

# Ghosts Beneath the Waves: The Untold Story of Ghost Fishing in Panama



Ynes S. Sánchez<sup>1</sup>, Gustavo Graciano Fonseca<sup>2</sup>, Haraldur Arnar Einarsson<sup>3</sup>

<sup>1</sup>Aquatic Resources Authority of Panama, <sup>2</sup> University of Akureyri, Iceland, <sup>3</sup>Marine and Freshwater Research Institute, Iceland

## INTRODUCTION

Abandoned, lost, or discarded fishing gear (ALDFG), commonly known as ghost fishing gear, is one of the most persistent and significant sources of marine plastic pollution. Large volumes of synthetic fishing materials enter the ocean annually, continuing to entangle and kill marine organisms long after deployment, with severe ecological and economic consequences.

In Panama, this problem is exacerbated by inadequate monitoring, limited waste management infrastructure, and regulatory gaps in fisheries management, posing a serious threat to marine biodiversity and undermining the socioeconomic stability of coastal communities, particularly within the artisanal fishing sector.



Figure 1. Map showing spatial-temporal distribution of ghost gear in Panama (left) and a parrotfish entangled in ghost fishing gear (right).

## OBJECTIVES

- Assess ecological and economic impacts
- Identify vulnerable species and habitats
- Quantify spatial-temporal distribution
- Develop management strategies

## METHODOLOGY

- Quantitative data were derived from the National Ghost Gear Removal Program and Annual Fisheries and Aquaculture Statistical Reports (2020-2025) produced by the Aquatic Resources Authority of Panama (ARAP).
- Qualitative data were collected through a systematic review of environmental policies and semi-structured stakeholder interviews to identify existing enforcement gaps and institutional challenges.

## RESULTS

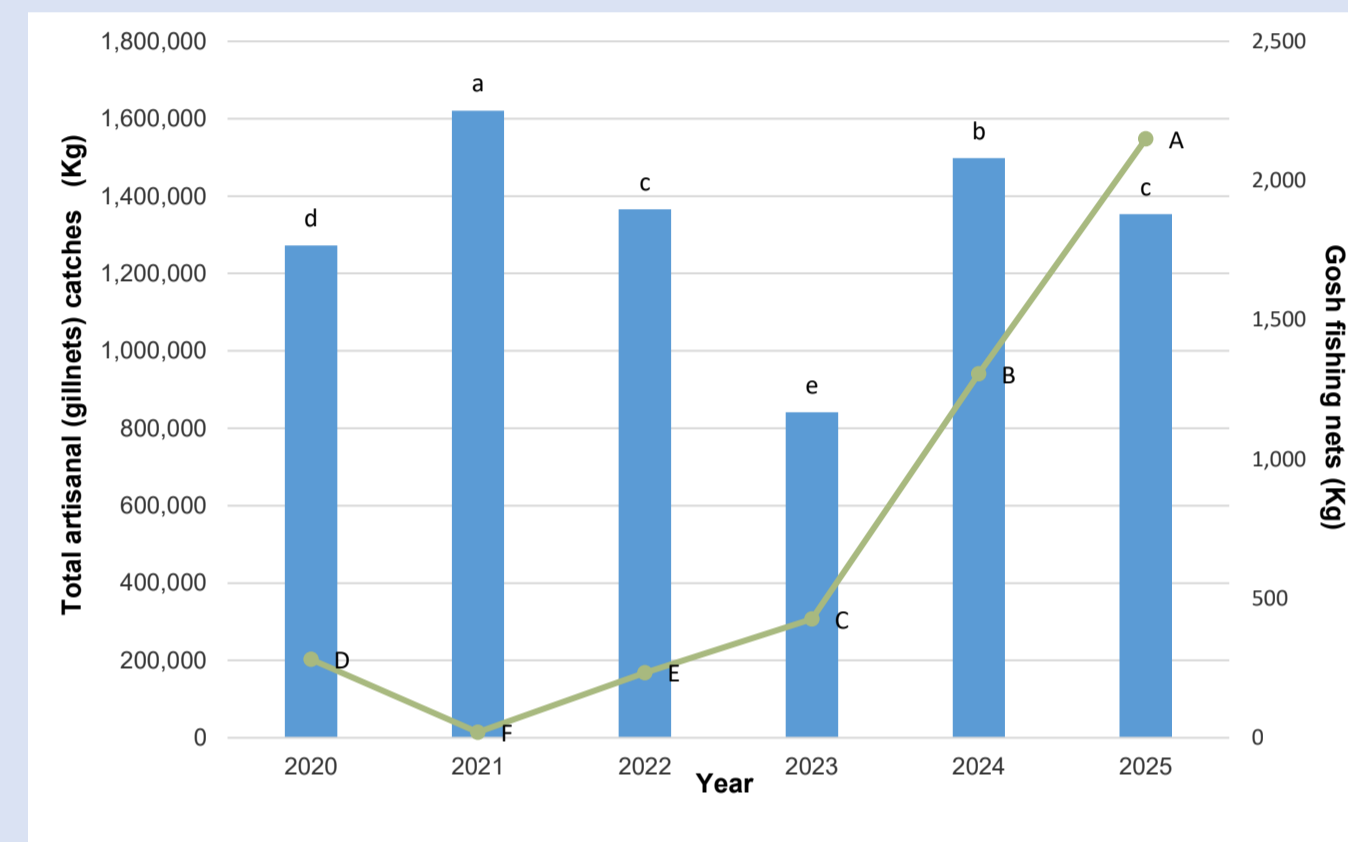


Figure 2. Comparison between artisanal gillnet catches and the quantity of ghost nets recovered in Panama (2020-2025).



Figure 3. Ghost gear entangled in a Panama Canal buoy.

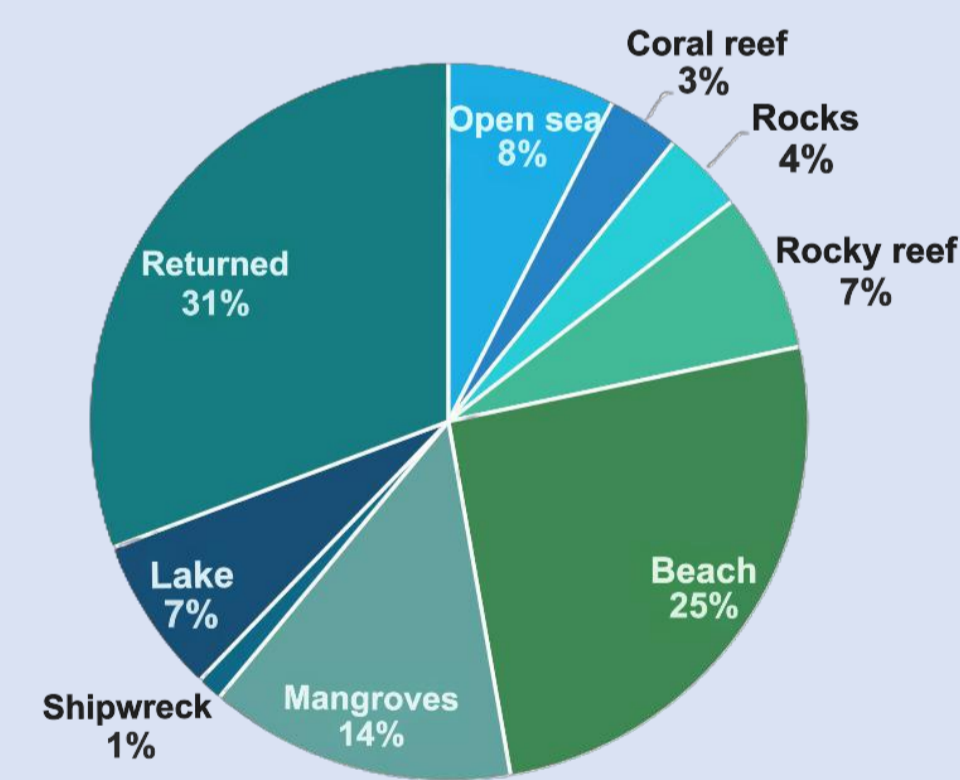


Figure 4. Proportional distribution of ghost fishing nets across documented ecosystems and recovery categories.

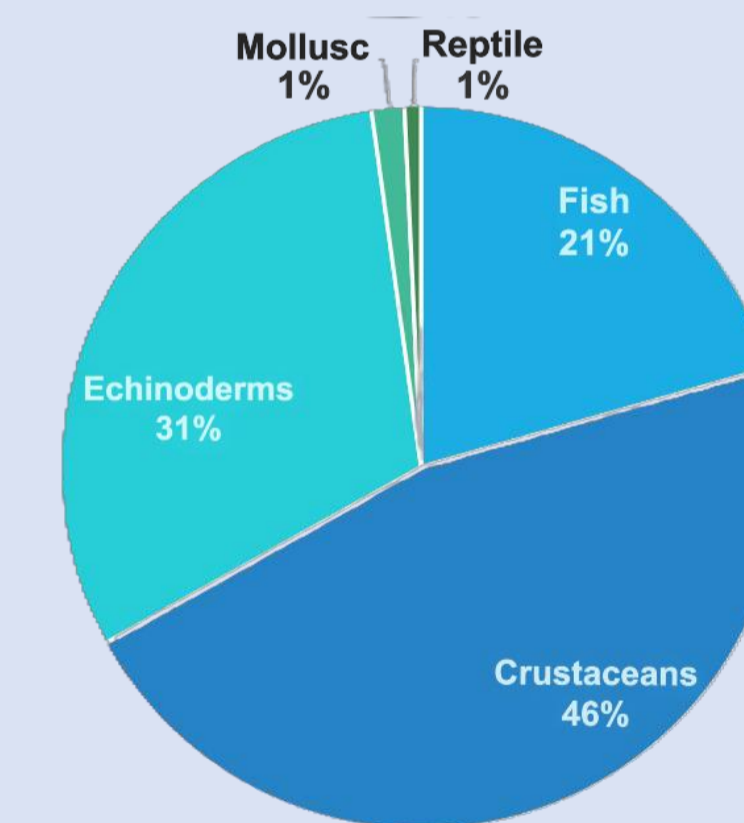


Figure 5. Taxonomic distribution of species impacted by ghost fishing gear in Panama (2020-2025).

## RECOMMENDATIONS

- Spatially explicit management:** prioritise hotspots for targeted intervention.
- Improve traceability** through better gear identification and tracking systems.
- Co-management:** engage fishers and communities in decision-making.
- Policy implementation** can: protect marine ecosystems; strengthen Panama's leadership in tackling marine plastic pollution.

### COLLABORATION IS KEY



## CONCLUSIONS

- High concentration of ghost gear on the Pacific side (Panama Canal)
  - Ecological harm, including impacts on benthic scavengers
  - Risks to maritime safety
- Evidence suggests a decoupling effect between fisheries production and environmental sustainability
- The Blue Exchange program shows promise, achieving a 31% gear recovery rate

## ACKNOWLEDGEMENTS

