



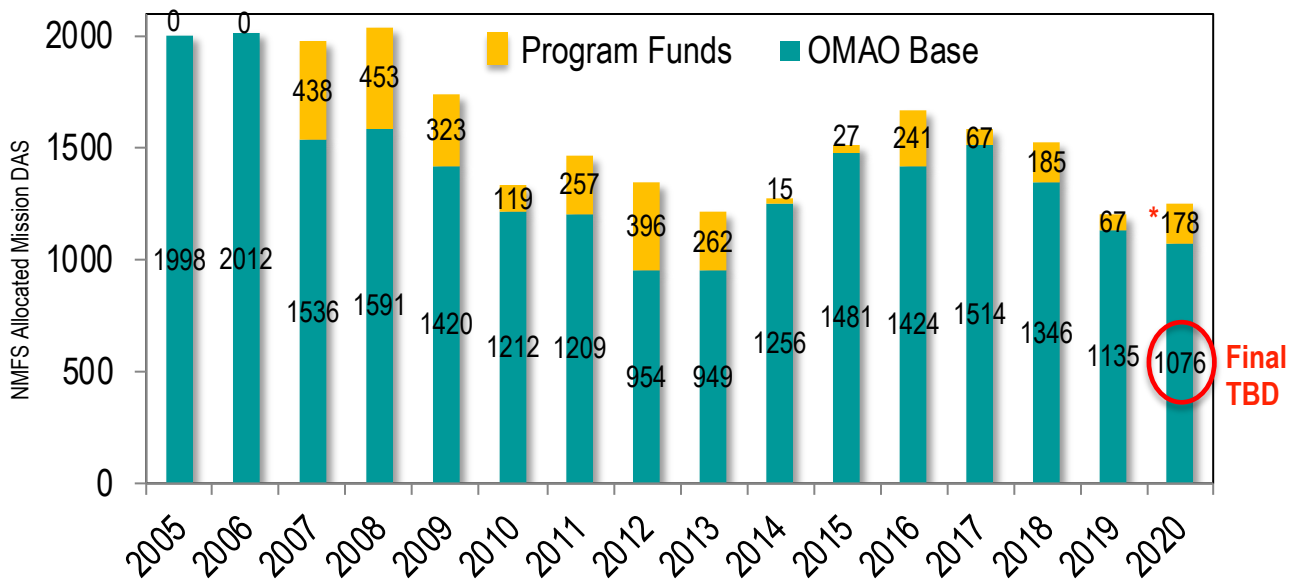
**NOAA  
FISHERIES**

# **Funding for basic surveys: issues related to ongoing funding for basic surveys and research on critical information needs**

**Cisco Werner  
NOAA Fisheries  
[cisco.werner@noaa.gov](mailto:cisco.werner@noaa.gov)**

**CCC (Virtual Meeting)  
May 2020**

# NMFS Days-At-Sea on the NOAA Fleet



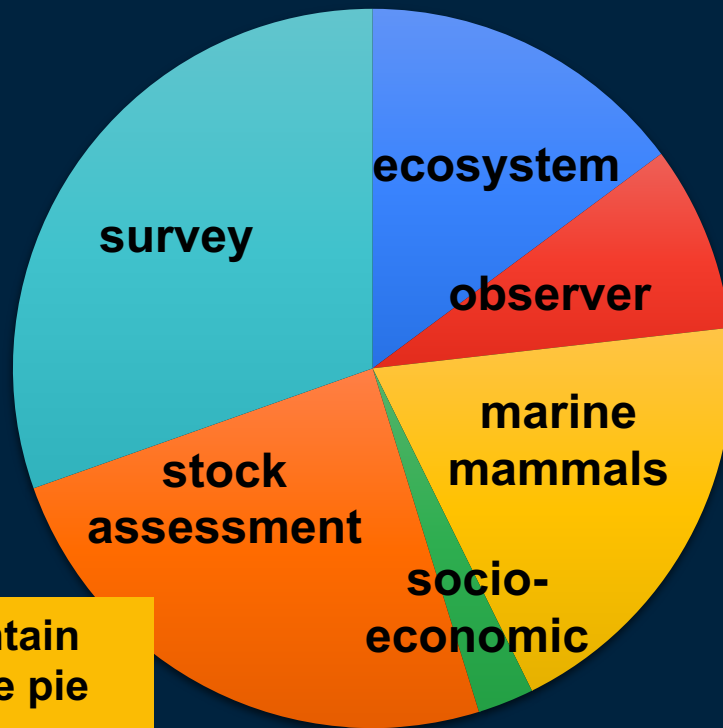
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
NMFS \$M's	0	0	\$4.8	\$5.4	\$1.5	\$1.6	\$3.1	\$3.7	\$2.9	\$0.2	\$0.3	\$2.86	\$0.6	\$2.3	\$1.0	\$2.7*

\*Program DAS forgone due to COVID

# Balancing the survey & research portfolio

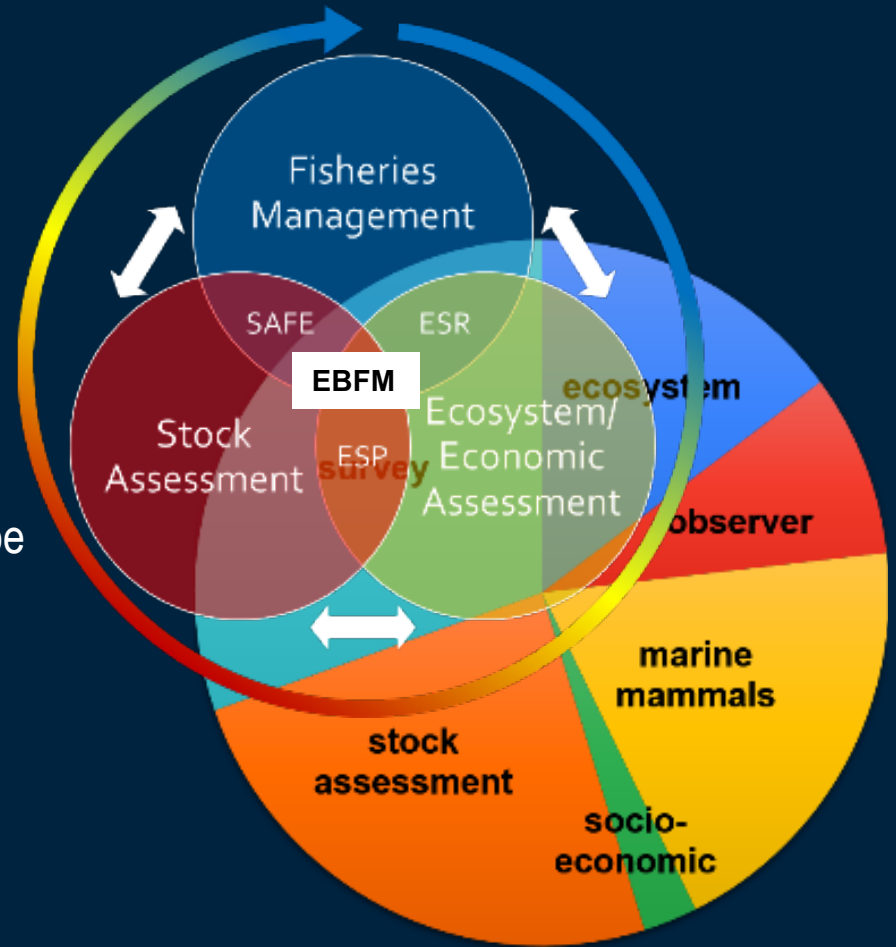
- Environmental variability & changing climate
- Building resilience in shifting states
- Relatively static management tools
- Anticipate changes to occur

**Strive to maintain balance as the pie changes**

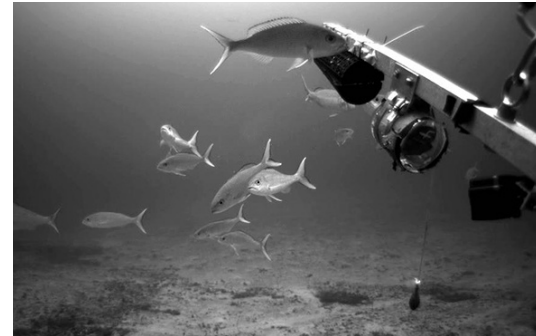
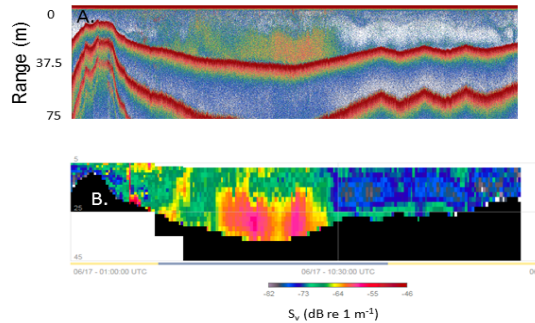
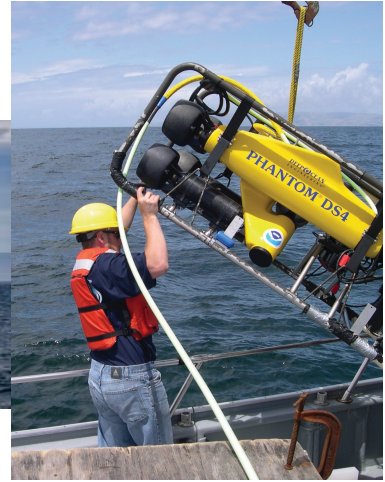
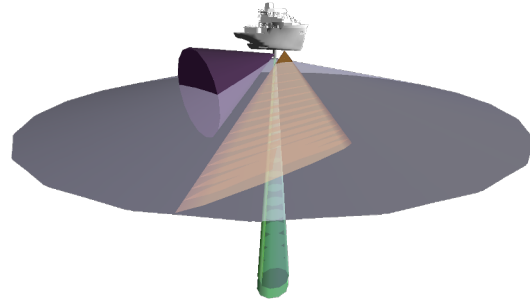
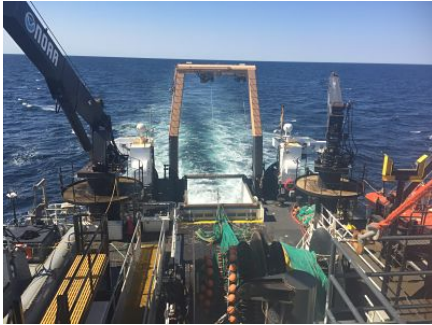


# Balancing the survey & research portfolio

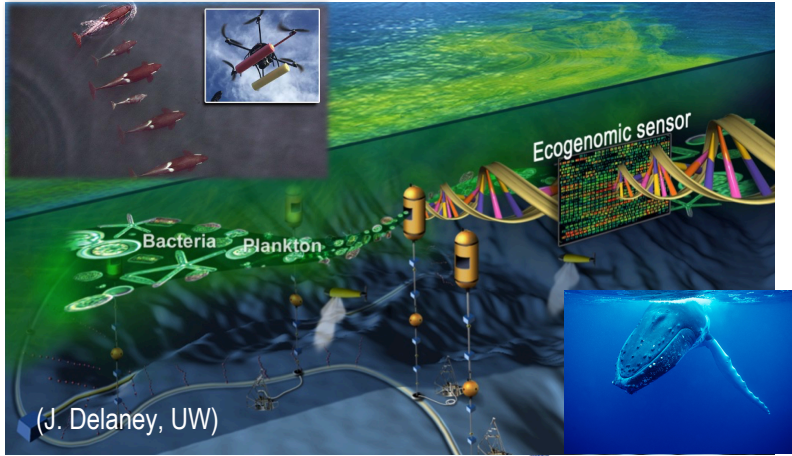
- Mission has expanded in complexity and scope
- Increased uncertainty if we remain static
- Do we have the proper balance?



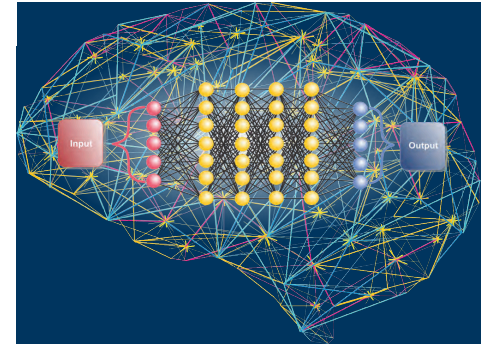
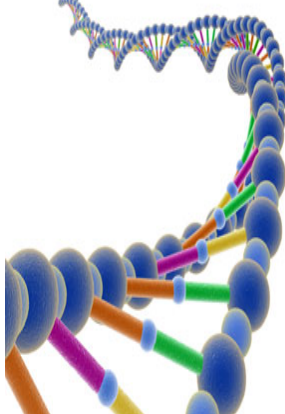
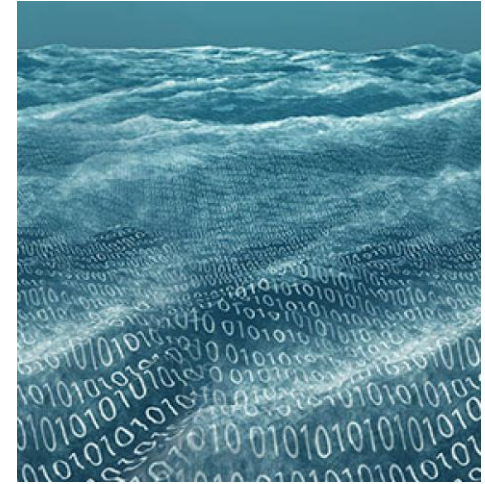
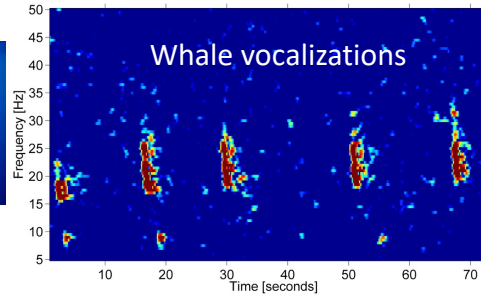
# Existing survey methods



# Research to expand observing and computational capabilities...



- Autonomous systems
- Advanced technologies
- "Oceans" of data
- Artificial intelligence



# Evolving approaches: new technologies and modeling

## Unmanned Systems



## Artificial Intelligence



## 'Omics



## Cloud Computing



“... NOAA’s strategies on UxS, ‘Omics, Cloud and AI, will be crucial to understanding our vast ocean resources ... and, in partnership with Federal agencies, the academic community, non-profit organizations and the private sector, NOAA is helping advance America’s ability to understand, manage, and conserve our ocean resources...”

Thank you...



... questions?

