# A protocol to identify biological sound sources in the ocean

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**Résumé**

Underwater soundscapes are powerful tools for visualizing marine environments. However, identifying specific sound sources, such as fish species, remains challenging due to limited annotated data and methodological constraints. We propose a protocol that combines acoustic feature comparisons with unsupervised machine learning for species-level identification. Specifically, we compared field recordings of unknown sounds against known references using feature analysis, machine learning classification, and supplementary data, such as fish catch records. Our approach showed that these unidentified sounds likely originated from Sciaenidae species, including *Pennahia argentata*. Also, some mismatches were observed, highlighting the complexity of call types and the difficulty of precise identification. Discrepancies between listening tests and classification outcomes underscore the need for improved annotation and validation methods. Although preliminary, the proposed protocol demonstrates the usefulness of integrating human and machine analyses to narrow down potential sound sources. Further refinement and additional data will enhance species-level identification, thereby supporting effective fisheries resource management and broader ecosystem assessments.

**Mots-Clés:** fish sounds, passive acoustic monitoring, unsupervised machine learning, underwater acoustics

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