

Shrimp trawl fishery threatened one of the most important olive ridley populations in Atlantic ocean

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Introduction

The olive ridley (*Lepidochelys olivacea*) population in Brazil is one of the most important in the Atlantic Ocean, with close to 12.000 nests recorded in the last reproductive season (Aug 2018 to Jul 2019). Almost all nests (95%) are in Sergipe state, in Northeast Brazil.

Shrimp trawl, gillnets and hook and line are important fisheries in Sergipe. Among those, shrimp trawl has been pointed out as the main cause of the 6500 olive ridley turtles found stranded between 2008 and 2019 on the beaches of the region.

Objective

To identify which fishery most impact the olive ridley turtles in front of the olive ridley main nesting site in Brazil.

Methods

To identify the fishing area we monitor, between September 2010 and June 2013, 380 Km of coastline since the South of Alagoas state until the North coast of Bahia state, including entire Sergipe coastline (Fig 1). To that we used a wood boat, equipped by 260hp engine (Fig. 2). 27 trips were performed (179 monitoring days at sea) and we identified the Kernel Density Estimate – KDE - (50%) of the core fishing area.

In order to identify the olive ridley's habitat use, specially interesting home range, we attached satellite transmitters (model KiwiSat 101, Sirtrack) on 10 females from Sergipe rookery and identified the KDE 50% core area.

To characterize the fisheries, we applied a semi-structured questionnaire to interview the fishermen.

Additionally, between October 2010 and June 2012, fishermen, voluntarily filled in forms (logbooks) provided by Fundação Projeto Tamar, to estimate the sea turtle incidental captures and the fishery effort (in number of trawls per day and days of fishing).

From what has been reported in logbooks by fishermen, we estimate the total number of turtles captured by the shrimp trawl fleet in a year.

We multiply the number of trawl sets performed in a day (5,2), by the total number of fishing days per year (150) and by the total number of shrimp trawl boats (168) of the fleet.

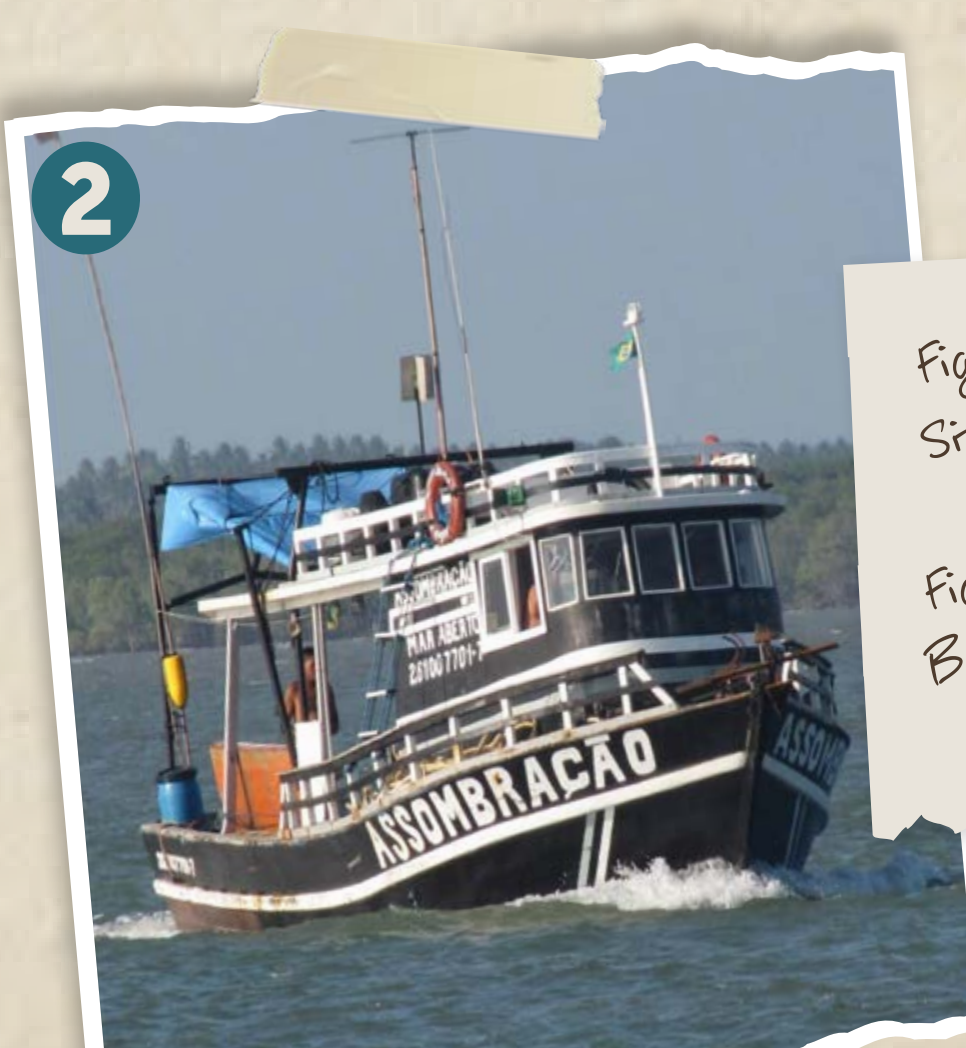
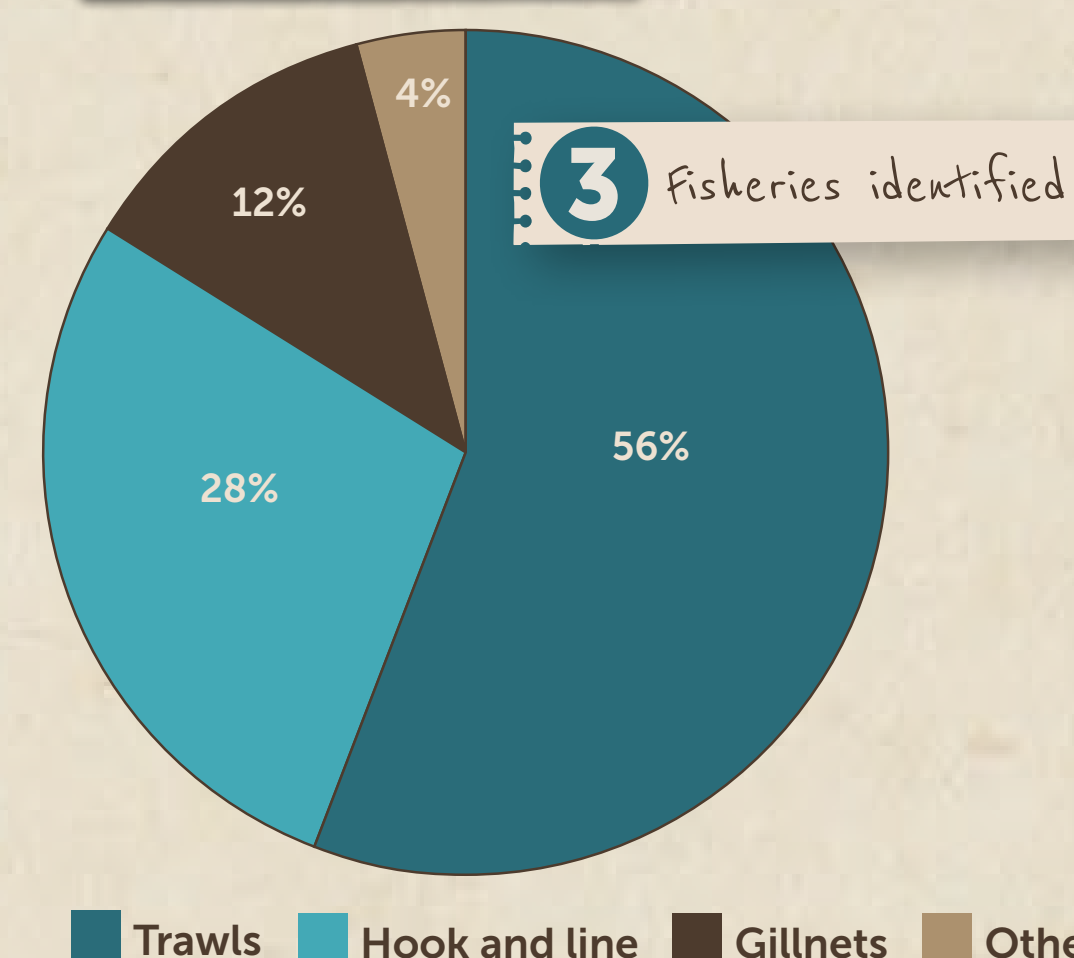
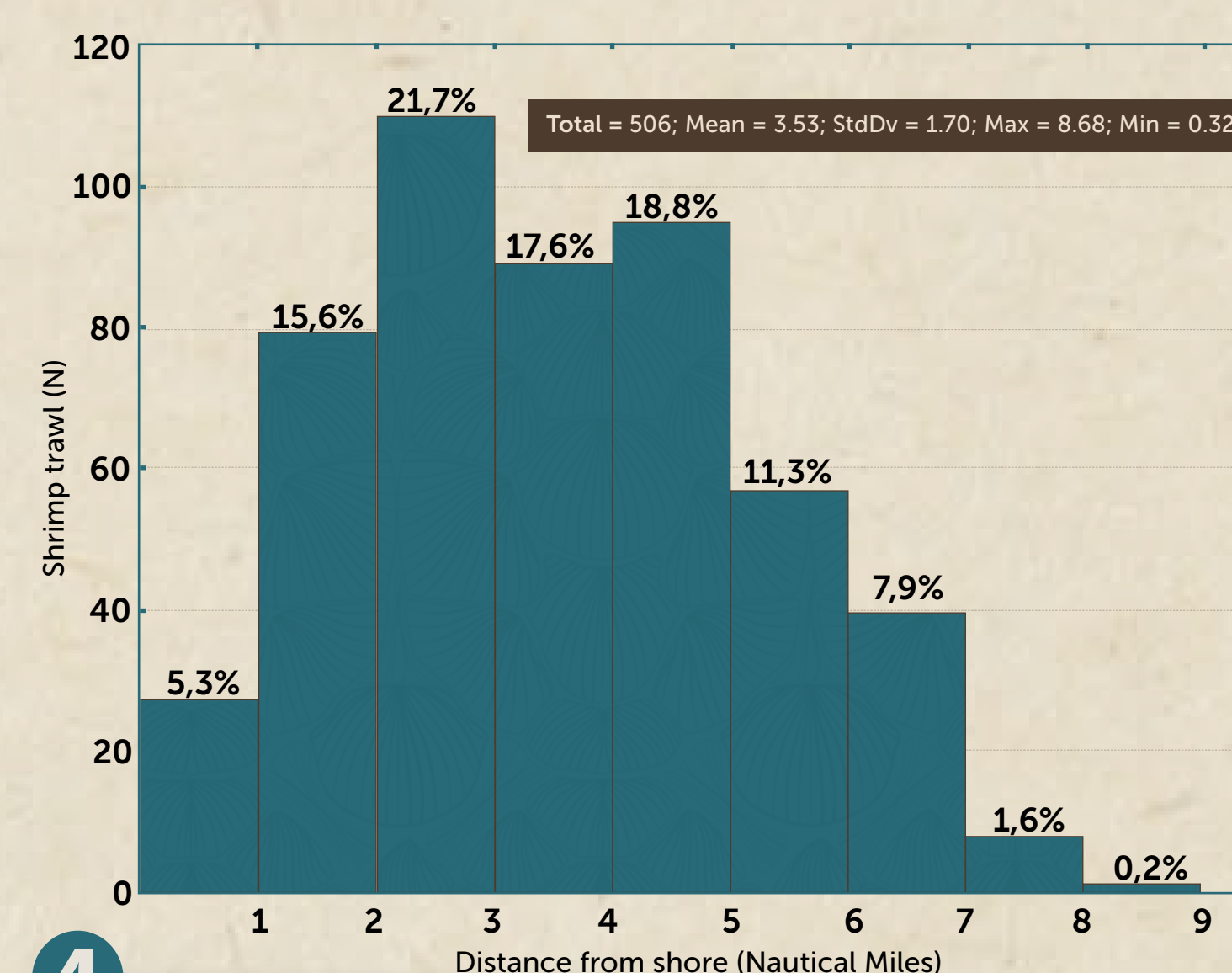


Figure 1. Site study
Figure 2. Boat used to monitor

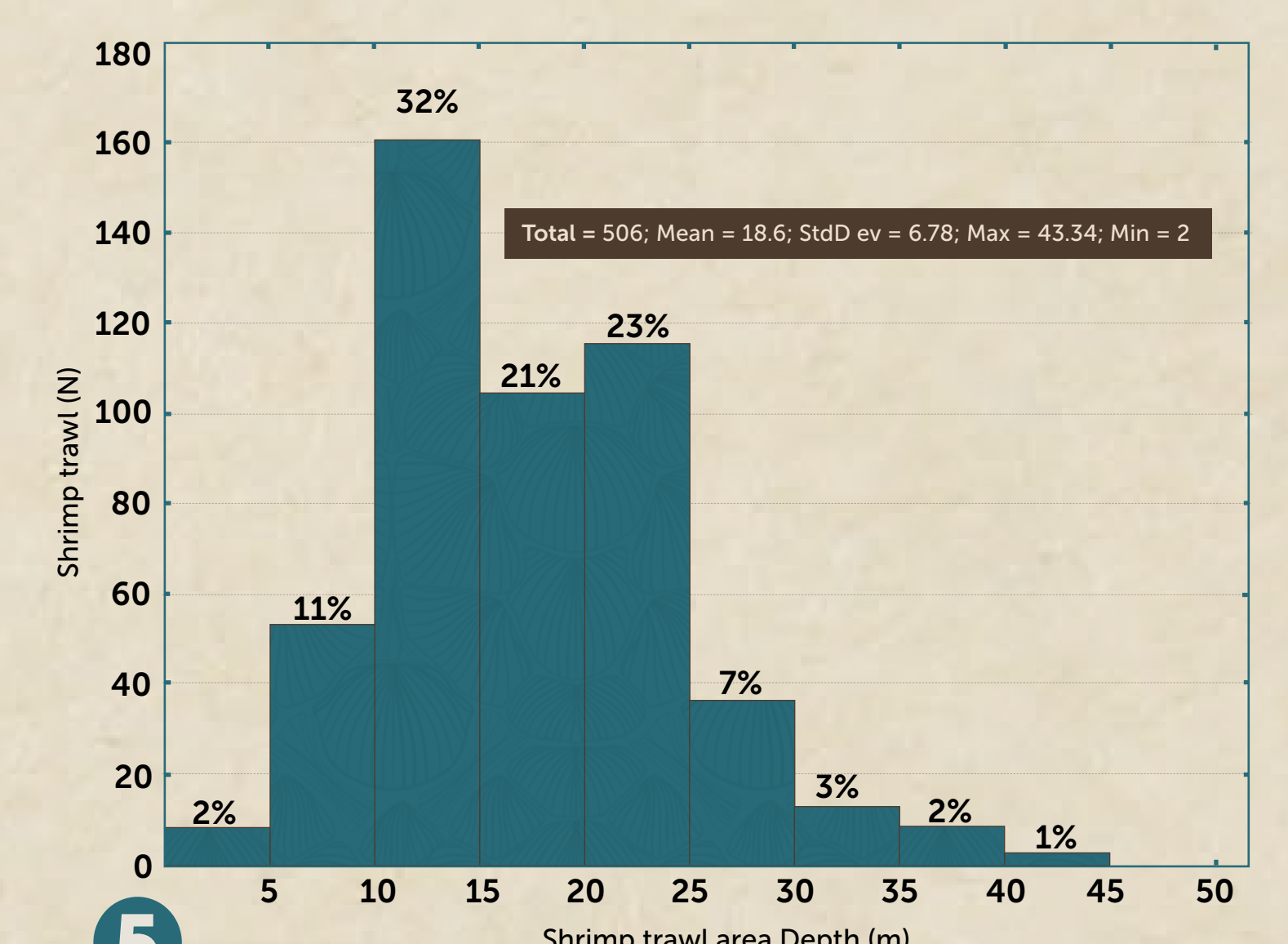
Results



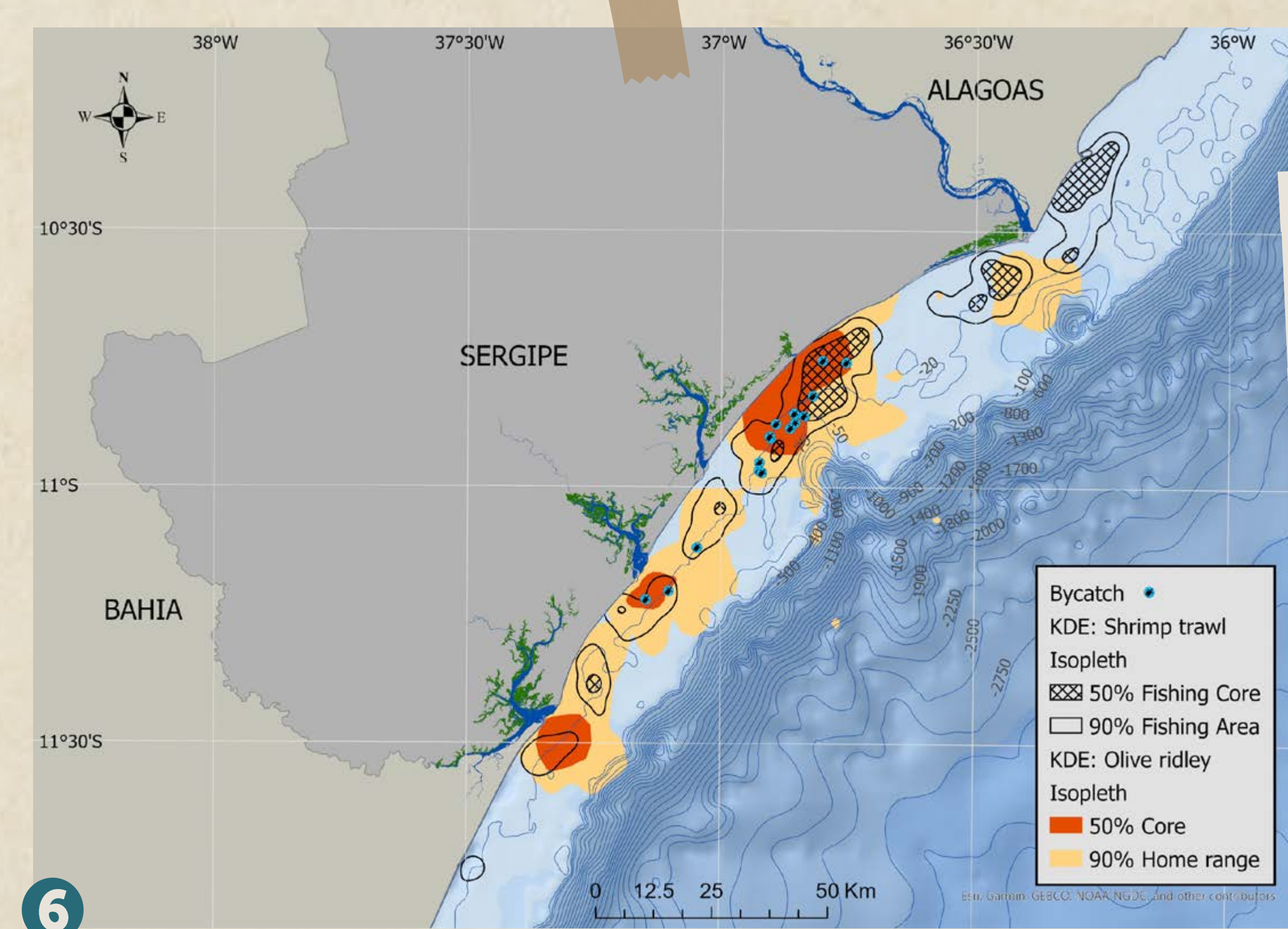
3 Fisheries identified



4 Shrimp trawl distance from shore (Nautical Miles)



5 Shrimp trawl fishing depths (meters)



6

Kernel Density Estimation (KDE) of the core area for the shrimp trawl fleet and olive ridley interesting area.

Discussion

- Brazilian legislation only obligates shrimp trawl boats bigger than 11 meters to use TEDs.
- Out of 168 trawlers from Sergipe's fleet, only 17,3% (29 boats) are bigger than 11 meters, and no one use TED.
- There is also a rule on the region forbidden the shrimp trawl fishery under 2 nautical miles from the coast, however this rule is not respected.
- The estimated numbers of turtles captured by shrimp trawl fishery encompass the stranded olive ridleys registered (2010-2018 mean = 532, SD = 239, min = 248 max = 978).

Conclusion

- The incidental captures in shrimp trawl fisheries is the main threat to olive ridley in Brazil and must be urgently mitigated.
- In order to reduce the capture and death of olive ridley turtles we recommend: 1) an adjustment on TED's rules in Brazil, obligating the use of TED in all shrimp trawl boats, instead of only in boats bigger than 11 meters, 2) To establish a time-closed fishing area between the north coast of Bahia to the south coast of Alagoas, from November to March, when the olive ridley nesting season in Brazil reaches the peak.
- The low enforcement capacity weakens the conservation initiatives in the region and must be strengthened

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