



NOAA
FISHERIES

Office of
Science &
Technology

ST Ecosystem Science Overview

ST Ecosystem Science Program Review

Kenric Osgood, Ph.D.
Chief, Marine Ecosystems Division

July 26, 2016

Outline

Why

Priority setting

Programs

Wrap-up

Why – Mandates

MSA

Magnuson-Stevens
Fisheries
Conservation &
Management Act

MMPA

Marine Mammal
Protection Act

ESA

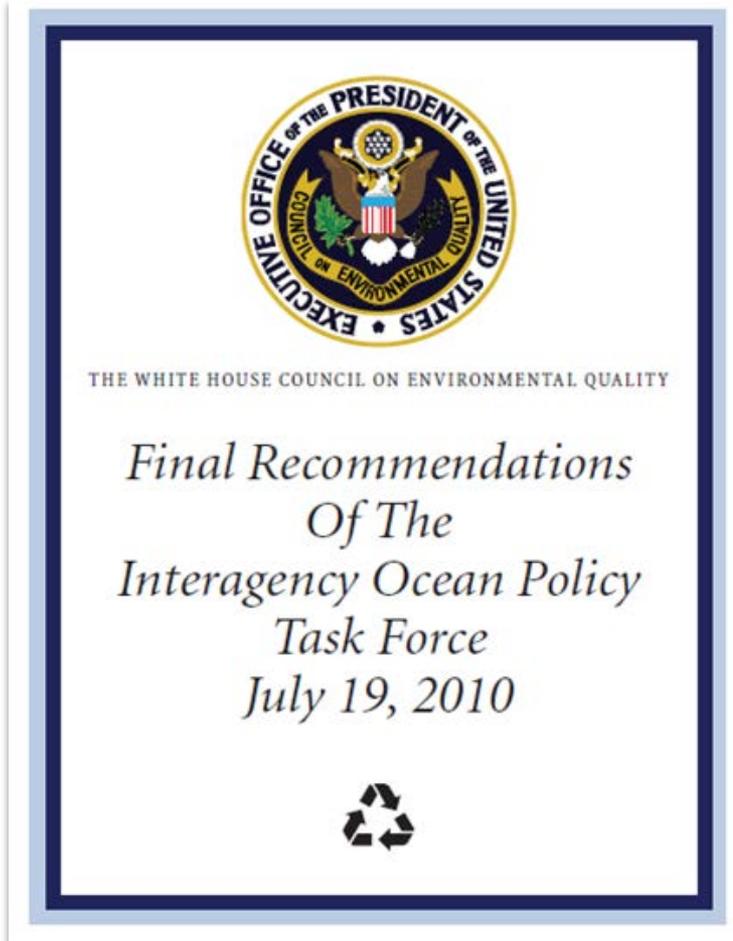
Endangered
Species Act

NEPA

National
Environmental
Policy Act

Resilient Resources, Communities & Economies

Why – Mandates *(continued)*



Why – NOAA Fisheries Priorities & Guidance

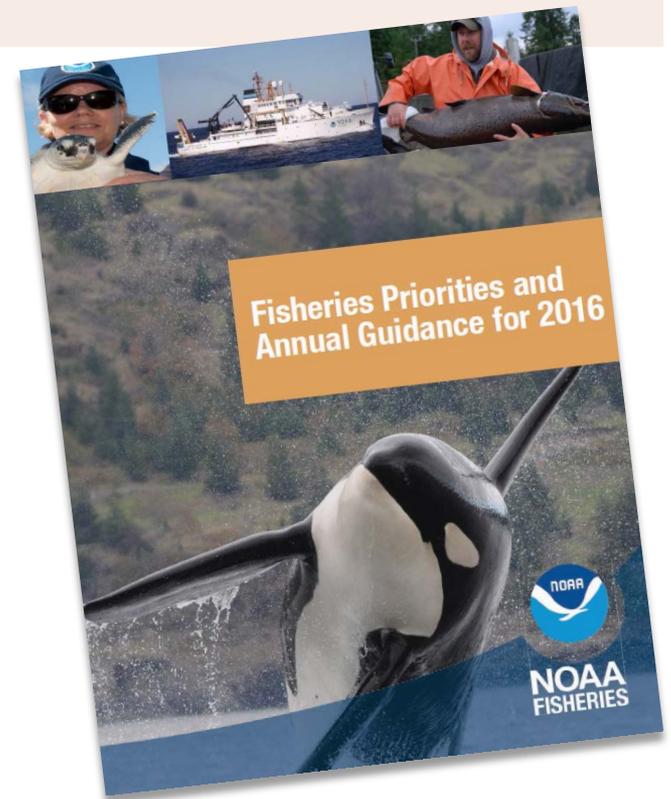
NOAA Fisheries will continue to advance ecosystem-based management to deliver the information and services needed to achieve our mission.

Fisheries

- Implementing ecosystem-based management principles with an integrated approach linking biological, physical, and social science.
- Recognizing the impacts of climate change and other stressors on fisheries and the communities that depend on them.

Protected Species

- NOAA Fisheries will advance an integrated approach to achieve joint ecological and societal benefits that support living marine resource stewardship when protected species and sustainable fisheries decisions overlap.
- Better understanding and managing for climate change impacts ...



Why We Do **What We Do**

Mandates and NOAA Fisheries guidance enable and call for ecosystem approaches.

By taking into account the **linked components of ecosystems** (biological, physical, chemical, and socio-economic) we can achieve optimal management results for fisheries, protected species, and their habitats.

Directly considering tradeoffs among competing objectives within and among ocean use sectors is essential.

Ecosystem approaches to management require **ecosystem level science**.

What We Do

Lead & support the production, delivery, and use of ecosystem information to fulfill the agency's mandates

- **Focal point** for national ecosystem science issues within NOAA Fisheries
- **Support** the NOAA Fisheries Science Centers
- **Work with internal & external partners** to develop, facilitate support for, and oversee science programs to advance ecosystem approaches to marine resource management

How We Do **What We Do**

Identify
(with our partners)
key issues

Develop **national strategic & implementation plans**, budget initiatives, and partnerships

Develop, coordinate, and support **science programs and activities** to address critical topics

Marine Ecosystem Activities

Develop & coordinate science programs that enable integration of ecosystem information into marine resource management

Integrated Ecosystem Assessments (IEA)

Fisheries Oceanography (FATE)

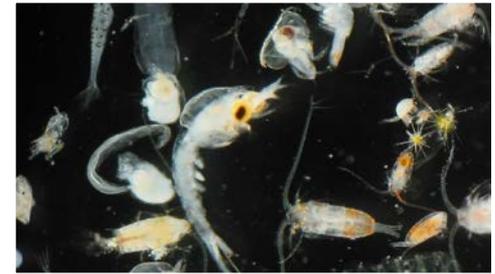
Habitat Science

Marine Ecosystems and Climate

Global Plankton Database (COPEPOD)

Ecosystem Modeling Coordination

Ecosystem
Science for
Management



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Ecosystem Science Priorities

The need for multi-disciplinary, ecosystem-based approaches for effective decision-making is clear

Fulfilling this need is a large and complex science requirement

How should NOAA Fisheries focus its science portfolio to meet these needs?



What Determines Our **Priorities**?



Mandates, NOAA Fisheries guidance (already covered)

External Input

NOAA Fisheries Science Board

Strategic/Implementation Plans

Scientific Steering Committees of Programs

External Input

Ecosystem Principles
Advisory Panel

- **1999:** Ecosystem-Based Fisheries Management

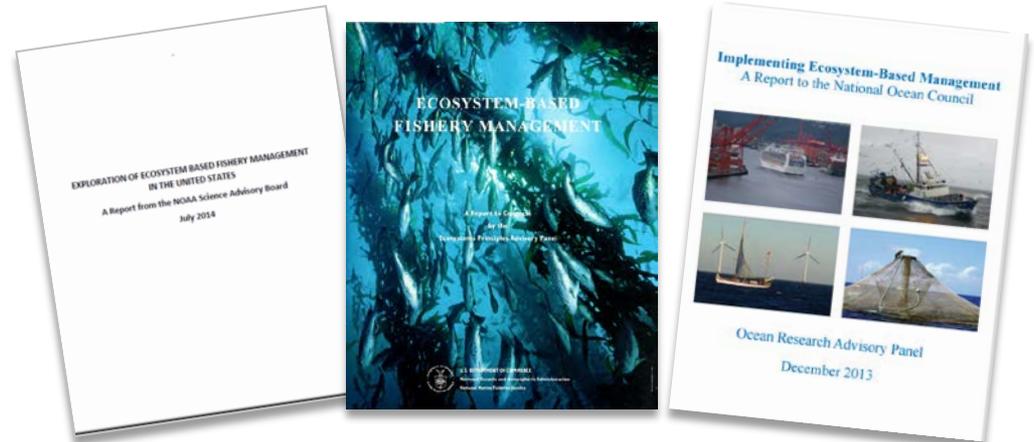
Ocean Research
Advisory Panel

- **2013:** Implementing Ecosystem-Based Management – A Report to the National Ocean Council

NOAA Science
Advisory Board

- **2014:** Ecosystem Sciences and Management Working Group – Exploration of EBFM in the U.S.

Lenfest Fishery
Ecosystem Task Force



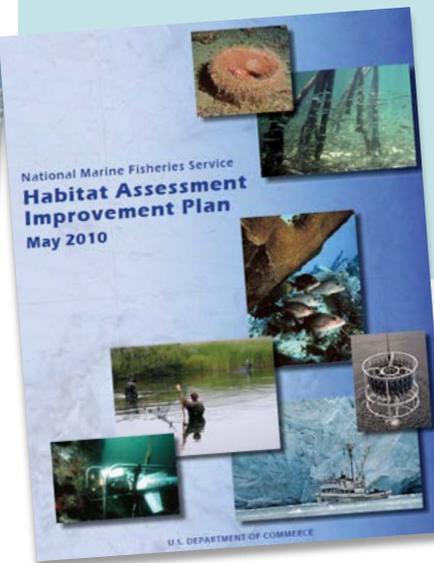
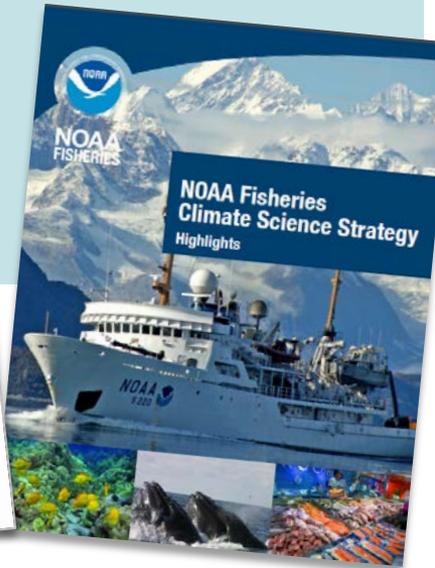
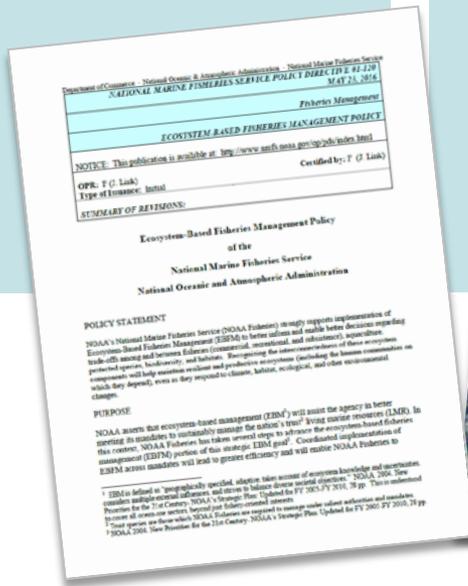
Strategic/Implementation Plans

EBFM
Policy,
EBFM
Road Map

Climate
Science
Strategy

Habitat
Assessment
Improvement
Plan

Stock
Assessment
Improvement
Plan



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Marine Ecosystem Activities

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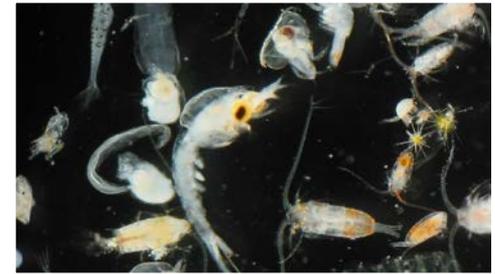
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Management



NOAA Integrated Ecosystem Assessment (IEA)

Why?

- Increases ability to **predict likely outcomes** of management actions.
- Allows decision-makers to account for & manage in context of multiple, interacting influences; **assess trade-offs**.

What?

- **Science based framework** to support decision making in an ecosystem context.

How?

- **FY16 — \$2.66M distributed**
based on strategic plan, regional work plans & steering committee recommendations



Fisheries and the Environment (FATE) Program

Why?

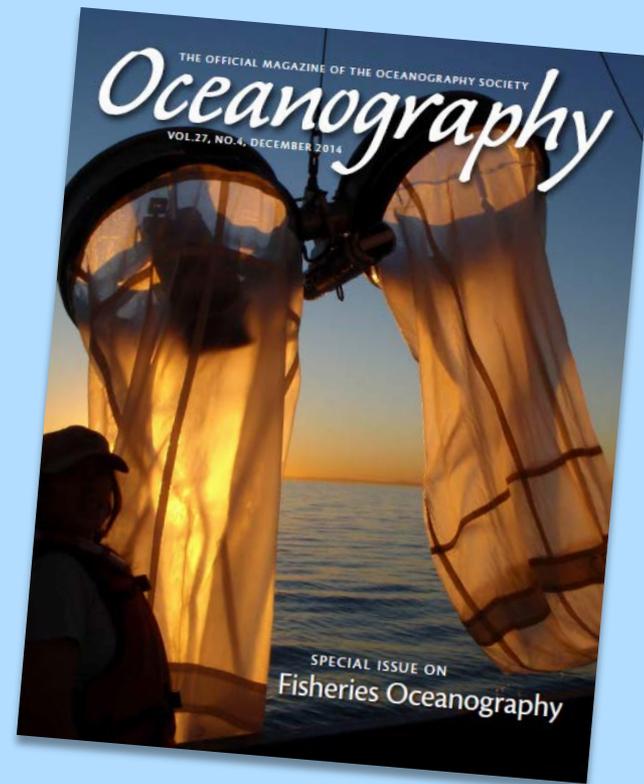
- Understanding the responses to environmental conditions is required to develop forecasts and assess the long-term impact on marine ecosystems.

What?

- Develop ecological and oceanographic products for improving fishery stock assessments, Ecosystem Status Reports, and IEAs.

How?

- FY16 — \$1.65M distributed
via internal proposal competition



Fisheries Habitat Science

Why?

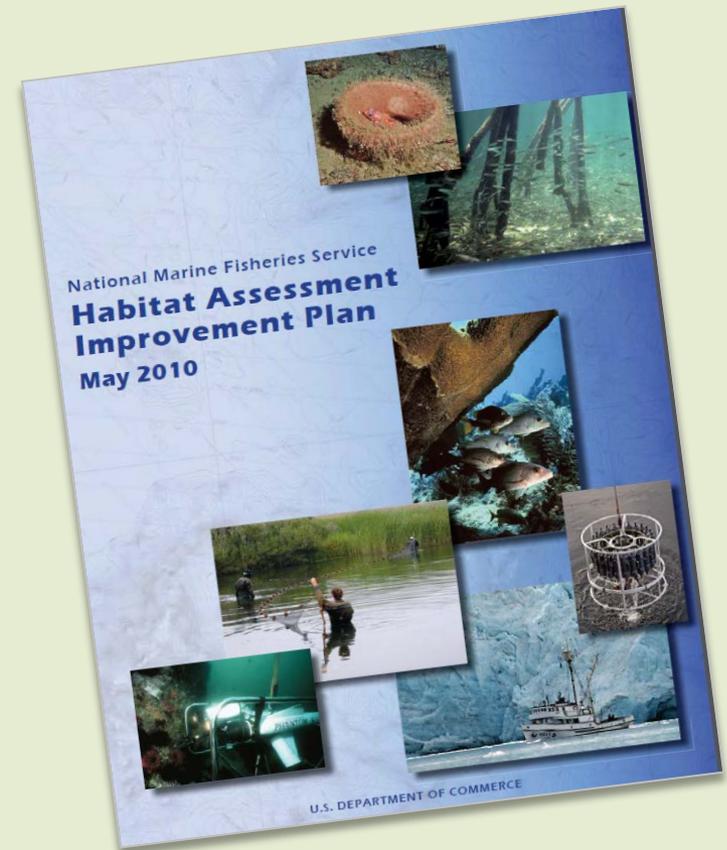
- Improving understanding about the relationships between marine species and their habitats allows us to better manage our living marine resources.

What?

- National coordination of NOAA Fisheries habitat science activities and implementation of the Habitat Assessment Improvement Plan (HAIP).

How?

- FY16 — \$0.5 M distributed
via internal proposal competition,
previous years up to \$1.0 M



Marine Ecosystems and Climate

Why?

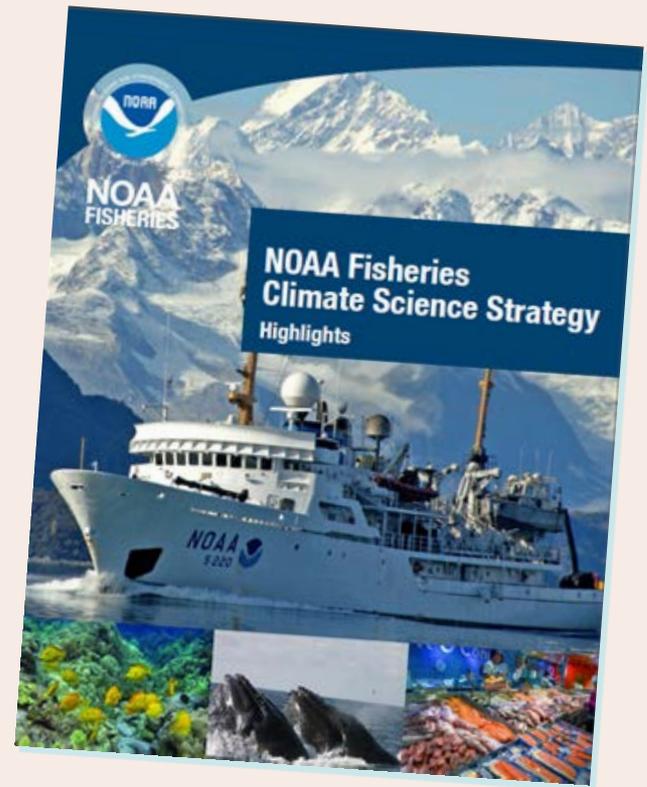
- Increase the production, delivery and use of climate-related information to fulfill NOAA Fisheries mandates in a changing climate.

What?

- Provide national leadership and support for climate-related science activities.
- Lead internal science planning

How?

- Build partnerships and leverage resources.
- FY16 - **\$0.87M distributed** Support Climate & Fisheries Research Program and other initiatives.



COPEPOD: The global plankton database project

Why?

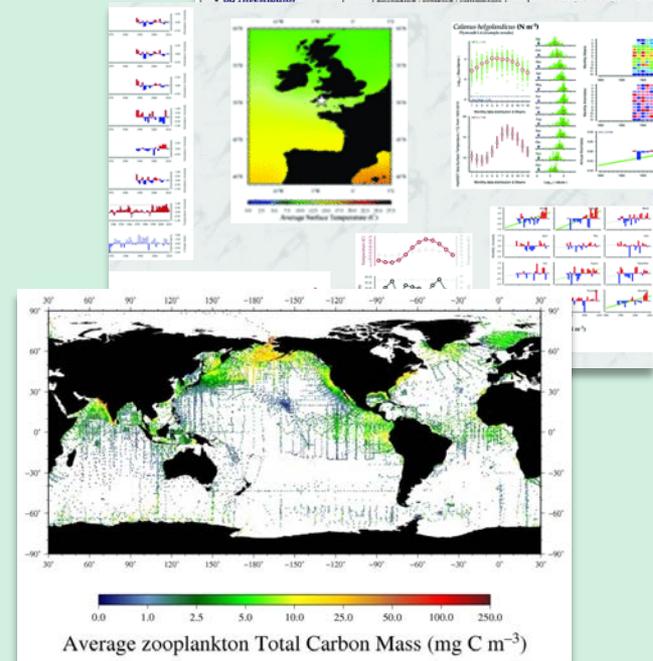
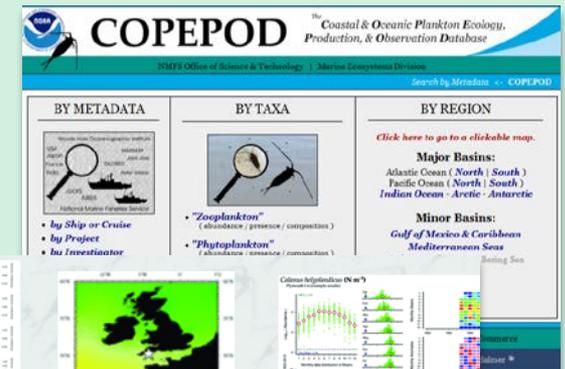
- To provide global plankton and ecosystems data, products, and exploration tools for the marine ecosystem and fisheries research communities.

What?

- A global database of plankton survey data and prepared data products.
- Online toolkits for the discovery and analysis of time series and the extraction and visualization of *in situ* and satellite data.

How?

- One scientist focused on plankton data compilation and analysis, product development, and collaboration with plankton and ecosystem scientists.



Ecosystem Modeling Coordination

Why?

- Ensure Science Centers have adequate capacity, consistency and rigor, uptake by regional management bodies.

What?

- Develop technical standards and modeling toolbox, identify capacity gaps.

How?

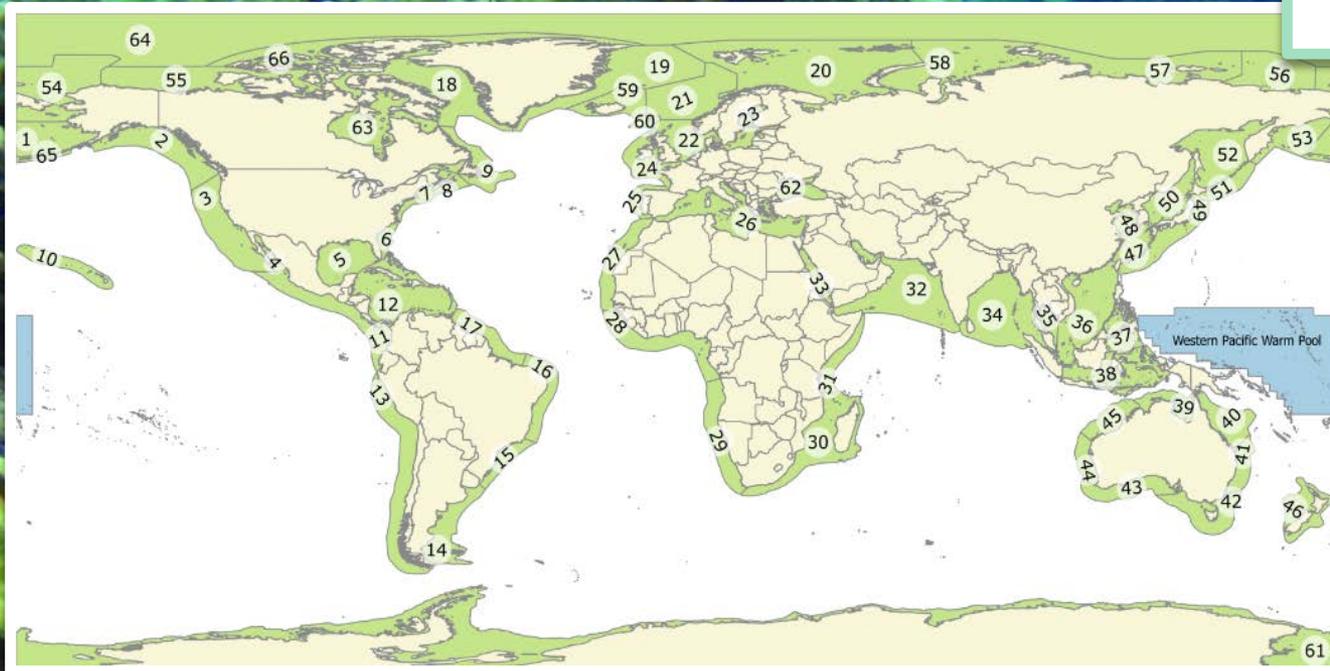
- Provide national coordination, National Ecosystem Modeling Workshops, lead workgroups



Large Marine Ecosystems Program

The ST LME program works with other NOAA offices to integrate and coordinate support services to these projects.

~22 active/
recently active
LME projects
worldwide



Program Summaries

Program	Permanent Staff	Activities	\$ Disbursed (FY2016)
IEA	1	Leadership, coordinates national effort	\$2.66M
FATE	1	Leadership, manages research program	\$1.65M
Habitat Science	1	Leadership, coordination and support of science activities	\$0.50M
Marine Eco. and Climate	2	Leadership, coordination and support of science activities	\$0.87M
COPEPOD	1	Develops plankton database and data serving tools	---
Eco. Model Coord.	1	Leadership, coordinates ecosystem modeling	---

Staff not just managing this program funding & the supported projects

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Progress

Milestones

Progress & Final Reports

Publications

Results inform management
advice/decisions

Evaluate whether programs are
targeting Science Center needs

Strengths



Dedicated, passionate, skilled staff

Unique vantage point allowing a line of sight between mandates, agency guidance, and scientific projects

Valuable, high quality programs/activities — products valued and used

A suite of multi-disciplinary programs managed in one office

Strong partnerships across NOAA Fisheries, NOAA, Federal/State agencies, academics, ...
