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INSTITUTO DEL MAR DEL PERÚ

Department of Conservation
Te Papa Atawhai

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Testing low coast mitigation measures to reduce albatrosses and petrels bycatch in the Peruvian artisanal longline fisheries targeting sharks in southern Peru.

Javier Quiñones, Jairo Calderon, Christian Jimenez, Manuel Ochoa, Dave Goad, Johannes H. Fischer, Igor Debski.

3rd Meeting of the Permanent Working Group on Ecosystem and Bycatch, 26 May – 27 May 2025.

Situation of the artisanal longline fishery targeting sharks in southern Peru.

Small wooden boats (< 12 mt) with rear cabin, with open deck without using tori lines

The longline is deployed (04:00 to 07:00 pm) and recovered from 05:00 am to 08:00 a.m., no floats are used in the snoods, and the last section is steel wire with a swivel and lead.

The bait is hooked while the longline is being deployed

There are not good practices in offal discards.

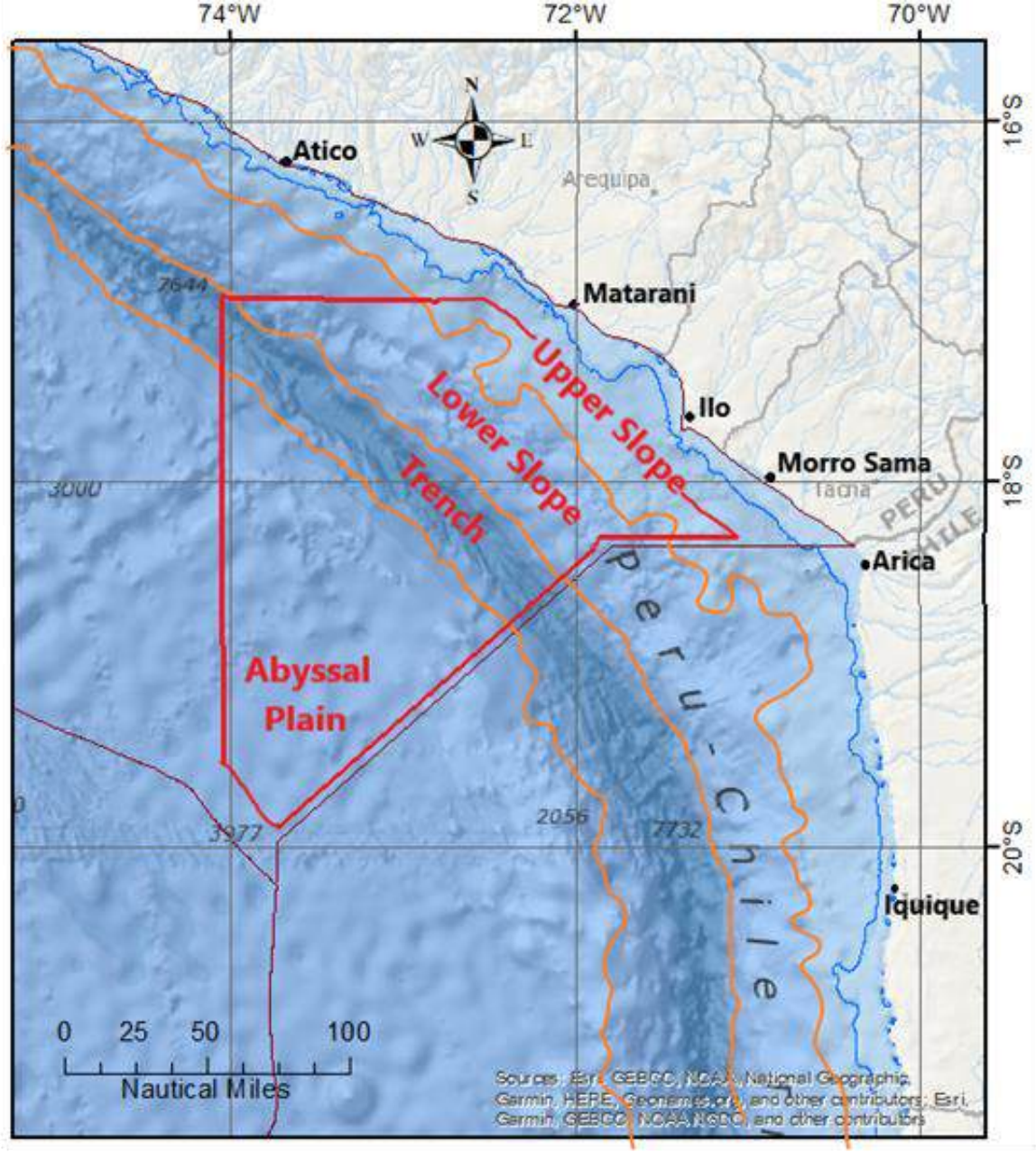


Fig 1. Study area represented by a red polygon, the continues blue line represents the shelf break, the magenta continues line represents the Peruvian and Chilean EEZ, and the continues orange line, are the boundaries of the four habitats: Upper Slope, Lower Slope, Trench and Abyssal plain

Study Area

*Upper Slope: Up to 30 nm offshore, up to ~ 1,500 mt depth.

*Lower Slope: since 30 to 65 nm offshore (1,500 to 4,500 mt depth).

*Trench: Peruvian – Chilean Trench, from 4,500 up to > 7,000 mt east, and to 5,500 west.

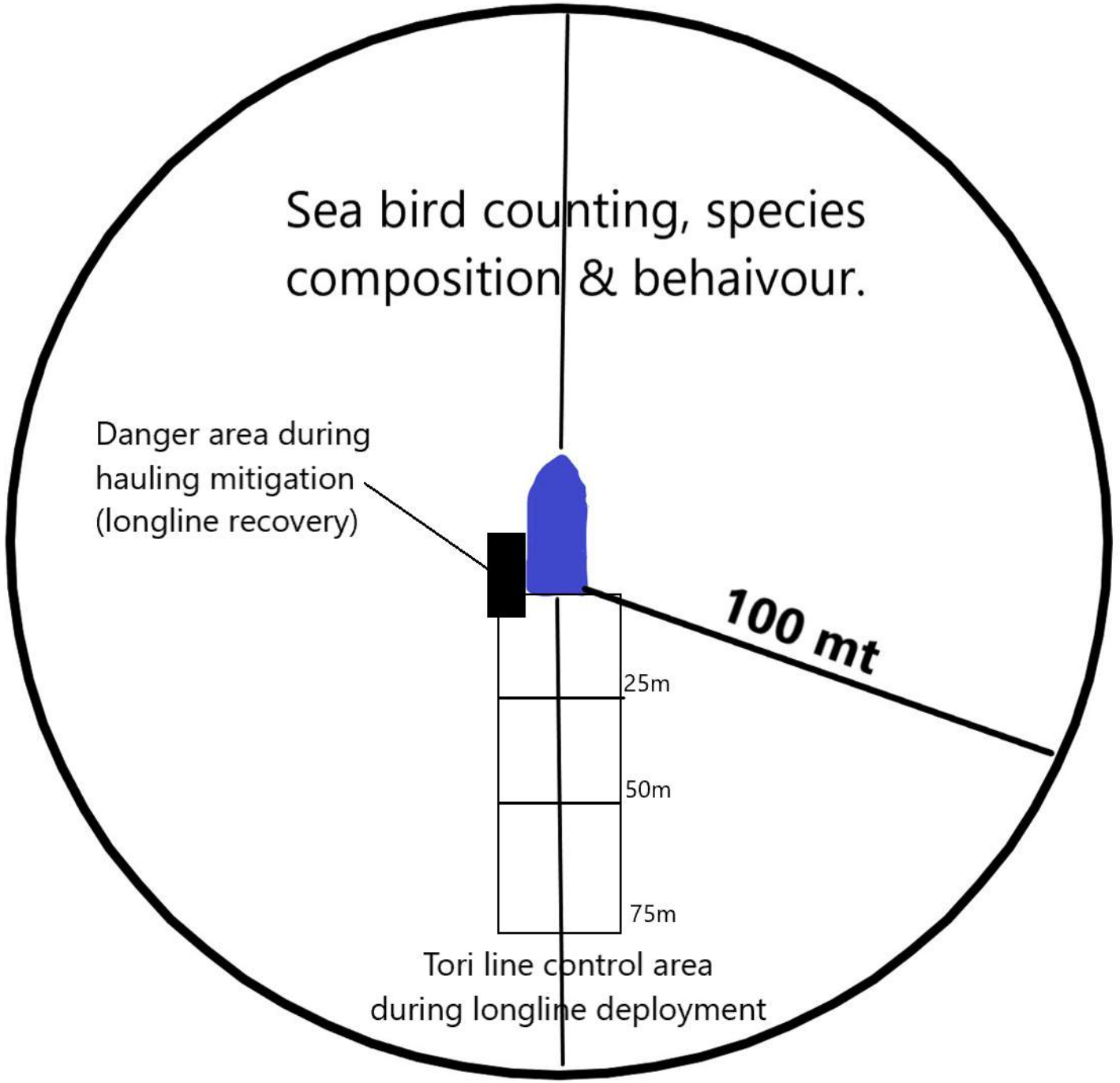
*Abyssal Plain: from 5,500 mt westward up to the 200 nm of EEZ.

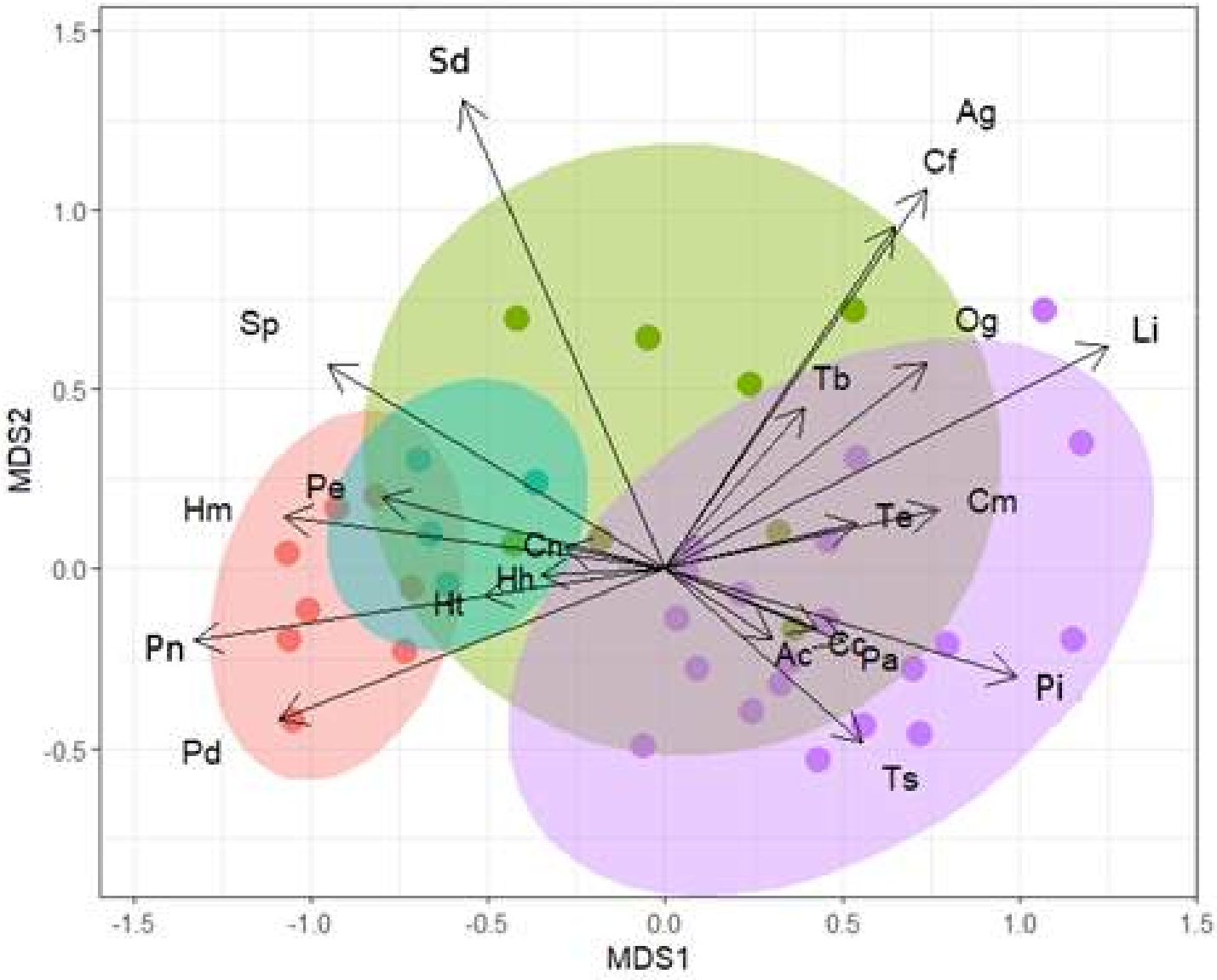
On board seabirds sampling

Bycatch proxy
1.- N° of seabirds (air & surface)
2.- Species composition
3.- Seabird beahivour during fishing operability.

Evaluación areas
1.- 360° seabirds counting
2.- Danger áreas.

Sampling
1.- during deployment (04:00 – 07:00 pm)
2.- durante soaking time is imposible, since is totally dark.
3.- durante recovery (05:00 – 08:00 am).



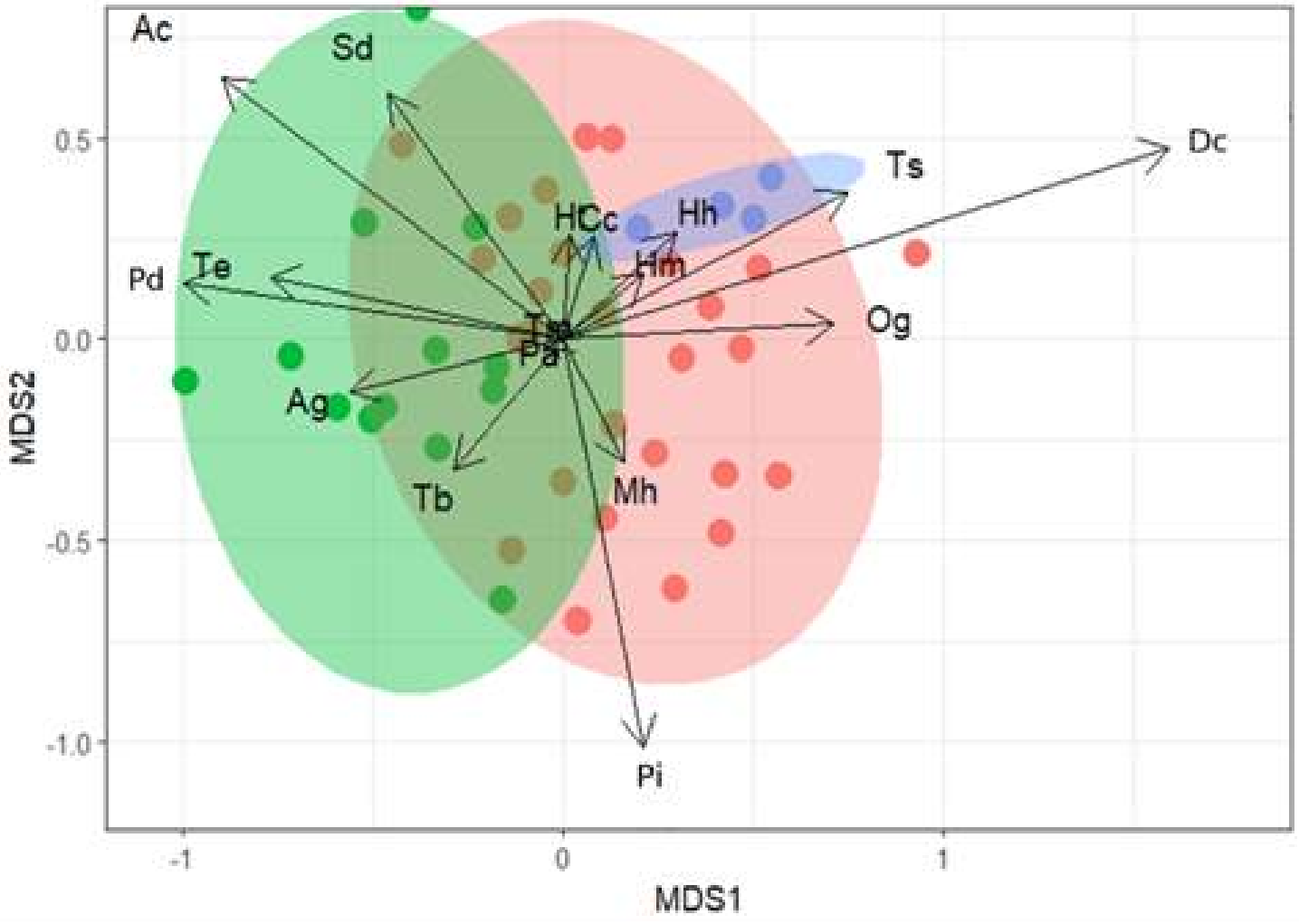


Groups

- Abyssal plain
- Lower Slope
- Trench
- Upper Slope

Cod	Especie
Pi	Phoebastria irrorata
Te	Thallasarche eremita
Tb	Thalassarche bulleri
Ts	Thalassarche salvini
Tm	Thalassarche melanophris
Mh	Macronectes halli
Dc	Daption capense
Pa	Procellaria aequinoctialis
Pe	Pterodroma extema
Pd	Pterodroma defilippiana
Pn	Pterodroma neglecta
Pc	Pterodroma cookii
Ac	Ardenna creatopus
Ag	Ardenna grisea
Ht	Hydrobates tethys
Hh	Hydrobates hombyi
Hm	Hydrobates markhami
Og	Oceanites gracilis
Sd	Sula dactylatra
Sl	Sula leucogaster
Sv	Sula variegata
Cm	Catharacta maccormicki
Cc	Catharacta chilensis
Sp	Stercorarius pomarinus
Cf	Creagrus furcatus
Ld	Larus dominicanus
Li	Larosterna inca
Cn	Chlidonias niger
Sh	Sterna hirudinacea

MDS analysis between the species clusters in the “Upper Slope”, “Lower Slope”, “Trench”, and “Abyssal Plain” during April 2024 in southern Peru.



Groups

- Lower Slope
- Trench
- Upper Slope

Cod	Especie
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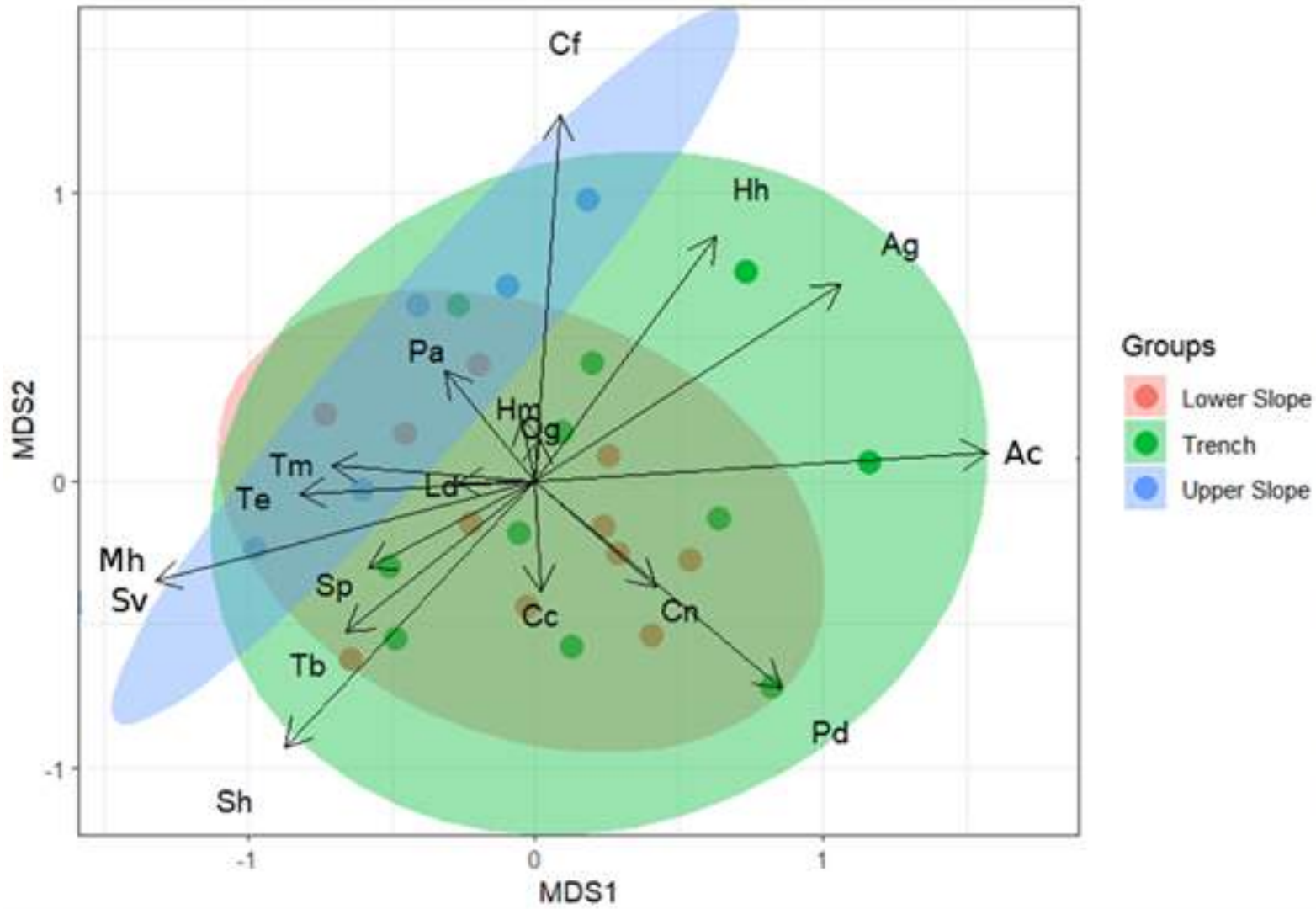
MDS analysis between the species clusters in the “Upper Slope”, “Lower Slope”, “Trench”, during June 2024 in southern Peru.



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Sh	Sterna hirudinacea

Fig X. MDS analysis between the species clusters in the “Upper Slope”, “Lower Slope”, “Trench”, during October 2024 in southern Peru.

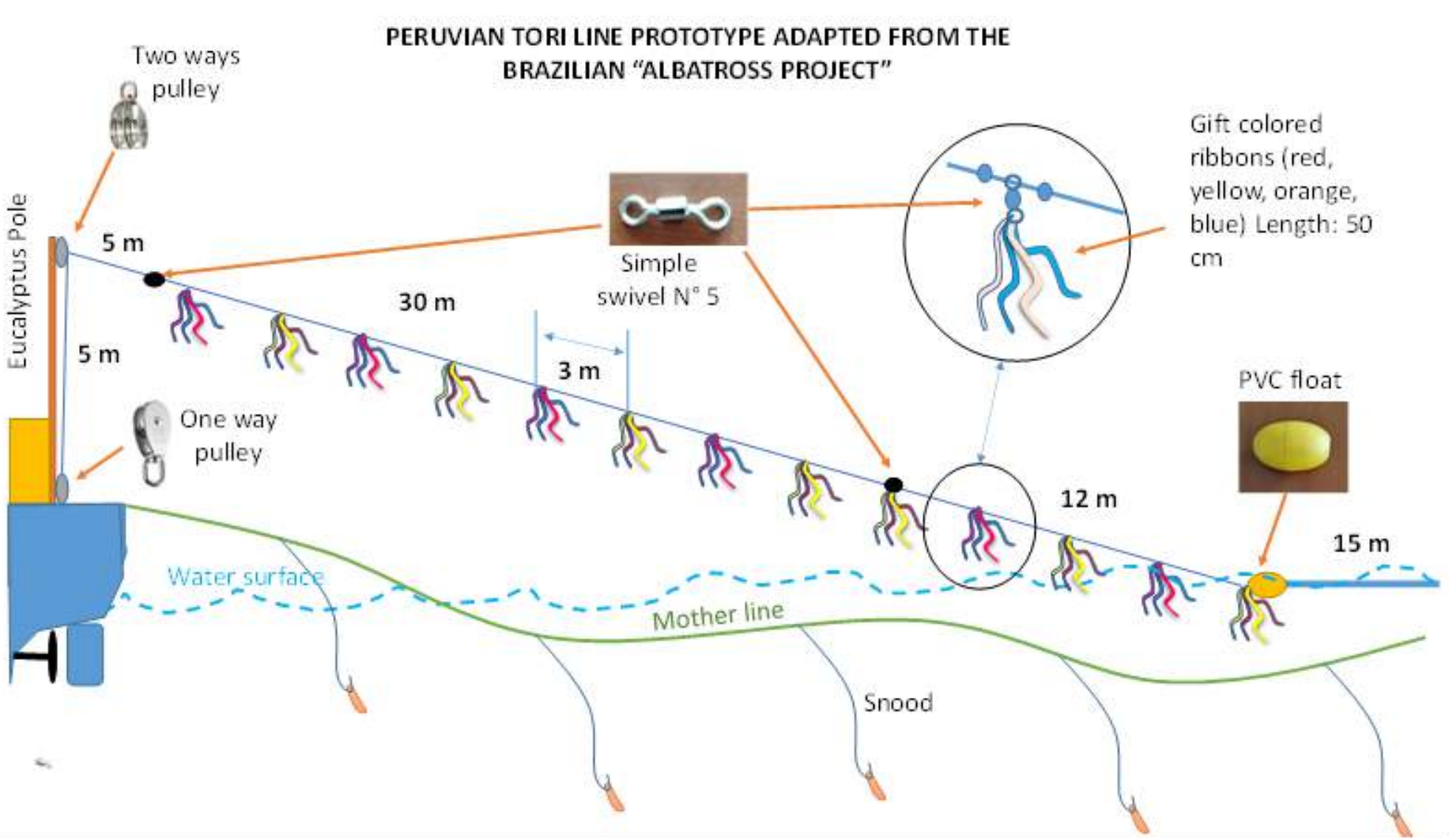


Fig. 2. Peruvian low coast prototype, adapted from the Brazilian "Albatross Project", Gabriel Canani send us the original Brazilian model used in Rio Grande do Sul.

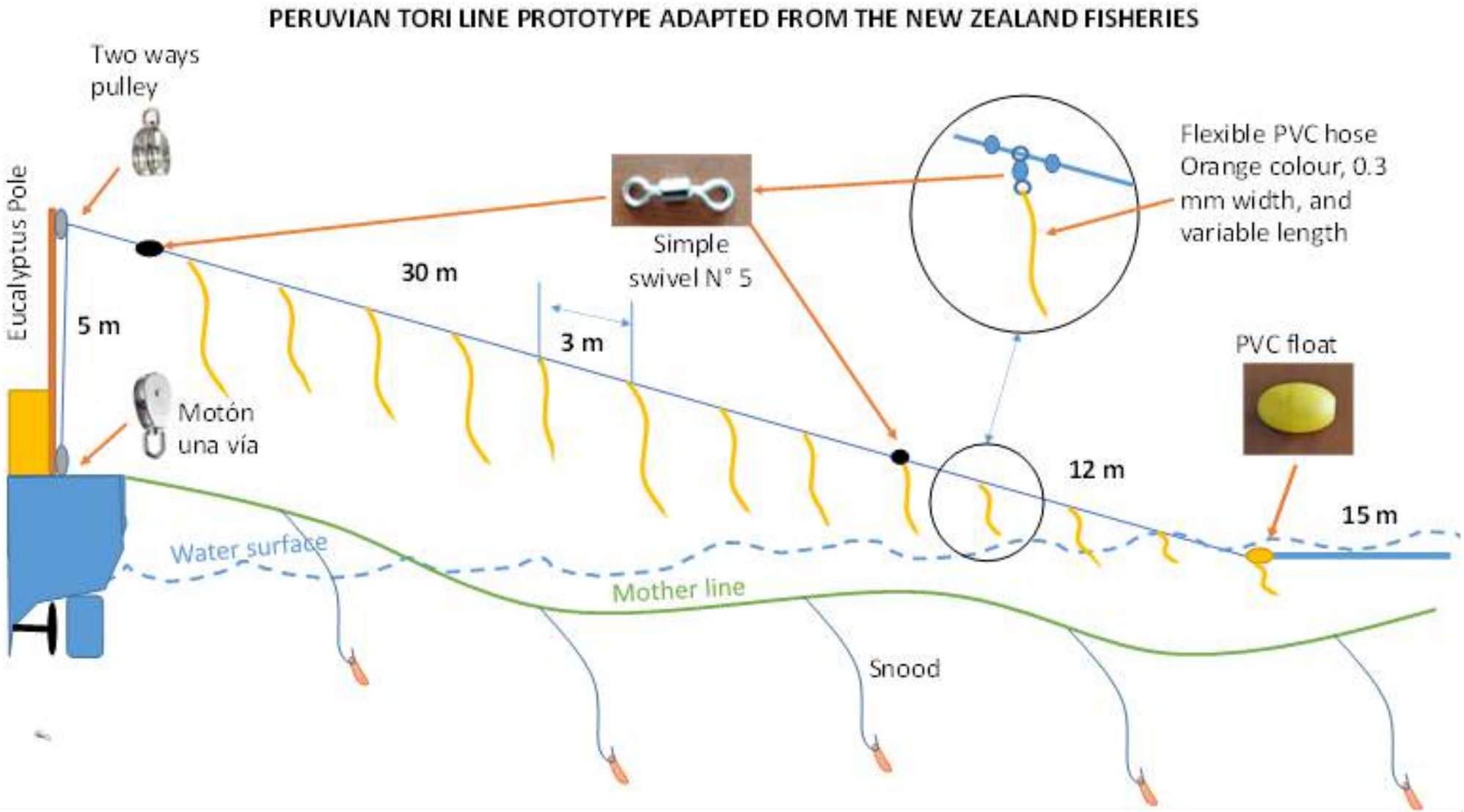


Fig. 3. Peruvian low coast prototype, adapted from the small scale New Zealand longline fisheries targeting Bluefin tuna, original sent by Dave Goad, from the Department of Conservation.

Used materials to build the peruvian tori line

Simple swivel
Nro 5

Security seals,
cutter, pliers

Insulating
tape

PVC floats

Tubería flexible de PVC
Color : Anaranjado

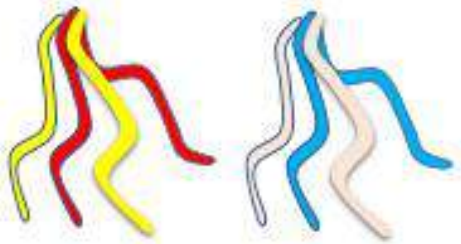
Motón
una vía

Polyethylene &
polyamide mother
line, 6 mm Ø

Gift
ribbons

Two ways
pulley

Gift ribbons



Red, yellow, blue, orange,
length 50 cm.

Flexible PVC hose
Orange colour

Length: 0.35 ~ 4 m

*5 m eucalyptus stick:	6 US$
*Flexible PVC 4 cm diameter (20 m):	7 US$
*Polyethylene mother line 4 mm (3 kg):	8 US$
*simple swivel (15):	7 US$
*two way pulley (2):	8 US$
*Gift Ribbons (6 rolls):	5 US$
*Old rope (for drag section)	10 US$
*Security seals & cutter:	7 US$
TOTAL	**58 US$**

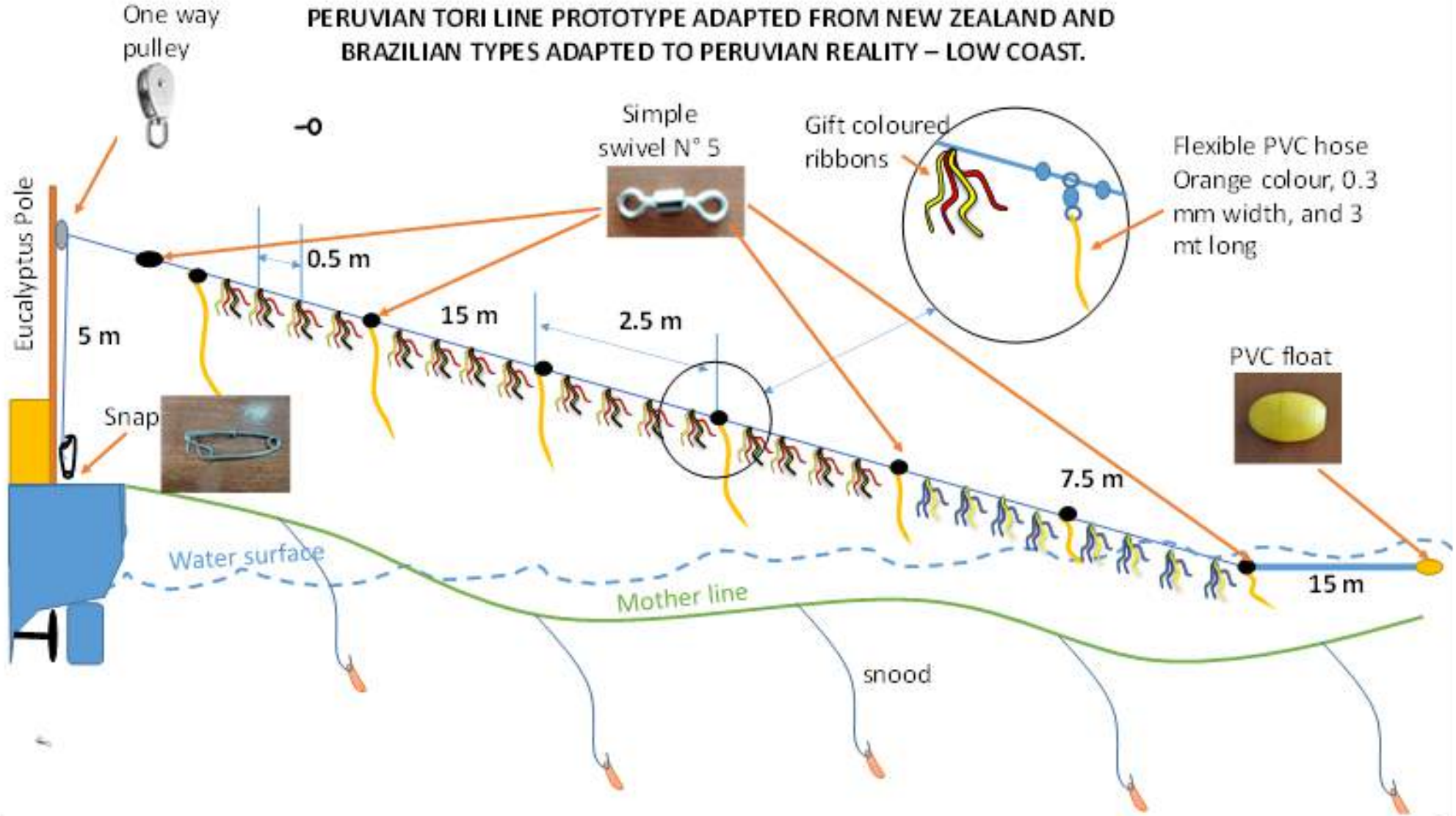


Fig. 4. Peruvian low coast prototype, adapted from the small scale Brazilian and New Zealand longline fisheries targeting swordfish and Bluefin tuna respectively, this is the final design being tested in Peru, since is well adapted to the vessels size and engine power.

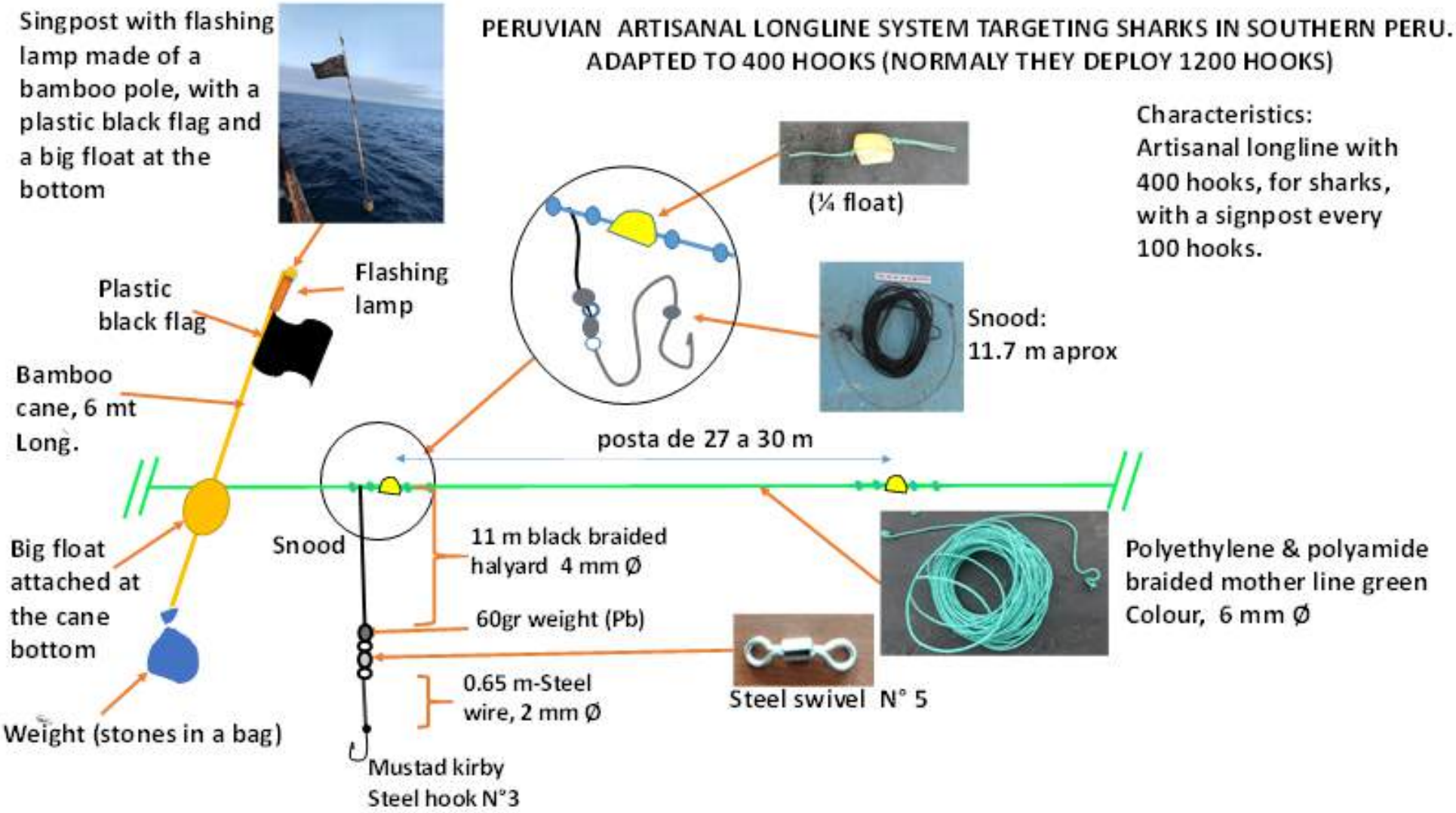
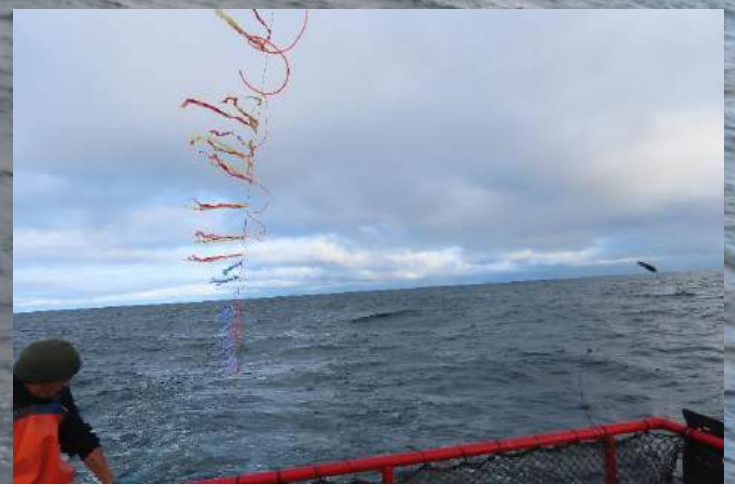
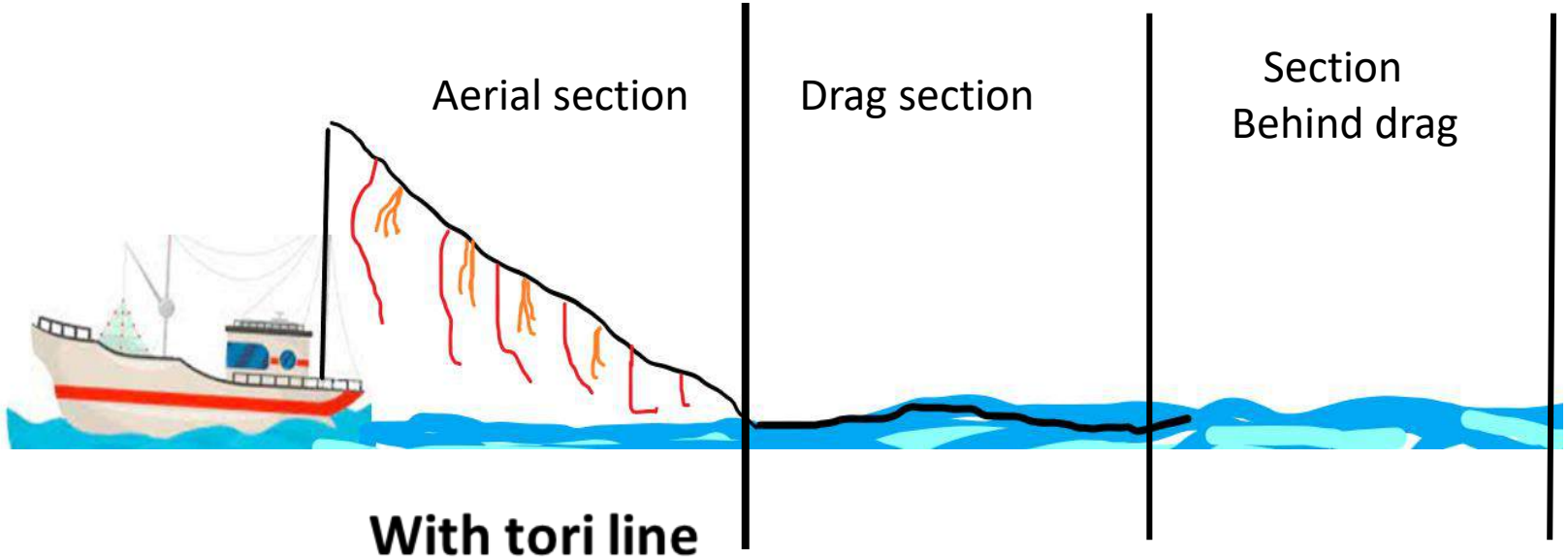


Fig. 7. Design of the artisanal Peruvian longline targeting sharks, materials, measures, and structures used by local fisherman in southern Peru.

Mitigation measures during Longline deploying

a) Low coast tori line

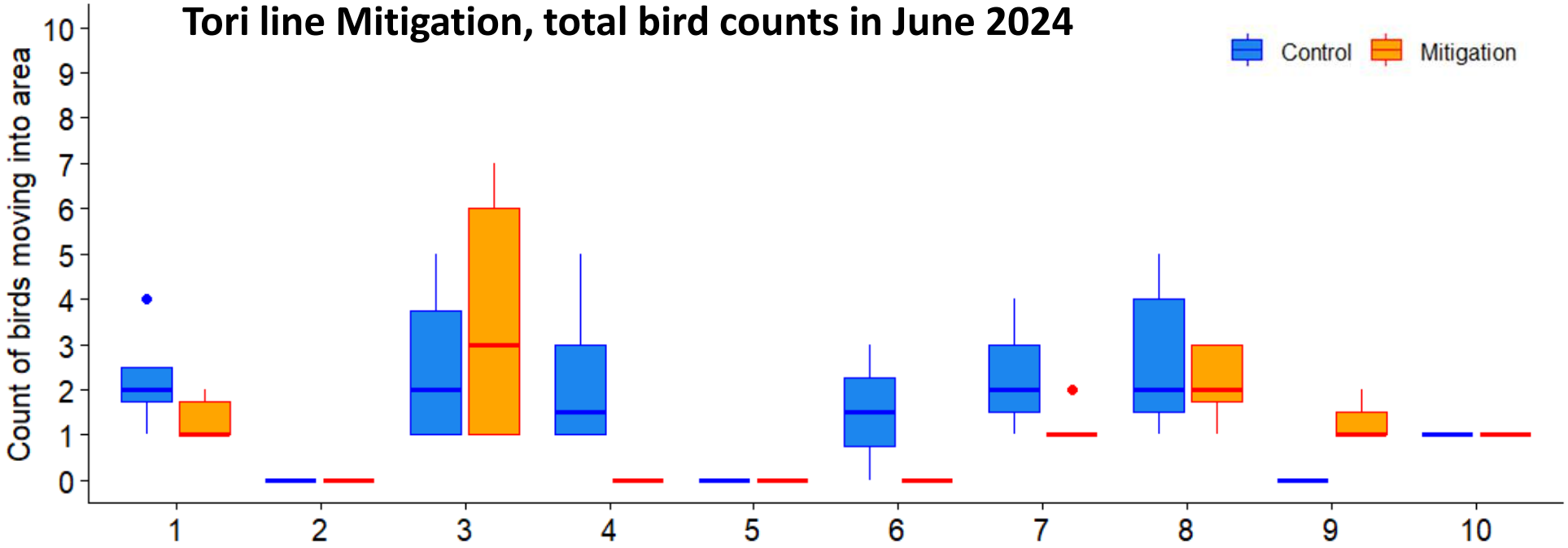




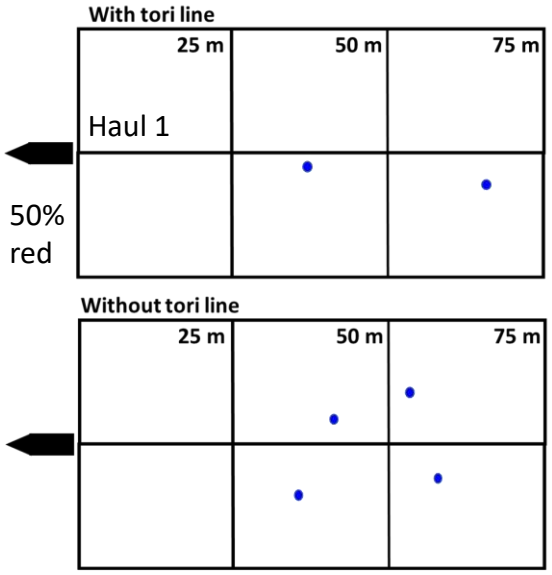
With tori line

25 m	50 m	75 m

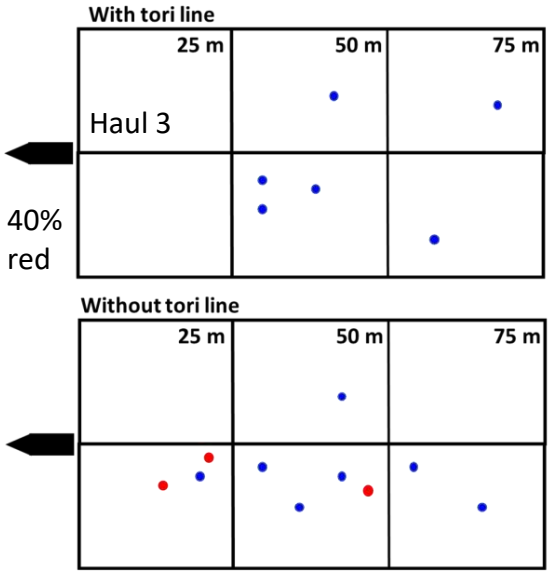
Tori line Mitigation, total bird counts in June 2024



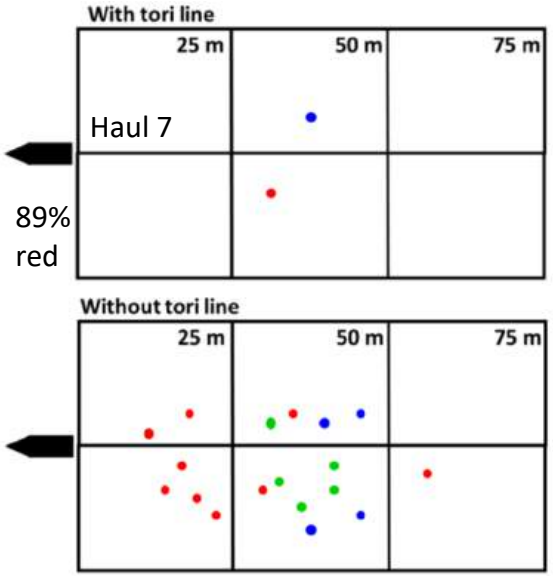
● *Procellaria aequinoctialis*

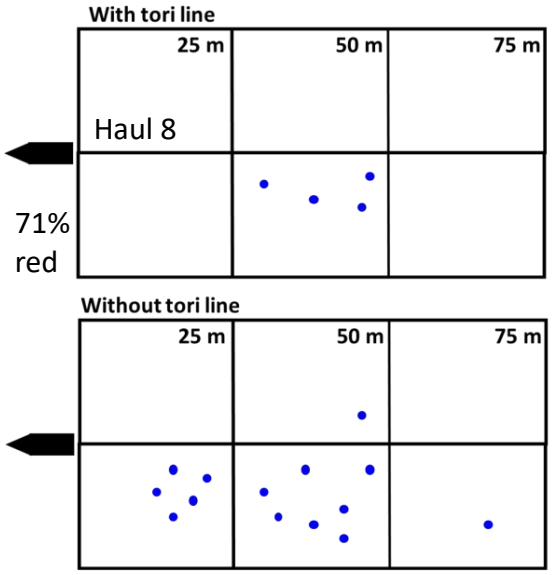


● *Thalassarche melanophris*

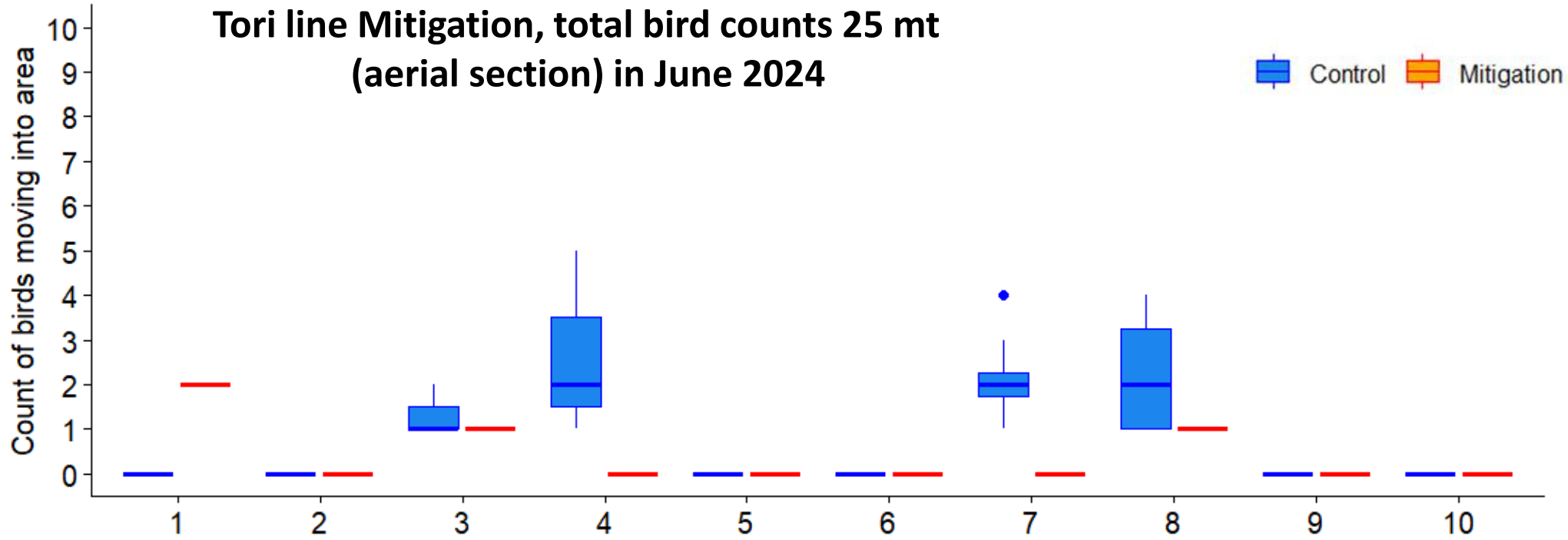


● *Catharacta chilensis*

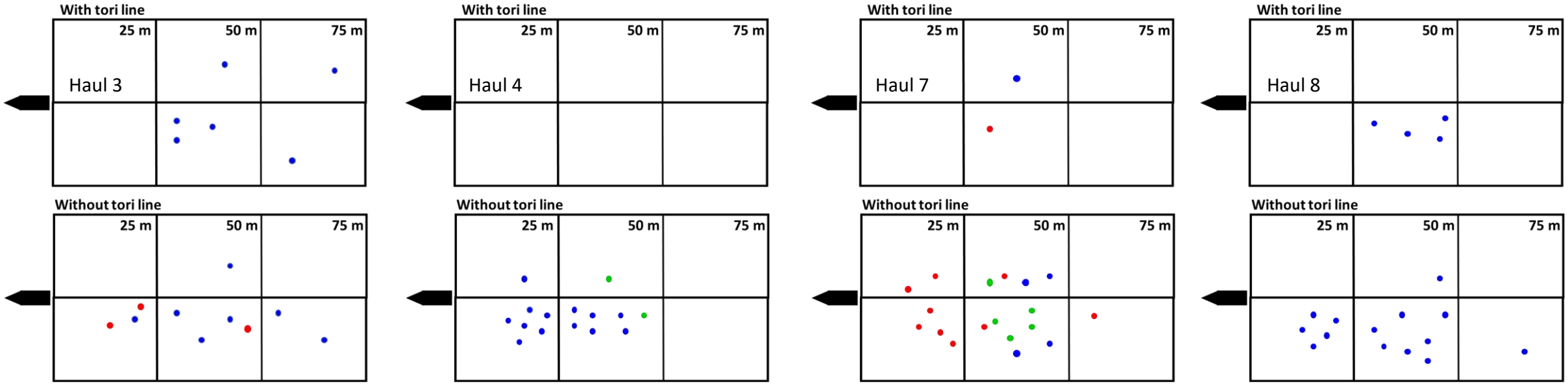


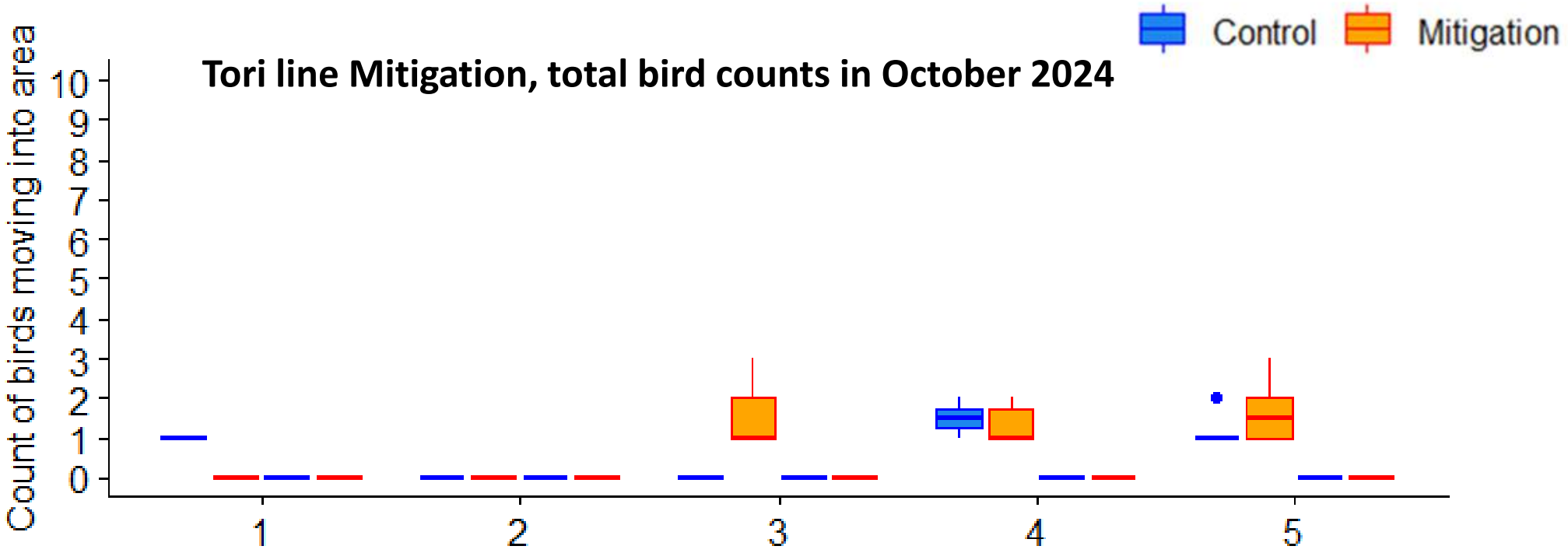


Tori line Mitigation, total bird counts 25 mt (aerial section) in June 2024

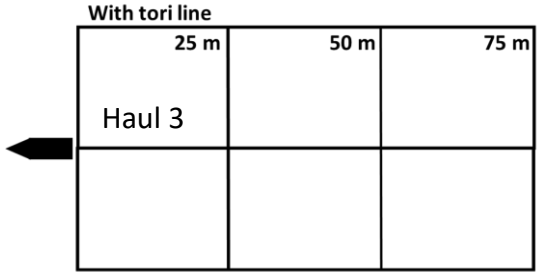


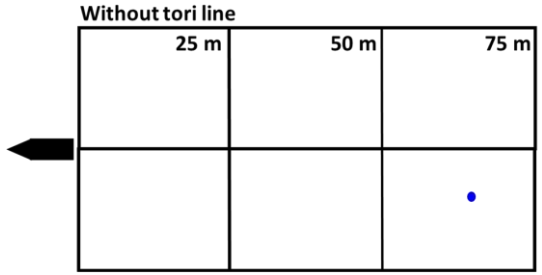
● *Procellaria aequinoctialis* ● *Thalassarche melanophris* ● *Catharacta chilensis*



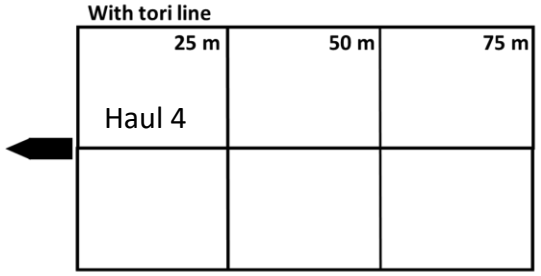


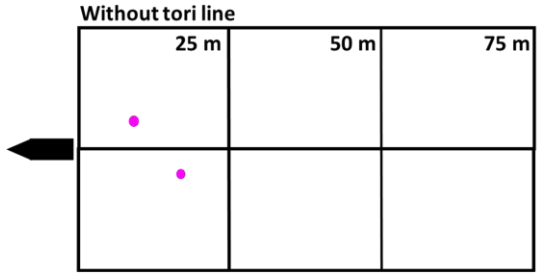
Procellaria aequinoctialis



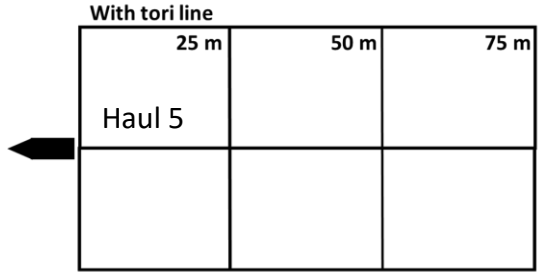


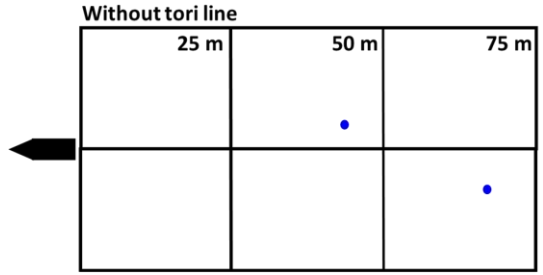
Larus dominicanus





Procellaria aequinoctialis

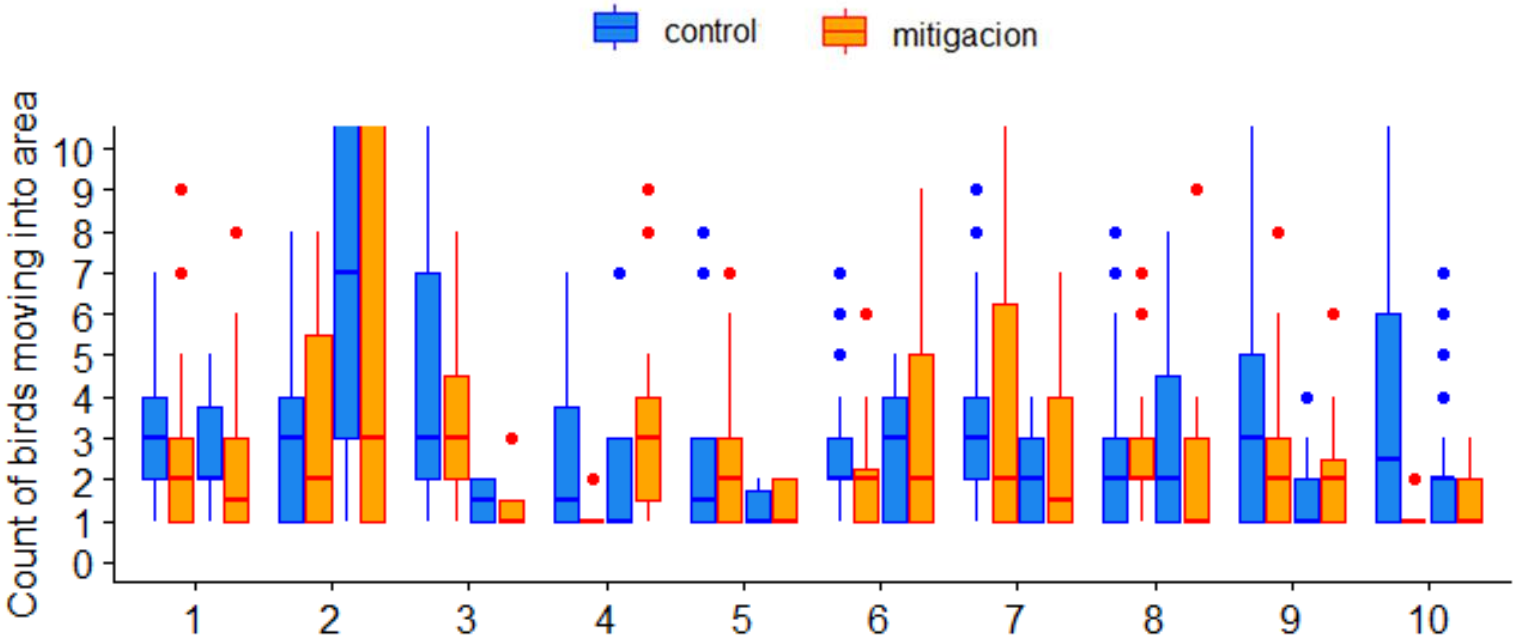


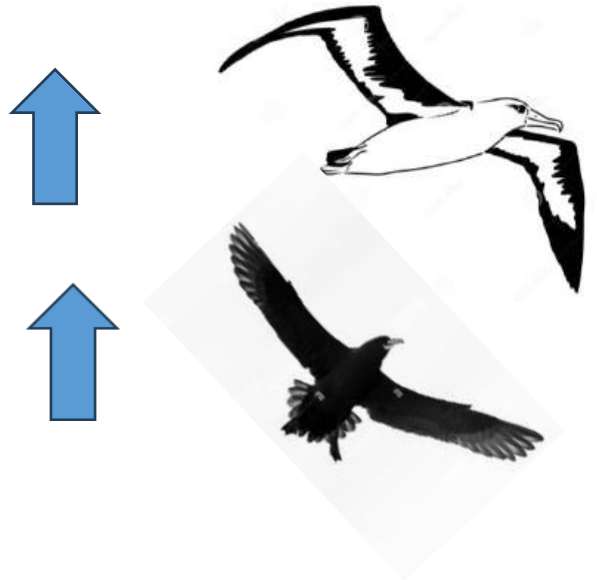



Mitigation measures during longline recovery:
a) Hauling mitigation
b) Retention of second used baits
c) Good practices in offal discards
(ALL TOGETHER)

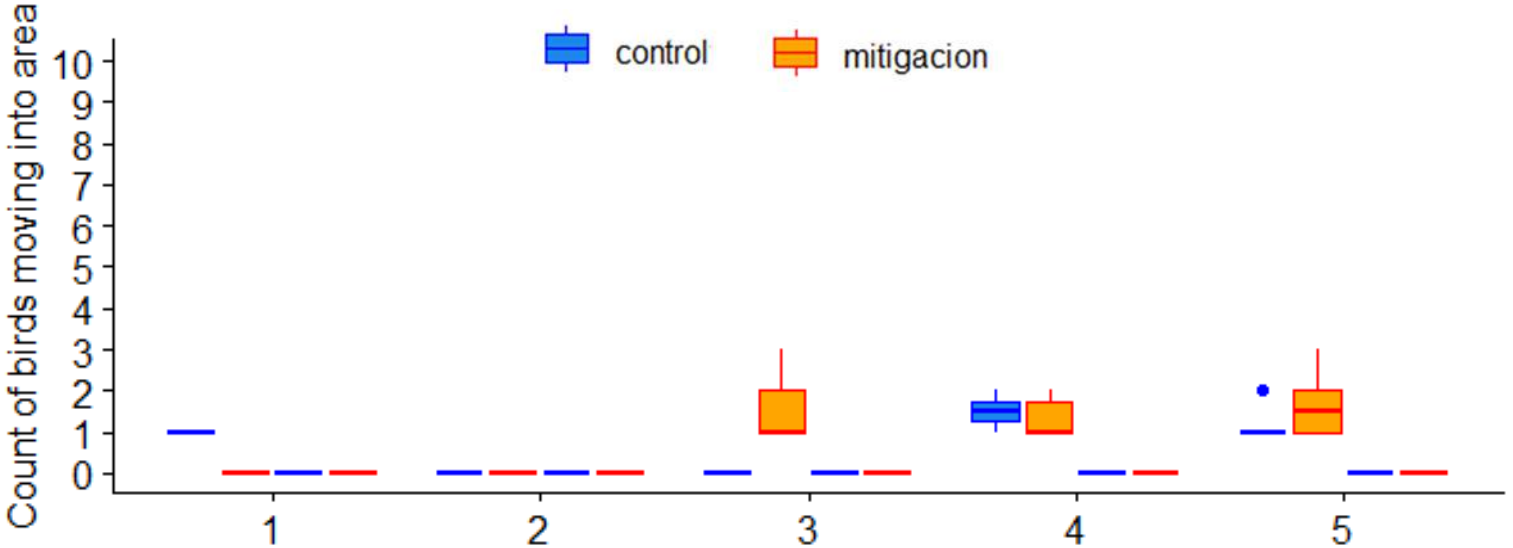
HOULING MITIGATION

Total birds entering in danger area during recovery in June 2024



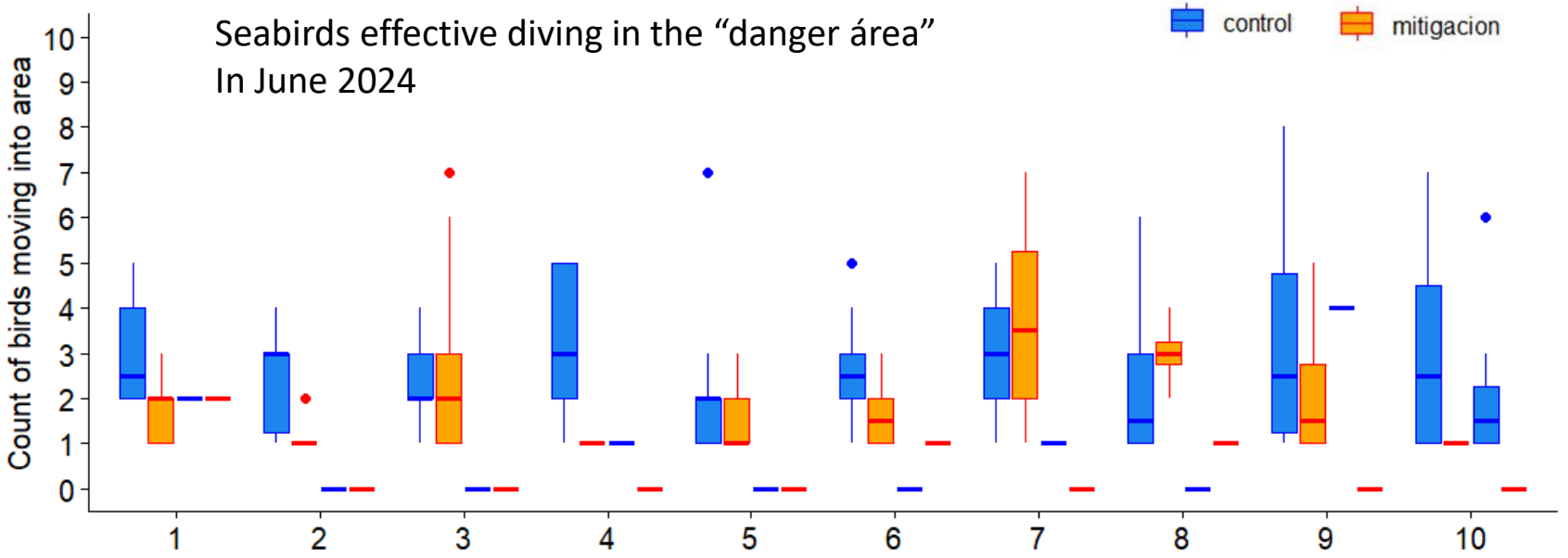


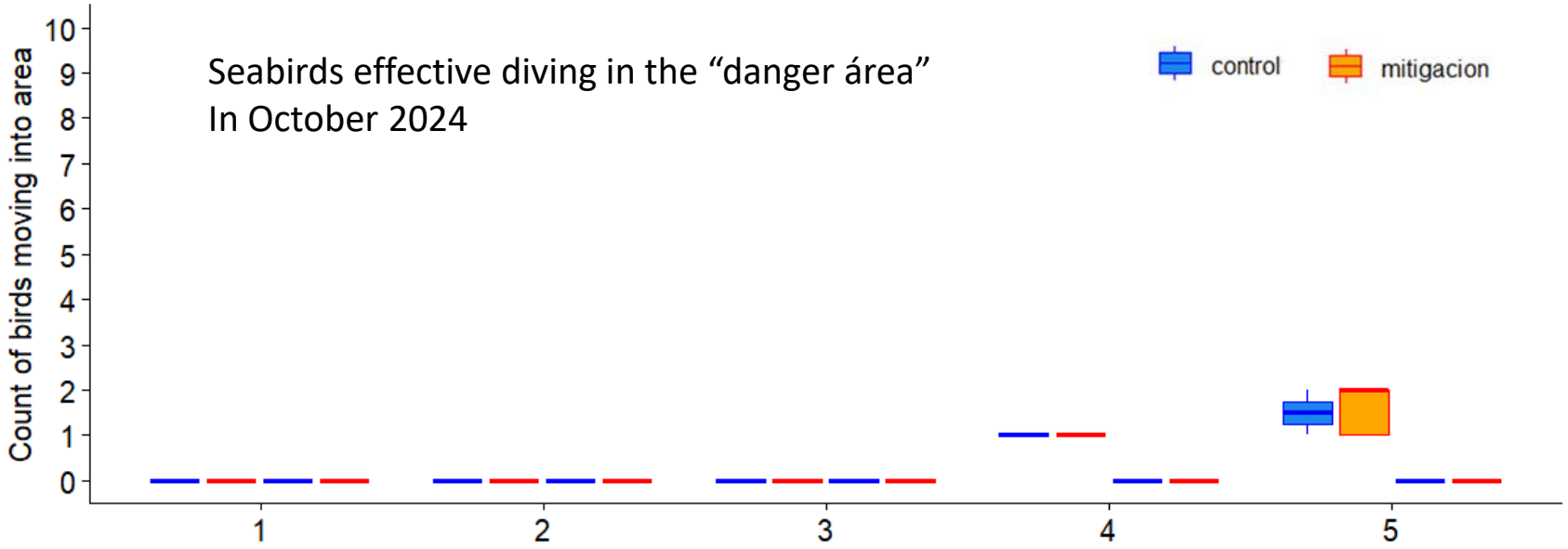
Total birds entering in danger area during recovery in October 2024



In October more than one
Order of magnitude less
Abundances of albatrosses
And petrels, since the great
Majority were already back
To their breeding grounds.

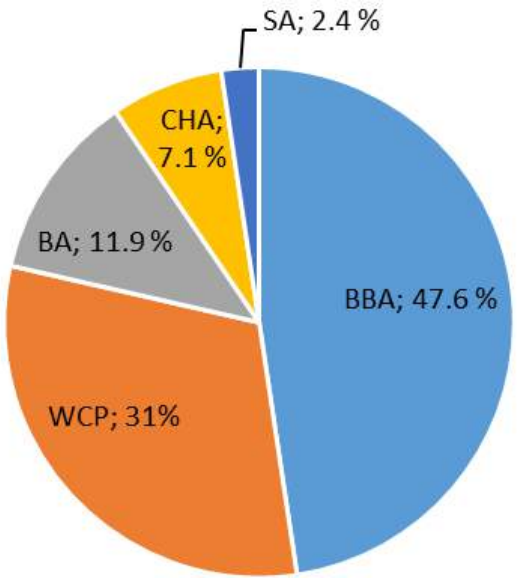
All mitigation measures during longline recovery.



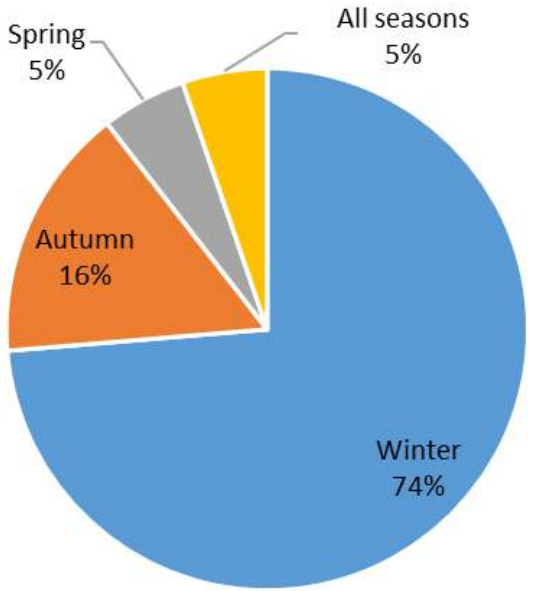


In the trials no effective bycatch was detected, however according to interviews with skippers there is bycatch on Black-browed & Buller's albatrosses, and White-chinned petrels.

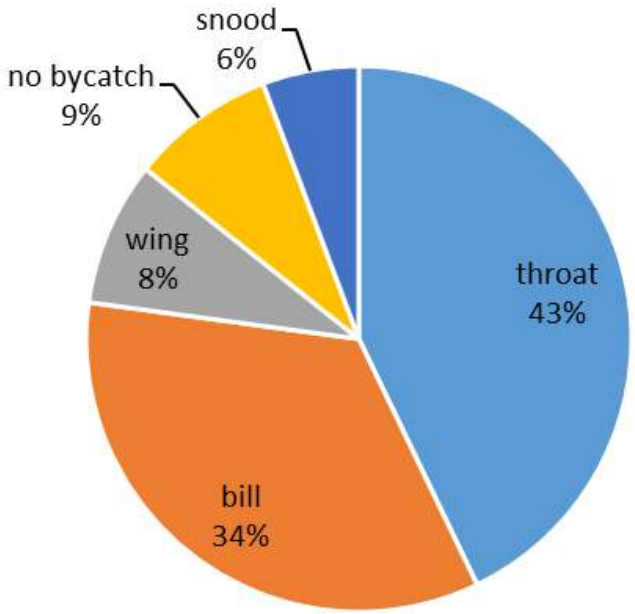
Which albatross and petrel species are bycaught? (Photographs shown).



In which season are more albatrosses and petrels?



When bycatch occurs the hook is placed on the bill, throat, wings, or entangled with the mother line?



Average Bycaught species per fishing trip according to the interviews with the skippers in Ilo, Morro Sama, and Arica	
Seabird species / country	Peruvian waters & beyond
Black-browed albatross	17±11birds (0-4, n=12)
White-chinned petrel	11±14 birds (0-3, n=8)
Buller's albatross	0.3±0.6 birds (0-15, n=6)

Thank You

Department of Conservation
Te Papa Atawbai

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