NOAA FISHERIES

Pacific Islands Fisheries Science Center

Science Plan

2019 – 2023

U.S. Department of Commerce | National Oceanic and Atmospheric Administration | National Marine Fisheries Service

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Message from the Director's Office

In the spirit of proactive and positive change, we believe in the importance of being flexible and open-minded as priorities shift and improvements and efficiencies are identified, vetted, and implemented. Through sound science and clear communication, we are committed to an integrated and collaborative approach and effective communication of our scientific findings based on the best available data and analyses.

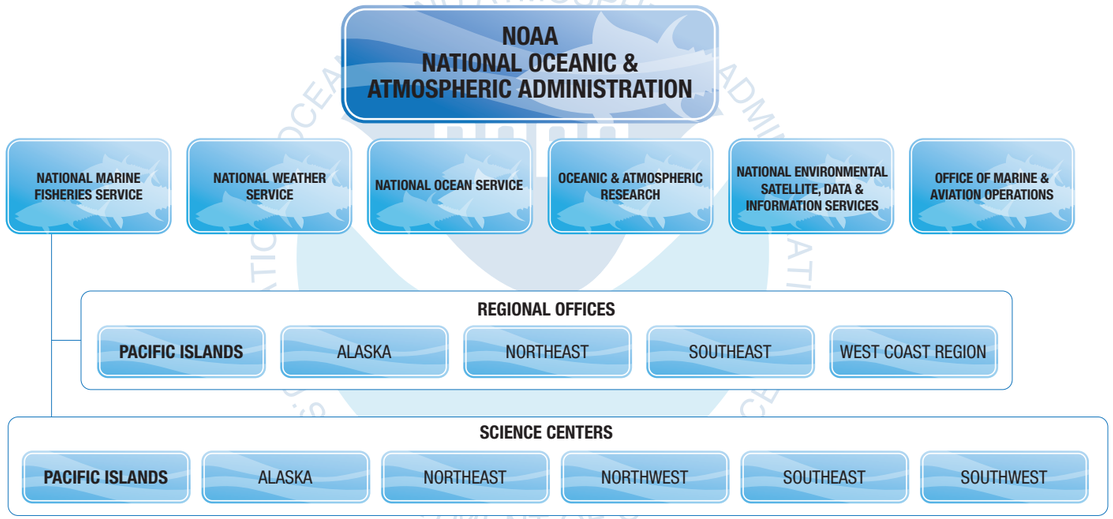
We are proud of the Center's accomplishments, both scientifically and operationally, and strive to continue advancements in science and operations while supporting individual successes driven by PIFSC's core values and guiding principles. It is our hope that continued efforts to increase collaboration and integration, both internally and externally, will contribute to providing clarity in understanding and successfully implementing the Center's goals over the next five years.

Mike Seki
PIFSC Director

Evan Howell
PIFSC Deputy Director

Center Overview

The Pacific Islands Fisheries Science Center (PIFSC or the Center) of the National Marine Fisheries Services (NMFS) is part of the National Oceanic and Atmospheric Administration within the Department of Commerce, as detailed below.



The Center administers and conducts scientific research and monitoring programs that produce science to support the conservation and management of fisheries and living marine resources. This is achieved by conducting research on fisheries and ocean ecosystems and the communities that depend on them throughout the Pacific Islands Region, and by dedicating efforts to the recovery and conservation of protected species. The Center is organized into five major divisions - - Operations, Management, and Information Division (OMI), Science Operations Division (SOD), Fisheries Research and Monitoring Division (FRMD), Protected Species Division (PSD), and Ecosystem Sciences Division (ESD). Visit our website to learn more about the science and operations of each division: *www.fisheries.noaa.gov*

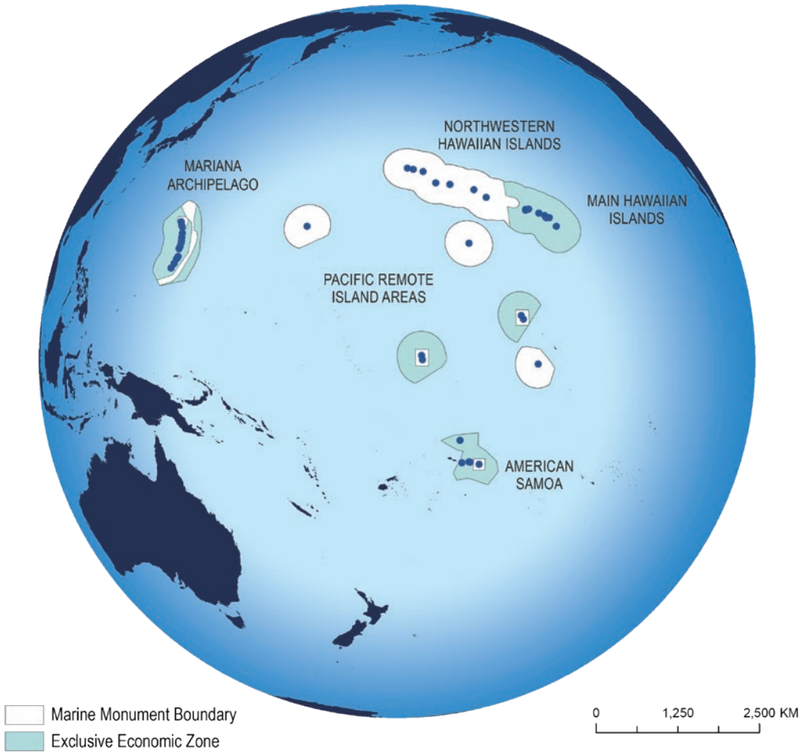
PACIFIC ISLANDS FISHERIES SCIENCE CENTER

PACIFIC ISLANDS FISHERIES SCIENCE CENTER DIRECTOR'S OFFICE

OPERATIONS, MANAGEMENT, AND INFORMATION DIVISION	SCIENCE OPERATIONS DIVISION	FISHERIES RESEARCH AND MONITORING DIVISION	PROTECTED SPECIES DIVISION	ECOSYSTEM SCIENCES DIVISION
https://www.fisheries.noaa.gov/about/pacific-islands-fisheries-science-center	*https://www.fisheries.noaa.gov/about/pacific-islands-fisheries-science-center*	*https://www.fisheries.noaa.gov/pacific-islands/monitoring-and-researching-fisheries-sustainability*	*https://www.fisheries.noaa.gov/pacific-islands/providing-science-protect-marine-species*	*https://www.fisheries.noaa.gov/pacific-islands/ecosystems/surveying-vast-ocean*

Through cross-divisional and interagency collaboration, PIFSC annually conducts science and operational activities throughout the entire Pacific Ocean, beyond Marine Monument and U.S. Exclusive Economic Zone boundaries as shown in Figure 1 (i.e., Western, Central, and South Pacific regions). These activities are either mandated by federal regulations (e.g., Magnuson-Stevens Fisheries Conservation and Management Action (MSA), Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA)) or driven by stakeholder and management needs. This plan details the Center's vision for research and monitoring activities, infrastructure, and support services that are necessary to meet NOAA Fisheries mandates, to support the needs of our partners and communities across the region, and to advance and position the Center to achieve long term goals. As a science-based organization, creativity and innovation are central tenets to our scientific and operational successes and implicit within all the themes, foci, and targets in this plan.

Figure 1: Map of the Pacific Islands Region



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Strategic Framework

While aspirational in many ways, this plan aims to continue to improve our science and operations through cross-divisional collaboration, integration, and increased communication, cooperation, and coordination with our partners and stakeholders. This plan describes the 5-year framework within which PIFSC will annually prioritize its research and monitoring activities, positioning the Center to fully utilize all research capabilities, as well as those of our partners and collaborators (e.g., the Pacific Islands Regional Office and the Western Pacific Regional Fisheries Management Council). The plan is organized by broad themes, each of which comprises foci and targets. Themes are high-level categories that organize the Center's priority science and operational activities. Foci detail PIFSC's major goals, and targets describe the specific work the Center will conduct to achieve its foci.

Aligned with NOAA Fisheries mandates and strategic goals, the Center's 5-year targets are nested under four major themes- -

1) PROMOTE SUSTAINABLE FISHERIES

2) CONSERVE PROTECTED SPECIES

3) RESEARCH TO SUPPORT ECOSYSTEM-BASED FISHERIES AND LIVING MARINE RESOURCE MANAGEMENT (EBFM)

4) ORGANIZATIONAL EXCELLENCE

Research priorities detailed under the themes of PROMOTE SUSTAINABLE FISHERIES and CONSERVE PROTECTED SPECIES are core to our statutory and regulatory mandates and include stock and population assessments, conservation science, data collection and analysis, and gap analyses to ensure our research priorities are relevant and continue to address current concerns and needs.

The Center's RESEARCH TO SUPPORT ECOSYSTEM-BASED FISHERIES AND LIVING MARINE RESOURCE MANAGEMENT (EBFM) highlights our commitment to conducting research which reflects a shift from single species management to a more holistic approach. PIFSC will renew focus on cross-divisional collaboration and integration and continue to improve our understanding of ecosystem dynamics and relationships coupled with monitoring programs which assess the status and trends of ecosystem indicators. We believe the resulting science conducted in support of promoting sus-tainable fisheries and conserving protected species will advance.

Finally, ORGANIZATIONAL EXCELLENCE acknowledges the fundamental importance of investing in our staff and infra-structure to foster an inclusive, engaged, and innovative workforce. Through positive interactions and relationship building, we will continue to maintain collaborative and cooperative research partnerships, resulting in communica-tion, mutual understanding, and resource sharing.

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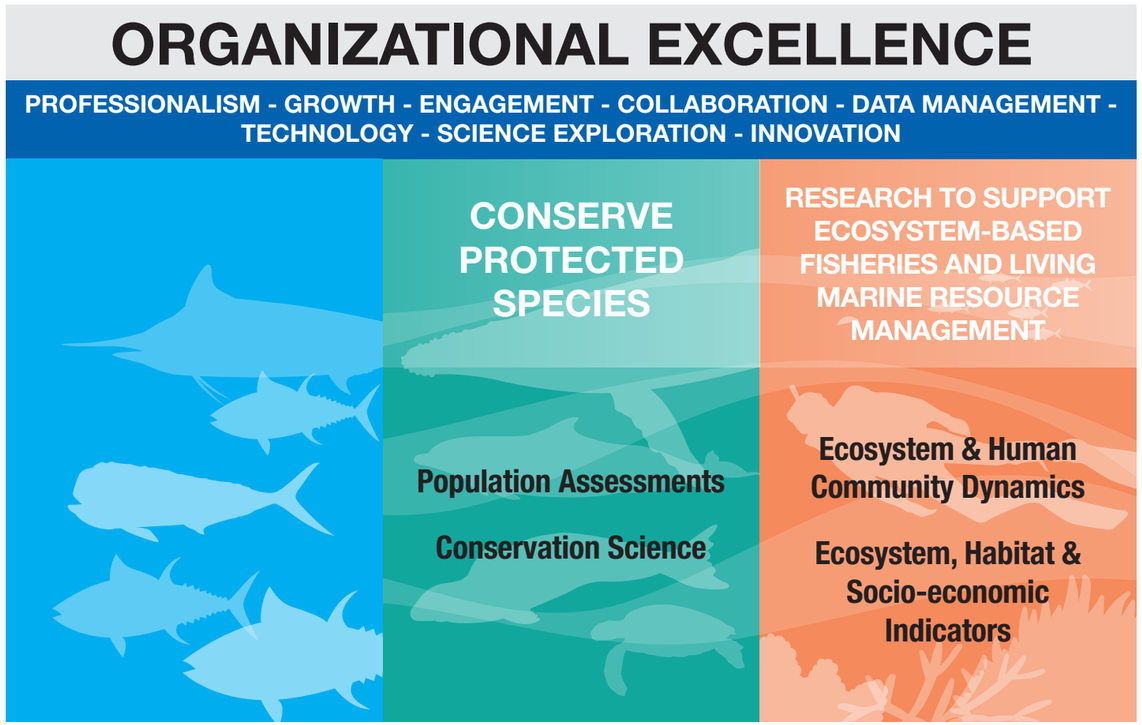
Figure 2: PIFSC Strategic Framework



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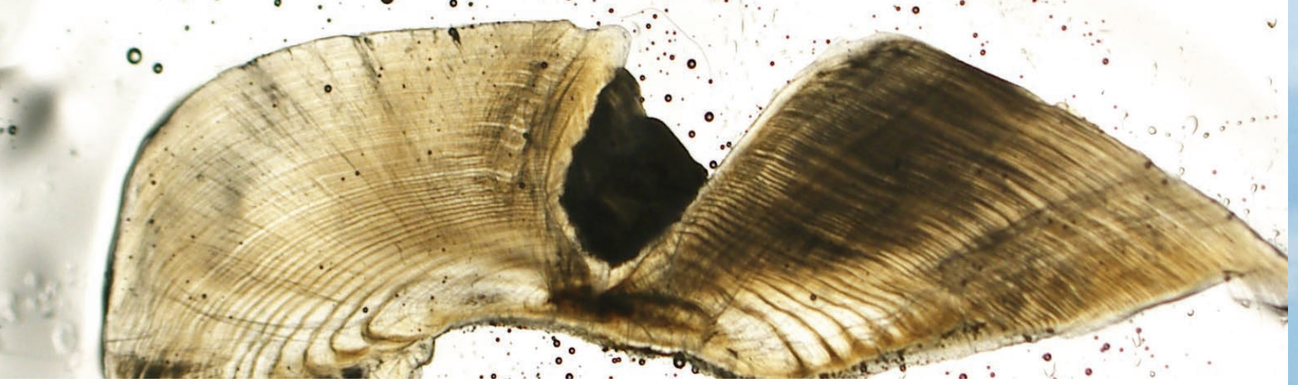
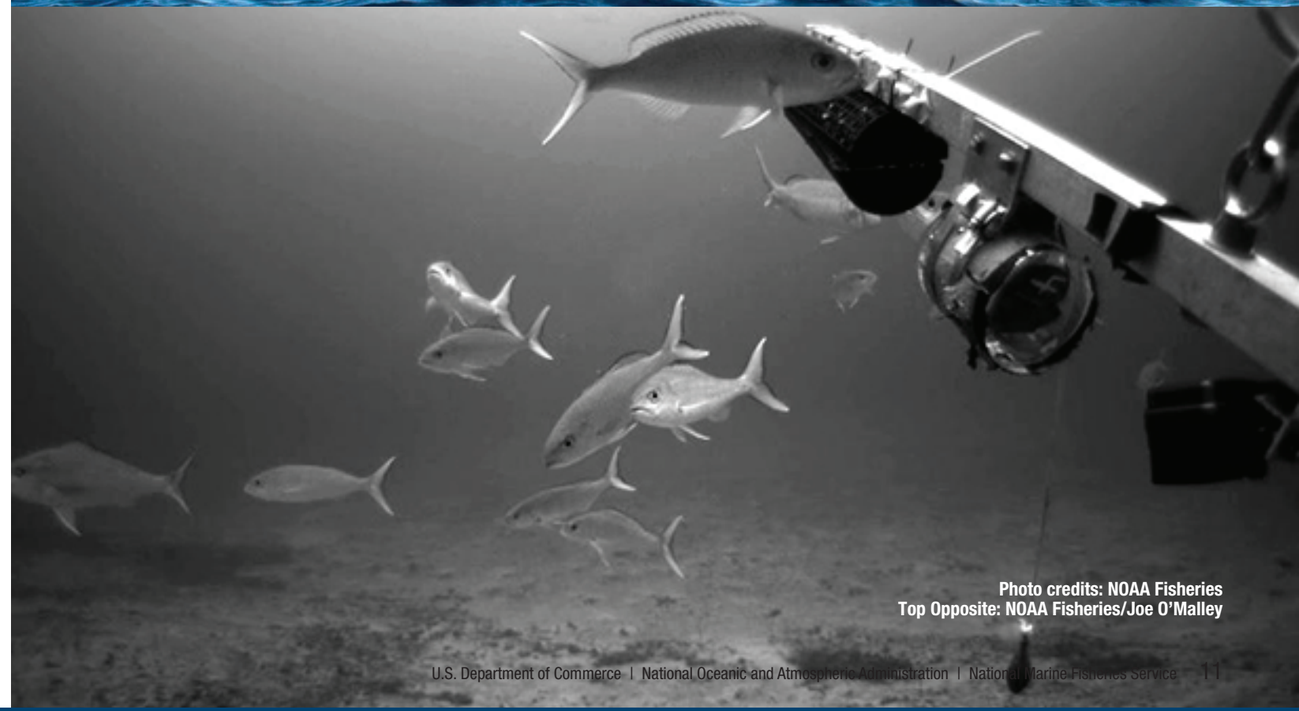
Top: NOAA Fisheries/James Morioka

Themes	Foci	
1) Promote Sustainable Fisheries	A	Fishery-independent science in support of stock assessments
	B	Fishery-dependent data streams in support of stock assessments
	C	Stock assessments for priority insular and pelagic species
	D	Catch and bycatch estimation and management-relevant analyses
2) Conserve Protected Species	E	Protected species population assessments
	F	Conservation science research (identify threats, design, implement and evaluate threats-mitigation measures) to improve protected species status
3) Research to Support Ecosystem-Based Fisheries and Living Marine Resource Management (EBFM)	G	Ecosystem dynamics and relationships
	H	Status and trends of ecosystem indicators
4) Organizational Excellence	I	High-performing and inclusive workforce
	J	Partner, stakeholder, and public engagement
	K	Center-wide coordination, communication, and collaboration
	L	Infrastructure investments and data management
	M	Expand science endeavors



1) PROMOTE SUSTAINABLE FISHERIES

Foci		Targets
A	Fishery-independent science in support of stock assessments	(1) Conduct biological sampling and analyses to provide requisite life history information on priority insular and pelagic species, including ecosystem considerations of spatial, temporal, and environmental effects (2) Conduct and improve efficiency and accuracy of fishery-independent surveys
B	Fishery-dependent data streams in support of stock assessments	(1) Improve accuracy and efficiency of commercial and noncommercial fishery data collection and data management of priority insular and pelagic species (2) Improve standardization of data collection, storage, and reporting formats to ensure timeliness, quality, and accessibility of data products
C	Stock assessments for priority insular and pelagic species	(1) Optimize incorporation of all fishery-independent and -dependent data sources based on quality and availability (2) Increase the number of stock assessments and improve methods and model complexity for all benchmark stock assessments (3) Promote incorporation of climate, habitat, socioeconomic, or ecosystem considerations for select species based on data availability and relevance
D	Catch and bycatch estimation and management-relevant analyses	(1) Improve efficiency and timeliness of catch and bycatch estimates and predictions to meet multiple management needs (2) Conduct and disseminate research on catch and bycatch species to support ecosystem-based fisheries management



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2) CONSERVE PROTECTED SPECIES

Foci		Targets
E	Protected species population assessments	(1) Improve data streams (e.g., surveys) for protected species population assessments (2) Continue R&D and use of advanced technology to improve assessments and increase efficiencies (3) Strategically expand population assessments to unsurveyed areas of the Pacific Islands region (4) Enhance quantitative analyses and data processing of passive acoustic capabilities to improve population assessments of cetaceans
F	Conservation science research (identify threats, design, implement and evaluate threats-mitigation measures) to improve protected species status	(1) Deploy annual Hawaiian monk seal and turtle research and recovery field camps (2) Operationalize proactive health programs including the Hawaiian monk seal vaccination program (3) Improve understanding of ecological (including climate) and social drivers that affect protected species populations and effectiveness of management strategies to address them (4) Advance methods for reducing bycatch and bycatch mortality of protected species

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Opposite: NOAA Fisheries/James Morioka

3) RESEARCH TO SUPPORT ECOSYSTEM-BASED FISHERIES AND LIVING MARINE RESOURCE MANAGEMENT

Foci		Targets
G	Ecosystem dynamics and relationships	(1) Conduct field and experimental research to better understand ecosystem structure, function and processes, and how these might be influenced by ocean and climate change (2) Identify key socioeconomic, environmental, and management drivers affecting regional ecosystems and associated fisheries, markets, and fishing communities (3) Determine and fill information gaps to integrate social, ecological, and biophysical research to evaluate management strategies and societal tradeoffs
H	Status and trends of ecosystem indicators	(1) Sustain socioeconomic, ecological, environmental, and climate observing programs to monitor status and trends of ecological and human communities, habitats, and processes influencing living marine resources and human well-being (2) Conduct integrated monitoring, analyses, and assessments at appropriate scientific, management, and societal scales throughout the Pacific Islands Region (3) Develop and implement technologies to monitor growth, mortality, recruitment for research on coral reef resilience in the face of ocean and climate change

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4) ORGANIZATIONAL EXCELLENCE

Foci		Targets
I	High-performing and inclusive workforce	(1) Support career pathway opportunities and encourage professional growth (2) Create a communicative, diverse, and supportive working environment that rewards achievement, creativity, and innovation (3) Streamline administrative policies and processes to improve mission effectiveness
J	Partner, stakeholder, and public engagement	(1) Integrate stakeholders and partners in the planning and execution of our mission (2) For research activities identify and engage target audience to develop and measurably improve communication, education, and outreach messages (3) Improve integration with other regional, national, and international programs
K	Center-wide coordination, communication and collaboration	(1) Improve the efficiency of PIFSC's planning and prioritization processes (2) Encourage cross-divisional collaboration in conducting interdisciplinary activities
L	Infrastructure investments and data management	(1) Effectively manage infrastructure, information technology services, equipment, and facilities to meet priority research and monitoring needs (2) Strategically integrate, manage, and disseminate all data and data products produced by Center scientists (3) Build supporting infrastructure and staffing as needed and operationalize new technology for improved efficiency
M	Expand science endeavors	(1) Explore new science directions promulgated by nationally established priorities, such as aquaculture, deep-sea exploration, and habitat restoration (2) Invest in new capabilities and capacity to explore and develop new approaches, such as advanced technologies (e.g., unmanned survey vehicles), genomics, and artificial intelligence applications that will improve the quality of our research

Implementation and Evaluation

The Center develops an Annual Guidance Memorandum (AGM) to highlight planned research priorities and a comprehensive set of activity plans representing proposed science and operational targets (codified in the Center's annual implementation plan). hese activity plans are evaluated using the Center's Priority-Based Resource (PBR) review process and evaluation metrics and will serve as the basis by which funding may be allocated. With each planning cycle, metrics used to establish priorities and evaluate planned activities will be reviewed and refined to enhance the Center's science and operations.

Internally, the Center will continue its efforts to identify research priorities and conduct research activities that are aligned with both short- and long-term goals and objectives. Externally, we will continue to engage with partners, stakeholders, and communities to capture and incorporate conservation and management needs and concerns in our work. Efficient communication and strong relationships are central to achieving interdisciplinary science and cross-divisional and interagency collaborations and the lines in Figure 3 indicate both existing and planned collaborative efforts. As the 5-year vision for PIFSC, the foci and targets articulated in this plan will serve as important tools for validating the science and operational direction as the Center's planning efforts evolve and improve. As new opportunities arise, they will be considered in the context of their contributions to realizing the themes, foci, and targets identified in this plan.

Figure 3: Striving for Interdisciplinary Science and Cross-Divisional Collaboration

Summary of Themes, Foci, and Targets

1) PROMOTE SUSTAINABLE FISHERIES

A. Fishery-independent science in support of stock assessments

1) Conduct biological sampling and analyses to provide requisite life history information on priority insular and pelagic species, including ecosystem considerations of spatial, temporal, and environmental effects

2) Conduct and improve efficiency and accuracy of fishery-independent surveys

B. Fishery-dependent data streams in support of stock assessments

1) Improve accuracy and efficiency of commercial and noncommercial fishery data collection and data management of priority insular and pelagic species

2) Improve standardization of data collection, storage, and reporting formats to ensure timeliness, quality, and accessibility of data products

C. Stock assessments for priority insular and pelagic species

1) Optimize incorporation of all fishery-independent and -dependent data sources based on quality and availability

2) Increase the number of stock assessments and improve methods and model complexity for all benchmark stock assessments

3) Promote incorporation of climate, habitat, socioeconomic, or ecosystem considerations for select species based on data availability and relevance

D. Catch and bycatch estimation and management-relevant analyses

1) Improve efficiency and timeliness of catch and bycatch estimates and predictions to meet multiple management needs

2) Conduct and disseminate research on catch and bycatch species to support ecosystem-based fisheries management

2) CONSERVE PROTECTED SPECIES

E. Protected species population assessments

1) Improve data streams (e.g., surveys) for protected species population assessments

2) Continue R&D and use of advanced technology to improve assessments and increase efficiencies

3) Strategically expand population assessments to unsurveyed areas of the Pacific Islands region

4) Enhance quantitative analyses and data processing of passive acoustic capabilities to improve population assessments of cetaceans

F. Conservation science research (identify threats, design, implement and evaluate threats-mitigation measures) to improve protected species status

1) Deploy annual Hawaiian monk seal and turtle research and recovery field camps

2) Operationalize proactive health programs including the Hawaiian monk seal vaccinations program

3) Improve understanding of ecological (including climate) and social drivers that affect protected species populations and effectiveness of management strategies used to address them

4) Advance methods for reducing bycatch and bycatch mortality of protected species

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3) RESEARCH TO SUPPORT ECOSYSTEM-BASED FISHERIES AND LIVING MARINE RESOURCE MANAGEMENT (EBFM)

G. Ecosystem dynamics and relationships

1) Conduct field and experimental research to better understand ecosystem structure, function, and processes and how these might be influenced by ocean and climate change

2) Identify key socioeconomic, environmental, and management drivers affecting regional ecosystems and associated fisheries, markets, and fishing communities

3) Determine and fill information gaps to integrate social, ecological, and biophysical research to evaluate management strategies and societal tradeoffs

H. Status and trends of ecosystem indicators

1) Sustain socioeconomic, ecological, environmental, and climate observing programs to monitor status and trends of ecological and human communities, habitats, and processes influencing living marine resources and human well-being

2) Conduct integrated monitoring, analyses, and assessments at appropriate scientific, management, and societal scales throughout the Pacific Islands Region

3) Develop and implement technologies to monitor growth, mortality, and recruitment for research on coral reef resilience in the face of ocean and climate change

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NOAA Fisheries/David Slater

4) ORGANIZATIONAL EXCELLENCE

I. High-performing and inclusive workforce

1) Support career pathway opportunities and encourage professional growth

2) Create a communicative, diverse, and supportive working environment that rewards achievement, creativity, and innovation

3) Streamline administrative policies and processes to improve mission effectiveness

J. Partner, stakeholder, and public engagement

1) Integrate stakeholders and partners in the planning and execution of our mission

2) For research activities, identify and engage target audience to develop and measurably improve communication, education and outreach messages

3) Improve integration with other regional, national and international programs

K. Center-wide coordination, communication, and collaboration

1) Improve the efficiency of PIFSC's planning and prioritization processes

2) Encourage cross-divisional collaboration in conducting interdisciplinary activities

L. Infrastructure investments and data management

1) Effectively manage infrastructure, information technology services, equipment, and facilities to meet priority research and monitoring needs

2) Strategically integrate, manage, and disseminate all data and data products produced by Center scientists

3) Build supporting infrastructure and staffing as needed, and operationalize new technology for improved efficiency

M. Expand science endeavors

1) Explore new science directions promulgated by nationally established priorities, such as aquaculture, deep-sea exploration, and habitat restoration

2) Invest in new capabilities and capacity to explore and develop new approaches, such as advanced technologies (e.g., unmanned survey vehicles), genomics, and artificial intelligence applications that will improve the quality of our research

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