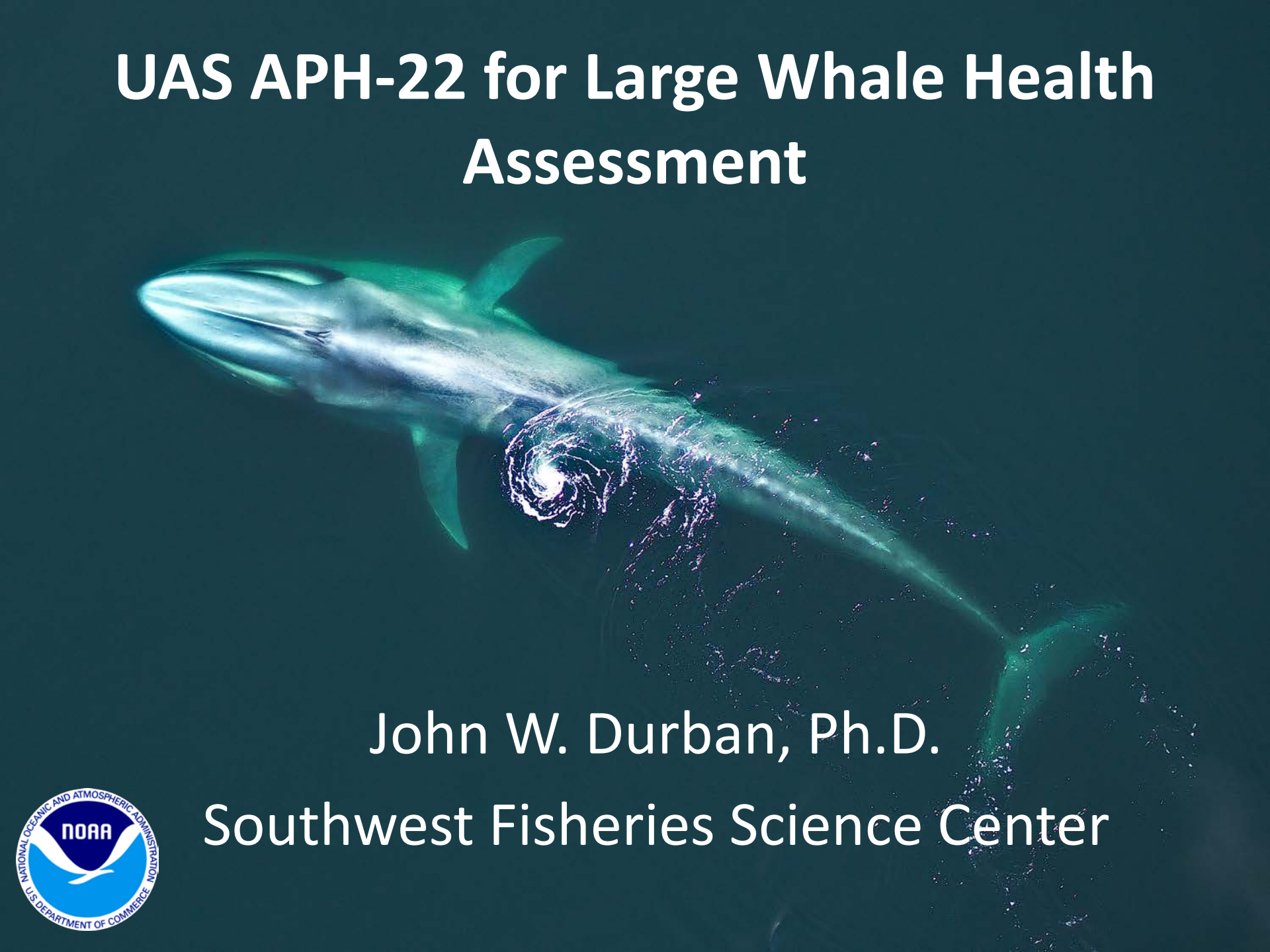
UAS APH-22 for Large Whale Health Assessment



John W. Durban, Ph.D.

Southwest Fisheries Science Center

Goals

NMFS status assessments for protected whales and dolphins rely on abundance trends.

Mitigation of threats requires the health consequences to be identified before they impact population dynamics.

Our goal: use UAS tools to assess the body condition and health of whales to augment status assessments and facilitate management.

Approach

- Photogrammetry

- Blow sampling

APH-22 Hexacopter

Outreach

BBC Sign in News Sport Weather Shop Earth Travel More

NEWS

Home Video World US & Canada UK Business Tech Science Magazine Entertainment & Arts

Science & Environment

In pictures: Drones take whale science to new heights

30 May 2015 | Science & Environment

Gray whales can weigh more than 30,000kg

CNN U.S. + Live TV

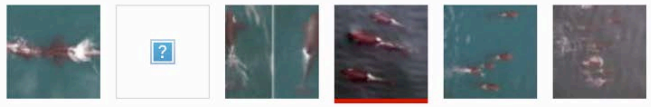
Drone shows life and death of killer whales

Brad Lendon, CNN

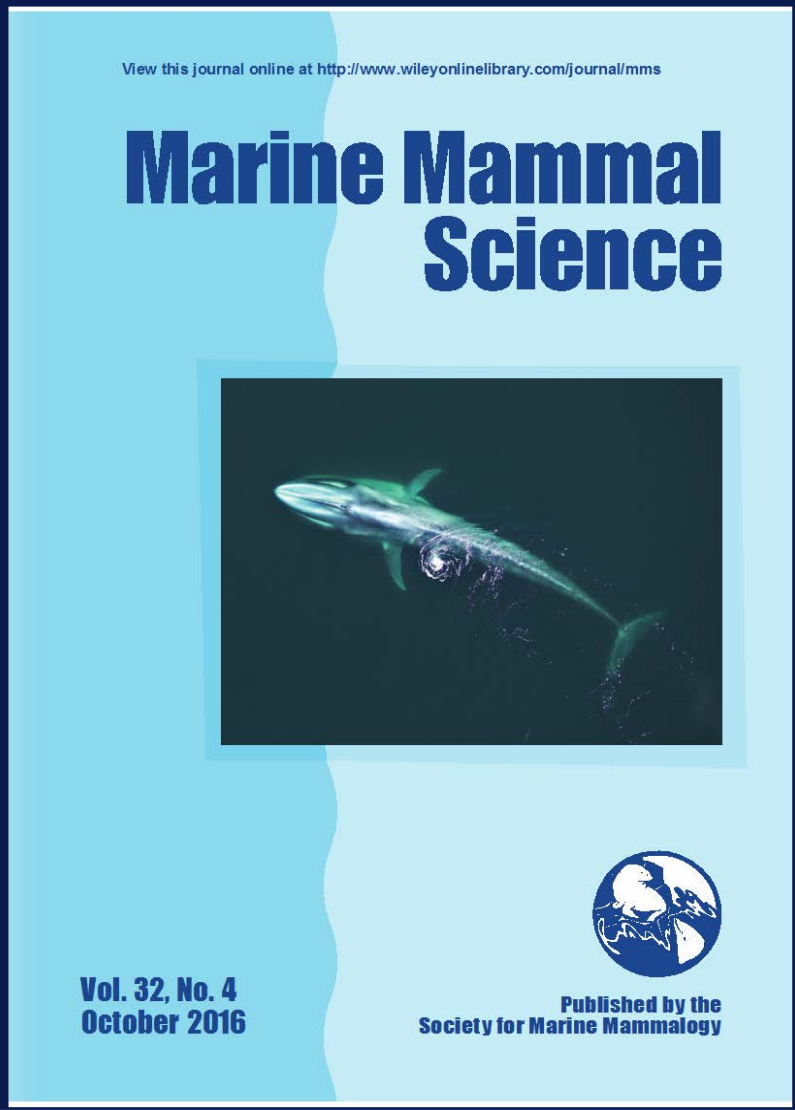
Updated 9:33 PM ET, Sun October 19, 201

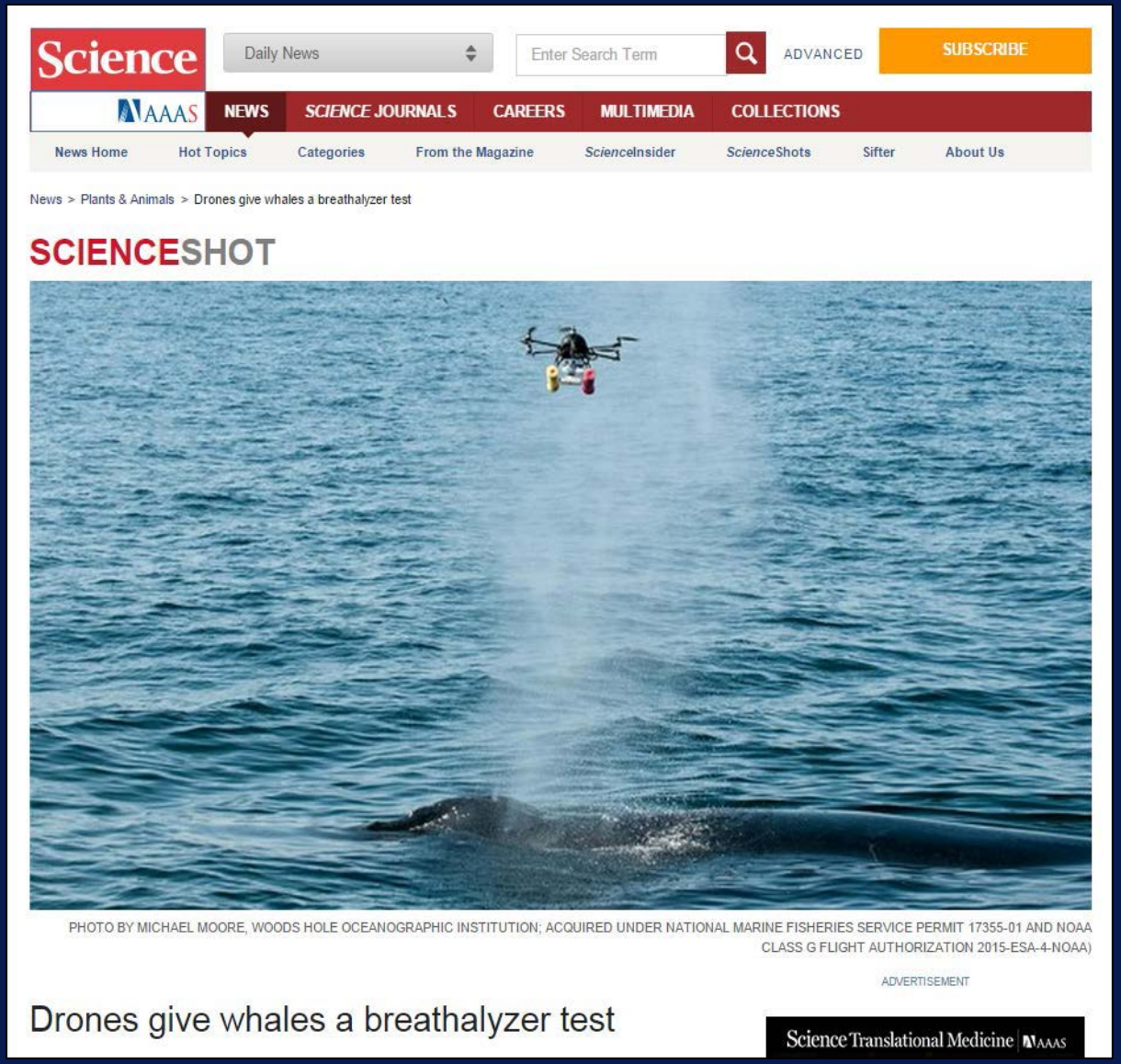
Photos: Killer whales from above

4 of 6 Show Caption



Science Achievements



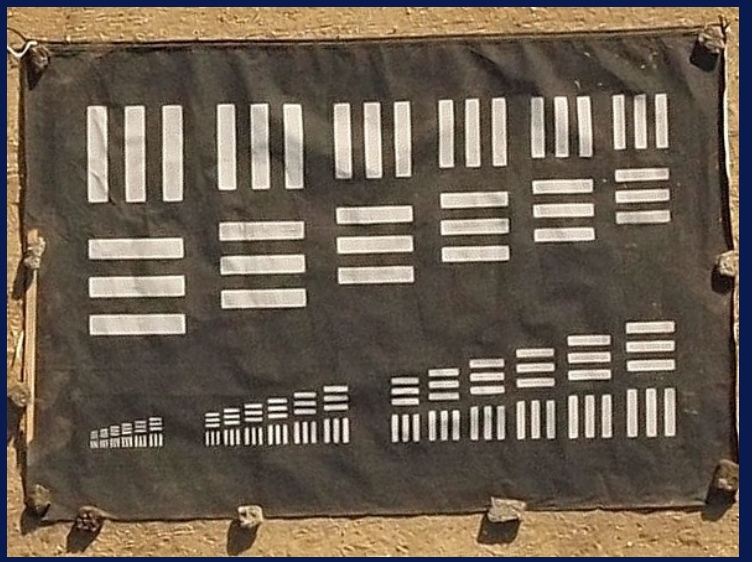


- Whale blow sampling featured in “Science” in 2015

Portable

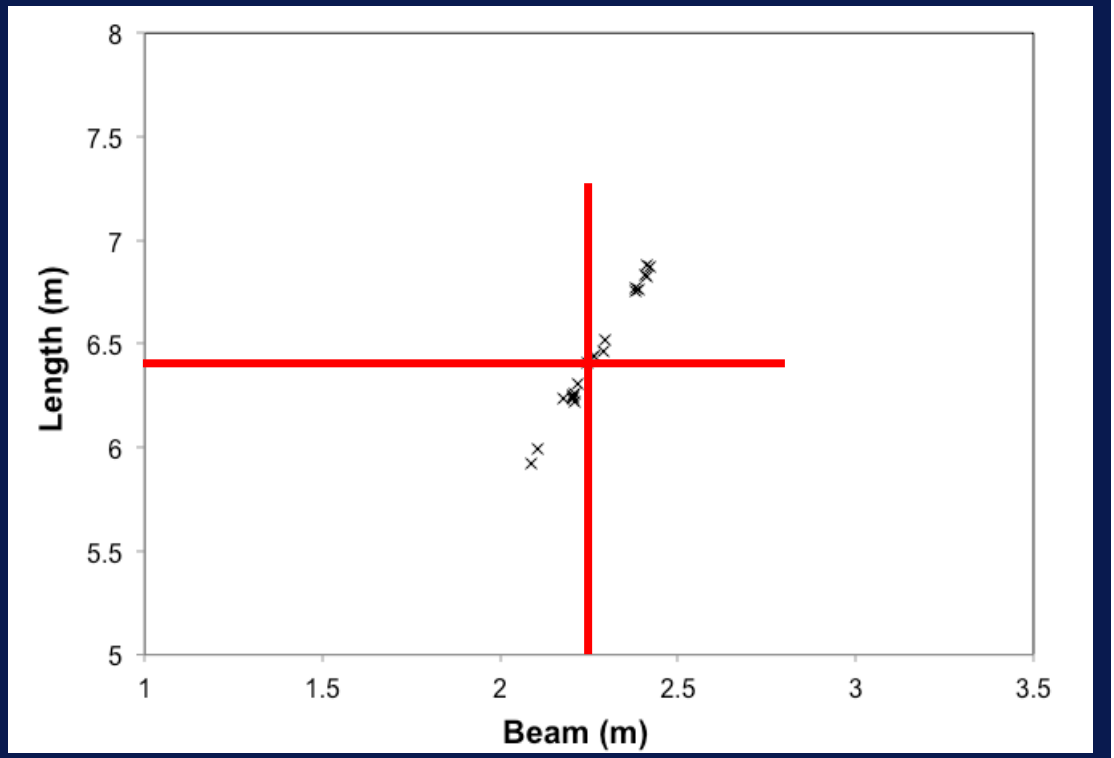
High Resolution Imagery

<1.8cm at 60m
<1.4cm at 30m



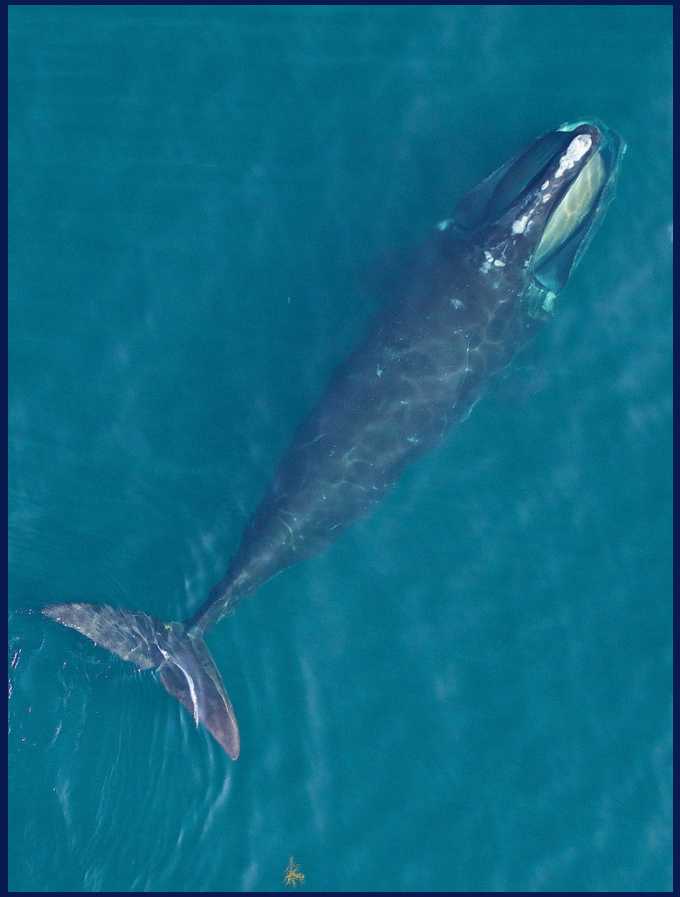
Resolving whale shape

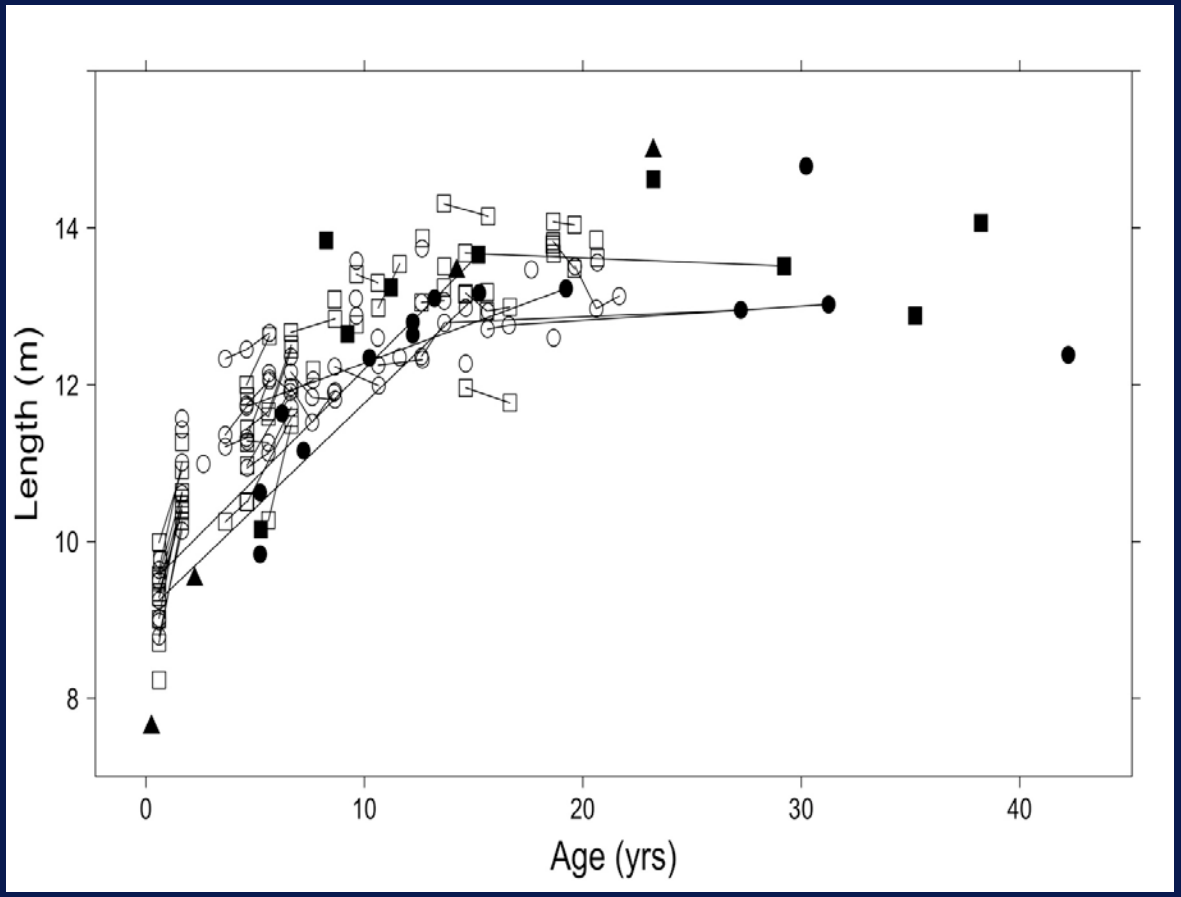
Precise altimetry



Average error <1% of known-length vessel

Quantifying whale growth



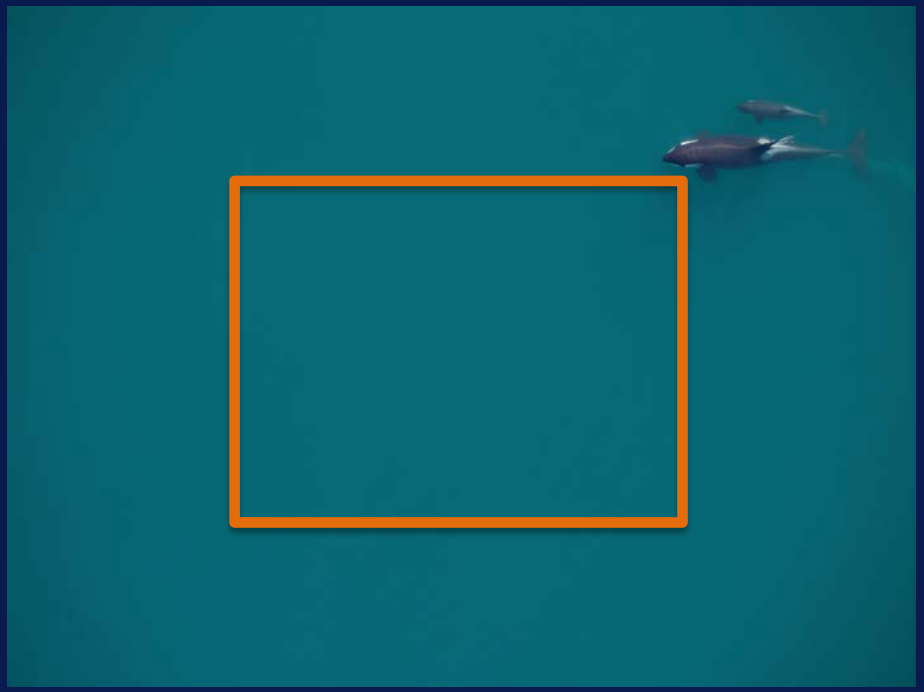


Stable flight attitude

UAS PO Contributions

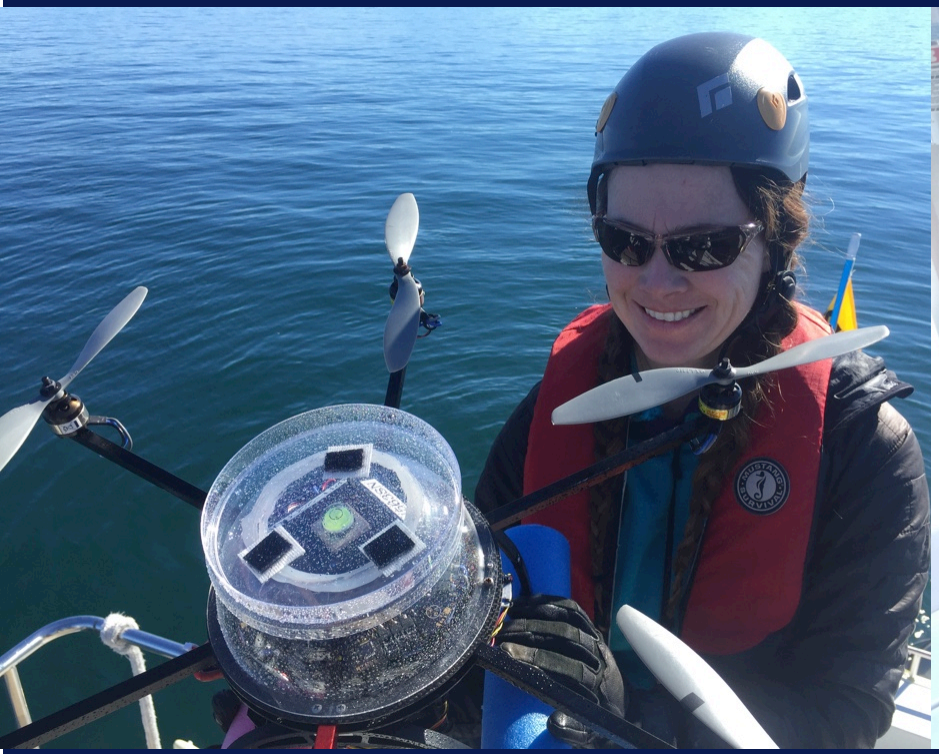
Increased efficiency

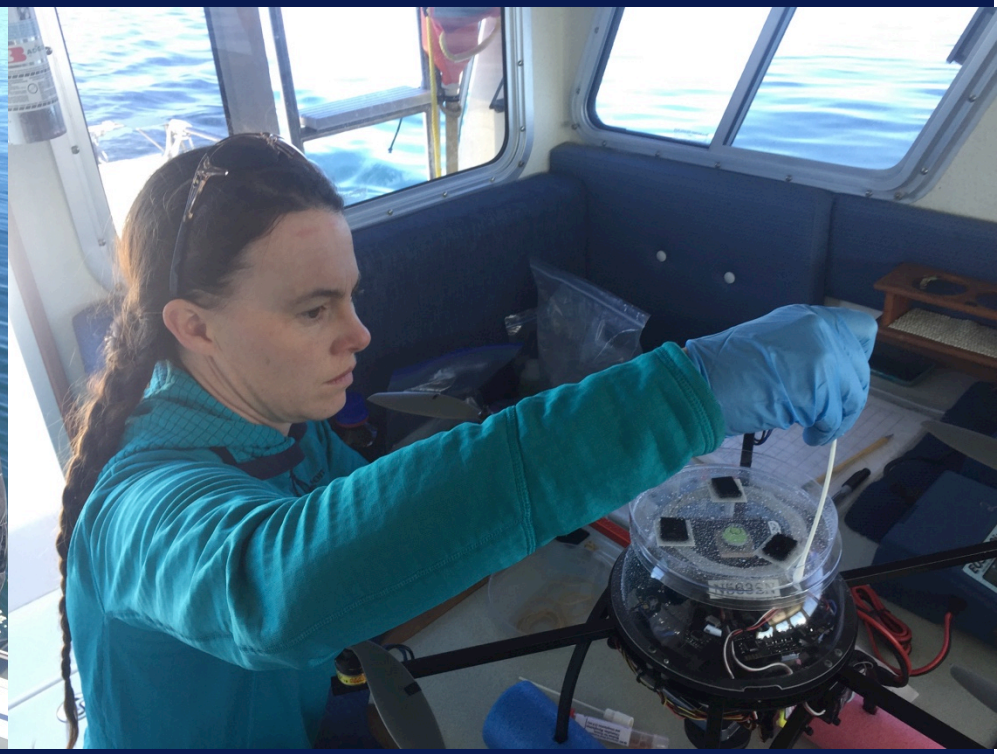
Without Gimbal ~ 64%



With Gimbal: = 91%

Increased efficiency



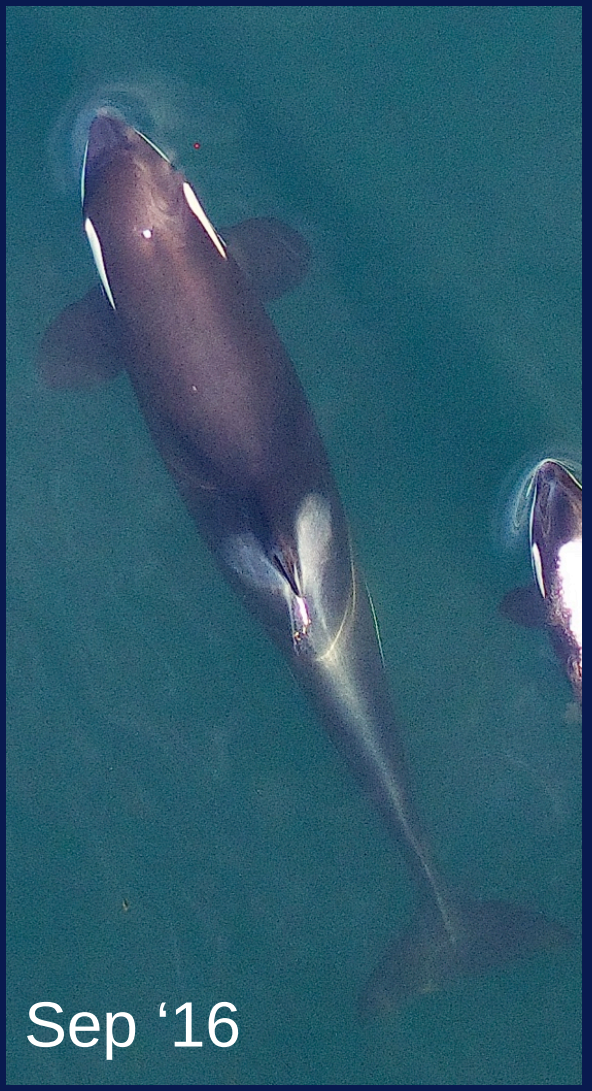


TRL Levels
RFP APH-22 Systems Development

- Gimbal Camera Mount
  - Beginning TRL 5
  - Current TRL 9
- Blow Sampling System
  - Beginning TRL 4
  - Current TRL 7
- Laser Altimeter
  - Beginning TRL 3
  - Current TRL 8

- GOAL TO REACH TRL 9 BY END OF FY17

Future: continuity



Future: extending missions

Collaborations

NOAA Fisheries: SWFSC, NWFSC, NEFSC, PIFSC, AFSC
Vancouver Aquarium
Woods Hole Oceanographic Institution
SR3: SeaLife Response, Rehab and Research
Aerial Imaging Solutions

NOAA AOC & OMAO
NMFS Office of Science and Technology
NOAA UAS Program