



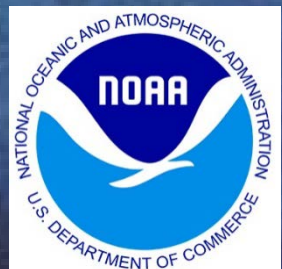
**NOAA
FISHERIES**

Topic 9
Emerging Technologies for
Fisheries Stock Assessments

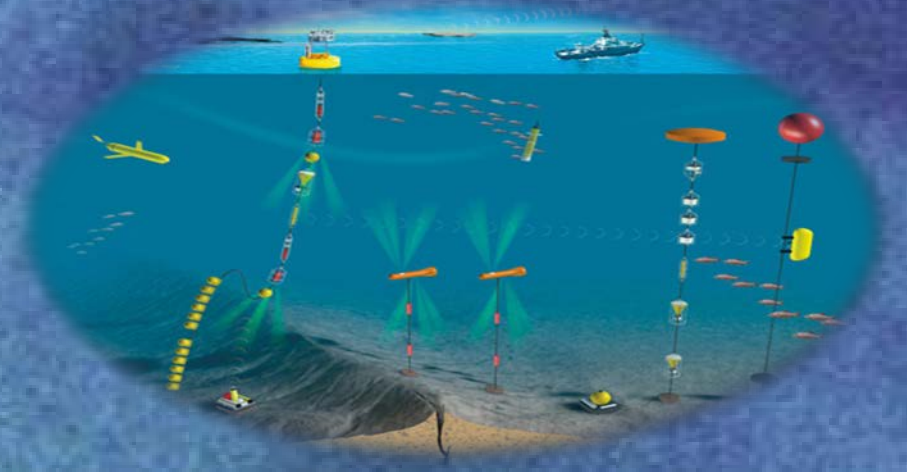
NOAA Science Advisory Board
Seattle
July 10-11, 2019

Ecosystem Sciences Management Working Group

Dr. Michael Castellini, University of Alaska
Dr. Robert Johnston, Clark University
Co-chairs



Update since April SAB and path forward

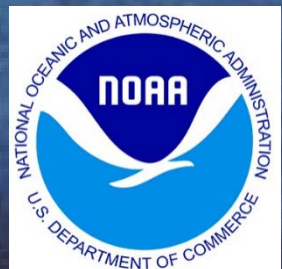


Context: Current SAB Work Plan:

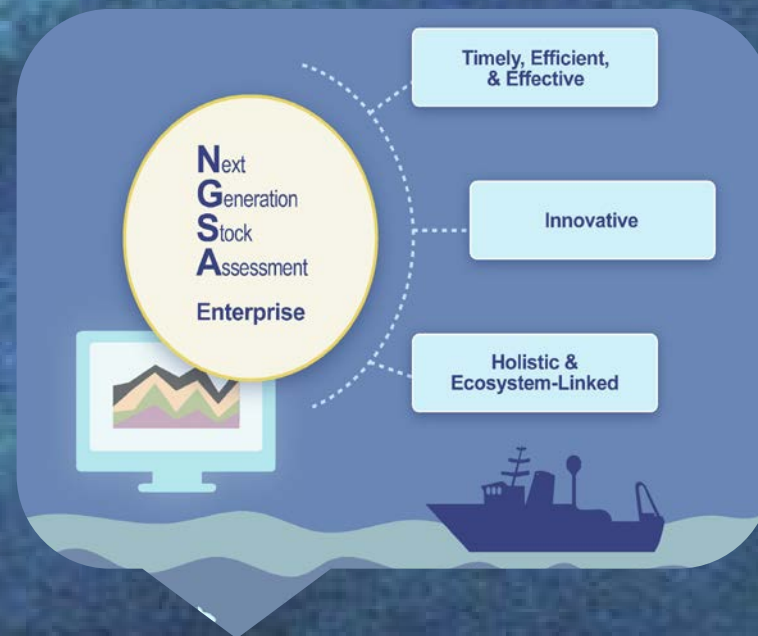
“Evaluate fisheries monitoring technologies to improve stock assessments. This evaluation should consider how to optimally balance electronic monitoring, eDNA, and other technologies...”

2018 Stock Assessment Improvement Plan (SAIP):

“To provide the best information possible and meet the demands for increased quality and quantity of stock assessments, we must continually improve stock assessments with new developments in science and technology.”



- May 2019 in-person meeting with NOAA experts
- Today: Topic 9 report outline to SAB July 2019
- Late summer 2019 first draft of 10-12 page report
- October/ November 2019 ESMWG meeting to finalize
- End of 2019 submit to SAB

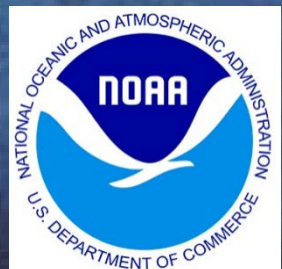


Major Components of Topic 9 Report:

- Methods are not yet “plug and play”. Therefore no immediate cost savings to replace ships and people. Will require dedicated research to compare with SOP
- Best viewed as a means to continually improve stock assessments moving forward.

Three example case-studies utilized in “readiness” scenarios:

- Near term and currently being field verified
 - Modern otolith assessment methods for fish age and life history
- Medium term at field testing stages
 - Remote observing systems, e.g saildrones
- Longer term development in laboratory and field
 - eDNA, molecular methods Omics Roadmap



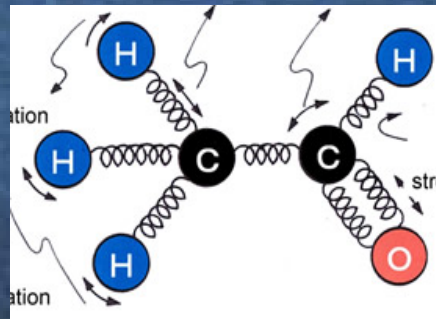
Near term. Dedicated field comparisons underway

Case study: New methods in fish otolith chemistry for aging



Near IR FFT analysis of composition of layers provides rapid age estimation with good precision, and greater than 800% efficiency compared to traditional methods.

- Consulting NOAA expert: Dr. Tom Helser; AFSC



Medium horizon: Calibration, testing and initial trials

Case example: Remote observing systems (e.g. saildrones) for assessment of ocean conditions and population distributions.



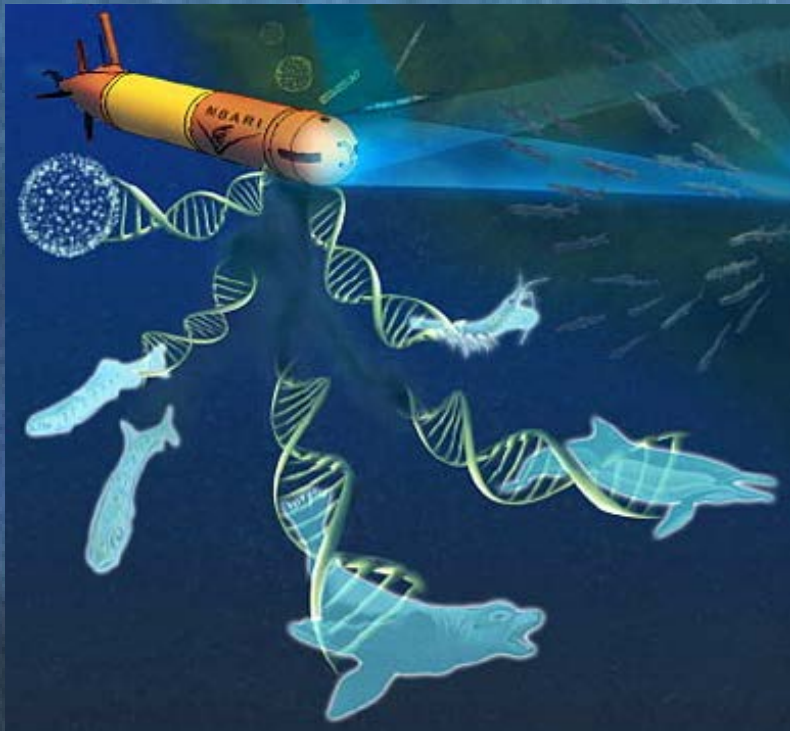
Many trials underway. Best use is offshore and remote

Consulting NOAA expert: Christian Meinig;
PMEL



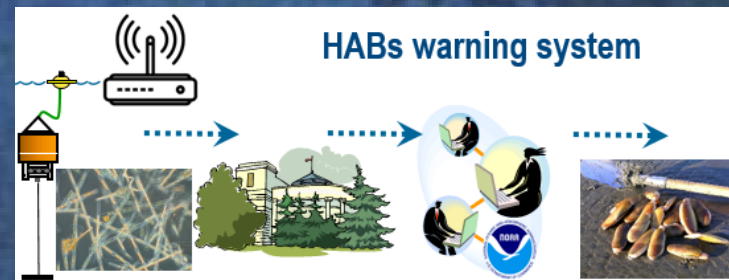
Longer term: Conceptual models, laboratory and university collaborations

Case study: e DNA, Omics and molecular tools



Species identification, presence, distribution, life history.

Consulting NOAA expert: Dr. Kelly Goodwin, OAR, AOML, SWFSC



Ecosystem Sciences Management Working Group

Dr. Michael Castellini, University of Alaska
Dr. Robert Johnston, Clark University
Co- chairs

James Cowan, Louisiana State University
Selina Heppell, Oregon State University
Molly McCammon, Alaska Ocean Observing System
Ed Parnell, University of California at San Diego
Lisa Wainger, University of Maryland
Four new members: TBA



