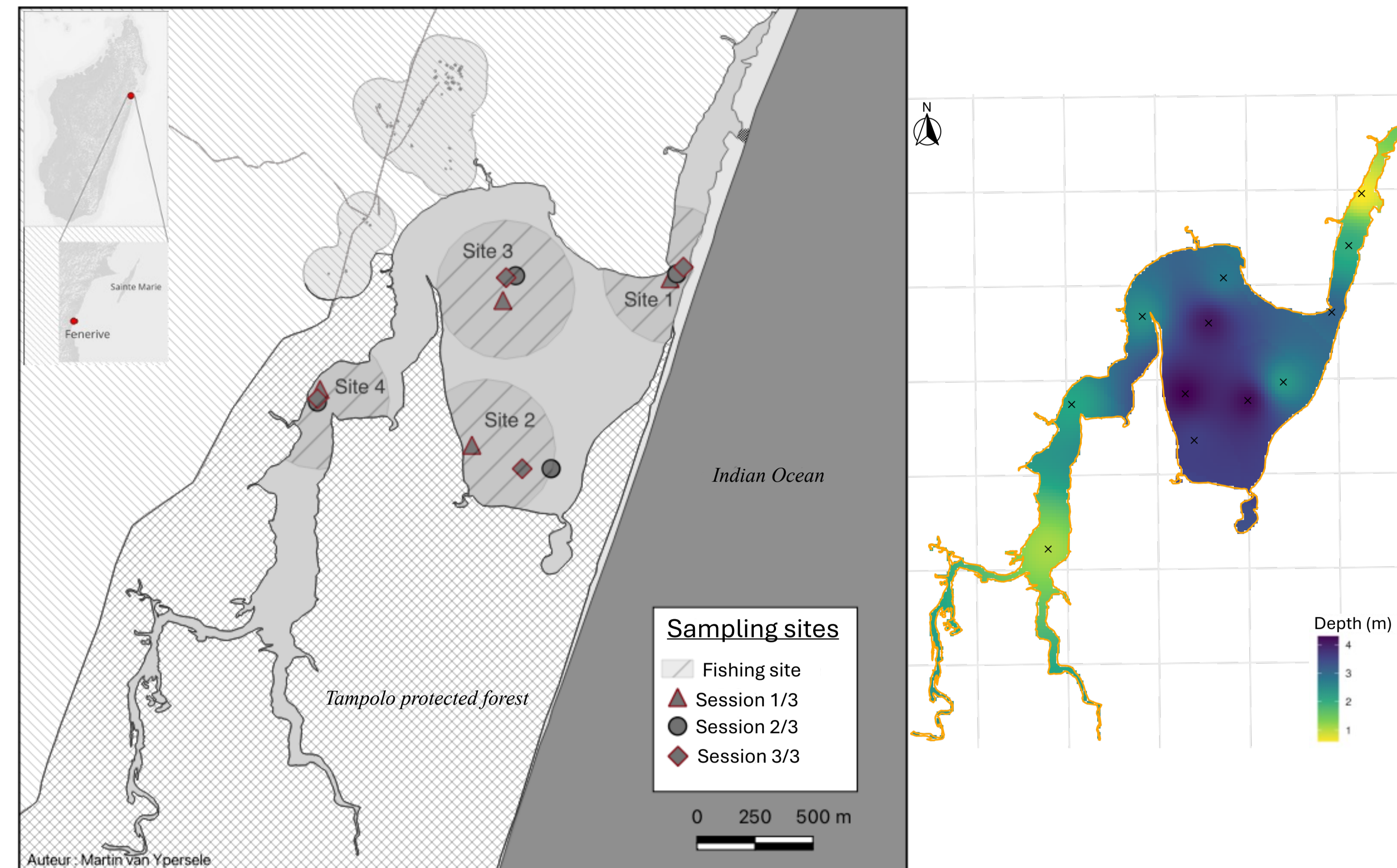


## WHY TAMPOLO LAGOON ?

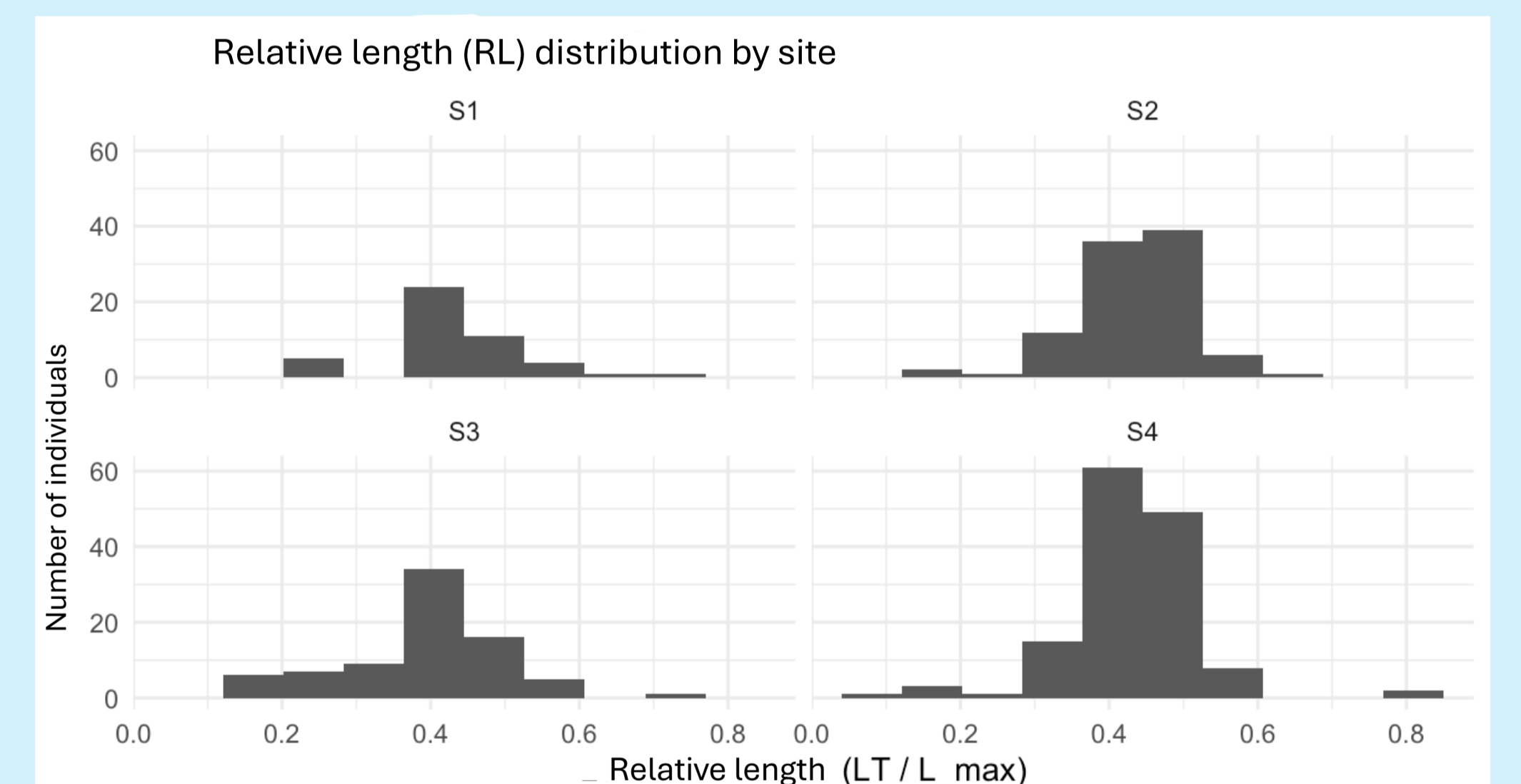
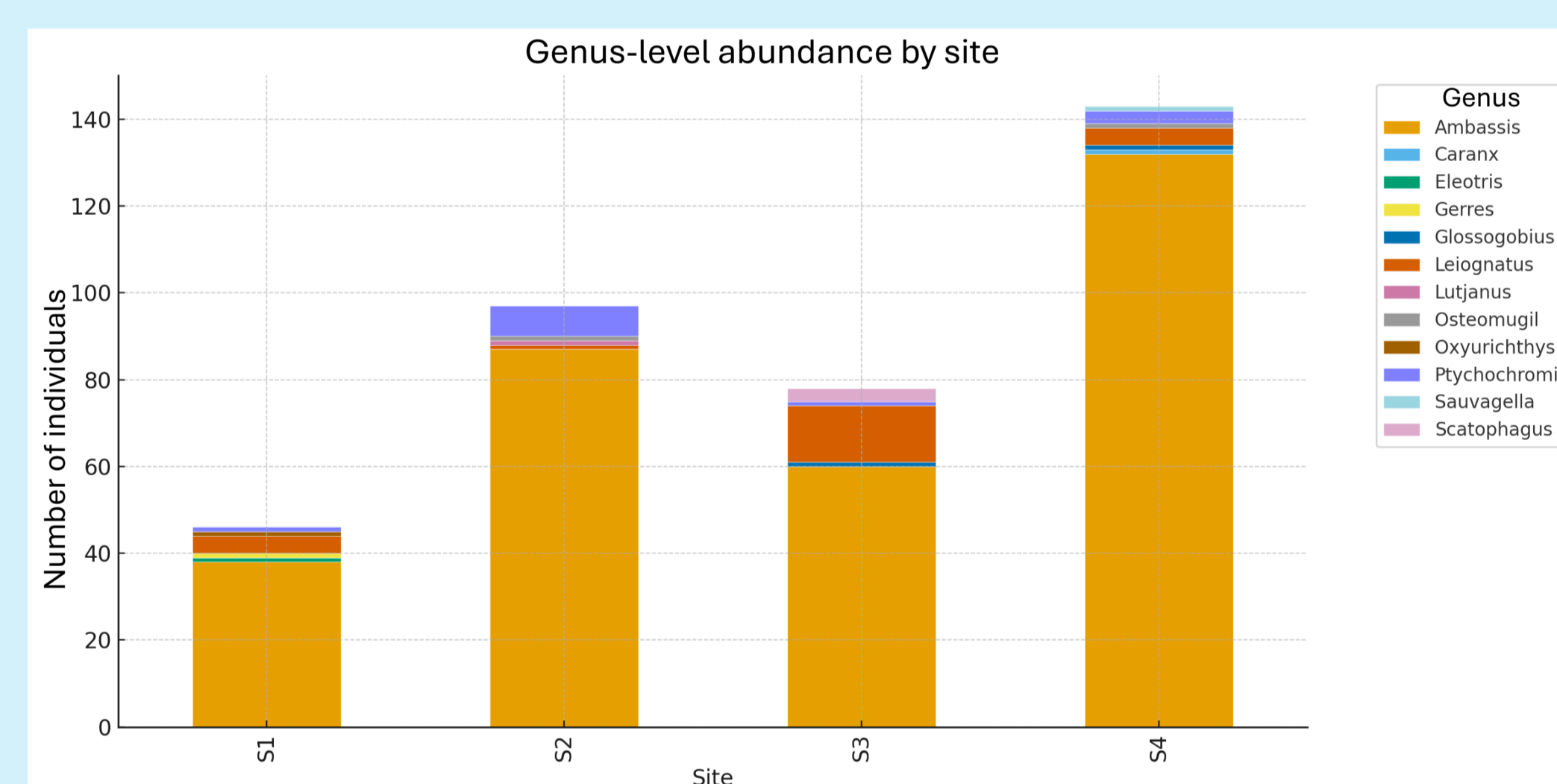
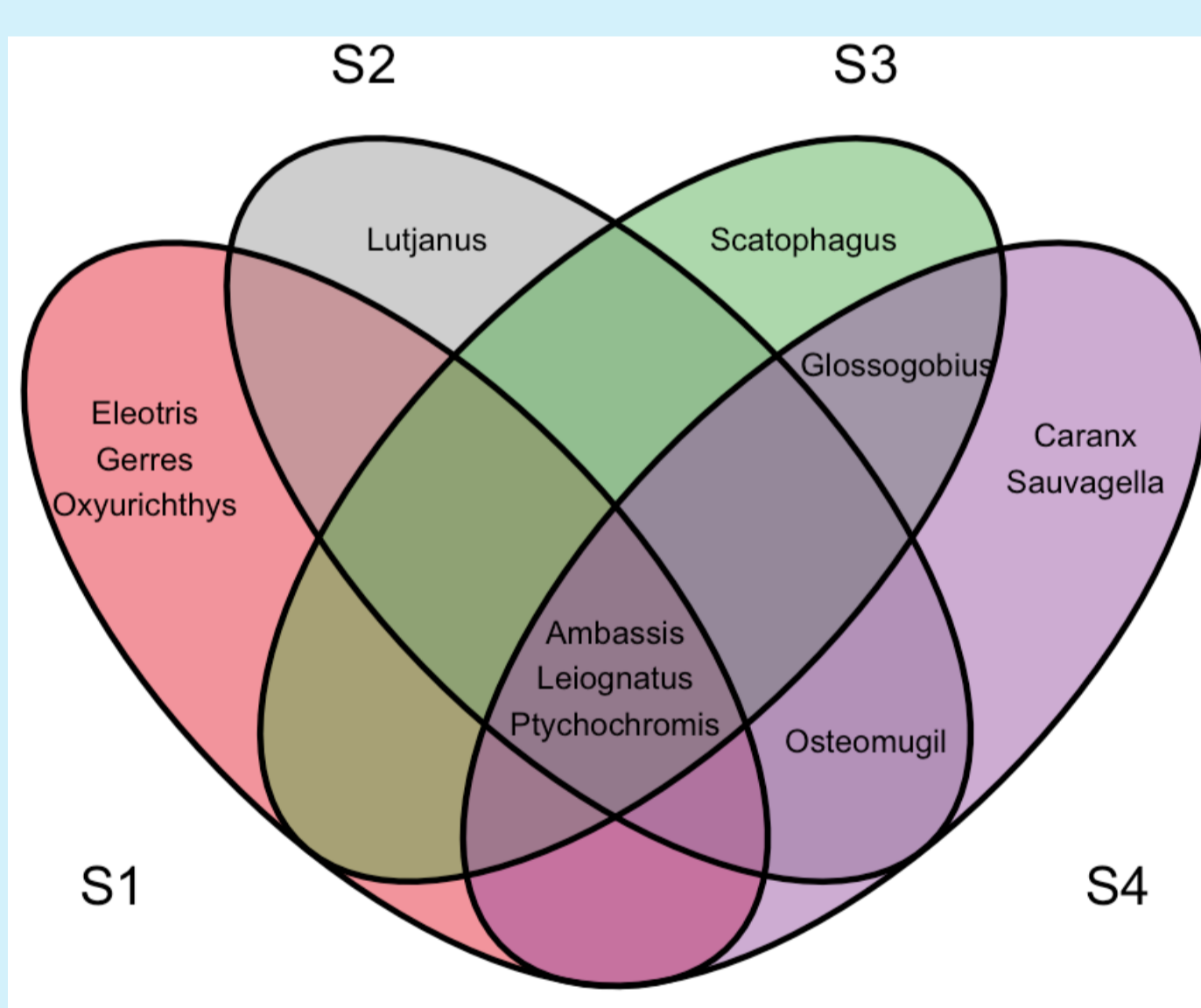
Tropical lagoons support biodiversity and small-scale fisheries, yet many remain poorly documented and weakly protected. In northeastern Madagascar, Tampolo Lagoon is used by local communities and bordered by a protected forest area, but the lagoon itself remains outside formal conservation planning. This study provides the first standardized fish inventory of the lagoon and examines how fish assemblages are structured across its heterogeneous sectors.

## STUDY AREA & METHODS

- **166 ha semi-closed coastal lagoon** located ~10 km north of Fénérive-Est, on the north-eastern coast of Madagascar.
- **Intermittent marine connection** and freshwater inputs from the south create strong differences in connectivity, depth, and habitat conditions among sectors.
- Fish assemblages were surveyed from February to April 2025 using **three standardized multimesh gillnet sessions** across four representative sectors.
- Captured fish were **identified morphologically and measured** to assess species composition, relative abundance, and size structure.
- **DNA barcoding** supported species-level identification for captured taxa.



## RESULTS



- Tampolo Lagoon supports a diverse fish assemblage, including **two Malagasy endemic species** (highlighted in red). A total of **17 fish species** belonging to **14 genera** and **12 families** were documented, and standardized sampling yielded **364 individuals** and a total biomass of **2.19 kg**.
- Assemblages differed strongly among lagoon sectors, with **turnover dominating beta diversity**. Each sector contributed unique taxa, while only a small core of species was shared across all sites (e.g., *Ptychochromis grandidieri* ; *A. ambassis*).
- The assemblage was strongly dominated by *Ambassis ambassis* (>87% of total abundance). Most individuals were subadults with very few large fish, indicating a truncated size structure.

## DISCUSSION & MANAGEMENT IMPLICATIONS

**The assemblage may be functionally altered.**

The scarcity of large fish suggests reduced trophic complexity and lower resilience to disturbance.

**No single sector is enough.**

Distinct sectors contribute complementary biodiversity, so conservation must operate across the whole lagoon.

**Management should target both space and selectivity.**

Functional zoning, mesh-size regulation, and seasonal closures are needed to support stock renewal.

**Tampolo Lagoon supports a spatially structured fish assemblage of high ecological value, but its truncated size structure indicates a vulnerable system requiring lagoon-wide management.**