

Original: English

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| Paper reference: | Working Paper 3 |
| Title: | SPC FAME priorities and emerging work areas in 2023 |
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Summary/short description/key points:

This paper outlines priorities for 2023 for the Pacific Community (SPC) Fisheries, Aquaculture and Marine Ecosystems (FAME) division. The 2023 priorities are in line with the long-term strategic directions and emerging work areas outlined in the [SPC Strategic Plan 2022-2031](#) and [SPC-FAME Business Plan 2022-2027](#). This paper also outlines key work programmes in 2023 to support members recovery from the impacts of COVID-19. SPC-FAME notes that work programmes will continue to evolve to focus on the impacts of climate change and food systems thinking as the region fully opens its borders as it transitions from the COVID-19 mitigation responses.

Recommendations:

Members are invited to:

- Review the priorities and emerging work areas for 2023 and beyond
- Make suggestions on strategic direction, and
- Endorse the priorities and emerging work areas in line with SPC-FAME Business Plan 2022-2027.

Introduction

1. The implementation of the new [SPC FAME Business Plan 2022-2027](#) for Fisheries, Aquaculture and Marine Ecosystems (FAME) commenced in 2022 after endorsement by the 14th SPC Heads of Fisheries Meeting to support the transition from the shocks of COVID-19, and in line with SPC's new *Strategic Plan 2022-2031* approved by the 51st CRGA in November 2021. The new Business Plan sets the higher-level outcomes expected from the Division's work, goals, objectives, and results for 2022. The overall goal is *that the fisheries and aquaculture resources of the Pacific region are resilient, and managed sustainably for economic growth, food security, cultural and environmental conservation.*
2. FAME continues to work towards this goal through the new *Business Plan* objectives:
 - Enhance strategic oversight, efficient operational systems, partnership, and collaboration with other SPC divisions, our members, and partners.
 - Provide, and facilitate access to and interpretation of fisheries, aquaculture, and marine ecosystems information and knowledge.
 - Enhance data collection and provide data management services for fisheries, aquaculture, and marine ecosystems.
 - Provide scientific research, analysis, and advice for evidence-based fisheries management.
 - Strengthen the contribution of Pacific islands aquaculture and fisheries toward sustainable, bio-secure, equitable and more secure food systems.
 - Identify diverse and sustainable livelihood options for SPC member Pacific Island Country and Territories (PICTs).
 - Support the development of national capacity and enhance capabilities in fisheries and aquaculture among PICTs.
3. The key results areas under each objective provide the framework for development of workplans for the key programmes of SPC FAME, the Coastal Fisheries and Aquaculture Programme (CFAP), and the Oceanic Fisheries Programme (OFP), nested under Key Focus Areas of the SPC Strategic Plan 2022-2031. The Office of the Director supports OFP and CFAP through the provision of strategy development, stakeholder engagement, resource mobilisation, information and knowledge management, communication, planning and monitoring, evaluation, and learning as part of One SPC.
4. SPC-FAME supports members' needs by generating science and knowledge, innovation, enhancing individual and institutional capacity, and building trusted relationships through culturally and contextually responsive ways to support sustainable management of regional and national fisheries and aquaculture resources.
5. This paper provides an outline of the key priorities to be implemented by SPC FAME sections and units over the coming year, in line with the direction set out in the new *SPC FAME Business Plan 2022-2027*.
6. The fisheries and aquaculture sector in the region is undergoing rapid changes due to both regional dynamics and global trends related to climate change, COVID-19, coastal habitat degradation, food security, population growth and a shifting geopolitical landscape. These

changes require SPC FAME to continue to have strategic foresight for learning and adaptation – including positioning itself to serve the needs of members and navigate these challenges in support of national priorities, regional frameworks and SPC’s strategic plan.

7. SPC-FAME’s Member Request Management System (FMRMS) tracks the management and implementation of requests that are aligned to member priorities (Information Paper 6). The FMRMS was developed to ensure member requests are prioritised, tracked and responded to in a timely and efficient way.

Key work priorities across SPC (One SPC)

8. SPC-FAME works across One SPC to deliver many of its key priorities – including working with key divisions and programs. Some of the key priorities for 2023 will include working with:
 - a. Regional Offices (Melanesia, Micronesia and Polynesia) to enhance and strengthen implementation of activities in member countries and territories and avoid duplication.
 - b. Integration and Resource Mobilisation Office (IRMO) to integrate priorities identified in the division to mobilise resources and ensure effective use.
 - c. Pacific Community Centre for Ocean Science (PCCOS) to improve the quality and accessibility of ocean data and information relevant to fisheries, and to provide technical support and capacity-building to member countries to enable them to make use of these services. The PCCOS will continue its critical work in ocean science research, which will enable FAME to leverage the expertise and resources of its partners to improve its work and achieve its objectives. Together, FAME and PCCOS will work to enhance ocean science research, data management, and technical support to better serve the needs of members.
 - d. Climate Change and Environmental Sustainability (CCES) division to strengthen FAME’s climate-driven activities. FAME’s work for improving climate resilience in fisheries and aquaculture focuses on three main areas: knowledge generation, regional and national capability building, and developing solutions. To achieve the first goal, FAME will provide tools and information for evidence-based policy development and decision-making. The second goal will be accomplished by increasing the capabilities of both the region and individual countries through national attachment programmes and short-course training. Lastly, FAME will convert current information into tools and solutions that can be used to operationalise climate adaptation in fisheries and aquaculture policies and management, such as climate-tuned control rules, national dashboards, and regional report cards, and
 - e. Human Rights and Social Development Division (HSRD) to promote gender integration, social inclusion, and environmental responsibility in fisheries and aquaculture. This collaboration aims to empower women, girls, youth, and marginalised groups to participate in managing and benefiting from these resources. It is guided by SPC’s Social and Environmental Responsibility policy.

9. Reflecting the organisational development of 'SPC flagship programmes' (Food systems, climate change, oceans and gender), FAME and its programmes have been actively engaging in the ongoing development in all of the flagships.

Key priorities of the FAME Director's Office

10. The FAME Director's Office (DO) provides leadership and strategic oversight of the Division's work, supports operational efficiencies, facilitation, and coordination of high-level stakeholder engagement, supports One SPC through integrated programming, Flagship programming, collaboration, communication, and partnerships. In addition, the Director's Office, in partnership with SPC's Integration and Resource Mobilisation section, develops funding and partnership opportunities and ensures that FAME is well integrated with the rest of SPC through involvement in corporate-level planning and decision making. The Director's Office incorporates two functions that work across the Division's two substantive programmes – the Fisheries Information and Knowledge Section (FIKS), and the Planning, Monitoring, Evaluation and Learning (PMEL) Unit (including communication, programme planning and resource mobilisation).

Fisheries Information and Knowledge Section

11. The Fisheries Information and Knowledge Section (FIKS) supports objective 2 of the new [SPC FAME Business Plan 2022–2027](#). The section develops and facilitates access to and interpretation of fisheries information and knowledge products in collaboration with other FAME sections, as well as with, and for, all members. It works with SPC's Information Services (Publication and Translation) to reach high editorial standards, both in English and French documents, and increase the use of Pacific languages in information tools produced. It also collects, organises and disseminates relevant fisheries information, mainly to assist members to achieve their development goals.
12. Priority work for the Section includes:
 - The production of reference newsletters and information bulletins that provide a current look at some of the most exciting research and case studies on marine-related topics of interest to the region through the triannual SPC [Fisheries Newsletter](#), and two Information SPC Bulletins: [Women in Fisheries](#) (biannual), and [Beche-de-mer](#) (annual)
 - The production of scientific and technical reports, as well as other paper-based information tools such as posters, brochures, leaflets and manuals at the request of members or other FAME sections
 - The provision of fisheries-related information in response to specific needs expressed by members or as a response to needs identified at the regional level, using all available media, including online portals, web applications, social media, etc
 - The production of tailor-made information for communities, in line with the [New Song for Coastal Fisheries](#) recommendations and the [Framework for Action on Scaling up Community-based Fisheries Management](#), using a wide range of materials combining

print with more interactive tools such as videos, animated films dubbed in local languages and social media

- The production of training videos as pre-learning tools for online workshops aimed at reinforcing capacity of Pacific Island fisheries officers and associated networks, and
- The elaboration and implementation of national information strategies in collaboration with member countries and territories to refine their communication strategies to enhance community engagement, elevate local voices, and support social and behaviour change efforts. The objective is to significantly increase the delivery of information on sustainable coastal fisheries management to communities. This approach has been undertaken in collaboration with the LMMA Network International for the Melanesian countries.

Finance Section

13. The Finance section, in close collaboration with SPC corporate finance team, provides financial and operational services to ensure the delivery of projects and activities. The section is responsible for upholding SPC's fiduciary responsibility towards its donors and development partners, which is essential for the long-term financial sustainability of the organisation. The section works with SPC finance to provide budget expenditure support to FAME's key programmes by creating an enabling environment through the management of budget covering all streams of core, programme, and project funding. This support is essential for the effective and efficient delivery of programmes and the achievement of the organisation's goals.

Planning, Monitoring, Evaluation and Learning (PMEL) Unit

14. The PMEL Unit supports the SPC FAME Division in MEL, communication and visibility, donor and corporate reporting, project scoping and design, strategic foresight and planning, resource mobilisation, budget tracking, business plan tracking, facilitation and learning from within FAME as well as undertaking broader strategic planning and learning.
15. Priority work areas for PMEL unit in 2023 includes:
 - f. Internal MEL systems and support is provided to enhance evidence generation on FAME's work areas and communicate results to members and stakeholders, while improving systems, tools, standards, and processes, building MEL capability and capacity within FAME. This includes tracking and reporting on SPC FAME's new *Business Plan 2022-2027*
 - g. Integrated MEL in One SPC: working closely with other sections within SPC through MELNet to ensure that MEL is integrated across the organisation's programmes and services. By doing so, the unit supports evidence-based decision-making and effective programme delivery, as well as monitors progress and impact towards the organisation's goals
 - h. Communication: priorities for communication include the development and implementation of a communication strategy for the Division, improved visibility, and communication of FAME's work areas to members and partners, enhancing the

ongoing collaboration and network with CROP agencies, donors, and stakeholders. It also includes cohesive messaging on other common concerns for the region, such as the food systems, climate change, gender and the Blue Pacific

- i. Programme Planning: priorities in this work include facilitation, coordination, and oversight of high-level stakeholder engagements – such as the SPC Heads of Fisheries Meeting, the Regional Technical Meeting on Coastal Fisheries and Aquaculture (RTMCFA) and the Regional Fisheries Ministers Meeting (RFMM). PMEL also supports annual and long-term planning within the FAME sections, including the development and implementation of the *SPC FAME Business Plan 2022-2027* and integrated programming within SPC.
- j. Resource Mobilisation: priorities of this work include project development, and identification of new project opportunities, mapping of regional priorities and identifying resourcing gaps that align with the FAME business plan, support to internal FAME staff in concept and proposal writing and liaison with SPC's Integration and Resource Mobilisation team, and
- k. Pacific Fisheries Leadership Programme (PFLP): PFLP will continue with ongoing programme and budget management, as well as monitoring, evaluation and learning oversight. The programme will offer both face-to-face and virtual leadership courses, workshops, and coaching throughout the year, as well as piloting new initiatives to enhance progress towards the long-term outcome. The PFLP will also continue to facilitate stakeholder engagement, including with Consortium Members and the Steering Committee, with a focus on visibility and dissemination of learnings, opportunities, and impact. The programme's implementation will require an end-of-project evaluation to measure its long-term impact and learnings, which will inform future programmes.

Key priorities and emerging areas of the Coastal Fisheries and Aquaculture Programme (CFAP)

16. The Coastal Fisheries and Aquaculture Programme (CFAP) provides science and technical support to Pacific Island Country and Territory (PICT) governments and administrations to enhance the management of their coastal fisheries, and the sustainable development of aquaculture and nearshore livelihoods. CFAP supports and implements all seven of the *SPC FAME Business Plan: 2022-2027* objectives.
17. CFAP priorities are captured in the recently completed CFAP 5-Year Plan and are also guided by members' requests and the frameworks and strategies in the [New Song for Coastal Fisheries – Pathways to Change: The Noumea Strategy](#), the coastal fisheries component of the [Future of Fisheries: Regional Roadmap for Sustainable Pacific Fisheries](#), the [Pacific Framework for Action on Community-based Fisheries Management](#) and the [Regional Framework on Aquatic Biosecurity](#).
18. CFAP began implementing its new 5-year plan in late 2022. CFAP's aim is to provide excellence in coastal fisheries and aquaculture science and management to realise sustainable and

equitable use of coastal and aquaculture resources for the social and economic wellbeing of Pacific peoples. The 5-Year Plan guides CFAP's work to better support governments and administrations to effectively manage and equitably benefit from their coastal fisheries and aquaculture resources, though the use of emerging technologies, community engagement, evidence-based management, and people-centred approaches.

19. CFAP has three sections: Aquaculture; Coastal Fisheries and Aquaculture Science; and Coastal Fisheries Management and Livelihoods. These sections are supported by two cross-cutting areas: Coastal Fisheries Information and Data Management – providing database and information service, support and advice; and Coastal Fisheries and Aquaculture Economics – providing economic advice, analysis and assessment of coastal fisheries and aquaculture data and projects. CFAP currently has 30 staff.
20. Given the integrated nature of coastal fisheries and aquaculture in the Pacific islands region, CFAP works in close partnership with the Oceanic Fisheries Programme and the Director's Office – including Fisheries Information and Knowledge and the PMEL sections. CFAP also adopts an interdisciplinary approach by collaborating with other SPC Divisions (especially, Human Rights and Social Development; Land Resources; Climate Change and Environmental Sustainability Programme; Statistics for Development; and Geoscience, Energy and Maritime), and collaborates with a wide range of universities, international, regional and local NGOs, and other Council of Regional Organisations in the Pacific (CROP) agencies, Secretariat of the Pacific Regional Environment Programme (SPREP); Forum Fisheries Agency (FFA) to deliver the CFAP work programme in an integrated and collaborative manner. Ensuring aquaculture and coastal fisheries are integrated into the broader food systems initiatives by promoting and supporting aquatic/blue foods.
21. Activities are supported by key donors, including New Zealand, Australia, European Union, Sweden and the United States, and implementation is frequently in partnership with non-government organisations, civil society organisations, communities, universities and, increasingly, locally and regionally based consultants.
22. CFAP work activities are primarily supported by three anchor projects:
 - I. *Sustainable Coastal Fisheries and Aquaculture for Pacific Livelihoods, Food and Economic Security* (SCoFA; Aug 2021 to Nov 2027) funded by the NZ Government (NZ MFAT), with additional support from the Australian Government (AU DFAT)
 - m. *Pacific Coastal Fisheries Management and Compliance* (PaFMaC; Oct 2021-Sep 2026) funded by the US Agency for International Development (USAID)
 - n. *Pacific European Union Marine Partnership* (PEUMP; Jul 2019-Dec 2024) Programme funded by the European Union and Sweden (Sida)
23. CFAP is also supported through allocations from the Australian (2021-2023) and New Zealand (2020-2024) programme funding for SPC FAME in support of the *FAME Business Plan* implementation, and the SPC annual Core funding.
24. A high priority in 2023 is to secure the funding necessary for CFAP to be able to effectively meet members' priorities and the increasing number of requests for science and fisheries

development support, areas where assistance is currently acutely constrained by limited funding and resources.

Coastal Information and Data Management

25. The priority work areas of the Coastal Fisheries Information and Data Management team for 2023 include:

- Support to PICTs through developing formal online training courses; providing training on market/landings/socio-economic/community surveys using Ikasavea and web modules; training on the Monitoring, Control and Surveillance module; and on the Reef Fisheries Integrated Database (RFID) and other web-based modules. Responding to member requests for country specific database support and training, including addressing legacy databases and migrating and decommissioning old databases.
- Small-scale fisheries catch data collection through the use of photos and tablet applications (TAILS and Ikasavea). Collaborating with OFP to automate the processing of catch photos into TAILS/TUFMAN2, employing technology developed for Ikasavea.
- Using artificial intelligence (AI) and machine learning tools to analyse photos of fishes and invertebrates on a measuring board or on a mat to semi-automate data entry by predicting species, reading scales, and calibrating images for length measurements. As more images are acquired and validated, models will be updated to improve accuracy and recognise a larger number of species. New models will be developed to automate the measurement of additional invertebrate groups.
- PICT specific fisheries and aquaculture related documents continue to be scanned and remote support provided to several member-managed knowledge bases to promote the accessibility of scientific knowledge to national fisheries staff.
- The current knowledge of the biology, exports and regulations of targeted species is being collated by experts and will be presented in an online database that is in development, along with tools derived from these parameters, such as, weight and length conversions between wet and processed product; suggested minimum size derived from species traits; etc. The online module will be expanded for biological sampling data.
- To improve the mapping and monitoring of the benthic habitat in relation to coastal resources, large photographic underwater surveys have been conducted to complement classification from satellite imagery. AI is being used for computer assisted image classification of photo-quadrat images. The models will continue to be reviewed and improved.
- A Monitoring, Control and Surveillance (MCS) online module to record infringements will be expanded to fit the needs of various PICTs. With the continued increase in coastal fisheries activities in the region, the ongoing development of this module is a high priority.
- Online training tools (data acquisition, entry and analysis) and access to the latest information continues to be developed on a fishery-by-fishery basis, to provide web-based self-service tools for various stakeholders.

- There will be a continued emphasis on the development of web modules for quality control, predefined and customised queries, and statistical analyses, to ease flow of data between members and SPC, and to assist with the assessment and cleaning of data and the accessibility to scientific outputs (both self-service and expert advice).
- Tools and methodologies to assist with tracing commercial products are being explored to improve the monitoring of exploitation levels and to facilitate enforcement of coastal fisheries-related regulations at a local scale. Processed sea cucumber species images are being collated and will be used to produce training/support tools for enforcement officers in identifying the processed species/products and automate data collection and measurements.
- The trials of underwater video, collected by remotely operated vehicle (ROV), for deeper sea cucumber species stock assessments are underway, assisted by computer vision analysis of the videos.

Aquaculture

26. The priority work areas for the Aquaculture section in 2023 include:

- Enhancing regional and national capacity in aquaculture policy, planning, MCS and legislation to facilitate the establishment of clear priorities for aquaculture to meet current and future needs. This includes: undertaking the consultations and development of the Pacific Regional Aquaculture Strategy (see Working Paper 6); providing expertise and technical support to members on the development of new, or the review of existing, national aquaculture development and management plans; providing technical support to members on the development and/or review of commodity specific policy and action plans; and providing technical support to members in the area of aquaculture and aquatic biosecurity legislation/policy/plans.
- Providing both direct and remote technical and analytical support for aquaculture to facilitate production and economic sustainability, including:
 - Strengthening members' capacity and tackling technical constraints in feed, seed and broodstock management, including further developing the 'cluster approach' to support small operators to better manage residual COVID-related impacts on aquaculture.
 - Providing technical support to improve aquaculture infrastructure.
 - Supporting small- to medium-sized private sector development through capacity-building and technology transfer to increase efficiency of enterprises and up-scale their production.
 - Improving support for remote networking and collaboration, technology, research, skills transfer and technical advice.
 - Strengthening business skills, knowledge and information on aquaculture operations through mentoring and training.

- Strengthening economic and market assessments for viable aquaculture commodities and products, including identifying and facilitating the shift to domestic markets to compensate for the residual COVID-19 trade impacts.
- Enhancing the management of aquatic biosecurity risks, including: supporting the application of the Regional Framework on Aquatic Biosecurity; supporting members to strengthen risk analysis capacity and assess their aquatic biosecurity needs and practices; supporting members to improve aquatic biosecurity disease diagnosis, surveillance and reporting practices; strengthening national capacities of quarantine by working with national biosecurity and quarantine agencies to include live aquatic organisms; and supporting members to improve national infrastructure and operations for quarantine of live aquatic organisms.
- Developing online tools, training and support for improved governance in terms of policies, legislation, development and management plans. Absence of good governance and/or clarity on tenure slows development in aquaculture.
- Promote innovation and diversification in members' aquaculture production sectors by facilitating the acquisition of appropriate new technology and investments.
- Identify and foster aquaculture that is “climate-smart”, by virtue of either being resilient to climate change or by helping to address climate change (such as by carbon sequestration).
- Expand the current ‘cluster approach’ to include supporting local aquaculture industry associations reach a critical mass through better information exchange, more efficient procurements, and coordinated marketing.
- Strengthen gender and social inclusion assessments to better understand family farming, especially the roles of women and youth in aquaculture.
- Provide support to members on web-based data applications to strengthen on-farm data collection and management.
- Improve engagement in aquaculture in the area of monitoring, control and surveillance, as well as enhancing capacity in occupational health and safety in aquaculture farming operations.
- Strengthen leadership skills in small- to medium-sized commercial aquaculture farming operations.
- Target future work to support hatcheries for key commodities and low cost/low technology farming systems for livelihood aquaculture.

Coastal Fisheries Management and Livelihoods

27. The priority work areas for the Coastal Fisheries Management and Livelihoods Section include:

- Supporting members to strengthen coastal fisheries and aquaculture management arrangements, through support on reviewing and drafting policies, management plans, legislation and regulations, and training national fisheries officers and communities in Monitoring, Control, Surveillance and Enforcement (MCS&E).

- Supporting and further developing the Community-Based Fisheries Dialogue (CBFD) to give the Civil Society Organisations and other Non-State Actors sector an opportunity to share experiences and lessons from community-based initiatives and provide information and advice on key CBFM needs and issues, through the RTMCFA to the Heads of Fisheries, on priority issues associated with the sustainable use of coastal fisheries resources (see Working Paper 8).
- Expanding the coordination, collaboration and support to members, as well as local and regional partners in implementing effective CBFM scaling-up approaches within national contexts in line with the “Pacific Framework for Action on Scaling-up Community-based Fisheries Management”.
- Support officials from PICTs to review the regional frameworks - “[New Song for Coastal Fisheries – Pathways to Change: The Noumea Strategy](#)” and the coastal fisheries component of the “[Future of Fisheries: Regional Roadmap for Sustainable Pacific Fisheries](#)”. Including reviewing and updating the indicators for the Coastal Fisheries Report Card.
- Providing on-going support for reviewing and advising on CBFM programmes and projects across the region, including providing oversight of the implementation of the PEUMP Programme LMMA Network International CBFM activities in Melanesia.
- Launching and maintaining a FAME web page to serve as an inclusive e-platform for CBFM in the region.
- Supporting members with sustainable livelihoods opportunities, through strengthening national anchored FAD programmes; providing training workshops for key nearshore fisheries; capacity enhancement and support in safe, sustainable fishing methods; exploring alternative target species; and developing non-extractive uses of coastal fisheries resources.
- Developing and maintaining an anchored-FAD web portal to improve members’ access to up-to-date anchored FAD design, development, deployment, monitoring and management information, tools, and training materials. Working in close partnership with FAME OFP, SPC GEM and PCCOS on developing Highly Instrumented Fish Aggregating Devices (HI-FAD; see [HoF14 Information Paper 5](#)).
- Expanding current MCS training, capacity building and support activities at the national level to enable national fisheries MCS officers to train and support their counterparts in communities located on outer islands or in remote locations.
- Undertake a review of the Certificate IV in Coastal Fisheries and Aquaculture Compliance course (including improving linkages with the FFA Oceanic MCS Cert IV); run Cohort 6 of the Certificate IV MCS course (EOI to be advertised in March 2023); and compile the learning materials for the new Professional Certificate (equivalent Cert III) Community Compliance course for in-PICT training institutions to begin delivering in 2023.
- Explore the advantages of and trial emerging technology in monitoring and detecting coastal fisheries and aquaculture offences.

- Providing regular training and mentoring on legislative drafting for coastal fisheries and aquaculture, aimed at members' fisheries policy and legal officers. Review the first *Legislative drafting online course in coastal fisheries*, developed and delivered in collaboration with the University of California, Hastings College of the Law, and deliver another online course.

Coastal Fisheries and Aquaculture Science

28. The priority work areas for Coastal Fisheries and Aquaculture Science section include:

- Securing funding to build the CFAP science capacity and capability to be able to effectively provide PICTs with requested support in:
 - Building the science foundations for a core standard, Pacific approach to sustainable, evidence-based coastal fisheries management.
 - Utilising new tools (e-tools) and approaches for online data entry; standardised data collection; data and information quality control; and analysis and dissemination for use in management decision-making (see Coastal Fisheries Information and Data above).
- Working with members to assess and manage finfish and invertebrate resources and their associated habitats to inform management through resource assessments, data analysis, interpretation, training, mentoring and advice.
- Capacity enhancement support to members to conduct fisheries independent (in water surveys) and fisheries dependent (market and creel surveys) assessments, through developing online learning software and conducting virtual training for members' fisheries staff.
- Continue developing a series of "marine resource status" reports, similar to the "[Trochus in the Pacific Islands: a review of the fisheries, management and trade](#)" and "[Aquarium products in the Pacific Islands: a review of the fisheries, management and trade](#)", that can be maintained as easily-updatable web-based reports.

Key priorities and emerging areas of the Oceanic Fisheries Programme (OFP)

29. While contributing to all FAME objectives, the OFP directly supports objectives 3, 4, 6 and 7 of the *SPC FAME Business Plan 2022-2027*. To summarise, OFP provides scientific advice on the status of stocks, management options and impacts of fisheries and the environment – including climate change - on both target and non-target species and the pelagic ecosystem; conducts research on the biology and ecology of tuna and tuna-like species; provides technical support in the collection and management of data from fisheries; and provides capacity building opportunities to members across these fields of work.
30. OFP delivers its work to members both at the national level and through the various regional and sub-regional fisheries organisations of which they are members, including the Western and Central Pacific Fisheries Commission (WCPFC), the Pacific Islands Forum Fisheries Agency (FFA), the Parties to the Nauru Agreement (PNA) and the South Pacific Group (SPG). In doing

so, there is extensive collaboration with the Secretariats of these organisations, as well as with government fishery agencies, many NGOs and universities.

31. Providing scientific advice to help maintain healthy oceanic resources and ecosystems continues to be a key OFP role, to ensure that both short-term and long-term options are informed by the best available scientific information. OFP has continued to reach out to its partners and worked collaboratively to identify emerging issues and deliver scientific advice to improve understanding and help develop effective mitigation strategies, including those that arose because of the COVID-19 outbreak. OFP also continues to pursue work that will support sustainable management of tuna fisheries to help ensure longer-term benefits can be maintained. In turn, progressing work that will contribute to a better understanding of food security options, such as estimation of potential bycatch levels, further research into non-target species biology, and data reporting tools (e.g. TAILS), aims to help provide scientific information to support decision making that may mitigate some ongoing COVID-19 impacts. Finally, given the existing forecasts of climate change induced impacts on regional oceanic resources, with the assistance of regional partners OFP has significantly enhanced its capacity in this area with the aim to support national and regional decision making by providing the latest information and advice.
32. Organisationally, the work of the Programme falls into three sections – the Fisheries & Ecosystems Monitoring & Assessment (FEMA) section, the Data Management (DM) section and the Stock Assessment & Modelling (SAM) section – however, there is considerable integration across these areas to provide comprehensive services and support in oceanic fisheries to members.
33. One area that cuts across all sections in OFP is:
 - **National science capacity building** to continue to enhance the region’s skill sets. Internally, OFP continues to build the Pacific Island Fisheries Professional programme which restarted in 2022 following COVID-19 related restrictions and which will expand considerably in 2023. Regular capacity building workshops, such as the Stock Assessment training Workshops (SAWs) and new ‘R-analysis workshop’ (RAW), will also be pursued. The feasibility of short-term placement opportunities and FAME mentorship activities continues to be evaluated. Through the development of stronger links with regional universities and partners, options for studies that lead to formal qualifications and the development of new skills and opportunities to fill gaps in curricula areas that foster specific skills of direct relevance to fisheries science (e.g. statistics, stock assessment, etc.) are being pursued.

Fisheries Ecosystem Monitoring and Analysis (FEMA)

34. The work of the FEMA section will be supported this year by the completion of the renovation and expansion of the laboratory facility in Noumea. The priority work being conducted by this section includes:
 - **Providing important biological inputs** for stock assessments and related scientific advice. This includes work on tuna age and growth, reproduction, movements, diet and trophic ecology. Key programmes in support of this work are:

1. The Pacific Tuna Tagging Programme, with annual tag release cruises and the regional tag recovery effort now funded substantially through the WCPFC.
2. Trophic ecology research voyages and associated laboratory analyses; and
3. PIRFO, the Pacific Islands Regional Fisheries Observer programme, coordinated collaboratively with FFA to provide training and accreditation of tuna fisheries observers in the region.

These programmes are undertaken with substantial collaboration and assistance from members' fisheries offices, in particular national observer programmes. In addition to providing critical data for stock assessments, modelling of the impacts of environmental variation and other management advice, they also provide opportunities for member fisheries scientists to enhance their capacity and skills through direct participation.

- **Modelling the impacts of environment variation, including climate change**, on tuna and the pelagic ecosystem. OFP pioneered development of the SEAPODYM model, a key platform for understanding the interaction of environment and tuna. SEAPODYM integrates a variety of fisheries, biological and environmental data at a fine spatial scale, and has been used to assess questions such as the efficacy of spatial management measures and the impact of environmental variation such as ENSO and climate change. Over the coming years, work on climate change impacts will be a particular focus, with the support of New Zealand MFAT, with the aim of providing enhanced information to support national decision making. FEMA is also working with OFP SAM, SPC PCCOS and GEM to ensure the advanced scientific computing facilities available to SPC meet the requirements of these key areas of work.
- **Enhanced climate change monitoring**. Building upon the SEAPODYM enhancements, there is a need to develop indicators of climate change that allow us to identify which pathway the Pacific is on toward identified potential climate-impacted futures. Candidate indicators are being developed and have been presented to regional meetings in 2022. These will be further refined and approaches to provide them to managers in readily accessible formats, including online dashboards for national reporting and regional report cards, are being developed.
- **The application of new technology** to the monitoring of fisheries. FEMA assists members in the development and implementation of video-based electronic tools for monitoring catch and effort by longliners, as well as rolling out electronic reporting tools, such as the longline e-log *OnBoard*, port sampling app *OnShore* and the *Tails* app for collecting small-scale fisheries data, all developed by the OFP Data Management Section.
- **Maintaining the Pacific Community Specimen Tissue Bank** that includes samples collected for the WCPFC Tissue Bank. It supports existing science programmes that inform tuna stock assessments and biological material for developing new directions in tuna trophic ecology, methylmercury, micro-/nano-plastics, genetics, and building the region's capacity in marine ecosystem science generally. Increasingly, the facility combines specimens for both coastal and oceanic science.

- **Fisheries genomics and molecular ecology.** FEMA has increased its in-house capacity in the field of fisheries genetics, as well as strengthened its partnerships with key expertise within the Pacific region to support genetic work on tuna stock structure and fish ageing. Sampling protocols and techniques to improve the quality of samples underpinning analyses have been put in place. Current work is focusing on the potential application of close-kin mark recapture for estimating absolute abundance of each tuna stock, the application of genetic metabarcoding as a means for rapid identification of species from tissue and water samples to monitor ecosystem status, and the use of ‘epigenetic ageing’ approaches to enhance biological inputs to regional stock assessments. The methodological developments associated with this work are likely to have spin-off benefits for traceability monitoring and tuna provenance.
- **Monitoring the impacts of tuna fisheries on bycatch** and the pelagic ecosystem more broadly. FEMA conducts analyses of observer data to produce estimates of important bycatch species, including species of special interest and species of potential importance for food security, and report these periodically as regional- and national-level analyses. This information is increasingly important for the certification of fisheries by bodies such as the Marine Stewardship Council.
- **Investigating wahoo and mahi mahi ecology,** as key species of importance to nearshore fisheries and critical to the success of the nearshore anchored FAD fisheries in the coming decades. Currently, there is limited information on their biology and ecology in the Western and Central Pacific. Age and growth, migratory patterns, and how these species may be impacted by climate change are key questions and need to be addressed across both coastal and oceanic habitats. Initial work aims to enhance regional vulnerability analyses to identify potential areas of concern for further investigation.
- **Investigating the impact of methyl mercury and micro/nano-plastic** contamination of tuna and other fish stocks, including the health implications for Pacific Island human populations. Micro and nano-plastic contamination of fish and the oceans generally is emerging as a threat for fisheries and human health. Analysis of collected skipjack and yellowfin tuna is ongoing.

Data Management (DM)

35. The priority work being conducted by the DM section includes:

- **Enhancements and support for TUFMAN 2,** which enable member countries to manage/report on their integrated tuna fishery data. The system now integrates all major tuna-fishery data types (including logbook, VMS, observer, port sampling, unloadings and cannery receipt data) and work will continue to focus on how to enhance capacity so that member countries have more control on processing, managing, reporting and analysing their data through the system. SPC will also continue its focus on using the *Slack* helpdesk to provide live support to members, noting that this system now has over 490 users, who have exchanged more than 66,000 messages since inception in 2016.
- **Enhancing E-Reporting (ER) tools** developed by SPC in response to member country requests. The Data Management section has developed several E-reporting tools in

response to member country requests, including the longline e-log *OnBoard*, *TAILS* app for collecting small-scale fisheries data, longline observer data at sea app (*OLLO*), and the longline port sampling app *OnShore*. In 2022, Tonga became the first member to have close to 100% implementation of all the key SPC ER apps for their fishery. OFP is also working with CFAP to enhance FAME data collection approaches using AI. All E-Reporting systems developed by SPC are fully integrated into the *TUFMAN 2* system. SPC remains attentive to future requests from member countries for new ER tools.

- **Data Management support to the WCPFC**, which also covers the direct support to member countries in satisfying their WCPFC reporting obligations, but also building capacity (through mechanisms such as the Regional Tuna Data Workshop) to enhance the ability of member countries to respond directly to WCPFC reporting obligations without SPC assistance.
- **Acquisition of E-Reporting and E-Monitoring data from third-party systems**, covers situations where member countries choose to adopt ER and EM systems developed and maintained by third-party technical service providers. SPC continues to work with member countries and their service providers, providing advice on data quality control and other standards so that the data flow seamlessly into regional systems (e.g. the member country's *TUFMAN 2* database instance). SPC has a key technical role in the establishment of ER and EM standards in the region (through both the SPC/FFA/PNAO Data Collection Committee (DCC) and the WCPFC ER & EM Working Group), which have continued to progress in the past year.
- **Data standards, monitoring and auditing for regional tuna fisheries** continue to be enhanced and now extends beyond the requirements for science to include the requirements for, for instance, Monitoring, Control and Surveillance (MCS) and E-Monitoring process standards. SPC continues to have a key role through the DCC in coordinating meetings that review and update regional data standards (with other regional and sub-regional organisations, and member countries). As the region transitions to increasingly efficient data collection approaches, the DM Section will refocus on data auditing approaches, assisting members to ensure the quality of data collected from their fisheries is as high as possible.
- **Support for new management systems required by member countries**, for example, potential Catch Documentation Systems (CDS) and Catch Management Systems (CMS). Most data already collected and managed through the *TUFMAN 2* and other national/regional systems are fundamental inputs into potential regional and national CDS and CMS systems, as they evolve. SPC will continue to have a key role in the provision of technical advice and support to the sub-regional agencies overseeing these initiatives (e.g., FFA and PNA) and to individual members in the future.
- **Independent validation of at-sea longline transshipments** has been identified as a major data gap and SPC will continue to collaboratively advance this work with interested members, regional agencies and through the WCPFC transshipment IWG, providing information and technical advice to establish an adequate, independent data collection system for at-sea longline transshipments. This will include incorporation of these new

streams of information (such as longline transshipment carrier declarations and data collected by observers monitoring at seas transshipments) into regional systems, and the potential development of ER tools to support transshipment observers.

- **Data visualisation, analysis and reporting including alerts** is an area with considerable potential for tuna fishery data in the near future, with the objective of providing ‘business intelligence’ systems to support senior managers through app-based access to relevant data ‘dashboards’. Alerts are features of business intelligence systems (the ‘push’ philosophy, rather than the ‘pull’ philosophy of reporting systems) and there is significant scope to introduce this concept into the systems supported by SPC to provide additional functionality; for example, alerts to highlight particular data gaps. A significant review of the potential of PowerBi as a tool for data visualisation has been conducted over the past year and this development area is envisaged to cut across all FAME Sections.
- **Cannery receipt data** represents a potentially important source of information to verify estimates of purse seine tuna species catch determined from observer data (which is based on data with very low coverage). This activity will be supported by a new initiative in 2023 through a dedicated WCPFC SC project. With the anticipated cooperation of regional partners, the work will support improved catch estimates for assessment and management purposes, with other potential benefits in tracing and resolving gaps in tuna tag recapture data.

Stock Assessment and Modelling (SAM)

36. The priority work being done by the SAM section includes:

- **Regional stock assessments of tuna, billfish, and sharks** to inform scientific advice on current stock status and fishery sustainability within the western and central Pacific Ocean. These assessments also provide the basis of analyses that examine the potential effectiveness of alternative regional management approaches to achieve fishery objectives of profitability and sustainability. The results feed into the Future of Fisheries Report Card for offshore fisheries, and the annual Tuna Fisheries Assessment Report (TFAR). The 2023 stock assessments that OFP will be conducting, or overseeing, include bigeye and yellowfin tuna – implementing key recommendations arising from the peer review of the 2020 yellowfin tuna assessment - and silky shark in the WCPO. Ongoing work is improving the accessibility, repeatability, and transparency of our stock assessment work, and enhancing the utility of CPUE data to inform stock assessments.
- **Harvest strategy work for key tuna stocks and fisheries.** Following adoption of the harvest strategy approach by WCPFC members and a specific harvest strategy for WCPO skipjack in 2022, the SAM section continues to develop the modelling and simulation frameworks to undertake this work for the four key tuna stocks. In 2023 we will continue to work with members to identify candidate harvest strategies, including harvest control rules, that best meet their objectives for the tuna fisheries. A key activity will be running the estimation method for the agreed skipjack MP for the first time, to be reported to SC19. Following the Science Management Dialogue meeting in 2022 (used by WCPFC members to facilitate the development and adoption of harvest strategies) ongoing SAM section work will continue

preparing members for harvest strategy discussions and decision making, and targeted workshops and capacity building will remain a high priority. On the technical side, work will concentrate on developing candidate harvest strategies for South Pacific albacore and the underlying management strategy evaluation framework, and on further development of a multispecies approach for testing harvest strategies in line with the agreed WCPFC workplan for the development and implementation of harvest strategies.

- **National-level advice based upon scientific analyses to address specific national requests and issues.** These activities include the development of new 'Issue-Specific National Reports' to address emerging issues of national importance, on-going bio-economic evaluations of national fisheries undertaken in partnership with FFA, assistance in development of Tuna Management Plans and Shark National Plans of Action, and provision of analyses in support of regional fisheries management. The analyses are supported by the secure online national webpage for each member. Remaining responsive to national requests is a critical component of the SAM section's activities. In 2022, three Stock Assessment training Workshops (SAWs) were undertaken, two of which were online and one a hybrid workshop with the first in-person participation in three years, delivering capacity building to over 100 participants across the three weeks. In 2023, the first 'R-analysis workshop' will also be held to build members' skills in the use of this framework. Regional support for FFA, PNA and the South Pacific Group continues to be a priority task, and we will again produce the Tuna Fisheries Assessment Report (No. 23). A new area of focus emerging in 2023 is marine spatial planning, and the national science team is increasing its capacity to deliver support to members in this area to support the cross-sectoral SPC approach that is required to address these national issues.
- **Research and analysis on Fish Aggregation Devices (FADs)** is ongoing to increase our understanding of this fishing approach and support improved management and decision-making on FAD related issues. Our FAD related work continues to grow due to the increased regional and global interest in the large-scale use of FADs in tuna fisheries. This year's top priority is the roll out of the WCPFC project to test Non-entangling and Biodegradable FADs (bioFADs) in the western and central Pacific purse seine tuna fishery. This project depends on collaboration with fishing companies and national fisheries organisations, and on our FADs Focal Officer based in SPC's FSM regional office. We are also partnering on this work with the ISSF (International Sustainable Seafood Foundation). We continue to work closely with the PNA on FAD related issues and support the PNA FAD tracking programme as requested to increase understanding of the potential impacts and trends in the use of this fishing device. The expanding use of acoustic buoys on FADs provides a potential new source of information, and the SAM section will continue to explore the potential to use these data to address data gaps and support stock assessments. Finally, we continue to support national initiatives encouraging public-led data gathering on FAD stranding events, and to curate and analyse the resulting information. This is increasing the information available on stranding events (over 2,000 reports from 15 PICTs) and ground-truthing the outputs of other analyses. We are also continuing our outreach and awareness building of FAD use in the Pacific through community engagement activities linked to sea safety and support of anchored FAD programmes. This has been very successful in FSM thanks to our FADs Focal Office in

Pohnpei, and we are looking to expand these efforts to other locations. As noted earlier, OFP is also working closely with FAME CFAP, SPC GEM and PCCOS on developing Highly Instrumented Fish Aggregating Devices (HI-FAD; see [HoF14 Information Paper 5](#)).

- **Development of new stock assessment tools to ensure that regional WCPO assessments remain at the forefront of international best practice.** Consolidation of the MULTIFAN-CL software will continue, while the SAM section is also engaging with international partners to ensure plans for the next generation of stock assessment software will be appropriate to meet the specific needs and data types of the WCPO region. As noted above, we will continue to improve our computing resources and effectiveness, in collaboration with SPC partners, to ensure our stock assessment advances are not limited by computing power.