

MARINE BIOLOGY RESEARCH GROUP

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SUSTAINABILITY OF A TROPICAL SHRIMP FISHERY: CAN GENETIC RESEARCH GIVE ADDITIONAL CLUES?

Fishery for the seabob shrimp

- Important **fishery resource** for both industrial and artisanal fisheries
- **Guyana, Suriname and Brazil** account for >90 % of the worldwide catch
- In Suriname, this fishery is regarded as sustainable, and has been certified with the **Marine Stewardship Council (MSC)** label



The Atlantic seabob shrimp *Xiphopenaeus kroyeri*

- Decapod crustacean
- **Western Atlantic** distribution
- Pacific **sister species** *X. riveti*
- Muddy and sandy substrates up to 37 meters depth
- Phylogeny debated

Challenges

A lack of information on the **genetic structure** of the seabob makes this claim of 'sustainability' uncertain

- Presence of **cryptic species** (shown in Brazil)
- Unknown population genetic structure in the Guianan Marine Ecoregion

Resolving this can **guide management decisions** to come to an ecosystem approach to fisheries

Sustainable fishery for the Atlantic seabob shrimp in Suriname

Phylogeny

- Multilocus approach: **COI cytb ITS1 PEPCK NaK**

- Morphology

Population structure

- Microsatellite markers

Preliminary results

- **COI partial gene sequencing** was performed on 150 samples from Guyana and Suriname
- Reveals presence of *Xiphopenaeus sp. 2* in **one single sampling location** (n=2)

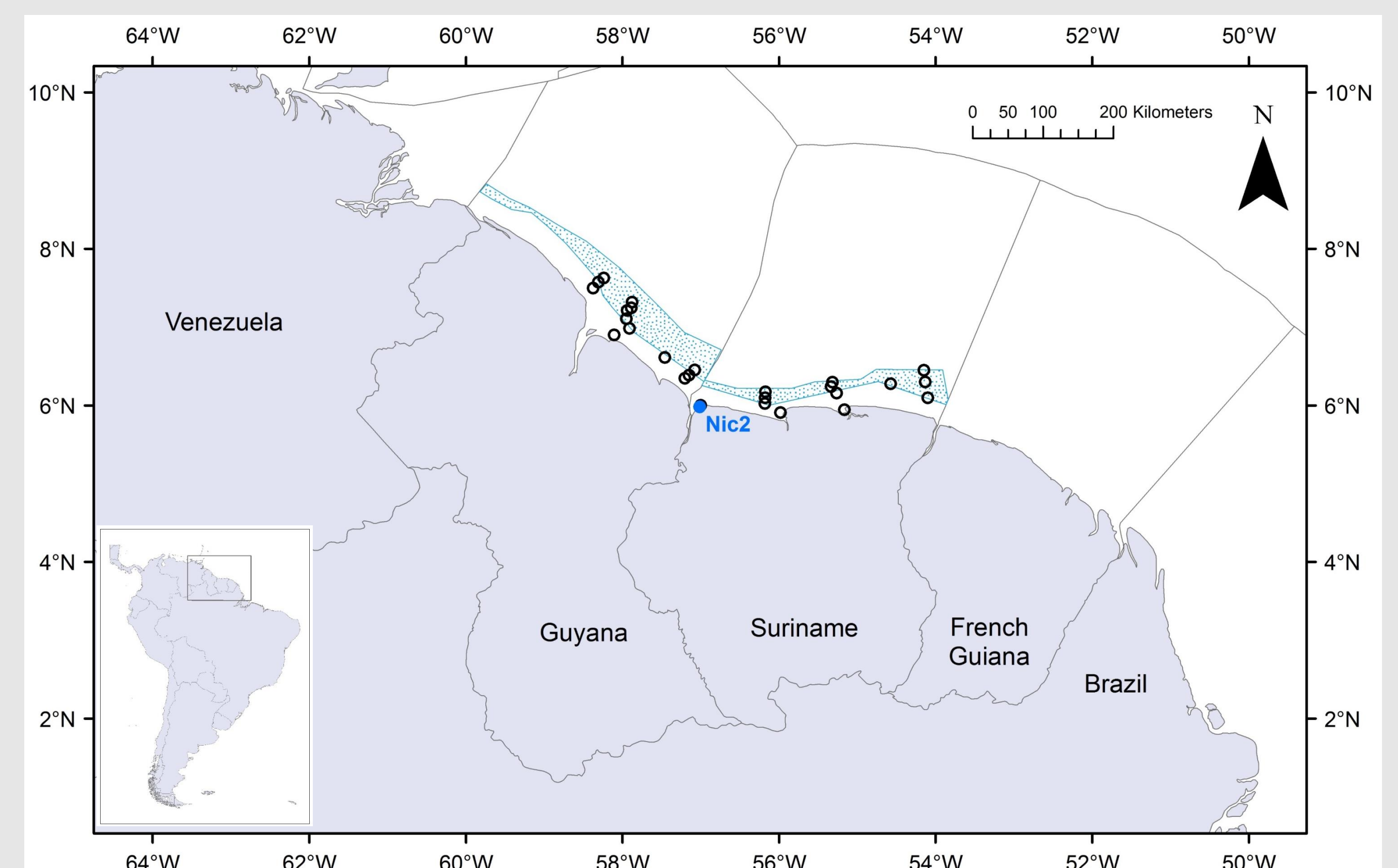


Figure 2. Map of the Guianan Marine Ecoregion indicating sampling locations (circles). *Xiphopenaeus sp.2* (n=2) was found at Nic2 (blue circle). Blue dotted areas indicate industrial fishing zones.

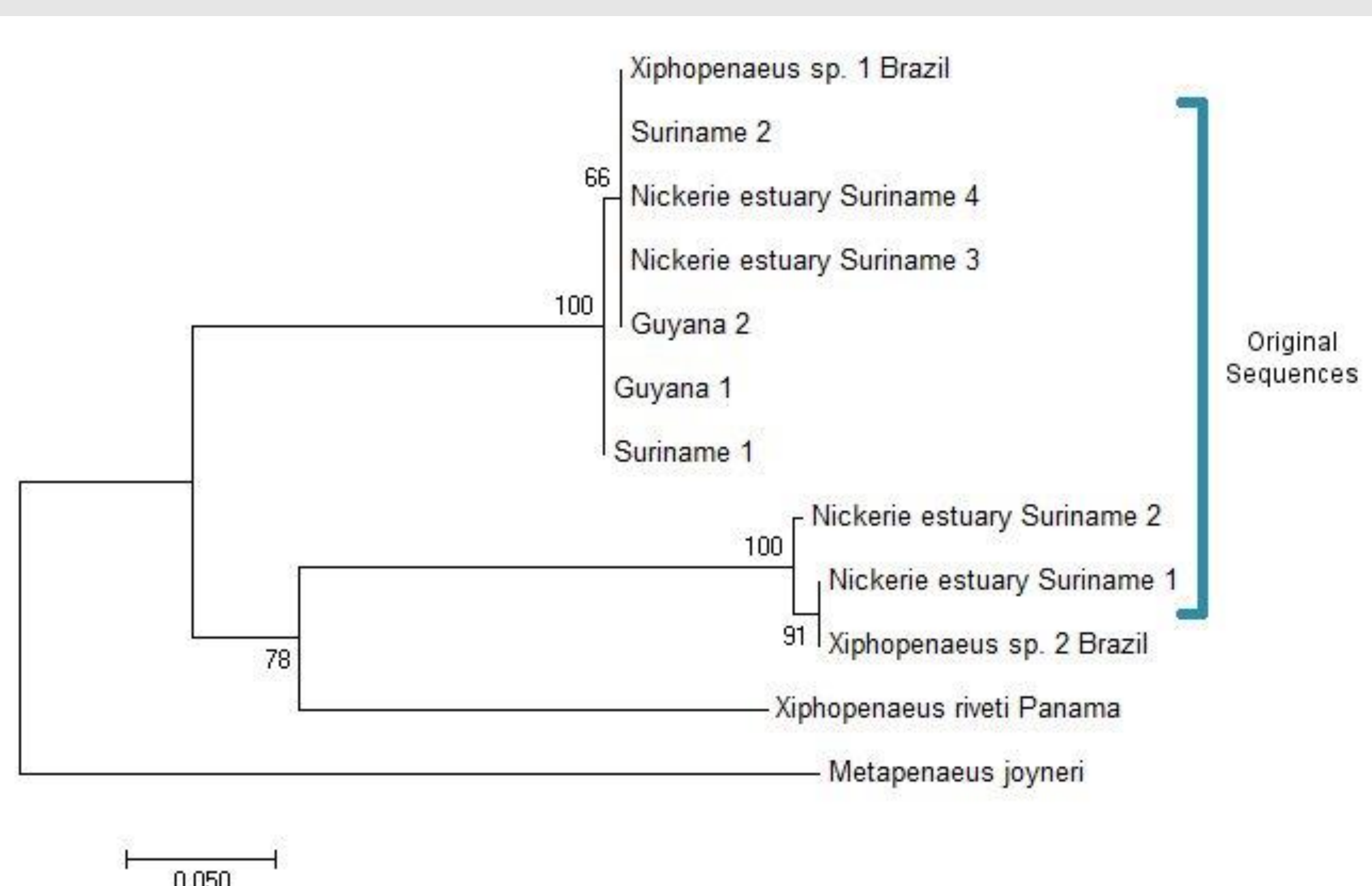


Figure 1. Cytochrome oxidase I neighbor-joining tree with bootstrap values near branches (1000 replicates). Non-original sequences were retrieved from GenBank.

Sustainability of the seabob fishery?

Fishery in Suriname MSC certified since 2011

- Turtle Excluder Devices (TEDs)
- Bycatch Reduction Devices (BRDs)
- Spatial and temporal restrictions
- Vessel Monitoring System (VMS)
- Monitoring of fishing effort



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