Seeing More, Knowing More: Integrating Cameras and Telemetry to Advance Fish Tracking in the Bay of Fundy

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Understanding fish presence, movement, and behaviour near tidal energy devices remains one of the central scientific challenges facing the sector. In Minas Passage, high-velocity currents, turbidity, variable light conditions, and ambient noise constrain the performance of conventional monitoring tools and complicate the interpretation of fish-turbine interactions.

The Ocean Sensor Innovation Platforms (OSIP) project is evaluating integrated monitoring approaches designed specifically for these conditions. Using a network of floating, seabed, and telemetry-triangulation platforms, OSIP is testing the performance of multiple sensor systems, including single- and split-beam echosounders, multibeam imaging sonars, and stereo-camera and lighting configurations, alongside acoustic telemetry infrastructure. These technologies are being assessed across tidal states and seasonal conditions, with concurrent measurements of environmental variables such as turbidity, fluorescent dissolved organic matter, and chlorophyll-a to help explain variation in sensor performance.

This presentation focuses on the scientific rationale for combining optical and telemetry-based approaches, the methodological constraints associated with each, and the opportunities created by synchronizing these data streams in a shared field setting. By integrating detections, imagery, and environmental context, the project aims to improve interpretation of fish movement and behaviour in high-flow water, better characterize the conditions under which monitoring systems succeed or fail, and support more reliable study design for collision-risk and environmental-effects research.

Aimed at scientists and technical practitioners, the presentation will focus on methods, integration challenges, and early lessons from implementation. It will highlight how combined optical and telemetry approaches may help advance next-generation environmental monitoring for tidal energy in energetic marine channels.