The Indian Ocean Tuna Tagging Program

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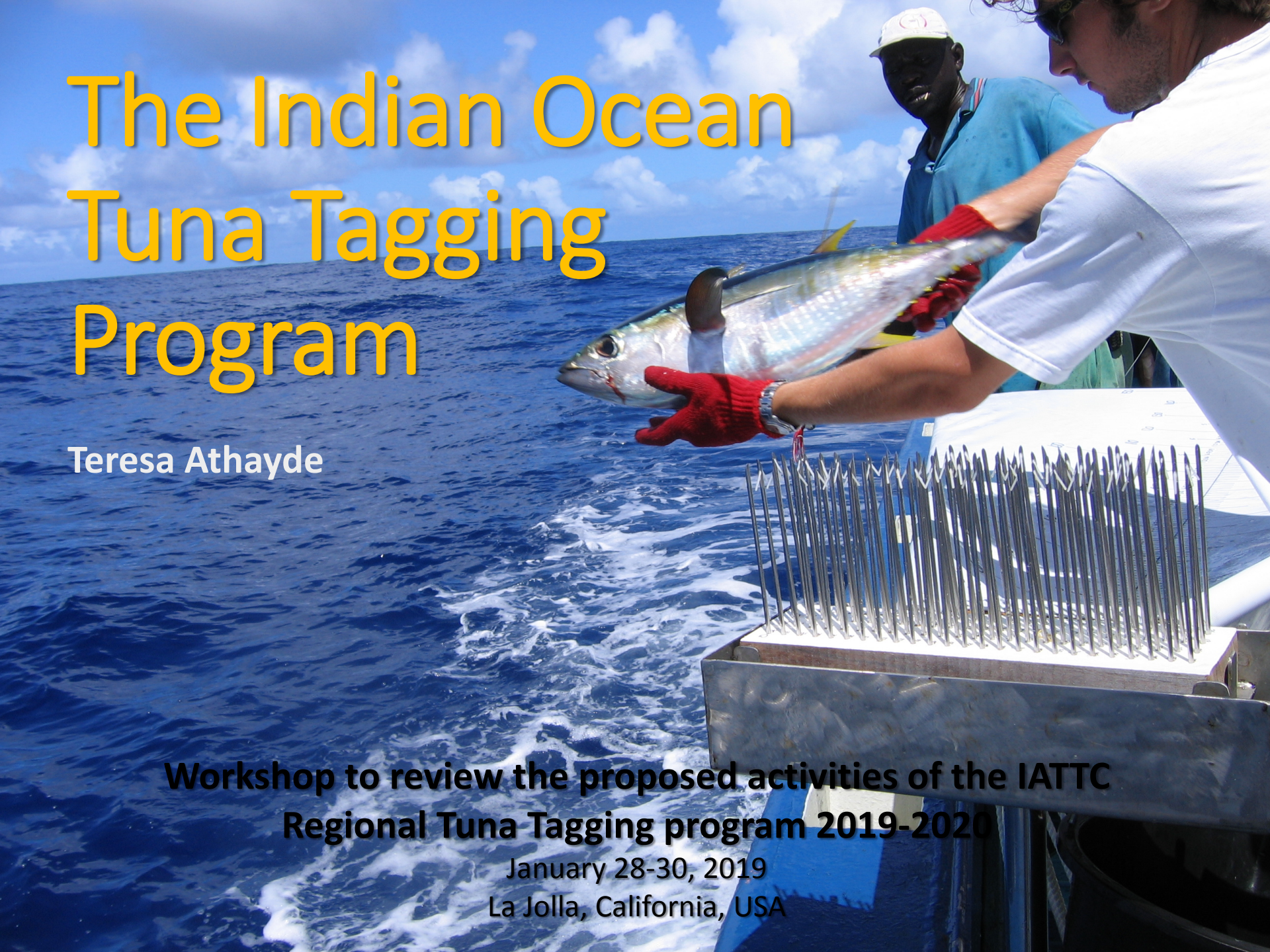


Workshop to review the proposed activities of the IATTC Regional Tuna Tagging program 2019-2020

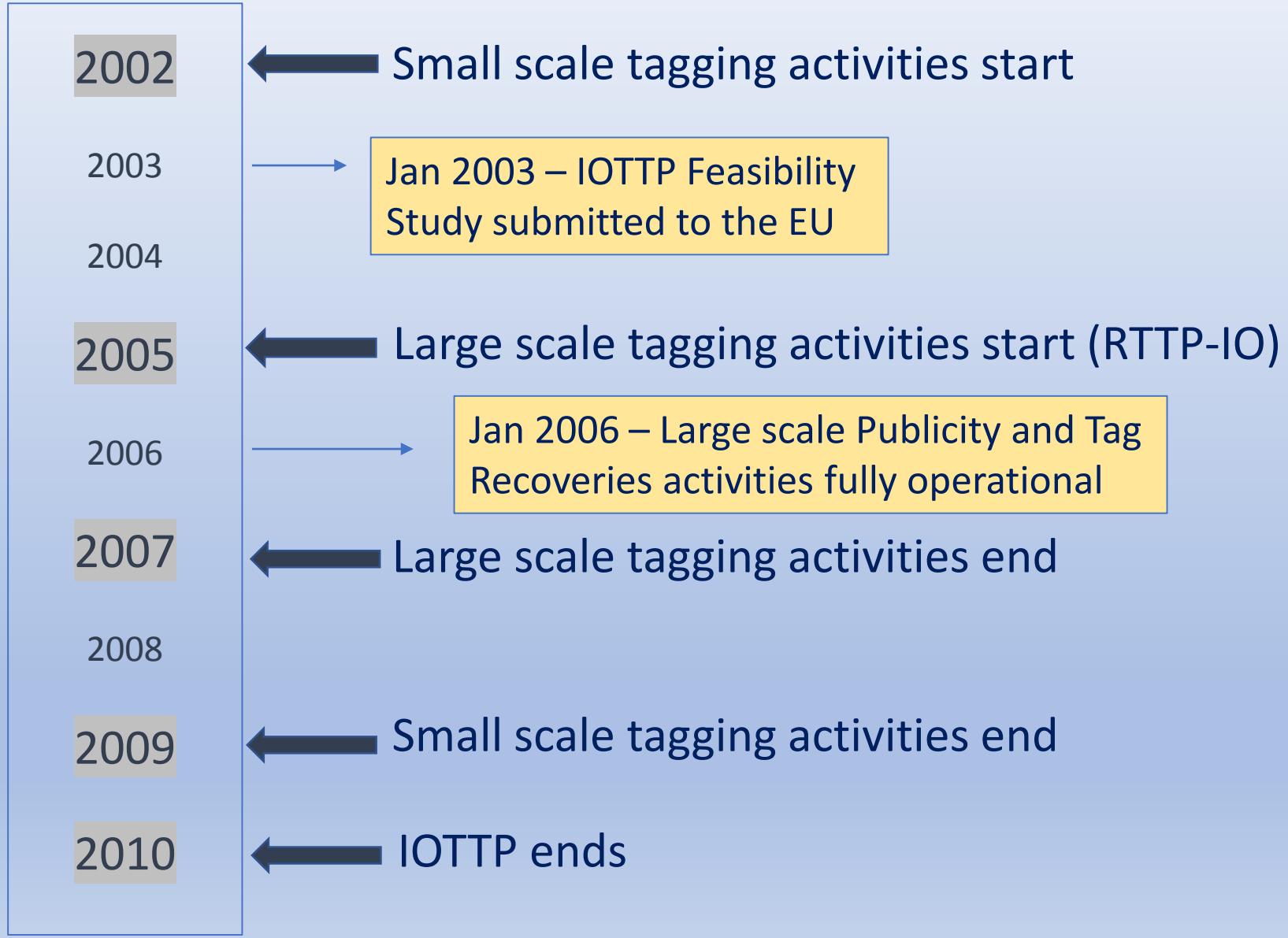
January 28-30, 2019

La Jolla, California, USA

History of the IOTTP: the road to a large tagging programme

1980 – 1985	First calls from the scientific community IOC Regional Tuna Project (PTR) Tagging experiment by JAMARC, Japan
1985 – 1990	Small-scale experiments in Maldives
1990 -1995	Planning through IPTP & Expert Consultations
1995 – 2000	**IOTC starts operating (1998)** ➢ WPT launched to seek funding and advance planning
2000	Funding for SST is found (Japan, EU-DGmar)
2001	Funding for a large scale component is found (EU) ➢ A partnership between IOC and IOTC is established for the execution of the RTTP-IO.

History of the IOTTP (continued):



IOTTP Scientific Objectives

1. Natural and Fishing Mortality
2. Fisheries Interactions
3. Distribution range, stock structure and migration/movement
4. Growth Estimates
5. Effects of FAD's on movement and exploitation

IOTTP Structure

Pilot and small-scale tagging projects (2002-2009)	Large-scale tagging project (RTTP-IO 2005-2009)
• US$1.2M (78% JPN, 22% EU)	• EUR 14 M (9th EDF)
• Implemented in collaboration with research centers in France (Mayotte), India, Indonesia, Japan, Maldives, SEAFDEC, South Africa, Spain	• Implemented by external contractors with IOTC technical support.
• Tech. supervisor: IOTC	• Contracting authority: IOC • Tech. supervisor: IOTC • Funding body: EUD Mauritius

LSTP organisation (RTTP-IO)

Program Management Unit

- Program Coordinator
- Financial Administrative Officer
- Pub. & Tag Recovery Officer 1 & 2
- Secretary-Data Entry
- Driver-Tag Recovery Officer
- IOTC tagging expert
- IOTC Executive Secretary
- IT Administrator (part-time)

- **2 PL Vessels (AZTI) (April 2005)**

F/V AitaFraxku and F/V Kermantxo

Tagging team

CL + Chief Tagging Technician + Tagging Technicians (Capfish)(May 2005)

RTT (supplied by participating countries)

SSTPs organisation

- 11 small-scale projects
  - Country Coordinators
  - Tagging technicians
  - Tagging vessels (local pole-and-line and other vessels)
  - IOTC Technical Assistance:
    - Tagging expert
  - RTTP-IO Technical Assistance:
    - Training in tagging technics and data collection
    - PTR activities

IOTTP TAGGING METHODOLOGY

- Tagging cradels
- Conventional plastic dart tags
- Stainless steel tagging applicators
- OTC tagging
- Careful fish selection
- Voice recording of tag number, species, lenght, fish condition
- Daily input and verification of tagging data.
- Tagging data transmitted to land and crosschecked on a daily basis.

Target: 80,000 fish → More than 200 000 fish tagged

99.6% of the tagged tuna caught with pole-and-line

IOTTP TAGGING STRATEGY:
the complementary approach

Objectives

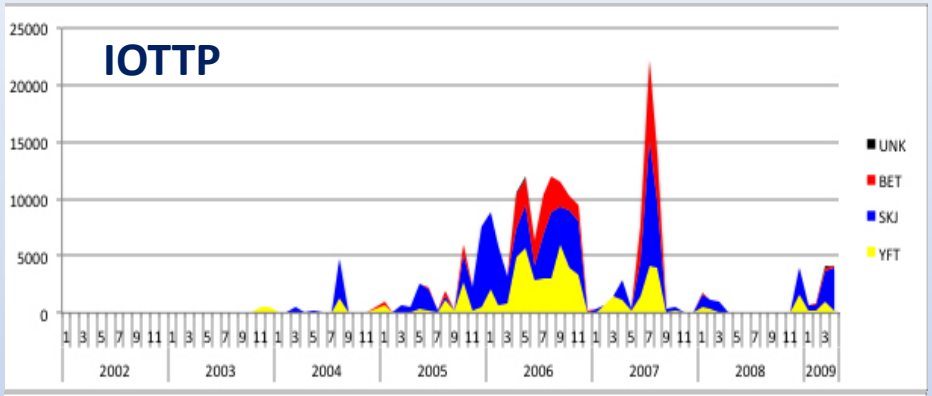
1. Increase tagging numbers
2. Increase temporal coverage

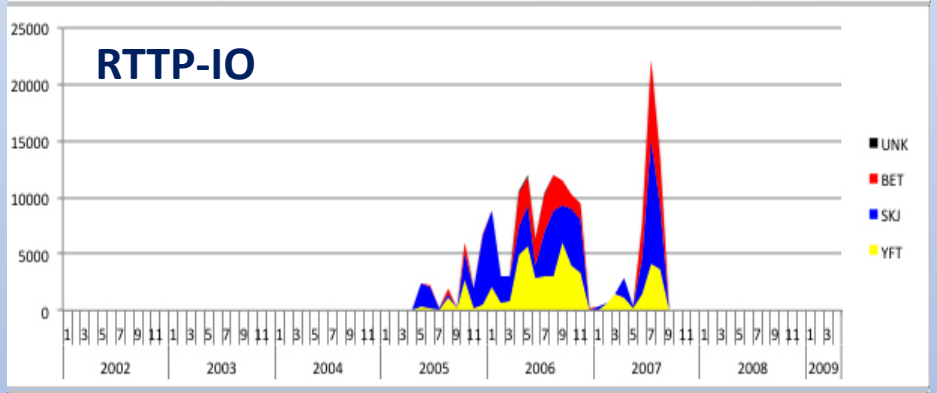
Results RTTP - IO

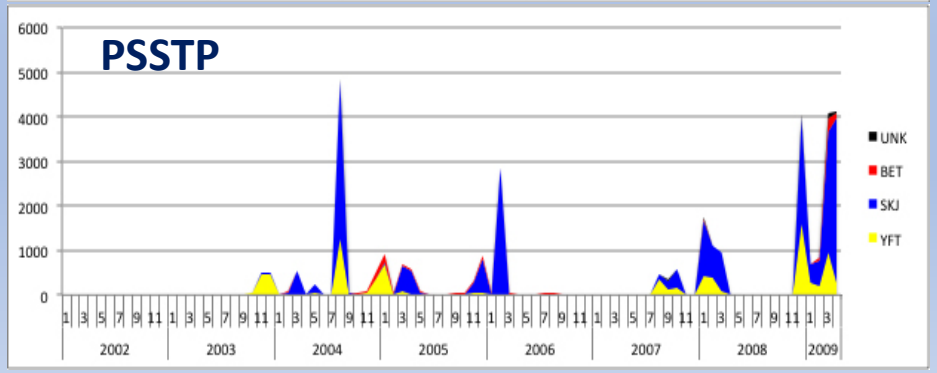
- 162 000 tunas tagged (83,6% of all releases)
- Tagging conducted from 2005 to 2007

Results SSTP

- More than 33 000 tunas tagged (15% of all releases)
- Tagging conducted from 2002 to 2009

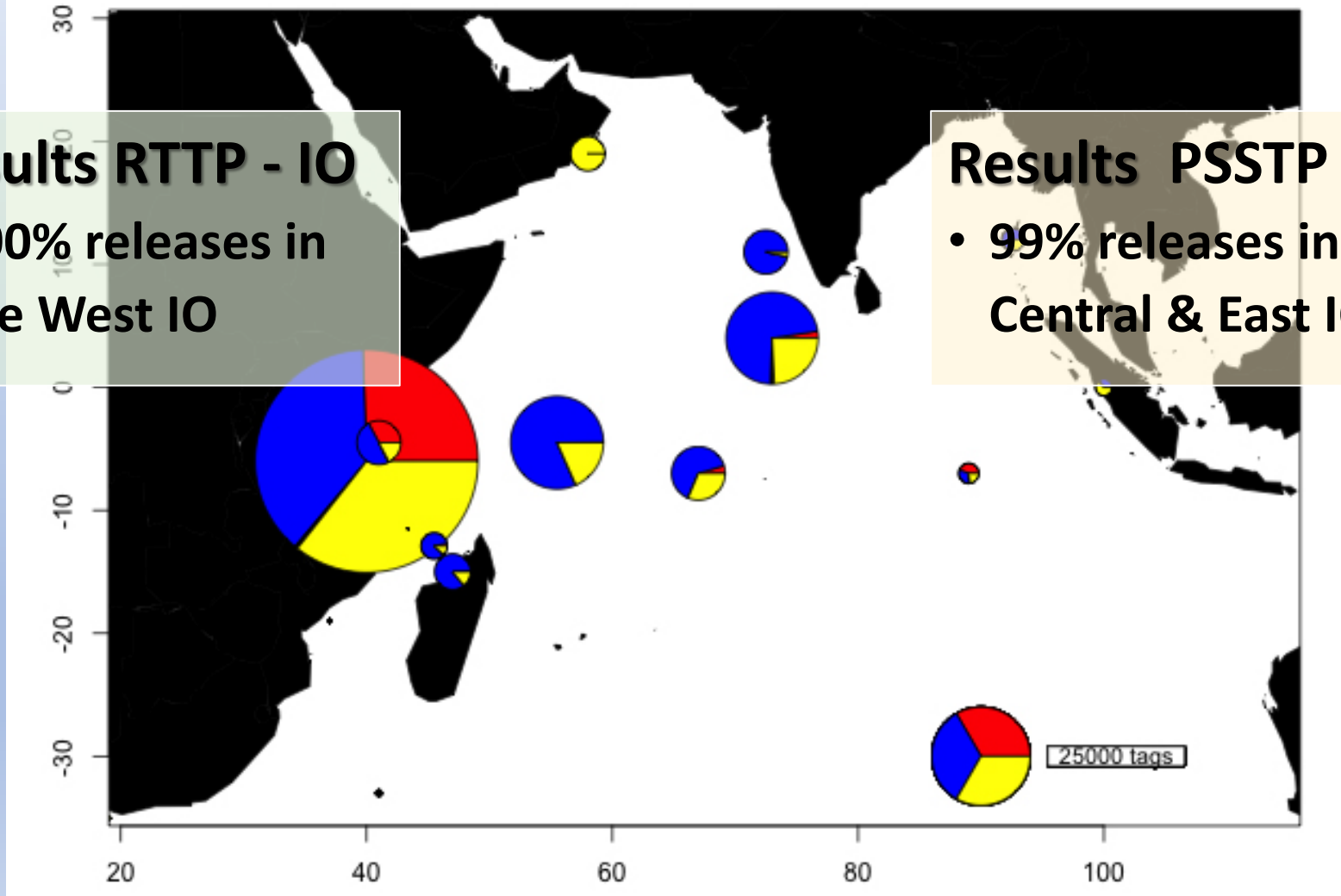






IOTTP TAGGING STRATEGY:
the complementary approach (continue)

Objectives: 3. Increase geographical coverage



Results RTTP - IO

- **100% releases in the West IO**

Results PSSTP

- **99% releases in the Central & East IO**

IOTTP TAGGING STRATEGY:
the complementary approach

Objectives

4. Increase distribution range (per spp. & size)

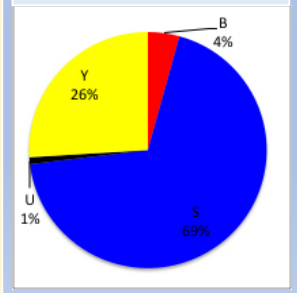
Results RTTP - IO

- Larger % of BET and YFT tagged
- Smaller SKJ tagged: [39-68] cm
- Larger YFT & BET tagged

Results PSSTP

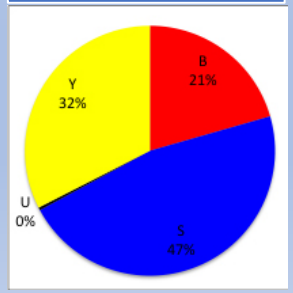
- Larger % of SKJ tagged
- Bigger SKJ tagged: [22-57] cm
- Smaller YFT & BET tagged

PSSTP



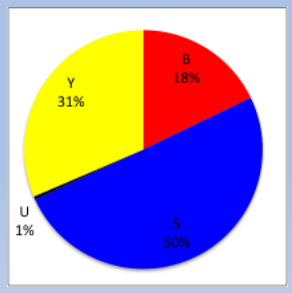
Larger proportion of SKJ tagged

RTTP-IO



Larger proportion of BET tagged

IOTTP

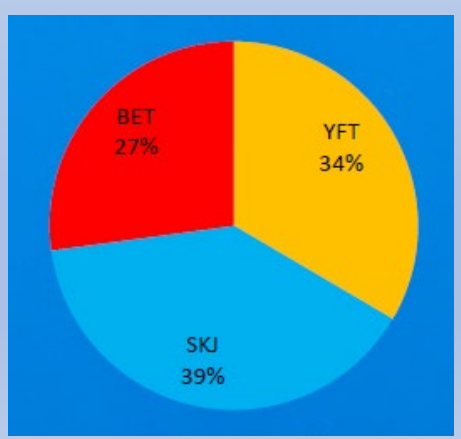


50% releases YFT & BET

The Associated School Fishing Technique

- Vessel used as a FAD
- Associated school can be maintained for weeks/months
- Used off TZN far from fishery traditional fishing grounds
- **73%** of all RTTP tagging
- Allowed tagging the 3 species in a well balanced proportion
- Allowed for tagging without bait for days, weeks, months
- Hight fish turnover (tuna hub)

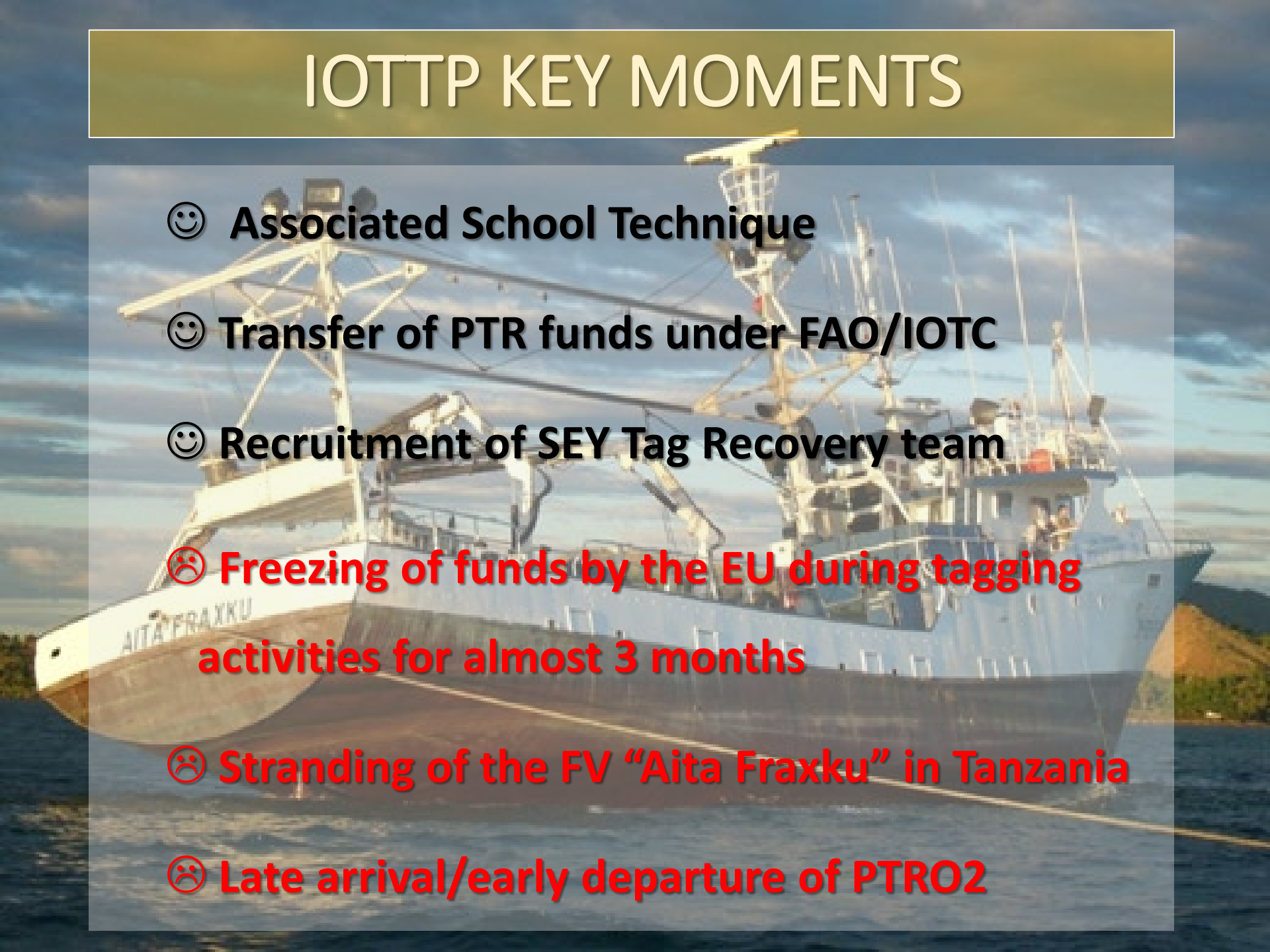
Importance of the Associated School (AS) to RTTP-IO tagging activities (in % of total) compared with other school types (non-AS)



Species composition of the fish tagged in the AS

	Implementation challenges	Solution proposed / found
• 1	Operation restrictions in tagging (mainly live bait)	Procurement of bait **Associated school technique**
• 2	Low tagging rates	Tagging in seamounts, FADs **Associated school technique**
• 3	Limited spatial and temporal coverage	Tag away from the main area of fisheries operations (AST in TZN)
• 4	Project delays (team availability)	**PRTO job converted into 2 job**
• 5	Limited commitment of IOC members fisheries research institutions in the supply of tagging technicians.	**Recruitment of Tagging Technicians via CapFish** **Intensive use of SEY RTT**
• 6	EU procedures & policy	**Transfer of PTR funds to FAO**
• 7	EU Delegation (fastidious, formalistic)	**ZENITUDE / robust contractors**
• 8	Staff shortage (TR activities)	**Hiring of SEY tag recovery team**

IOTTP KEY MOMENTS



☺ Associated School Technique

☺ Transfer of PTR funds under FAO/IOTC

☺ Recruitment of SEY Tag Recovery team

☹ Freezing of funds by the EU during tagging activities for almost 3 months

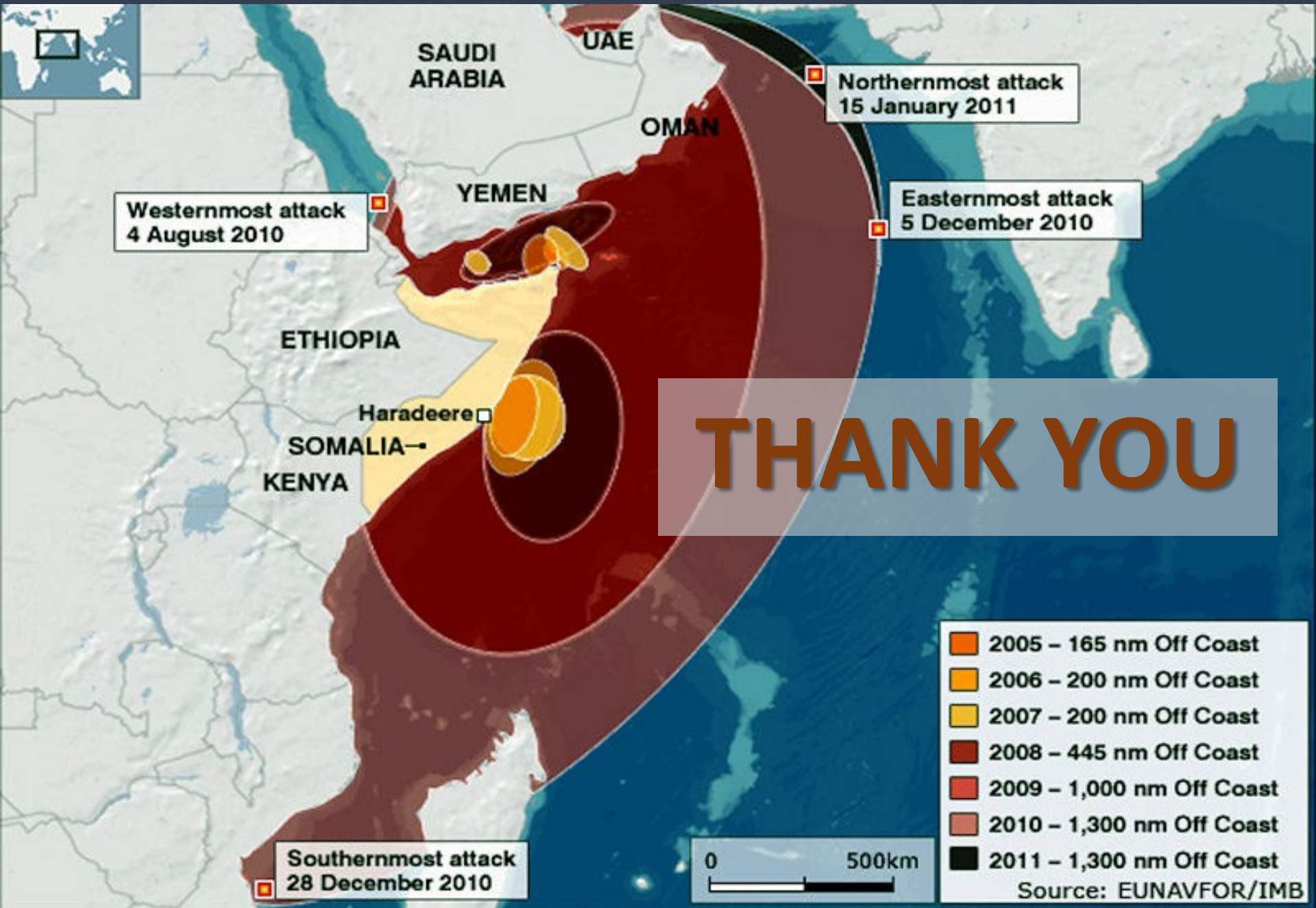
☹ Stranding of the FV "Aita Fraxku" in Tanzania

☹ Late arrival/early departure of PTRO2

LESSONS LEARNED

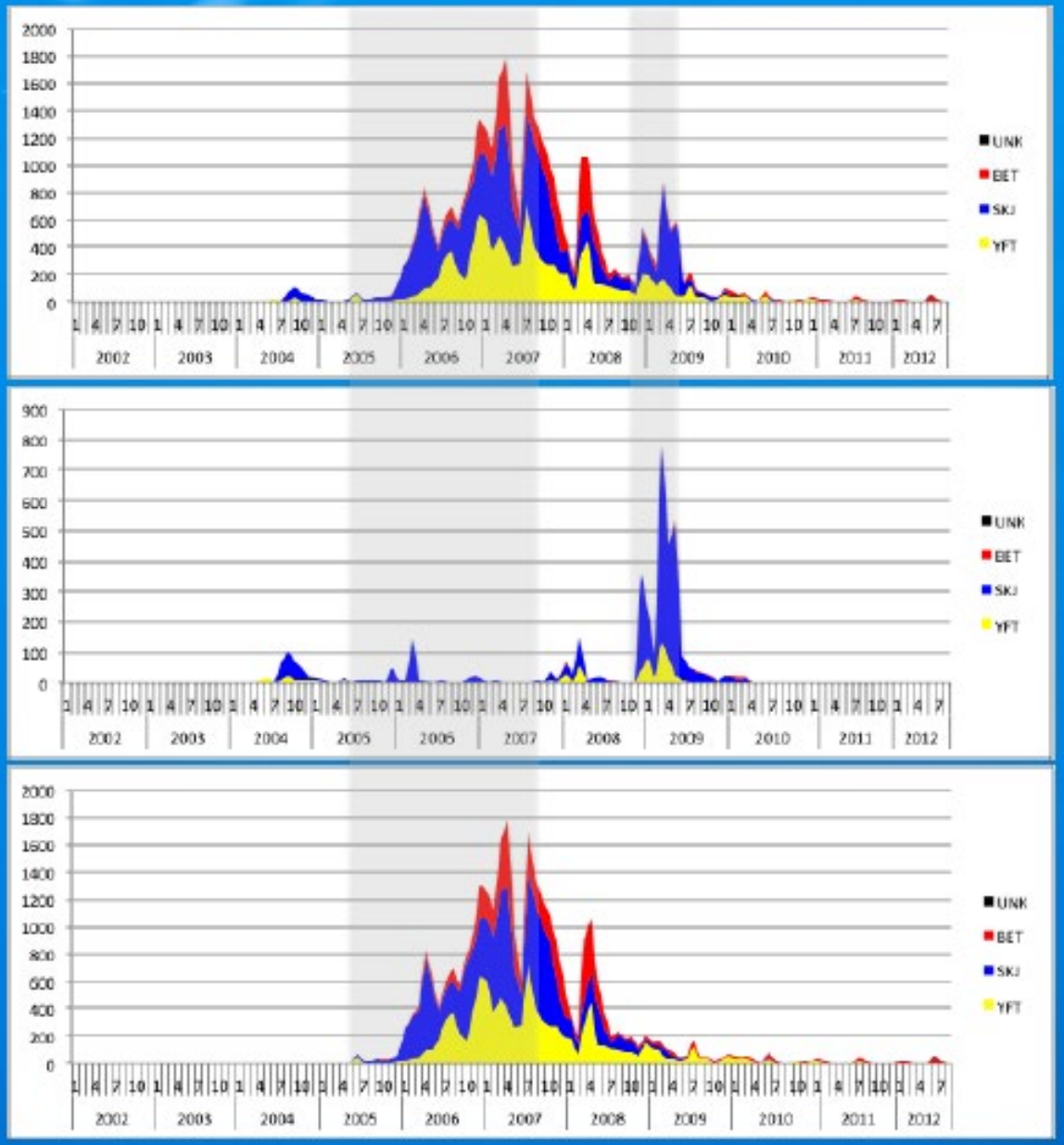
- Importance of a well planed program is to be underlined (e.g. feasibility study)
- Risks connected to external donor/s rules and procedures need to be evaluated (e.g. EDF rules)
- Contractors economically robustness can be vital to program survival
- Professional, dynamic, passionate, hard-working teams are key to success
- The use of professional observers as tagging technicians is a good choice.
- More attention needs to be paid to TR (funds, time and H. resources)

the necessary dose of good luck its also vital



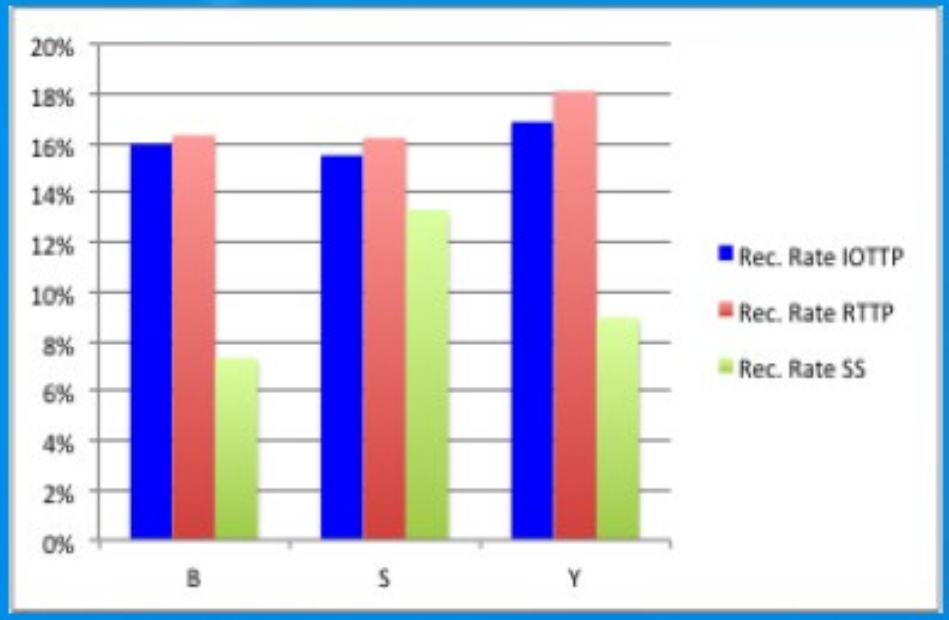
Recoveries

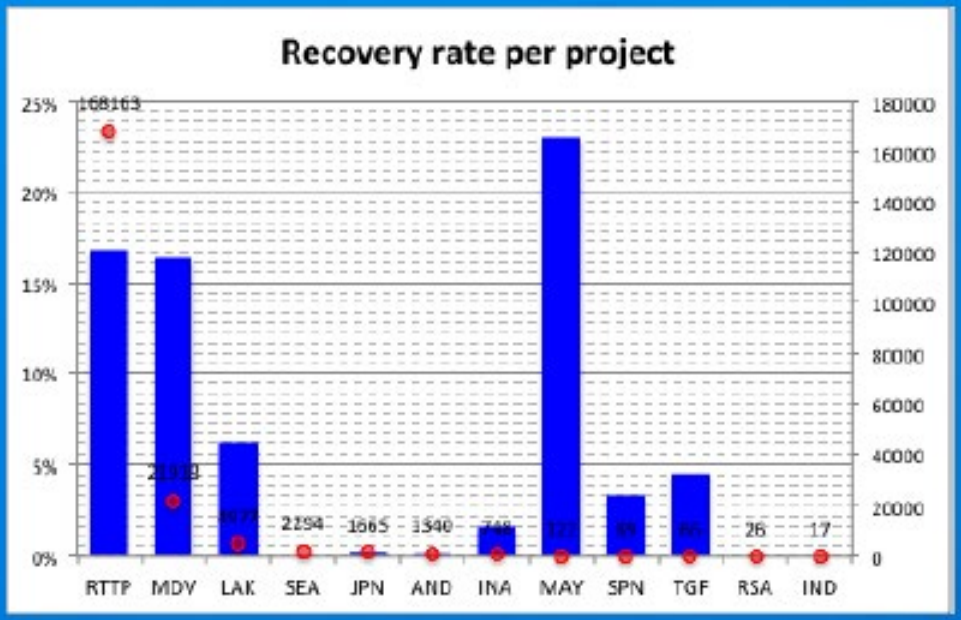
- 32 232 tagged tuna were recovered… until now
- RTTP: large number of recoveries after the end of the tagging operation… until today
- SS: recoveries reduce fast after the end of tagging activities



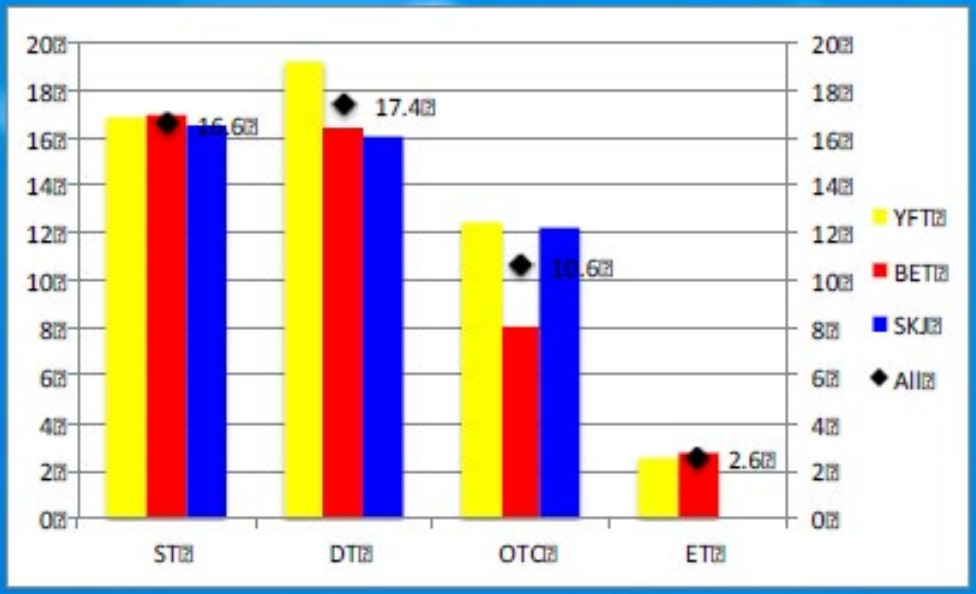
Recoveries: rates

- Recovery rate over 15% for all species
- RTTP Recovery rate over 16% for all species
- Some small-scale projects have very low recovery rate
  - High tag induced mortality?
  - Low reporting rate in coastal fisheries?





Recoveries: tag type

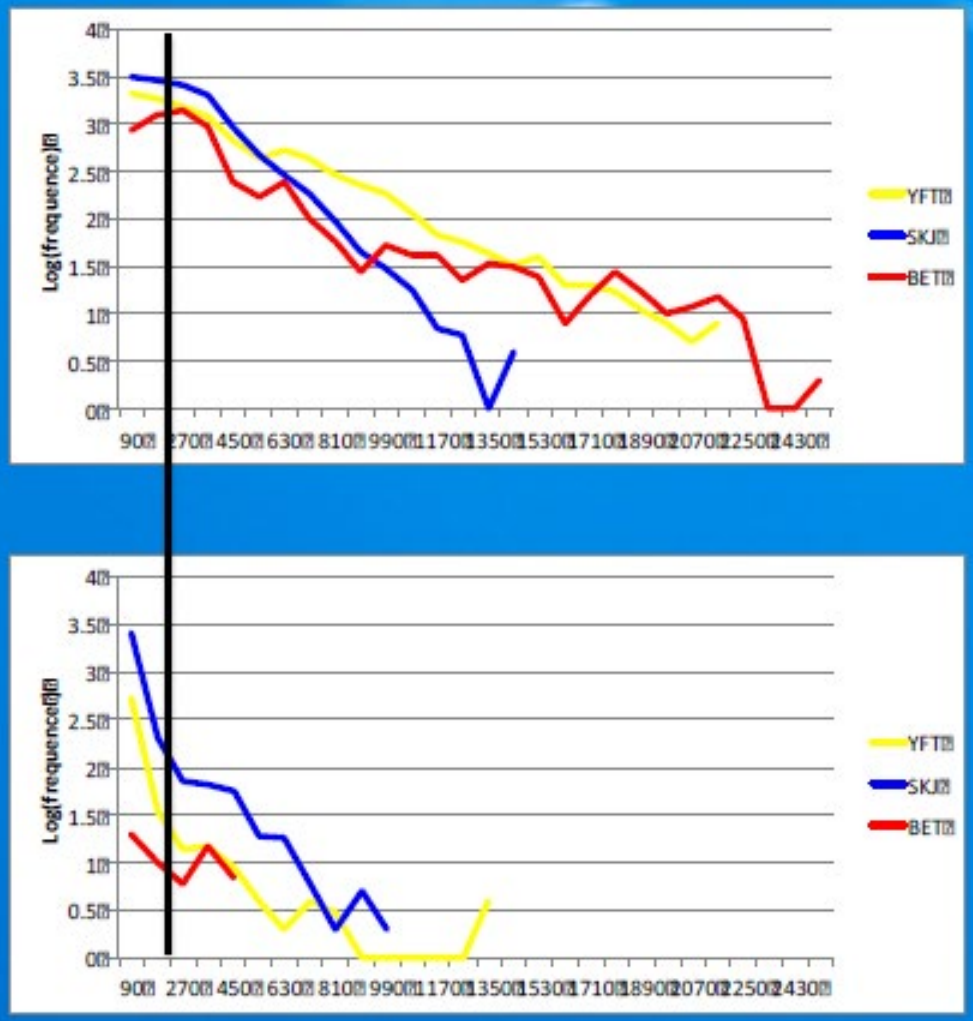


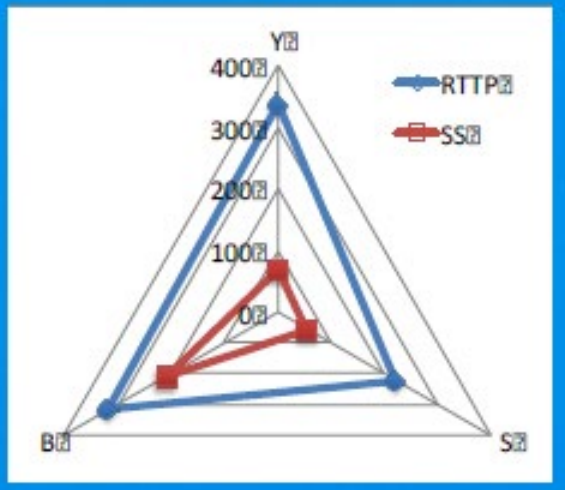
- Overall recovery rate: 16%
- Double tag with higher recovery rate:

⇒ More chances to detect the tag if one has shed

- OTC tagged fish with lower recovery rate (10.6%)
- Electronic tagging not successful with very low reporting rate

Recoveries: time at liberty

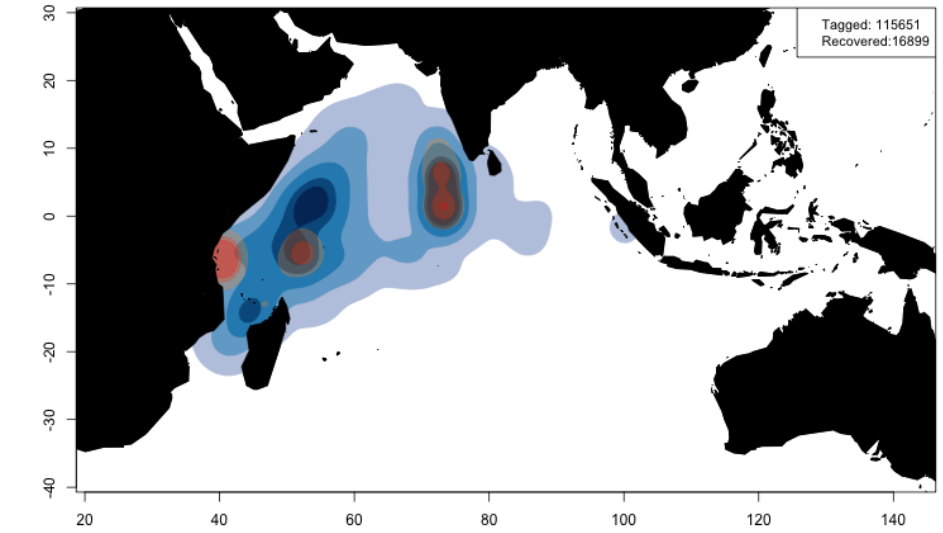




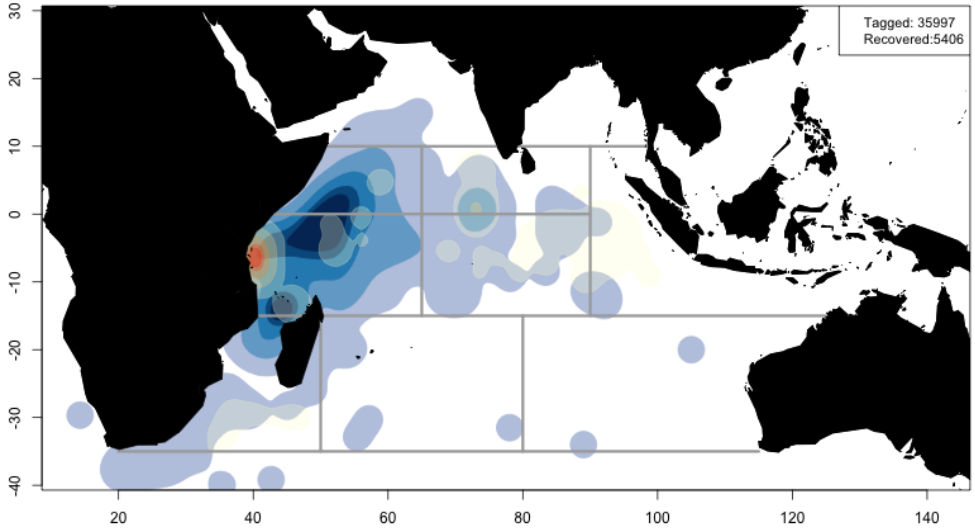
- TAL longer for RTTP
  - YFT: 337 days
  - SKJ: 222 days
  - BET: 317 days
- TAL short for SS
  - YFT: 69 days
  - SKJ: 55 days
  - BET: 208 days

Movements

SKJ



BET



YFT