

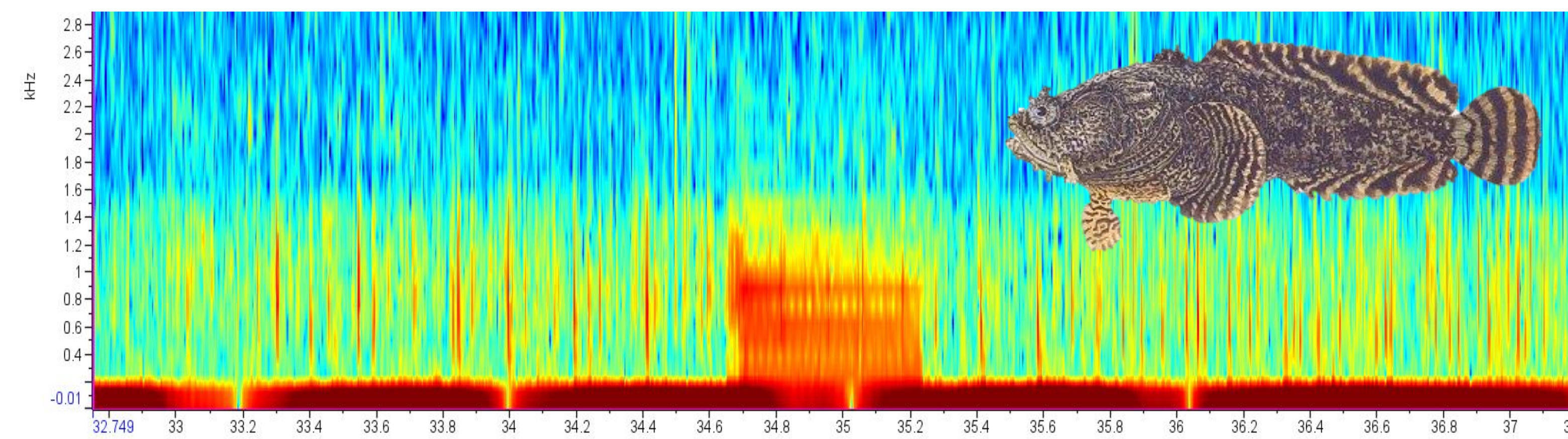
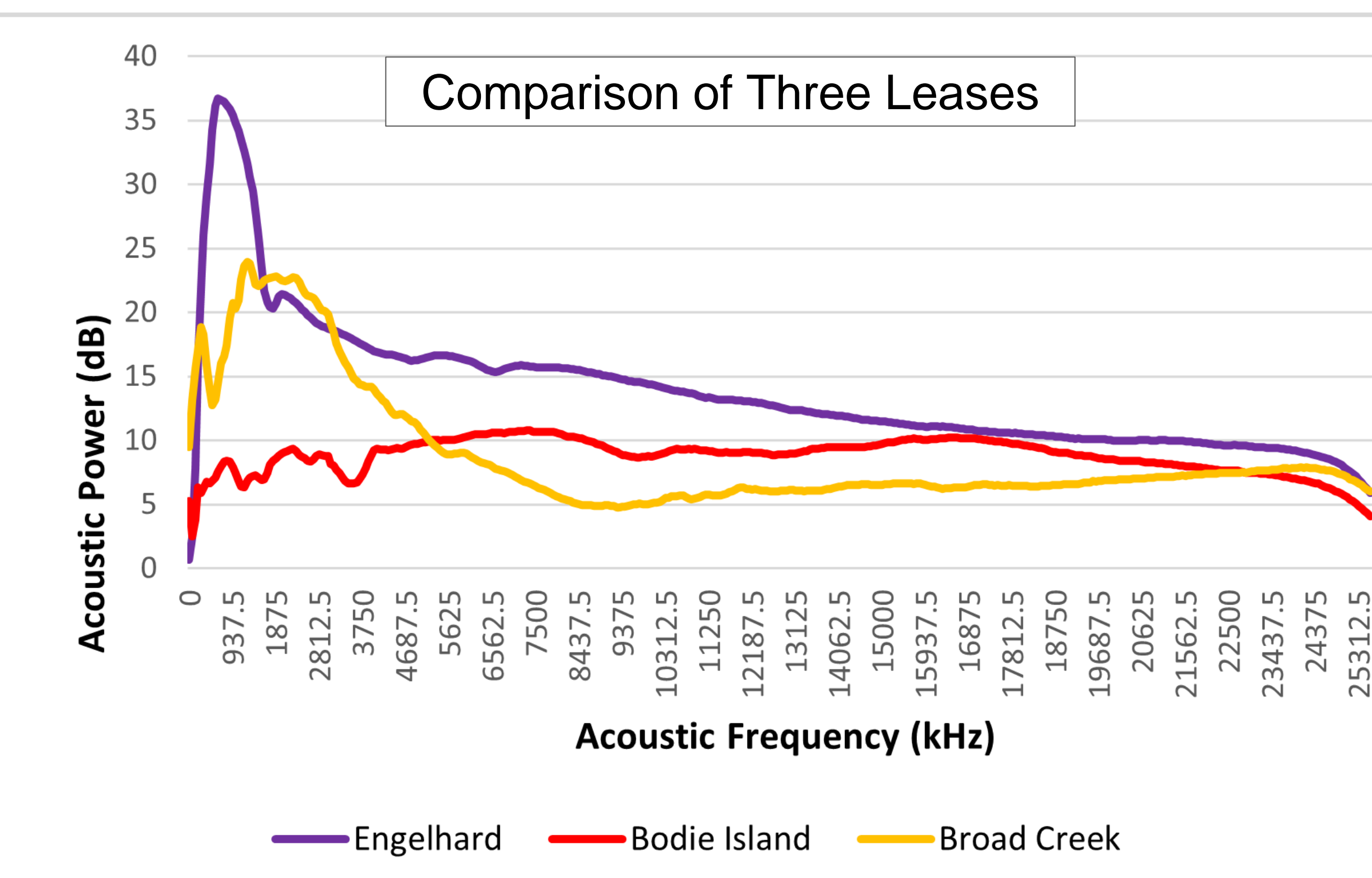
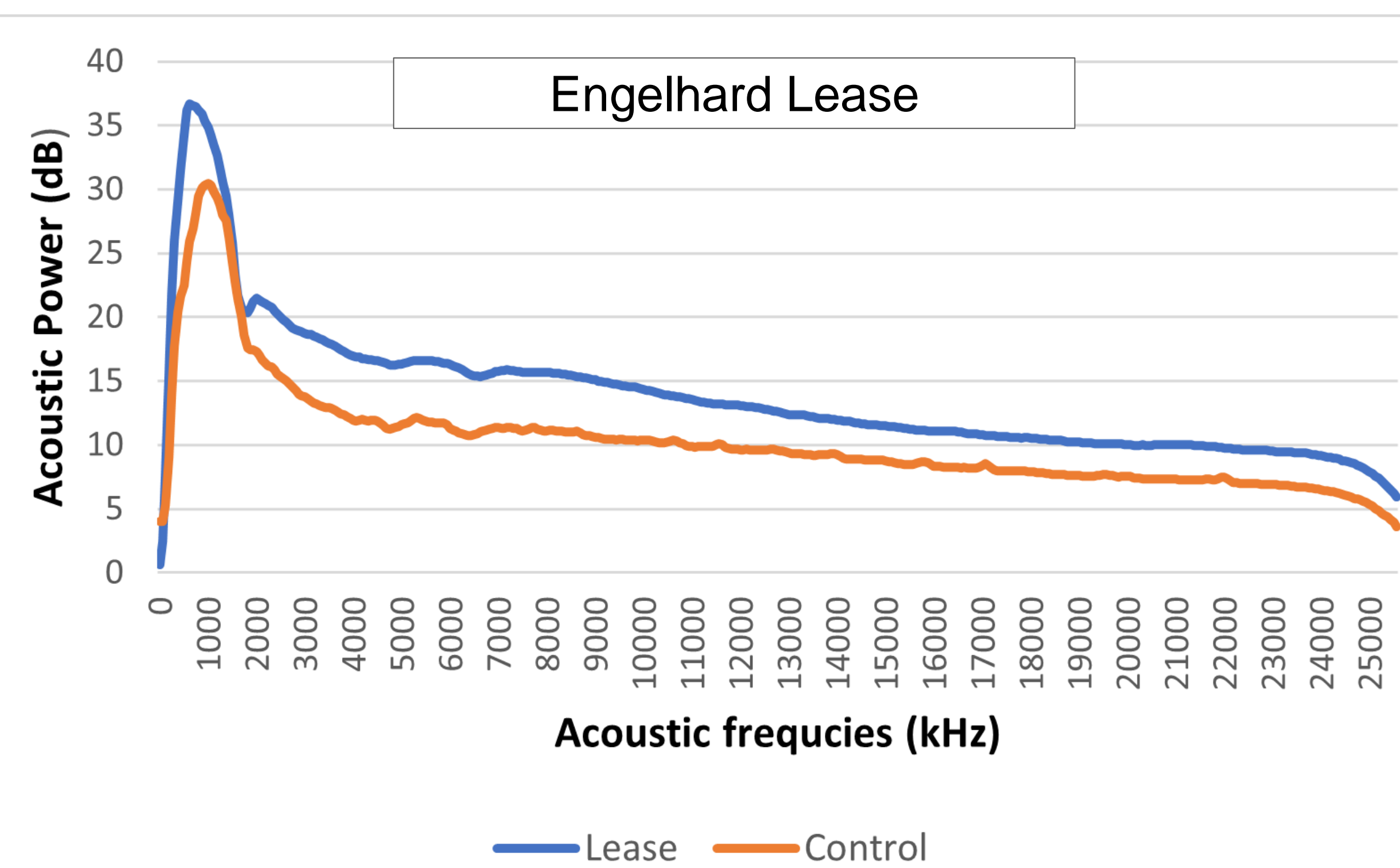
Acoustic Monitoring Reveals Habitat Value of Oyster Farms

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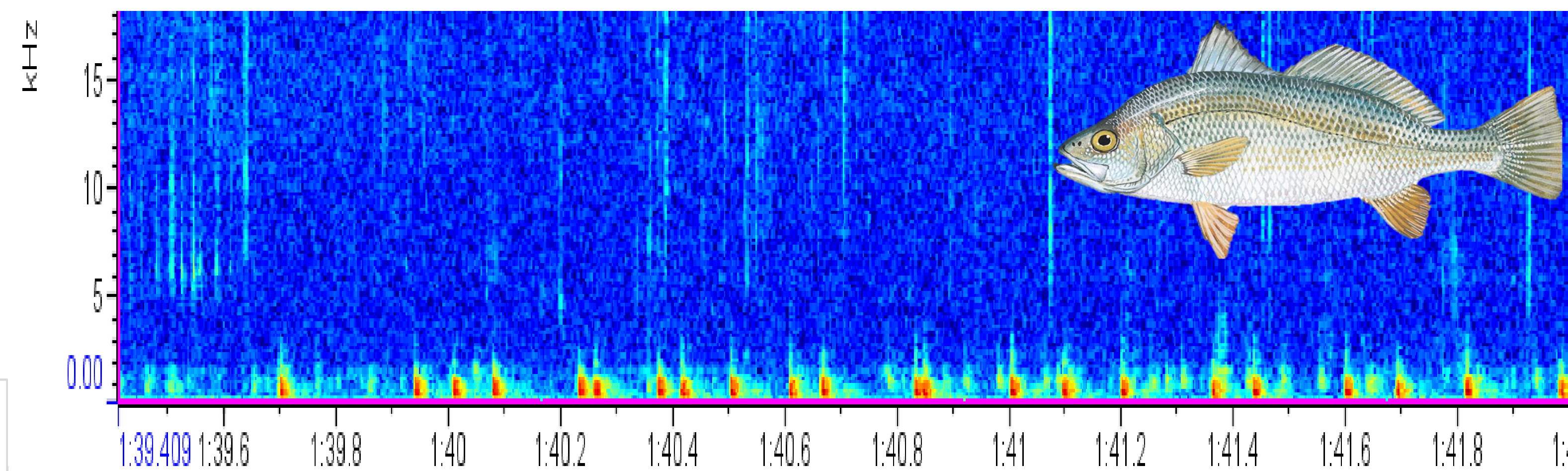
Intro: Oyster aquaculture has become increasingly-popular in NC. From 2015 to 2024, there were 387 applications, averaging 39 per year a nearly 700% increase from previous years. With an increasing number of oyster leases appearing in our waters, How do these structures affect estuarine soundscapes?

2021 Pilot Study Methods and Results:

- Deployed hydrophones to three different lease and control sites for an hour
- Processed the audio data in Raven software.



Spectrograms are used to examine sound levels at different frequencies over time. Examples of a toadfish “Boatwhistle” call (above) and drumming chorus of silver perch (below).



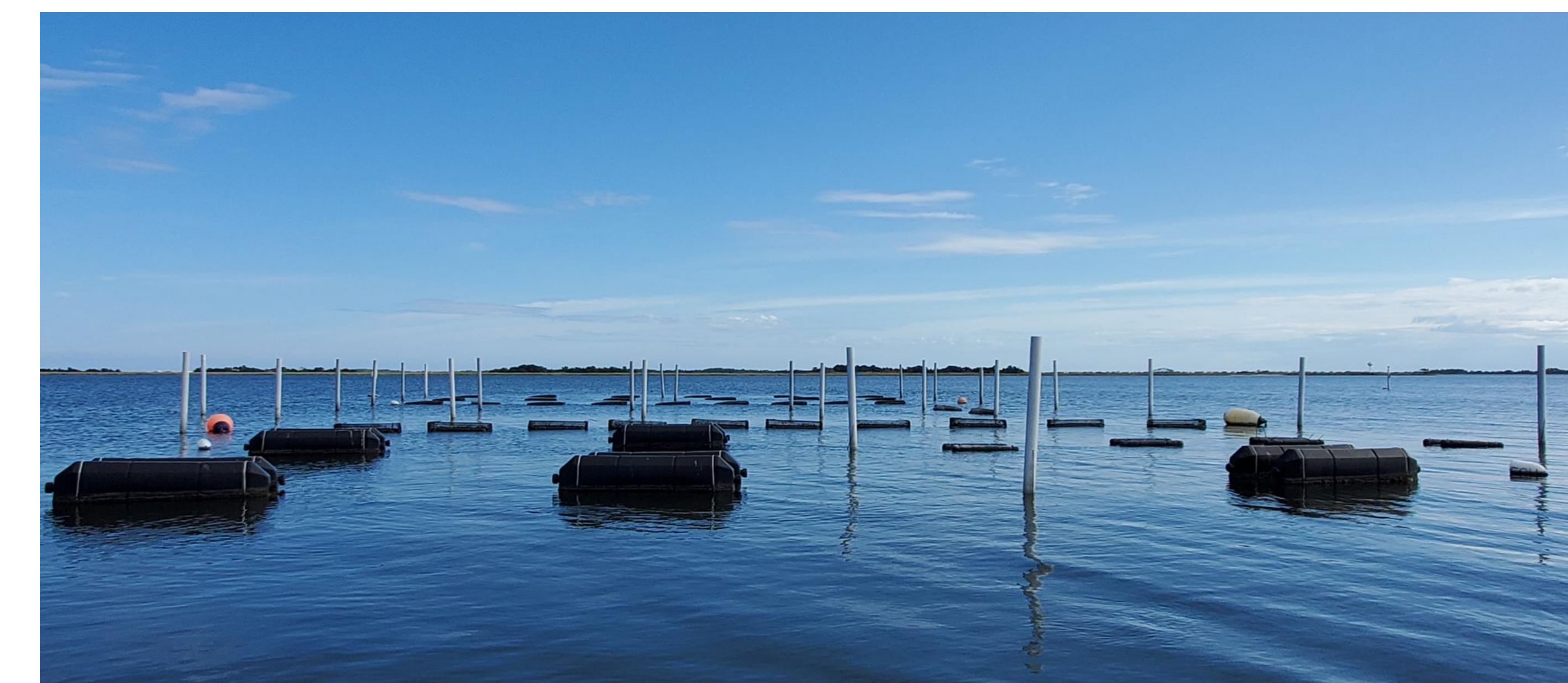
Planned Research 2025-2026:

- Deploy HydroMoths on multiple leases and corresponding control sites. Conduct continuous recordings over multiple time periods, day/night cycle variations.
- Identify fish species based on call frequencies and assess habitat use differences between farmed and non-farmed areas.
- Deploy SMURFs alongside hydrophones at selected oyster lease and control sites to quantify larval fish recruitment.



HydroMoth acoustic receiver (left). A Standardized Monitoring Unit for the Recruitment of Fishes (SMURF) is a passive larval fish collector (Right).

Oyster leases provide structured habitats that may enhance fish recruitment and biodiversity. Findings from this research will contribute to best practices for sustainable aquaculture, ensuring that oyster farming supports both economic growth and ecosystem health.



Expected Outcomes

- Provide a comprehensive understanding of soundscape variability in aquaculture settings.
- Examine behaviors of fish on oyster leases using acoustics.
- Assess whether larval fish are attracted to oyster leases, potentially using sound cues to settle in structured habitats.



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