EMERGING WATER RISKS: ASSESSING DESALINATION AS AN ADAPTATION STRATEGY WITH AND FOR ISLANDERS

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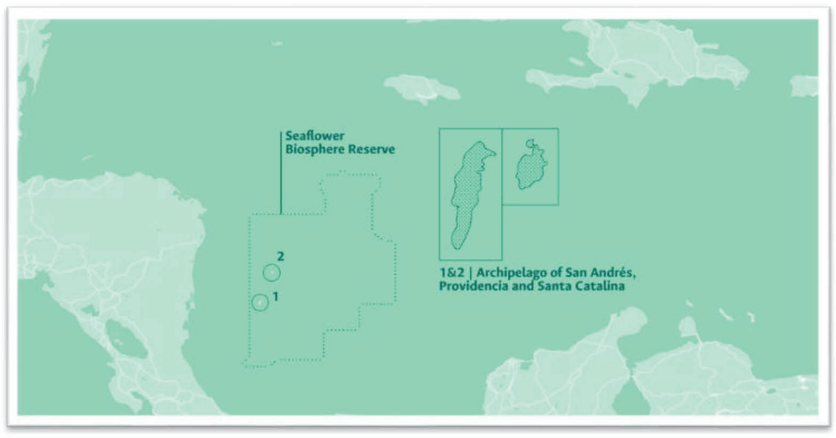
INTRODUCTION

Desalinated water has become a critical resource for over 16 Caribbean islands, including the Archipelago of San Andrés, Providencia, and Santa Catalina, Colombia. Since 2016, the island has faced recurring water crises despite the operation of three public desalination plants. This research examines the intertwined dynamics of desalination, risk, and crisis—issues that have often been studied in isolation. While desalination can increase water supply, it also introduces new risks, including ecological impacts, the erosion of traditional water practices, and challenges to water sovereignty.

Study Area: Archipelago of San Andres, Colombia



Caribbean region with the location of the San Andrés Archipelago islands, Seaflower Biosphere Reserve, Colombian Caribbean (Google Earth)

The Archipelago is in the Southwestern Caribbean Sea. Home to the Raizal people, an Indigenous and Afro-descendant ethnic group, the Archipelago is highly exposed to extreme events like droughts and tropical cyclones.

METHODOLOGY

Three key questions drove this research:

1) What are the impacts of desalination on San Andrés islanders?
2) How do islanders perceive desalination's role in addressing the water crisis?
3) What is the spatial distribution of desalinated water across the island?

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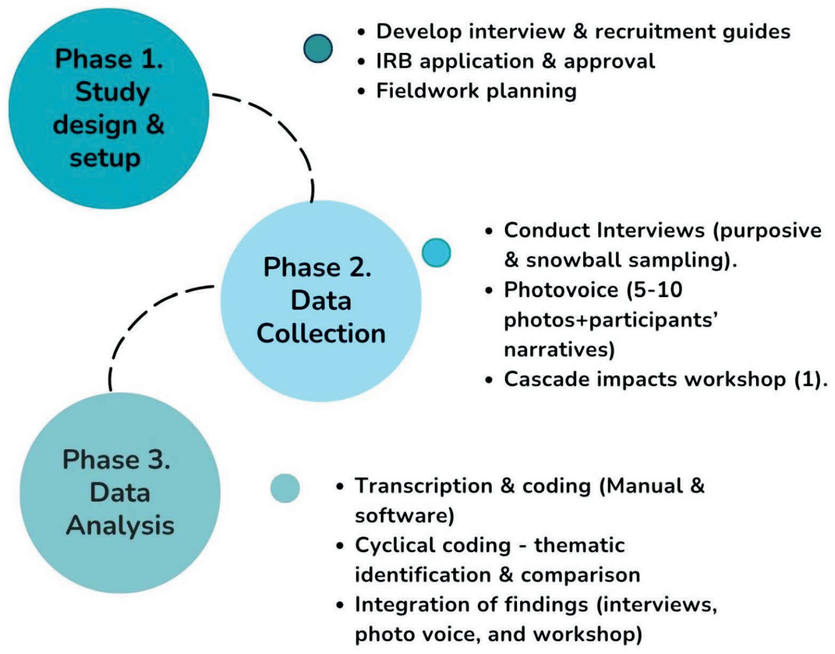
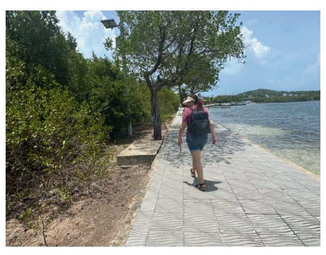


Fieldwork results: Interviews

A total of 35 semi-structured interviews were conducted: 15 in Providencia and 20 in San Andrés.

The transcripts are currently undergoing manual and software-assisted coding to identify key themes and patterns related to desalination and water management.




Fieldwork results: Photo Voice Process

"Water here is a tangled mess." *(Three pumps, three schedules, endless complications)* *(Phot01)*

"Collecting water with what we have" *(Improvised rainwater harvesting system)* *(Phot09)*

"Water on wheels" *(Tanker trucks deliver water, necessity and dependence)* *(Phot02)*

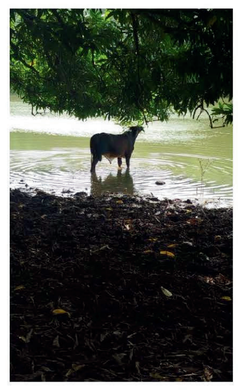
"Rainwater is our livelihood." *(We sell ice made from rainwater)* *(Phot04)*

"Hotels get more water than the people." (Phot05) *(Water truck supply for hotels)*

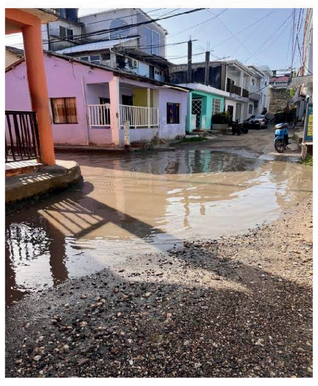
"The sea is part of our life." *(Children and a horse in the sea)* *(Phot09)*

"Washing the bait" *(Preparing fish with rainwater)* *(Phot09)*

"Coffee" *(Water in daily life)* (Phot06)



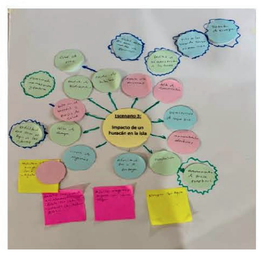
"Water scarcity touches every life" *(A cow drinking water)* *(Phot08)*



They send us water when it's already raining." (Phot03) *(Water service worsens flooding)*

These photos show the everyday struggles that frame desalination as either a 'solution' or another layer of inequality. They reveal how desalination can ease scarcity yet also reconfigure islanders' relationship with the sea; turning it into a source of risk and adaptation.

Fieldwork results: Workshop

A cascade impacts workshop with 21 participants explored four risk scenarios: the introduction of desalination plants, prolonged drought, hurricane impacts, and water shortages from tanker truck supply. Participants developed cascade impact diagrams, highlighting interconnected risks and community perspectives on water management.

CONCLUSSIONS AND NEXT STEPS

This research examines how, in island contexts, desalination is not merely a technical fix for water scarcity but a process that reshapes social, ecological, and spatial relationships around water. It demonstrates how desalination can simultaneously address and reproduce vulnerabilities, disrupt traditional water practices, and generate new "desalted" geographies.

The fieldwork thus far produced 35 interviews, 10 photovoice narratives, and approximately 50 participant-generated photos, enriching the data with visual, participatory, and systemic perspectives on desalination and water management. The next steps include transcribing and analyzing interviews, photovoice narratives, and photos, as well as developing cascade impact diagrams and maps to visualize desalinated water flows. Dissemination will occur through presentations at professional conferences and publications in journal outlets, while seeking funding to progress to the next phases of this work.

Acknowledgement

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