

SEASWAP Video Acoustic, and Accelerometer Project

Funding: NOAA BREP, NPRB

Jan Straley, Univ Alaska Southeast

Aaron Thode, Scripps Inst Oceanography

Lauren Wild, Sitka Sound Science Center

Victoria O'Connell, SSSC

Dan Falvey, Alaska Longline Fishermen's Assoc.

Thanks To

Sean Martin, Jerry Ray F/V Katy Mary

Ali Bayless (UH), Erin Oleson (NOAA)

Dustin Barnes, NOAA Observer Program

Jit Sarkar (SIO) and Toby Campbell (ALFA)

& 2 anonymous False Killer Whales



SEASWAP Smarthook Project

- video
- acoustics
- accelerometer

Looking at fish dynamics
and marine mammal interactions



“Smart Hook” – could you design gear to release unwanted bycatch, using acceleration alone?

Pelagic Longline/FKW

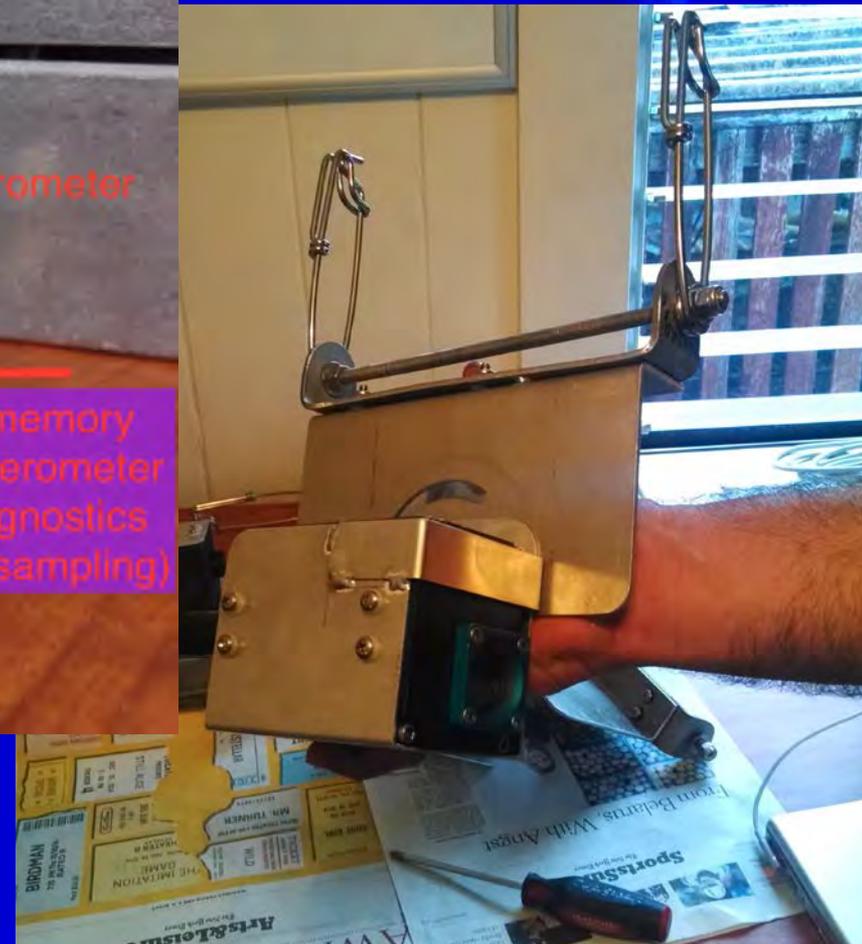
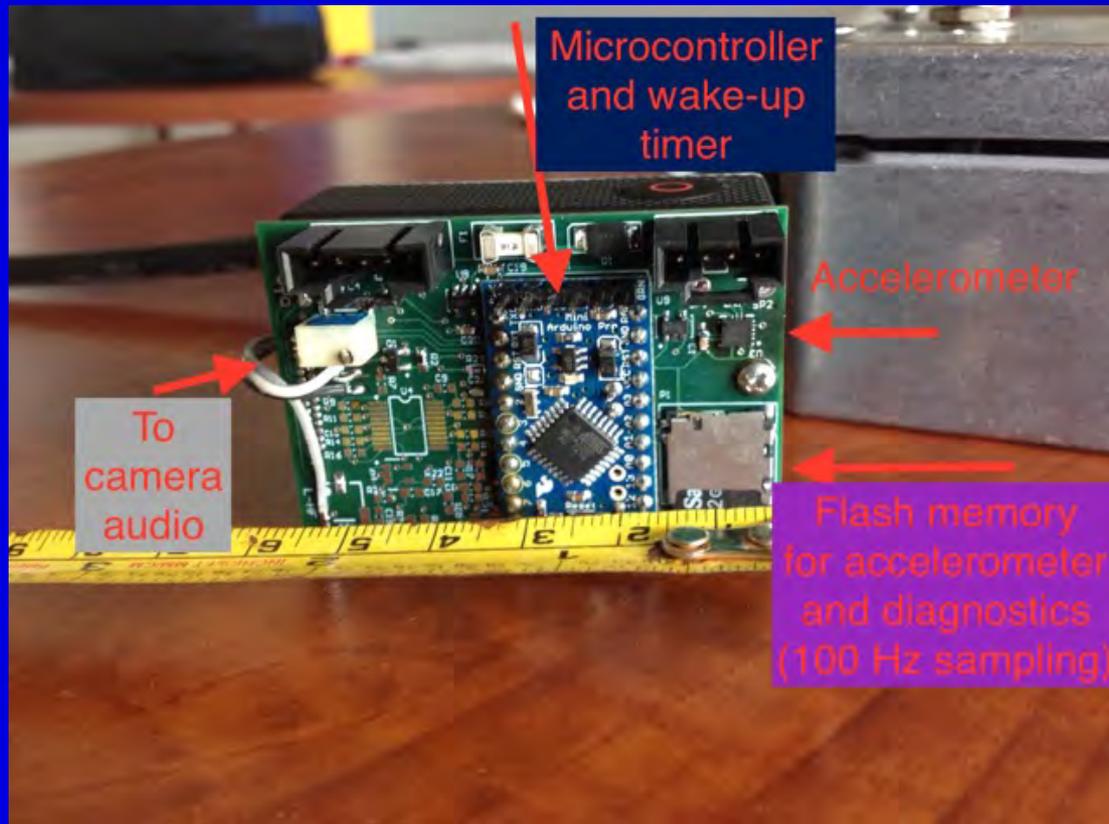
Worked with Ali Bayless and Sean Martin to set up a field project with a pelagic longliner

Jerry Rice (*F/V Katy Mary*) took camera gear and observer

Dustin Barnes (observer) took initiative to collect this additional information – programming cameras and downloading data



“TadPro” provides compact, convenient attachment



Field Work

- 4 Tadpros deployed on each set
- Cameras were programmed to record during daylight hours
- Clipped on mainline
(each camera views one hook)
- Cameras were placed on 12 sets
(out of 14 for the trip)
- Data review is ongoing



Preliminary review

looked at beginning and end of
footage for each camera-
if bait missing or any catch on hook-
backtracked from there



Details of Field Work

- 49 camera deployments
- 3200 hooks per set x 12 sets
- Cameras observed 0.13% of hooks
(filmed during soak only)
- 2 different FKWs taking bait
- Some video of mahi mahi bait stealing



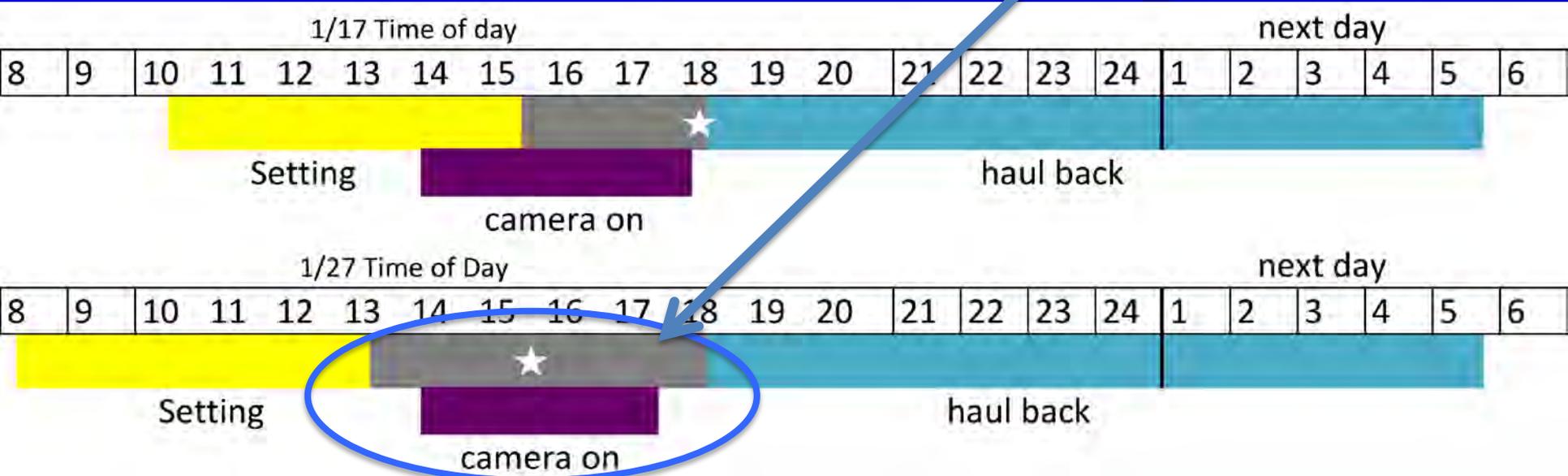
Dustin's deployment video



Time of day

soak

Haul



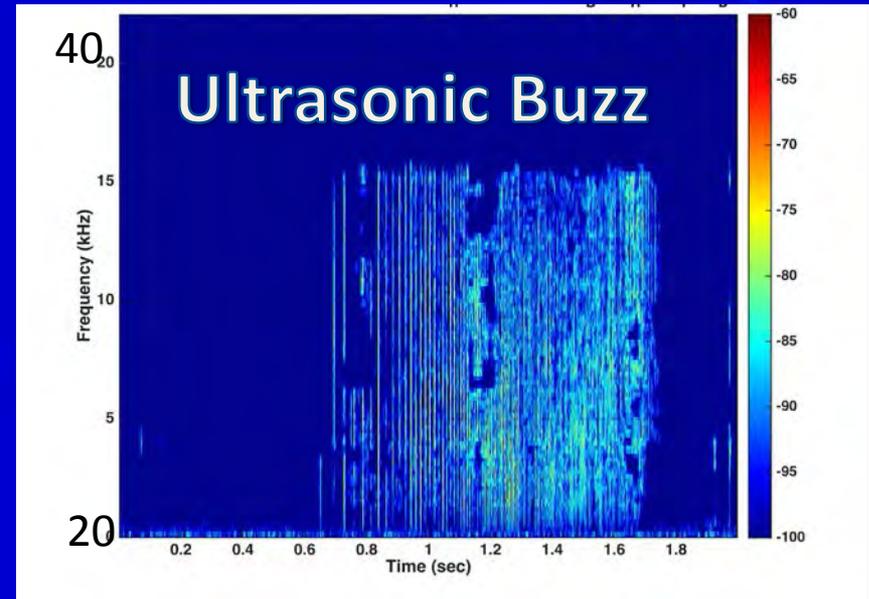
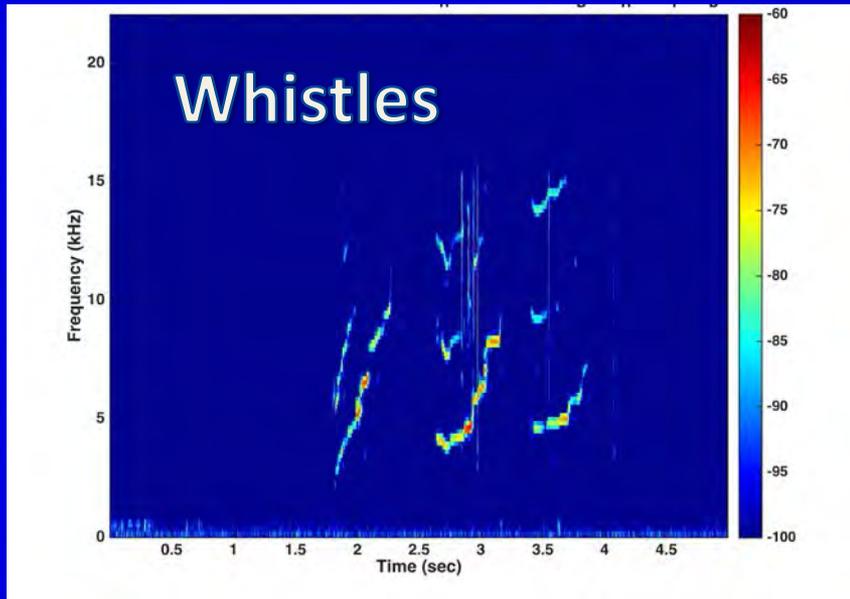
SET 14 INTERACTION



Set 4 Interaction



FKW produced whistles, echolocation buzzes, even during daylight depredation



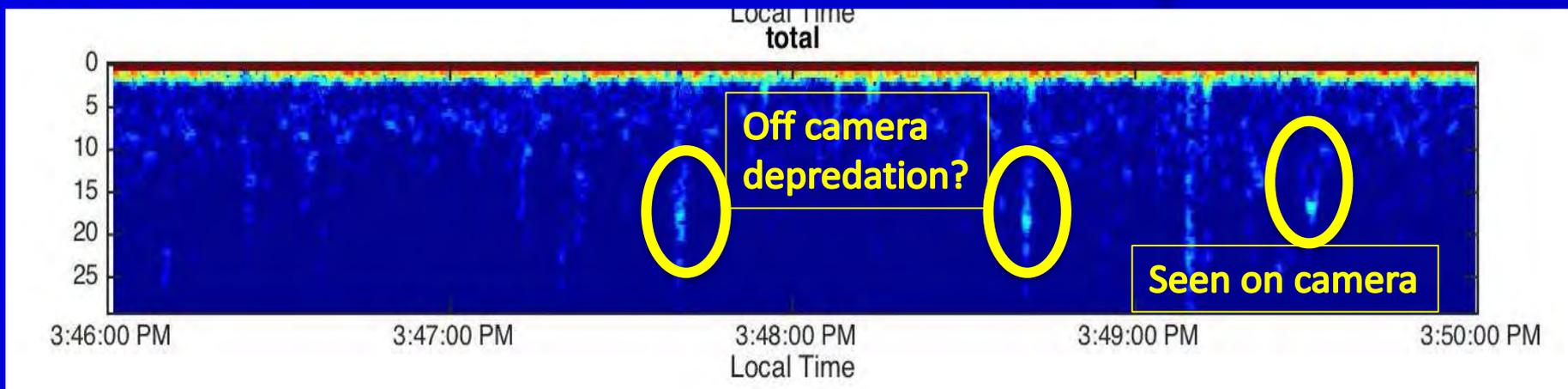
- Data will be combined with PIFSC data to estimate source level and detection range of FKW sounds.
- May be useful for future passive acoustic surveys of population density and depredation rate

What we learned from 2 interactions

- 2 bait events, with 2 different FKW, during soak
- FKW are using acoustics and vision to depredate, even during daylight
- They are agile around the gear and skilled at removing bait from the hooks
- Individual whales behaved differently (grab and go vs twist and tug) – no id of individuals



Preliminary evidence that depredation can be detected using accelerometers



- 4% interaction rate on 49 hooks observed (0.13% of total hooks covered by cameras)
- Accelerometer data indicate more bait removals occurred – analysis ongoing
- Also looking at accelerometer differences mahi mahi activity vs FKW –
- no target fish data yet



Mahi-mahi bait stealing



Next Steps:

Finish video, accelerometer, and acoustic review
likely acoustics record FKW activity as well

Working with Alaska demersal longline fleet
sablefish and halibut and sperm whales

Request for additional funding to increase
coverage in Hawaiian fishery – more tadpros,
longer battery life, low light cameras

Can accelerometers alone (small and cheap) be
used to identify FKW depredation rates?

1,000 m
Alaska

