Assessment of an Alternate Frequency Pinger to Mitigate Seal Interaction in the Northeast Sink Gillnet Fishery

Cornell University Cooperative Extension of Suffolk County (CCE)

Marine Program

In Collaboration with Fishtek Marine and the Commercial Monkfish Sink Gillnet Fishery of the Northeast

Funding Provided by NOAA's Saltonstall-Kennedy Grant Program

Welcome and Opening Remarks

- Introduction
- Workshop Objectives
- Overview of Workshop Topics

Pinger Regulations

History of Pingers

- HPTRP implemented in 1998
  - Required the use of pingers in New England waters for the Gillnet Fishery
- Updated in 2010 to strengthen pinger enforcement and management measures
- Pinger Requirements
  - The frequency must be a 10 kHz (± 2 kHz) sound at 132 dB (± 4 dB) re 1 micropascal at 1 m, lasting 300 milliseconds (± 15 milliseconds), and repeating every 4 seconds (± 0.2 seconds)
  - A pinger must be attached at the end of each gillnet string and at the bridle of each net within that string
  - 11 pingers are required on a 10 net string

Time and Area Requirements

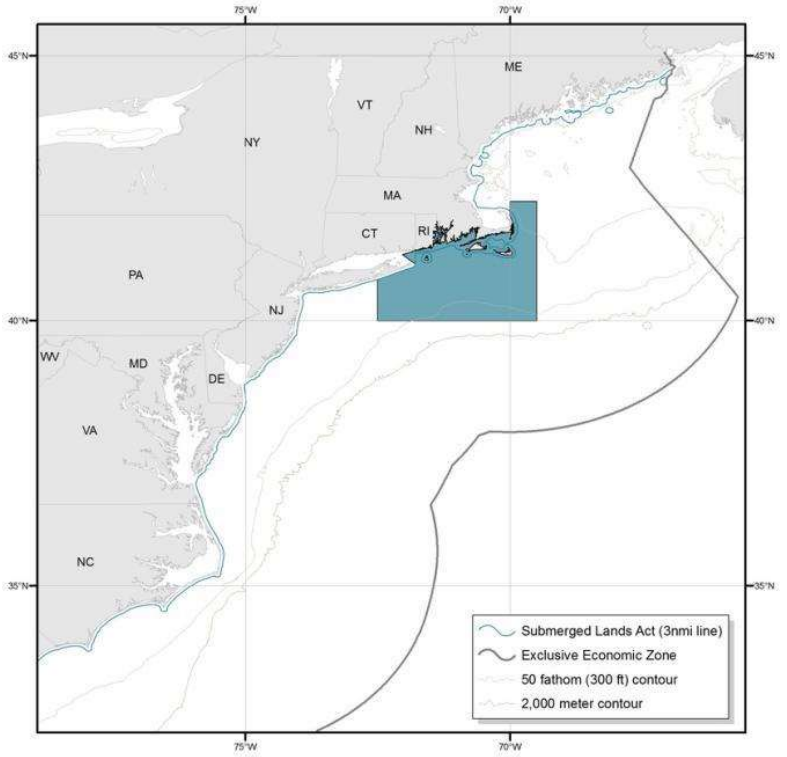
Area	Times	Requirement
Cashes Ledge Closure Area	February	Closed (No Gillnets)
Mass Bay Mgmt Area	March	Closed (No Gillnets)
Cape Cod South Closure Area	March	Closed (No Gillnets)
Mass Bay Mgmt Area	April 1-May 31	Gillnets with Pingers
Northeast Closure Area	Aug 15-Sept 13	Closed (No Gillnets)
Midcoast Management Area	Sept 15-May 31	Gillnets with Pingers
Mass Bay Mgmt Area	Nov 1-Feb 28/29	Gillnets with Pingers
Stellwagen Bank Mgmt Area	Nov 1-May 31	Gillnets with Pingers
Offshore Management Area	Nov 1-May 31	Gillnets with Pingers
Southern New England Mgmt Area	Dec 1-May 31	Gillnets with Pingers

Shapefile: Southern_New_England_Management_Area.shp

Posted to Website: 9/15/2014

This shapefile includes the NMFS Regulated Areas in Northeast and Mid-Atlantic Waters depicted below. The dataset can be downloaded from the GARFO GIS website at http://www.greateratlantic.fisheries.noaa.gov/gis.

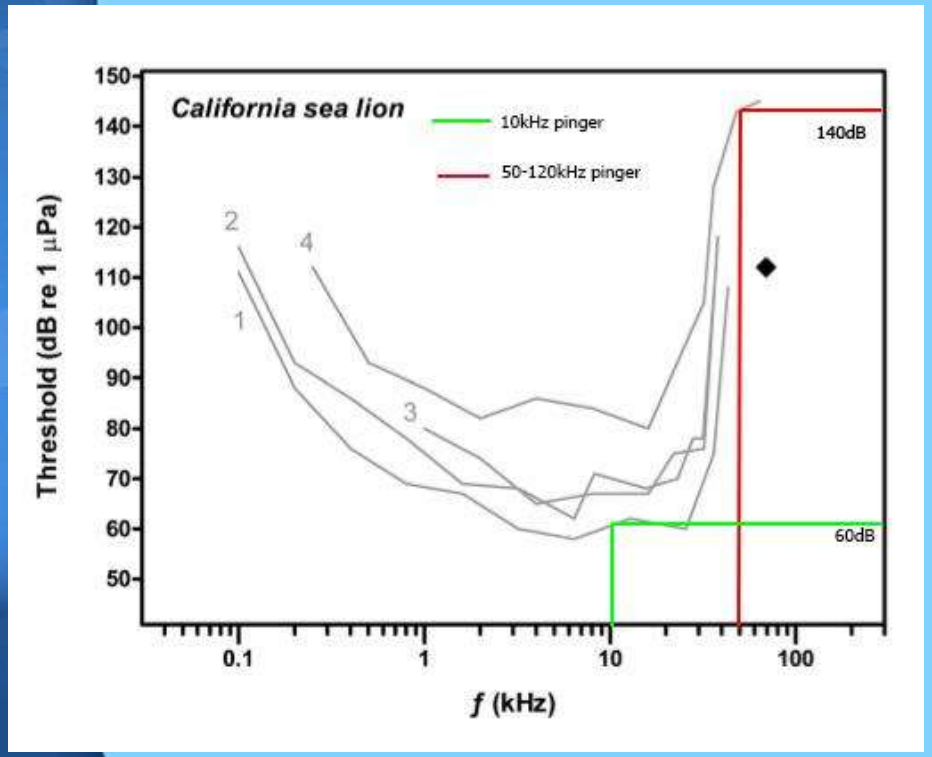
Southern New England Management Area



Pingers

	US HPTRP and POTRP	Proposed for trials(but specifications mandated in Norway and Europe)
Frequency	10 kHz with harmonics	60 kHz-120 kHz with harmonics
Advanced Acoustics	N/A	Randomized pings with harmonics*
Sound Level	132dB+/-3dB@ 1m	145dB+/-3dB@ 1m
Spacing	100m	200m
Dimensions/weight(with battery)	185mm x 52mm x 42mm 229 grams	185mm x 52mm x 42mm 229 grams
Battery life	12 months with average use (50% immersion time)	12 months with average use (50% immersion time)

- Randomized pings prohibits habituation
- Transmits outside the audible range of seals



High frequencies (60+) are well outside the optimal hearing range of seals

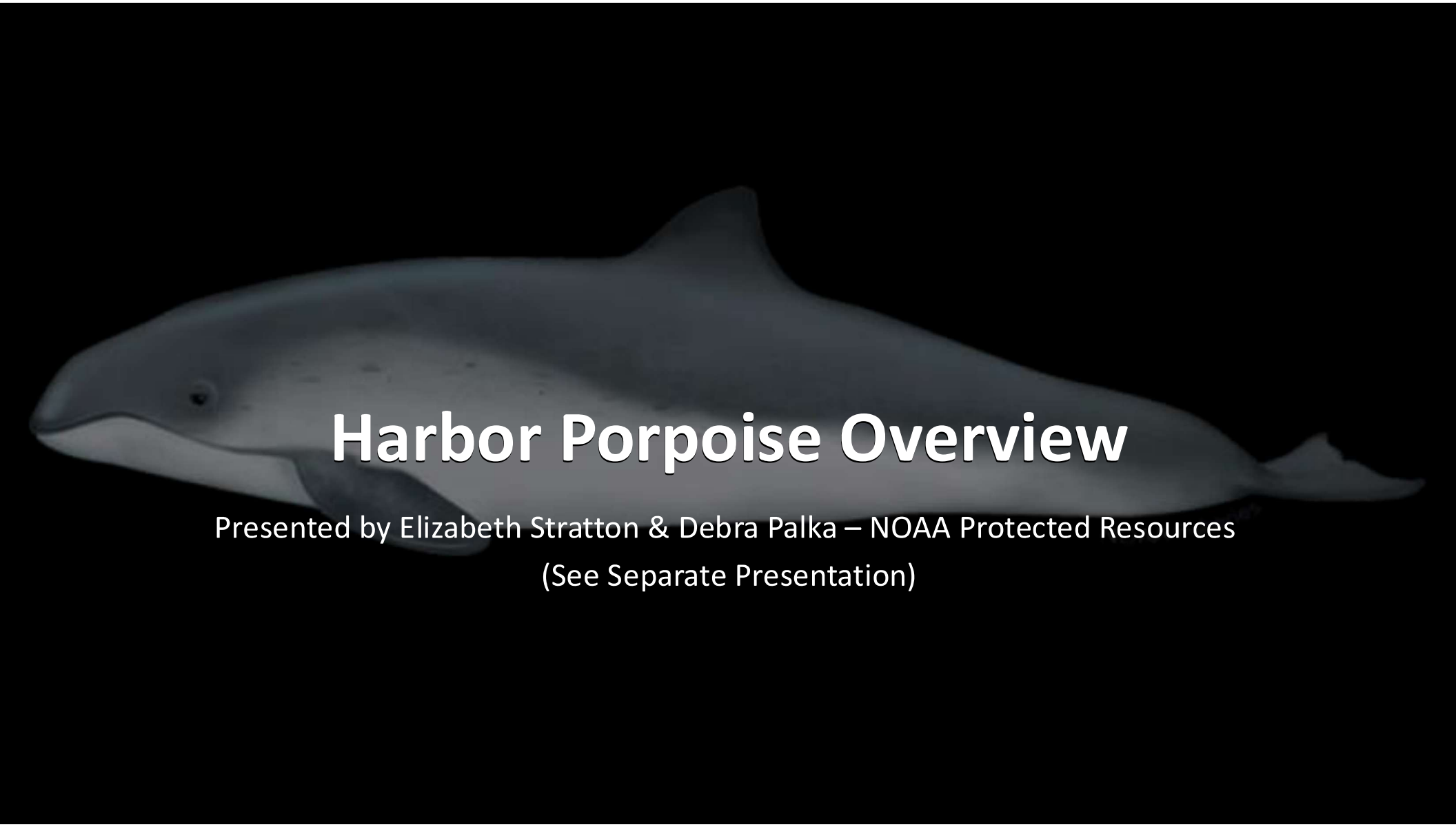
Seals must be very close to this frequency to hear it

High frequency sounds rapidly diminish in sea water

Low frequencies (10kHz) are in the optimal hearing range of seals

Seals can hear this frequency at a much lower volume

Low frequency sounds travel further



Harbor Porpoise Overview

Presented by Elizabeth Stratton & Debra Palka – NOAA Protected Resources

(See Separate Presentation)

Seal Overview

Presented by Ellie Heywood –NOAA Protected Resources Branch

(See Separate Presentation)

CCE Project Recap

Presented by Tara McCli

Project Overview

The problem

- Low frequency pingers (10kHz) mandated by the US to mitigate HP bycatch can be heard by seals
- Seals associate pingers with food – dinner bell
- Its thought this increases incidences of seal bycatch and depredation

The proposed solution

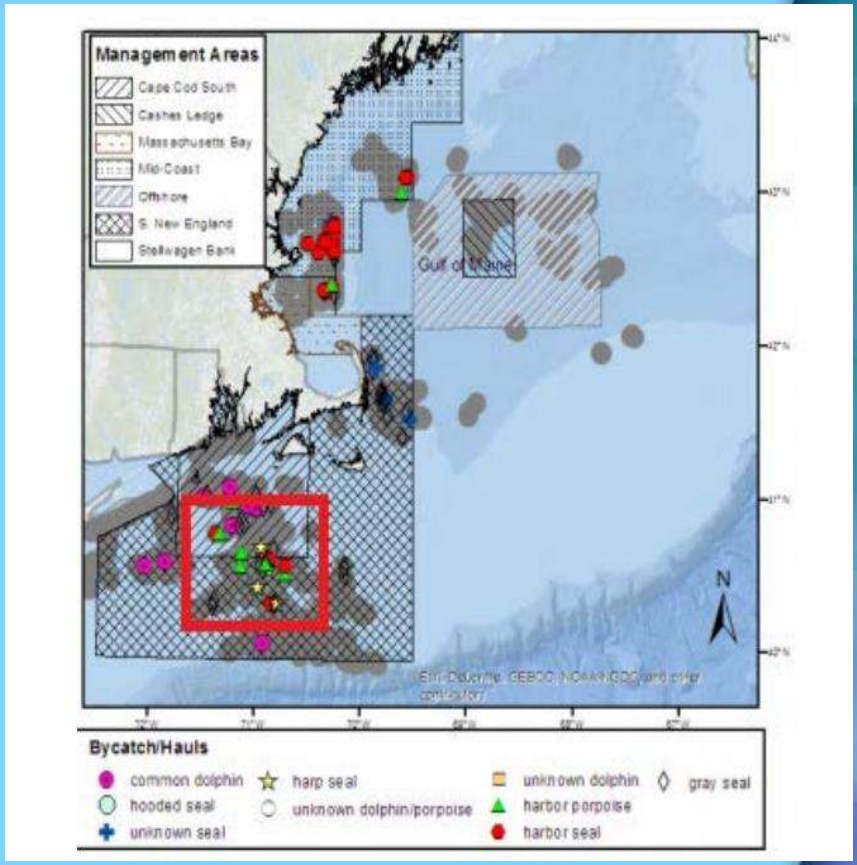
- Trial higher frequency pingers that cannot be heard by seals but still deter HP

Potential outcomes

- Continued high levels of HP bycatch reduction
- Reduced seal-fishery interactions
- Reduced seal mortality and depredation events

Proposed Project

- Commercial fishing industry partners contacted CCE in 2020 to discuss new technology to avoid seal interactions.
- CCE was selected for funding from the Saltonstall-Kennedy Grant Program in 2021.
- Paired sea trials to occur aboard a commercial monkfish vessel from Montauk, NY.
  - ~44 trips will occur southeast of Montauk in NMFS statistical area 537.



Project Gear Description

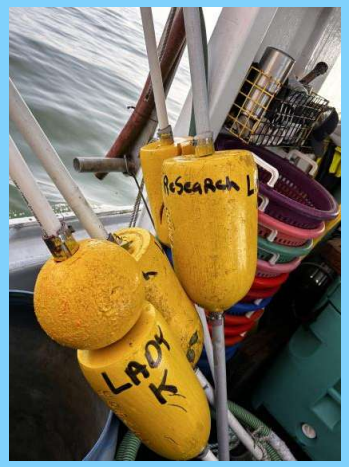
- This study utilized a standard large mesh sink gillnet design for all nets tested for this project. Panels of 300 ft. (91.4m) in length and consisting of 12 meshes high of 12” (30.5 cm) stretch mesh with 42” tie-downs will be used. Panels will be constructed using webbing of 0.90mm
- Ten panels, each 300 ft. long, joined together constitute a “string”.
- A total of 6 strings: 3 strings of control gillnet with regulated pinger, and 3 strings of gillnet with experimental pinger.
- 1,320 nets per treatment for a total of 2,640 nets will be set and hauled for this project.
- We randomized the net area placement.
- To reduce pinger influence we set gear 3 miles away.
- The soak duration was standard for regular fishing activity, 1-3 days.

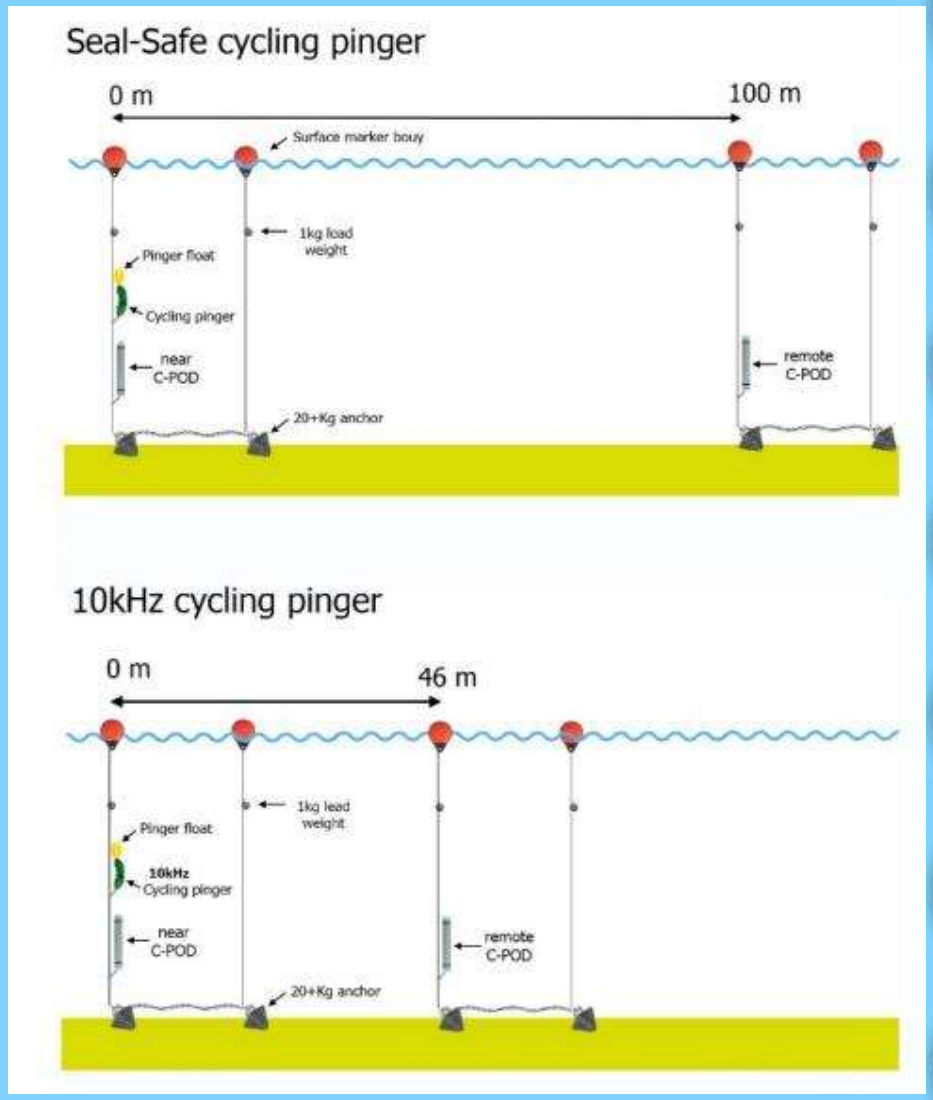
Passive Acoustic Monitoring (PAM) Component

- PAM was used to test any potential impacts of habituation and esonification.
- Specialized cycling pingers that alternate between being active and inactive will be used.
- Passive Acoustic Monitoring devices (CPODs) will be deployed at 0m and 100m from the experimental cycling pinger (the mid-distance of the recommended spacing of 200m) and 0m and 46m from the 10kHz cycling pinger (the mid-distance of the legislated 92 meters).
- Both acoustic arrays will record porpoise activity (clicks per minute) when the pinger is active or inactive at both the near and far CPOD devices for both pinger types.

PAM Component (continued)

- Performing an additional layer of data collection using PAM will reveal when porpoise are in the area and not being captured, thus validating the effects of the acoustic device.





Stakeholder Engagement

- Project inception proposed by commercial fishing industry.
- CCE has performed project fishing industry outreach upon funding selection.
- GARFO, NEFMC and MAFMC are aware of this proposed research.
- Research needs expressed and research priorities set.

Challenges

- Research permitting due to restrictions in the HPTRP
- Research gear interactions
- Mother Nature

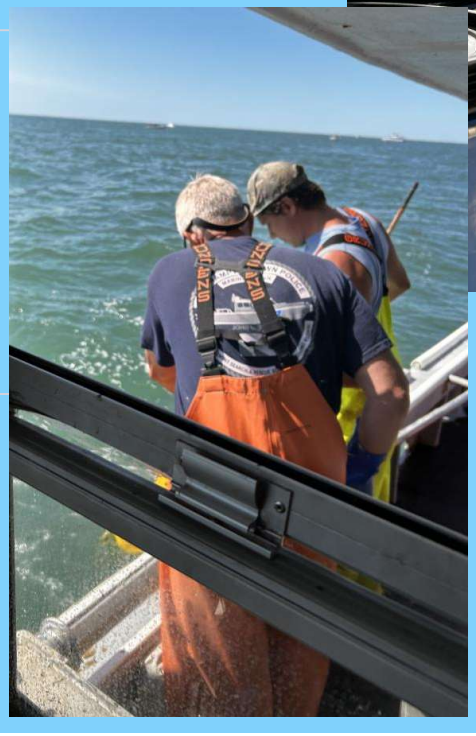
Accomplishments

- 17 at-sea research days
- F-Pod Deployment
- Potential Regulatory Modifications to the HPTRP

Fishing Industry Input/On the Water Observations

Discussion Topics:

- Protected species interactions over time
- Pinger usage and impacts

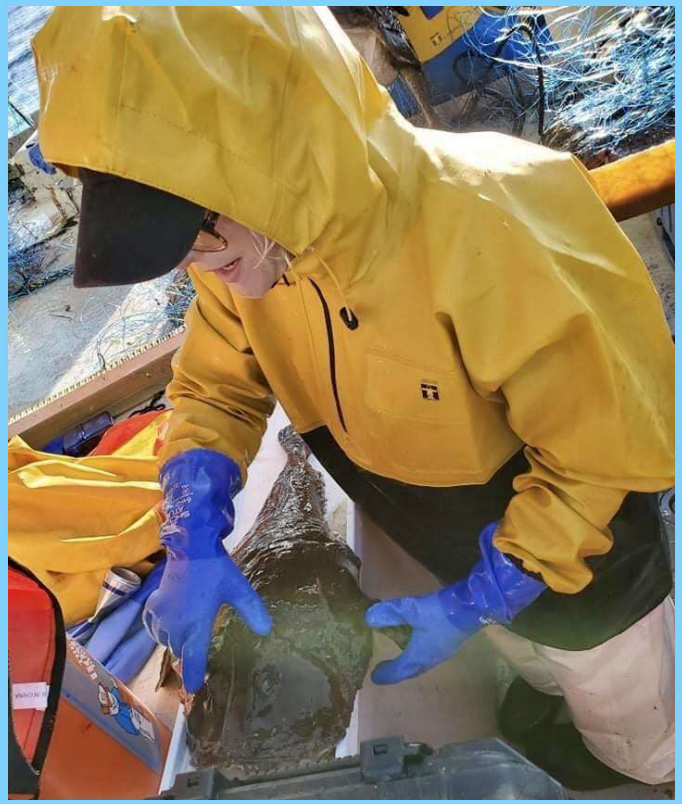


Looking to the future

Discussion Topics:

- Research Exceptions for HPTRP
- Research Opportunities
- Alternative Deterrent technologies
- Industry opinion, opportunities, and concerns

Questions?



What we know from around the world

Øien & Haug, 2017

Norway - focused on harbour porpoise

Trialed low frequency (10kHz)

Reduced HP bycatch

Scientists found that the bycatch of harbor seal (*Phoca vitulina*) in set net fisheries was three times higher than using no pingers or nets equipped with 50-120kHz

Moan & Bjørge 2023

Trialed high frequency (50-120kHz)

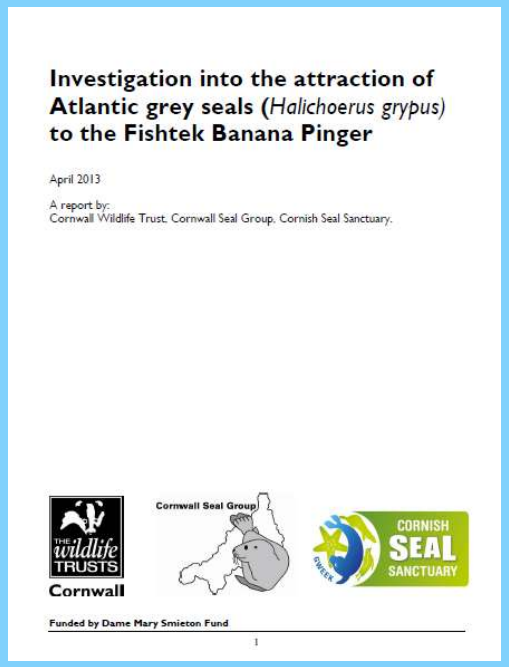
Reduced HP bycatch by 94%

High frequency pingers had no significant effect on catch rates of seals or fishes in cod and monkfish nets

Cornwall Wildlife Trust, 2013

Blind tests using Atlantic gray seals (wild and captive) in an enclosed test pool

Demonstrated that there was no significant attraction of Atlantic gray seals to the activated Fishtek Marine “Seal-Safe” pinger compared with the control deactivated Fishtek Marine “Seal-Safe” pinger.



Investigation into the attraction of Atlantic grey seals (*Halichoerus grypus*) to the Fishtek Banana Pinger

April 2013

A report by:
Cornwall Wildlife Trust, Cornwall Seal Group, Cornish Seal Sanctuary.

Cornwall Seal Group

Funded by Dame Mary Smieton Fund

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