Snapper Fishery

Highlighting Fisheries Management Areas (WPP) 713, 718 & 573

Indonesia Snapper Consortium

2022 State of the Fishery

2022 State of the Fishery

Snapper Fishery

HIGHLIGHTING FISHERIES MANAGEMENT AREAS (WPP) 713, 718 & 573

produced by:	The Blue-Green Advisors Ltd. team with support from Katherina Tjandra, Abdul Halim, the Indonesia Snapper Consortium members, and the fisher communities of Saleh Bay.
	Graphics & layout: Laura Kola SSIC
	www.bluegreenadvisors.com
production date:	April-June 2023
cover photo:	Fish catch in Saleh Bay © BGA Ltd/Imam Syuhada.
supported by:	#2022-74073 from the David and Lucile Packard Foundation and Application #00106835 of the Walton Family Foundation.

Feedback

The authors take responsibility for all errors herein, and warmly welcome feedback from all stakeholders to help us enhance this report.

blue-green ADVISORS LTD

Contents

Ringkasan Eksekutif

Meski tidak lagi mengadakan pertemuan formal, konsorsium perikanan Kakap Indonesia tetap menjunjung tinggi pentingnya kolaborasi dan berbagi pengetahuan di antara para mitranya. Pengamatan kami terhadap perikanan kakap menunjukkan masalah kritis seperti hak buruh, penangkapan ikan berlebihan (*overfished*), dan penipisan stok sumberdaya. Oleh karena itu, mengembalikan pengumpulan data dapat meningkatkan ketepatan penilaian dan memandu strategi manajemen yang efektif.

Data lokal Teluk Saleh menggarisbawahi potensi praktik pengelolaan yang berhasil, menyoroti pentingnya pengumpulan data regional. Namun, mengelola perikanan skala kecil menghadirkan tantangan tersendiri. Kompleksitas bentang alam ini memerlukan fokus yang lebih kuat pada kolaborasi dan pengambilan keputusan yang kuat di tingkat Wilayah Pengelolaan Perikanan (WPP).

Seperti perikanan demersal lainnya, perikanan kakap memiliki potensi pemulihan dengan rencana pengelolaan yang tersusun dengan baik. Hubungan antara stok dan habitat pantai dan lepas pantai, ditambah dengan pembagian sumber daya antara armada skala besar dan kecil, menekan perlunya pengelolaan terpadu dan prioritas hak akses.

Penilaian kami terhadap kondisi perikanan diTeluk Saleh mengemukan perpaduan antara praktik terbaik dan bidang yang harus diperhatian. Sisi positifnya, kami mencatat beragam dukungan keuangan, mekanisme pengaduan yang transparan, dan peningkatan manfaat bagi kelompok nelayan. Namun, permasalahan seperti kurangnya perjanjian kerja tertulis, persyaratan pinjaman yang tidak berdokumen, perlindungan asuransi yang tidak memadai, dan ketidakpatuhan terhadap standar keselamatan memerlukan perhatian yang lebih. Menggunakan inisiatif yang ada dan memfasilitasi pelatihan dapat membantu memperbaiki hal ini, sehingga menguntungkan nelayan dan keluarga mereka.

Replikasi strategi dan investasi tingkat provinsi yang berhasil dalam inisiatif pada tingkat provinsi dapat meningkatkan pengelolaan perikanan dalam skala yang lebih luas. Peraturan Perikanan Terukur (Measurable Fisheries/PIT) baru-baru ini, meskipun merupakan peluang untuk meningkatkan kepatuhan dan memerangi penangkapan ikan ilegal, namun memerlukan kehati-hatian dalam implementasi tersebut untuk mencegah potensi dampak buruk pada nelayan skala kecil.

Asosiasi Demersal Indonesia (ADI) dan konsorsium ikan kakap telah menunjukkan komitmen mereka terhadap praktik berkelanjutan, kepatuhan, pengumpulan data, dan pengurangan dampak terhadap spesies yang terancam punah. Selanjutnya ADI juga membangun hubungan dengan pembeli internasional, melakukan penjangkauan masyarakat, dan berkolaborasi dengan peneliti untuk berkontribusi pada keberlanjutan jangka panjang perikanan kakap dan kerapu.

Pada tahun 2024, anggota Konsorsium akan melakukan kajian komprehensif terhadap kondisi perikanan yang mencakup tahun 2019-2023. Evaluasi ini bertujuan untuk menghasilkan wawasan berharga tentang indikator keberhasilan perikanan kakap Indonesia. Dengan mengambil dan menganalisa data selama lima tahun, kita dapat memperoleh pelajaran berharga yang dapat membentuk masa depan pengambilan keputusan dan manajemen untuk ikan kakap dan perikanan terkait. Pada akhirnya, pelajaran ini dapat bermanfaat bagi puluhan juta anggota masyarakat pesisir, berkontribusi terhadap ketahanan pangan, gizi, dan mata pencaharian di berbagai pulau di kepulauan terbesar di dunia.

Temuan dan rekomendasi utama dalam publikasi ini menawarkan tinjauan tingkat tinggi tentang pengkajian perikanan kakap Indonesia dan kerja Konsorsium. Pendekatan pengumpulan data yang sangat menyeluruh namun mahal telah terbukti tidak dapat dibiayai secara berkelanjutan, yang menghambat beberapa perincian dalam laporan ini. Memperkuat pengumpulan data melalui platform inovatif dan berbiaya rendah dapat berkontribusi pada keberlanjutan jangka panjang dan pengelolaan perikanan kakap yang efektif dan sangat dianjurkan.

Transisi ke sistem berbasis kuota di Indonesia menghadirkan tantangan, terutama bagi nelayan skala kecil yang beroperasi di luar pelabuhan perikanan resmi. Pengelola perikanan perlu memastikan bahwa sistem baru tidak berdampak secara tidak proporsional terhadap para nelayan dan komunitas mereka.

Pembentukan Lembaga Pengelola Perikanan (LPP) merupakan langkah yang menjanjikan untuk memperbaiki pengelolaan perikanan di Indonesia. Namun, organisasi ini membutuhkan lebih banyak kekuatan pengambilan keputusan dan pendanaan di tingkat WPP untuk mengoptimalkan efektivitasnya.

Kesimpulannya, jelas bahwa pendekatan kolaboratif, investasi yang ditargetkan, dan kemampuan beradaptasi sangat penting untuk meningkatkan pengelolaan perikanan Indonesia. Dengan mengisi kesenjangan tata kelola, mempromosikan praktik berkelanjutan, dan memprioritaskan konservasi, kami dapat memastikan keberlanjutan jangka panjang

perikanan kakap dan kerapu. Kami tetap berkomitmen untuk melakukan analisis retrospektif menyeluruh pada tahun 2024, yang akan memberikan wawasan berharga tentang hubungan antara indikator dan keberhasilan perikanan kakap dan rajungan Indonesia, sehingga menginformasikan pengambilan keputusan dan pekerjaan perikanan di masa depan.

Laporan 'Keadaan Perikanan' tahunan keempat Konsorsium Kakap Indonesia mencakup pelaksanaan program Konsorsium dari tahun 2019 hingga 2022. Program ini didukung oleh David and Lucile Packard Foundation dan Walton Family Foundation [1,2,3], dengan dana pembiayaan bersama yang dialokasikan oleh United States Agency for International Development (USAID) kepada Yayasan Konservasi Alam Nusantara (mitra afiliasi The Nature Conservancy di Indonesia) untuk mendukung inisiatif tersebut. Perikanan kakap [4] adalah salah satu dari tiga tipikal perikanan Indonesia yang secara historis didukung melalui Konsorsium Kakap. Anggota Konsorsium bersejarah termasuk Ocean Conservancy; Kemitraan Perikanan Berkelanjutan (SFP); Fasilitas Pendanaan Bentang Alam Tropis (TLFF); Masyarakat Konservasi Margasatwa (WCS); Yayasan Konservasi Alam Nusantara (YKAN); dan Rekam Nusantara Foundation (RNF) dan The Indonesian Demersal Association (ADI).

Anggota Konsorsium bekerja secara independen di tiga WPP di Indonesia selatan dan barat daya (713, 718, dan 573). BGA mendukung Konsorsium untuk mengukur kemajuan menggunakan 18 indikator yang terkait dengan Teori Perubahan dan rencana kerja bersama yang disepakati bersama oleh anggota Konsorsium. Indikator-indikator ini termasuk dalam empat kategori:

- **Kondisi Kesehatan Perikanan**
- **Lembaga, Tata Kelola, Pengelolaan, dan Kebijakan**
- **Prakarsa Industri**
- **Komunikasi**

Selain itu, laporan Status Perikanan 2022 mencakup penilaian Hak Asasi Manusia dan tenaga kerja di Teluk Saleh, yang mencakup dua wewenang:

- **Perlindungan Hak Asasi Manusia dan tenaga kerja**
- **Pemenuhan hak untuk memperoleh perlakuan yang sama dan adil.**

1 Untuk detail lebih lanjut tentang publikasi ini dan meninjau data tahun 2019, lihat https://bit.ly/2019snappercoalitionbaselinereport.

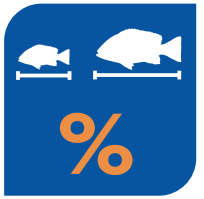
2 Untuk Kondisi Perikanan Kakap 2020, lihat https://bit.ly/snapperfisheryreport2020.

3 Untuk Perikanan Kakap 2021, lihat https://bit.ly/2021stateofthesnapperfishery.

4 Seperti dipakai dalam laporan ini, istilah 'perikanan kakap' merangkum Lutjanidae (ikan kakap), Epinephelidae (ikan kerapu), Sciaenidae, Lethrinidae (ikan lencam), Carangidae (ikan kuwe), dan Hemulidae.

Kondisi Kesehatan Perikanan – Indikator A, B, C, D

Kesehatan perikanan kakap dinilai dengan menggunakan empat indikator:



Indikator A: Rasio potensi pemijahan (SPR)(SPR). Tiga perwakilan WPP dipilih untuk penilaian tiga spesies kakap dan satu spesies kerapu. Kisaran SPR yang sehat terletak antara 30% dan 40%. Namun, spesies yang tumbuh lambat dan berumur panjang membutuhkan target SPR yang lebih tinggi. Saat ini, penangkapan ikan secara signifikan berlebihan, dan rencana pengelolaan yang komprehensif sangat dibutuhkan untuk menghentikan penurunan ini. Data lapangan yang dikumpulkan dari tahun 2019 hingga 2021 menunjukkan penurunan nilai SPR lintas spesies dan WPP, yang bukan pertanda baik dan dapat menyebabkan kepunahan lokal.

Indikator B: *Catch per unit effort* (CPUE). Ini dievaluasi untuk beberapa alat tangkap prioritas di DPI terpilih. Temuan CPUE sangat bervariasi karena faktor-faktor seperti ukuran alat tangkap, tenaga mesin kapal, dan penyesuaian hari penangkapan ikan. Tren masih diamati dengan pengumpulan data yang sedang berlangsung.

Indikator C: Kapasitas penangkapan ikan kakap. Hal ini diukur dengan menggunakan data dua tahunan dari tahun 2019 dan 2021. Kapal kecil dengan bobot kurang dari 5 gross ton (GT) mendominasi perikanan pada tahun 2021. Namun, terjadi peningkatan tekanan penangkapan oleh kapal berukuran kecil dan sedang di WPP 573 dan 713. , sehingga meningkatkan kapasitas penangkapan ikan

Indikator D: Penggunaan data pemantauan ikan tingkat nasional dan WPP. Kementerian Kelautan dan Perikanan (KKP) mengandalkan data perikanan CODRS dan KoBoToolbox untuk menginformasikan pengelolaan perikanan kakap. Namun, penghentian pendataan CODRS telah mengganggu kemampuan untuk menghasilkan laporan tingkat eksploitasi.

Lembaga, Tata Kelola, Pengelolaan, dan Kebijakan – Indikator E hingga M

Status kelembagaan, tata kelola, manajemen, dan kebijakan terkait perikanan kakap dinilai dengan menggunakan sembilan indikator:

Indikator E: Adopsi Rencana Pengelolaan Perikanan Kakap (RPP) Nasional. Hal ini tercapai lebih cepat dari jadwal pada tahun 2021. Strategi panen yang mempertimbangkan perbedaan regional dan isu lokal sangat penting untuk pengelolaan perikanan berkelanjutan di Indonesia.

Indikator F: Adopsi Strategi Panen Kakap dan Kerapu untuk setiap WPP prioritas. Ini telah dikonsultasikan dan diselesaikan untuk WPP 713 tetapi masih dalam peninjauan oleh Biro Hukum KKP.

Indikator G: Integrasi ilmu pengetahuan dan pengetahuan lokal ke dalam strategi pemanenan tingkat WPP. Hal ini dicapai melalui beberapa pertemuan di tahun 2022.

Indikator H: Sumber daya yang dialokasikan untuk kepatuhan di WPP 713, 718, dan 573. Kepatuhan dipantau oleh stasiun yang ditunjuk di bawah Direktorat Jenderal Pengawasan Sumber Daya Kelautan dan Perikanan (PSDKP).

Indikator I: Buku putih kebijakan yang didukung oleh pemangku kepentingan. Antara tahun 2019 dan 2022, beberapa kertas putih dikembangkan dan diintegrasikan ke dalam dokumen strategi panen untuk WPP 713 dan 573.

Indikator J: Dewan Konsultatif dan Panel Ilmiah WPP berfungsi dan mencapai tonggak sejarah. Direktorat Jenderal Perikanan Tangkap (DGCF) memberikan dukungan keuangan yang besar untuk kegiatan mereka.

Indikator K: Alokasi sumber daya untuk pengelolaan kakap Teluk Saleh. Alokasi sumber daya untuk pengelolaan kakap Teluk Saleh meningkat signifikan pada tahun 2022 dibandingkan tahun 2019.

Indikator L: Peningkatan manajemen pemangku kepentingan lokal dalam pengelolaan perikanan kakap di lokasi WCS. Ada kemajuan penting dengan kelompok perempuan di berbagai daerah pada tahun 2022.

Indikator M: Kelompok pengelolaan perikanan provinsi menunjukkan kemajuan menuju pengelolaan adaptif. Kelompok pengelolaan perikanan provinsi menunjukkan kemajuan menuju pengelolaan adaptif di lima lokasi fokus.

Fish catch in Saleh Bay © BGA Ltd/Imam Syuhada.

Prakarsa Industri – Indikator N hingga Q

Status industri perikanan kakap tahun 2022 dinilai dengan menggunakan empat indikator:

Indikator N: ADI telah menunjukkan kemajuan dengan mengadopsi rencana bisnis dan secara aktif mematuhi kode etik (CoC). Keanggotaan ADI bertambah menjadi 20 perusahaan pada tahun 2022, dengan tiga pendatang baru. Merangkul CoC yang ditujukan untuk mendorong praktik penangkapan ikan yang bertanggung jawab, organisasi mendorong anggotanya untuk mematuhinya dan berkontribusi pada Proyek Peningkatan Perikanan (FIP), sehingga mempromosikan pengelolaan perikanan yang lebih baik.

Indikator O: Kinerja positif dicapai untuk dua Fishery Improvement Project (FIP) yang komprehensif. Kemajuan substansial dicatat dalam dua FIP komprehensif pada tahun 2022. Proyek YKAN dan ADI terkait dropline groundfish dan gillnet ikan laut dalam, serta kakap dan kerapu Indonesia - longline dasar, dropline, trap, dan gillnet, semuanya mendapatkan peringkat A untuk kemajuan substansial. Ini merupakan peningkatan signifikan dari peringkat C ADI sebelumnya. Kedua FIP mencapai skor 54% dalam kategori hijau, yang menunjukkan praktik penangkapan ikan yang bertanggung jawab dan berkelanjutan.

Indikator P: Pemetaan rantai pasokan perikanan kakap merupakan aspek penting dari proyek CODRS, yang secara ekstensif menggunakan data tangkapan tingkat kapal. Data tersebut membantu melacak di mana produk berakhir di pasar, sehingga memberikan wawasan berharga tentang keberlanjutan perikanan. Namun, sejak proyek CODRS selesai pada tahun 2021, saat ini tidak ada data yang dapat dipercaya untuk memverifikasi asal tangkapan. Oleh karena itu penting untuk menerapkan mekanisme pemetaan rantai pasokan yang kuat, karena sekitar 80% pasar produk berada di Asia.

Indikator Q: Penerapan ketertelusuran yang efektif oleh perusahaan anggota FIP. Implementasi ketertelusuran yang efektif oleh perusahaan anggota FIP diuji melalui kemitraan antara YKAN dan tiga perusahaan (UD Damena, CV Indotropik, dan CV Sukses Hasil Alam Indo). Program pemantauan menilai parameter seperti legalitas kapal, penyerahan buku catatan, dan kepatuhan lacak balak. Sementara beberapa standar terpenuhi, legalitas kapal memerlukan perbaikan, menggarisbawahi perlunya mekanisme pemantauan yang lebih baik untuk kepatuhan hukum dan ketertelusuran yang efektif.

Komunikasi – Indikator R

Mengenai komunikasi, ada satu indikator:

Indikator R: Referensi media Indonesia tentang perikanan kakap berkelanjutan. There was a substantial increase in Indonesian media references to sustainable snapper fisheries in 2022. As many as 69 articles were published on this topic, marking a significant rise compared to 17 articles in 2020 and 28 in 2021. This is a 73% increase in publications on the subject. These articles significantly shape the ongoing discourse on snapper fishery management in Indonesia and serve as a vital resource for the Consortium's efforts to promote sustainable practices within the country's snapper fisheries. The rise in publications also indicates an impressive level of activity at both national and provincial levels concerning policy development and the establishment of harvest strategies in the WPP 713 and 573 regions.


Small-scale fishery actors in NTB. © BGA Ltd/Imam Syuhada

Melindungi Hak Asasi Manusia dan Buruh

Setelah memeriksa keberlanjutan dan tata kelola perikanan selama empat tahun terakhir, tim memutuskan untuk beralih ke pendekatan yang lebih terintegrasi untuk menilai perikanan. Unsur penting yang hilang dari laporan sebelumnya dimasukkan – dimensi hak asasi manusia dan hak tenaga kerja perikanan. Untuk mencapai hal ini, kami membangun prinsip-prinsip luar biasa yang ditetapkan oleh Monterey Bay, ILO 188, di antara hukum internasional lainnya. Dengan memanfaatkan alat Penilaian Tanggung Jawab Sosial (SRA) yang luar biasa dari Fishchoice, kami menyelaraskannya dengan undang-undang Indonesia dan realitas pengumpulan data di komunitas nelayan Indonesia dengan cara yang terhormat dan tepat. Upaya ini dipimpin oleh tim ahli Indonesia di bawah pimpinan Abdul Halim dari Center of Maritime Reform for Humanity (CMRH). Pendekatan yang diperbarui bertujuan untuk memberikan pemahaman yang lebih komprehensif dan akurat tentang keadaan perikanan, mengintegrasikan aspek lingkungan, ekonomi, dan sosial. Ini mencerminkan komitmen kami untuk mempromosikan keberlanjutan di semua aspek perikanan dan memastikan bahwa hak asasi manusia dan tenaga kerja diakui dan dijunjung tinggi.

Kondisi hak asasi manusia dan hak buruh di bidang perikanan dipahami dengan menelaah dua ranah yang berbeda.

Kajian yang dilakukan pada tahun 2022 untuk Teluk Saleh menunjukkan bahwa upaya dengan intensitas sedang diperlukan untuk meningkatkan hak asasi manusia dan tenaga kerja dalam perikanan kakap dan kerapu. Di antara 18 peserta yang disurvei, 13 berada pada risiko minimal pelanggaran hak-hak buruh (dikategorikan sebagai “hijau” atau risiko rendah), sementara lima berada pada beberapa risiko (dikategorikan sebagai “kuning” atau risiko sedang). Tidak ada peserta yang dinilai berisiko tinggi. Praktik terbaik untuk melindungi hak asasi manusia telah diidentifikasi, seperti memastikan akses ke berbagai opsi dukungan keuangan dan menetapkan mekanisme yang jelas dan efektif untuk mengatasi masalah yang muncul antara nelayan dan perantara seperti pembeli ikan. Namun, kekhawatiran tentang kurangnya perjanjian kerja formal, kondisi pinjaman yang tidak berdokumen, dan tidak adanya standar asuransi dan keselamatan untuk nelayan skala kecil juga muncul. Menerapkan inisiatif seperti Kebijakan Kartu Pelaku Usaha Kelautan dan Perikanan (KUSUKA), asuransi (BPJS), dan dukungan peningkatan kapasitas sangat penting untuk memajukan hak asasi manusia dan tenaga kerja dalam industri perikanan.

Proyek data CODRS yang dipimpin oleh YKAN berperan penting dalam mengumpulkan data pengelolaan perikanan utama dari 2019 hingga 2021, dengan kontribusi lokal dari WCS dan RNF mengisi kesenjangan dalam pengumpulan data tingkat provinsi. Sekarang setelah CODRS berhenti mengumpulkan data, kami berharap iterasi laporan di masa mendatang akan mengeksplorasi program-program yang meningkatkan inisiatif pengumpulan dan pemantauan data yang dipimpin pemerintah.

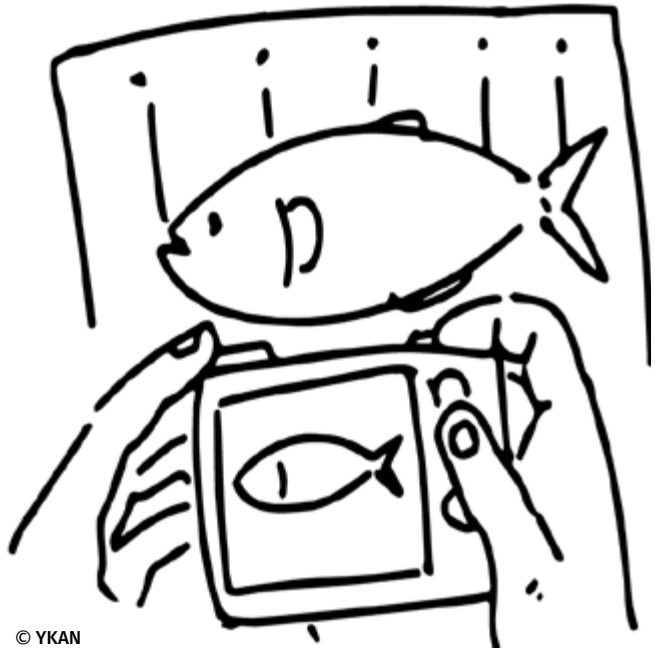
Pembentukan Dewan Pengelola WPP masih belum pasti, menimbulkan tantangan yang signifikan dalam mengelola spesies seperti ikan kakap yang melintasi batas provinsi. Tidak ada interaksi signifikan yang terbentuk antara pemangku kepentingan, ilmuwan, pengelola, dan Pemerintah Pusat, yang belum mengalokasikan sumber daya untuk pembentukan WPP. Anggota Konsorsium telah memberikan dukungan ilmiah dan kebijakan melalui upaya pengumpulan data tingkat WPP dan provinsi, membantu dalam mengembangkan dokumen pengelolaan perikanan seperti RPP dan strategi panen. Strategi jangka panjang diperlukan untuk mempertahankan upaya ini di luar proyek tertentu.

Selain itu, Pusat Penelitian Perikanan (PUSRISKAN) berperan penting dalam memberikan analisis dan saran ilmiah kepada pengelola perikanan di DGCF-KKP. Pemindahan personel ilmiah terkemuka baru-baru ini ke BRIN telah meninggalkan celah dalam dukungan dan saran ilmiah. Peluang untuk lebih terlibat dengan BRIN dan KKP merupakan peluang untuk dijajaki, terutama dalam kajian kebijakan dan praktik terbaik dalam pengelolaan perikanan.

Kabar baiknya, dengan pelonggaran pembatasan perjalanan dan pertemuan publik, acara publik yang berfokus pada pengelolaan dan keberlanjutan perikanan kakap dan kerapu telah dimulai kembali. Hal ini menyebabkan lonjakan publikasi dan liputan media tentang masalah ini, menunjukkan meningkatnya kesadaran dan minat pada praktik berkelanjutan, keterlibatan publik, dan pengembangan kebijakan dalam sektor perikanan negara. Tren positif ini menunjukkan komitmen yang berkembang untuk mempromosikan perikanan berkelanjutan dan mengembangkan kerangka kerja kebijakan yang efektif.

Crew-Operated Data Recording System (CODRS)

CORDS adalah metode pencatatan data perikanan yang dikembangkan oleh YKAN dan **diterapkan oleh nelayan untuk mencatat hasil tangkapan** selama melaut.



© YKAN

Fishing family in Less Village. © YKAN

Executive Summary

The Indonesia Snapper Consortium, while no longer holding formal meetings, continues to uphold the importance of collaboration and knowledge sharing amongst its partners. Our observations of the snapper fishery indicate critical issues such as labor rights, overfishing, and stock depletion. Hence, reinstating data collection can heighten the precision of assessments and guide effective management strategies.

Saleh Bay's localized data underscores the potential of successful management practices, shining a light on the significance of regional data collection. However, managing small-scale fisheries presents its challenges. The intricacies of these landscapes necessitate a stronger focus on collaboration and robust decision-making at the Fisheries Management Area level (*Wilayah Pengelolaan Perikanan* - WPP).

Like other demersal fisheries, snapper fisheries have the potential for recovery with a well-structured management plan. The connection between nearshore and offshore stocks and habitats, coupled with the sharing of resources between large and small-scale fleets, underscores the need for integrated management and prioritization of access rights.

Our human and labor rights assessment of Saleh Bay revealed a mix of commendable practices and areas of concern. On the positive side, we noted diverse financial support, transparent complaint mechanisms, and enhanced benefits for fisher groups. However, issues such as the lack of written work agreements, undocumented loan terms, inadequate insurance coverage, and non-adherence to safety standards require attention. Using existing initiatives and facilitating training can help rectify these areas, thereby benefiting fishers and their families.

The replication of successful provincial-level strategies and investment in provincial initiatives can improve fisheries management on a broader scale. The recent measurable fisheries (PIT) regulation, although an opportunity to enhance compliance and combat illegal fishing, requires careful implementation to prevent potential adverse impacts on small-scale fishers.

The Indonesian Demersal Association (ADI) and the Snapper Consortium have demonstrated their commitment to sustainable practices, compliance, data collection, and reducing impacts on endangered species. Further, engaging international buyers, conducting community outreach, and collaborating with researchers promise to contribute to the long-term sustainability of snapper and grouper fisheries.

In 2024, Consortium members will conduct a comprehensive review covering the years 2019-2023. This evaluation aims to yield valuable insights into the success indicators in the Indonesian snapper fisheries. By drawing on five years of data, we can learn valuable lessons that can shape the future of decision-making and management for snapper and related fisheries. Ultimately, these lessons can benefit tens of millions of coastal community members, contributing to food security, nutrition, and livelihoods across the numerous islands of the world's largest archipelago.

The key findings and recommendations in this publication offer a high-level overview of the Indonesian snapper fisheries assessment and the Consortium's work. An incredibly thorough but costly approach to data collection has proven not to be sustainably financeable, which has hindered some of the details in this report. Strengthening data collection through innovative and low-cost platforms can contribute to the long-term sustainability and effective management of the snapper fishery and is strongly recommended.

The transition to a quota-based system in Indonesia presents challenges, especially for small-scale fishers operating outside official fishing ports. Fisheries managers need to ensure the new system doesn't disproportionately impact these fishers and their communities.

The establishment of Fisheries Management Units (FMUs) is a promising step towards improving fisheries management in Indonesia. However, these organizations need more decision-making power and funding at the WPP level to optimize their effectiveness.

In conclusion, it's clear that a collaborative approach, targeted investments, and adaptability are crucial to improve Indonesian fisheries management. By filling governance gaps, promoting sustainable practices, and prioritizing conservation, we can ensure the long-term sustainability of snapper and grouper fisheries. We remain committed to conducting a thorough retrospective analysis in 2024, which will provide valuable insights into the connection between indicators and success in the Indonesian snapper and blue swimming crab fisheries, thereby informing future decision-making and fisheries work.

The fourth annual 'State of the Fishery' report of the Indonesia Snapper Consortium covers the implementation of the Consortium's program from 2019 to 2022. This program is supported by the David and Lucile Packard Foundation and Walton Family Foundation [1, 2,3] with co-financing funds allocated by the United States Agency for International Development (USAID) to Yayasan Konservasi Alam Nusantara (the affiliate partner of The Nature Conservancy in Indonesia) in support of the initiative. The snapper fishery [4] is one of three archetypal Indonesian fisheries that were historically supported through the Snapper Consortium. Historic Consortium members include the Ocean Conservancy, Sustainable Fisheries Partnership (SFP), the Tropical Landscapes Finance Facility (TLFF), Wildlife Conservation Society (WCS), Yayasan Konservasi Alam Nusantara (YKAN), Rekam Nusantara Foundation (RNF), and the Indonesian Demersal Association (ADI).

The Consortium members work independently across three WPPs in southern and southwestern Indonesia (713, 718, and 573). Blue-Green Advisors Ltd (BGA) supports the Consortium to measure progress using 18 indicators related to a Theory of Change and a joint work plan that is mutually agreed upon by Consortium members. These indicators fall under four categories:

- **Fishery Health**
- **Industry Initiatives**
- **Institutions, Governance, Management, and Policy**
- **Communications**

In addition, the 2022 State of Fishery report includes a human and labor rights assessment of Saleh Bay, supported by Abdul Halim from the the Center of Maritime Reform for Humanity (CMRH) covering two domains:

» **Protection of human rights and labor rights**

» **Fulfillment of the right to obtain equal and fair treatment**

1 For more details on the history of this publication and to review the 2019 data, see https://bit.ly/2019snappercoalitionbaselinereport.

2 For the 2020 State of the Snapper Fishery, see https://bit.ly/snapperfisheryreport2020.

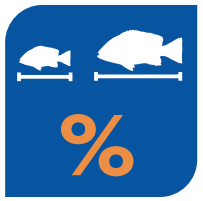
3 For the 2021 State of the Snapper Fishery, see https://bit.ly/2021stateofthesnapperfishery.

4 As used in this report, the term 'snapper fishery' applies broadly to include Lutjanidae (snappers), Epinephelidae (groupers), Sciaenidae (croakers), Lethrinidae (emperors), Carangidae (jacks and trevallies), and Hemulidae (grunts).

Fishery Health – Indicators A, B, C, D

The health status of the snapper fishery is evaluated using four indicators:

Indicator A: Spawning potential ratio (SPR). Three representative WPPs were chosen for assessment of three snapper species and one grouper species. A healthy SPR range lies between 30% and 40%. However, slow-growing, long-living species require higher SPR targets. Currently, the fishery is significantly overfished, and a comprehensive management plan is needed urgently to halt this decline. Field data collected from 2019 to 2021 shows a decrease in SPR values across species and WPPs, which is not a good sign and can lead to local extinctions.



Indicator B: Catch per unit effort (CPUE). This was evaluated for some priority fishing gears across selected fishing grounds. The CPUE findings varied considerably due to factors like gear size, boat engine power, and fishing days adjustments. Trends are still being observed with ongoing data collection.

Indicator C: Snapper fishing capacity. This was measured using biennial data from 2019 and 2021. Small boats of less than 5 gross ton (GT) dominated the fishery in 2021. However, there was an increase in fishing pressure by small- and medium-sized boats in WPPs 573 and 713, resulting in increased fishing capacity.

Indicator D: Use of national- and WPP-level fish monitoring data. The Ministry of Marine Affairs and Fisheries (MMAF) relies on the Community-based Data Recording System (CODRS) and KoBoToolbox's fisheries data to inform snapper fishery management. However, the discontinuation of CODRS data collection has disrupted the ability to generate reports on exploitation rates.

Institutions, Governance, Management, and Policy – Indicators E through to M

The status of institutions, governance, management, and policies related to the snapper fishery was assessed using nine indicators:

Indicator E: Adoption of a National Snapper Fishery Management Plan. This was accomplished ahead of schedule in 2021. Harvest strategies that consider regional differences and local issues are vital for sustainable fisheries management in Indonesia.

Indicator F: Adoption of Snapper and Grouper Harvest Strategies for each priority WPP. These have been consulted and finalized for WPP 713 but are still under review by the MMAF Legal Bureau.

Indicator G: Integration of science and local knowledge into the WPP-level harvest strategies. This was achieved through several meetings in 2022.

Indicator H: Resources allocated to compliance in WPP 713, 718, and 573. Compliance is monitored by designated stations under the Directorate General of Marine and Fisheries Resources Surveillance (PSDKP).

Indicator I: Policy white papers endorsed by stakeholders. Between 2019 and 2022, several white papers were developed and integrated into the harvest strategy documents for WPP 713 and 573.

Indicator J: WPP Council Consultative and Scientific Panels functional and achieving milestones. The Directorate General of Capture Fishery (DGCF) provides substantial financial support for their activities.

Indicator K: Increase in resource allocation for Saleh Bay snapper management. Resource allocation for Saleh Bay snapper management increased significantly in 2022 compared to 2019.

Indicator L: Improved local stakeholder management in snapper fishery management in WCS sites. There was notable progress with women's groups in various regions in 2022.

Indicator M: Provincial fisheries management groups demonstrating progress towards adaptive management. Provincial fisheries management groups made progress towards adaptive management in the five focal sites.

Fish catch in Saleh Bay © BGA Ltd/Imam Syuhada.

Industry Initiatives – Indicators N through to Q

The status of the snapper fishery industry for 2022 was evaluated using four indicators:

Indicator N: The Indonesian Demersal Association (ADI) adopting a business plan and actively complying with a code of conduct. ADI has shown progress by adopting a business plan and actively complying with a code of conduct (CoC). The ADI's membership expanded to 20 companies in 2022, with three new entrants. Embracing a Code of Conduct aimed at fostering responsible fishing practices, the organization is encouraging its members to adhere to it and contribute to Fisheries Improvement Projects (FIPs), thereby promoting better fisheries management.

Indicator O: Positive performance achieved for the two comprehensive Fishery Improvement Projects (FIPs). Substantial advancement was noted in the two comprehensive FIPs in 2022. YKAN and ADI's projects concerning deepwater groundfish dropline trap and gillnet, and Indonesia snapper and grouper - bottom longline, dropline, trap, and gillnet, all earned an A rating for substantial progress. This is a significant step up from ADI's previous C rating. Both the FIPs attained a 54% score in the green category, which suggests responsible and sustainable fishing practices.

Indicator P: Mapping of snapper supply chains. The mapping of snapper supply chains is a vital aspect of the CODRS project, which extensively uses vessel-level catch data. The data assists in tracing where the product ends up in the market, thereby giving valuable insights into the sustainability of fisheries. However, since the CODRS project concluded in 2021, there is currently no reliable data to verify catch origins. It's therefore critical to implement robust supply chain mapping mechanisms, as around 80% of the product market lies in Asia.

Indicator Q: Effective application of traceability by FIP member companies. The effective implementation of traceability by FIP member companies was tested through a partnership between YKAN and three companies (UD Damena, CV Indotropik, and CV Sukses Hasil Alam Indo). The monitoring program assessed parameters such as vessel legality, logbook submission, and chain of custody adherence. While some standards were met, vessel legality requires improvement, underscoring the need for enhanced monitoring mechanisms for legal compliance and effective traceability.

Communications – Indicator R

There is one indicator for this aspect of the snapper work:

Indicator R: Indonesian media reference to sustainable snapper fisheries. There was a substantial increase in Indonesian media references to sustainable snapper fisheries in 2022. As many as 69 articles were published on this topic, marking a significant rise compared to 17 articles in 2020 and 28 in 2021. This is a 73% increase in publications on the subject. These articles significantly shape the ongoing discourse on snapper fishery management in Indonesia and serve as a vital resource for the Consortium's efforts to promote sustainable practices within the country's snapper fisheries. The rise in publications also indicates an impressive level of activity at both national and provincial levels concerning policy development and the establishment of harvest strategies in the WPP 713 and 573 regions.

Small-scale snapper fleet in NTB. © BGA Ltd/Imam Syuhada

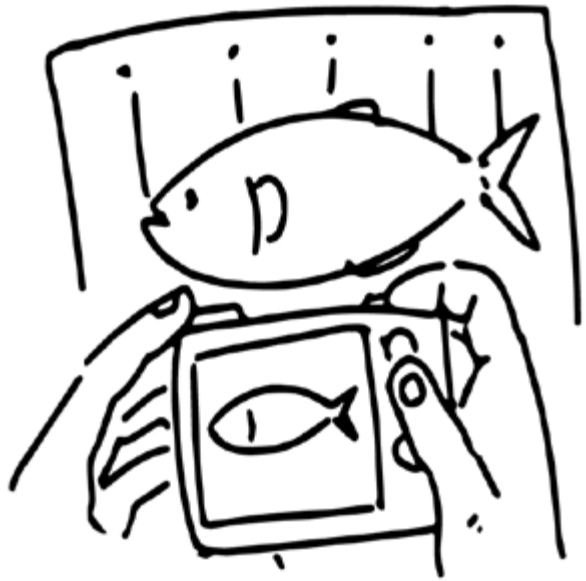
Safeguarding Human and Labor Rights

After examining the sustainability and governance of the fishery for the past four years, the team decided to shift towards a more integrated approach to assess the fishery. A critical missing element from previous reports was incorporated – the human and labor rights dimensions of the fishery. To achieve this, we built on the excellent principles laid out by Monterey Bay, ILO 188, among other international laws. Utilizing Fishchoice's remarkable Social Responsibility Assessment (SRA) tool, we harmonized it with Indonesian laws and the realities of collecting data in Indonesian fishing communities in a respectful and appropriate manner. This effort was led by a team of Indonesian experts under the leadership of Abdul Halim from the Center of Maritime Reform for Humanity (CMRH). The updated approach aims to provide a more comprehensive and accurate understanding of the fishery's state, integrating environmental, economic, and social aspects. It reflects our commitment to promoting sustainability in all aspects of the fishery and ensuring that human and labor rights are recognized and upheld.

The condition of human and labor rights in the fishery is understood by examining two distinct domains.

The assessment conducted in 2022 for Saleh Bay indicates that efforts of moderate intensity are required to enhance human and labor rights within the snapper and grouper fishery. Among the 18 participants surveyed, 13 are at a minimal risk of labor rights violations (categorized as "green" or low risk), while five are at some risk (categorized as "yellow" or medium risk). None of the participants were assessed as high risk. Best practices to protect human rights were identified, such as ensuring access to a variety of financial support options and establishing clear and effective mechanisms for addressing issues that arise between fishers and intermediaries like fish buyers. However, concerns about the lack of formal employment agreements, undocumented loan conditions, and the absence of insurance and safety standards for small-scale fishers were also raised. Implementing initiatives like the Marine and Fisheries Business Actor Card Policy (KUSUKA), insurance (BPJS), and capacity-building support is crucial for advancing human and labor rights within the fishing industry.

Fishing family in Less Village. © YKAN



Data capture method using CODRS. © YKAN

The CODRS data project led by YKAN was instrumental in gathering key fisheries management data from 2019 to 2021, with local contributions from WCS and RNF filling gaps in provincial-level data collection. Now that the CODRS has stopped collecting data, we hope that future iterations of the report will explore programs that enhance government-led data collection and monitoring initiatives.

The establishment of WPP Management Councils remains uncertain, posing a significant challenge in managing species like snapper that cross all provincial borders. No significant interface has been formed among stakeholders, scientists, managers, and the Central Government, which hasn't allocated resources for the establishment of WPPs. Members of the Consortium have provided scientific and policy support through WPP- and provincial-level data collection efforts, assisting in developing fisheries management documents like the RPP and harvest strategy. A long-term strategy is needed to maintain these efforts beyond specific projects.

Moreover, the Center for Fisheries Research (PUSRISKAN) is pivotal in offering scientific analysis and advice to the fisheries manager at the DGCF-MMAF. The recent transfer of leading scientific personnel to the National Research and Innovation Agency (BRIN) has left a gap in scientific support and advice. The opportunity for more engagement with BRIN and MMAF is an opportunity to explore, especially in the review of policies and best practice in management of fisheries.

The good news is that with the easing of travel and public gathering restrictions, public events focusing on the management and sustainability of snapper and grouper fisheries have restarted. This has led to a surge in publications and media coverage on the subject, demonstrating a growing awareness and interest in sustainable practices, public engagement, and policy development within the country's fisheries sector. This positive trend represents a growing commitment to promoting sustainable fisheries and developing effective policy frameworks.

About This Report

This is the fourth annual 'State of the Fishery' report on the Indonesian snapper fishery, spanning the years 2019 to 2022. This collaborative effort, funded by the David and Lucile Packard Foundation (Packard Foundation) and the Walton Family Foundation (WFF) for the period of 2020-2023, is a testament to the power of partnership in working towards sustainable fisheries management. In 2024, a comprehensive final report will be produced, reflecting on the five-year span of snapper data collection and drawing conclusive insights.

The report amalgamates data gathered from January to December 2022 and incorporates insights from a broad array of sources. Key contributors to this report include members of the Snapper Consortium such as the Ocean Conservancy, Sustainable Fisheries Partnership (SFP), Tropical Landscapes Finance Facility (TLFF), Wildlife Conservation Society (WCS), Yayasan Konservasi Alam Nusantara (YKAN - the affiliate partner of The Nature Conservancy in Indonesia), Rekam Nusantara Foundation (RNF), and the Indonesian Demersal Associaion (ADI).

Our goal with this report is to foster dialogue and shared learning among donors, implementers, and stakeholders, thus facilitating informed decision-making for sustainable fisheries management. Partners participated in the validation and discussion of the initial findings throughout February and March 2022, further enriching the report's contents.

We express our sincere appreciation to all contributing partners for their generous sharing of data and their invaluable feedback. While every effort has been made to ensure accuracy, the authors assume responsibility for any inadvertent errors that may have occurred. We welcome constructive feedback from all stakeholders and partners to continuously refine and enhance future editions of this report.

Fish catch in NTB. © BGA Ltd/Imam Syuhada

Snapper Fishery Indicators


Snapper catch. ©BGA Ltd/Imam Syuhada

The indicators [5] presented below were generated and designed during a series of consultations held in 2022 amongst the members of the Indonesia Snapper Consortium. Consortium members include Ocean Conservancy, SFP, TLFF, WCS, YKAN, RNF, and ADI collaborating with USAID, Packard Foundation, and WFF.

1. Fishery Health
2. Institutions, Governance, Management, and Policy
3. Industry Initiatives
4. Communications

These indicators intend to:

- Track progress, evaluate effectiveness, and showcase lessons from the implementation of the Snapper Initiative across the Consortium;
- Align methods used for monitoring and evaluation;
- Capture and integrate learnings into the strategies of both implementers and donors;
- Assist with monitoring, evaluation, and learning for implementing partners and the donors (USAID, Packard Foundation, and WFF); and
- Provide proxies that allow for tracking and adaptive learning for the Consortium's Theory of Change (TOC) for the fishery.

While there is much historical data, an objective of this report is to collate all the Consortium members' data to provide a snapshot of the fishery that allows for a thorough review of the dataset and progress against the backdrop of the Consortium's TOC and joint work plan.

In addition to the list of indicators above, the 2022 State of Fishery report includes a human and labor rights assessment of Saleh Bay, covering two domains to assess the opportunities and challenges within the employment landscape of snapper fisheries sector in Indonesia:

1. Protection of human and labor rights
2. Fulfillment of the right to obtain equal and fair treatment

5 Taken from latest Theory of Change and meetings conducted in July and October 2019, and January 2020.

Sites and Responsible Organizations

The indicators track outputs from grants made in 2019 through the end of 2023.

The snapper fishery covers most of Indonesia's immense exclusive economic zone (EEZ). These indicators focus on a subset of the Indonesian EEZ surrounding the provinces of West Nusa Tenggara and North Maluku (Table 1) [6].

Table 1. Sites and Consortium partners providing primary data

SITES	RESPONSIBLE ORGANIZATIONS [7]
National EEZ	YKAN, TLFF, WCS, SFP, ADI
WPP 713 (geographic locations in West Nusa Tenggara – Saleh Bay, Alas Strait)	YKAN, WCS, RNF
WPP 718	YKAN
WPP 573 (geographic locations in West Nusa Tenggara - Alas Strait, Cempi Bay, Waworada Bay and Sape Strait)	YKAN, WCS, RNF

▶▶ **Note:** The data covers all indicators spread across the three WPPs (713, 718 and 573)

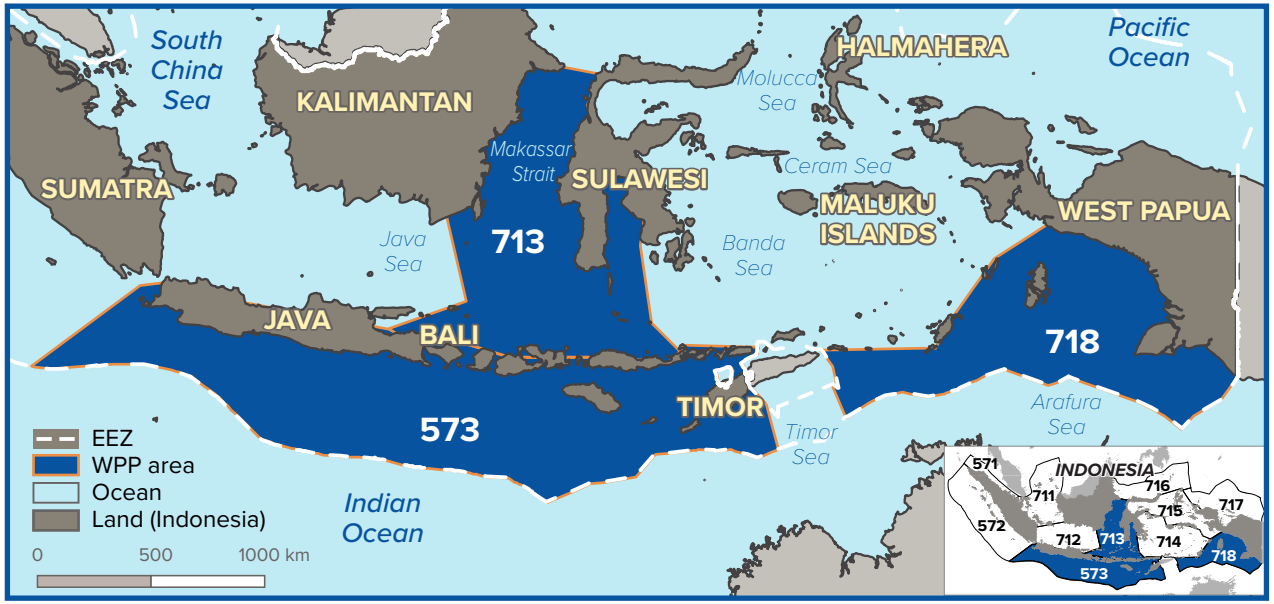
6 To access the full indicators reporting sheet and document articulating the indicators please go to 2022 Snapper Indicators.

7 YKAN undertook comprehensive data collection (2019-2021) in all of Indonesia's WPPs across different fishing gears (e.g., drop lines, longlines, traps, gillnets) and gear sizes, and across four vessel size categories: (1) nano (<5 GT), (2) small (5-10 GT), (3) medium (>10-30 GT) and (4) large (>30 GT).

WCS focuses on three geographies in West Nusa Tenggara Province: (1) Saleh Bay, (2) Cempi Bay, Waworada Bay, and Sape Strait, and (3) Alas Strait.

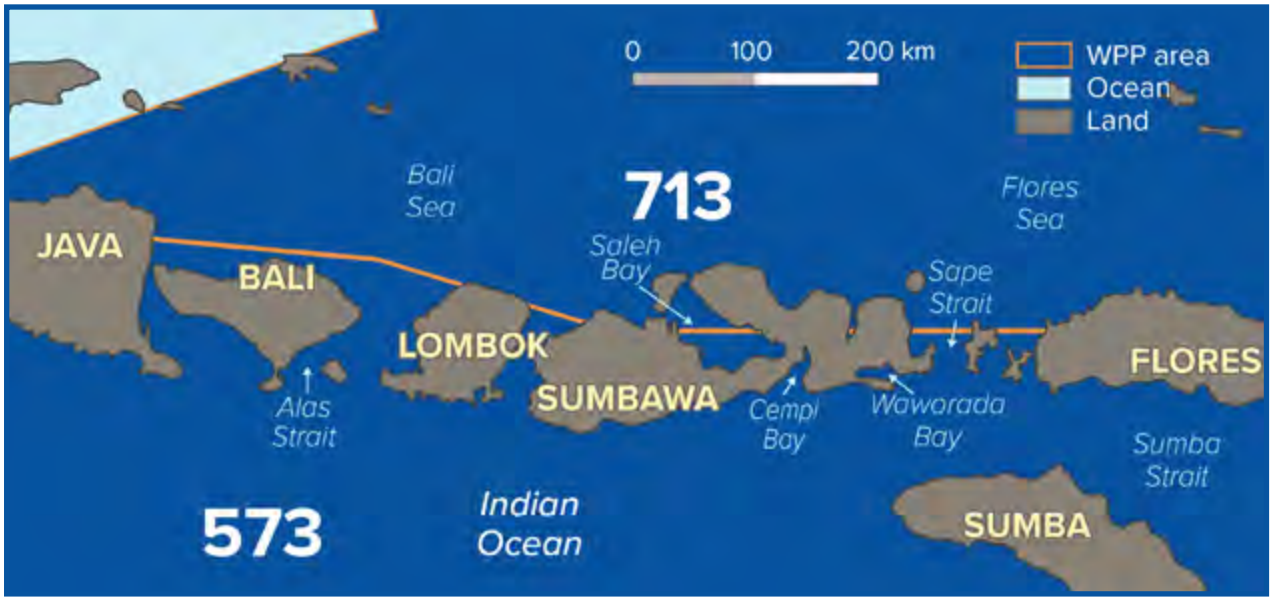
Fish stock data collection directly interfaces with the Ministry of Marine Affairs and Fisheries (MMAF) Center for Fisheries Research Pusriskan (Pusat Riset Perikanan) through its Marine Fisheries Research Center BRPL (Balai Riset Perikanan Laut).

Sites



▲ *Figure 1. Geographical location of WPP 573, 713 and 718*

▼ *Figure 2. Geographical location of sites in WPP 573 and 713, West Nusa Tenggara (NTB)*



Sources: Land – Natural Earth Data. Consulted on 2020-06-25; Fisheries Management Units – SSIC (2018). Fisheries Management Areas – Republic of Indonesia; Administrative boundaries and villages – GADM database, version 3.4, April 2018; EEZ – Flanders Marine Institute (2016). Maritime Boundaries Geodatabase, version 1.

% SPR

Data from YKAN Crew-Operated Data Recording System (CODRS) and WCS integrated into the MMAF-BRPL portal system

Annual (quarterly full trend data consolidated annually in the 1st quarter of the succeeding year)

Fishery Health

Spawning Potential Ratio (SPR) indicating stock status (Indicator A)

The Spawning Potential Ratio (SPR) is a crucial metric that the Snapper Consortium utilizes to monitor the health of the snapper stock effectively. It serves as an index of recruitment to the snapper fishery, representing the unfished spawning potential preserved under the Snapper Harvest Strategy. However, it's crucial to note that the calculation methodologies for this key indicator of stock status vary between YKAN and WCS.

YKAN employs a unique method that is rooted in the Indonesian Fisheries Information System (I-Fish) community's automatic length-frequency distribution reporting system. This approach, which enables species-specific, length-based assessment of the fishery, incorporates elements from the catch-length frequencies surrounding a concept akin to length-based SPR (LBSPR). These elements include (a) minimum size as traded, (b) proportion of immature fish in the catch, (c) current exploitation level, (d) proportion of mega-spawners in the catch, and (e) SPR.

Conversely, WCS employs the LBSPR assessment method proposed by Hordyk et al. (2015). This approach compares the length composition of adult catches to local estimates of the size at first maturity (L50) using estimates of life history ratios (LHR): L50/L-infinity and M/k. Here, L50 is the length at which 50% maturity is achieved, L-infinity is the asymptotic size as determined by the von Bertalanffy growth equation, M denotes the rate of natural mortality, and k represents the Brody growth coefficient, as defined by the von Bertalanffy growth equation[8].

8 Hordyk, A., Ono, K., Valencia, S., Loneragan, N.R., and Prince, J. 2014. "A novel length-based empirical estimation method of spawning potential ratio (SPR), and tests of its performance, for small-scale, data-poor fisheries". https://doi.org/10.1093/icesjms/fsu004

2022 Status

Three snapper species (*Pristipomoides multidens*, *Lutjanus malabaricus*, and *Aphareus rutilans*) and one grouper species (*Epinephelus areolatus*) were selected by the Consortium from the priority WPPs as somewhat representative of the fishery. According to the health rating system by Prince et al. (2015), these species are in a poor state across all WPPs, with most stocks falling below the point of impaired recruitment. Our 2021 assessment indicated that the potential implementation of a recovery program in WPP 713 is hampered by the high number of smaller vessels operating in the area. Additionally, the observed decline in SPR for *A. rutilans* in WPP 573 is concerning. While recovery is achievable for the snapper stocks, these species are characterized by slow growth rates and late maturity, requiring multiple decades to recover.

In general, an SPR between 30 to 40 percent is indicative of a fair stock status. However, the longer-living snapper species tend to require higher SPR targets. None of the species examined in this study are near a fair stock status, underlining the urgent need for effective management measures and constraints. Failing to implement these measures will likely result in a further decline in stock status.

Saleh Bay

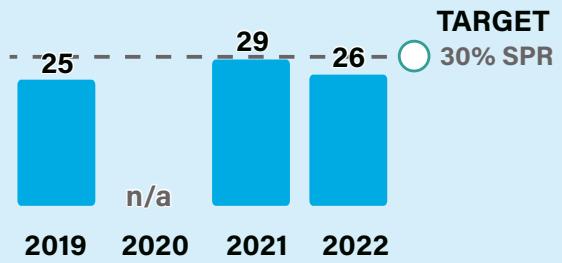


Figure 3. Indicator A – 2022 SPR for L. malabaricus *in Saleh Bay compared to 2019 baseline, 2021, and 2023 target*

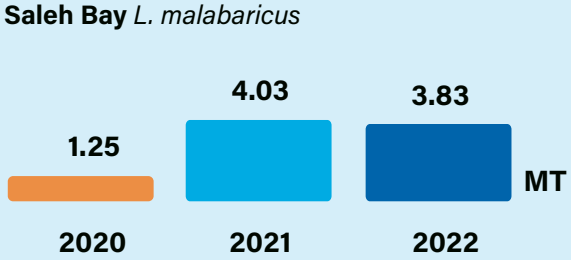


Figure 4. L. malabaricus *production (metric ton) for Saleh Bay*

% SPR

Data from YKAN Crew-Operated Data Recording System (CODRS) and WCS integrated into the MMAF-BRPL portal system

Annual (quarterly full trend data consolidated annually in the 1st quarter of the succeeding year)

WPP level

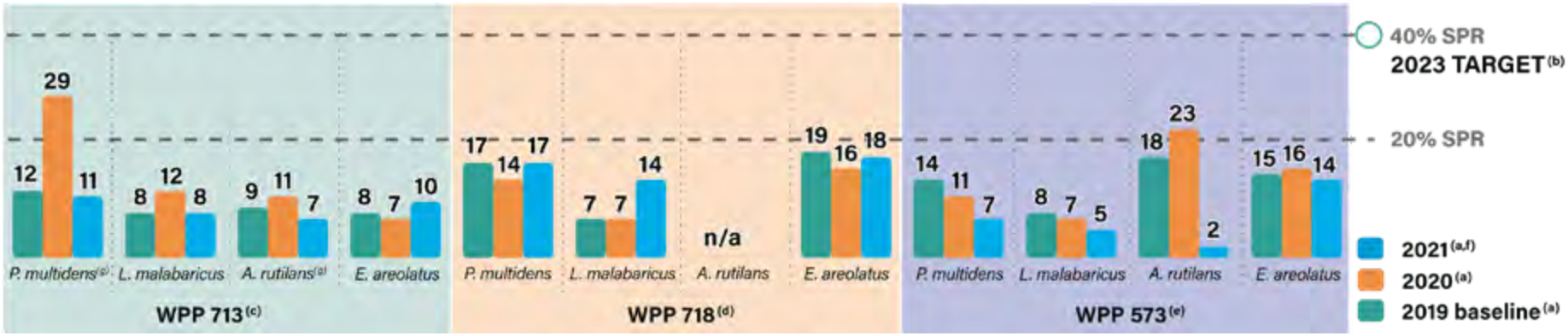


Figure 5. Indicator A - 2021 SPRs for snappers compared to 2019 (baseline), 2020 and 2023 target

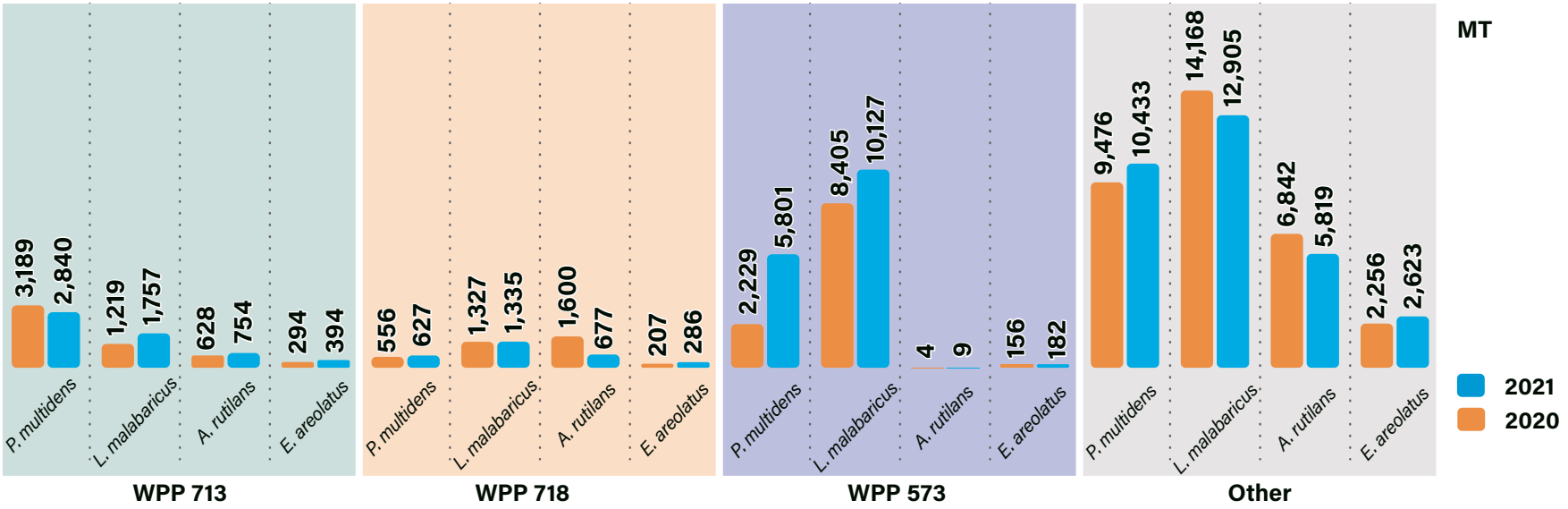


Figure 6. Top four species production (in metric ton) for WPPs 713, 718, and 573 and eight other WPPs

Notes:

(a) YKAN changed its formula for calculating SPR at the end of 2020 based on updated life history parameters of the species. The 2020 SPRs were calculated using the new formula. Accordingly, the baseline SPRs (2019) were recalculated and updated to account for this change (i.e., the 2019 values shown here were revised from those presented in the 2019 State of the Fishery Report). (YKAN Snapper Technical Report, Section 2.3, 23 February 2021). All values are approximate and do not include error bars.

(b) The target is stated as "SPR ... stabilized by 2023 and moving towards 40%"

(c) Mous, IGede & Pet. 2020. Assessment of Snapper Fishery in WPP 713 (Draft). TNC-IFPC. BRPLDemersalWPP713.pdf

(d) Mous, IGede & Pet. 2020. Assessment of Snapper Fishery in WPP 718 (Draft). TNC-IFPC. BRPLDemersalWPP718.pdf

(e) Mous, IGede & Pet. 2020. Assessment of Snapper Fishery in WPP 573 (Draft). TNC-IFPC. BRPLDemersalWPP573.pdf

(f) Trends are not interpretable for data from 2020 to 2021 as the 2021 data do not represent all fleet segments (YKAN has been winding down the monitoring program) and differences may be caused by sampling technicalities. 2021 data source reports are available at this link: https://kkp.go.id/brsdm/brpl/page/5676-kajian-stok-demersal.

(g) Species *A. rutilans* and *P. multidens* are caught by all types of boat and all kinds of fishing gears. But for fishing gear, *A. rutilans* is caught mostly by dropline.

% SPR

Data from YKAN Crew-Operated Data Recording System (CODRS) and WCS integrated into the MMAF-BRPL portal system

Annual (quarterly full trend data consolidated annually in the 1st quarter of the succeeding year)

Fishery Health

Catch Per Unit Effort (CPUE) for a subset of priority fishing gears in selected fishing grounds (Indicator B)

CPUE [9] is the rate at which snappers are caught and is used to provide an index of stock abundance. It can be calculated using the catch (kg) of snappers taken by the number of hooks set per day of fishing, or per gross ton (GT) of vessel capacity per day. Representative sub-sampling of the main fishing gears [10] in each WPP (713, 718, and 573) provides an estimate of the level of effort applied to the fishery. For future iterations of this report, collective pooling of the raw data and the application of a single analysis method will be done to ensure standardization of the results across the different fleets and allow for cross-site comparisons.

2022 Status

The current data set is too inconsistent to draw any concrete trends, and a statistically significant trend analysis necessitates at least 4-5 years of data. Standardization of calculation parameters and methods is crucial for conducting valid comparisons. Furthermore, there is a glaring absence of data to evaluate the CPUE status, as data collection ceased in 2021.

The available data indicates that the Saleh Bay fishery is undergoing a downturn in several key metrics as of 2022. Notably, SPR, CPUE, and overall catch levels have all exhibited signs of decline. This declining trend in key indicators emphasizes the urgent need for effective management strategies and the resumption of consistent data collection to enable accurate assessment and ensure sustainable practices within the fishery.

9 CPUE (Catch Per Unit Effort) does not provide a complete picture of a fishery. Generally, CPUE data are utilized to track trends in biomass over extended periods. However, as an isolated metric, CPUE is of little significance and can't be compared across sites. The metric depends heavily on a multitude of contextual details such as the targeted species, the fishing techniques employed, local conditions, and fishing pressure. Substantial timelines of CPUE data trends are required before drawing conclusions—typically a minimum of 5 to 10 years.

The value in presenting and tracking CPUE lies in the discussions revolving around the factors influencing the trend. These factors include pricing, price incentives, fishing behavior, gear types, technology advancements, and other modifications to boats and fishing activities. Such conversations can elevate CPUE to a valuable indicator status. It's crucial to interpret CPUE within this broader context, making it an instrumental piece of the puzzle in understanding a fishery's health and sustainability.

10 While not reported here, CPUE data for trap, bottomset line, gillnet and mixed gears were also collected and are available in the full indicator dataset.

kg/per GT/per day by species for a representative subsample presented in time chart per gear showing trends

YKAN CODRS and WCS data

Annual (quarterly full trend data consolidated annually in the last quarter of the year)

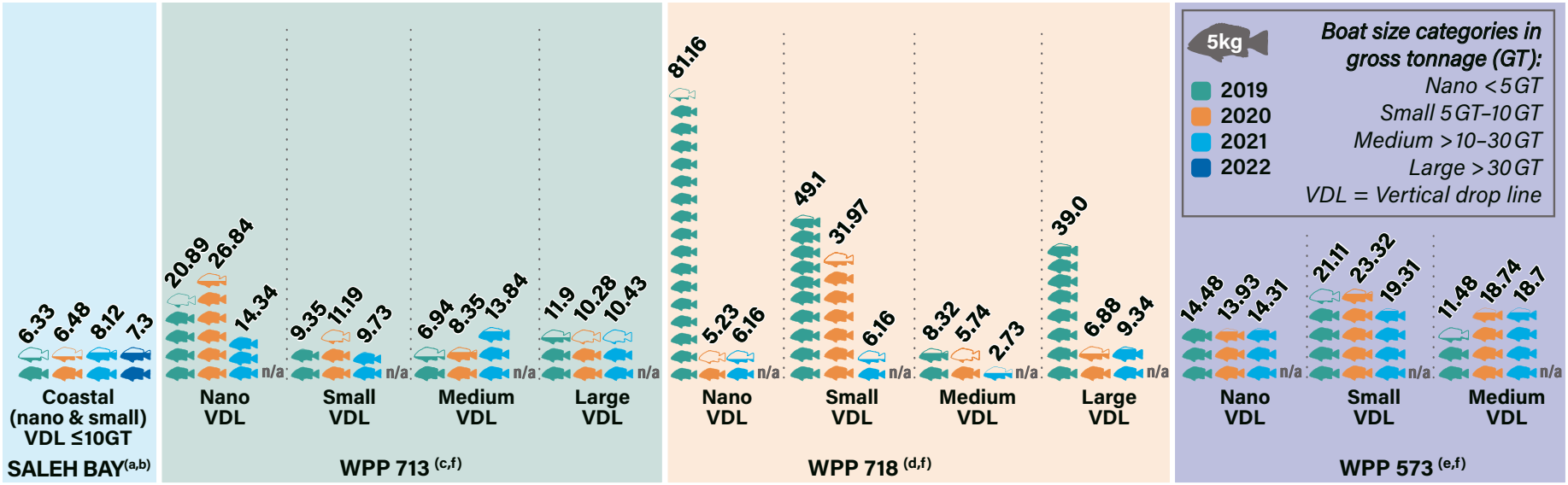


Figure 7. Indicator B - 2022 CPUE for snapper (kg per GT per day) using vertical drop line (VDL) in Saleh Bay compared to 2019 baseline, 2020 and 2021, and 2021 CPUE in WPP 713, 718 and 573 compared to 2019 baseline and 2020 (no comparable data in 2022)

Notes:

(a) This is using average method / nominal CPUE. For snapper only.

(b) 2019 and 2020 data for Saleh Bay was adjusted by WCS using the Fishing Power Index for speargun as a standard

(c) IFishSnapperWPP713_data 2020.pdf

(d) IFishSnapperWPP718_data 2020.pdf

(e) IFishSnapperWPP573_data 2020.pdf

c) Trends are not interpretable for data from 2020 to 2021 as the 2021 data do not represent all fleet segments (YKAN have been winding down the monitoring program) and differences may be caused by sampling technicalities.

Total fishing capacity (gross tonnage) for snapper, calculated as follows: No. of boats by size category x median GT (MGT) [a]

YKAN data with Saleh Bay data from WCS

Biennial with a report in the first quarter of the next year

Fishery Health

Fishing capacity for snapper (Indicator C)

This indicator tracks the estimated total capacity in gross tonnage of snapper fishing vessels. It is based on a biennial Indonesia-wide survey of the snapper fishery fleet.

2022 Status

Fishing capacity serves as a biennial indicator, with the next evaluation scheduled for 2023. The most recent assessment in 2021 depicted the variance in boat sizes between 2019 and 2021 across different WPPs. This data underscored a significant prevalence of small boats under 5GT in the fishery.

However, the presence of seasonal fishing boats complicates the estimation and reduction of the snapper fishing effort. This complexity arises because these vessels operate on a seasonal basis and do not exclusively target snapper.

Despite a 19% reduction in overall fishing capacity, a decrease in fishing was observed solely in WPP 713. Notably, the fleet shifted its fishing activities to WPP 573 and WPP 718. This transition aligns with the noted declines in fish health under Indicator A, implying enhanced overfishing in the newly targeted regions. This highlights the need for a country wide management system.

Total fishing capacity in the snapper fishery (all-year and seasonal) in WPP 573, 718 and 713, and eight other WPPs (all gear types)

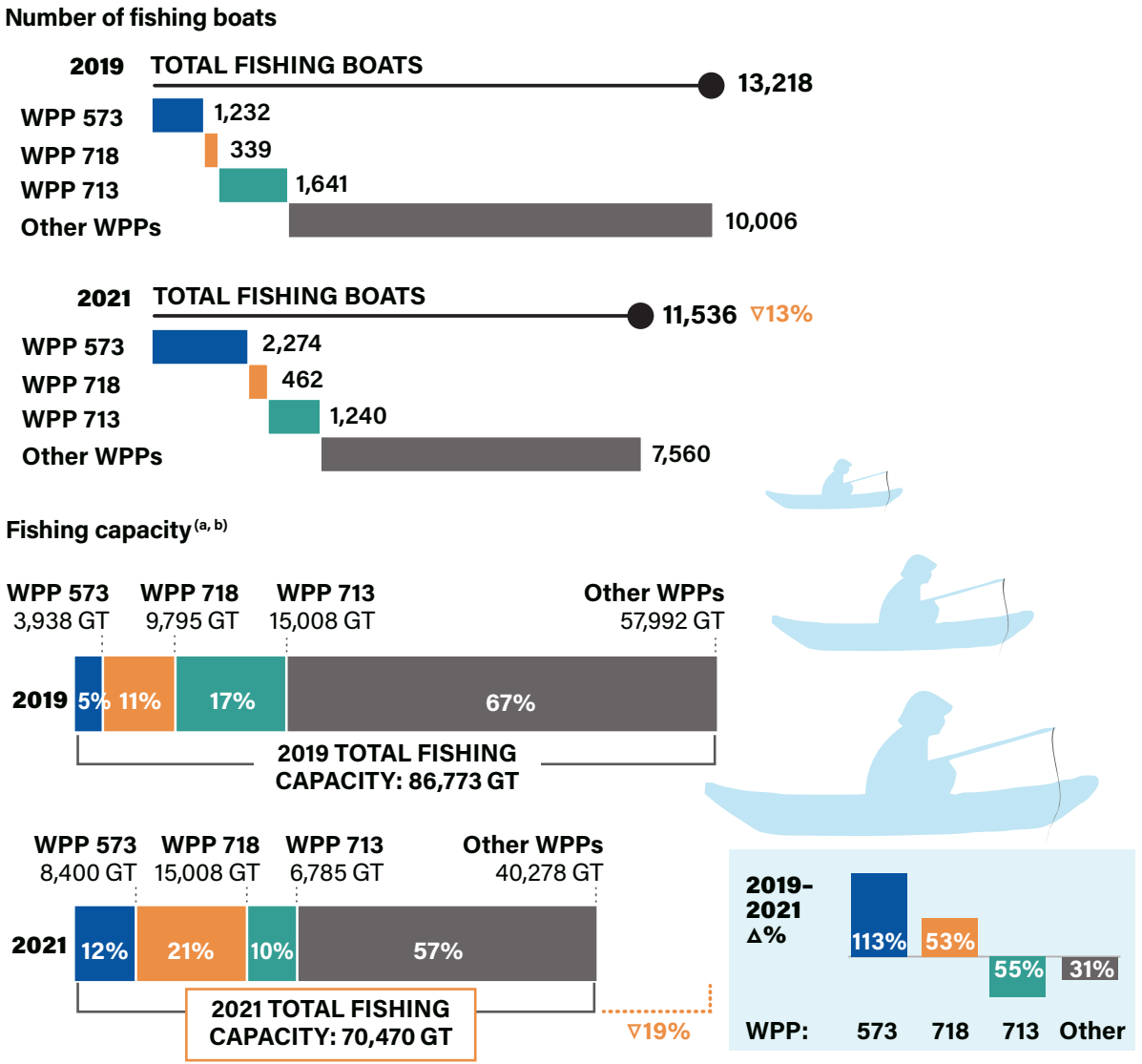


Figure 8. Indicator C – Total fishing capacity and percentage of change from 2019 baseline to 2021 across all gear types in the snapper fishery (all-year and seasonal) of WPP 573, 718 & 713, and eight other WPPs

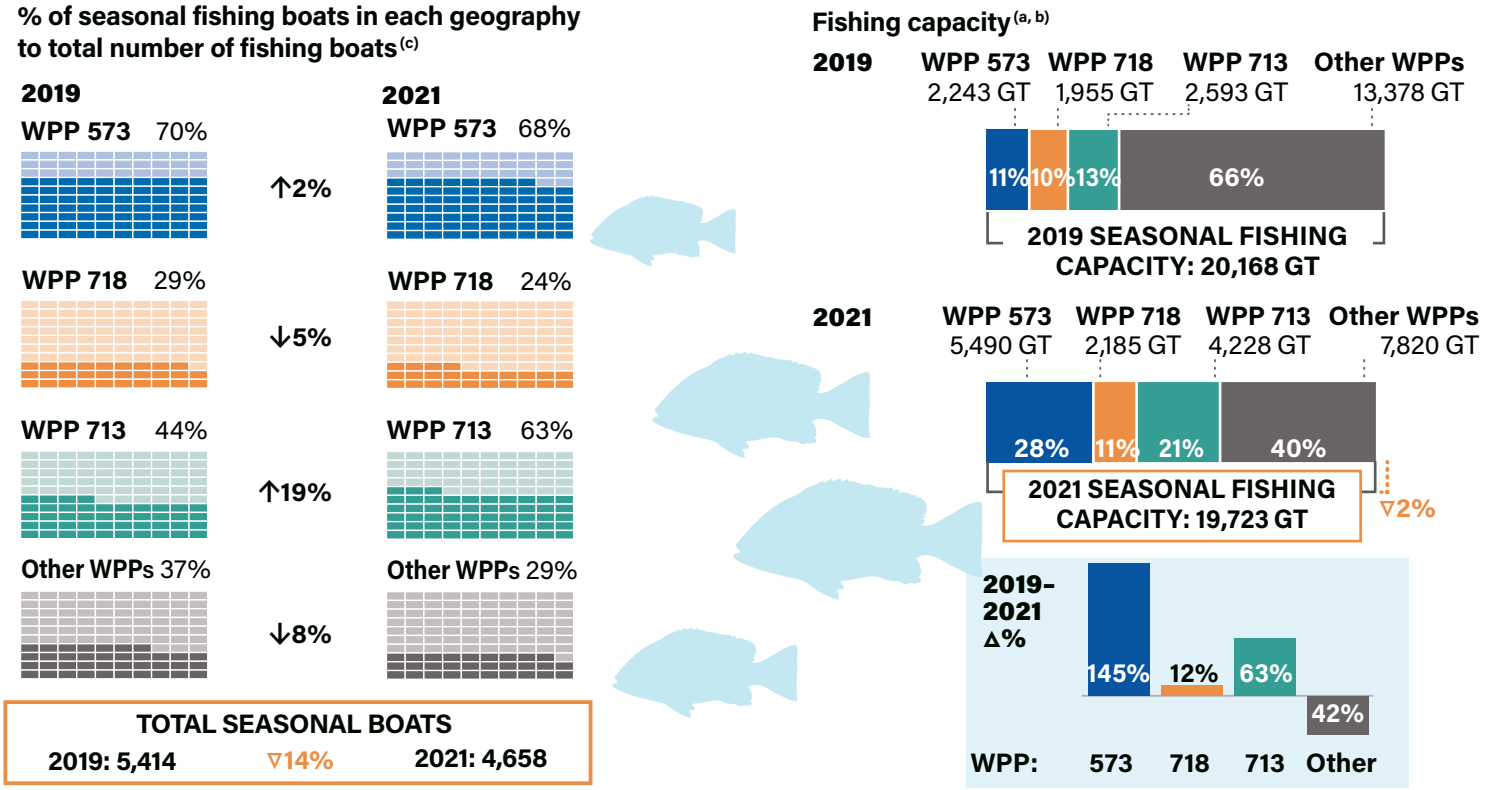
Total fishing capacity (gross tonnage) for snapper, calculated as follows: No. of boats by size category x median GT (MGT) [a]

YKAN data with Saleh Bay data from WCS

Biennial with a report in the first quarter of the next year

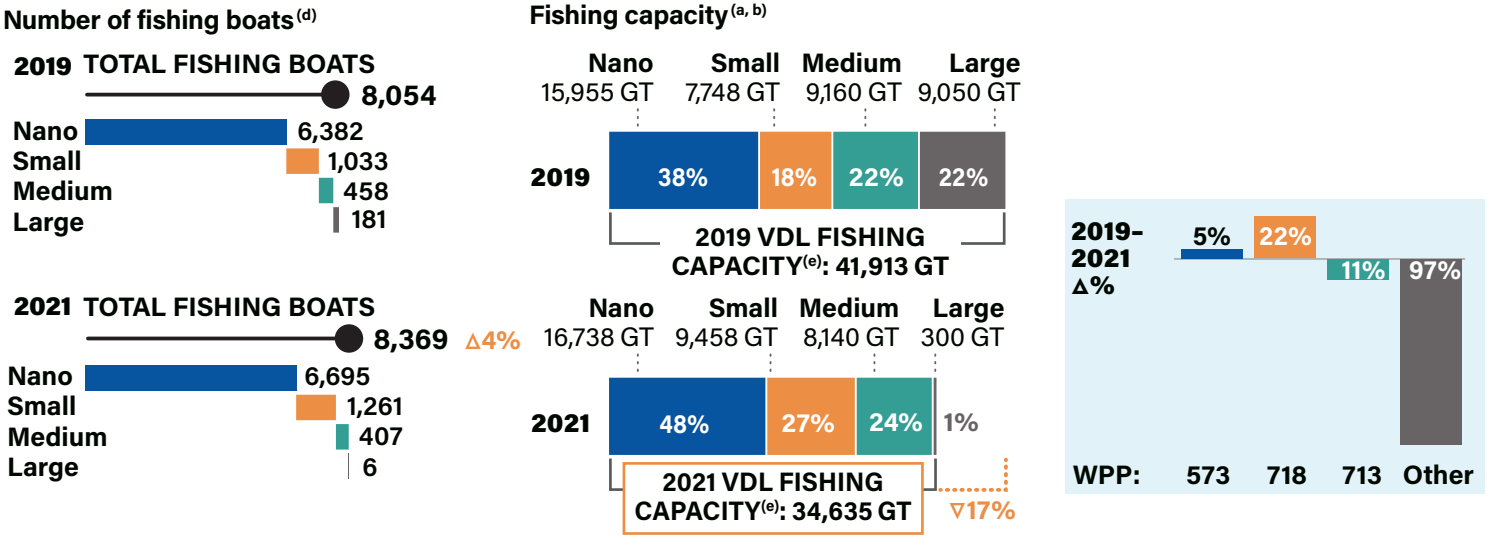
Fishing capacity in the seasonal snapper fishery of WPP 573, 718 and 713, and eight other WPPs (all gear types)

Figure 9. Fishing capacity and percentage change from 2019 baseline to 2021 across all gear types in the seasonal snapper fishery of WPP 573, 718 and 713, and eight other WPPs[c]



Vertical drop line (VDL) fishing capacity in the snapper fishery of WPP 573, 718 and 713, and eight other WPPs

Figure 10. Number of VDL fishing boats (left) and fishing capacity by boat size category in the snapper fishery across all WPPs[d]



Fishing capacity for snapper

Total fishing capacity (gross tonnage) for snapper, calculated as follows: No. of boats by size category x median GT (MGT) [a]

YKAN data with Saleh Bay data from WCS

Biennial with a report in the first quarter of the next year

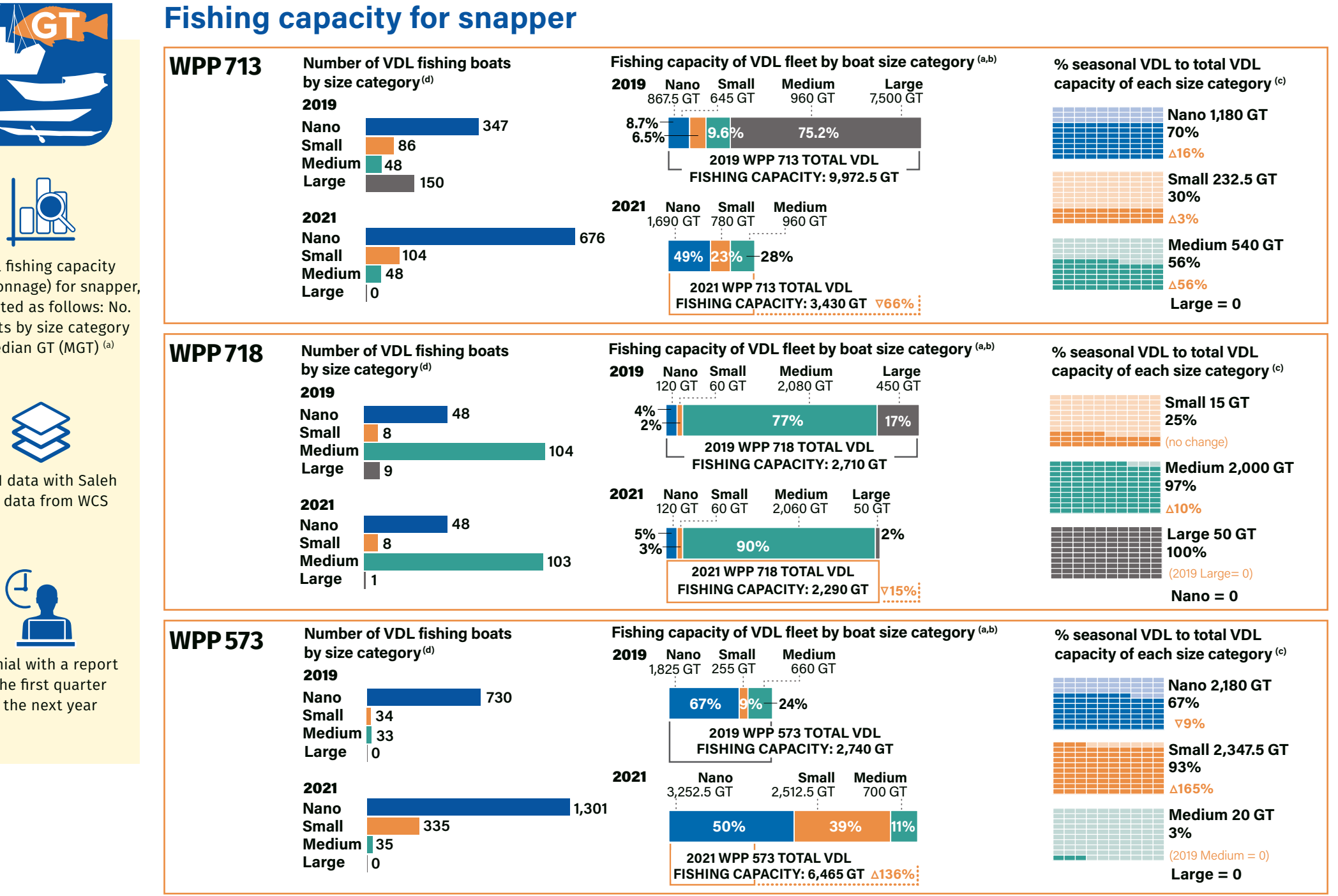


Figure 11. 2019 baseline and 2021 number of VDL fishing boats and fishing capacity, and proportion of 2021 seasonal VDL to total VDL capacity of each boat size category, and percentage change over 2019–2021 in the snapper fishery of WPP 713 (top), 718 (middle), and 573 (bottom)[e]

Total fishing capacity (gross tonnage) for snapper, calculated as follows: No. of boats by size category x median GT (MGT) [a]

YKAN data with Saleh Bay data from WCS

Biennial with a report in the first quarter of the next year

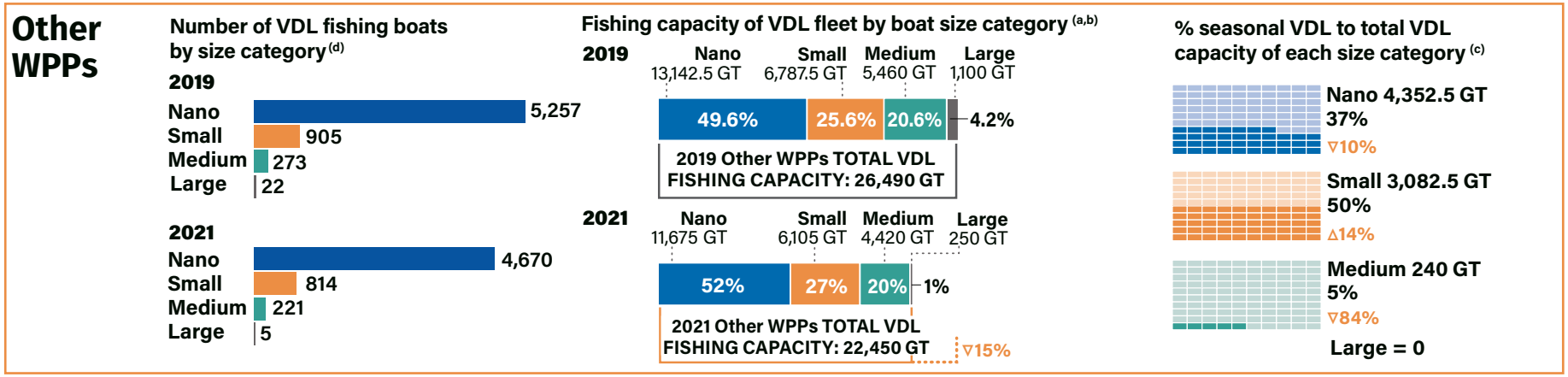


Figure 12. 2019 baseline and 2021 number of VDL fishing boats and fishing capacity, proportion of 2021 seasonal VDL to total VDL capacity of each boat size category, and percentage change over 2019–2021 in the snapper fishery of the eight WPPs outside the Consortium's priority areas [e]

Fishing capacity in the snapper fishery of Saleh Bay

NUMBER OF BOATS: 2,913

TOTAL FISHING CAPACITY: 7,282 GT [a]

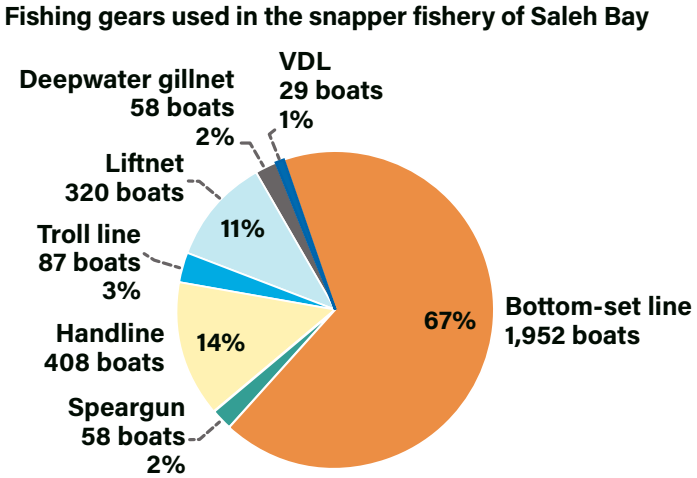


Figure 13. Baseline number of fishing boats and fishing capacity, and gear composition of the snapper fishery in Saleh Bay [f]

Notes:

(a) Due to a lack of actual tonnage data, the 2019 (base Fishing Capacity (FC) values are estimated from the "midrange GT" (rather than "median GT") of the minimum and maximum size limits of the different vessel size categories (see boat size categories table below). Midrange is a very non-robust statistic, so these values are by no means an accurate measure of FC. But they are the only metrics currently available for this purpose across the geographies and will have to suffice until more precise data can be obtained.

(b) Indicator C 2021 data

(c) The fishery has a lot of unlicensed boats that are fishing seasonally, which makes management even more complicated.

(d)

Boat size:	Definition	min GT	max GT	MGT
Nano	<5GT	0	5	2.5
Small	5-10GT	5	10	7.5
Medium	>10-30GT	10.01	30	20
Large	>30GT	30.01	70	50

(e) VDL is presented here as it is the most common gear in use by the larger fleet (medium and large boats). For future reports, there is an opportunity to present more details around the other gears being used. Some fishers (especially small-scale fishers) regularly change gear, making gear use difficult to track and manage.

(f) Saleh Bay serves as a model for localized fishery management.

Fishery Health

Real-time availability and use of national- and WPP-level fish monitoring data to inform snapper fishery management and harvest strategy (Indicator D)

Level of adoption (1-3) of data from e-BRPL portal for snapper fishery management

Annual assessment by Snapper Consortium partners

Collected annually with previous year's data aggregated annually and submitted in the first quarter of the next year

This indicator shows MMAF and WPP Council adoption, for science-based adaptive management and decision-making, of WCS and YKAN CODRS data on snapper species representing 90% of the total volume of catch recorded by fishing vessels monitored by YKAN, as evidenced by MMAF and the WPP Councils achieving three milestones:

Milestone 1. Submission of the data to e-BRPL (Balai Riset Perikanan Laut / Marine Fisheries Research Center)

Milestone 2. Real-time analysis and publication of the data by MMAF-BRPL

Milestone 3. Revised harvest strategy with adjusted limit and target reference points and management interventions for WPPs 713, 718, and 573, based on the data and analysis of the real-time dataset.

2022 Status

Until 2021, YKAN and WCS were able to successfully integrate their CODRS and snapper databases with the MMAF-BRPL. The data from these databases have been utilized by the MMAF-BRPL to monitor the status of snapper stocks throughout the fleet.

However, with the CODRS project coming to an end, the e-BRPL system automation has faced several technical issues, and consequently, the CODRS data is no longer being incorporated into the system. Despite these obstacles, the MMAF continues to maintain the e-BRPL system. Moreover, RNF is currently contributing to the data collection and analysis efforts in Saleh Bay, West Nusa Tenggara. This continued dedication to data monitoring, even amidst technical challenges, underscores the nature of collaborations from each partner focusing together on each others' strengths for sustainable fishery management.

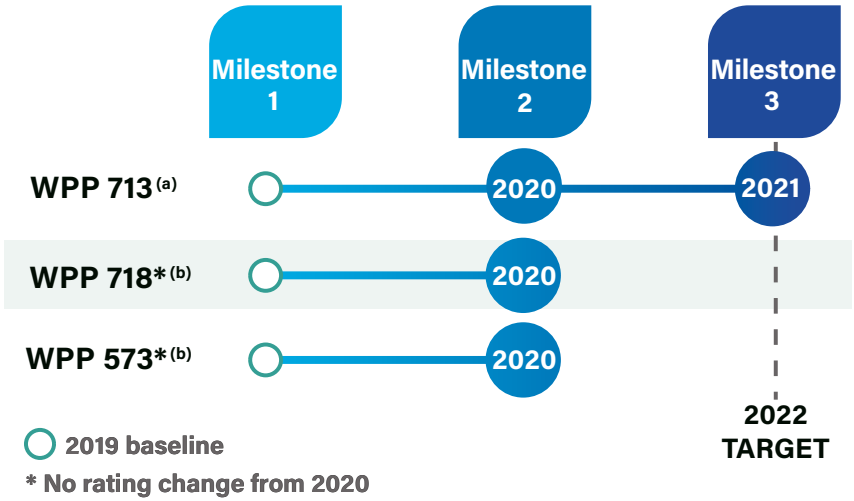


Figure 14. Indicator D – Milestone stage achieved from baseline (2019) to 2022 by each WPP towards 2022 target on level of adoption of data from the e-BRPL portal for snapper fishery management

Notes:

(a) Analysis and publication can be accessed in e-BRPL

(b) Harvest Strategy documents for Snapper and Grouper

Institutions, Management, Governance, and Policy

Progress towards government adoption of National Snapper Fishery Management Plan (RPP) (Indicator E)

Rating numbers 1-4 indicating stages (milestones) of RPP development

RPP as published by the MMAF Directorate of Fisheries Resources (*Sumber Daya Ikan*, SDI); minutes of meetings

Annual

The National Snapper Fishery Management Plan (RPP) describes risks, actions, and measurable outcomes (harvest strategy, harvest control rules and tools, monitoring system, and capacity building to be applied across all WPPs). **This indicator measures progress towards government adoption of the RPP using a four-stage rating system:** :

Stage 1. RPP drafted – 2019

Stage 2. Draft RPP consulted to priority WPPs (713, 718, and 573) and respective Provincial Governments – 2020

Stage 3. Draft RPP finalized, incorporating feedback from the consultations – 2021

Stage 4. RPP legally adopted by the MMAF Directorate General of Capture Fisheries (Direktorat Jenderal Perikanan Tangkap, DJPT) – 2022

2022 Status

The RPP document has been approved by the Directorate General of Capture Fisheries with Decree Number 123/2021, indicating that the indicator has been successfully achieved.

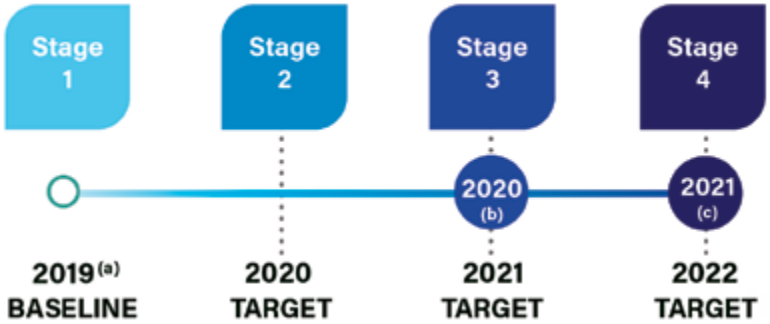


Figure 15. Indicator E – Four-stage rating system showing progress from baseline (2019) compared to targets towards government adoption of the RPP by 2022

Notes:

(a) Stage 1 started; RPP in initial drafting process

(b Final draft RPP consulted to the public in September 2020 and reviewed by the MMAF Legal Bureau

(c) RPP has been established with DG of Capture Fisheries Decree No. 123/2021

Institutions, Management, Governance, and Policy

Progress towards government adoption of Snapper Harvest Strategy and Grouper Harvest Strategy for each priority WPP (Indicator F)

Rating numbers 1-3 indicating stages (milestones) of Harvest Strategy Development per species group (snapper or grouper) per WPP

DJPT Harvest Strategy Decree; minutes of meetings

Annual

A Harvest Strategy [11] defines harvest control rules, management interventions, target (40% SPR) and limit reference points (20% SPR) for the most abundant species in the catch (90% of volume). **This indicator measures progress towards government adoption of a Snapper Harvest Strategy and a Grouper Harvest Strategy each for WPP 713, 718 and 573** using a three-stage rating system:

Stage 1. Harvest Strategy drafted for each priority WPP – 2019

Stage 2. Draft Harvest Strategy consulted with respective priority WPP and Provincial Governments – 2020

Stage 3. Harvest Strategy issued through a decree by the MMAF DJPT – 2022

2022 Status

Progress has been made in establishing a formal harvest strategy for the snapper fishery in certain Indonesian waters. Specifically, a comprehensive harvest strategy document has been finalized for the fishery in WPP 713 and is currently pending legal approval under the decree of the Directorate General of Capture Fisheries (DGCF). This harvest strategy will provide a clear and structured framework for sustainable management and harvest of the snapper fishery in WPP 713, once endorsed. In parallel, progress is also being made in WPP 573. A white paper, an authoritative report that outlines the issues and guides decision-making, has been drafted to support the creation of a similar harvest strategy for the fishery in this area. This document is now ready for further deliberation among relevant stakeholders. These efforts signify the commitment of the Consortium and local authorities to ensure the long-term sustainability of the snapper fishery in these critical areas.

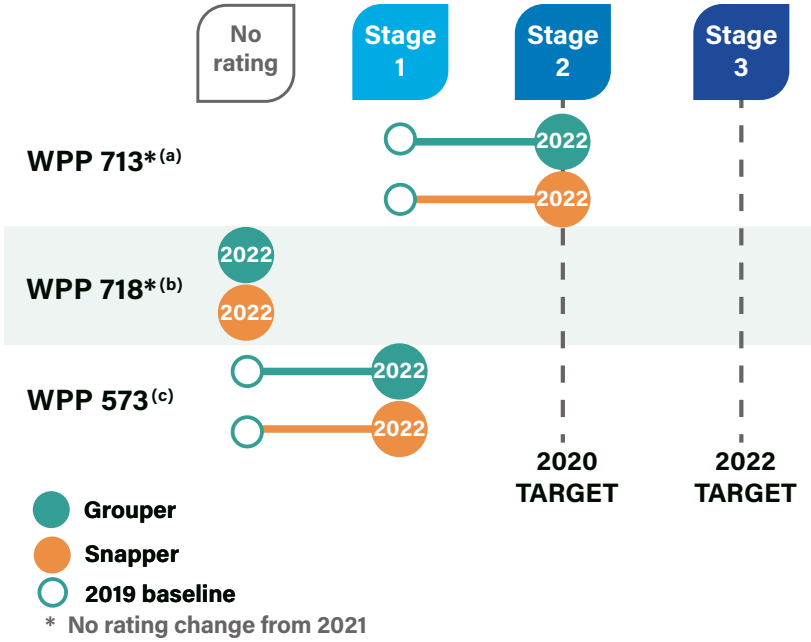


Figure 16. Indicator F – Milestone stage achieved from 2019 (baseline) to 2022 by each WPP towards government adoption of Snapper and Grouper Harvest Strategies by 2022

11 See Annex 3 for more information on harvest strategies

Notes:

(a) Interim snapper harvest strategy launched in March 2020 (Stage 2 rating)

(b) Recommendation and informal meeting held to refine WPP 718 Harvest Strategy but no further update reporting from the site

(c) Rating cannot be determined due to lack of progress reporting from the site

Rating numbers 1-3 indicating stages (milestones) of integration of science and local knowledge in Harvest Strategy development

Minutes of meetings of the Consultative and Scientific Panels of the WPP 713, 718 and 573 Councils

Annual

Institutions, Management, Governance, and Policy

Progress towards integration of science and local knowledge into the WPP-level Harvest Strategies (Indicator G)

This indicator involves a consultative process that includes the MMAF, members of the WPP Council Consultative and Scientific Panels, and stakeholders for WPP 713, 718 and 573 to facilitate the integration of science and local knowledge in the drafting of the Snapper and Grouper Harvest Strategies, and adoption at the WPP level of each Harvest Strategy. It is measured using a 3-stage rating system:

Stage 1. WPP consultative structure in place

Stage 2. Consultations held to integrate local science and knowledge into each Harvest Strategy (WPP 713, 718, 573)

Stage 3. Science- and local knowledge-based Harvest Strategy endorsed and adopted at the WPP level

2022 Status

The progress on the Harvest Strategy documents for the snapper fishery in the various WPPs is encouraging. The document for WPP 713 has reached Stage 3, indicating that scientific data have been incorporated into the final version, thus aligning fisheries management with the latest research and information.

Concurrently, Harvest Strategy documents for WPPs 718 and 573 are at Stage 2, meaning that they are still in the process of being drafted and revised. However, it's important to highlight the substantial progress made in WPP 573 throughout 2022. A significant milestone was achieved with a meeting conducted in November, where the stock status of both snapper and grouper species was communicated. These ongoing efforts underscore the commitment to sustainable fisheries management and the importance of using science-based strategies to guide policy decisions and actions.

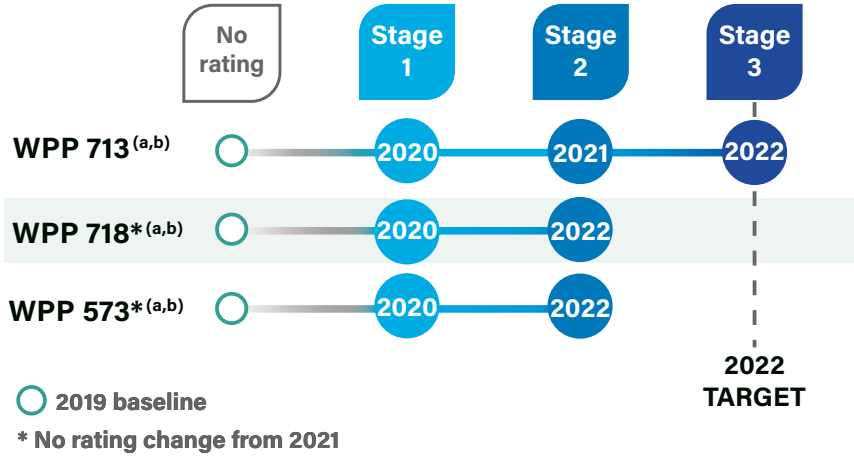


Figure 17. Indicator G – Milestone stage achieved from 2019 (baseline) to 2022 by each WPP towards the 2022 target of integrating science and local knowledge into harvest strategies

Notes:

(a) Minutes of meetings held in 2021

(b) Minutes fo meetings held in 2022

Institutions, Management, Governance, and Policy

Resources allocated to compliance in WPP 713, 718 and 573 (Indicator H)

Rating numbers 1-4 indicating milestones achieved on resource allocation for compliance in WPP 713, 718, and 573

Budget documents showing amount allocated for compliance activities in WPP 713, 718 and 573

Annual
(by end of the 1st quarter)

This indicator refers to resources allocated by MMAF-SDI (Directorate of Fisheries Resources) and the PSDKP to the implementation of appropriate compliance measures in WPP 713, 718, and 573. It tracks but does not report the actual amount of resources. Instead, it measures and reports resource allocation in terms of four specific milestones:

Milestone 1. MMAF develops a document each for WPP 713, 718 and 573 outlining compliance risk assessment

Milestone 2. Each WPP Council determines compliance measures based on their respective compliance risk assessment

Milestone 3. WPP Council adopts control system

Milestone 4. MMAF allocates resources for compliance in WPP 713, 718 and 573

2022 Status

While specific compliance risk assessments for the three WPPs (713, 573, and 718) are not in place, monitoring and surveillance programs are carried out by designated stations under the supervision of the PSDKP. These stations serve a crucial role in maintaining regulatory compliance and tracking activities within the fishing sector.

A case in point is the PSDKP station in Tual, which oversees monitoring activities in the Arafura and Banda seas. These areas encompass WPPs 718, 715, and 714. In 2022, the station was allocated a significant budget of USD 3 million (IDR 47.75 billion), indicating the commitment to enforce regulatory compliance and the importance of surveillance in maintaining the sustainability and health of the fisheries in these areas. This underscores the critical role that monitoring and surveillance play in managing and safeguarding the fisheries sector [12].

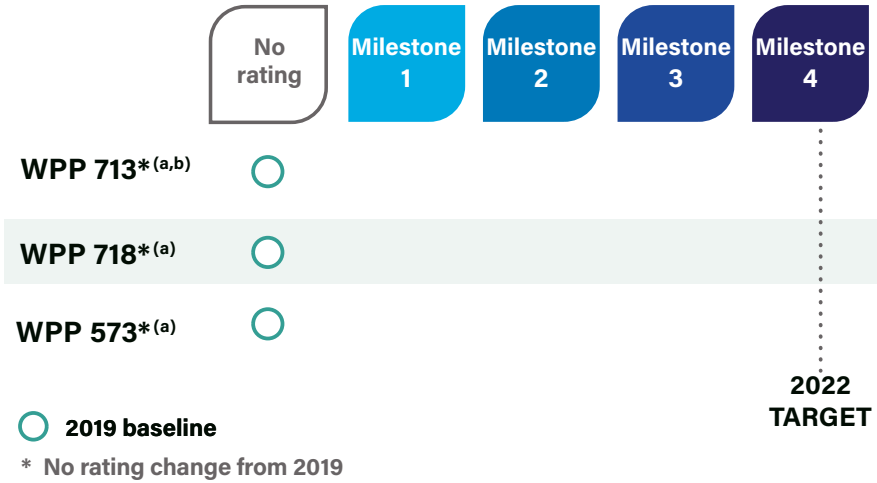


Figure 18. Indicator H – Milestone stage achieved by each WPP from 2019 (baseline) to 2022 towards resource allocation by 2022 for the implementation of appropriate compliance measures

12 PK PANGKALAN PSDKP TUAL TAHUN 2022

Notes:
(a) Harvest strategy has no legal document or regulation with which to determine compliance
(b) Grouper and Snapper Harvest Strategy documents approved in 2021 for WPP 713

Institutions, Management, Governance, and Policy

Policy white papers endorsed by stakeholders (Indicator I)

This indicator refers to policy white papers endorsed by civil society and industry stakeholders to the government (MMAF) in support of policy and management improvements for snapper fishery management.

Number of policy white papers

Policy white papers produced by fishers, industry, and civil society

Annual

2022 Status

The Consortium partners have made significant contributions towards the effective management of the fishery by providing valuable research and recommendations. To date, they have submitted three insightful papers to the MMAF for review and consideration in various forums.

Moreover, in 2022, an additional document was prepared and submitted to support and guide the fisheries management in WPP 573. This comprehensive scientific study was collaboratively undertaken by YKAN, WCS, RNF, and the Indonesian Institute of Sciences. It aims to evaluate the condition and sustainability of snapper and grouper stocks in WPP 573.

Such work underscores the Consortium partners' ongoing commitment to research-driven policy advocacy, and their efforts to continually enhance the sustainable management of Indonesia's important snapper and grouper fisheries.

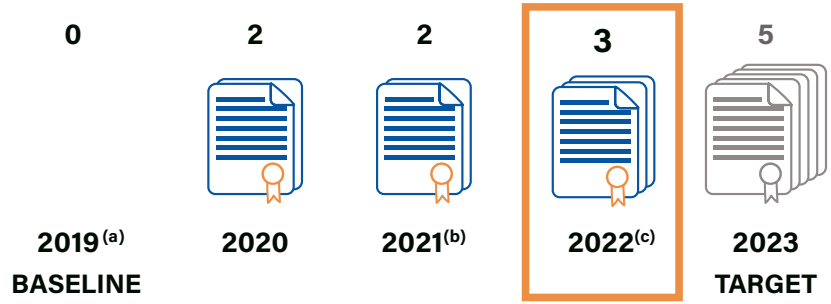


Figure 19. Indicator I – Number of policy white papers produced by Consortium partners in 2022 compared to 2019 (baseline), 2020, 2021, and 2023 (target)

Notes:

(a) No data found

(b) Finalization and legalization of Snapper and Grouper Harvest Strategy documents developed in 2021 for WPP 713

(c) Scientific review on the status of snapper and grouper fishery in WPP 573

Institutions, Management, Governance, and Policy

WPP Council Consultative and Scientific Panels functional and achieving milestones (Indicator J)

Rating numbers 1-3 indicating milestones achieved by WPP Consultative and Scientific Panels in each WPP; Number of management recommendations made by each Panel per year

WPP Consultative and Scientific Panel meetings providing management recommendations

Annual

This indicator is measured in terms of the following milestones:

Milestone 1. Consultative and Scientific Panels in each target WPP meet and deliberate on snapper fishery at least twice per year

Milestone 2. Panels review fishery performance, and provide WPP-specific management recommendations released publicly and shared with MMAF-DJPT

Milestone 3. Each Panel's decision-making processes are shown to respond to all issues identified in relevant research, monitoring, evaluation and consultation in a transparent, timely and adaptive manner, and to take account of the broader implications of decisions in their respective WPP

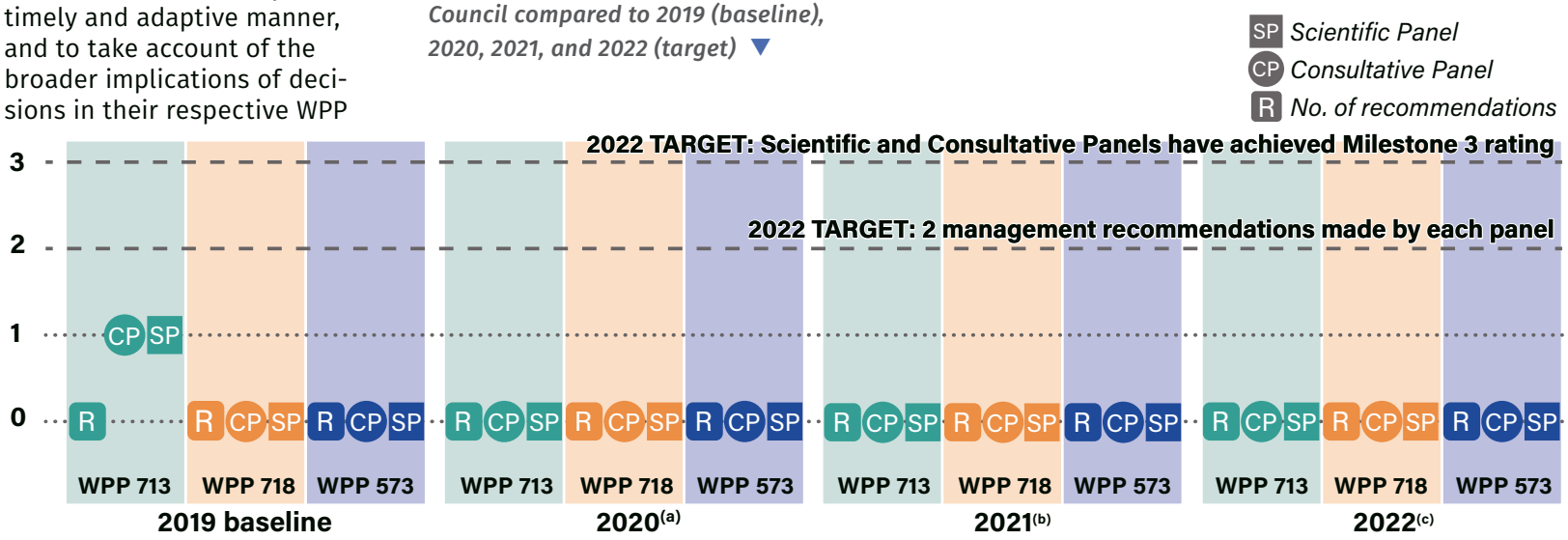
2022 Status

The MMAF extends significant support to each WPP, providing annual financial aid ranging from IDR 100 million to IDR 200 million (USD 7–14 million). This provision underscores the government's commitment to fostering sustainable fisheries management in these critical regions.

In June 2022, the MMAF conducted a capacity-building event with a clear focus on promoting the implementation of the quota-based system (PIT) among WPP personnel. This event is a testament to the concerted efforts made by the MMAF to enhance the knowledge and skills of those directly involved in the management of the fishery.

Although these capacity-building events primarily involve government officials and tracking attendance can be challenging, the public can access information about the progress of WPP intervention activities. By offering such transparency, the MMAF promotes public engagement and heightens awareness about the ongoing efforts to preserve and enhance the sustainability of Indonesia's important snapper and grouper fisheries here.

Figure 20. Indicator J – Milestones achieved in 2022 by each WPP in the development of their respective WPP Council compared to 2019 (baseline), 2020, 2021, and 2022 (target) ▼



Notes:

(a) 0 rating was due to the panel not being able to meet the criteria "at least 2 meetings conducted a year." Panel reported no progress as it waited for the issuance of a DG order pursuant to MMAF Decree No. 33/2010.

(b) No regular meeting was set by the Council. One meeting was held on the scientific review for Snapper and Grouper Harvest Strategies for WPP 713

(c) No progress reported from site

Institutions, Management, Governance, and Policy

Increase in resource allocation for Saleh Bay snapper management (Indicator K)

This indicator tracks the amount of resources allocated to the implementation of the Saleh Bay Snapper Management Plan endorsed by the West Nusa Tenggara Provincial Government, industry associations, fishers, and civil society organizations. The Plan aims to improve the management of the Saleh Bay snapper fishery from the general coastline out to 12nm offshore.

% increase in USD value of financial and in-kind resources allocated per year to the implementation of the Saleh Bay Management Plan, calculated based on the average USD:IDR exchange rate for the reporting year

Management plan with annual budget allocation

Annual

2022 Status

The West Nusa Tenggara DKP, responsible for managing government funds for the marine and fisheries sectors, as well as the empowerment of coastal communities, has shown an increased commitment to fisheries management in 2022. They allocated approximately IDR 1.5 billion (USD 98,000) for fisheries management in that year. This significant allocation represents a marked increase compared to previous years, highlighting the government's growing focus on sustainable fishery practices.

However, it's important to note that these funds are not solely designated for the Saleh Bay area. They are instead spread across various regions within the jurisdiction of the West Nusa Tenggara DKP, demonstrating a comprehensive approach to improving marine and fisheries management. Such investments are crucial to advance sustainable practices across the board, ensuring a more resilient and productive marine ecosystem.

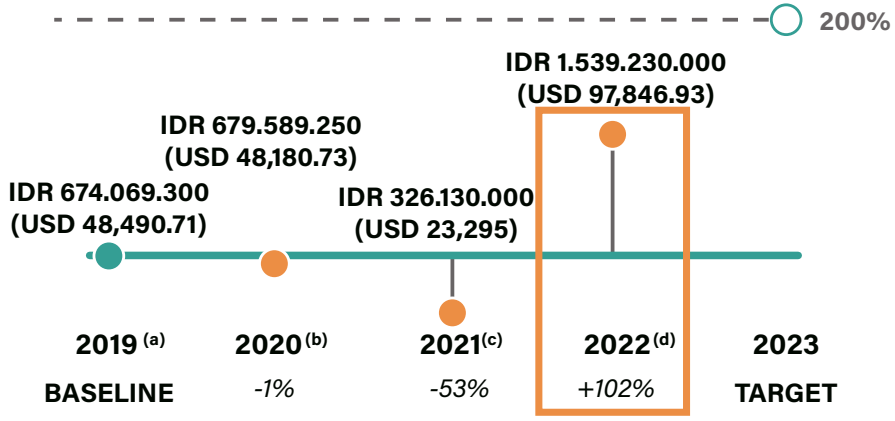


Figure 21. Indicator K – Resource allocation value (USD) for the implementation of the Saleh Bay Snapper Management Plan in 2022, compared to 2019 (baseline), 2020, 2021, and 2023 (target)

Notes:

(a) Allocation in 2019 does not include human resources (257 personnel)

(b) The budget allocation for 2020 came from MMAF's budget for the Provincial Marine and Fisheries Office (DKP). WCS made best assumption for Saleh Bay (only). Budget allocation is for all fisheries activities under DKP Prov. NTB in Saleh Bay area.

c) Budget allocation for the fisheries program in Saleh Bay was reduced due to the COVID-19 pandemic. The budget allocation supporting the fisheries sector of Saleh Bay for 2021 came from the Provincial Marine and Fisheries Office (DKP) 2021 budget change implementation document (*Dokumen Pelaksanaan Perubahan Anggaran Tahun 2021*—DPPA).

(d) Values are based on the average USD:IDR exchange rate for the reporting year. Exchange rate parameters and budget allocation for 2022 can be seen in the 2022 data source sheet.

Institutions, Management, Governance, and Policy

Improved local stakeholder engagement in snapper fishery management (Indicator L)

Number of stakeholder groups and ratings S0-S4 indicating levels of group development and engagement in snapper fishery management

WCS Reports

Annual, with the previous year's data submitted in the 1st quarter of the next year

This indicator tracks the number of local village management committees and fishing community co-management groups demonstrating improved engagement in the management of the snapper fishery in five geographic locations in West Nusa Tenggara (Saleh Bay, Alas Strait, Cempi Bay, Waworada Bay, and Sape Strait). The village management committee is defined as "local fishing community co-management groups such as fishers' groups (*kelompok nelayan*), community enforcement groups (*Pokmaswas*) and women's groups (*kelompok perempuan*). Their level of engagement is measured using a five-stage rating system:

Stage 0. Local stakeholder group loosely organized

Stage 1. Group formally established with registration, constitution, and bylaws

Stage 2. Group holding regular (at least biannual) meetings with at least 50% of members in attendance

Stage 3. Members disseminating and reinforcing management and supply-chain interventions in their communities to increase awareness and compliance by stakeholders

Stage 4. Group making recommendations to management committee on fishery improvements

2022 Status

In 2022, the monitoring of a total of 42 community groups took place, reflecting various stages of progression. This cohort included ten groups from Saleh Bay and Alas Strait. There have been notable developments in women's groups across different regions, demonstrating increasing inclusivity and diversity in fisheries management.

In Saleh Bay, the establishment of five new women's groups (Stage 0) marked a significant stride towards increasing female participation in fisheries and improving their overall livelihoods. Meanwhile, in Alas Strait, three already established women's groups showed commitment and advanced to the next stage (from Stage 0 to 1), indicating their growing involvement in the sector.

Significant progress was also made by the Alas Strait fishers group, which made concerted efforts to focus on enforcement, successfully maintaining their status. In Cempi Bay, the community enforcement groups experienced dynamic shifts. Hulu Jaya made positive progress, moving from Stage 2 to 3, while a new group, Jala Bersinar, was formed. However, the group Lakenda experienced a setback, regressing from Stage 3 to Stage 1.

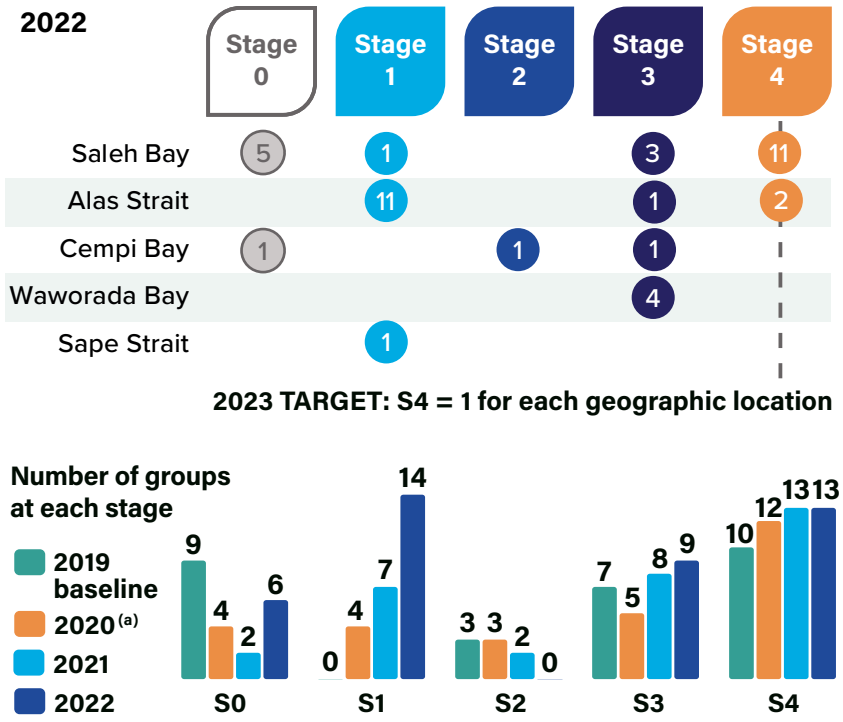


Figure 22. Indicator L – 2022 number and level of engagement of stakeholder groups along the five-stage rating system for five geographic locations in West Nusa Tenggara (top) and number of groups at each stage in 2021, 2020 and 2019 (baseline) (bottom)

Notes:
(a) Data source

Institutions, Management, Governance, and Policy

Provincial fisheries management groups demonstrating progress towards adaptive management of snapper fishery (Indicator M)

Number of Provincial Task Forces established and functional; ratings S0-S6 indicating adaptive management progress on the defined benchmarks

Annual assessment by WCS

Collected annually, with the previous year's data aggregated and submitted in the 1st quarter of the next year

This indicator tracks the number of provincial fisheries management groups demonstrating progress towards adaptive management of the snapper fishery in 5 geographic locations in West Nusa Tenggara (Saleh Bay, Alas Strait, Cempi Bay, Waworada Bay, and Sape Strait). In particular, it refers to "Provincial Task Forces," multi-stakeholder fisheries management groups recognized by the province and tasked with fisheries planning, with partners working at three scales of management (village, district, and provincial levels). Each Task Force's progress is benchmarked against 6 stages:

Stage 0. No Provincial Task Force (PTF) formed

Stage 1. PTF legally established by appropriate policy document, such as Regent's or Governor's Decree (*SK Bupati* or *Gubernur*}, with representation from various stakeholders (including but not limited to fishers, first-buyers, processors, district and provincial government officials, and industry partners) and inclusive of women and youth

Stage 2. Fisheries management plan, including harvest control rules and intervention options for the fisheries, formally adopted by Provincial Government

Stage 3. Enabling policies to implement the fisheries management plan enacted

Stage 4. PTF meeting held regularly (at least biennially) to track and assess progress against stated fishery objectives, with representation from all relevant stakeholders

Stage 5. PTF making fisheries management decisions that are consensus-based and recorded through a decree, resolution, working group (*Pokja*) presentation, and/or meeting notes

Stage 6. PTF practicing adaptive management through the incorporation and issuance of fishery management decisions that incorporate best available science and respond to evolving needs realized through the feedback of management interventions

2022 Status

As of 2022, the Provincial Task Force (PTF) overseeing Saleh Bay, Sape Strait, Cempi Bay, and Waworada Bay has successfully sustained its Stage 6 status, which signifies a well-operational state. Concurrently, the implementation of training and monitoring evaluation (MONEV) programs has been upheld for the fourth year in Saleh Bay and the third year in Sape Strait, Cempi Bay, and Waworada Bay, underscoring the PTF's dedication to continuous education and performance appraisal.

In Alas Strait, the PTF has achieved and maintained stability at Stage 2. This stage reflects the adoption of a comprehensive fishery management plan by the Provincial Government, marking a notable step forward in resource stewardship. Presently, the Alas Strait PTF is immersed in completing its first-year MONEV, undergoing stock assessment training, and engaging in other associated activities. These actions further demonstrate the ongoing efforts to enhance the capacity and capabilities of the PTF, thereby ensuring better governance of the fisheries sector in their jurisdiction.

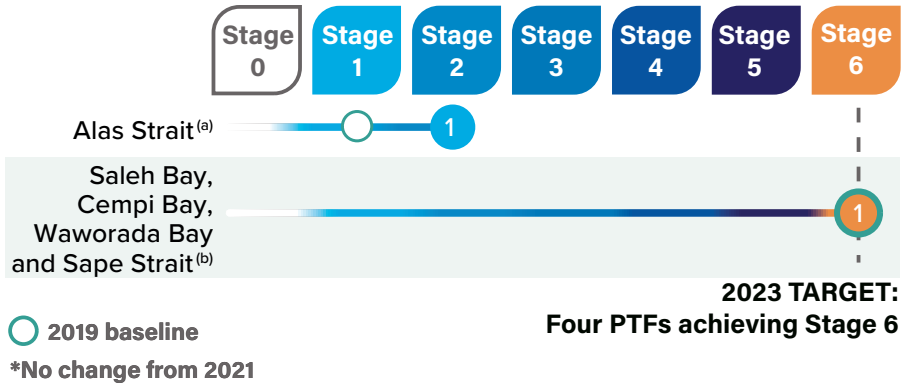


Figure 23. Indicator M – Number of PTFs in 2022 and progress against six benchmarked stages to adaptive management of the snapper fishery

Notes:
(a) Established in Alas Strait in 2019
(b) Established in 2016

Industry

Indonesian Demersal Association (ADI) adopting a business plan and actively complying with a code of conduct (Indicator N)

Rating numbers 1-5 indicating progress on milestones

Minutes of board meetings, business plan, code of conduct, and member audit plan

Annual

This indicator shows the progress achieved by ADI in adopting a business plan, code of conduct and member audit system, including allocating resources for business and member audit plan implementation to ensure code of conduct compliance. Progress is measured using a 5-stage (milestone) rating system:

Stage 1. Business plan adopted by Association members

Stage 2. Code of conduct adopted by Association members

Stage 3. Audit system adopted

Stage 4. Annual budget allocated against business plan activities

Stage 5. Annual audits indicating compliance with the code of conduct

2022 Status

In 2022, ADI welcomed an additional three companies into its ranks, increasing the total membership to 20 processors and exporters. As a part of their membership, ADI members have committed to adhering to a stringent CoC. In order to ensure this compliance, a strategy of persuasion and encouragement has been implemented.

Moreover, a comprehensive business plan has been finalized and distributed amongst ADI members and participants of Starling Resources (SR) to garner their support and ensure alignment of interests. This plan was publicly presented during the Indonesia Snapper Grouper Supply Chain Roundtable, a forum for US buyers, on October 26, 2021.

Despite these progressive strides, this particular indicator still lingers at Stage 2. This is primarily because the ADI has yet to establish and enforce a systematic method to implement and oversee adherence to the CoC across its membership. It is anticipated that with the creation and application of such a system, this indicator will move forward to the next stage, reflecting enhanced standards of conduct within the association.

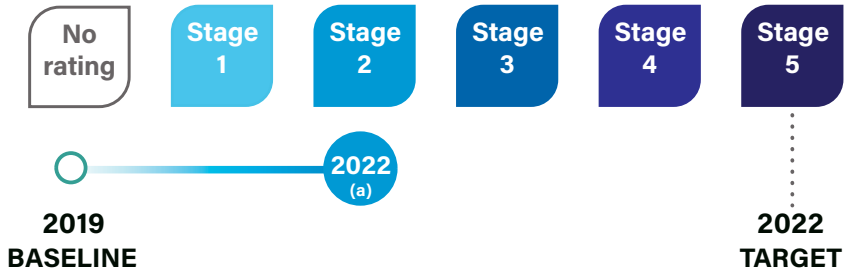


Figure 24. Indicator N – ADI milestones achieved towards adopting a business plan and actively complying with a code of conduct, and 2022 target

Notes:
(a) ADI Code of Conduct

Industry

Fishery Improvement Projects (FIPs) achieving positive performance (Indicator O)

No. of FIPs achieving a positive performance (green) score of at least 80% on FisheryProgress.org

FisheryProgress.org

Checked annually, with the previous year's data submitted in the 1st quarter of the next year

This indicator tracks the Marine Stewardship Council (MSC) scores of Indonesia Snapper FIPs as publicly reported on FisheryProgress.org**,** a web portal that provides information on the progress of FIPs on industry standards. The two FIPs representing the snapper work in Indonesia are as follows:

1. Comprehensive Deepwater Groundfish Dropline, Trap and Gillnet FIP (led by YKAN) [13]
2. Comprehensive Indonesian Demersal Association FIP (led by ADI) [14]

The MSC Fisheries Standard uses 28 performance indicators (PIs) against which FIP progress is measured. These PIs sit under three benchmarking principles: Principle 1 – Sustainable fish stocks (P1), Principle 2 – Minimizing environmental impact (P2), and Principle 3 – Effective fisheries management (P3).

13 Fishery Progress - Indonesia deepwater groundfish - dropline, longline, trap and gillnet - 2021-09-28.pdf

14 Fishery Progress - Indonesia deepwater groundfish - dropline, longline, trap and gillnet - 2022-01-18.pdf

2022 Status

The two Fisheries Improvement Projects (FIPs) representing snapper work in Indonesia have shown considerable advancement, receiving an 'A' rating for Advanced Progress. This achievement represents a significant leap forward for the Indonesia snapper and grouper FIP led by ADI from the 'C' rating (Some Recent Progress) secured in 2021.

The deep-water groundfish dropline trap and gillnet FIP, managed by YKAN, showcased an impressive 10% increase in the yellow category (indicating pass with conditions) compared to the 2021 assessment. Moreover, it saw a notable 11% decrease in the red category (indicating fail).

Similarly, the Indonesia snapper and grouper FIP has been making steady progress, with a 4% growth in the yellow category and a reduction of 3% in the red category.

Both FIPs scored 54% in the green category (indicating pass without conditions), pointing towards responsible and sustainable fishing practices being implemented. This demonstrates a strong commitment to sustainable fishing practices, enhancing the environmental sustainability of these fisheries.

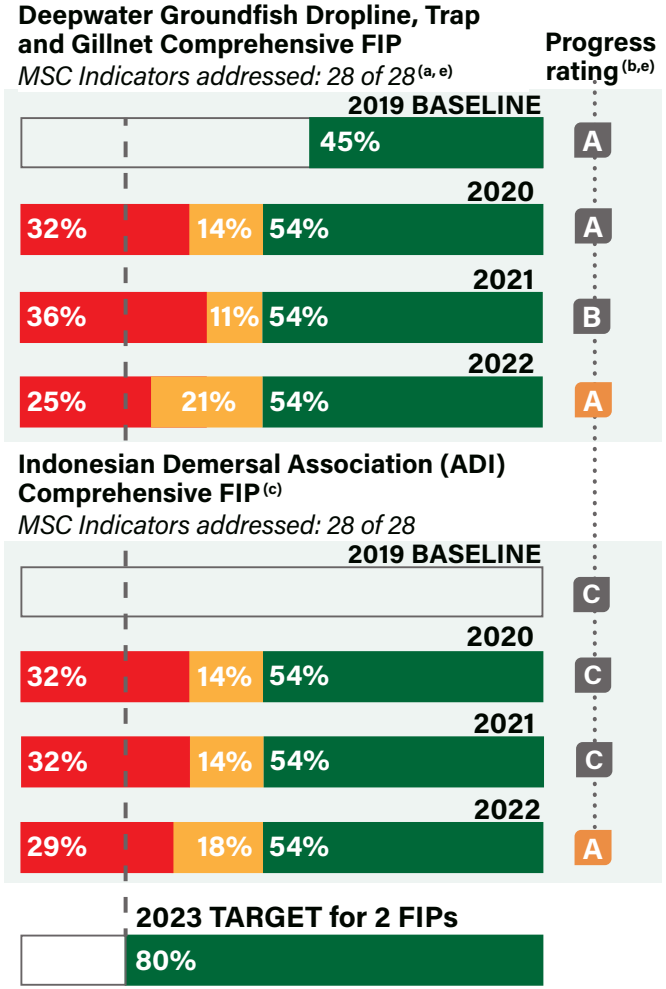


Figure 25. Indicator O – Performance of Indonesia FIPs compared to 2019 baseline and 2023 target ▶

Notes:

(a) Green score – pass without conditions; Yellow score – pass with conditions; Red score – fail

(b) **Progress ratings used by** FisheryProgress.org:

A – Advanced Progress: Reserved for comprehensive FIPs that have a Stage 4 or 5 result within the past 12 months

B – Good Progress: An FIP that has acheived a Stage 4 or 5 in more than 12 months AND Stage 3 activity in the last year; OR a basic FIP that has achieved Stage 4 or 5 achievements within the past 12 months

C – Some Recent Progress: An FIP that has achieved a Stage 4 or 5 result in more than 12 (but less than 24) months but has not generated a Stage 3 result within the past 12 months OR an FIP younger than a year that has never achieved a Stage 4 or 5 result but has completed a Stage 3 activity

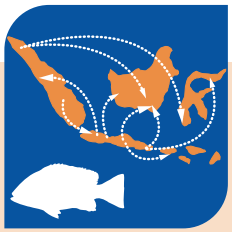
D – Some Past Progress: An FIP for which the most recent publicly reported Stage 4 or 5 result is more than 24 (but less than 30) months

E – Negligible Progress: An FIP older than a year that has not reported a Stage 4 or 5 result in more than 30 (but less than 36) months; OR an FIP younger than 1 year that has not reported a Stage 3 activity

(c) incorporating three FIPs reported in 2019 baseline: the Aru-Arafura Demersal Fish Longline Basic FIP, Makassar Strait Snapper and Grouper Longline and Dropline Basic FiP, and North Java Sea Snapper and Grouper Handline and Dropline Basic FIP.

d) Due to rounding of decimal figures, scores may total 101%.

e) Data sources for both FIPs are available at the following links: 2020 data (YKAN FIP and ADI FIP), 2021 data accessed in January 2022, and 2022 data accessed in January 2023.



Industry

Mapping of snapper supply chains (Indicator P)

This indicator identifies the percentage (by volume) of total snapper production that is tracked through supply chain mapping. The supply chain map describes how the Indonesian snapper supply is feeding into the different markets. Mapping includes price and species at each stage of the supply chain (catch, buyers, aggregators, processors). The supply chain map is updated annually to account for price fluctuations that occur from time to time.

2020 Status

Since the CODRS project wrapped up at the end of 2021, there's no trustworthy data to validate this proxy. Nonetheless, assessments from the past two years indicated that approximately 80% of the market flow was directed towards the Asian market. This indicator emphasizes the necessity for more sophisticated supply chain mapping tools to guarantee that fish products are sourced sustainably and marketed to legitimate markets. For this information to be useful, it should ideally be matched against the international demand for snapper and actual snapper exports in 2021.

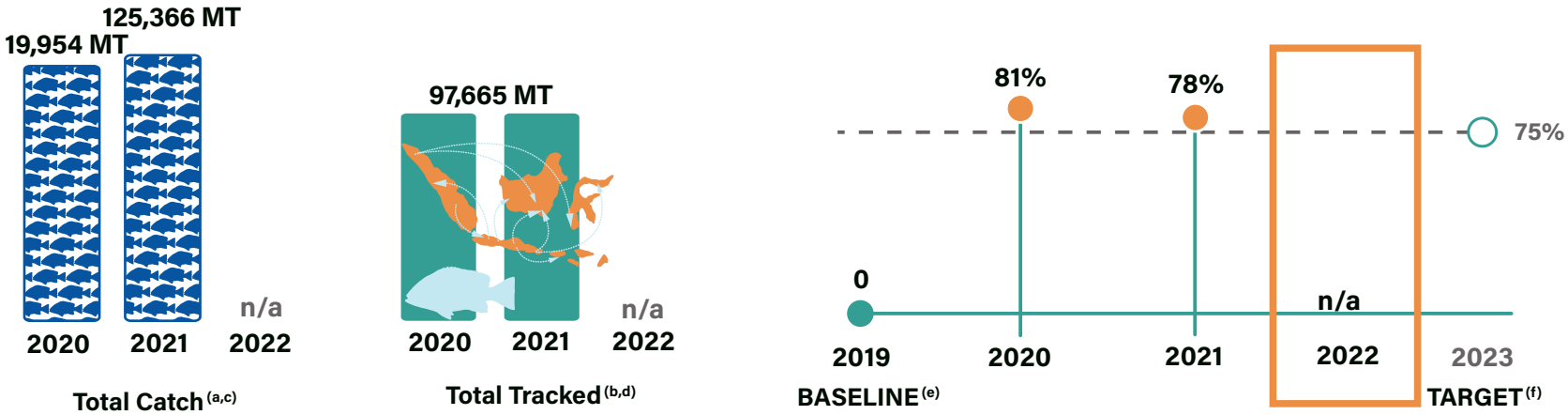


Figure 26. Indicator P – Left: 2020 and 2021 total snapper catch volume and volume tracked through supply chain mapping (MT). Right: Percentage (by volume) of total 2020 and 2021 snapper catch tracked through supply chain mapping

Percentage by volume (vol%) of total snapper production tracked through supply chain mapping, calculated using the formula (vol ÷ Vol) x 100, where vol is the volume of snapper tracked through supply chain mapping and Vol is total volume of snapper production

BKIPM (Fish Quarantine Inspection Agency); PDSPKP (Directorate General of Fishery Product Competitiveness); and industry association, primary data collection. Data on total annual snapper production volume will be provided by YKAN

Checked annually, with the previous year's data submitted in the 1st quarter of the next year

Notes:

(a) 2020 source: Snapper summary report, produced by YKAN
(b) 2020 source: Snapper supply lines report, produced by YKAN
(c) 2021 source: YKAN report
(d) 2021 source: Snapper supply lines report, produced by YKAN
(e) Percentage of production tracked/mapped cannot be determined due to lack of information on volume of production tracked/mapped
(f) Discussions need to take place to explore the link between traceability and actual compliance in the fishery

Industry

Effective application of traceability by FIP member companies (Indicator Q)

Number of FIP member companies implementing traceability systems

BKIPM processing units

Annual

This indicator tracks the number of FIP member companies that are implementing effective traceability systems. A company is counted when it has a traceability system that:

1. Sources from licensed boats fishing legally
2. Keeps records (boat logbook data) in analog and/or digital format itemizing catch, gear and fishing grounds
3. Maintains landing records
4. Includes an analog and/or digital system for transferring information across the whole supply chain
5. Meets MSC Chain of Custody Standard, ensuring that products are traceable to sustainable fisheries

2022 Status

YKAN carried out an experimental traceability monitoring program in collaboration with three companies to assess their adherence to traceability standards. The program evaluated various parameters, including vessel legality (Criteria #1), logbook submission, catch certificate completion, and adherence to chain custody standards. The findings of this program highlight the need for improved monitoring mechanisms to ensure legal compliance and effective traceability within the snapper fishery. However, achieving Criteria #1, which pertains to vessel legality, is unlikely as of 2022. This is primarily due to the absence of an Indonesian traceability policy and the fact that the three companies involved are buyers who do not own fishing vessels. Instead, they rely on third-party fish supplied by aggregators and traders.

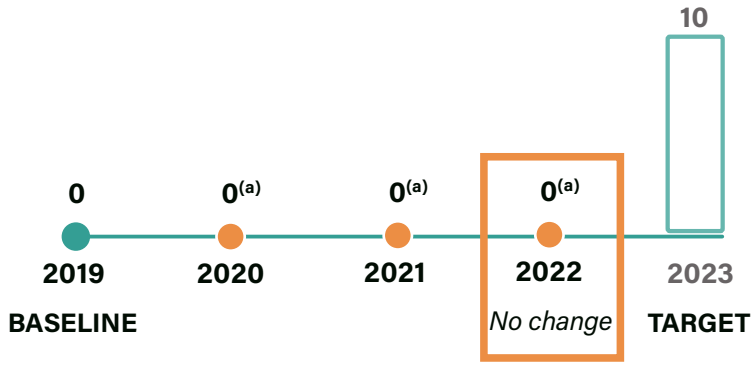


Figure 27. Indicator Q – Number (0) of FIP member companies implementing effective traceability systems against 2023 target (10), and percent change from 2019 baseline (0%)

Notes:

(a) Criteria 1 is not applicable since these 3 companies are buyers—they do not know (and are not required to ascertain) the legality of the fish they buy.

Communications

Indonesian media references to sustainable snapper fisheries (Indicator R)

This indicator counts the number of articles containing quotes from leaders (echelon two or higher) in government, marine NGOs, and ADI referencing best practices in snapper fishery management.

Number of articles

Articles and influential social media articles on the evolving narrative of snapper fishery management and sustainability

Annual

2022 Status

In 2022, there was a notable surge in the publication of articles addressing snapper fishery management and sustainability, with a total of 69 articles published. This represents a significant increase compared to the 17 articles published in 2020 and the 28 articles published in 2021, indicating a 73% rise in publications on this topic. The abundance of these articles plays a crucial role in shaping the evolving discourse surrounding snapper fishery management in Indonesia. It serves as a valuable resource for the Consortium's endeavors to promote sustainable practices within the country's snapper fisheries. Furthermore, the surge in publications indicates a remarkable level of activity at both the national and provincial levels concerning policy development and the formulation of harvest strategies in the WPP 713 and 573 regions.

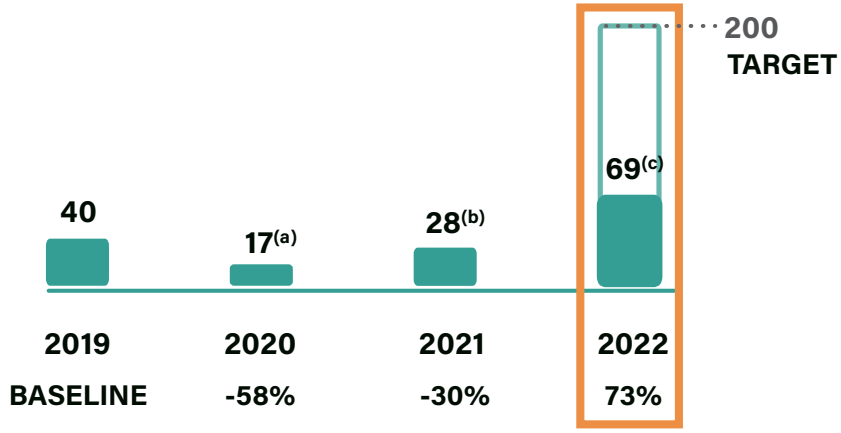


Figure 28. Indicator R – Number of articles in 2022 referencing best practice management in snapper fishery compared to 2019 (baseline), 2020, 2021, and 2023 (target)

Notes:

(a) 2020 data source
(b) 2021 data source
(c) 2022 data source

Human and Labor Rights Assessment of Saleh Bay

Safeguarding Human and Labor Rights

$$\sum_{k=1}^{n} [Weight * Score]$$

Level of assessed risk based on MMAF regulations No. 35/2015, No. 33/2021, and No. 41/2022

Data collection from site visit and interviews with small-scale snapper-grouper fishers and middle persons in Saleh Bay

Annual

To add the missing component to previous annual reports, we conducted **a first field-based assessment of the conditions of human and labor rights (HLRs) in one fishery of Saleh Bay**. The method was a hybrid of some global tools (SRA), frameworks and Indonesian law, and led by an experienced Indonesia partner, Abdul Halim. The evaluation employed a traffic light indicator system, which quantitatively assessed the evidence gathered during the assessment process. The weights assigned to the indicators were based on the regulations set forth by the MMAF, specifically Regulations 35/2015, 33/2021, and 41/2022.

The traffic light indicators used in the assessment are as follows:

Red: This indicates a high risk of violating HLRs standards, highlighting the need for prioritizing labor and human rights protection.

Yellow: This signifies a moderate risk of violating HLRs standards, suggesting a medium priority for labor and human rights protection.

Green: This indicates a low risk of violating HLRs standards, suggesting a lower priority for labor and human rights protection.

It is important to note that the findings presented in this assessment are specific to the small-scale fishery operating within the nano vessel category in Saleh Bay. These findings should not be generalized to other regions or vessel sizes. The assessment was conducted during a field visit from February 12 to 16, 2023.

Respondent Profile

LOCATION

DEMOGRAPHICS

6 middlepersons

12 fishers

Age

Figure 29. Respondent profile in the human rights and labor assessment of the snapper fishery in Saleh Bay.

Human and Labor Rights Assessment of Saleh Bay

Safeguarding Human and Labor Rights

Domains and Indicators	Weight
DOMAIN 1: Degree of human and labor rights (HLRs)	
1. Freedom from the practice of abusing vulnerabilities	0.25
2. Freedom of association and assembly	0.35
3. Decent Remuneration and Adequate Rest	0.15
4. Occupational safety and proper treatment	0.25
DOMAIN 2: Degree of Equality and Equitable Opportunity to Benefit (E2OB)	
1. Fair and open opportunity to benefit	0.25
2. The right to report complaints and access to remedies	0.15
3. Opportunity to develop career and competency	0.25
4. Free from discrimination and receive appropriate job placements	0.35

The first domain of the assessment examines the risk condition regarding labor rights standards in the snapper and grouper fishery. It considers four indicators to evaluate the extent to which fishers and middle persons, such as fish buyers, are ensured fair income mechanisms, freedom of expression, occupational safety, and adherence to standard working conditions at sea. The number of interviews was relatively low, however we tried as much as possible to get a representative subsample to represent the fishery. We will improve the methodology in time for next year's report.

The second domain focuses on equal opportunities, freedom from discrimination, skill enhancement through stakeholder involvement, and the presence of a reliable grievance mechanism.

2022 Status

The assessment found that out of the 18 respondents surveyed, 13 were considered to be at a low risk (green category) of experiencing poor labor rights within the snapper and grouper fishery. These respondents demonstrated favorable conditions regarding the range of factors mentioned above.

On the other hand, 5 respondents were identified as being more exposed to risk and were classified as medium risk (yellow category). Although they may face certain challenges or risks in terms of labor rights, they were not considered to be at a high risk level.

It is important to note that this assessment provides an overview of the labor rights risk conditions within the industry based on the data collected. However, it does not represent the entire snapper and grouper fishery sector, and the findings should be interpreted within the specific context of the surveyed respondents.

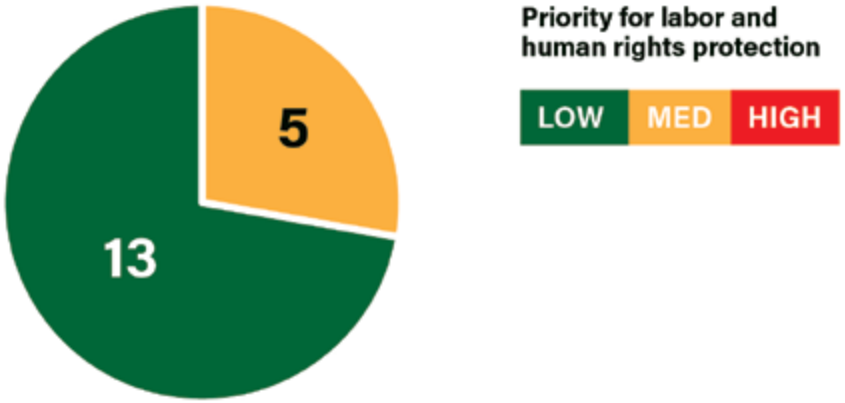


Figure 30. Level of priority for labor and human rights protection for actors in the snapper fishery of Saleh Bay

Human and Labor Rights Assessment of Saleh Bay

Best Practices

During the assessment of Saleh Bay, several commendable practices were observed that have had a positive impact on the human and labor rights conditions for fishers and middle persons in the area. One notable practice is the diverse financial support available. Fisher groups (KUB) and middle persons provide soft loans to alleviate the financial burden of acquiring loans for fishing operations. The interest generated from these loans can be reinvested in additional benefits for KUB members, contributing to the sustainability of their businesses and conservation efforts.

Another commendable practice is the presence of mechanisms that address concerns. These mechanisms facilitate discussions on purchasing prices and loan terms between fishers and middle persons, promoting transparency in the process. Additionally, a grievance redress mechanism (GRM) has been implemented in NTB, providing a platform for submitting complaints related to suspected labor rights violations. This mechanism ensures that fishers and middle persons have a voice and can address any issues they encounter.

Furthermore, in more advanced fisher groups, a designated member acts as the middle person or fish buyer. This arrangement leads to enhanced benefits for members as the designated middle person purchases fish at prices higher than the market rate offered by other middle persons. This commitment to fair and equitable business operations within the community demonstrates a dedication to creating a supportive environment for fishers and middle persons alike.

Areas of concern

However, the assessment also identified several areas of concern related to labor rights in the fishery sector of Saleh Bay. One major issue is the lack of written work agreements for some fishers, which leaves both parties vulnerable to potential disputes or unfulfilled obligations in the future. Additionally, the assessment revealed that loan terms between middle persons and fishers were often undocumented, creating uncertainty and the potential for disagreements.

Another significant concern is the inadequate provision of labor and health insurance for small-scale fishers in Saleh Bay. Without proper coverage, these fishers are left exposed and financially vulnerable in the event of accidents or health issues. Furthermore, the assessment highlighted the limited adherence to occupational safety standards within the fishery, which poses risks to the well-being of fishers.

Addressing these concerns will require significant efforts and interventions in Saleh Bay. Initiatives such as KUSUKA and insurance programs (BPJS) initiated by the MMAF can be leveraged to improve labor and health insurance coverage for fishers. Additionally, capacity-building and training support measures can be implemented to enhance awareness of labor rights, occupational safety, and access to proper medical treatment. By addressing these challenges head-on, the fishery sector in Saleh Bay can make substantial strides in improving the human and labor rights conditions for all its stakeholders.

Snapper fishery actor in Saleh Bay. © BGA Ltd/Imam Syuhada


Snapper fisher in Saleh Bay. © BGA Ltd/Imam Syuhada

Looking Ahead in 2023

Stock Monitoring

The assessment of the snapper fishery has revealed alarming trends and highlights the urgent need for conservation measures. Overfishing has severely depleted snapper stocks, with most populations showing a state of significant decline (less than 10% of the SPR). The data collected from 2019 to 2021 consistently demonstrate this downward trend, raising concerns about the potential local extinction of snapper species, particularly within WPP 573.

One of the key issues identified is the discontinuation of comprehensive data collection efforts, including the CODR data. This lack of data collection hinders the ability to assess the fishery's status accurately. There are differing opinions on how to best collect data, with discussions involving subsidies or making data collection a commitment for fishing vessel license holders, including both large boats and small-scale fishers. Without reliable data and a comprehensive assessment, policy-making and management interventions can only be based on "educated guesses" at best.

However, localized data collection efforts in Saleh Bay continue and provide valuable insights, demonstrating the potential for successful management practices at the local level. Scaling up these local efforts could help establish a representative picture of snapper fisheries and other fisheries across the country. Such data would be a solid foundation for developing a national quota system.

Small-scale fishers play a significant role in the snapper fishery, but they are currently exempt from catch reporting requirements, leading to a scarcity of reliable catch data. Developing a tailored catch monitoring system specifically for small-scale fisheries in Indonesia is crucial to address monitoring challenges and ensure accurate stock assessment and management.

The management landscape remains complex, with various agencies involved at the national and local levels, each with differing roles and responsibilities. Effective collaboration between the MMAF, BRIN, and other stakeholders is essential to address challenges in data management, scientific input, and communication. Access to timely and accurate scientific information is crucial for making informed decisions, implementing conservation measures, and rebuilding the snapper stock.

Addressing these challenges and adopting a holistic approach that includes comprehensive data collection, scientific input, and effective management will be crucial for the long-term sustainability and preservation of the Indonesian snapper fishery.

Data collection in Saleh Bay. ©BGA Ltd/Imam Syuhada

Fisheries Management

The Fisheries Management Unit (FMU) led by the DGCF plays a coordinating role but lacks executive decision-making authority, which lies with central and provincial government entities. While progress is observed in WPP 713, concerns remain regarding the management of depleted stocks in other WPPs. Notably, West Nusa Tenggara province has made significant advancements in fisheries management, serving as a model for other provinces. Integrating funding sources, including philanthropic investments and government budgets, is crucial for effective management. Advocacy efforts should secure dedicated government funds, engage coastal communities, strengthen local enforcement, and promote collaborative management platforms.

Given the limited authority of the FMU at the WPP level, directing investments towards provincial-level initiatives becomes important. Replicating successful interventions across provinces within the same WPP can enhance fisheries management on a broader scale. Evaluating the stock, its economic value, and opportunities for long-term sustainability is recommended, considering the decline in stock status, active stakeholder engagement, and scientific support.

Recent regulations, such as No. 11/2023 on measurable fisheries (PIT), have sparked extensive discussions. While the integration of vessel registration has the potential to improve compliance and combat illegal fishing, it is crucial to guide small-scale fishers through its technical implementation and mitigate any negative impacts on their livelihoods. Availability of real-time fisheries data plays a crucial role in supporting effective management. The Consortium partners have introduced data collection systems for both small-scale and industrial fishers, contributing up-to-date information for decision-making. [15]

Establishing a narrative that promotes sustainable and equitable fisheries management is crucial, prioritizing long-term economic benefits over short-term gains. Fisheries demonstrating good data collection, health, and governance can serve as pioneers for the PIT system. However, heavily depleted fisheries require a focus on meeting biological and environmental goals while considering the impact on local communities.

Improving fisheries management in Indonesia requires collaborative efforts, targeted investments, and adaptive approaches at the provincial level. Addressing governance gaps, promoting sustainable practices, and prioritizing conservation will contribute to the long-term sustainability of fisheries resources.

15 Irna, Sari, et al. 2021. “Monitoring Small-Scale Fisheries Catches in Indonesia through a Fishing Logbook System: Challenges and Strategies.” https://doi.org/10.1016/j.marpol.2021.104770.

Government fishery facilities in Saleh Bay. ©BGA Ltd/Imam Syuhada


Snapper fishing line. ©BGA Ltd/Imam Syuhada

Industry Initiatives

In contrast to other FIPs in Indonesia that have faced setbacks and downgraded ratings, two FIPs focused on snapper and grouper have achieved an A rating in 2022. These FIPs, overseen by Consortium members YKAN and ADI, serve as robust platforms for monitoring industry-standard indicators and receive support from approximately 28 companies sourcing from these fisheries. The sustained A rating demonstrates effective collaboration and dedication among stakeholders, highlighting their commitment to driving positive change and sustainable practices in these targeted fisheries.

ADI has adopted a code of conduct to improve practices within the industry. While technical implementation and member audits are ongoing, ADI encourages its members to comply with the established standards. Data collection is a crucial aspect of their efforts, with ADI requiring members to submit catch data, focusing on length distribution at processing companies. Compliance with minimum legal size requirements is expected, and ADI plans to extend data collection requirements to fishing companies, aiming to improve data accuracy and observation across the supply chain.

Mitigating the impacts on endangered, threatened, or protected (ETP) species is a priority for ADI. They collaborate with researchers and academic institutions to enhance data collection efforts and strengthen the scientific foundation of fisheries management practices.

ADI actively engages international buyers in sustainability initiatives, establishing partnerships and seeking additional buyers through international forums. This engagement promotes sustainable practices and responsible sourcing of snapper and grouper products.

In terms of community engagement, ADI works closely with fishers in Brondong, East Java, to raise environmental awareness and promote the adoption of sustainable and eco-friendly fishing gear. Through initiatives and campaigns, they address plastic pollution and promote conservation, actively involving the fishing community in their efforts.

These comprehensive efforts by ADI demonstrate a commitment to responsible fishing practices, data-driven decision-making, collaboration with stakeholders, and raising awareness about environmental issues. By actively engaging industry players and promoting sustainable practices, ADI contributes to the long-term sustainability of snapper and grouper fisheries in Indonesia.

Final Thoughts

The assessment of the snapper fishery reveals critical overfishing concerns, necessitating immediate action and conservation measures. Limited funding has hampered data collection efforts, emphasizing the need to restore and sustain data collection for effective management. Encouragingly, localized data from Saleh Bay indicates progress in stock recovery, highlighting the importance of regional initiatives. Strengthening data collection at various levels is necessary for comprehensive fishery understanding.

Exploring reliable industry-facing data platforms can enhance transparency, data accuracy, and stakeholder collaboration. Implementing such systems benefits the snapper fishery's long-term sustainability and effective management.

The fragmented management landscape and transition to a quota-based system pose challenges for the Indonesian snapper fishery. Limited knowledge complicates quota allocations based on landing data and vessel numbers. Recently, derivative rules have been developed to establish an effective framework. Balancing resource management and the well being of fishing communities is crucial while implementing the quota-based system.

Establishing 11 FMUs is a crucial step, but they require greater decision-making authority and funding at the WPP level. Philanthropic investments at the provincial level show promise, as do ongoing policy reforms supporting emergency measures and stock recovery. Collaboration between central and provincial governments is essential to optimize fisheries management.

Aligning data collection with industry practices and mechanisms promotes efficiency and stakeholder engagement. Incentives for collaborative data collection within the fisheries management framework should be established. Integrating data collection into industry operations with standardized protocols streamlines processes and facilitates informed decision-making. Creating a supportive framework and appropriate incentives encourage industry engagement and compliance.

While the Snapper Consortium no longer holds formal meetings, the enduring collaboration and knowledge sharing amongst partners proves the value of joint efforts. Looking ahead, Consortium members will conduct a thorough review from 2019-2023 in 2024. This evaluation will reveal valuable insights into the indicators of success in Indonesian snapper fisheries. With five years of data, we can learn lessons that will shape the future of decision-making and management for snapper and related fisheries. These lessons can ultimately benefit tens of millions of coastal community members, contributing to food security, nutrition, and livelihoods across the numerous islands of the world's largest archipelago.

Saleh Bay. ©BGA Ltd/Imam Syuhada

Annexes

Annex 1:

Consortium Members' Highlights

◄ Snapper fishery monitoring visit in Saleh Bay, Sumbawa. ©BGA Ltd/Imam Syuhada

The Snapper Consortium owes its success to the unwavering dedication and invaluable contributions of its members. The active participation of each member has been instrumental in advancing our shared goals, and their unique perspectives and areas of expertise have enriched our collective efforts.

By showcasing their individual efforts towards a common goal, we hope to shed light on the tremendous progress we have made together. Let's take a closer look into the remarkable achievements of our Consortium members.

Public consultation on small-scale snapper and grouper fisheries in South Sulawesi. © SFP

Ocean Conservancy

Ocean Conservancy conducted a manuscript publication titled "Understanding Fisher Behavior: The Case of Snapper Fishers in Indonesia," which involved a survey of 93 Indonesian snapper fishers. The results of the survey shed light on the factors that influence their decision-making process, including income, personal reputation, and sociocultural norms. The findings highlight the importance of incorporating fisher motivations and behavior into fisheries management models to ensure effective incentives and interventions. Failure to account for accurate behavioral assumptions may result in unintended consequences.

The survey revealed that Indonesian snapper fishers consider various competing aspects when deciding where and what to fish. They update their beliefs about the location, abundance, and catchability of target fish stocks through direct observations, inferences based on geographical similarities, and social interactions with other fishers. Additionally, fishers evaluate satisfaction from their fishing activities both economically and socially.

The study also found that information sharing and social knowledge among fishers are likely specific to particular fishing ports, reflecting local sociocultural norms rather than being influenced by vessel size, target catch, or other demographic factors. The prevalence of information sharing and imitation patterns indicates that sociocultural factors play a significant role in fisher decision-making within Indonesian snapper fisheries.

The implications of these findings are discussed in terms of fisheries management models and policy decisions. Understanding fisher behavior and incorporating sociocultural factors can lead to more effective and tailored management strategies for sustainable snapper fisheries in Indonesia.

Snapper and grouper catch in Saleh Bay. © BGA Ltd/Imam Syuhada

Saleh Bay, West Nusa Tenggara, home to 4,000 fishers and important habitat for snapper and grouper fish. ©Rekam

Rekam Nusantara Foundation

Rekam Nusantara Foundation's program focused on the integration of science and stakeholder engagement for the sustainable management of the grouper and snapper fisheries in Saleh Bay.

Saleh Bay is part of WPP 713 and is home to over 67,000 people, with nearly 4,000 of them being fishers. The bay serves as a habitat for snapper and grouper fish, which are important commodities that contribute to the livelihoods of the surrounding communities. In 2016, a scoping study was conducted, which revealed the stock status of the snapper and grouper fishery in Saleh Bay. Based on the results, stakeholders agreed on a harvest strategy, which was established in the Grouper and Snapper Fishery Management Plan of Action (FMPoA). This plan is coordinated through the West Nusa Tenggara Province Sustainable Grouper and Snapper Fisheries Management Committee.

In 2019, the Saleh Bay grouper and snapper fisheries entered the pre-assessment stage for the Marine Stewardship Council certification. The pre-assessment results were then followed up by the Management Committee into an Action Plan for Grouper and Snapper Fisheries Improvement Project in Teluk Saleh. Since then, various actions have been underway to rebuild and maintain stocks' sustainability, while also improving their habitat and governance. The FMPoA cycle in Saleh Bay entered its fourth-year phase in 2022. In addition to harvest strategy monitoring and evaluation, the Management Committee has also prepared and agreed on harvest control rules (HCRs) for the Malabar blood snapper (*Lutjanus malabaricus*) and leopard coral grouper (*Plectropomus leopardus*). The HCRs for both species were developed and simulated with the Method Evaluation and Risk Assessment (MERA) conducted by the Scientific Forum for Sustainable Fisheries Management of West Nusa Tenggara Province. Based on the agreed MERA results, several scenarios such as input control, output control, and area closures will be imposed when the fish stock reaches the limit reference point (Spawning Potential Ratio <0.2).

By integrating science and stakeholder engagement, it is possible to achieve healthy and sustainable fisheries in Saleh Bay. The implementation of the harvest strategy and harvest control rules will help to rebuild and maintain stocks' sustainability, while also improving their habitat and governance. The ongoing efforts of the Management Committee, in partnership with various stakeholders, are vital in ensuring the long-term sustainability of the grouper and snapper fisheries in Saleh Bay. With their commitment and collaboration, the future of these important commodities and the livelihoods they support look brighter.

Sustainable Fisheries Partnership

The Sustainable Fisheries Partnership (SFP) and its partner NGO, Yayasan Konservasi Laut (YKL), have been making waves in South Sulawesi Province with their exciting initiatives aimed at establishing small-scale snapper-grouper fisheries co-management.

Through a series of discussions with fishers in five target areas - Barrang Caddi, Galesong, Langkai, Sarappo, and Satangnga - SFP and YKL have successfully formed a Snapper Grouper Fishers Network, dedicated to addressing sustainability issues in the region.

SFP has also joined forces with YKL and the Fishery Office of South Sulawesi Province to establish a Provincial Fisheries Management Committee for snapper and grouper. This breakthrough development came after a series of meetings with the provincial government, representatives of small-scale fishers, and other key stakeholders. A co-management workshop held in April 2022 further cemented the agreement.

Furthermore, SFP has also been supporting fishers in the target sites to participate in consultations with government agencies regarding the draft harvest strategy for snapper and grouper in WPP 713. After compiling recommendations and inputs from the fishers, SFP submitted them to the Director of Fish Resources Management to be incorporated in the next revision of the harvest strategy document. Currently, the final harvest strategy is under review by the MMAF Legal Bureau.

▲ Snapper-grouper small-scale fishing fleet in Langkai, South Sulawesi. ©SFP

Collecting data from fishers in Barrang Caddi Island, South Sulawesi. © SFP

Yayasan Konservasi Alam Nusantara

As part of their objective to enhance stakeholder capacity in fisheries planning and management, YKAN has strengthened collaboration with the private sector through the Indonesia Groundfish Fishery Improvement Project (FIP). The FIP, led by the private sector, aims to establish a sustainable, profitable, and traceable groundfish fishery in Indonesia. It was launched in 2019 with the goal of achieving Marine Stewardship Council (MSC) certification by June 2024, according to MSC's sustainability standards.

The fishery operates across all 11 FMAs in Indonesia, targeting approximately 50 species using various fishing gears such as longline, dropline, trap, and gillnet. The FIP outlines specific activities to address gaps in meeting MSC certification requirements. One key commitment is limiting the sourcing of juvenile groundfish to a maximum of 5% of the total purchased volume, aiming to reduce the demand for juvenile fish and enhance the reproductive capacity of the fish stock.

Currently, the fishery pre-assessment for Indonesian multispecies Groundfish Fisheries, focusing on snappers, groupers, emperors, and associated species, is being updated with the assistance of an assessor consultant. The revised pre-assessment is conducted against MSC Fisheries Standard v3.0 and Fisheries Certification Requirements (FCR) v3.0. Adherence to this updated standard is essential for meeting certification requirements during the fourth year of the FIP period.

YKAN has maintained an A rating (Advanced Progress) on Fisheryprogress.org based on the latest update report in early 2023. This rating will continue as long as the FIP remains active. However, the potential certification process for this fishery at the end of the FIP period in July 2024 is currently on hold. This is due to the need to establish appropriate management measures, including a credible management plan and harvest strategy. These measures are crucial for the certification process, which is currently in progress.

Tropical Landscape Finance Facility

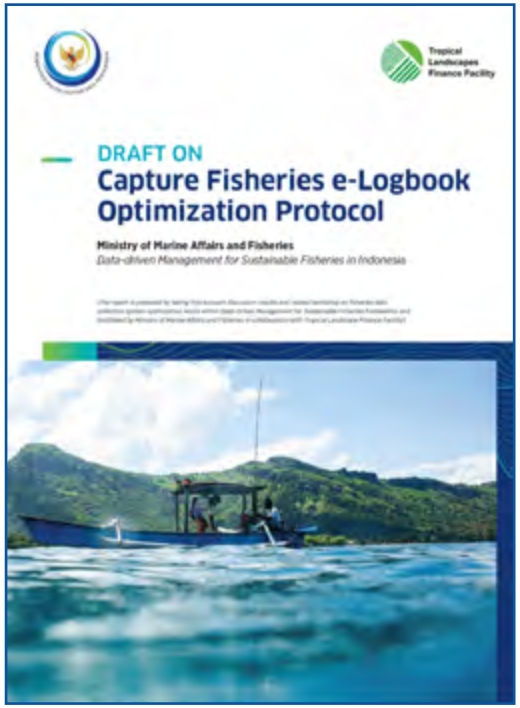
The ADM Capital Foundation and the Tropical Landscape Finance Facility organized a focus group discussion (FGD) to go over the draft protocol for optimizing integrated data collection and management towards sustainable capture fisheries. The initiative aimed to improve the state of the fishery by enhancing the collection and management of captured fisheries data. The FGD was a success, resulting in the agreement of a draft data protocol by the MMAF.

The draft Capture Fisheries e-Logbook Optimization Protocol is a set of guidelines designed to improve the collection and management of data related to captured fisheries in Indonesia. The protocol aims to optimize electronic logbooks (e-logbooks) as a data collection and management tool by providing a standardized framework for capturing essential information about fishing activities, catch, and effort.

The protocol includes recommendations for the design, implementation, and maintenance of e-logbooks and the roles and responsibilities of various stakeholders involved in the data collection process. With the goal of supporting sustainable management of captured fisheries, it aims to improve the accuracy and completeness of data collected, which can inform better decision-making and management strategies.

As a result of the initiative, a multi-stakeholder working group has been formed to collaboratively build and implement an integrated fisheries data system in various WPPs in Indonesia. The group will work together to design activity locations, target commodities, and types of activities for implementing the integrated fishery data protocol, all of which were agreed upon by the MMAF. This significant progress is a step towards sustainable capture fisheries management in Indonesia and a positive example of how stakeholders can work together towards a common goal.

▲ The FGD resulted in the agreement of a draft data protocol © TLFF



▲ The draft protocol

Wildlife Conservation Society

The Wildlife Conservation Society (WCS) has been actively involved in the sustainable management of snapper fisheries in West Nusa Tenggara (NTB) Province, and in the past year, they have achieved two significant milestones.

The first was the productive collaboration with the Scientific Forum for Sustainable Fisheries Management (FIP2B) including jointly conducting the 4th annual monitoring and evaluation of the Sustainable Grouper and Snapper Fishery Management Plan of Action (P2K2B) of NTB. The meeting participants (approximately 60), analyzed the data and assessed the current stock conditions of the target snapper and grouper species within three sub-WPPs in WPP 713 and 573, namely Saleh Bay, Cempi-Sape-Waworada, and Alas Strait, and recommended revisions to NTB Governor Regulation No. 32 of 2018, which would help better align it with the current, national regulations on snappers and groupers. This productive forum discussed important issues related to sustainable fisheries management in NTB Province, informed national policy, and paved the way for better management actions in the future.

Secondly, WCS collaborated with RNF, the provincial Marine and Fisheries Agency, and local universities in NTB Province to launch the FIP2B website and fisheries database. The website serves as an important resource for information related to snapper and grouper fisheries, shark and ray fisheries, coral reef ecosystems, and socio-economic indicators in the province. This website is expected to contribute to improvements in fisheries management and management effectiveness of marine protected areas in NTB, by providing data to support decision-making. The launch of the website marks a significant step forward in WCS's efforts to promote sustainable fisheries management in the region.

The 4th monitoring and evaluation meeting in NTB. © WCS

▶ The FIP2B website is an important source of information for fisheries decision- and policy-makers in NTB

Annex 2: Accepted International Reference Levels of SPR for Fish Species (snapper / grouper)[1]

SPR 10% - is referred to as 'SPR-crash' because the supply of young fish to a stock (which fisheries scientists call 'recruitment') is expected to be declining year on year at a rapid rate, leading to the crash of the fish stock.

SPR 20% - is referred to as the 'replacement level' because, around this level, the recruitment level of a fish stock is expected to be just high enough to replace the adults and keep the stock stable. It is also called by MSC as the 'point of impaired recruitment' (PIR) because, below this level, recruitment is expected to start to decline, leading to long-term declines in the stock. In most harvest strategies, it is used as a 'limit reference point' (LRP), below which all harvesting of fish must stop so that SPR can increase back to above SPR 20%.

SPR 30-40% - is used as an indication that a stock is around the level likely to produce the maximum sustainable yield (MSY). At this level, a stock should be able to stay abundant and have plenty of reproductive potential, allowing it to grow back after periods of poor environmental conditions or previous episodes of overfishing. This level is used as a target in many harvest strategies.

SPR 50% - is used as an indication that a fishery is around the level of maximum economic yield (MEY), which is characterized by slightly lower total catches than at MSY but much higher catch rates and more significant body size, and thus much more profitable fishing and good and sustainable levels of recruitment. This is why, in many first-world jurisdictions (e.g., Australian Commonwealth fisheries), SPR 50% is the target used in harvest strategies.

SPR 60% - is used as a recovery target reference point. In some jurisdictions, if a fishery becomes depleted below the LRP, this level of SPR must be achieved to correct the depletion and restore the stock as quickly as possible.

1 The Barefoot Ecologist's Toolbox. 2020. Length-Based Spawning Potential Ratio

Annex 3: Definition of Harvest Strategy

Harvest strategies formalize and make explicit how a fishery will be adaptively managed, the aim being to make the process of adjusting management settings routine, disciplined, transparent, and predictable to all stakeholders, i.e., to stop it being ad hoc and made up as you go along, just responding to crises when and if they happen, and especially to keep it as free as possible from the influence of politics and vested influence (Smith et al. 2008).

The elements of a harvest strategy are:

a. Explicit management objectives for the fishery translated as explicit reference points;

b. Indicators of fishery status that can be monitored and assessed in the context of the fisheries' objectives and reference points;

c. An agreed assessment methodology based on the indicators being monitored;

d. A framework of management regulations that can be incrementally adjusted relative to the assessed status of the fishery, and

e. Harvest control rules which explicitly define how the management regulations will be incrementally adjusted in response to assessment results.

Acronyms and Abbreviations

ADI	Asosiasi Perikanan Demersal Indonesia (Indonesian Demersal Association)
BKIPM	Balai Karantina Ikan Pengendalian Mutu dan Keamanan Hasil Perikanan (Fish Quarantine and Inspection Agency)
BPJS	Badan Penyelenggara Jaminan Sosial Kesehatan (Social Security Agency)
BRIN	Badan Riset dan Inovasi Nasional (National Research and Innovation Agency)
BRPL	Balai Riset Perikanan Laut (Marine Fisheries Research Center)
CoC	code of conduct
CODRS	Crew-Operated Data Recording System
CPUE	catch per unit effort
CMRH	Center of Maritime Reform for Humanity
DGCF	Directorate General of Capture Fisheries of Indonesia
DJPT	Direktorat Jenderal Perikanan Tangkap (Directorate-General of Capture Fisheries)
DKP	Dinas Kelautan dan Perikanan (Marine and Fisheries Office)
EEZ	exclusive economic zone
eBRPL	e-Badan Riset Perikanan Laut (e-Marine Fisheries Research Institute)
FGD	focus group discussion
FIP	fishery improvement project
FIP2B	Forum Ilmiah Pengelolaan Perikanan Berkelanjutan (Scientific Forum for Sustainable Fisheries Management)
FRC	Fisheries Research Center
GT	gross ton/gross tonnage
ICCTF	Indonesia Climate Change Trust Fund
IDR	Indonesian rupiah
I-Fish	Indonesian Fisheries Information System
IPB	Institut Pertanian Bogor University
IUU	illegal, unreported, and unregulated
k	Brody growth coefficient as defined for the von Bertalanffy growth equation
kg	kilogram
KUSUKA	Marine and Fisheries Business Actor Card Policy
L50	length at which 50% of the fish are mature
LBSPR	length-based spawning potential ratio
LHR	life history ratio
L-infinity	asymptotic size as defined for the von Bertalanffy growth equation
LRP	limit reference point
M	natural mortality rate
MEY	maximum economic yield
MGT	median gross tonnage
MMAF	Ministry of Marine Affairs and Fisheries
MONEV	monitoring evaluation
MSC	Marine Stewardship Council
MSY	maximum sustainable yield
MT	metric ton
NGO	non-governmental organization
nm	nautical mile
NTB	Nusa Tenggara Barat (West Nusa Tenggara)
P1	Principle 1: Sustainable fish stocks
P2	Principle 2: Minimizing environmental impact
P2K2B	Pengelolaan Perikanan Kerapu dan Kakap Berkelanjutan (Sustainable Grouper and Snapper Fishery Management Plan of Action)
P3	Principle 3: Effective fisheries management
PDSPKP	Penguatan Daya Saing Produk Kelautan dan Perikanan (Directorate General of Fishery Product Competitiveness)
PI	performance indicator
PIR	point of impaired recruitment
PIT	*Perikanan Ikan Terukur* (measurable fisheries, quota-based system)
Pokja	*Kelompok kerja* (working group)
Pokmaswas	*Kelompok masyarakat* Pengawas (community surveillance group)
PSDKP	Direktorat Jendral Pengawasan Sumber Daya Kelautan dan Perikanan (Directorate General of Marine and Fisheries Resource Surveillance)
PTF	Provincial Task Force
PUSRISKAN	Pusat Riset Perikanan (Center for Fisheries Research)
RPP	Rencana Pengelolaan Perikanan (Fisheries Management Plan)
SDI	Sumber Daya Ikan (Directorate of Fisheries Resources)
SFP	Sustainable Fisheries Partnership
SK	*Surat Keputusan* (decree)
SPR	Spawning Potential Ratio
SR	Starling Resources
SRA	Social Responsibility Assessment
TLFF	Tropical Landscape Finance Facility
TNC	The Nature Conservancy
TOC	Theory of Change
TRP	target reference point
US	United States
USAID	United States Agency for International Development
USD	United States dollar
VDL	vertical drop line
WCS	Wildlife Conservation Society
WFF	Walton Family Foundation
WPP	Wilayah Pengelolaan Perikanan (Fisheries Management Area)
YKAN	Yayasan Konservasi Alam Nusantara (Nusantara Nature Conservation Foundation)

Resources

For more background on the snapper fishery: Mous, P. 2018. Case study: Snapper and grouper fishery. Trends in Marine Resources and Fisheries Management in Indonesia: A 2018 Review, p.62. Retrieved from https://www.packard.org/wp-content/uploads/2018/08/Indonesia-Marine-Full-Report-08.07.2018.pdf

2019 State of the Fishery: Snapper Fishery report: https://bit.ly/2019snappercoalitionbaselinereport

2020 Snapper Fishery report: https://bit.ly/snapperfisheryreport2020

2021 State of the Snapper Fishery report: https://bit.ly/2021stateofthesnapperfishery

For more information on the TOC for the snapper fishery: https://bit.ly/snappertoc

To access the full 2022 indicators reporting sheet and document articulating the indicators, please go to 2022 Snapper Fishery Indicators

Hordyk, A., Ono, K., Valencia, S., Loneragan, N.R., and Prince, J.. 2014. A novel length-based empirical estimation method of spawning potential ratio (SPR), and tests of its performance, for small-scale, data-poor fisheries https://doi.org/10.1093/icesjms/fsu004

Progress of publicly released WPP intervention activities can be accessed here: https://integrasi.djpt.kkp.go.id/pinwpp

ADI business plan: https://bit.ly/adibusinessplanfinal

Fishery Progress - Indonesia deepwater groundfish - dropline, longline, trap and gillnet - 2021-09-28.pdf: https://bit.ly/3MMl7Tb

Fishery Progress - Indonesia deepwater groundfish - dropline, longline, trap and gillnet - 2022-01-18.pdf: https://bit.ly/37lzihB

Sari, I., Ichsan, M., White, A., Raup, S., Wisudo, S., 2021. Monitoring small-scale fisheries catches in Indonesia through a fishing logbook system: Challenges and strategies. https://bit.ly/3u2zlGH

Jeremy Prince, et al. 2019. Spawning potential surveys reveal an urgent need for effective management. SPC Fish. https://www.spc.int/DigitalLibrary/Doc/FAME/InfoBull/FishNews/158/FishNews158_28_Prince.html

ADI Code of Conduct is available through this link: https://demersal.or.id/code-of-conduct/

Plastic Waste and Abandoned / Lost Fishing Gear Management in the Indonesian Snapper Fishery: https://drive.google.com/file/d/1a01Z56rXyjszgAiaKPg84TlfFz9y6Tdp/view

Simulation of snapper management measures in the Arafura Sea (WPP 718): https://bit.ly/3CLYpG1

Sampling rate implications for fishery indicators in the Indonesian deep slope snapper fishery: https://bit.ly/3IfKWYj

Carrella, E., Drexler, M., and Ananthanarayanan, A., 2022. Comparison of MERA and POSEIDON Model Management Recommendations for the Arafura Sea Snapper-Grouper Fishery. https://bit.ly/3q91CKD

Wibisono, E., Mous, P., Firmana, E., and Humphries A., 2022. A crew-operated data recording system for length-based stock assessment of Indonesia's deep demersal fisheries. https://doi.org/10.1371/journal.pone.0263646

Dimarchopoulou, D., Mous, P., Firmana, E., Wibisono, E., Coro, G., and Humphries, A., 2021. Exploring the status of the Indonesian deep demersal fishery using length-based stock assessments. https://bit.ly/3i6vYcu

Hoenner, X., Barlain, E., Ernawati, T., Hardesty, B., Kembaren, D., Mous, P., Sadiyah, L., Satria, F., and Wilcox, C., 2022. Using anti-theft tracking devices to infer fishing vessel activity at sea. https://doi.org/10.1016/j.fishres.2022.106230

Accepted International Reference Levels of SPR for Fish Species (snapper / grouper): http://barefootecologist.com.au/lbspr.html

NOAA Fisheries, "NOAA Fisheries Announces Extension of Emergency Measures to Modify the Gulf of Mexico Greater Amberjack Recreational Fixed Closed Season" (December 19, 2022), accessed May 16, 2023, https://www.fisheries.noaa.gov/bulletin/noaa-fisheries-announces-extension-emergency-measures-modify-gulf-mexico-greater

Jens Koed Madsen, et al., Understanding Fisher Behavior: The Case of Snapper Fishers in Indonesia. Dec 13, 2022. https://drive.google.com/file/d/1V_9ABPdDPr585dMNpTtzhaGD-95Q7ZLd/view

Draft of the Capture Fisheries e-Logbook Optimization Protocol: https://drive.google.com/file/d/1ht7uaF3R5LU3TTY3Lc6iVBveQkSGWXNH/view

List of Tables and Figures

Snapper catch in South Sulawesi. © SFP

Feedback

The author takes responsibility for all errors herein, and warmly welcomes constructive feedback from all stakeholders to help us enhance the findings of the report.

2022 State of the Fishery

Snapper Fishery

Fisheries Management Areas (WPP) 713, 718 and 573

June 2023