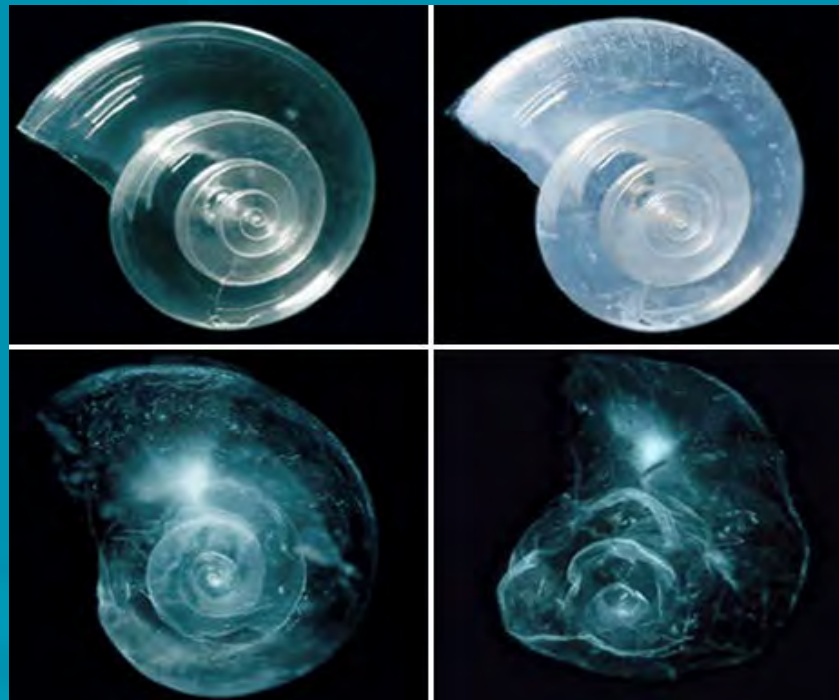


Effectively Communicating Ocean Acidification Workshop





National Marine Sanctuaries of the West Coast

Ocean Acidification Action Plan

Dave Lott WCR, Ed Bowlby OCNMS, Dan Howard CBNMS, Kelley Higgason GFNMS, Karen Grimmer MBNMS, Laura Francis CINMS, Linda Krop CINMS SAC, Richard Feely PMEL, Libby Jewett OAR

August 5, 2011

Strategy 3 - Education and Outreach

Activity 3.3

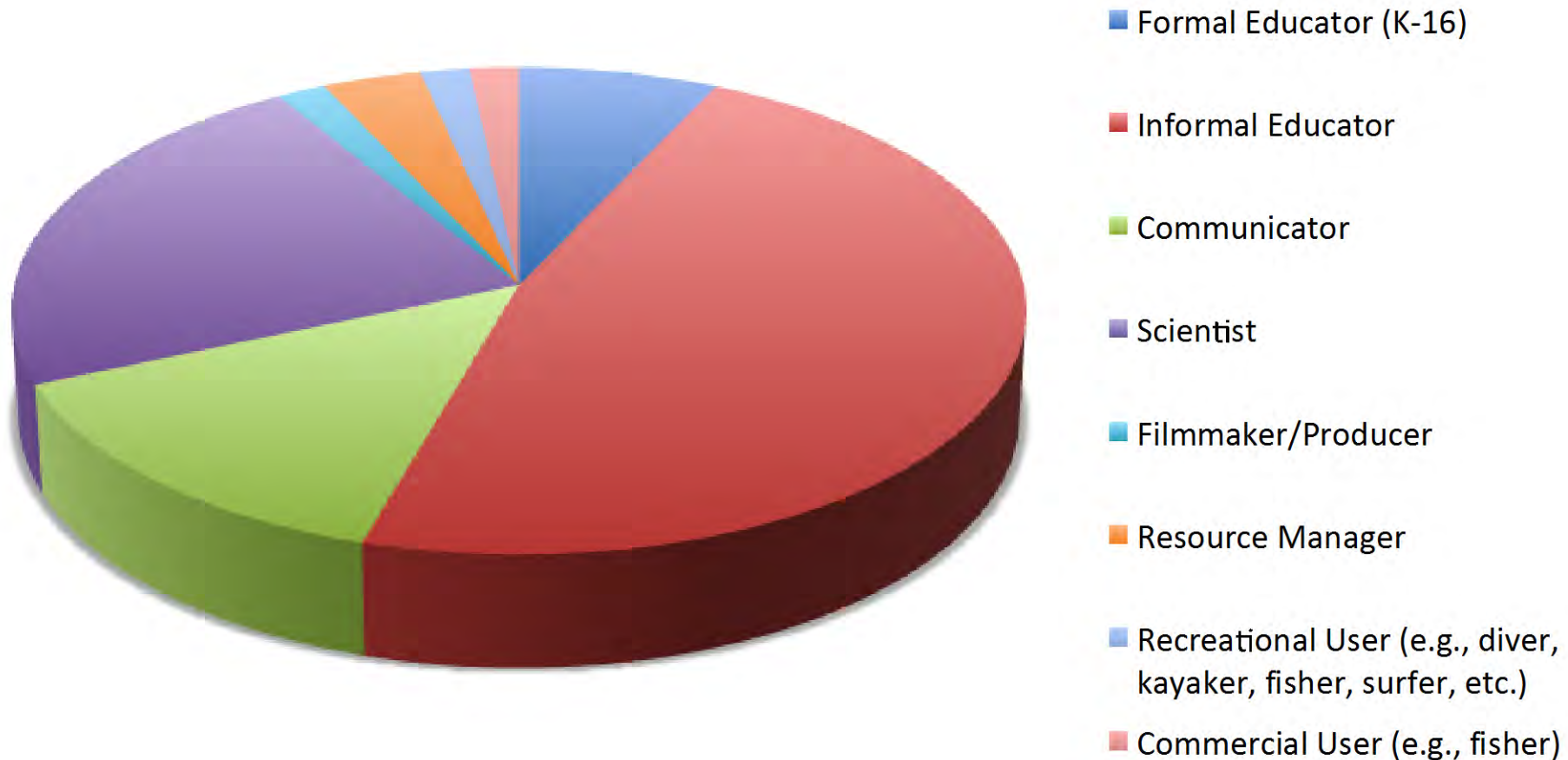
Host an OA Communication and Education Conference focusing on Best Practices and develop a summary report describing model programs for teaching and interpreting OA

Effective Practices for Communicating Ocean Acidification Workshop Participants



- California Academy of Sciences
- Center for Ocean Solutions
- University of California Santa Cruz
- Long Beach Aquarium of the Pacific
- California Coastal Commission
- National Marine Sanctuaries
- Hatfield Marine Science Center
- Monterey Dive Boat Operator
- CINMS Advisory Council
- University of California Santa Barbara
- Aquarium of the Bay
- Word Craft
- Passionfish
- Institute for Systems Biology
- South Slough and Elkhorn Slough National Estuarine Research Reserve
- Scripps Institution of Oceanography
- Monterey Bay Sanctuary Foundation
- Spector Dance
- Ocean Conservancy
- Monterey Bay Aquarium Research Institute
- University of Gothenburg
- NOAA Coastal Services Center
- Plymouth Marine Lab
- CeNCOOS
- Hopkins Marine Station
- National Marine Sanctuary Foundation
- Alisal High School
- Monterey Bay Aquarium
- New England Aquarium
- Ocean Conservancy
- Seattle Aquarium
- Stevenson School
- San Francisco State University
- Environmental Defense Center
- NOAA OA Program, Coral Reef Cons, Fisheries, Education, PMEL
- COSEE West/USC Sea Grant
- Kennesaw
- Edge Research
- Cal State University Monterey Bay
- Sanctuary Exploration Center
- CSIRO-CMAR - Australia
- Alaska Bering Sea Crabbers Exploratorium
- Oceana
- Millenium Art
- Rosenstiel School of Marine Sci.
- Hopkins Marine Station
- Upwell
- 360 Degree Films, Australia
- California Sea Grant
- National Parks Western Region
- Woods Hole Oceanographic Institution
- Climate Interpreter
- Moss Landing Marine Lab
- Consortium for Ocean Leadership
- Long Marine Lab
- Hog Island Oyster Company
- The Ocean Project
- Pacific Science Center Seattle

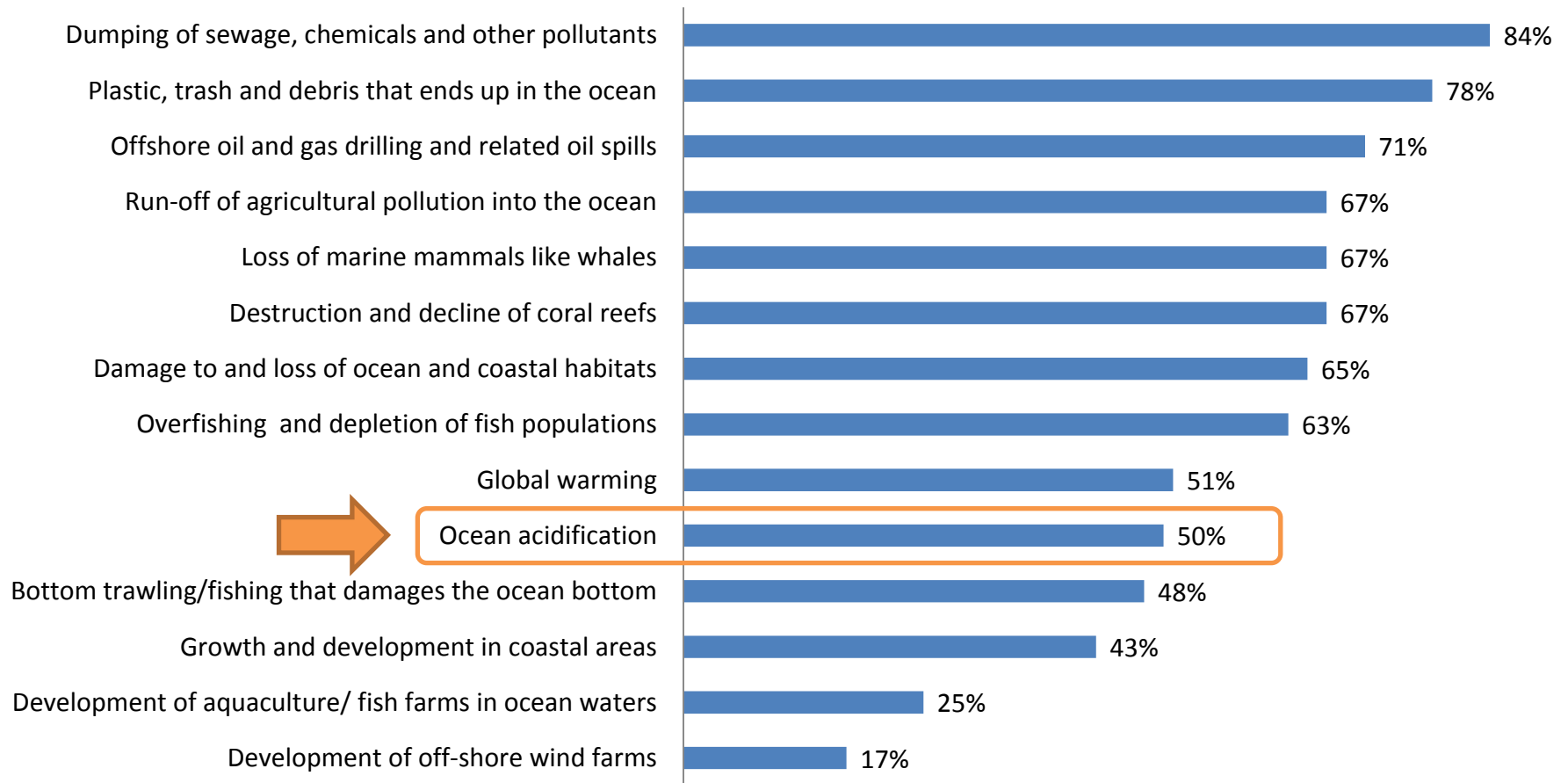
What is YOUR PRIMARY ROLE in communicating ocean acidification?



Perceptions of Threats to Ocean Health (2011)

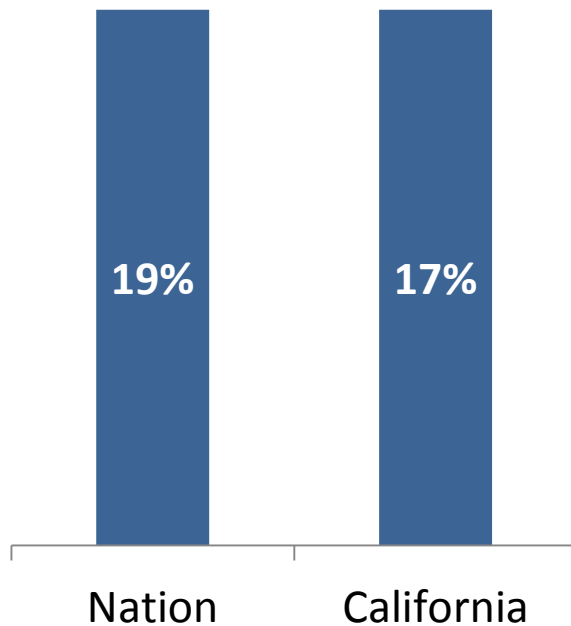
Q: How serious is each of these threats to ocean health?

% among most + very serious

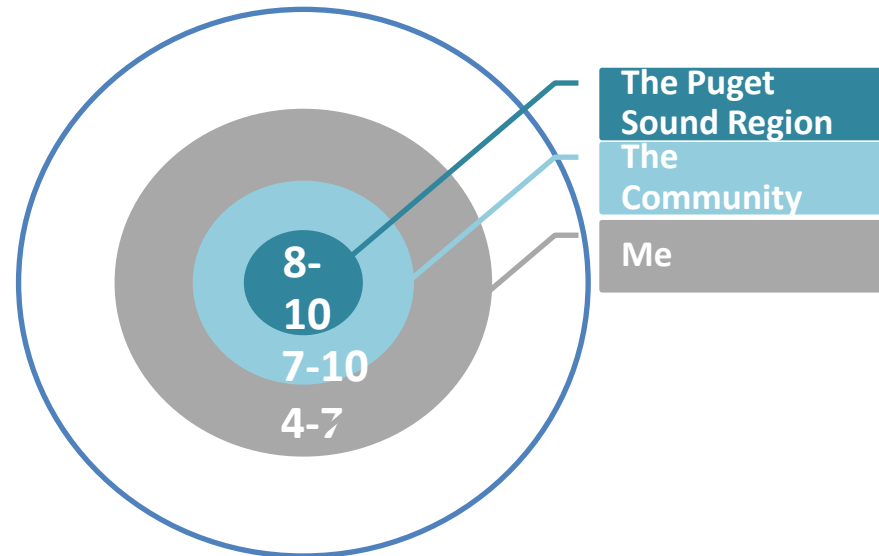


Context: Our Challenge is Making It Relevant

Consequences for Today...

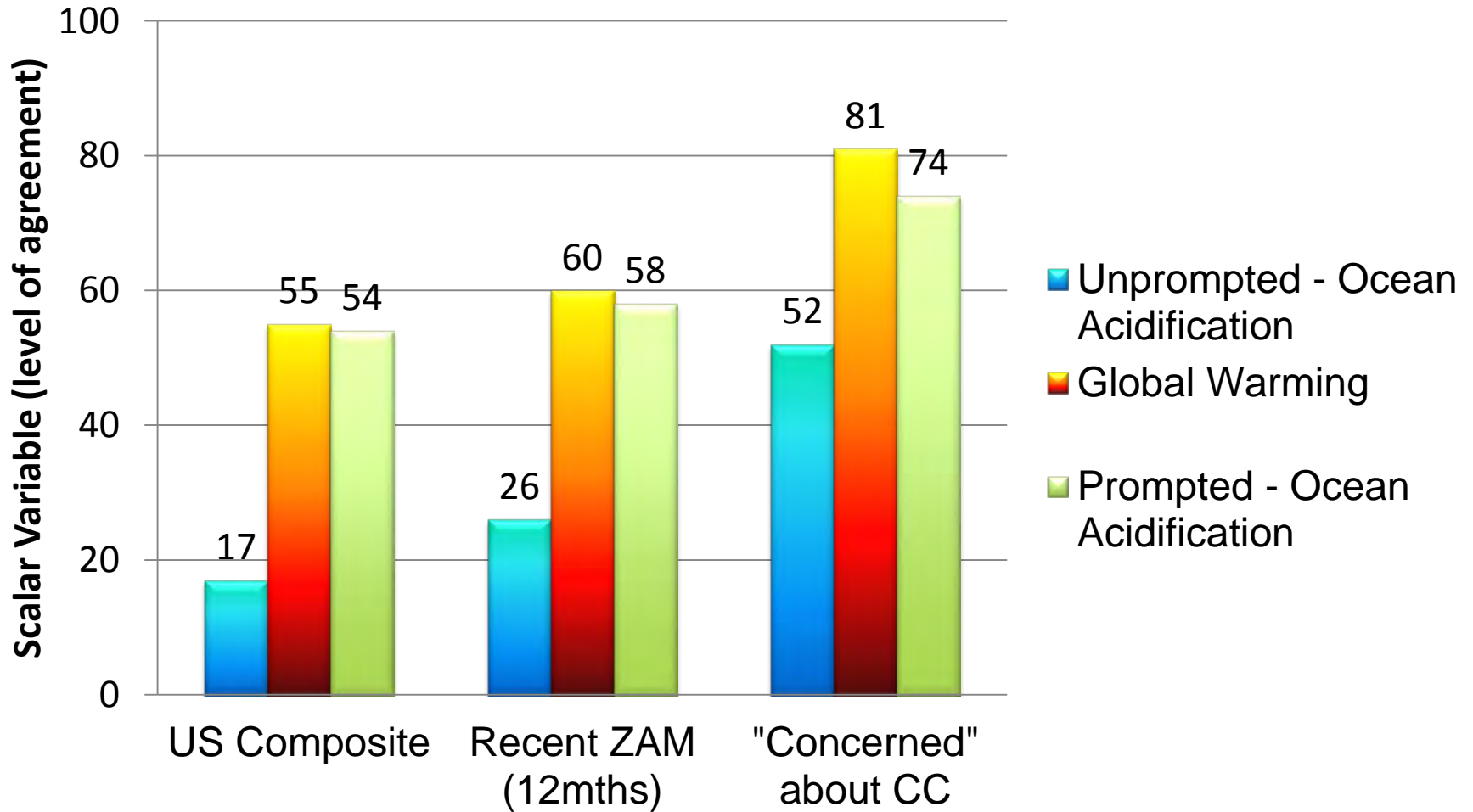


Impact to me personally?



I'd rate the impact to Puget Sound 9, community 8, personally 4. I just don't see myself being very dependent on the seafood or sea life or ocean. I think our economy depends on the fact that we live on the water. But we don't really eat seafood that much. It's not something like my business or anything. It doesn't affect me in any way.

I am worried about...

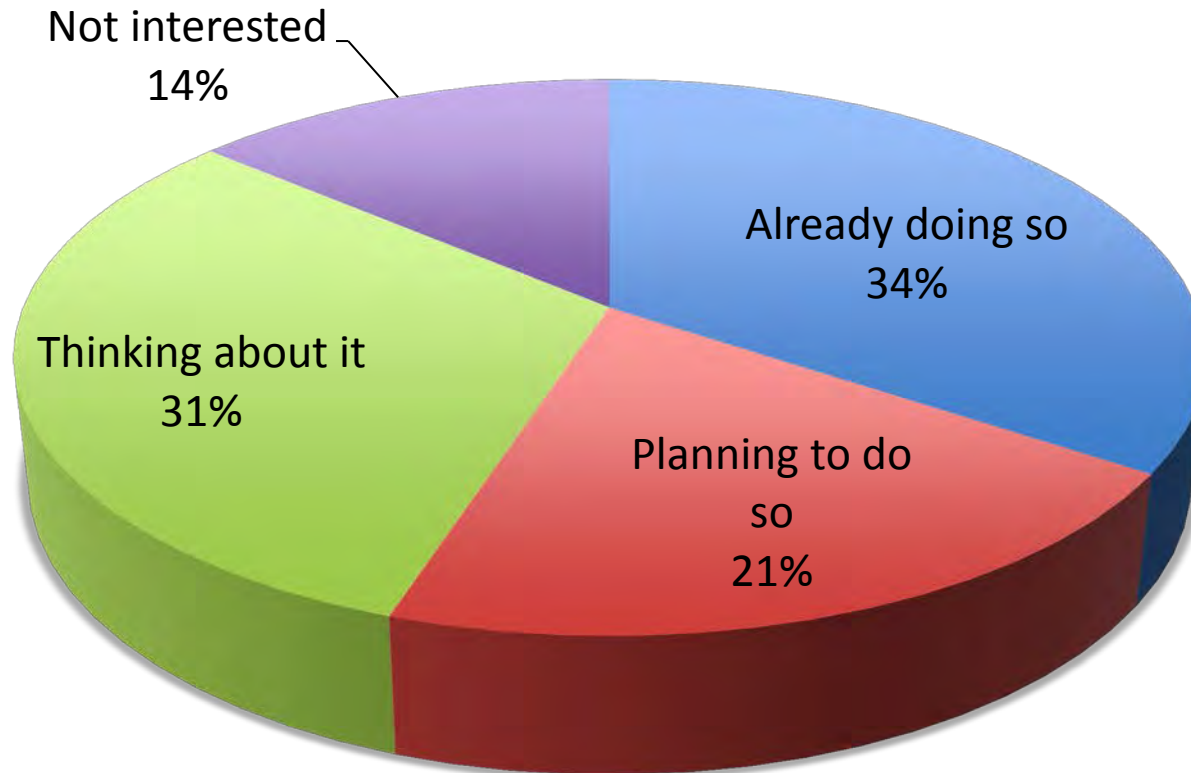


ZAM = Zoo, Aquarium, Museum visitors
CC = Climate Change



Partners Research

ZAM-Partners Communicating OA (98)



stories



- about innovative problem solvers
- so people can recognize their help is needed to address disruptive changes in the world
- many scales-individual, community, state, nation
- reduce CO₂ emissions



New England
Aquarium

Crisis approach does not work!



Effective Messages

Percent of respondents who indicated this message was effective or extremely effective

Message	Pre-Workshop	Post Workshop
As CO ₂ increases in the atmosphere, it dissolves in the ocean and it is changing the pH of the sea making it more acidic.	68	70
Ocean acidification is the other CO ₂ problem	28	37.5
The more CO ₂ we emit, the more acidic the ocean water becomes: a phenomenon known as ocean acidification.	67	60

Effective Messages

Percent of respondents who indicated this message was effective or extremely effective

Message	Pre-Workshop	Post-Workshop
Biodiversity of the global ocean is changing due to ocean acidification	51	65
Marine organisms with calcium carbonate skeletons or shells (e.g., oysters, clams and mussels) can be affected by small changes in acidity	69	86

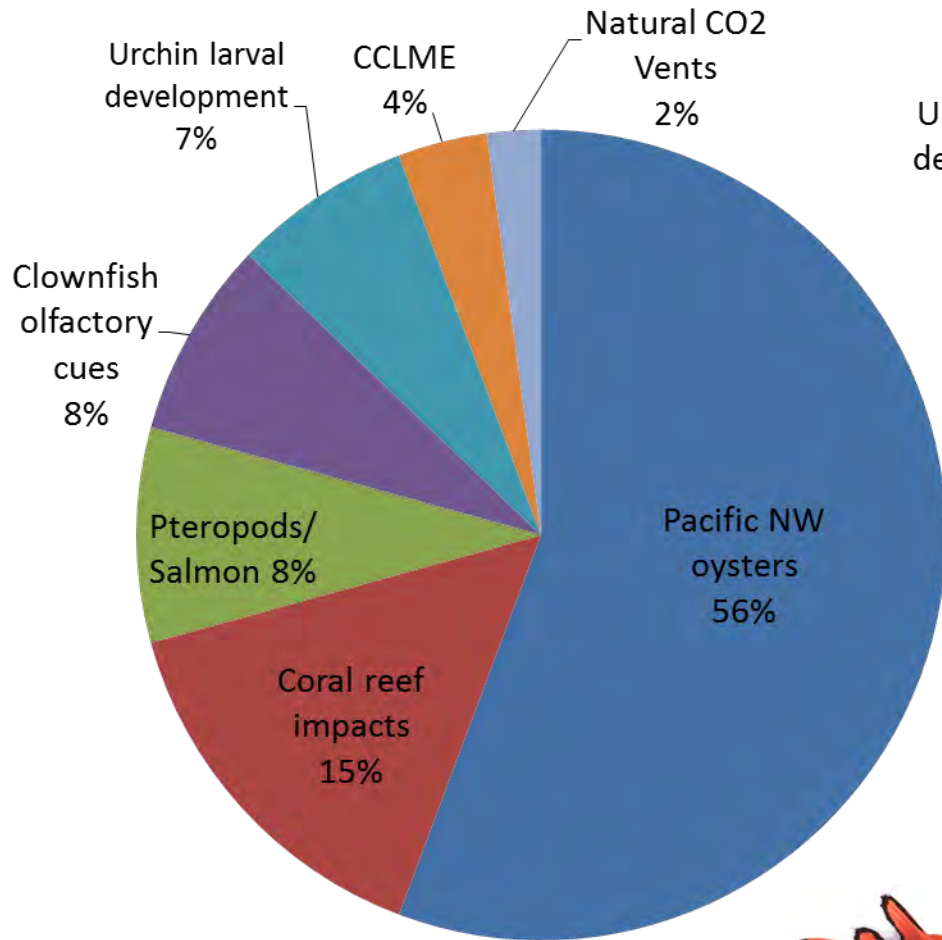
Effective Messages

Percent of respondents who indicated this message was effective or extremely effective

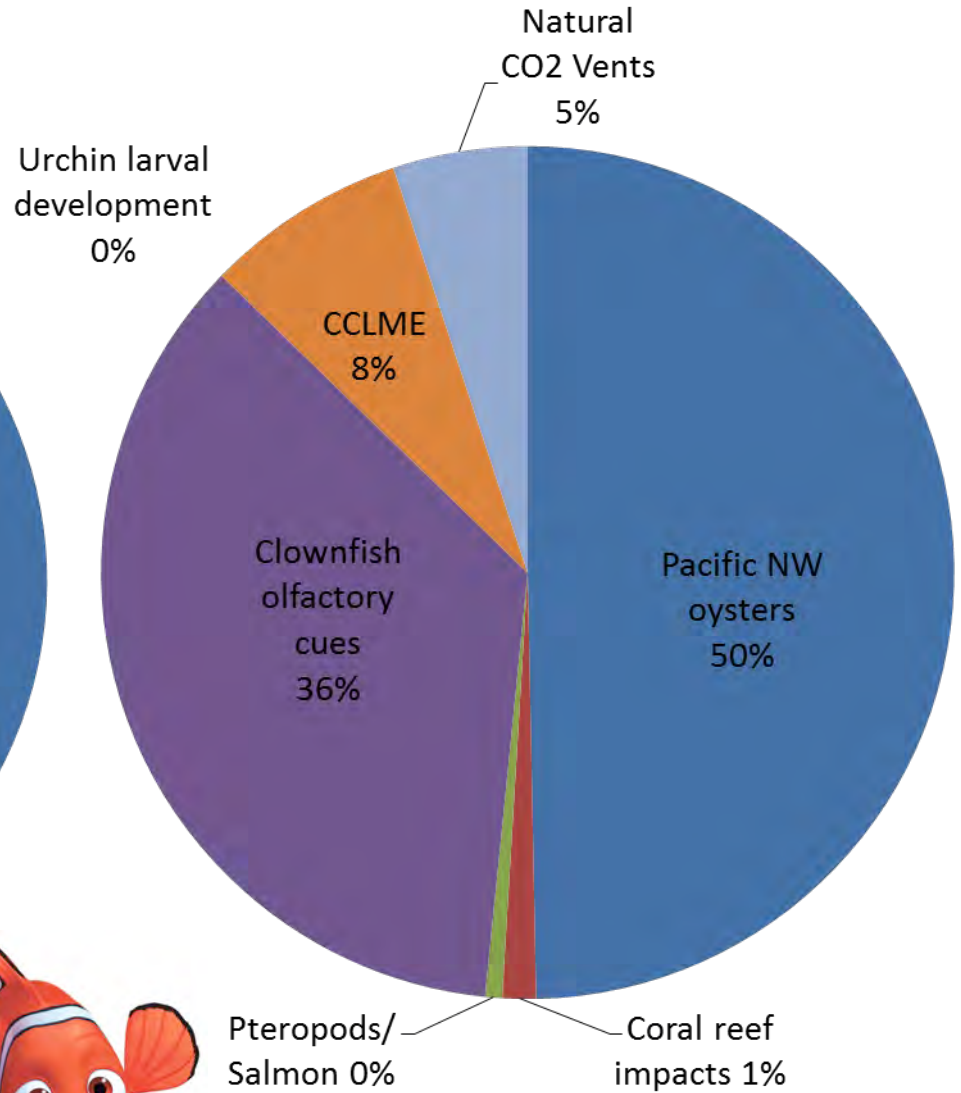
Message	Pre-Workshop	Post-Workshop
This rate of change is unprecedented in the last 55 million years. The rate of ocean acidification will continue to accelerate in the coming decades.	35	80
Ocean acidification has the potential to fundamentally change the ocean, its habitats, food webs and marine life	66	91

Case Study Preference

Pre-Workshop



Post-Workshop



CCLME = California Current Large Marine Ecosystem



MESSAGE PLATFORM

1. Remind the audience of the role and function of the ocean

2. Do not open the door to debate; OA is real and measurable

3. A living ocean matters; OA is a real danger to the basis of the food chain, clean water, our economy

4. This is not a problem for tomorrow; it is happening today.

5. Coastal states need to be especially concerned

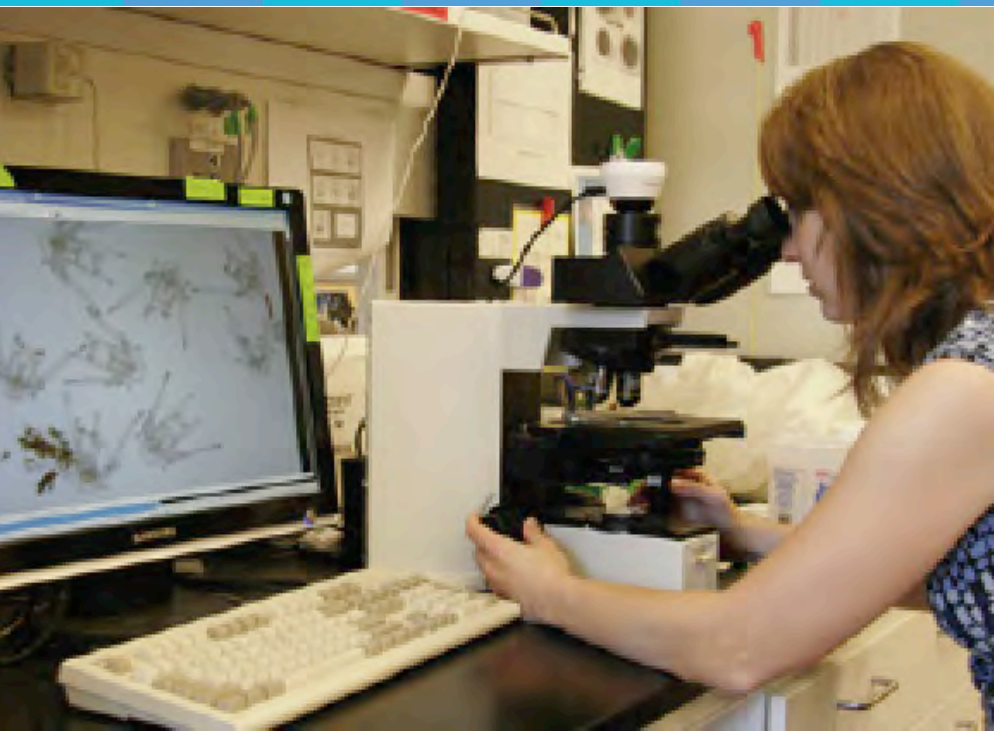
6. People have a role to play. Support for science, local initiatives and personal action are all needed.



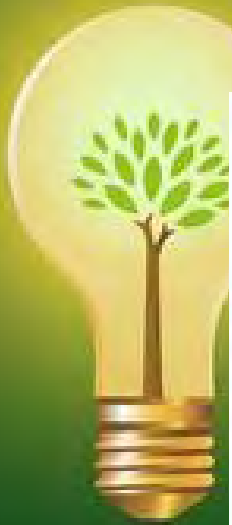
Ocean Conservancy®
Start a Sea Change



EDGE
RESEARCH



Conservation Actions



GO GREEN

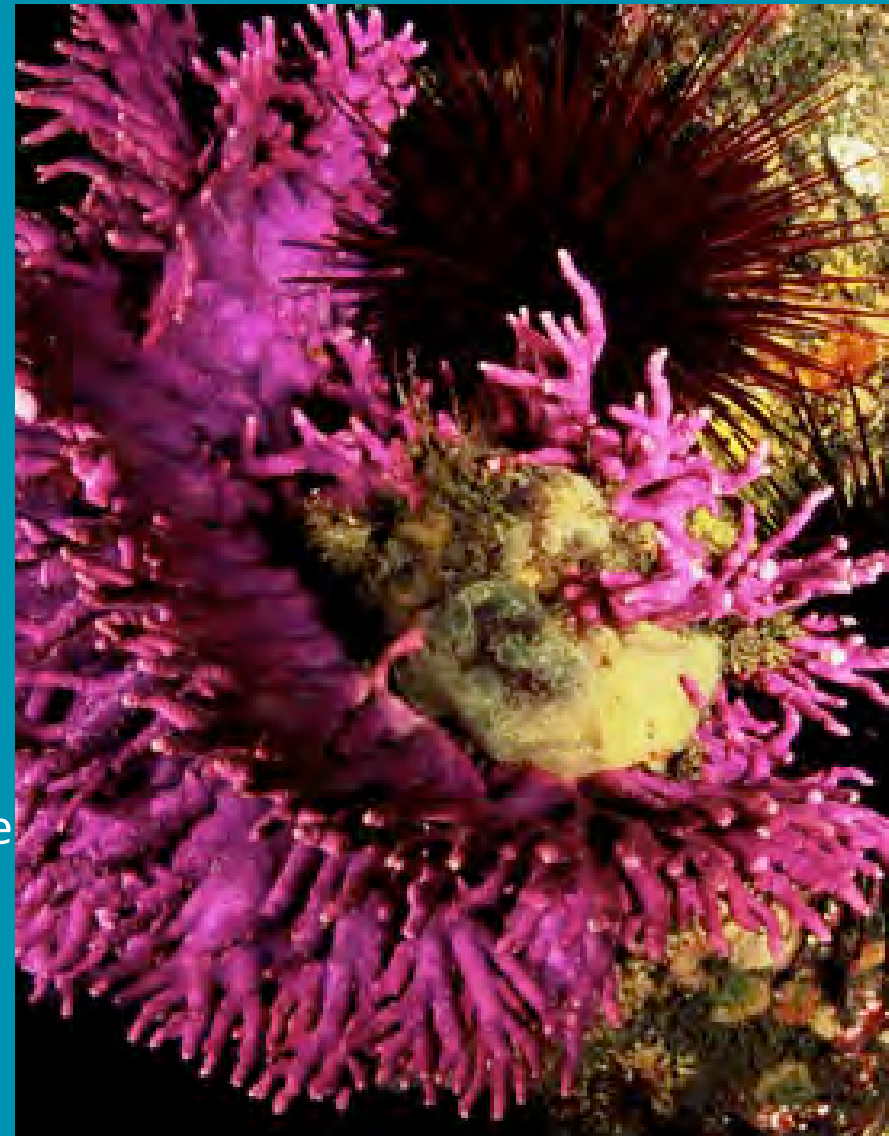
ENERGY STAR



Take Home



- Separate OA from Climate Change
- Changing Ocean not Acid Ocean
- Health Analogies
- Don't use winners and losers
- Economics and Seafood
- Make it locally relevant
- We CAN make a difference if we reduce our CO2 consumption – Hope
- Get Ready for Change!



Next Steps



- Workshop summary
- Action Plan
- Ongoing Communication
- Refine messages and case studies
- 85% plan to use what they learned





What does this mean for West Coast Region Educators?

- Participate
- Enhance Outreach Kits
- Stay Connected
- Future Workshops

acidocean.org to yourchangingocean.org?

Understanding Ocean Acidification

Our carbon emissions are making the ocean more acidic, which threatens life in our seas. Use these resources to educate yourself and others and take action.



Photo by: [Steve Jurvetson](#)

Workshops



Presentations from the Understanding Ocean Acidification workshops in coastal California.

[More](#)

Hands-On Activities



Find lesson plans and projects that show CO₂'s effect on ocean acid levels and sea life.

[More](#)

Useful Links



Continue learning from additional websites, FAQs, videos and reports available online.

[More](#)

Watch the PSA and Take the Pledge



Commit to change. Explore what you can do to reduce CO₂ emissions and make your ocean pledge.

[More](#)

What does this mean for Gulf of the Farallones NMS?



- Trainings for Partner Agency Docents & Volunteers
- Develop New AYS program
- Teacher Workshops
- Adapt 4th Grade VC Field Trip
- Planktonika & Public Programs
- Adapt Rocky Shore Partnership

Acknowledgements:

West Coast National Marine Sanctuary Education Team

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Ocean Conservancy

Upwell

Edge Research

The Ocean Project

California Academy of Science

Monterey Bay Aquarium

New England Aquarium

NOAA Ocean Acidification Program

NOAA Coral Reef Conservation Program

NOAA Fisheries



Education Share-a-thon

