unsrat.ac.id

6

SENYAWA FITOKIMIA DAN PIGMEN PADA RUMPUT LAUT

1

AIP Conference Proceedings

RESEARCH ARTICLE | APRIL 26 2023

Phytochemical compounds of *Halimeda opuntia* from coastal waters of North Sulawesi, Indonesia

Desy M. H. Mantiri, Rene Charles Kepel, Lawrence J. L. Lumingas, ... et. al

Check for updates

AIP Conference Proceedings 2694, 060006 (2023)

<https://doi.org/10.1063/1.5120894>



CrossMark

Pigmen-Pigmen pada *Ulva*, *Halimeda opuntia* dan *H. taenicola* di Teluk Totok dan Tongkaina

Mantiri et al (2019)

Eco. Env. & Cons. 25 (August Suppl. Issue) : 2019; pp. (S135-S140)
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ISSN 0971-765X

3

Analysis of antioxidant and chlorophyll in green algae from Totok bay and Tongkaina waters, North Sulawesi

Desy M.H. Mantiri¹, Rene C. Kepel¹, Antonius P. Rumengan and Alfred O. Kase⁴

¹Marine Science Study Program, Faculty of Fisheries and Marine Science, Sam Ratulangi University, Jln. Kampus Unsrat Bahu, Manado 95115, North Sulawesi, Indonesia

²Aquatic Resource Management Study Program, Faculty of Fisheries and Marine Science, Sam Ratulangi University, Jln. Kampus Unsrat Bahu, Manado 95115, North Sulawesi, Indonesia

³Marine Science Study Program, Faculty of Fisheries and Marine Science, Sam Ratulangi University, Jln. Kampus Unsrat Bahu, Manado 95115, North Sulawesi, Indonesia

⁴Fisheries and Marine Science Study Program of Artha Christian University, Kupang, East Nusa Tenggara

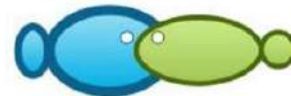
(Received 14 March, 2019; Accepted 27 May, 2019)

Senyawa Fitokimia pada *Halimeda opuntia*

Mantiri et al (2023)

Pigmen-Pigmen pada *Kappaphycus alvarezii* di Pulau Nain

Paransa et al (2020)



4

Pigment concentration of red algae, *Kappaphycus alvarezii* (Doty) Doty ex Silva during the cultivation in the coastal waters of Nain Island, North Sulawesi, Indonesia

Darus S. J. Paransa, Desy M. H. Mantiri, Rene C. Kepel, Antonius Rumengan

Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. Corresponding author: D. S. J. Paransa, darusparansa@unsrat.ac.id

Senyawa Fitokimia pada *Halymenia durvillaei*

Mantiri et al (2021)



Phytochemical screening, antioxidant and antibacterial tests on red algae, *Halymenia durvillaei*, and phycoerythrin pigments

Desy M. H. Mantiri, Rene C. Kepel, Farnis B. Boneka, Deiske A. Sumilat

Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. Corresponding author: D. M. H. Mantiri, dmh_mantiri@unsrat.ac.id

Senyawa Fitokimia pada *Halimeda maroloba* dan *Halimeda opuntia*

Kepel et al (2021)



5

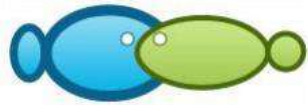
Biom mineral characterization and phytochemical profile of green algae *Halimeda macroloba* and *Halimeda opuntia* from coastal waters of Tanjung Merah, Bitung City, North Sulawesi, Indonesia

Rene C. Kepel, Lawrence J. L. Lumingas, John L. Tombokan, Desy M. H. Mantiri

Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. Corresponding author: R. C. Kepel, renecharleskepel65@gmail.com

BIOREMEDIASI RUMPUT LAUT

Ulva sp. dan Arsen



1

Kepel et al (2018)

Arsenic content, cell structure, and pigment of *Ulva* sp. from Totok Bay and Blongko waters, North Sulawesi, Indonesia

Rene C. Kepel, Desy M. H. Mantiri, Darus S. J. Paransa, James J. H. Paulus, Nasprianto, Billy T. Wagey

Faculty of Fisheries and Marine Science, Sam Ratulangi University, Jln. Kampus Unsrat Bahu, Manado 95115, North Sulawesi, Indonesia. Corresponding author: R. C. Kepel, renecharleskepel65@gmail.com

Halimeda opuntia dan Arsen, Krom dan Tembaga

Eco. Env. & Cons. 24 (3) : 2018; pp. (1076-1084)
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ISSN 0971-765X

2

Mantiri et al (2018)

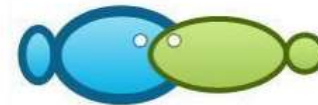
Heavy metal content, cell structure and pigment of *Halimeda opuntia* (Linnaeus) J.V. Lamouroux from Totok Bay and Blongko Waters, North Sulawesi, Indonesia

Desy Maria Helena Mantiri*, Rene Charles Kepel, Billy Theodorus Wagey and Nasprianto

*Faculty of Fisheries and Marine Sciences, Sam Ratulangi University, Jln.Kampus Unsrat Bahu, Manado 95115, North Sulawesi, Indonesia

(Received 9 February, 2018; accepted 1 April, 2018)

Padina australis dan Arsen, Tembaga, Seng dan Merkuri



3

Mantiri et al (2019)

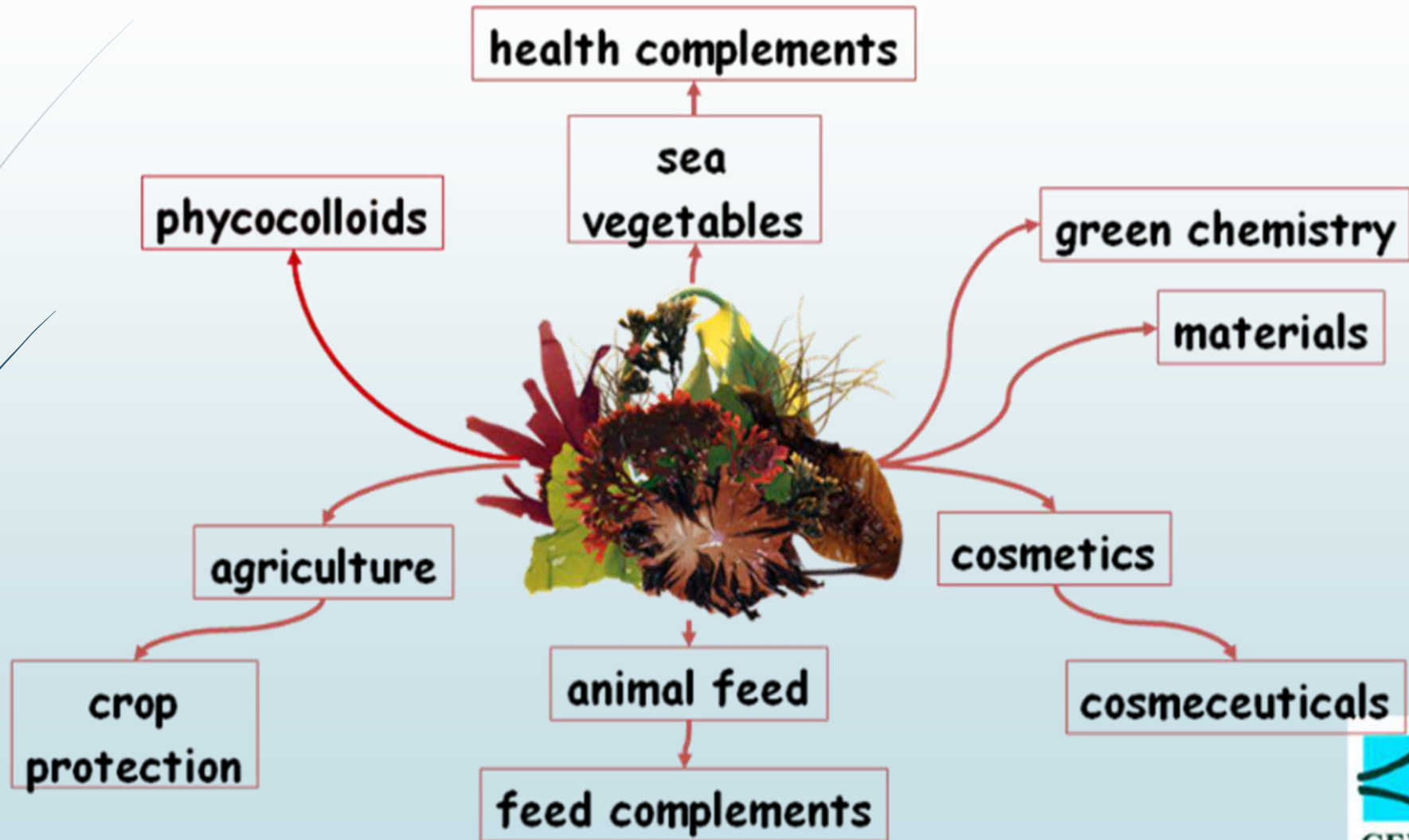
Metals in seawater, sediment and *Padina australis* (Hauck, 1887) algae in the waters of North Sulawesi

Desy M. H. Mantiri, Rene C. Kepel, Henky Manoppo, James J. H. Paulus, Darus S. Paransa, Nasprianto

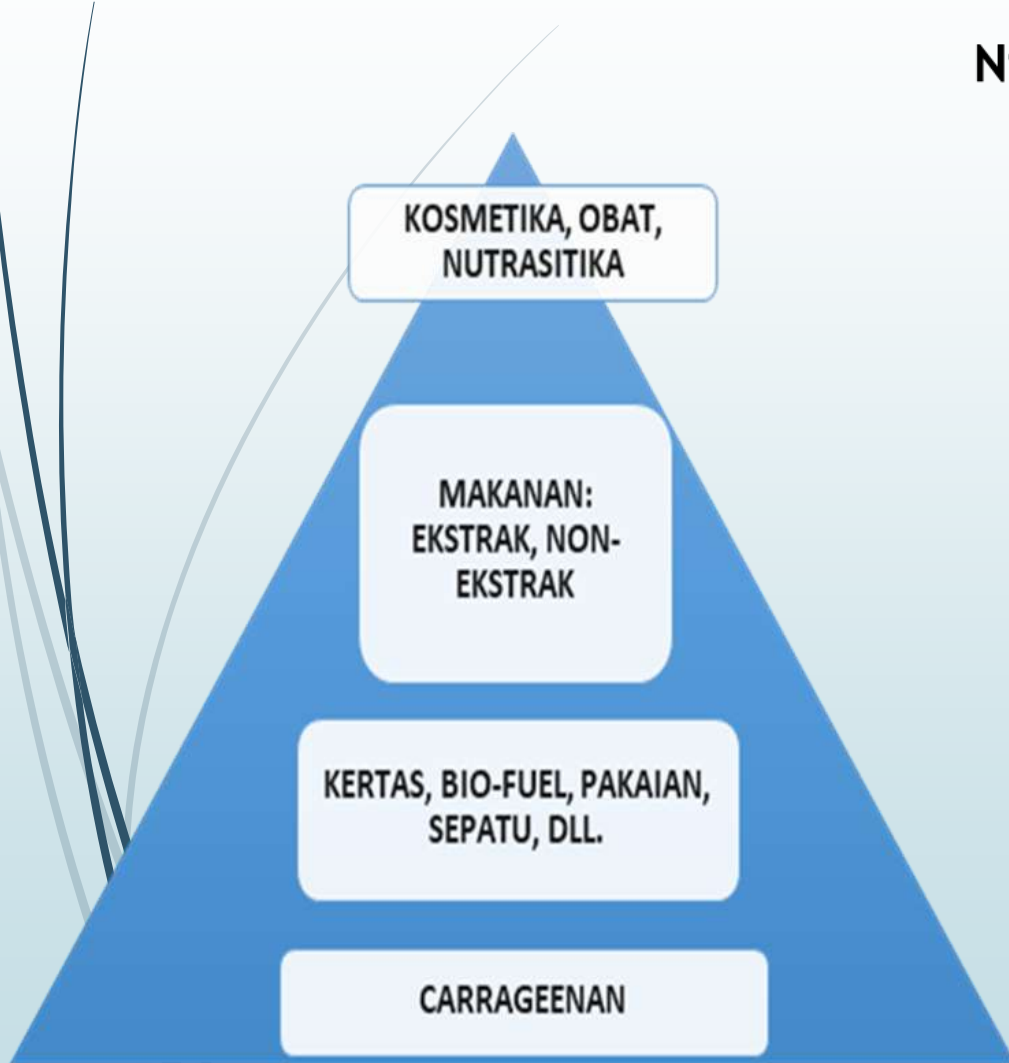
Faculty of Fisheries and Marine Sciences, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. Corresponding author: D. M. H. Mantiri, dmh_mantiri@unsrat.ac.id

- **Bioremediasi** berasal dari dua kata yaitu *Bio* (hidup) dan *remediation* (kembali) yang artinya pengembalian daerah atau lokasi yang terkena atau terpapar limbah kimia dengan bantuan makhluk hidup atau sebagian ada yang menyatakan dengan menyelesaikan masalah.
- **Bioremediasi** mengacu pada segala proses yang menggunakan mikroorganisme seperti bakteri, fungi (mycoremediasi), yeast, **alga** dan enzim-enzim yang dihasilkan oleh mikroba tersebut untuk membersihkan atau menetralkan bahan-bahan kimia dan limbah secara aman dan salah satu alternatif dalam mengatasi masalah lingkungan.

BERBAGAI MANFAAT RUMPUT LAUT



PIRAMIDA NILAI TAMBAH RUMPUT LAUT



Nilai tambah

Tinggi

Sifat Bahan Aktif

Harga jual di Pemasok

Ekstrak
kering dengan
serbuk larut
dalam air 0,5-1%

800-1.800 €/kg

Ekstrak cair
dengan 2-3%
bahan kering

150-200 €/kg

Ekstrak
hidroglikolik

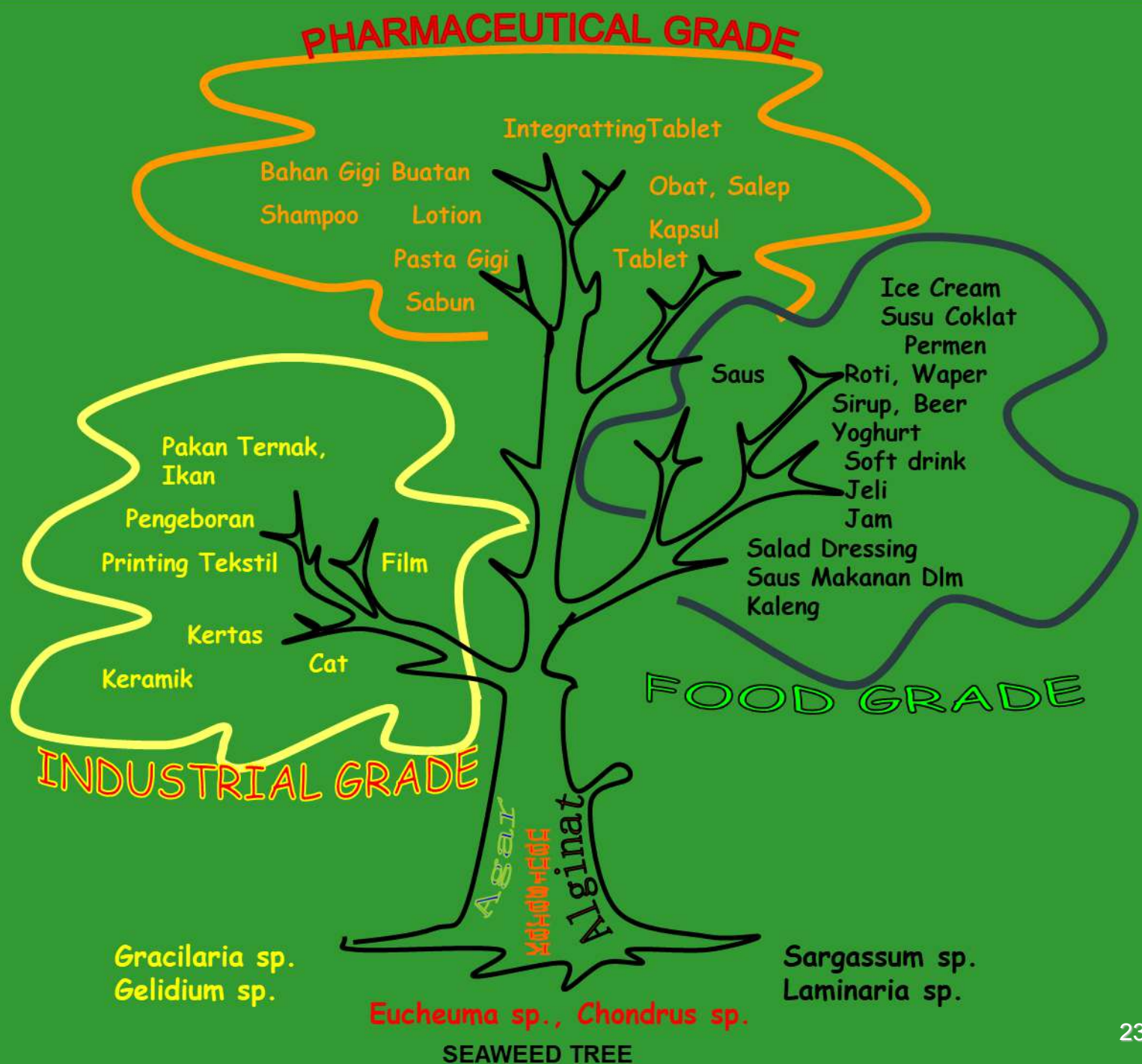
40 €/kg

Rendah

Tidak ada
ekstraksi

< 25-30 €/kg

POHON INDUSTRI RUMPUT LAUT



KULINER RUMPUT LAUT DARI KEI KECIL DAN KEI BESAR

Bahan Makanan – Sayur dari laut



Caulerpa lentillifera

(Reng lat : KEI KECIL)



Salad dimasak dengan santan



Salad dengan kelapa



Codium bartlettii

(Reng lam lam : KEI BESAR)



Salad tanpa kelapa

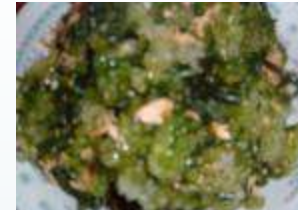


Caulerpa racemosa

(Reng wakit lat : KEI KECIL)

1

Jumlah jenis rumput laut (RL) di Pulau Kei Kecil: 40 jenis (13 RL hijau, 11 RL merah, 16 RL coklat) (Kepel & Dangeubun, 2012)



Salad dicampur gonad bulu babi



Salad dengan kelapa



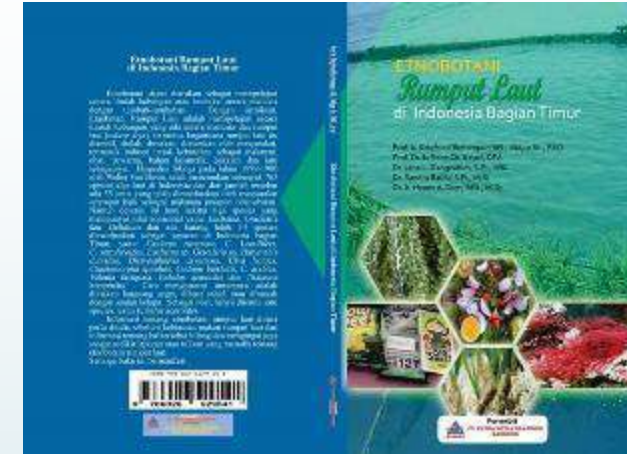
Valonia fastigiata

(Reng root : KEI BESAR)



Salad tanpa kelapa

Etnobotani Rumput Laut di Indonesia Bagian Timur (2019)



S. Berhimpon, J. Dangeubun, S. Baulu, R. C. Kepel (2015). Ethno-Botanical of Seaweeds and Sea Grass in Eastern Indonesian.

World Academy of Science, Engineering and Technology, International Journal.

2

Struktur komunitas makroalga di perairan pesisir Kei Kecil, Kabupaten Maluku Tenggara, Prov Maluku

3

Kepel dan Baulu (2011)

KULINER RUMPUT LAUT DARI PULAU LARAT

Bahan Makanan – Sayur dari laut

4

(Ngrowang : PULAU LARAT)



Ulva lactuca



Salad tanpa kelapa



Salad dengan kelapa



Salad dimasak dengan santan

(Weiwira : PULAU LARAT)



Valonia fastigiata



Salad dengan kelapa

(Duma : PULAU LARAT)



Codium bartlettii



Salad dengan kelapa



Salad tanpa kelapa



Caulerpa racemosa

(Laur latu : PULAU LARAT)



Salad tanpa kelapa

Kepel dan Baulu (2011). Pacific Journal of Regional Board of Research, North Sulawesi 1(6): 1005-1009



Caulerpa sertularioides

(Manut Wulun : PULAU LARAT)



Chaetomorpha spiralis

(Mie Laut : PULAU LARAT)



Salad tanpa kelapa

KULINER RUMPUT LAUT DARI PULAU YAMDENA DAN ARU

Bahan Makanan – Sayur dari laut



Caulerpa lentillifera

(Tongar : PULAU YAMDENA)



Salad dengan kelapa



Caulerpa racemosa

(Tongar : PULAU YAMDENA)

5

Komunitas Alga Makro di Perairan Pesisir Pulau Yamdena, Maluku Tenggara Barat, Maluku.
Kepel dan Baulu (2010). *Pacific Journal of Regional Board of Research, North Sulawesi* 3(4): 677-682

6

Struktur Komunitas Makroalga di Perairan Kabupaten Kepulauan Aru.
Kepel et al (2007). *Jurnal Perikanan dan Ilmu Kelautan* III(1): 46-55



Dictyosphaeria versluysii

(Tongar silai : PULAU YAMDENA)



Caulerpa racemosa

(Namas : PULAU ARU)



Chaetomorpha spiralis

(Nelawas dole : PULAU YAMDENA)



Caulerpa sertularioides

(Fulu sice : PULAU YAMDENA)



Caulerpa sertularioides

(Bulu ayam : PULAU ARU)



Caulerpa lentillifera

(Namas : PULAU ARU)

PELATIHAN PEMANENAN DAN BUDIDAYA RUMPUT LAUT

Pulau Nain, Minahasa Utara

Pengembangan Budidaya Rumput Laut

Pulau Kei Kecil, Maluku Tenggara

Pelatihan Pemanenan Rumput Laut

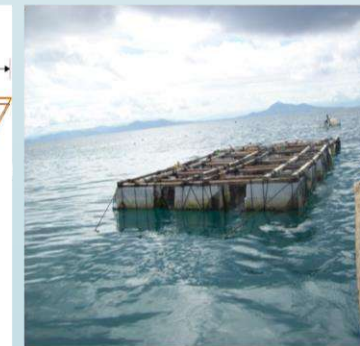
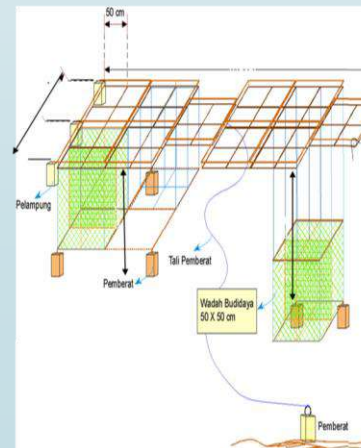
Di perairan Pulau Kei Kecil
Kabupaten Maluku Tenggara



Ujicoba budidaya rumput laut *Halymenia durvillaei*
di perairan Pulau Nain, Kabupaten Minahasa Utara



Ujicoba budidaya rumput laut *Halimeda*
dan *Padina* di perairan Pulau Nain,
Kabupaten Minahasa Utara



RISET PENGEMBANGAN BUDIDAYA RUMPUT LAUT

Halymenia durvillae di Pulau Nain



a



- (a) Hari ke-1
- (b) Hari ke-8
- (c) Hari ke-14
- (d) Hari ke-20

b



a



b



c



d



Kedalaman 150 cm

Kedalaman 50 cm

PIGMEN RUMPUT LAUT *Halymenia durvillaei*

Manado, 23 Oktober 2018



***Padina* spp. – DI ALAM, BUDIDAYA, PENGERINGAN, PENGEPAKAN DAN EKSPOR**



**Hambaran *Padina*
di perairan
Desa Ngilingof
Pulau Kei Kecil**



KERJASAMA DAN PROMOSI INVESTASI

Pameran Cosmoprof Asia Hong Kong (2006)

EU - EAGA Biz Tech Partnership,
Miri - Malaysia (2009)



Kunjungan ke CEVA, Perancis (2010)



Pameran In-Cosmetic, Amsterdam (2008)



Pameran In-Cosmetic, Paris (2007)



LEAFLET ANTI-AGEING PRODUCT



APRO ANTI-AGE

The new anti-ageing algae extract from the pure waters of Eastern Indonesia



APRO – anti-ageing extract

Our skin-care extract is obtained from selected local seaweeds by a gentle and controlled aqueous extraction. Available in liquid or powder form, it will perfectly solubilize in your aqueous phase to bring you a wealth of benefits.

Its richness in minerals, trace elements and micronutrients, and the presence of polyphenols and biologically active sulphated polysaccharides will help nourish and rejuvenate your skin, and protect it against ageing signs. APRO anti-ageing extract ability to inhibit hyaluronidase activity and promote Type I pro-collagen synthesis is scientifically proven.

Suggested formulations

Anti-ageing Cream

Purified water.....	qsp 100
Labrafac™ CC.....	15,00
Emulium® 22.....	4,00
Microcare® PM5.....	0,60
Carbopol® Ultrez 10.....	0,25
Rhodicare® S.....	0,20
Sodium hydroxyde.....	0,05
APRO ANTI-AGE - powder.....	0.05

Anti-ageing Gel

Purified water.....	qsp 100
Microcare®_PM5.....	0,60
Carbopol® Ultrez 10.....	0,50
TEA.....	0,20
APRO ANTI-AGE - powder.....	0.05



APRO – anti-ageing extract

Our skin-care extract is obtained from selected local seaweeds by a gentle and controlled aqueous extraction.

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Its richness in minerals, trace elements and micronutrients, and the presence of polyphenols and biologically active sulphated polysaccharides will help nourish and rejuvenate your skin, and protect it against ageing signs.

APRO anti-ageing extract ability to inhibit hyaluronidase activity and promote Type I pro-collagen synthesis is scientifically proven.



Pameran In-Cosmetic Hamburg, Jerman (1 - 3 April 2014)

Harga produk: € 200 / kg

Padina australis

Who We Are

About Us

The Algae Pacific-Rim Ocean (APRO) cosmetic initiative started 10 years ago from a will to develop a new sustainable economy from local Indonesian seaweeds.

The new anti-ageing ingredient that we are proud to offer you today will be one of the first launches of this initiative.



Contact Us :



ALGAE PACIFIC-RIM OCEAN
Contact : Maria Jelly Sundah
Email : jmsundah@yahoo.com
Phone : +62 87 889 099 148
Fax : +62 21 5462523

For technical details and inquiries, please contact :



CEVA
22610 PLEUBIAN - FRANCE
Contact : Ronan Pierre
Email : ronan.pierre@ceva.fr
Phone : +33 296 228 962



APRO ANTI-AGE

The new anti-ageing algae extract from the pure waters of Eastern Indonesia

LEAFLET SKIN WHITENING PRODUCT



APRO WHITENING

The new skin-whitening algae extract from the pure waters of Eastern Indonesia



APRO – anti-ageing extract

Our skin-whitening extract is obtained by a gentle eco-compatible extraction from carefully selected seaweeds from Eastern Indonesia.

Available in powder form, or as a water-based solution, it shows excellent solubility in your water phase. APRO skin-whitening extract has been shown to inhibit tyrosinase activity *in vitro*, one of the mechanisms involved in melanin synthesis. It also significantly reduces melanogenesis in human skin melanocyte cultures at low dosage. It is also rich in minerals and trace elements, and will be an ideal natural ingredient for your skin-whitening formulations.

Suggested formulations

Anti-ageing Cream

Purified water.....	qsp 100
Labrafac™ CC.....	15,00
Emulium® 22.....	4,00
Microcare® PMS.....	0,60
Carbopol® Ultrez 10.....	0,25
Rhodicare® S.....	0,20
Sodium hydroxyde.....	0,05
APRO WHITENING - powder.....	0.01

Anti-ageing Gel

Purified water.....	qsp 100
Microcare® PMS.....	0,60
Carbopol® Ultrez 10.....	0,50
TEA.....	0,20
APRO WHITENING - powder.....	0.01



Halimeda macroloba



APRO – Skin-whitening extract

Our skin-whitening extract is obtained by a gentle eco-compatible extraction from carefully selected seaweeds from Eastern Indonesia.

Available in powder form, or as a water-based solution, it shows excellent solubility in your water phase.

APRO skin-whitening extract has been shown to inhibit tyrosinase activity *in vitro*, one of the mechanisms involved in melanin synthesis. It also significantly reduces melanogenesis in human skin melanocyte cultures at low dosage.

It is also rich in minerals and trace elements, and will be an ideal natural ingredient for your skin-whitening and skin brightening formulations



Who We Are

About Us

The Algae Pacific-Rim Ocean (APRO) cosmetic initiative started 10 years ago from a will to develop a new sustainable economy from local Indonesian seaweeds.

The new skin-whitening ingredient that we are proud to offer you today will be one of the first launches of this initiative.



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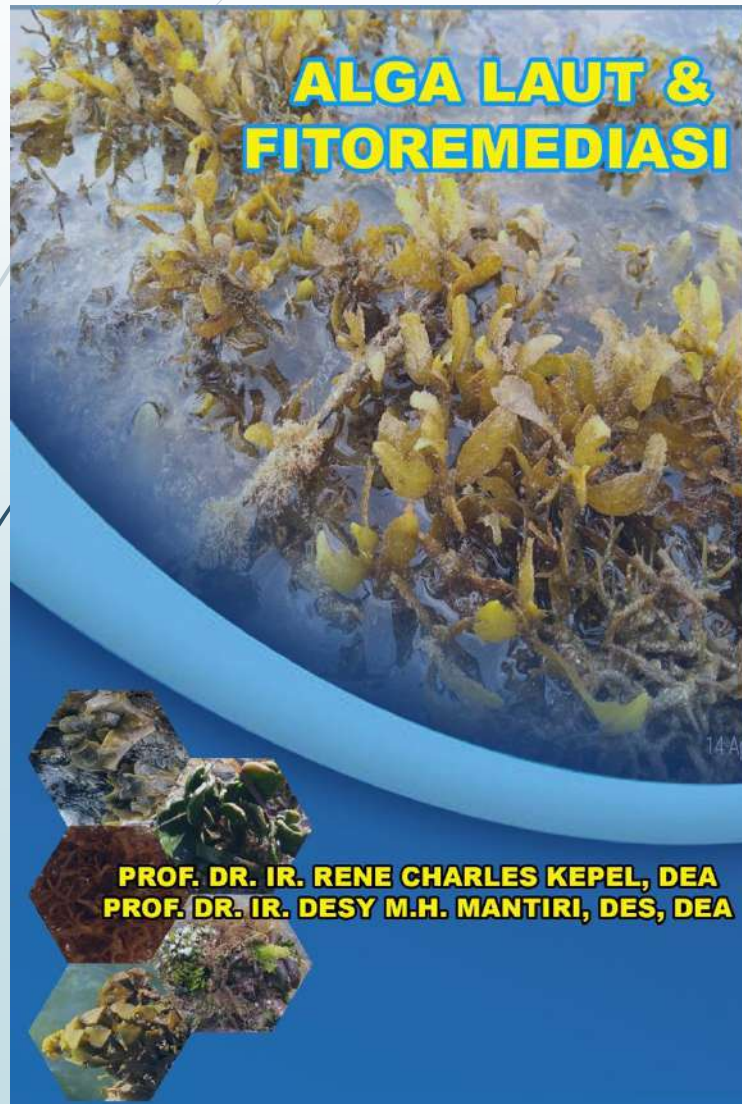
APRO WHITENING

The new skin-whitening algae extract from the pure waters of Eastern Indonesia

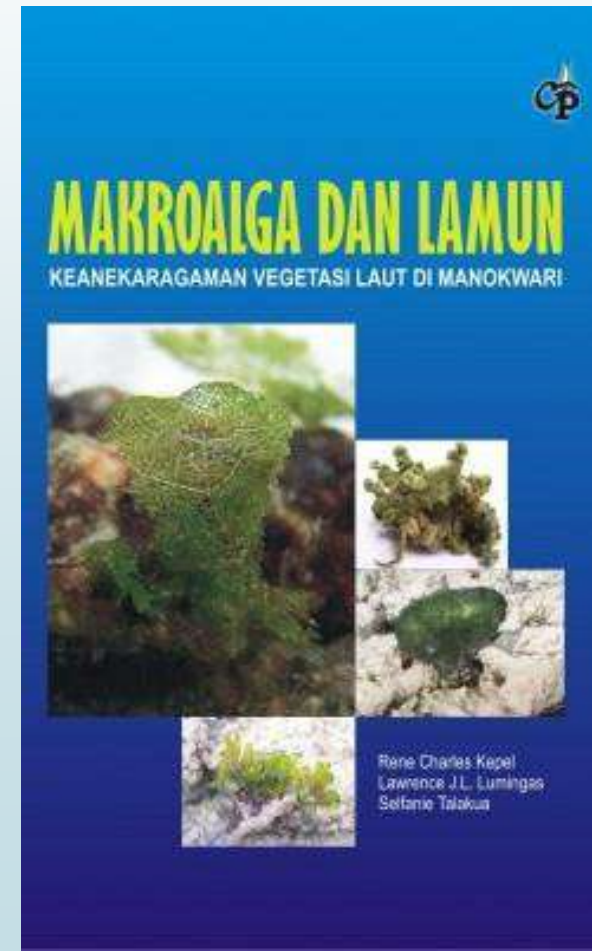


BUKU REFERENSI RUMPUT LAUT

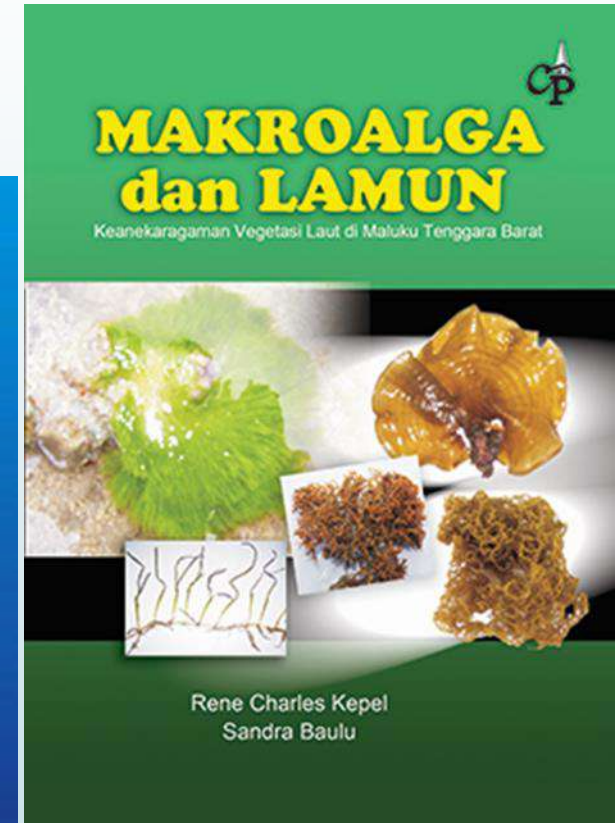
Kepel dan Mantiri (2020)



Kepel et al (2012)



Kepel dan Baulu (2013)



BIODIVERSITAS LAMUN

Enhalus acoroides



Cymodocea rotundata



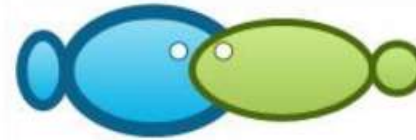
Halophila ovalis



Utara Oba

9 spesies

Darmawaty et al (2023)

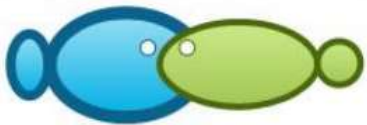


2

Fish community structure based on density and coverage of seagrass meadows in North Oba, Tidore Islands, North Maluku

¹Darmawaty, ¹Salim Abubakar, ²Rene C. Kepel, ²Rignolda Djamaluddin, ¹Nurhalis Wahidin, ¹Rina, ¹Riyadi Subur, ¹Mesrawaty Sabar, ¹Masykhur A. Kadir, ¹Nebuchadnezzar Akbar

¹ Faculty of Fisheries and Marine Sciences, Khairun University, Ternate, North Maluku, Indonesia; ² Faculty of Fisheries and Marine Sciences, Sam Ratulangi University, Manado, Indonesia. Corresponding author: N. Akbar, nezzarnebuchad@yahoo.co.id



1

Variation of carbon content in sediments of seagrass ecosystems based on the presence of seagrass species on Mare Island, Indonesia

¹Irmalita Tahir, ²Desy M. H. Mantiri, ²Antonius P. Rumengan, ¹Nurhalis Wahidin, ²Lawrence J. L. Lumingas, ²Khristin I. F. Kondoy, ²Roike I. Montolalu, ²Rene C. Kepel, ¹Zulhan A. Harahap

¹ Faculty of Fisheries and Marine Sciences, Khairun University, Ternate, North Maluku, Indonesia; ² Faculty of Fisheries and Marine Sciences, Sam Ratulangi University, Manado, Indonesia. Corresponding author: I. Tahir, iermalitha@gmail.com

Pulau Mare

7 spesies

Tahir et al (2023)

BIODIVERSITAS MANGROVE



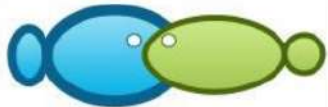
Bruguiera gymnorrhiza

Xylocarpus granatum

Semenanjung Minahasa

10 spesies

Lintong et al (2023)



4

Community structure of mangroves in Minahasa Peninsula, North Sulawesi, Indonesia

¹Oktavianus Lintong, ²Rene C. Kepel, ²Rignolda Djamaluddin, ¹Bet L. Lagarensse, ²Edwin L. A. Ngangi, ²Novie P. L. Pangemanan, ²Roike I. Montolalu, ²Desy M. H. Mantiri, ²Lawrence J. L. Lumingas

¹Manado State Polytechnic, Manado, North Sulawesi, Indonesia; ² Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. Corresponding author: O. Lintong, oktalintongpnm@yahoo.co.id

Pulau Mantehage

8 spesies

Opa et al (2019)

1

Pulau Jelfio

4 spesies

Yanti et al (2021)

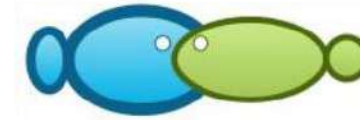
2

Pulau Mare

9 spesies

Tahir et al (2021)

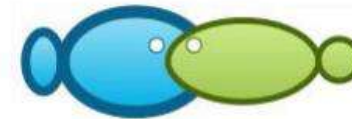
3



Community structure of mangrove in Mantehage Island and Paniki Island, North Sulawesi, Indonesia

Esry T. Opa, Janny D. Kusen, Rene C. Kepel, Alvon Jusuf, Lawrence J. L. Lumingas

Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. Corresponding author: R. C. Kepel, renecharleskepel65@gmail.com



Community structure of mangrove in Jelfio Island, Sorong Regency, West Papua, Indonesia

¹Dwi I. W. Yanti, ²Carolus P. Paruntu, ²Rene C. Kepel, ²Stephanus V. Mandagi, ¹Roger R. Tabalessy

¹ Faculty of Agriculture, Papua Christian University, Sorong, West Papua, Indonesia; ² Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. Corresponding author: R. C. Kepel, renecharleskepel65@gmail.com

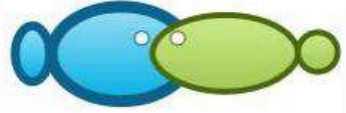
PAPER • OPEN ACCESS

Assessment of mangrove condition of Mare Island, North Maluku, Indonesia

To cite this article: I Tahir et al 2021 IOP Conf. Ser.: Earth Environ. Sci. 890 012056

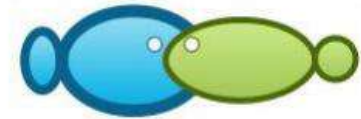
View the [article online](#) for updates and enhancements.

KESESUAIAN WISATA MANGROVE



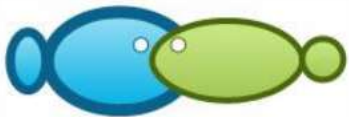
Ecological suitability of mangrove tourism in Mantehage Island as the outermost small island in North Sulawesi, Indonesia

Esry T. Opa, Rene C. Kepel, Ridwan Lasabuda, Janny D. Kusen, Carolus P. Paruntu, Rignolda Djameluddin, Farnis B. Boneka, Desy M. H. Mantiri



Suitability index and carrying capacity of mangrove tourism on Jeflio Island, Indonesia

¹Dwi I. W. Yanti, ²Carolus P. Paruntu, ²Rene C. Kepel, ²Stephanus V.



Suitability and carrying capacity of mangrove ecosystem for ecotourism in Jailolo Bay, West Halmahera, Indonesia

¹Salim Abubakar, ²Rene C. Kepel, ²Rignolda Djameluddin, ¹Nurhalis Wahidin, ²Winda M. Mingkid, ²Adnan S. Wantasen, ²Roike I. Montolalu, ²Desy M. H. Mantiri

¹ Faculty of Fisheries and Marine Sciences, Khairun University, Ternate, North Maluku, Indonesia; ² Faculty of Fisheries and Marine Sciences, Sam Ratulangi University, Manado, Indonesia. Corresponding author: S. Abubakar, mylasrinaldy@gmail.com

Pulau Mantehage

8 spesies

Opa et al (2021)

1

Pulau Jeflio

4 spesies

Yanti et al (2021)

2

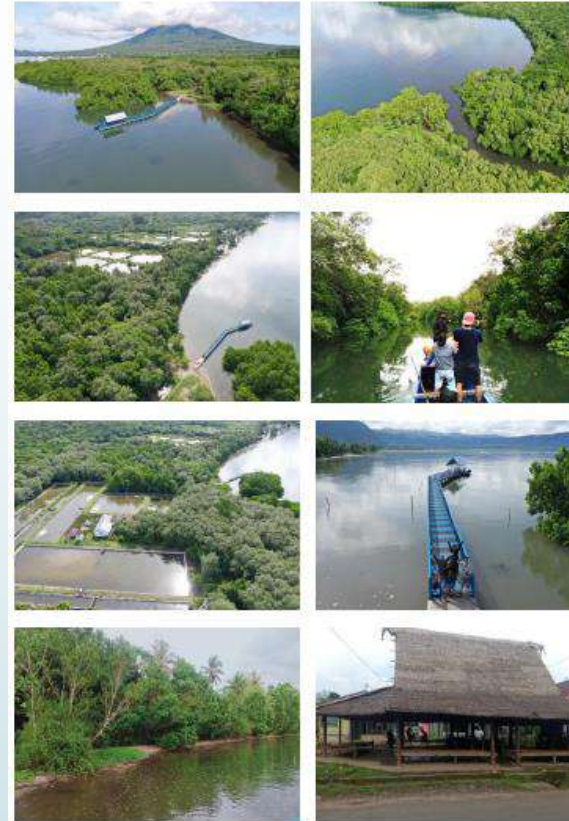
Teluk Jailolo

21 spesies

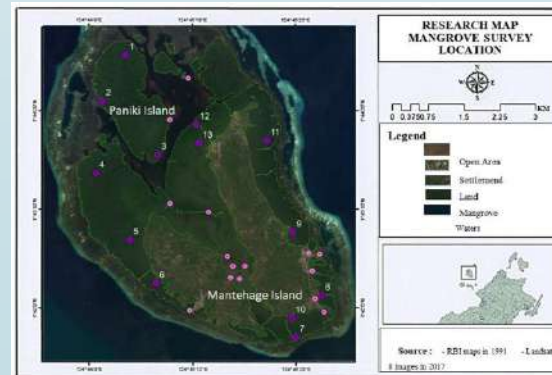
Abubakar et al (2022)

3

Teluk Jailolo



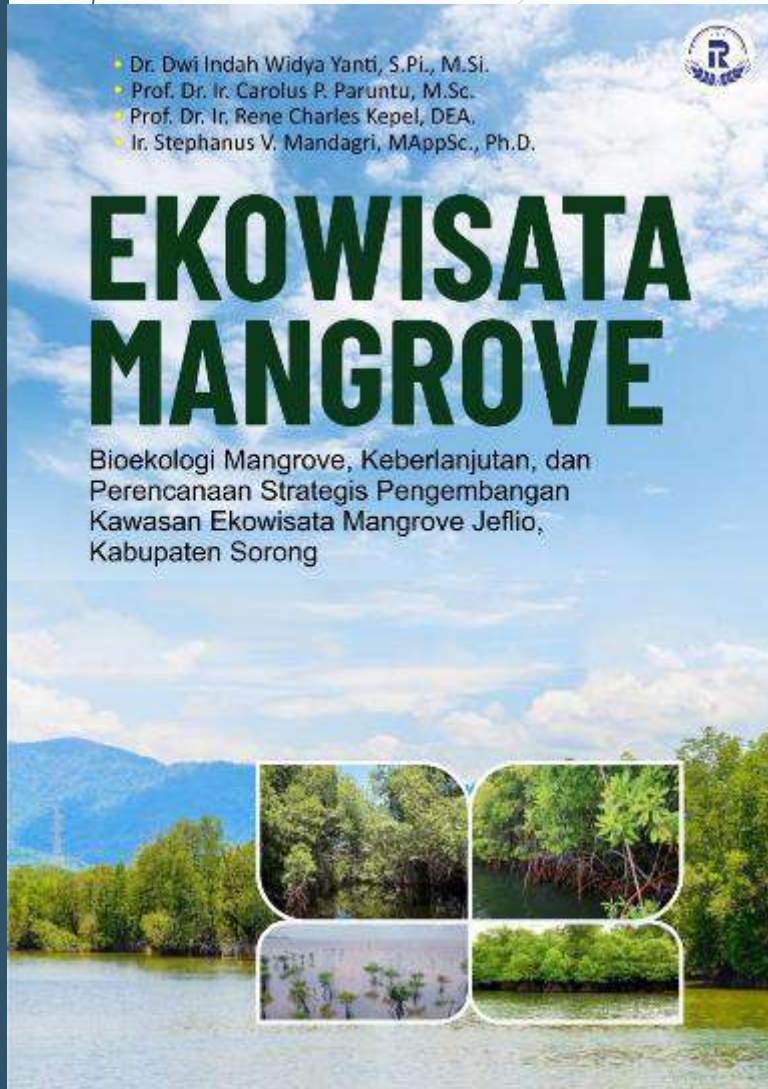
Pulau Jeflio



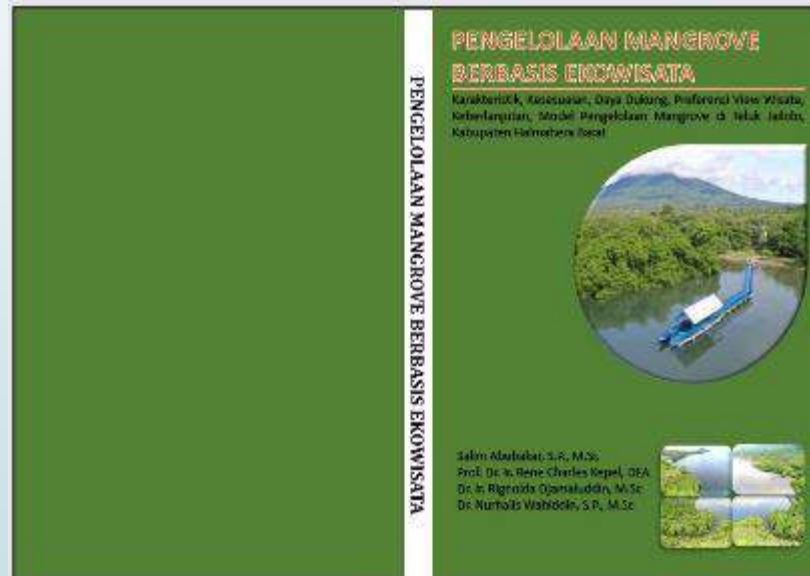
Pulau Mantehage

BUKU REFERENSI MANGROVE

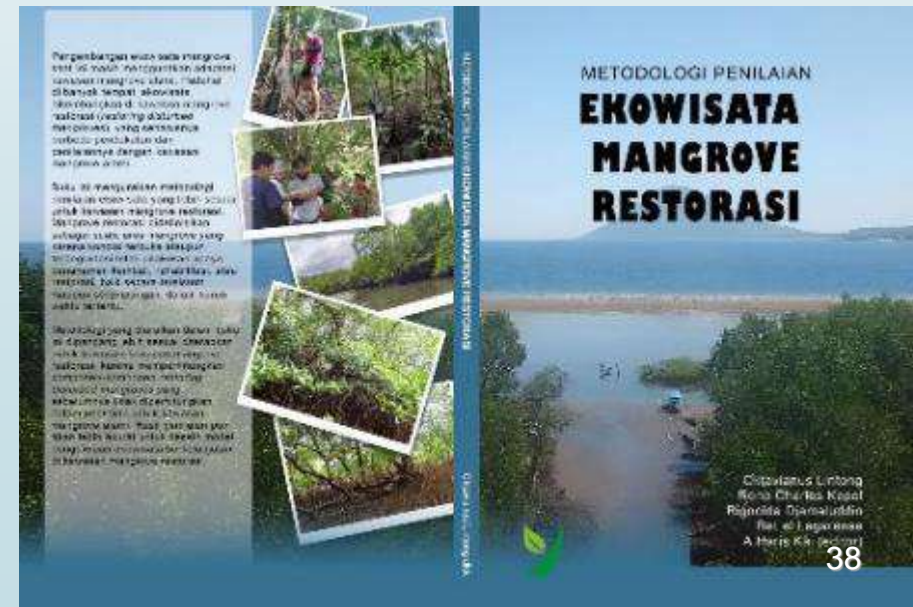
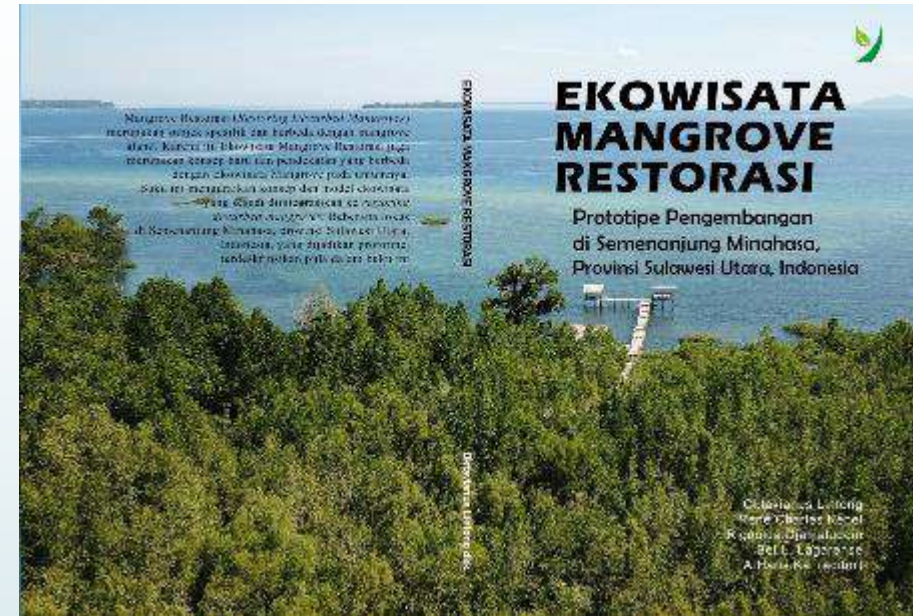
Yanti et al (2022)



Abubakar et al (2023)



Lintong et al (2023)



BIODIVERSITAS IKAN NIKE / BULAN-BULAN

Teluk Gorontalo

7 spesies

Sahami et al (2019)

1

Determination of morphological alteration based on molecular analysis and melanophore pattern of the migrating Nike fish in Gorontalo Bay, Indonesia

¹Femy M. Sahami, ²Rene C. Kepel, ¹Abdul H. Olii, ²Silvester B. Pratasik

¹ Department of Aquatic Resources Management, Faculty of Fisheries and Marine Science, Gorontalo State University, Gorontalo City, Indonesia; ² Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado City, Indonesia. Corresponding author: F. M. Sahami, femysahami@yahoo.co.id

F1000Research

F1000Research 2019, 8:1654 Last updated: 10 NOV 2019

Sahami et al (2019)



RESEARCH ARTICLE

What species make up the Nike fish assemblages at the macrotidal estuary in Gorontalo Bay, Indonesia? [version 1; peer review: 2 approved with reservations]

Femy M. Sahami¹, Rene Charles Kepel², Abdul Hafidz Olii¹, Silvester Benny Pratasik²

2

¹Faculty of Fisheries and Marine Sciences, State University of Gorontalo, Gorontalo, 96128, Indonesia

²Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, 95115, Indonesia

BIODIVERSITAS
Volume 21, Number
Pages: 4571-4581

3

Sahami et al (2020)

ISSN: 1412-033X
E-ISSN: 2085-4722
DOI: 10.13057/biodiv/d211015

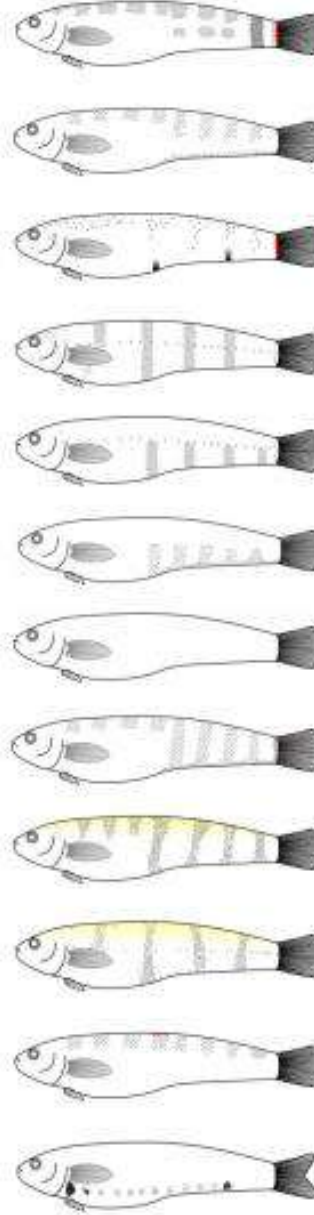
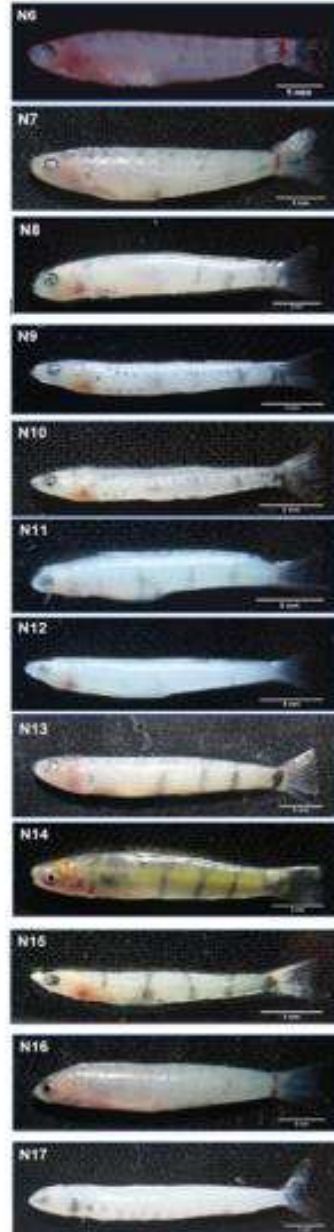
Morphometric and genetic variations of species composers of nike fish assemblages in Gorontalo Bay Waters, Indonesia

FEMY M. SAHAMI^{1*}, RENE CHARLES KEPEL², ABDUL HAFIDZ OLII¹, SILVESTER BENNY PRATASIK², RIDWAN LASABUDA², ADNAN WANTASEN², SITTY AINSYAH HABIBIE¹

¹Faculty of Fisheries and Marine Sciences, Universitas Negeri Gorontalo, Jl. Jend. Sudirman No. 6, Gorontalo City 96128, Gorontalo, Indonesia. Tel.: +62-435-821125, Fax.: +62-435-821752, *email: femysahami@ung.ac.id

²Faculty of Fisheries and Marine Sciences, Universitas Sam Ratulangi, Jl. Klek Hahu, Manado 95115, North Sulawesi, Indonesia

Manuscript received: 13 July 2020. Revision accepted: 11 September 2020.

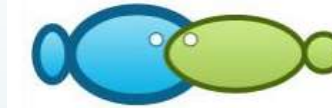


Muara Sungai Tondano dan Poigar

3 spesies

Salindeho et al (2022)

4



First report on the seasonal and spatial variation of the species composition of amphidromous goby fry schools in Tondano River and Poigar River estuaries, North Sulawesi, Indonesia

¹Indra R. N. Salindeho, ¹Rene C. Kepel, ¹Nego E. Bataragoa, ¹Reiny A. Tumbol

¹Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. Corresponding author: I. R. N. Salindeho, indra.salindeho@unsrat.ac.id

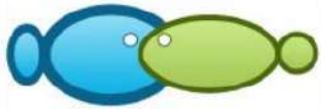
Melanophore code	The morphology of the three goby fries with clearly different melanophore pattern	Proportion of each melanophore at each sampling location		
		Poigar estuary (Pg)	Tondano estuary 1 st sampling (Tn-1)	Tondano estuary 2 nd sampling (Tn-2)
M1 (<i>Awaous grammepomus</i>)		35%	0	7.5%
M2 (<i>Sicyopterus pugnans</i>)		65%	0	40%
M3 (<i>Sicyopterus lagocephalus</i>)		0	100%	52.5%

BIODIVERSITAS IKAN NIKE / BULAN-BULAN

Estuari Sungai Poigar

4 spesies

Pangemanan et al (2020)



5

Morphometric and molecular analysis for identification of the early stages of gobioid fishes in Poigar River estuary, North Sulawesi, Indonesia

¹Novie P. L. Pangemanan, ¹Rene C. Kepel, ¹Nego E. Bataragoa, ¹Reiny A. Tumbol, ²Femy M. Sahami, ¹Cyska Lumenta, ¹Meiske S. Salaki, ¹Farnis B. Boneka, ¹Desy M. H. Mantiri

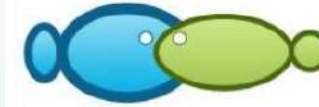
¹ Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia; ² Department of Aquatic Resources Management, Faculty of Fisheries and Marine Science, Gorontalo State University, Gorontalo City, Indonesia. Corresponding author: R. A. Tumbol, reinytumbol@yahoo.com

Sample Code	Foto	Sketch
N1-P		
N7-P		
N11-P		
N12-P		
N13-P		
N16-P		
N18-P		

Pulau Halmahera

7 spesies

Kader et al (2023)



7

Preliminary findings on Halmahera moony fish (amphidromous goby post larvae) of North Moluccas, Indonesia

¹Iwan H. Kader, ²Rene C. Kepel, ³Femy M. Sahami, ²Nego E. Bataragoa, ²Cyska Lumenta, ²Ockstan Kalesaran, ²Roike I. Montolalu, ²Desy M. H. Mantiri, ¹Riyadi Subur, ¹Zulhan A. Harahap

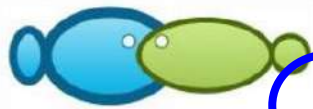
¹ Faculty of Fisheries and Marine Science, Khairun University, Ternate 97716, North Moluccas, Indonesia; ² Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado 95115, North Sulawesi, Indonesia; ³ Department of Aquatic Resources Management, Faculty of Fisheries and Marine Science, Gorontalo State University, Gorontalo 96128, Indonesia. Corresponding author: I. H. Kader, iwan.kader19@gmail.com

Sample codes	Sample photos
L4.1	
L4.2	
L4.3	
L5.1	
L5.2	
L5.3	
L5.4	

Danau Tondano

1 spesies

Pangemanan et al (2020)



6

Morphological and molecular identification of nike fish, *Ophieleotris aporos* in Tondano Lake, North Sulawesi, Indonesia

¹Novie P. L. Pangemanan, ¹Rene C. Kepel, ¹Nego E. Bataragoa, ¹Reiny Tumbol, ²Femy M. Sahami

¹ Faculty of Fisheries and Marine Science, Sam Ratulangi University, Manado, North Sulawesi, Indonesia; ² Department of Aquatic Resources Management, Faculty of Fisheries and Marine Science, Gorontalo State University, Gorontalo City, Indonesia. Corresponding author: N. P. L. Pangemanan, pankie_p@unsrat.ac.id

Sample Code	Picture (Personal documentation)	Sketch	Species Identified
A			<i>Ophieleotris aporos</i>
B			<i>Ophieleotris aporos</i>
C			<i>Ophieleotris aporos</i>
D			<i>Ophieleotris aporos</i>
E			<i>Ophieleotris aporos</i>
F			<i>Ophieleotris aporos</i>

PENANGKAPAN IKAN NIKE / BULAN-BULAN

Teluk Gorontalo

Muara Sungai Tondano



A



B

Gambar 7. Penangkapan ikan nike; A. Alat tangkap tagahu; B. Alat tangkap *tutalu,o*

Muara Sungai Poigar



Pulau Halmahera



FROM SEA / LAKE TO PLATE

Nike Muara Sungai Tondano

Nike Danau Tondano



Tondano River
(Kuala Jengki)

May 21st, 2020



"Nike fish"

"Perkedel"



Estuary of Tondano River



Poigar River

June 6th, 2020



"Nike fish"

"Perkedel"



Estuary of Poigar River



Tondano Lake

January 11th, 2020

"Perkedel"



Fishing boat

"Nike fish"



"Payangka"



Nike Muara Sungai Poigar

BUKU REFERENSI IKAN NIKE

Kader et al (2023)



REKOMENDASI

- 1. Perlu pengembangan riset diversifikasi jenis, produk dan bioremediasi dari rumput laut.**
- 2. Perlu pengembangan riset lamun terkait konservasi.**
- 3. Perlu pengembangan riset jenis dan jasa lingkungan dari mangrove.**
- 4. Perlu pengembangan riset jenis dan penangkapan terukur, serta diversifikasi produk dari ikan nike.**



TERIMA KASIH