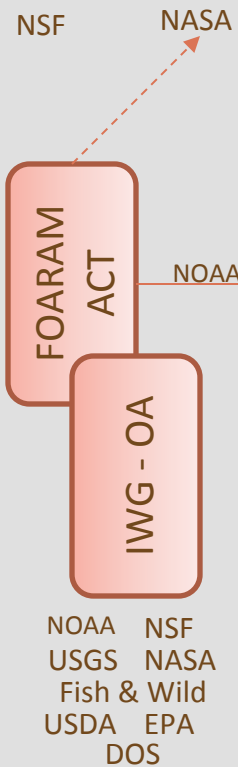


A GROWING NATIONAL OA RESEARCH COMMUNITY – NOAA'S INVOLVEMENT

U.S. Ocean Acidification Principal
Investigators Meeting
Sept. 18-20, 2013



NOAA OAP Thematic Focus Areas



NOAA OAP (FY12 \$6,359K)

Changing ocean chemistry



Biological/Ecosystem Response



Socio-Economic Impacts



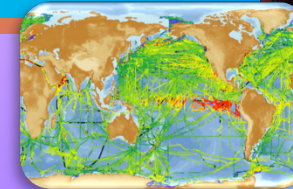
Adaptation Strategies



Educational Resources



Data Management

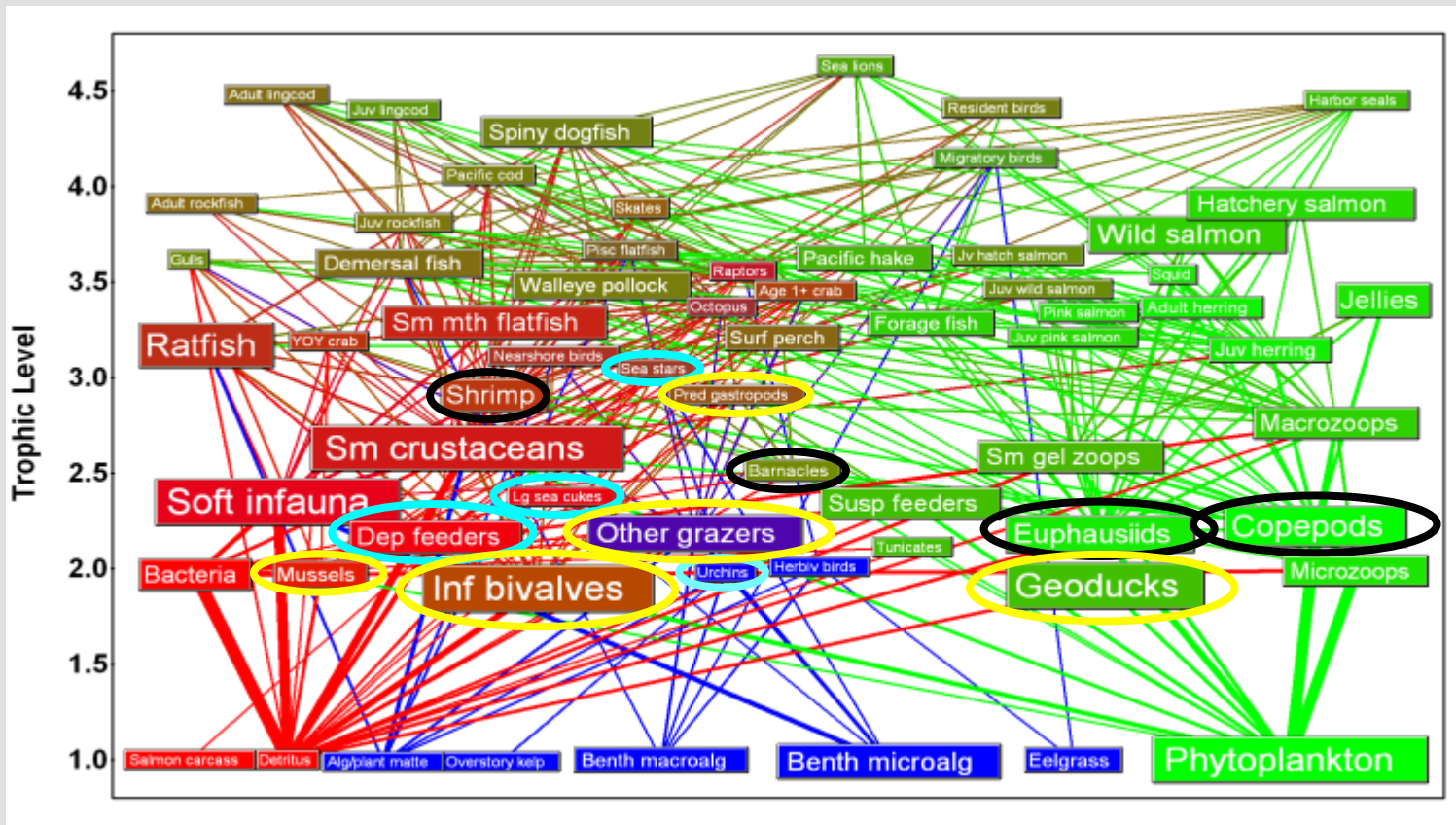


NMFS Science Centers

A broad research effort is directed toward several taxa including shellfish, calcareous plankton, coldwater corals, and fish.



Modeling



Potential impacts of ocean acidification on the Puget Sound food web.
(Busch et al 2013)

Education & Outreach

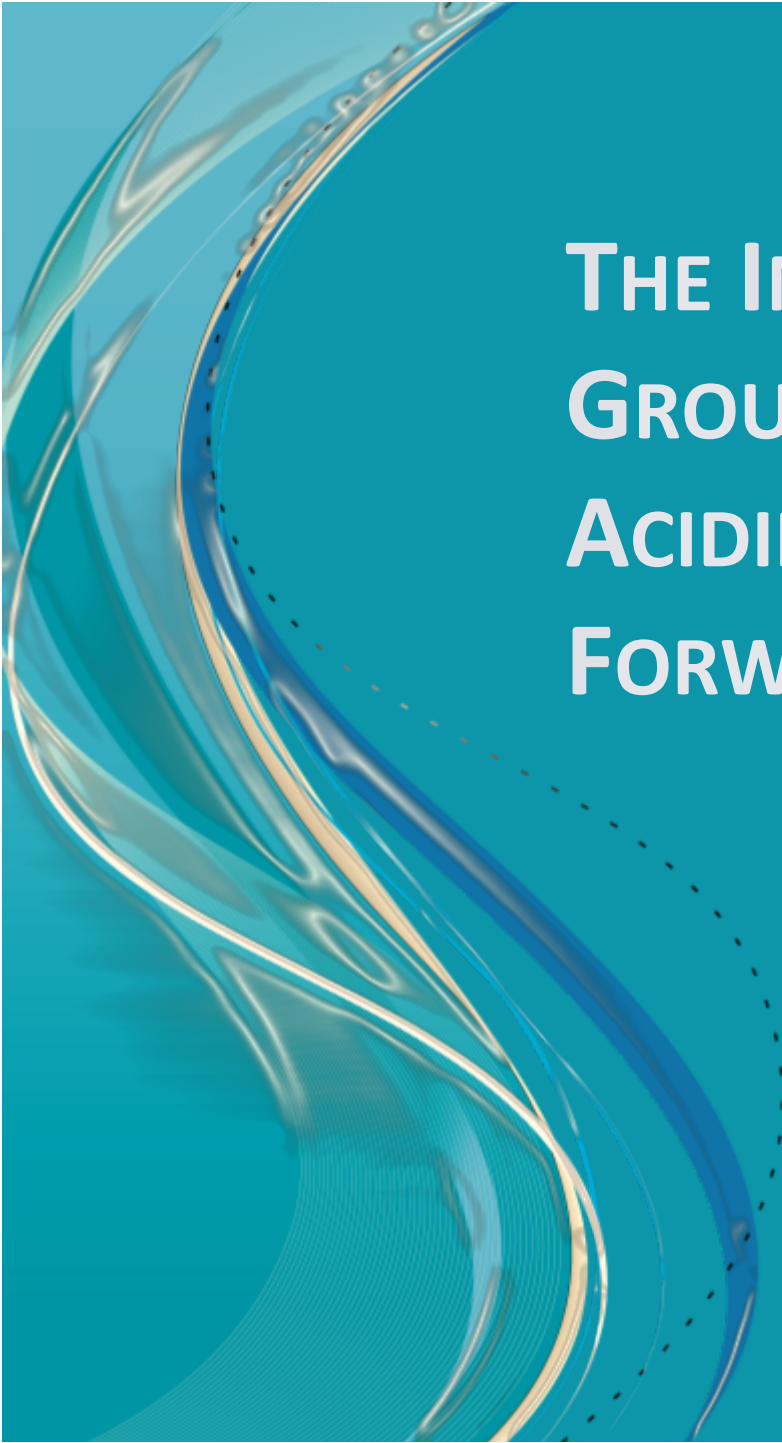
Raise awareness about the program and the research being done via:

- Organized national OA education effort: meets monthly
- Public and web events
- OAP Website
oceanacidification.noaa.gov
- Facebook & Twitter



Integration of NOAA and regional/ state efforts

- Want to continue with active collaboration and leadership on regional initiatives. Listening for guidance on how we can best work together.
- WA State
 - Several layers of interaction in BRP
 - Hope to continue to play role in WA OA Research Center
- CA/OR/WA/BC
 - Sitting on the panel just stood up
 - On CCAN Steering Committee
- AK
 - Jeremy Mathis leading organizational efforts there
- NECAN and CBAN
 - Just standing up organizational efforts.
 - Workshops in spring 2014

An abstract graphic on the left side of the slide, featuring flowing, wavy lines in shades of teal and light blue, creating a sense of movement and depth. The lines are layered and have a slight 3D effect, with some appearing as solid ribbons and others as thin, glowing trails. The overall composition is dynamic and modern.

THE INTERAGENCY WORKING GROUP ON OCEAN ACIDIFICATION – THE WAY FORWARD

Overview

- Status Update on the Strategic Plan and IWG activities to date
- Current agency portfolio
- Looking towards the future
- Input from the community



IWG-OA Status Update

- The final Strategic Plan for Federal Research and Monitoring on Ocean Acidification was submitted to the Subcommittee on Ocean Science and Technology on June 7th, 2013 for final approval
- The IWG-OA met on September 3, 2013 to begin the process of prioritizing draft actions for an implementation plan
- Libby Jewett took over as chair of the IWG-OA, effective September 3, 2013
- GAO study on federal involvement with ocean acidification
- FOARAM Act reauthorization

Coordination of Goals

- Agencies met on September 3rd to discuss how they were collectively addressing the goals in the Strategic Research Plan

Current Focus

- Represents the areas where the agencies are currently investing a majority of their resources

Near-term Focus

- Focus for next 3-5 years, but little current investment

Long term Focus

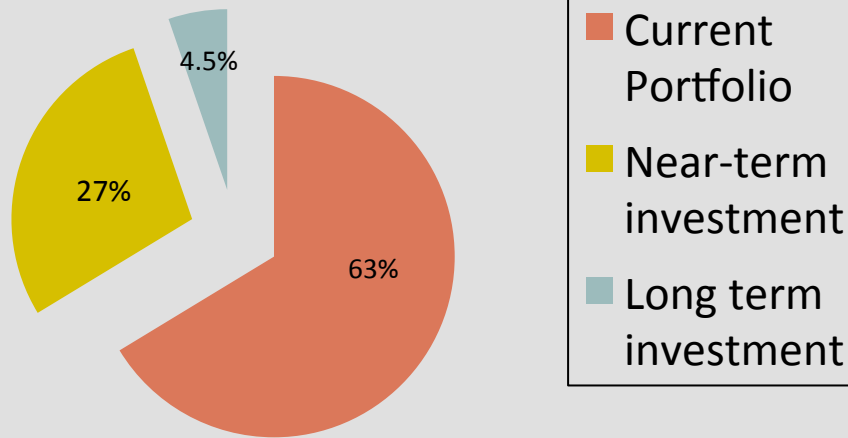
- Agencies not currently focused on these goals, no current investment, can't be achieved in 5 year time frame

Major Themes of the Plan

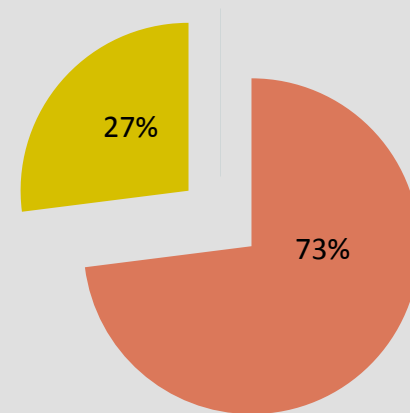
- **Research** to Understand Responses to Ocean Acidification
- **Monitoring** of Ocean Chemistry and Biological Impacts
- **Modeling** to Predict Changes in the Ocean Carbon Cycle and Impacts on Marine Ecosystems and Organisms
- **Technology Development** and Standardization of Measurements
- Assessment of **Socioeconomic Impacts** and Development of Strategies to Conserve Marine Organisms and Ecosystems
- **Education, Outreach, and Engagement** Strategy on Ocean Acidification
- **Data Management** and Integration

Agencies Focus on Strategic Goals

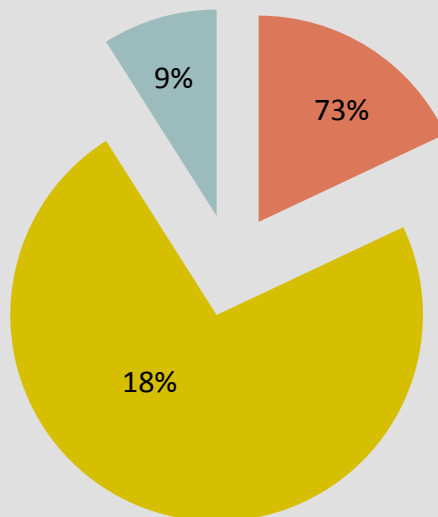
Impacts Research



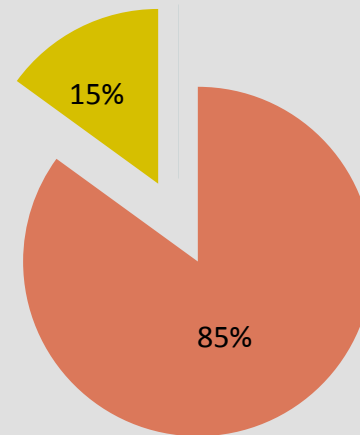
Monitoring



Modeling

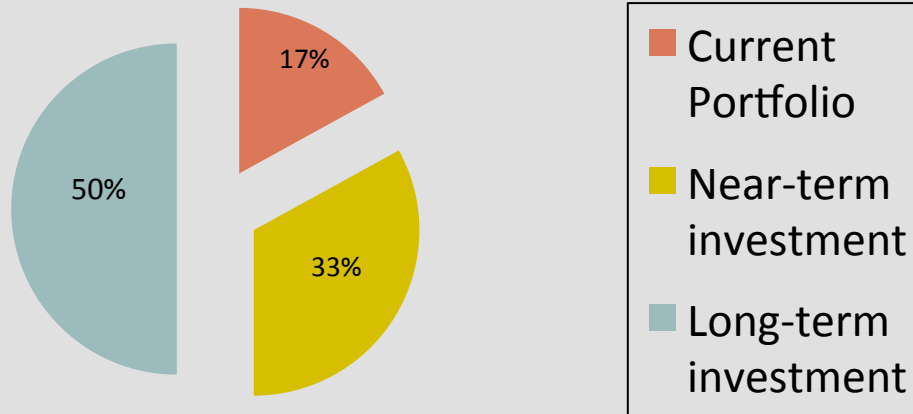


Technology Development and Standardization of Measurements

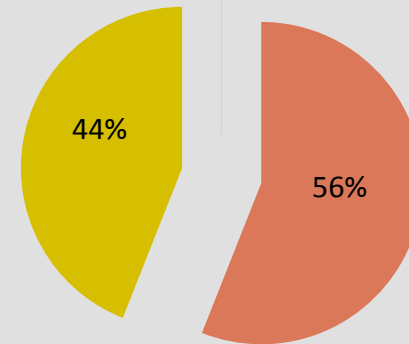


Agencies Focus on Strategic Goals

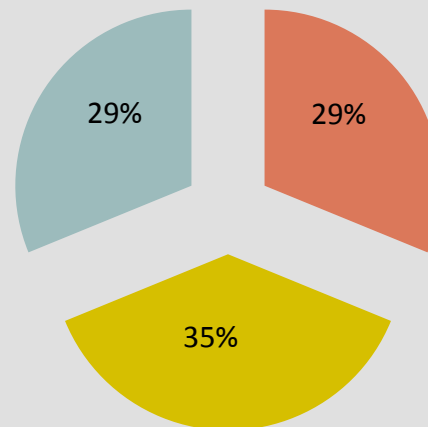
Assessing Socioeconomic Impacts



Education and Outreach



Data Management and Integration



Near-Term focus for Research

- Conduct research on species ability to evolve and adapt to ocean acidification.
- Evaluate biogeochemical proxies of OA and organism response.
- Use life history and population demography to scale up individual species response research findings to the population and ecosystem level.
- Develop a candidate list of organisms that can serve as marine ecosystem “sentinels” and develop standard operating procedures for their long-term monitoring.
- Develop and refine proxies of ocean pH and carbonate saturation state.
- Collect and evaluate historical records of organism and ecosystem response to changes in ocean chemistry.




Near-term Focus for Monitoring

- Foster closer connections between observing scientists and biologists in order to provide information about carbon chemistry of waters where species reside naturally.
- **Integrate observational data into regional and global models**
- Compile and interpret existing coastal States' and Federal datasets on water quality.


Near-term Priorities for Modeling

- Develop models of impacts to exceptionally vulnerable species, communities, and geographic areas in order to inform prioritization of research.
- Incorporate more detailed life history strategies of specific organisms at higher trophic levels.
- Invest in and develop multi- and interdisciplinary models (coastal processes on both sides of the land-ocean boundary, as well as atmospheric processes).
- Identify and track regional modeling efforts that include or could be expanded to include carbonate chemistry.
- Use high-resolution regional models to realistically represent coastal upwelling or coral reef hydrodynamics.
- Develop models that will differentiate natural and anthropogenic CO₂ sources.
- Develop appropriate decision support tools, outreach, and training programs for regional and local resource managers.
- Ensure adequate Federal capacity for archiving model code and results to support management and decision making.



Near-term Focus for Technology Development and Standardization of Measurements

- Establish validated SOPs for measurement of critical biological and geochemical parameters.
- Calibrate existing and develop new geochemical proxies to facilitate paleo-oceanographic studies of organismal and ecosystem response to OA.



Near-Term Focus for Assessment of Socioeconomic Impacts

- Support inclusion of cultural and economic components in studies of the effects of ocean acidification.
- Develop integrated models that link physical, biological, and economic systems that estimate the economic and distributional impacts of OA.
- Foster communication between researchers, stakeholders, and decision makers to develop efficient mitigation and adaptation strategies.

Near Term Focus for Education and Outreach

- Facilitate an OA data and information exchange among stakeholders.
- Make scientific assessments available to managers, policy makers, and the general public as useful education tools.
- Engage current Cooperative Extension and National and state Sea Grant offices to develop and implement outreach programs focused on OA.
- Solidify funding streams to foster development and maintenance of education, outreach, and engagement programs and activities.

Near-term Focus for Data Management and Integration

- Negotiate and implement system-specific approaches to interagency interoperability.
- Automate collection of metadata from “smart” sensors.
- Develop a catalog of relevant data and documentation.
- Establish tools and procedures to support community-wide data synthesis.
- Harmonize with the emerging OOI framework.
- Determine the components of the OA data access framework
- Consult with user communities to determine the specific software tools that need to be supported.



QUESTIONS?

