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COVER FEATURE · ACOUSTIC ECOLOGY

Listening beneath the winter swell

Five moored hydrophones along the Scotian Shelf are revealing how migrating right whales navigate shipping lanes in low visibility.

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IN THIS ISSUE

Page 1–2 · Cover Story
Continuous passive acoustics along the Scotian Shelf and new real-time vessel alerts.

Page 3 · Archive Vault
Digitizing 19th-century lighthouse keeper logbooks from Cape Sable Island.

Page 4 · Winter Lectures
Public symposium dates at the Halifax Harbourfront Pavilion.

FIELD NOTES

Kelp canopy mapping

Drone photogrammetry across twelve coves shows cold-water kelp beds rebounding where urchin barrens were cleared.

COLLECTIONS

Brass sextant restoration

Conservators completed cleaning an 1874 Troughton & Simms sextant donated by the Lunenburg Pilots Guild.

FELLOWSHIPS

2027 Coastal Grants

Applications open December 1 for early-career researchers studying tidal marsh carbon sequestration.

For forty years, winter whale surveys off Nova Scotia depended on clear skies and calm seas. Between November and March, North Atlantic gales grounded spotter aircraft for weeks at a time, leaving a blind spot precisely when deep-draft cargo traffic peaked along the Emerald Basin corridor.

In October 2025, our acoustics team anchored five autonomous listening buoys sixty metres below the surface. Each titanium housing carries a calibrated hydrophone array capable of recording low-frequency calls through force-eight storms without surfacing.

Reading the underwater soundscape

Unlike visual sightings, which capture a single instant at the surface, passive acoustics records the continuous social chatter of pods moving along the shelf edge. Within the first ninety days, the array logged more than four thousand distinct North Atlantic right whale up-calls.

> *“When fog closes the harbour mouth, sound travels forty kilometres through cold water without losing a single syllable.”*

By comparing arrival times across adjacent moorings, analysts triangulate a vocalizing whale within three hundred metres. Surface telemetry floats transmit compressed detection packets via satellite every twenty minutes to harbour pilots and coast guard traffic controllers.

Voluntary slowdowns that hold

Data from the inaugural winter season shows strong compliance from commercial carriers. When an acoustic alert triggered a ten-knot advisory zone, eighty-six percent of transiting vessels reduced speed within half an hour, cutting underwater propeller noise by nearly nine decibels.

Lower ambient noise does more than prevent ship strikes. Hydrophone spectrograms show mother-calf pairs maintaining contact calls at twice the distance recorded during unmitigated traffic windows, reducing energetic stress during lean winter feeding months.

Expanding the coastal array

This November, the survey vessel Petrel will deploy two additional moorings near Roseway Basin, extending continuous acoustic coverage across the western approaches. All processed detection logs are published openly each Monday for partner laboratories and maritime educators.