



MITIGATING ADVERSE ECOLOGICAL IMPACTS OF OPEN OCEAN FISHERIES

## IDENTIFICATION OF NURSERY AREAS OF BLUE AND OCEANIC WHITETIP SHARKS IN SOUTHWESTERN ATLANTIC OCEAN

Mariana Travassos Tolotti, Thierry Frédou, Flávia Lucena Frédou,  
Fábio Hazin, Humber Agrelli Andrade, & Paulo Travassos

Universidade Federal Rural de Pernambuco (Brazil)



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## **SCOPE AND AIM WITHIN MADE PROJECT**

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### **SCOPE**

WS “Hotspots of bycatch in pelagic oceanic fisheries”  
January 2012 (Paris)

### **AIM**

Identify areas of high rate of bycatch of juveniles of Blue and Oceanic whitetip sharks in pelagic longline in Central and Western South Atlantic

# DATA COLLECTION



2005 → 2010

2 Datasets

National Observer Program for commercial chartered vessels of the Brazilian fleet

LOGBOOK

- Date
- Boat
- Latitude
- Longitude
- Effort
- Capture

From each set

BIOMETRY

- Date
- Boat
- Latitude
- Longitude
- Size

From each set

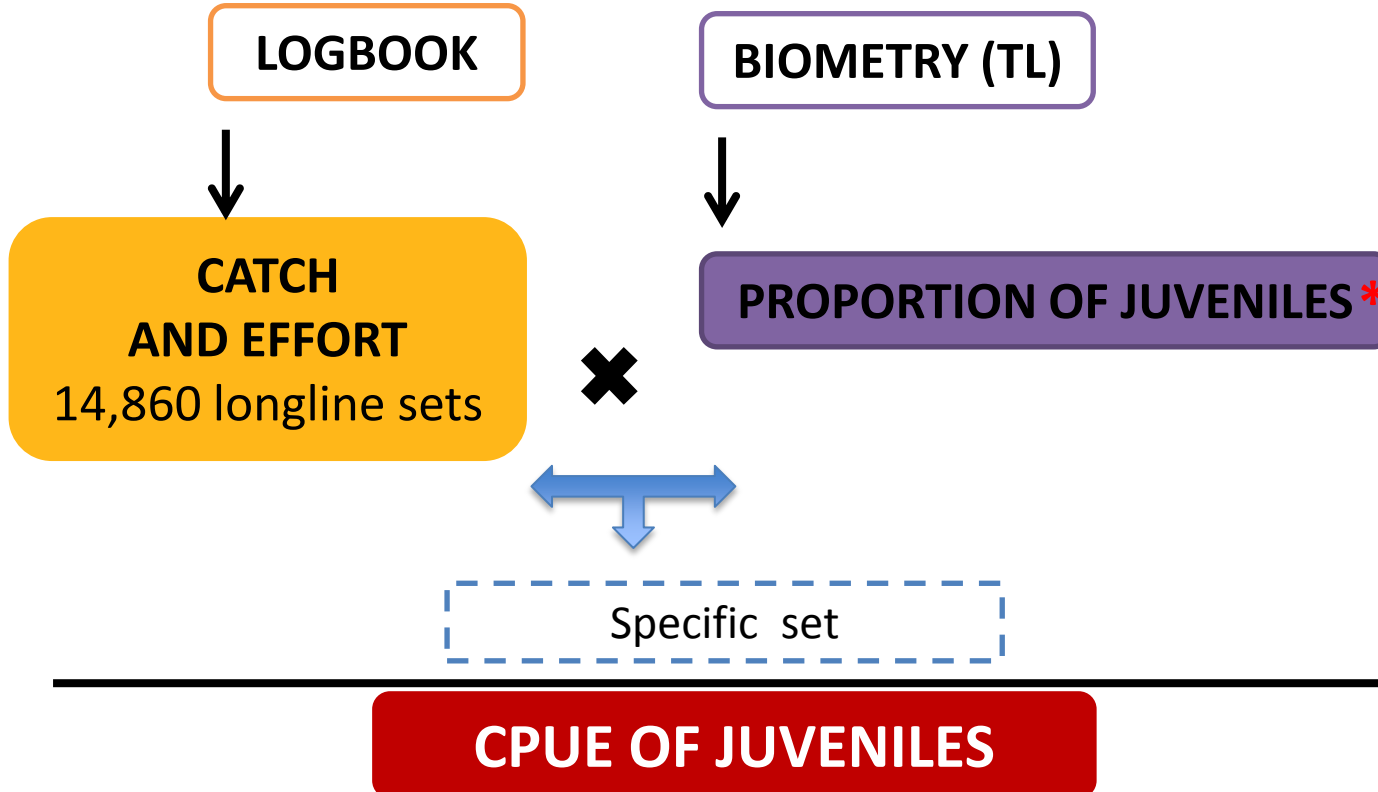


30 %  
COVERTURE





## DATA PREPARATION



\* Published sizes  
at first maturity

Juvenile blue shark < 226cm total length  
(Hazin et al., 2004)

Juvenile oceanic whitetip shark < 180 cm  
(Lessa et al., 1998)

# DATA ANALYSIS



- Spatial prediction

## GENERAL ADDITIVE MODEL

### RESPONSE VARIABLE

CPUE of juveniles

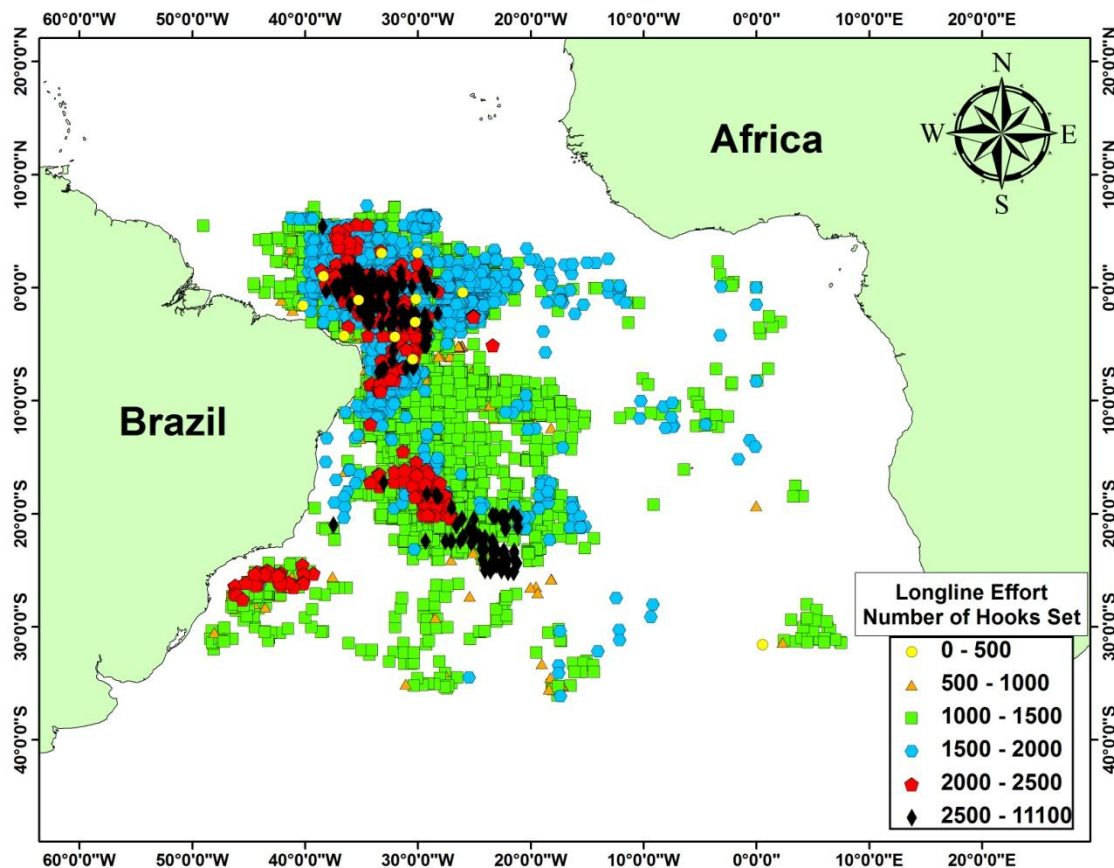
### EXPLANATORY VARIABLES

Latitude

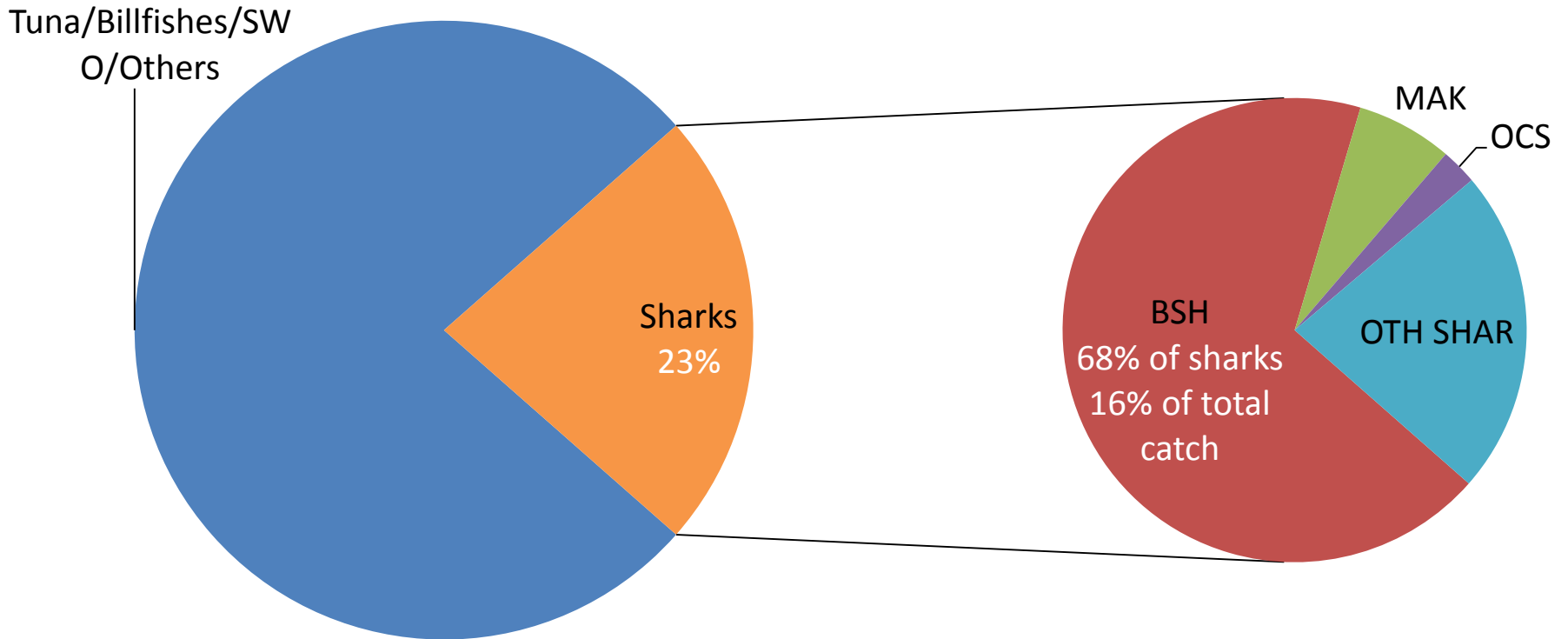
Longitude

$$\text{CPUE}_{\text{juv}} \sim s(\text{LONG}, \text{LAT})$$

# EFFORT



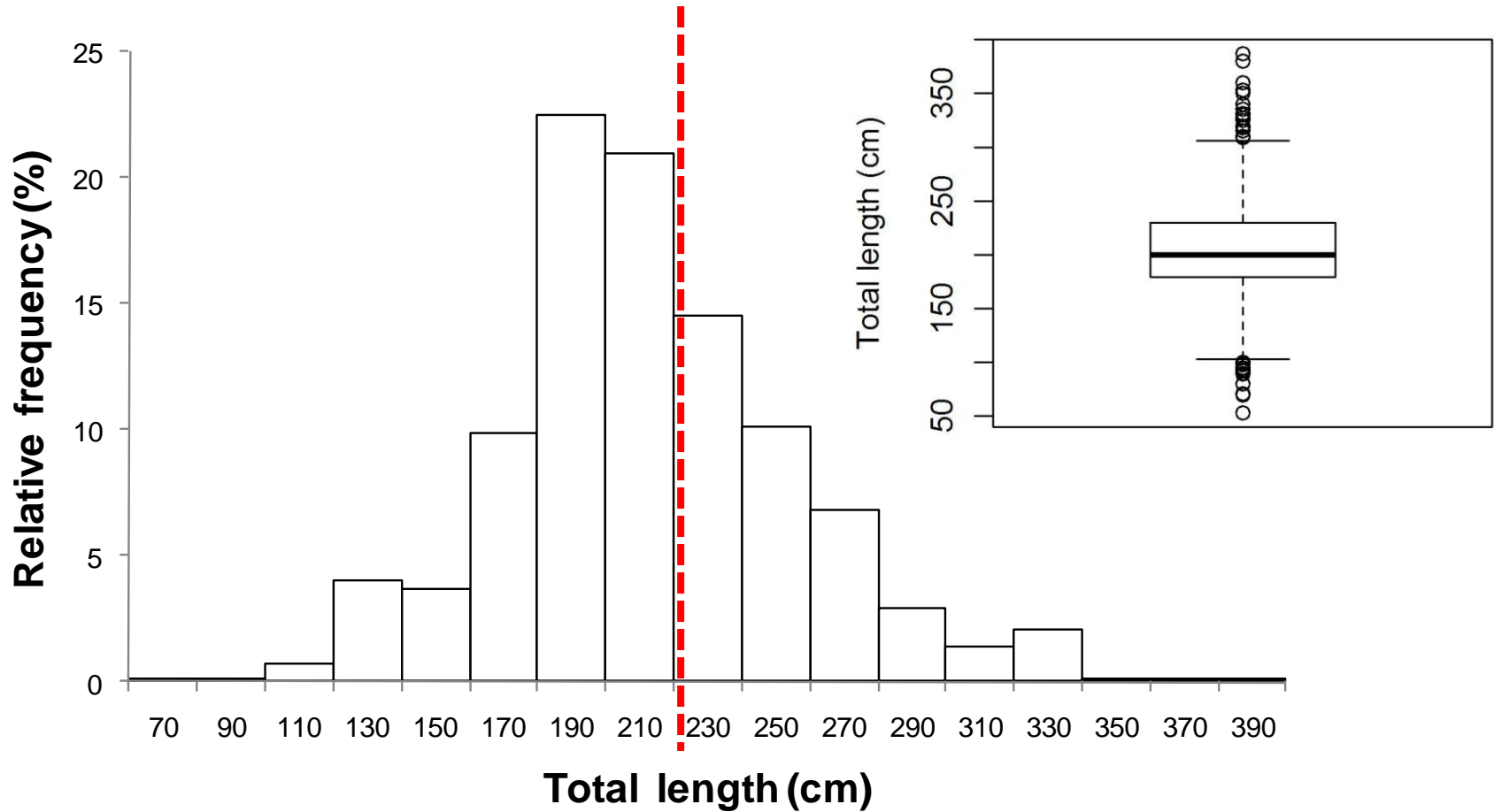
# CATCH COMPOSITION



Task 1 ICCAT – average 2005-2010

# BLUE SHARK

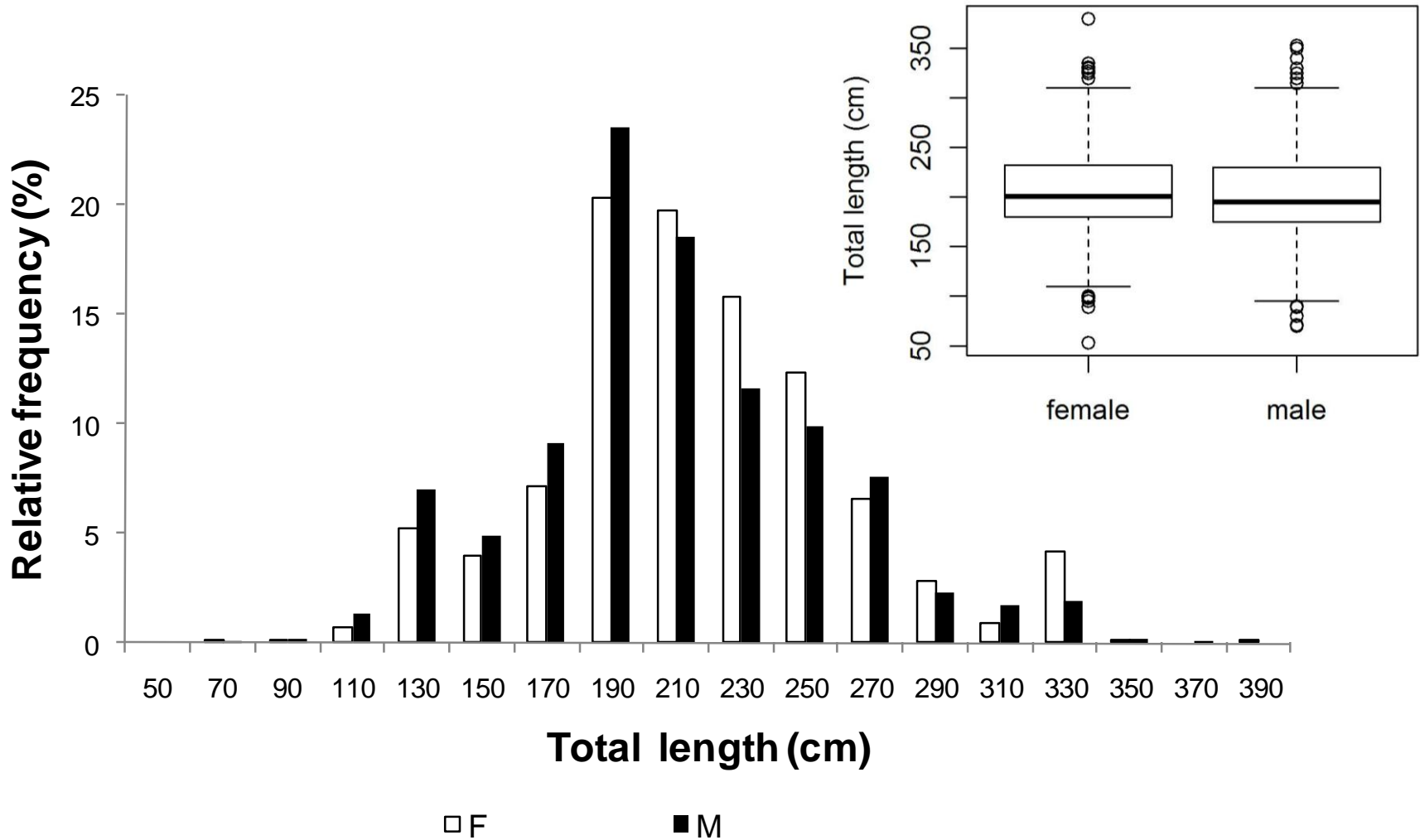
RESULTS





# BLUE SHARK

RESULTS

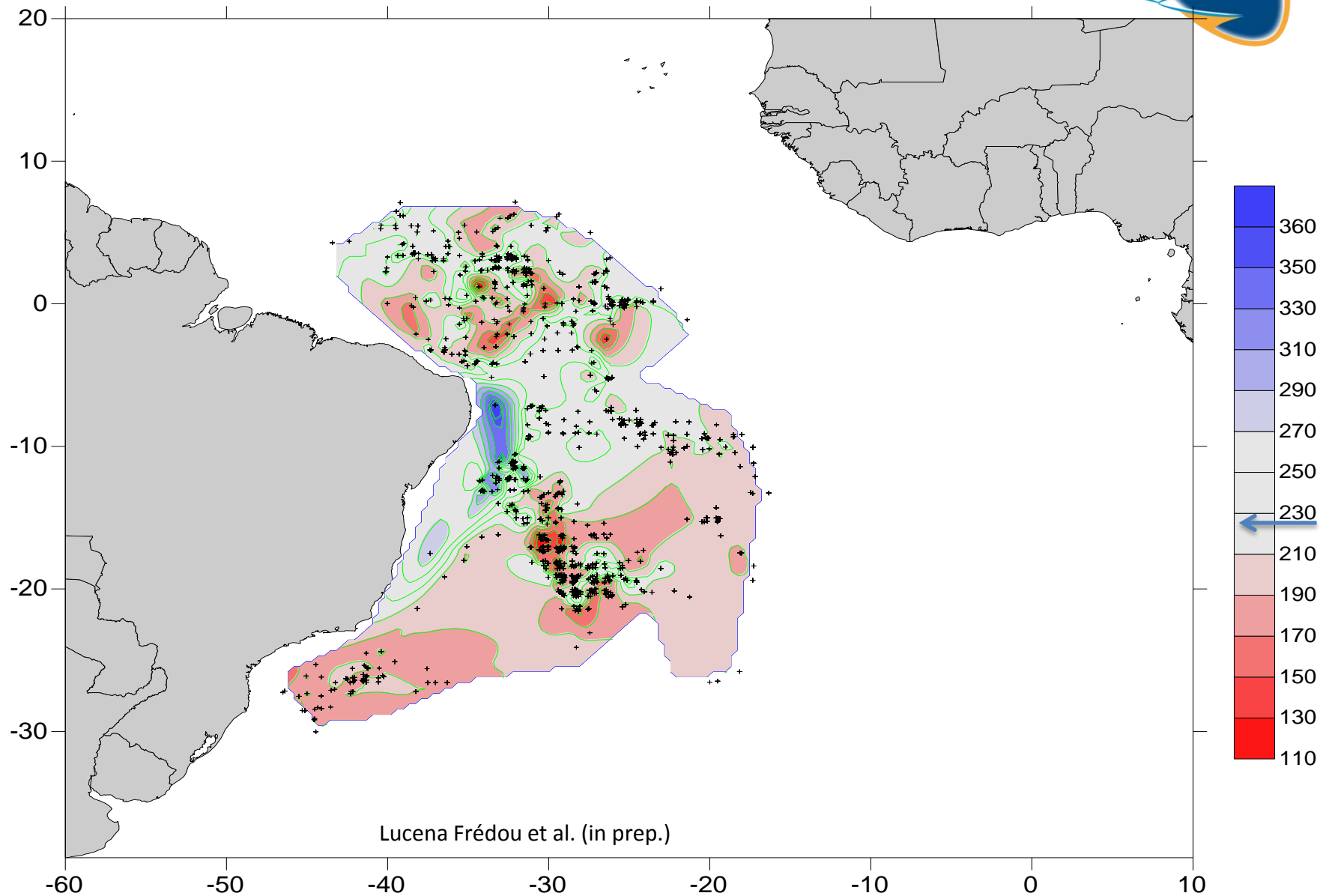


# BLUE SHARK

RESULTS



BSH



Lucena Frédou et al. (in prep.)

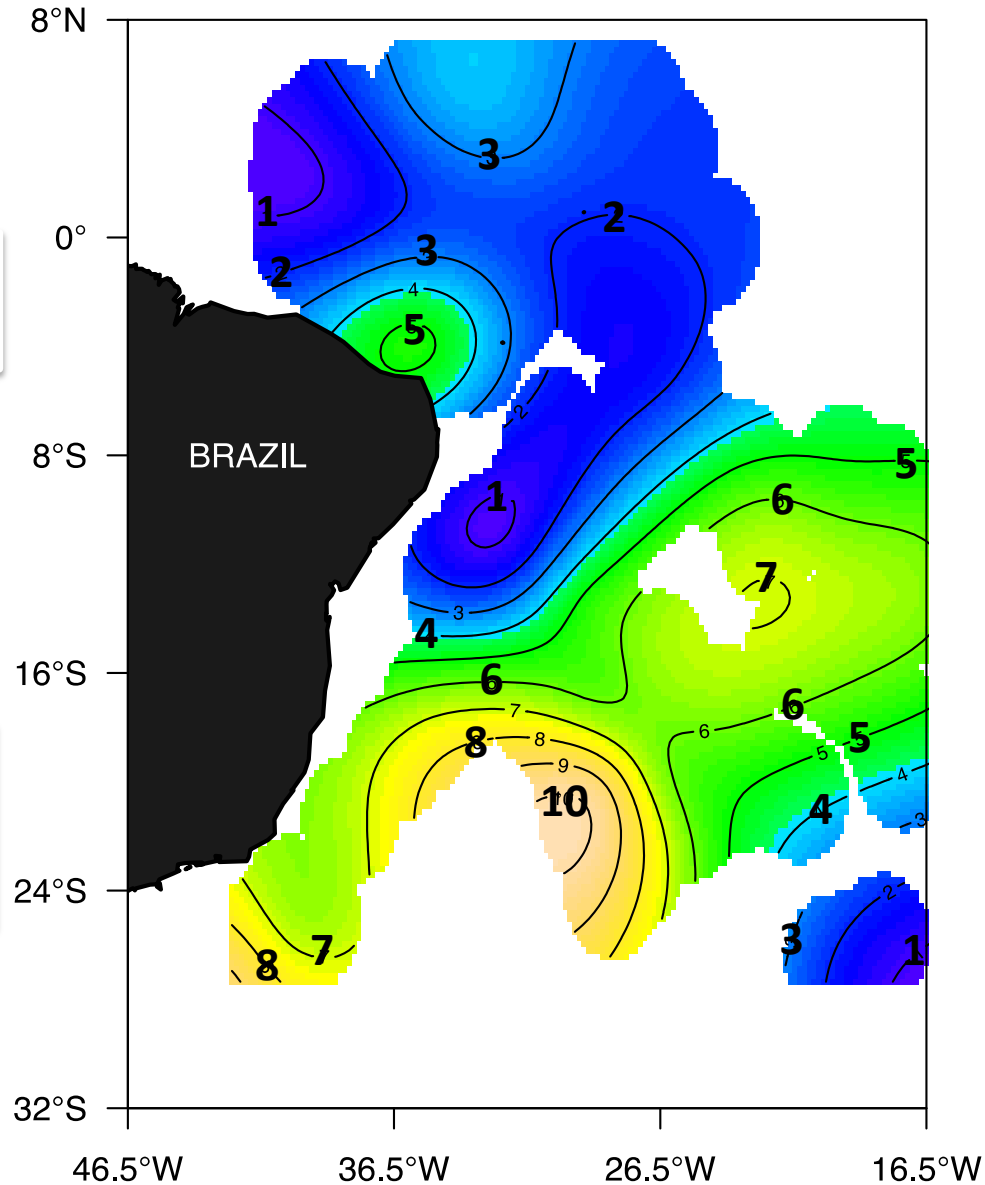
# BLUE SHARK

RESULTS



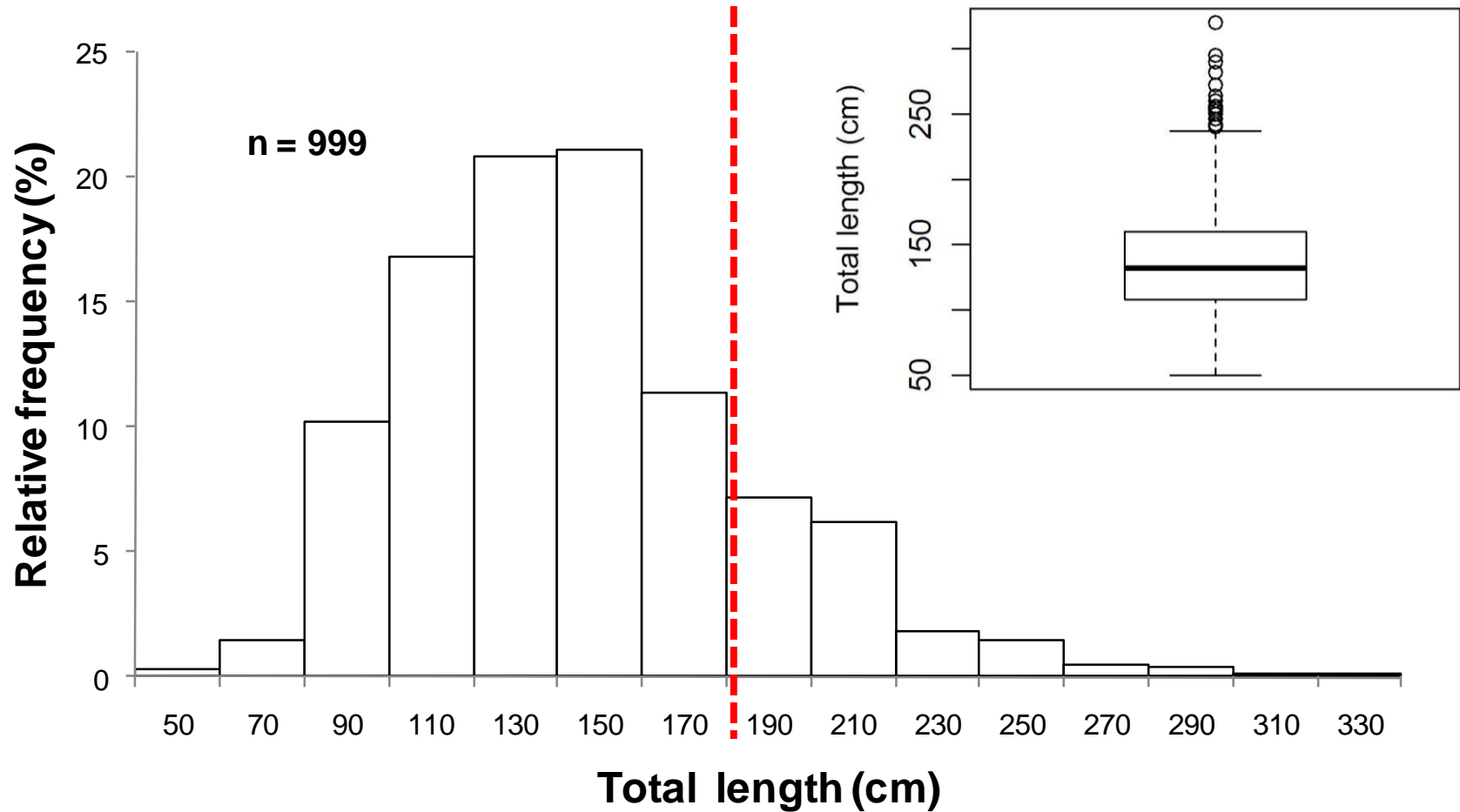
CPUE increasing southwards

18 to 28oS  
36 to 26oW



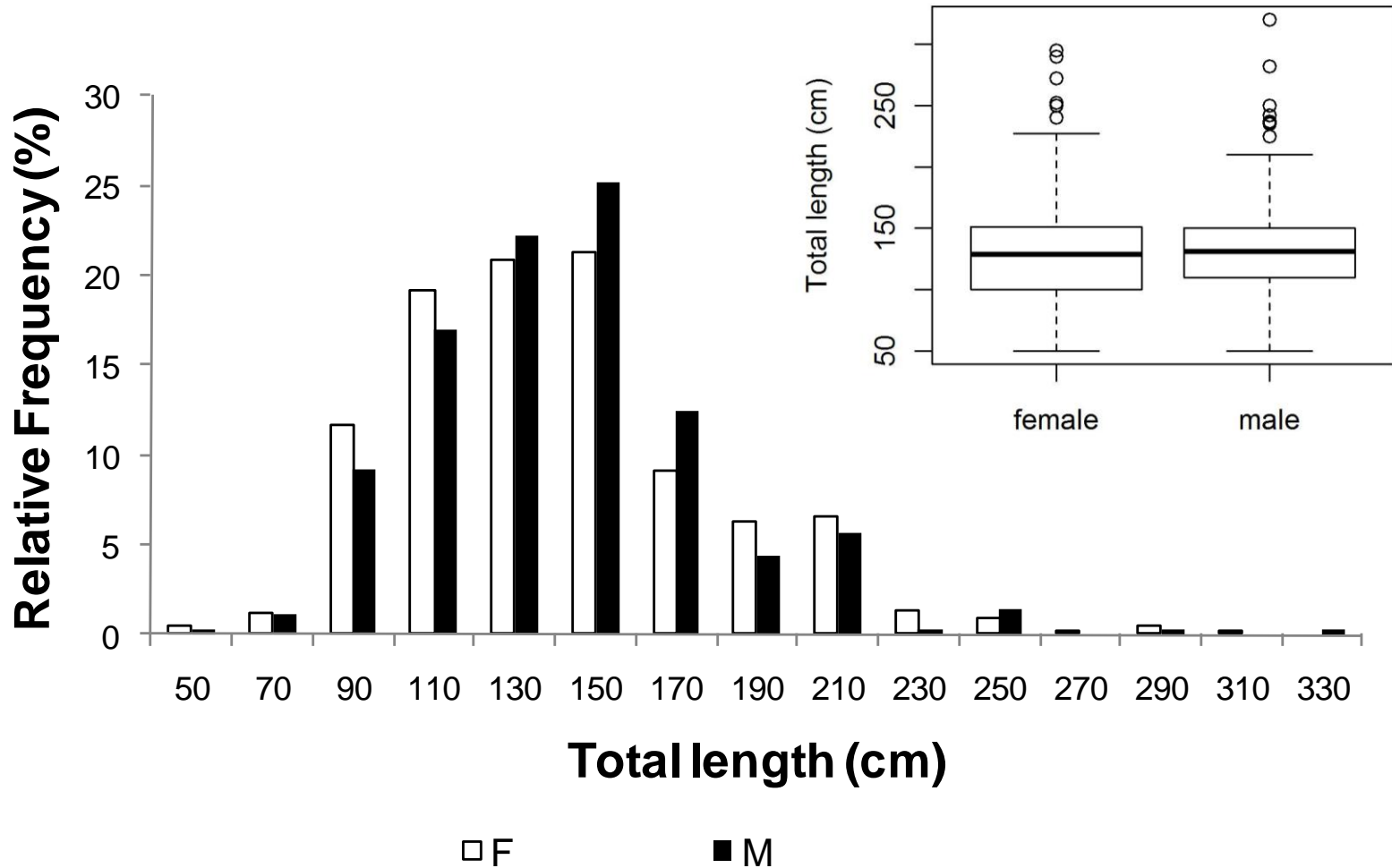
# OCEANIC WHITETIP SHARK

RESULTS



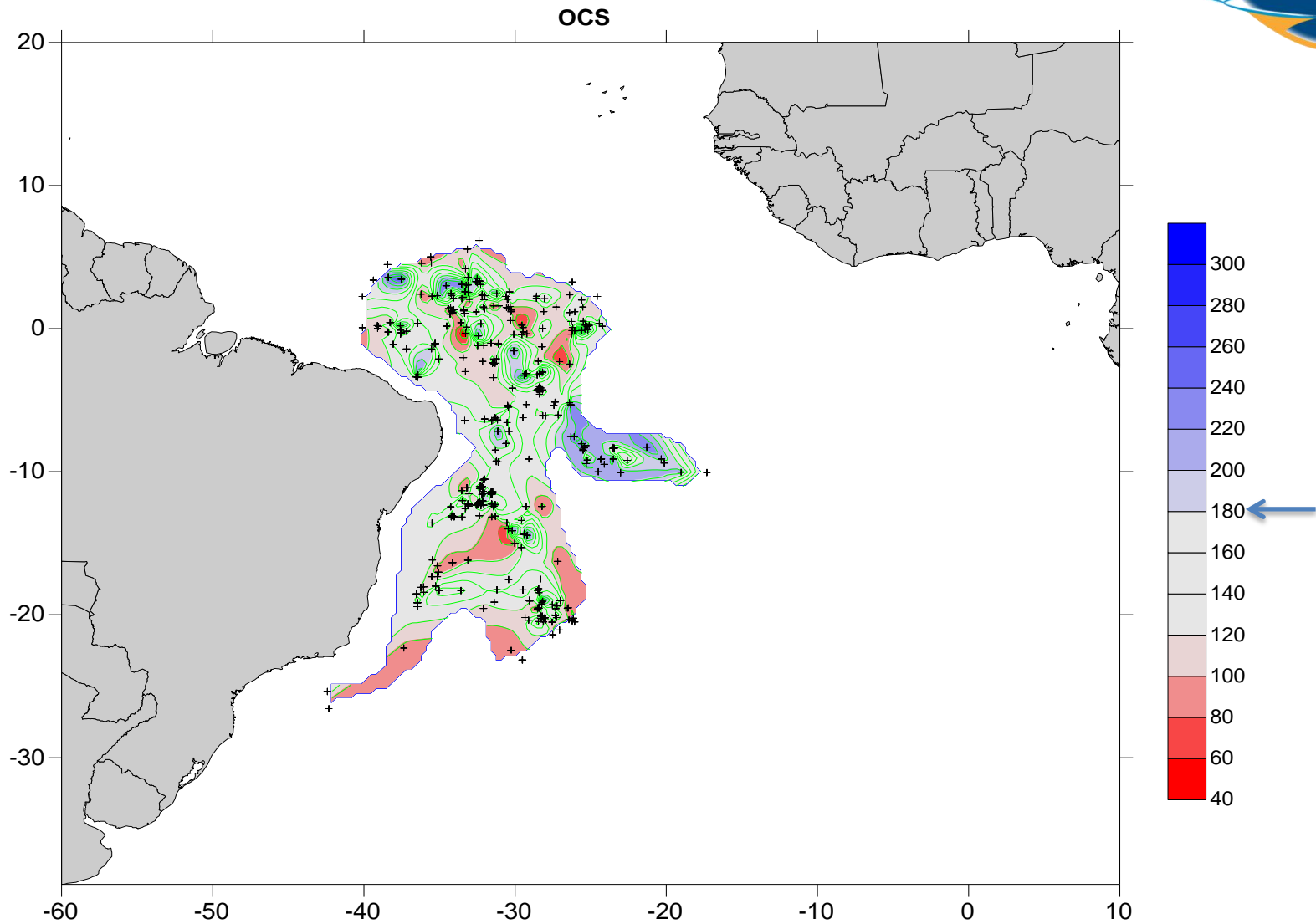
# OCEANIC WHITETIP SHARK

RESULTS



# OCEANIC WHITETIP SHARK

RESULTS



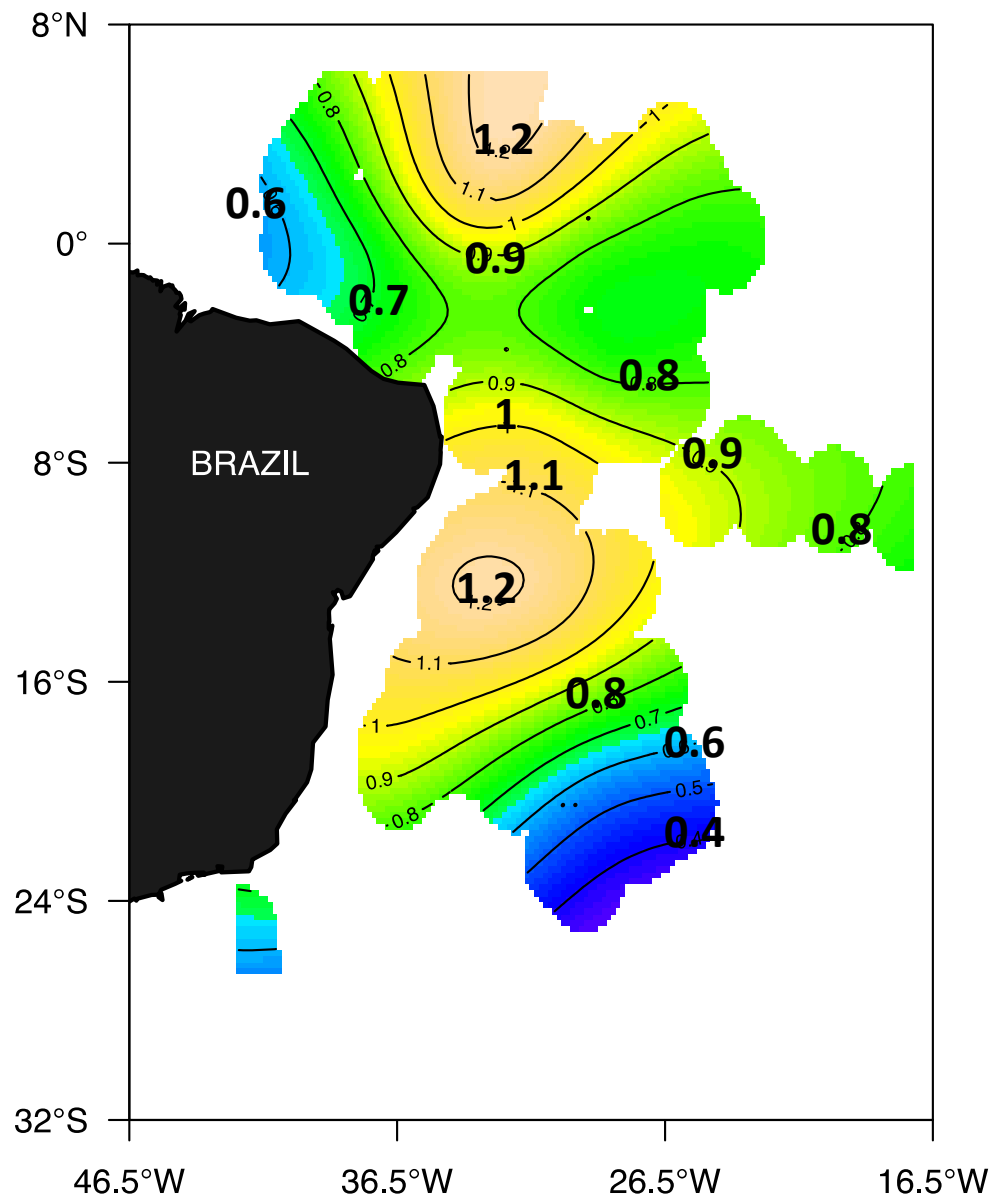
Lucena Frédou et al. (in prep.)

# OCEANIC WHITETIP SHARK

RESULTS



10 – 15o S  
Above equator



# BLUE SHARK

Remarks



Important species – 23% of total catch and 68% of sharks  
2000t (Brazilian Catches, Task 1 ICCAT)

Main catch area – Southeastern Brazil (Frédou et al)

Main nursery area – Southeastern Brazil

IUCN - NT

ERA – Cortes et al (in prep.) – intermediate to low risk vulnerability rank

## EXPANDED ECOLOGICAL RISK ASSESSMENT OF PELAGIC SHARKS CAUGHT IN ATLANTIC PELAGIC LONGLINE FISHERIES

E. Cortés<sup>1</sup>, A. Domingo<sup>2</sup>, P. Miller<sup>3</sup>, R. Forselledo<sup>3</sup>, F. Mas<sup>3</sup>, F. Arocha<sup>4</sup>, S. Campana<sup>5</sup>, R. Coelho<sup>6</sup>, C. Da Silva<sup>7</sup>, H. Holtzhausen<sup>8</sup>, K. Keene<sup>9</sup>, F. Lucena<sup>10</sup>, K. Ramirez<sup>11</sup>, M. N. Santos<sup>6</sup>, Y. Semba-Murakami<sup>12</sup>, and K. Yokawa<sup>12</sup>



# OCEANIC WHITETIP SHARK

Remarks



Not an important species – 3% of total catch and 1% of sharks  
150 t (Brazilian Catches, Task 1 ICCAT)

Low CPUE

Most catches are of immature and new born individuals

IUCN - VU

High to intermediate vulnerability rank (ERA – Cortes et al. in prep.)

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# Thank you!

flavia.lucena@pq.cnpq.br

