



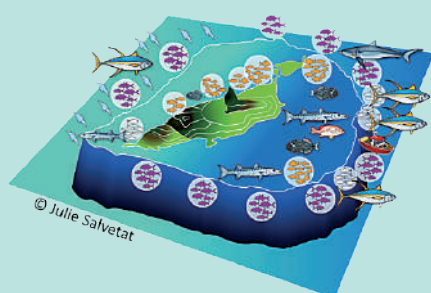
© IIRD, P. Laboute, T. Chagnon, R. Hocdé
© Ifremer, N. Cmiterra, O. Schall, J. Bourjès

SOUTENANCE DE THÈSE

MARDI 29 NOVEMBRE 2022 / 13H00 À SÈTE

Julie SALVETAT

Demersal fish distribution in Northeast Brazil from multifrequency active acoustics and video observations



> jury

Jean GUILLARD

Research Engineer INRAE,
UMR CARRTEL, Thonon-les-Bains, France
Reviewer

Elodie MARTINEZ

Research Fellow IRD,
LOPS IUEM, Brest, France
Reviewer

Mariana BENDER

Associate professor
Federal University of Santa Maria, Brazil
Examinator

Nidia Noemi FABRÉ

Full professor
Federal University of Alagoas, Brazil
Examinator

Arnaud BERTRAND

Research director IRD,
Federal Rural University of Pernambuco,
Brazil
UMR MARBEC, Sète, France
Co-supervisor

Nicolas BEZ

Research director IRD,
UMR Marbec, France
Co-supervisor

> lieu

Station Ifremer
87 avenue Jean Monnet 34200 SETE
Salle Mont St Clair

> Partenariat

**Federal Rural University
of Pernambuco, Brazil**



> lien zoom à venir

RÉSUMÉ Tropical waters hold major biodiversity hotspots and are priority areas for protection in a context of over exploration and climate change. Suitable management of marine resources requires comprehensive, spatially explicit, high quality and up-to-date data. In that regard, multi-frequency active acoustic is a powerful tool that can provide relevant solutions to the increasing need for comprehensive data. This thesis aims at filling some gaps in fish distribution knowledge for two tropical ecosystems of the South Western Tropical Atlantic, an oceanic archipelago and the neritic coastal ecosystem of North-east Brazil by using acoustic active methods combined with other approaches.

In the first two chapters, we used an innovative integrated method combining acoustic and video data to study fish distribution around the oceanic Archipelago of Fernando de Noronha (FNA). FNA encompasses a no-take marine protected area preventing the use of traditional extractive sampling. In this context, the coupling of active acoustics with underwater video has allowed to acquire ecosystem data at high spatio-temporal resolution and to infer the global distribution of fish and fish assemblages in relation to habitat characteristics (e.g., depth and sediment type). These results led to complete the portrait of the island mass effect for high trophic levels.

In the third and last part of this thesis, we applied a similar methodology to acoustic data collected continuously along the diel cycle during two surveys performed in different seasons on the neritic environment of the Northeast Brazilian coast. Acoustic data allowed describing fish and fish assemblages' spatial distribution and highlighting the presence of hotspots.

Finally, the datasets and knowledge developed during this thesis paves the way for future implementation of ecosystem-based marine spatial planning for balanced management between protection and rational use of resources.

MOTS-CLÉS Tropical marine ecosystems / Northeast region of Brazil / Marine Protected Area / Fish assemblages

