

West Africa Red List Assessment Sharks and rays - São Tomé and Príncipe

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Contributing projects

- **Omali Vida Nón** (2016-2019) → Príncipe island
Organisations: University of Exeter, Fundação Príncipe
Funding: Darwin Initiative
Contact: Dr. Ana Nuno (a.m.g.nuno@exeter.ac.uk)

- **Kike da Mungú** (2017-2020) → São Tomé island
Organisations: Oikos, MARAPA
Funding: EU
Contact: Bastien Loloum (coord.stp@oikos.pt)



Contributing projects

- **Establishing a network of marine protected areas across São Tomé and Príncipe through a co-management approach (2018-2023)**
Organisations: *Fauna & Flora International, Fundação Príncipe, MARAPA, Oikos*
Funding: Blue Action Fund, Arcadia Fund
Contact: Luisa Madruga (luisa.madruga@fauna-flora.org)

Continues and expands the activities of the projects
Omali Vida Nón and Kike da Mungú

Contributors

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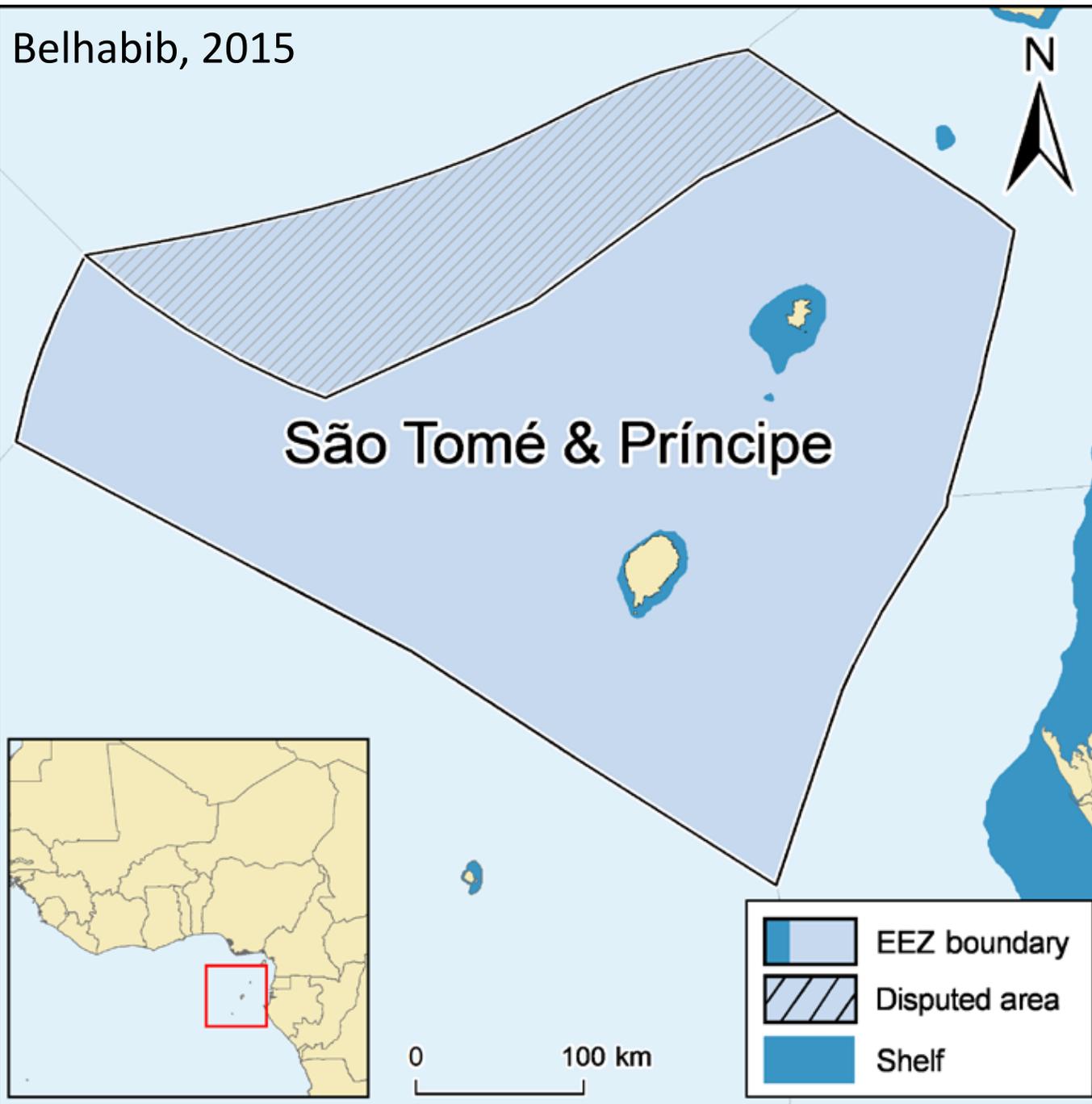
Sinaida Espírito-Santo (*MARAPA*)

Lodney Nazaré (*Oikos, cooperação e desenvolvimento*)

Bastien Loloum (*Oikos, cooperação e desenvolvimento*)



Belhabib, 2015



São Tomé and Príncipe

- True oceanic islands. Part of the Cameroon line (chain of extinct volcanoes)
- Narrow shallow coastal shelf (<200 m wide in São Tomé)
- Highly dependent on fisheries
- 211,000 inhabitants (8000 in Príncipe)

Industrial fishing

- São Tomé and Príncipe does not have an industrial fishing fleet
- Foreign catches represent the majority of removals from the EEZ, dominated by catches from EU fishing vessels (Belhabib, 2015).
- 40% of the non-fiscal revenues come from fisheries agreements with other countries (Belhabib, 2015)
- STP is responsible for monitoring industrial fishing vessels, and monitoring and surveillance is considered low.
- Although not currently in place, fisheries agreements between STP and China are likely under development (see [here](#)).

Current fisheries agreement between EU and STP

CURRENT PROTOCOL				
Fishing possibilities				
	SPAIN	FRANCE	PORTUGAL	TOTAL
Tuna seiners	16	12	-	28 vessels
Surface longliners	5	-	1	6 vessels
Reference tonnage:	8 000 t./year			

Illegal fishing

- Sept 2018, Spanish-linked Senegalese vessel, filled solely with sharks (predominantly blue sharks). Licensed for tuna, but gear suggested that sharks were the main target.



- Aug 2016, Spanish longliner caught with 87 tonnes of sharks and shark fins. Charges not pursued, in spite of complaints from STP fisheries department.
- Sep 2018 and Aug 2017, fisheries dept. issued two notices of violation of fisheries rules of a Spanish and Taiwanese vessel, respectively.

(Sea Shepherd [2018](#))

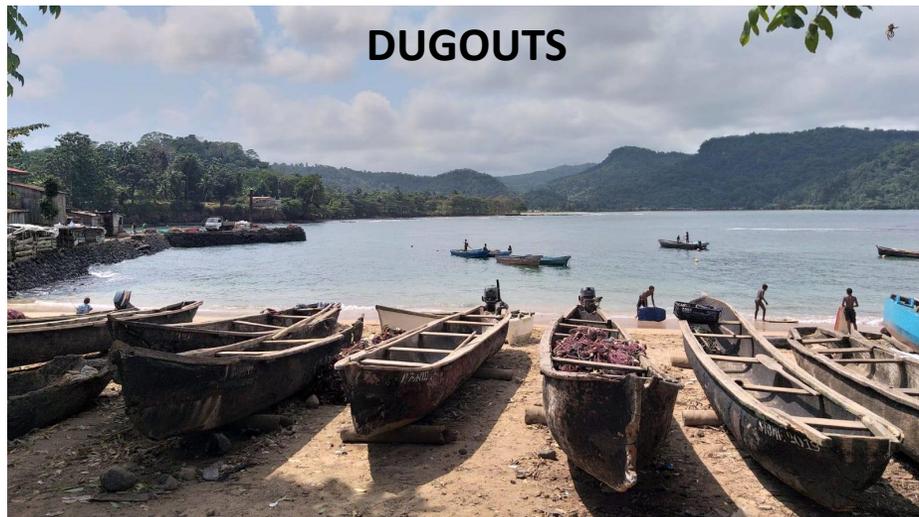
Semi-industrial fishing

- 15 vessels, specialised in line fishing
- Based in São Tomé
- Fishing trips 4 – 10 days
- 7 to 14 fishers, each of them with a line with 25-30 hooks

(Tous 2015)

Artisanal fishing

- Vessels are dugout canoes (4 to 12 metres), “*praos*” (fiber-glass with a side hull) or fiber-glass boats (10 x1.5 metres).
- 74% of the fishing trips use motorised vessels, with engines up to 40cv in ST, and up to 25 cv in PC (n=404, Príncipe, Aug –Dec 2019)
- No fish is exported out of the country, but a large proportion of fish caught in Príncipe is salted and sent to São Tomé



Artisanal fishing

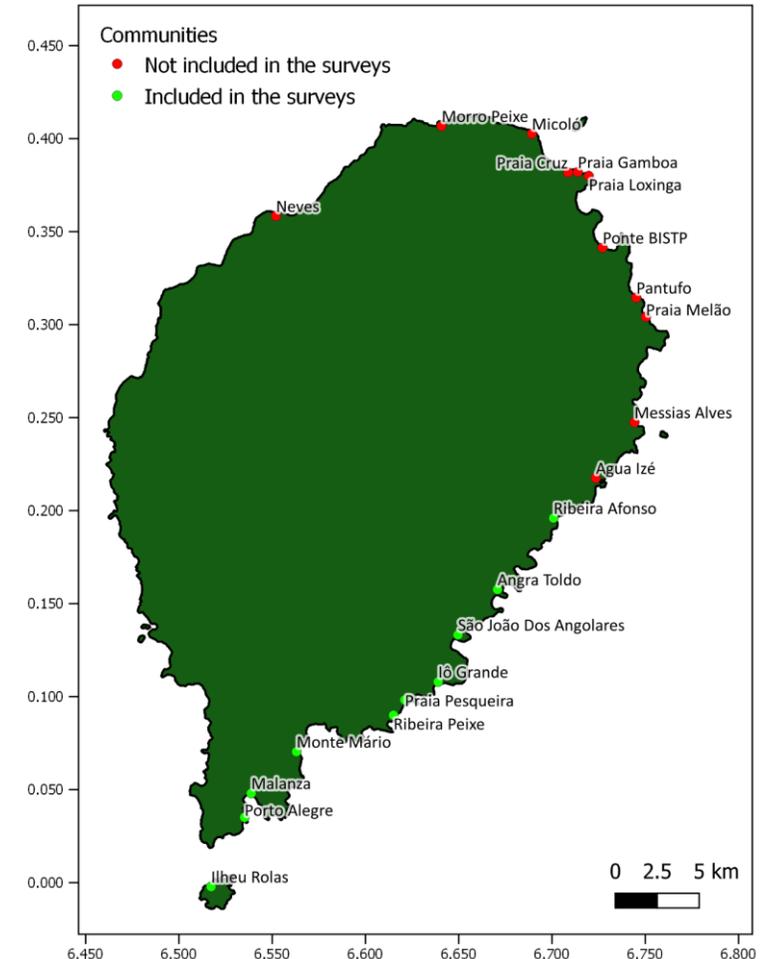
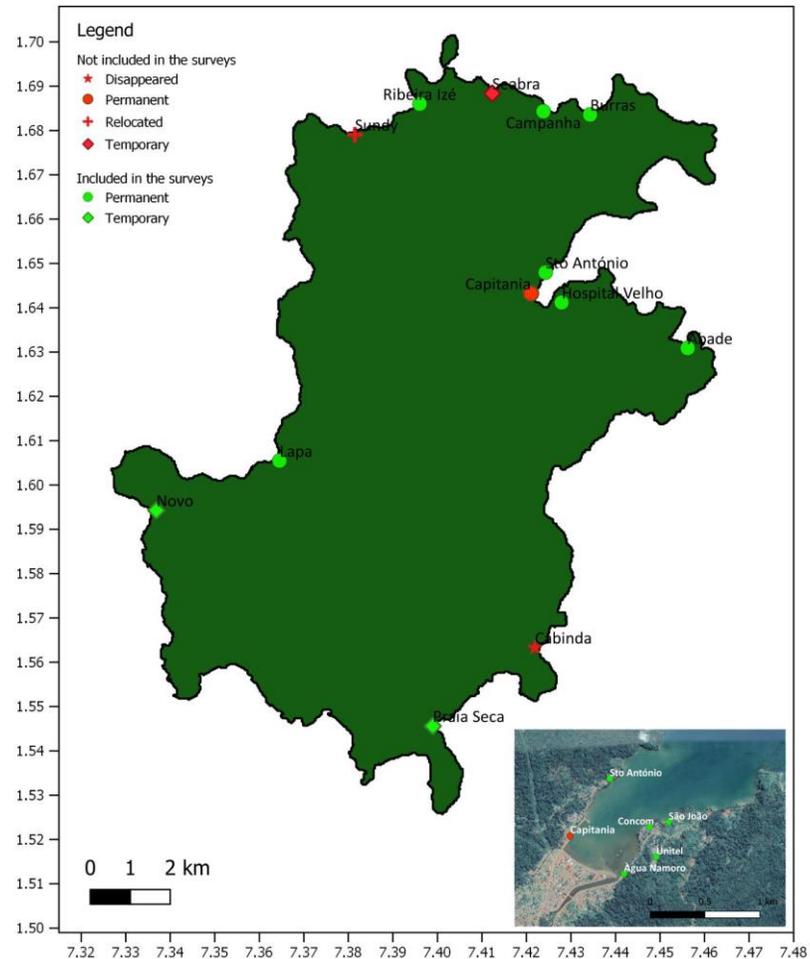
Príncipe: around 11 permanent and 3 temporary fishing communities

São Tomé: around 22 fishing communities

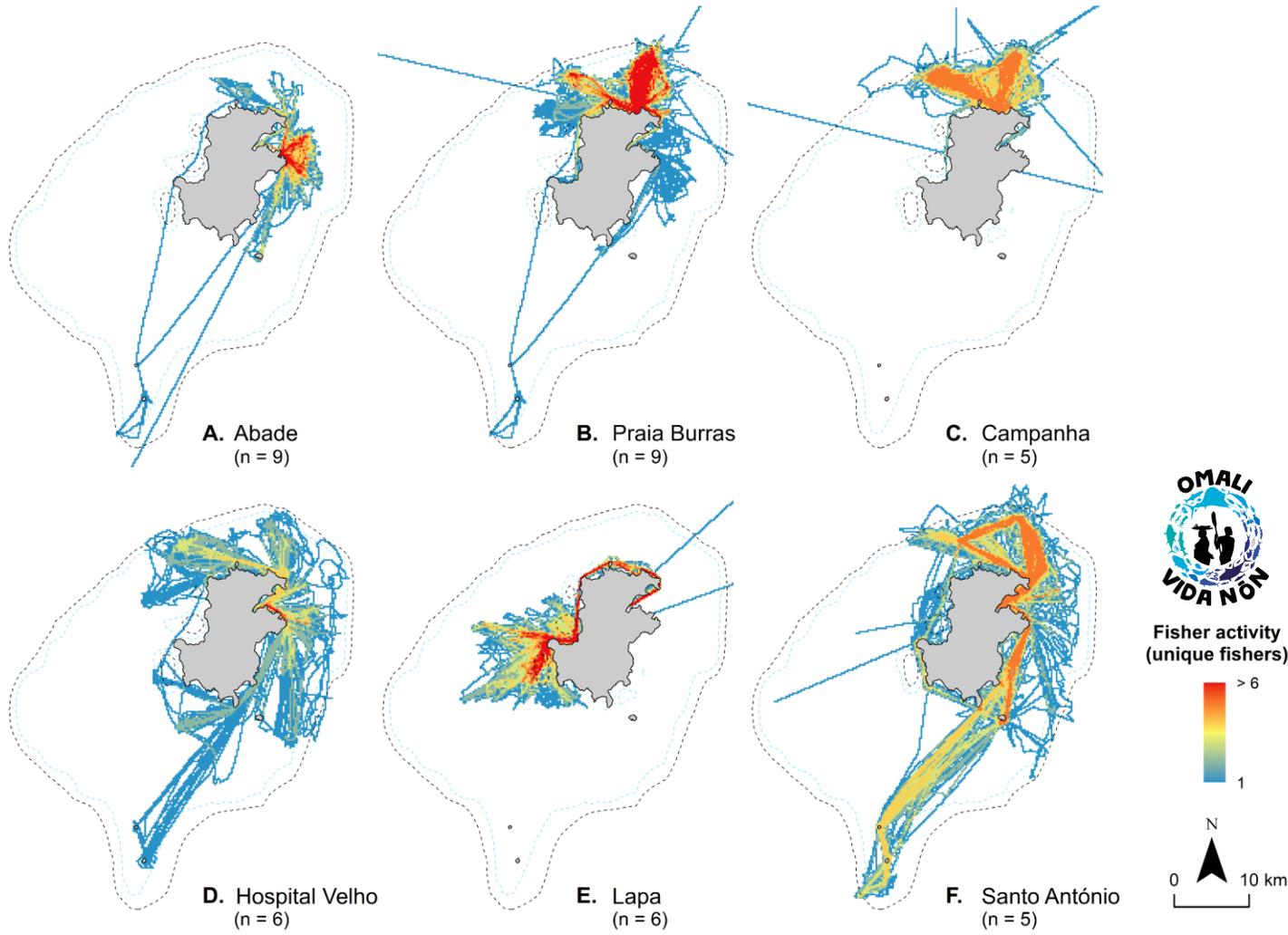
2007: 1 921 vessels, of which 450 are motorised.

The Coast Guard keeps a record of all the vessels. Licensing a vessel costs 40€ per year, and failing to issue a license results on its confiscation.

52% of the fishing trips are done renting someone else's boat (n=404)



Artisanal fishing



The area within 12 nautical miles from the coast is reserved to artisanal fisheries

GPS trackers carried by 36 fishers in 6 communities in Príncipe island show that artisanal fishing in Príncipe is restricted to the continental shelf (project *Omali Vida Nón*)

Same data exists for São Tomé, shows that some fishers (mostly surface troll) go beyond the 12 nautical miles from the coast (*MARAPA, Oikos, programa Tatô*)

Map by [Omali Vida Nón, 2019](#)

Use: trade and consumption

- All fish caught by the artisanal fleet is consumed in-country (exc. shark fins). Shark and ray consumption is much more prevalent (65% and 14% respectively), compared to other protected species (Nuno *et al*, in press).
- Rays are generally used for consumption, more rarely as a source of income (sold at less than 1€/kg)
- Sharks are sold fresh at the marketplaces (1 – 1.5€, cheaper than the rest of fish) or salted. In Príncipe island they are also salted and sent to São Tomé island.
- Sharks fins sent to specialised traders at the capital for its export. Fishers sell the shark fins at 4.5 – 12 € kg (Nuno *et al.*, 2015)



Nuno et al, 2015
Nuno et al, in press

Regulations

- São Tomé and Príncipe is signatory of: *Convention of Biological Diversity (CBD)*; *Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*; *International Commission for the Conservation of Atlantic Tunas (ICCAT)*
- Sharks are provided with no national protection and so are harvested if caught. Although the country is signatory of CITES, there were no regulations regarding the trade of shark fins (Nuno *et al.*, 2015)
- HOWEVER → Recent change in regulations temporarily ban shark fin exports.

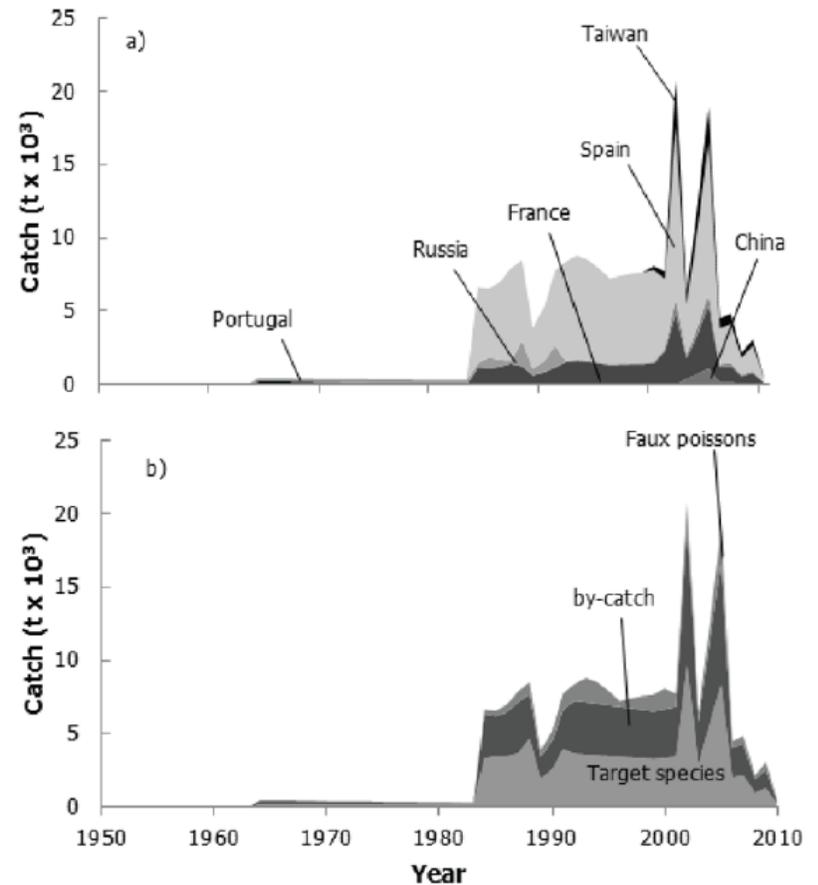
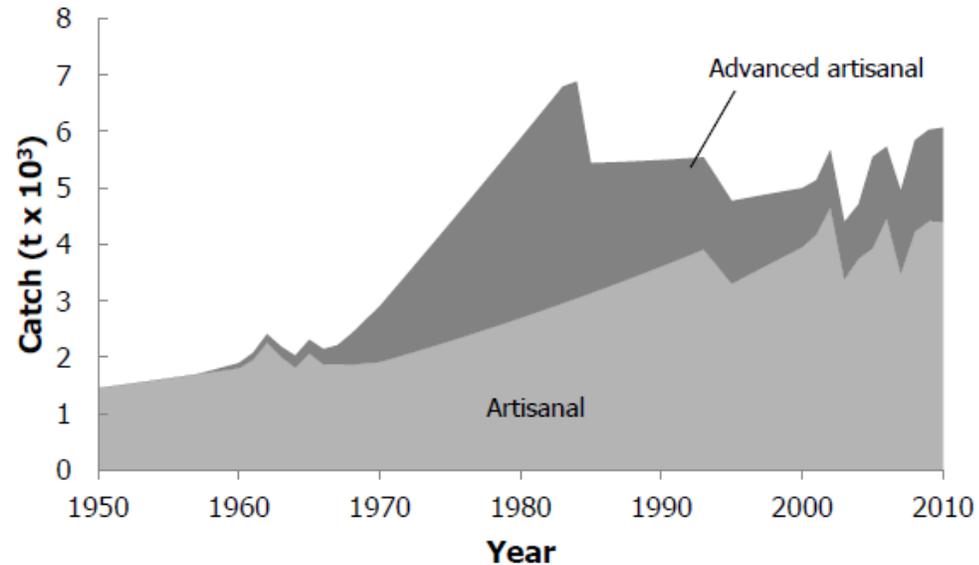
22/06/2020

“... considering the need of stock assessments and studies to determine the maximum allowable catch, it is proposed a temporal ban of the exports and re-exports of fins of sharks of any species...”

<i>I SÉRIE</i>	<i>N.º 41 – 22 de Junho de 2020</i>	<i>SÃO TOMÉ E PRÍNCIPE - DIÁRIO DA REPÚBLICA</i>	<i>395</i>
Decreto n.º 19/2020		tubarões para a extração de barbatanas, polvo, caranguejo (santola) e lagosta;	
Proíbe os Recursos Haliêuticos		Considerando que este aumento de pressão nas capturas tem levado a desequilíbrios destas espécies o	
Preâmbulo			

No que diz respeito às barbatanas de tubarão a medida proposta é da suspensão temporária da exportação, e reexportação, tendo em conta a necessidade da realização de estudos que possam determinar o stock e a capacidade de captura. A mesma medida proteccionista é extensiva a lagosta.

Historic trends



“Although the limited documentation about Sao Tome and Principe fisheries fails to document over-exploitation, declining fish consumption, declining catches and expanding effort suggest overexploitation is likely to occur. If so, this would threaten the very sector upon which the coastal population of Sao Tome and Principe depends for its food security.” (Belhabib, 2015)

<http://www.seaaroundus.org/doc/publications/wp/2015/Belhabib-Sao-Tome-and-Principe.pdf>

Participatory landing surveys

Daily number of fishing trips per community

Disaggregated by:

- Line fishing
- Drifting surface gillnet
- Demersal gillnet
- Purse seine
- Spear fishers

General information

- Fishing ground
- Landing site;
- Date;
- N fishers
- Depart. and land. time
- Fuel consumption and cost
- Boat type
- N fish consumption
- Problems during fishing
- ...

Effort

- Gear(s)
- Soaking time
- Lines: N hooks and lines, hook size, bait
- Nets: N mesh holes and length, mesh size
- Species caught with each gear

Catch

- Species
- N and total weight
- Price (if relevant)
- Use (sold, consumed, salted)

Individual lengths of indicator species

From scaled pictures
Up to 3000 pictures taken since August 2019

A screenshot of a mobile application interface for recording fishing data. The screen shows a form titled "Dados de pesca" with a sub-header "Capturas > tubarao-martelo". Below the title is a photograph of a hammerhead shark and the text "Tubarão martelo". The form contains several input fields: "Quantos kilos de tubarao-martelo?", "Numero de peixes tubarao-martelo?", and "Preço da tubarao-martelo?". At the bottom, there is a section "Este preço é por:" with three radio button options: "preço por kilogramo", "preço por 1 peixes", and "preço por 2 peixes". Navigation buttons "BACK" and "PRÓXIMO" are visible at the bottom.

Collected twice a week by fishers or traders from the fishing communities

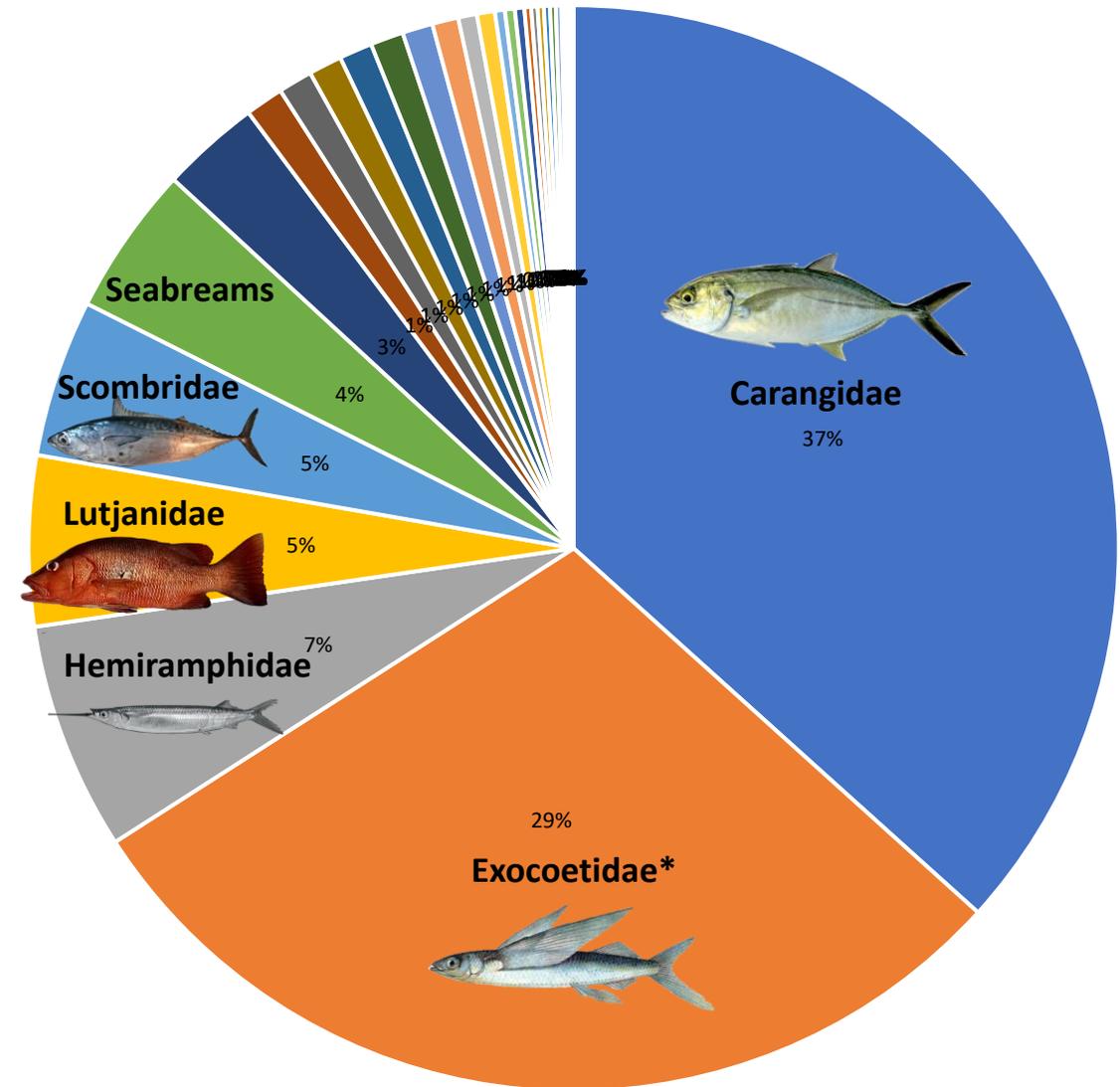
- 11 communities in Príncipe (since 2016, expanded in 2019)
- 10 communities in the South of São Tomé (since 2019)
- Data of each community summarised and returned to the fishers once a year



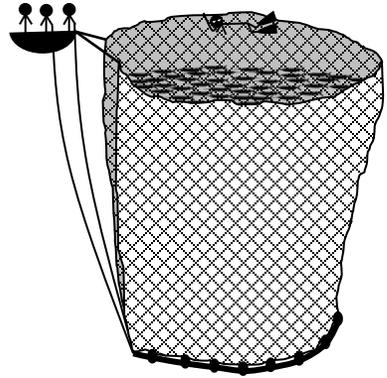
Catch (preliminary results)

Príncipe island (10 communities)

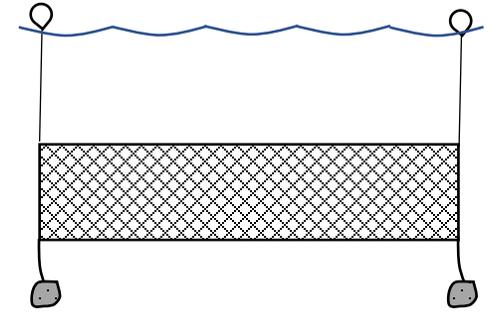
- Estimated 316 Tonnes of fish per year
 - n= 1863 trips, and daily number of fishing trips since Aug 2019
 - probably underestimated: reductions in effort observed after COVID-19.
- Sharks comprise 0.98% of the catch (3 Tonnes per year)
- Rays comprise 0.01% of the catch (mostly *Dasyatis pastinaca*)



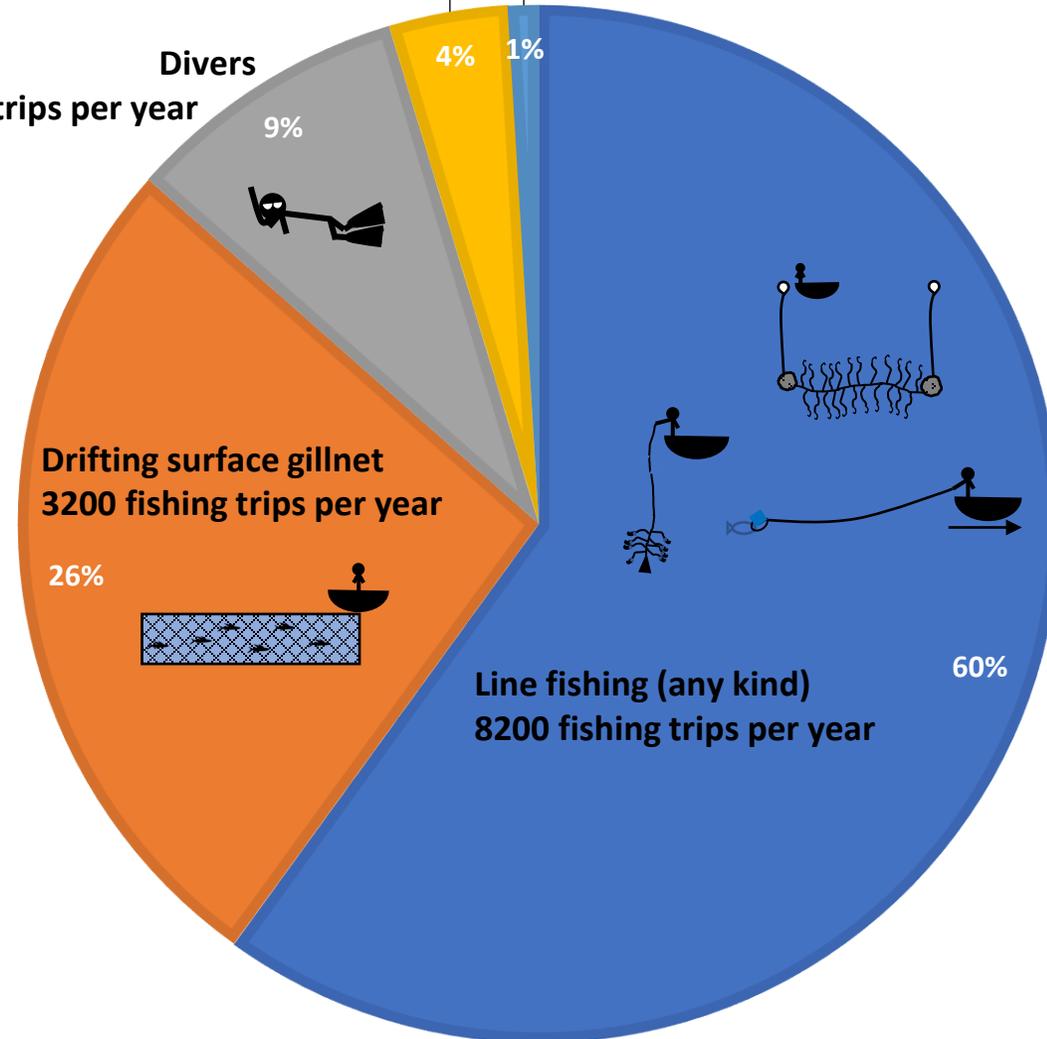
Effort (preliminary results)



Purse seine
Around 500 fishing trips per year



Demersal gillnet
110 fishing trips per year



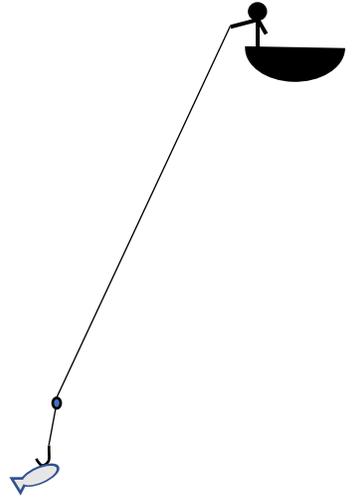
Preliminary results (Príncipe island)

N = 1863 fishing trips

Daily number of fishing trips disaggregated by gear

Line fishing: some handlines specialised in catching sharks

Local names
sonda,
fio jogado,
matelé...



Deep jigging handline

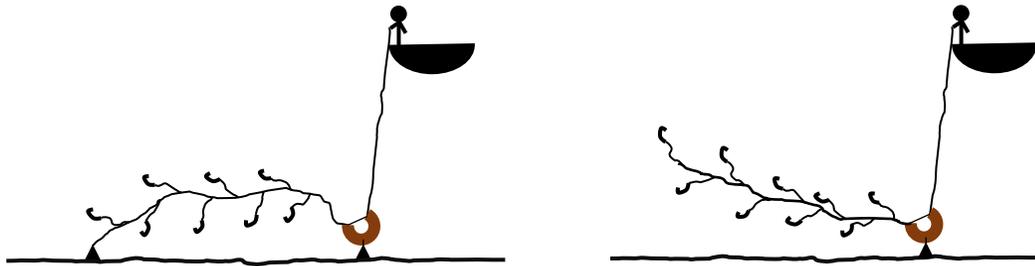
- Depth?
- Normally one large, baited hook (size 1 to 5)
- Target sharks, amongst others species
- Often reinforced with steel wire
- **11% of the catch are sharks**
- **Used in 3% of all fishing trips**



Surface handline

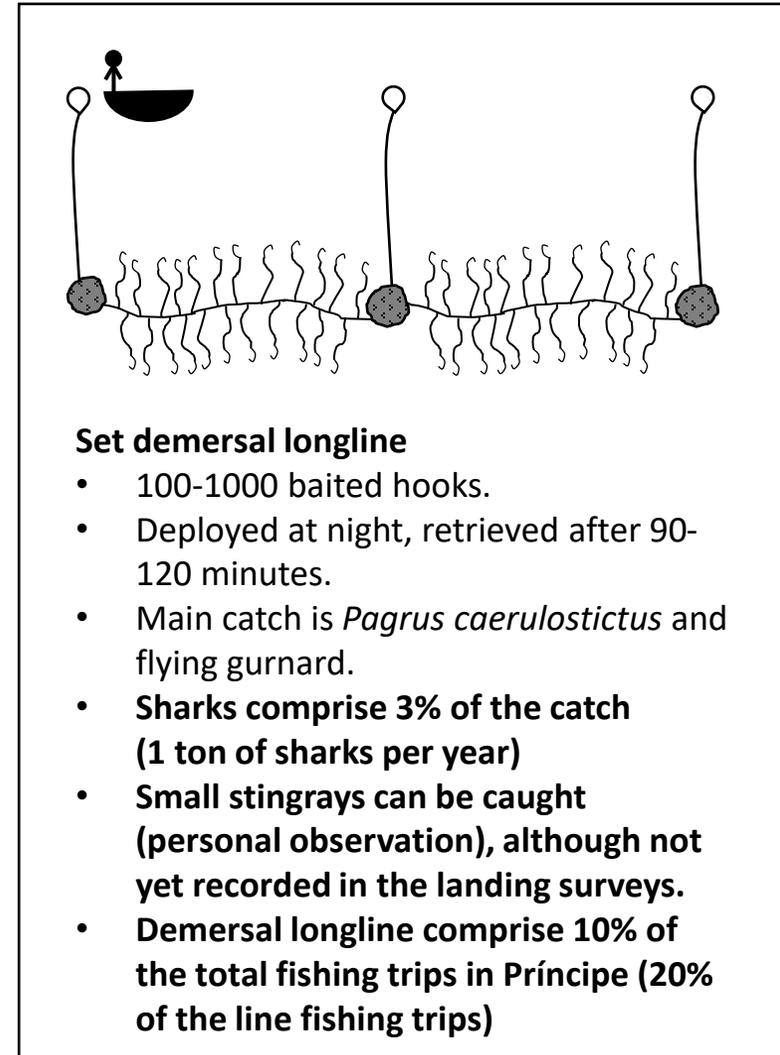
- A variation of this is used for catching sailfish (with a specialised device instead of a hook).
- Normally one large, baited hook (size 1 to 5), which can be reinforced with steel wire.
- **Target sharks amongst other species.**
- **Main catch are sailfish, barracudas, wahoos. Sharks are 2% of the catch.**

Line fishing: demersal lines



Demersal handlines

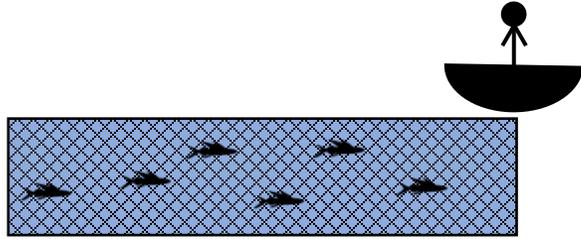
- Up to 30 baited hooks.
- Catch similar to the set demersal longline.
- **No sharks recorded in the catch so far**



Set demersal longline

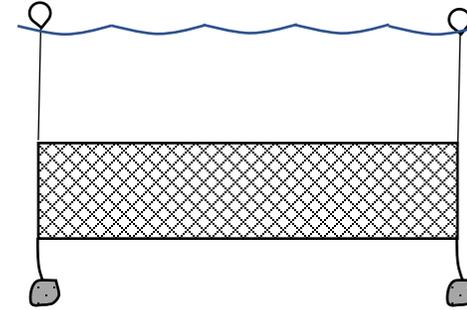
- 100-1000 baited hooks.
- Deployed at night, retrieved after 90-120 minutes.
- Main catch is *Pagrus caerulostictus* and flying gurnard.
- **Sharks comprise 3% of the catch (1 ton of sharks per year)**
- **Small stingrays can be caught (personal observation), although not yet recorded in the landing surveys.**
- **Demersal longline comprise 10% of the total fishing trips in Príncipe (20% of the line fishing trips)**

Gillnet



Drifting surface gillnet

- 1 metre-deep; 2000 metre-long
- **Sharks are not target, but bycatch** (target = flying fish)
- **Sharks are rarely caught** (so far, 1 out of 304 trips surveyed, Príncipe island, Aug 2019 - now)
- One of the most important fishing gears (30% of the fishing trips)



Set demersal gillnet

- **Sharks comprise 8% of the catch**
- **Stingrays comprise 12% of the catch**
- This technique comprise 1% of the total fishing trips
- Deployed at night.

Spear fishers (free-divers)

- Most divers only catch octopus using an iron rod with a hook.
- Divers who use a spear gun also target fish, including stingrays and Mobula rays (no sharks)
- Some free divers reported to reach 35 metres.
- **4% of the catch are stingrays**, all the records preliminary ID'd as *Dasyatis pastinaca*. Mobula rays can be caught (personal observation) but not yet recorded in the landing surveys.





Possible (perceived) decline in shark populations

- 60% of the fishers perceive a decrease in landings in the last 10 years (Nuno et al, in press)
- Some fishers perceive a decrease in the abundance of sharks compared to 20 years ago (informal interviews)
- Only in ST → *Perceived* increase in abundance of smooth puffer (*Lagocephalus laeviagatus*) in the last years. *Observed* seasonal booms of the populations of puffers that destroy fishing gears (no info on temporal trends). It has been hypothesised that is linked to the 1) disappearance of sharks in coastal areas or 2) catch of sharks in the EEZ areas by foreign industrial vessels (Tous, 2015)

CONCLUSIONS

- Data insufficient to provide a long-term assessment of the fishery (Belhabib, 2015)
- Illegal fishing of sharks by EU industrial vessels might pose a threat over shark populations in STP's EEZ (?)
- Consumption of shark and rays in the country prevalent, compared to other threatened species (Nuno et al, in press).
- Shark fin export was banned in June 2020, but the compliance levels are unknown.
- Sharks comprise 1% of the artisanal catch, rays comprise 0.01%.
- Sharks mostly caught by demersal gillnets and specialised handlines. Bycatch of sharks by demersal longlines comprise a third of the total shark catches.
- Rays mostly targeted by demersal gillnets and spear fishers.

References

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