Workshop Summary: Alternate Frequency Pingers in the Monkfish Gillnet Fishery

1. Purpose and Attendance

The CCE Workshop on *Pingers in the Gillnet Fishery* brought together fishermen, researchers, NOAA staff, and regional managers to review progress on a Saltonstall-Kennedy–funded project testing alternate-frequency pingers (60–120 kHz) in the monkfish gillnet fishery. The project aims to reduce seal attraction while maintaining harbor porpoise deterrence, addressing longstanding industry concerns about depredation, gear damage, and regulatory burden.

By facilitating a transparent dialogue between the commercial fishing fleet and the management agencies overseeing fisheries and protected resources, this session aimed to address impacts of current acoustic technology and establish a collaborative network for modernizing bycatch mitigation.

Feature	Details
Date	March 6
Time	1:00 PM – 3:00 PM EST
Format	Project Overview and Collaborative Information Sharing

Key Participating Entities:

- **Academic & Extension:** Cornell Cooperative Extension (CCE) Marine Program.
- **Federal Agencies:** NOAA Fisheries (NEFSC, GARFO), Protected Resources Division.
- **State Regulators:** New York DEC, New Jersey Marine Resources/Council, Maryland DNR, Virginia Marine Resource Commission (VMRC), Connecticut DEEP, and Massachusetts DMF.
- **Industry Representatives:** Commercial fishermen from NY, NJ, RI, and MA; members of the Monkfish Advisory Panel (AP) and the Harbor Porpoise Take Reduction Team (HPTRT).

This diverse group convened to evaluate a specific Saltonstall-Kennedy research initiative designed to modernize acoustic deterrents and mitigate conflict between protected marine mammals and commercial fishing operations.

2. Strategic Objectives and Project Background

The project, funded by the 2021 Saltonstall-Kennedy (S-K) Grant, investigates the central hypothesis that shifting pinger frequencies from the standard 10 kHz to a randomized higher range (60–120 kHz) can mitigate the "dinner bell" effect for seals while maintaining effective deterrence for harbor porpoises. Current industry observations suggest that seals have learned to

associate the standard 10 kHz signal—which they can detect from up to three miles away—with a reliable food source, leading to significant depredation and gear damage.

Core Project Objectives:

- Measure the effectiveness of alternate frequency pingers in reducing seal attraction and interaction.
- Evaluate the impact of experimental frequencies on monkfish catch rates.
- Monitor harbor porpoise bycatch to ensure continued pinger conservation effectiveness.
- Validate manufacturer-rated pinger spacing to potentially reduce industry cost burdens.

Technical Specifications Comparison

Specification	Standard Monkfish Pinger	Experimental Pinger (FishTech)
Frequency	10 kHz	60–120 kHz (Randomized)
Ping Interval	Every 4 seconds	Randomized intervals
Spacing	300 feet (Regulatory)	200 meters (Manufacturer 600ft rating)
Acoustic Profile	Continuous/Predictable	Variable/Randomized

3. At-Sea Implementation: Results and Operational Hurdles

Conducting scientific research within a heavily regulated fishery revealed issues between regulation and the fluid realities of fisheries interactions. The administrative framework prevented testing during peak interaction periods, forcing CCE to collect data during windows of lower species abundance and interaction to maintain legal compliance, which compromised the statistical power of the results.

Preliminary Field Trial Data (Summarized)

- **Days at Sea:** 17
- **Net Sets:** 34 total (17 Control / 17 Experimental)
- **Biological Data:** ~800 monkfish measured; zero seal or harbor porpoise bycatch observed.
- **Catch Volume:** 9,942 lbs monkfish; 28,246 lbs skate (retained/bait).

Operational Challenges:

- **Permitting Bottlenecks:** A critical two-year delay occurred while seeking a "research exception" to the HPTRP. The lack of a standardized administrative pathway meant testing during the mandatory pinger season (peak interaction period) was prohibited.
- **Temporal Shifts:** Field trials were forced to commence in June—after the mandatory pinger season—coinciding with a seasonal decline in monkfish abundance and lower seal activity.
- **Environmental Factors:** Operations were hampered by unseasonably poor weather and the decline in monkfish catch due to season ending.

- **Gear Conflict:** High activity from scallop vessels in the study area created significant risks for gear loss, including gillnets with experimental pingers and Passive Acoustic Monitoring (PAM) devices.

These field results underscored the necessity of aligning management frameworks with the practicalities of biological research to ensure that bycatch mitigation technology is "real-world" ready.

4. NOAA Biological & Management Information

Harbor Porpoise Management and Regulatory Updates (Elizabeth Stratton)

- **TRT Meetings:** The last Harbor Porpoise Take Reduction Team (TRT) meeting was held in **June 2024**, with the next tentatively planned for **late fall or early winter 2026**.
- **Rule Changes:** An amendment to the plan in 2025 reduced the **minimum gillnet twine size to 0.81 mm** to align with sturgeon bycatch reduction measures.
- **Research Exception:** A major focus of current work is **streamlining the research exception process**. Stratton reported that NOAA is collaborating with the permits department to create a standardized mechanism to grant exceptions, which would allow researchers to test gear modifications (like experimental pingers) during mandatory pinger periods.

Population and Bycatch Status (Debra Palka)

- **Biological Limits:** The **Potential Biological Removal (PBR) is set at 649 animals**. While current bycatch levels are below the PBR, they remain **above the Zero Mortality Rate Goal (ZMRG)**.
- **Bycatch Trends:** Total bycatch has decreased significantly since the 1990s and occurs primarily in **New England gillnet fisheries**, with very few instances in the mid-Atlantic.

Shifting Distributions (Debra Palka)

- **Spatial Shifts:** Evidence from 2010–2023 shows harbor porpoise distributions are **shifting further north and offshore**.
- **Temporal Shifts:** Density patterns are changing; while abundance in US waters has typically peaked in spring and summer, there is a trend of **fewer animals south of New England during these seasons** and an increase in the fall and winter.
- **Regional Observations:** Specific habitat modeling shows **fewer porpoises off New York and south of Long Island** in 2023 compared to 2010 levels. This aligns with observations from local fishermen who report a decline in harbor porpoise sightings over the last 10 years.

Seal Population Status and Trends (Eleanor Heywood)
Heywood noted that both gray and harbor seals are **transboundary species**, occupying waters in both the U.S. and Canada.

- **Gray Seals:** The total transboundary population is estimated at approximately **400,000 animals** (as of a 2021 survey), with roughly 28,000 attributed to the U.S. and 366,000 to Canada. Pup counts at major colonies, such as **Muskeget Island**, have been increasing since the late 1980s.
- **Harbor Seals:** The most recent abundance estimate (2018) is **61,000**. Heywood mentioned concerns that the rebounding gray seal population may be **displacing harbor seals**, contributing to their more fluctuating population trends.
- **Management Status:** Neither species is currently listed as threatened or endangered, and they are classified as **non-strategic stocks**. However, because fishery-related mortality and serious injury exceed 10% of the **Potential Biological Removal (PBR)**, bycatch remains a significant management concern.

Fishery Interactions and Risk Mapping
Her research utilizes several data layers to understand how seals interact with commercial gear:

- **Bycatch Observations:** In the southern New England region, observed bycatch consists primarily of gray seals, while coastal Maine sees a more mixed bycatch of both gray and harbor seals.
- **Risk Mapping:** By combining vessel trip data with satellite telemetry from tagged seals, the team creates **risk maps** to identify areas and times where seal and gillnet fishery overlap is highest.
- **Recent Surveys:** A comprehensive coastwide aerial survey was completed in **January 2026** to update these abundance estimates, using advanced infrared and ultraviolet camera systems to count seals at haul-outs and colonies.

Movement and Dive Behavior
Heywood's primary area of expertise is the **satellite telemetry program**, which tracks the wide-ranging movements of gray seal pups.

- **Range:** Post-weaning gray seals travel extensively across the U.S. continental shelf, often transiting into Canadian waters off Nova Scotia.
- **Spatial Overlap:** Their core ranges often overlap significantly with **wind energy areas** and high-risk fishing zones.
- **Benthic Feeding:** Data from dive tags confirms that gray seals are **primarily benthic feeders**, hunting along the ocean floor. This behavior directly impacts the monkfish fishery, as seals are most active in these benthic zones during **daylight hours**.

Population Origins
In follow-up discussions, Heywood clarified that the current U.S. gray seal population likely grew through **immigration from Canadian colonies** (like Sable Island) after being nearly extirpated in the mid-20th century. While pup counts at some U.S. colonies are showing signs of leveling off due to **density dependence**, it remains challenging to determine if the U.S. population is fully self-sustaining or still relying on Canadian immigration

5. Stakeholder Perspectives: The Commercial Monkfish Gillnet Industry

The commercial fleet is currently caught in a "Catch-22": the biological recovery of protected species (seals, sharks, and sturgeon) has triggered increased interaction rates, which in turn leads to more rigid management measures for a shrinking fleet. This is exacerbated by a northward shift where warming oceans bring new predators into traditional fishing grounds, further straining economic viability.

Voice of the Industry

"We would like to try different frequency pingers during our active season, when we are regulated to have pingers on, to try these new pingers that hopefully don't attract all this stuff." — **Vinny Damm**, *NY Fisherman*

"There's some days... you're losing 100 to 150 fish a day that are perfect market fish... there's days they just destroy our gear." — **James Dobkin**, *NJ Fisherman*

"We don't know how to handle our successes... as the population grows, interaction rates go up and bam, we have to suffer." — **Kevin Wark**, *NJ Fisherman*

Economic and Socio-Economic Impacts:

- **Direct Catch Loss:** Seals consume high-value monkfish and striped bass directly from the nets, causing daily losses of up to 150 market-sized fish.
- **Gear Destruction:** Predation by seals and sharks causes significant net damage, requiring frequent and costly repairs or purchase of new nets.
- **Regulatory Redundancy:** Mandatory 300-foot pinger spacing effectively doubles the cost for fishermen compared to the 200-meter (600ft) rating provided by the experimental pinger.
- **Fleet Attrition & Gentrification:** Participants noted that harbors once supporting eight gillnet vessels are reduced to two or three. Rising property values and the gentrification of working waterfronts further isolate the remaining fleet.

6. Future Directions: Technology and Research Exception

Reconciling industry survival with species conservation requires a transition from reactive management to agile, technology-driven policy. The workshop identified several pathways to modernize the fishery.

Emerging Research & Technology:

- **Passive Acoustic Monitoring (PAM):** Deployed to record porpoise "clicks" during experimental pinger cycles to verify if 60–120 kHz frequencies maintain effective deterrence. Results will be provided in CCE final project report.
- **"Startle Response" Technology:** Prototypes (e.g., Genus Wave) that trigger reflexive avoidance in seals without creating the constant acoustic lure of 10 kHz pingers.

- **Behavioral Camera Studies:** Use of infrared and night-vision cameras has revealed that seal activity peaks at dawn and dusk, suggesting that gear interactions are highly behavior-driven.

Group Recommendations:

Category	Recommended Action
Policy Reform	Streamline the "Research Exception" process to allow at-sea testing during regulated seasons.
Technical Research	Evaluate lighter twine sizes (e.g., 0.81 mm) to allow mammals/sturgeon to break through.
Technical Research	Expand use of PAM and satellite tagging to map bycatch risk in real-time.

7. Consolidated Action Items and Deadlines

Task	Responsible Party	Timeline/Deadline
Share pinger specs, vendor info, and meeting materials	CCE Team	Spring 2026
Create and maintain project mailing list	CCE Team	Spring 2026
Retrieve deployed PAM devices from Fisher's Island	CCE Team / Field Partners	End of March 2026
Download and analyze acoustic/PAM data	Chelonia / CCE Team	April -May 2026
Update CCE website with audiograms and overseas studies	CCE Team	May 2026
Produce gillnet bycatch risk maps	NOAA	May 2026
Continue satellite tagging and behavior analysis	NOAA	Ongoing
Draft final project report and document permitting lessons	CCE Team	June 2026
Submit formal HPTRT research exception request	CCE Team	TBD (Upon release of process)

Web Resources:

FishTek Marine Research Performed Website

https://www.fishtekmarine.com/impact/cetacean-bycatch/#evidence

Underwater Audiogram of the Gray Seal

https://journals.biologists.com/bio/article/14/8/bio062059/368920

What bycatch tells us about the diet of harbor and gray seals and overlap with commercial fishermen

https://www.frontiersin.org/journals/conservation-science/articles/10.3389/fcosc.2024.1377673/full

Low Profile Gillnet Research

https://www.fisheries.noaa.gov/new-england-mid-atlantic/bycatch/reducing-sea-turtle-bycatch-northeast-fisheries#low-profile-gillnet-research

Workshop Participants

CCE Team	Tara McClintock, Kristin Gerbino, Scott Curatolo-Wageman, Alex Mercado, Richard Gueteres
Vinny Damm	NY Fisherman
Tim Kriegsmann	NJ Fisherman
Kevin Wark	NJ Fisherman, NJ Marine Fisheries Councilman
Angel Willey	MD DNR
Debi Palka	NEFSC Conservation Ecology Branch
Hayden Dubniczki	MAFMC, HPTRT (pending)
Danielle Palmer	GARFO, Protected Resources Liaison
Chloe Jacobson	MD DNR Marine Mammal and Sea Turtle stranding
Aubrey Church	CCCFA, Fisheries Policy, Monk and Skate AP
Elizabeth Stratton	NOAA Fisheries HPTRT
Ted Platz	NEFMC, RI Fisherman
Ellie Heywood	NEFSC Seal Ecology Team Conservation Ecology Branch
Kate Sampson	NOAA Fisheries Marine Mammal & Sea Turtle Branch lead
Ellen Keane	NOAA Fisheries
Abigail Machernis	SERO MM Branch on bottlenose dolphin bycatch
Katy Lawson	NYNHP NYSDEC
James Dopkin	NJ Fisherman, Monkfish AP member

Tara Cox	Georgia Take Reduction Team
Jennifer Goebel	NOAA GARFO
Renee St. Amand	CT DEEP
Jenny Couture	NEFMC
Mackenzie Peacock	NJMR
Spencer Talmage	NOAA GARFO
Kerri Dobbs-Kazan	NYSDEC
Chris Davis	VMRC protected species observer program
Marjorie Rossman	SMAST student
Jessica Powell	NOAA Fisheries
Cheryl Cross	GARFO marine mammals and protected species
Jesse Hornstein	NYSDEC, HPTRT alternate
Amanda Weschler	MD DNR Marine Mammal and sea turtle stranding
Andrea Bogomolni	NEFSC Protected Species Division, Conservation Ecology Branch
Chris Rainone	NJ Fisherman
James Depasquale	NY Fisherman
Kelly Whitmore	MA DMF
Kristin Precoda	NEFSC Protected Resources
Meghan Rickard	NYSDEC
Catherine Fede	NYSDEC
Patrick Duckworth	RI fisherman
Doug Feeney	MA fisherman