

Significant reductions in mortality of threatened seabirds in a South African trawl fishery

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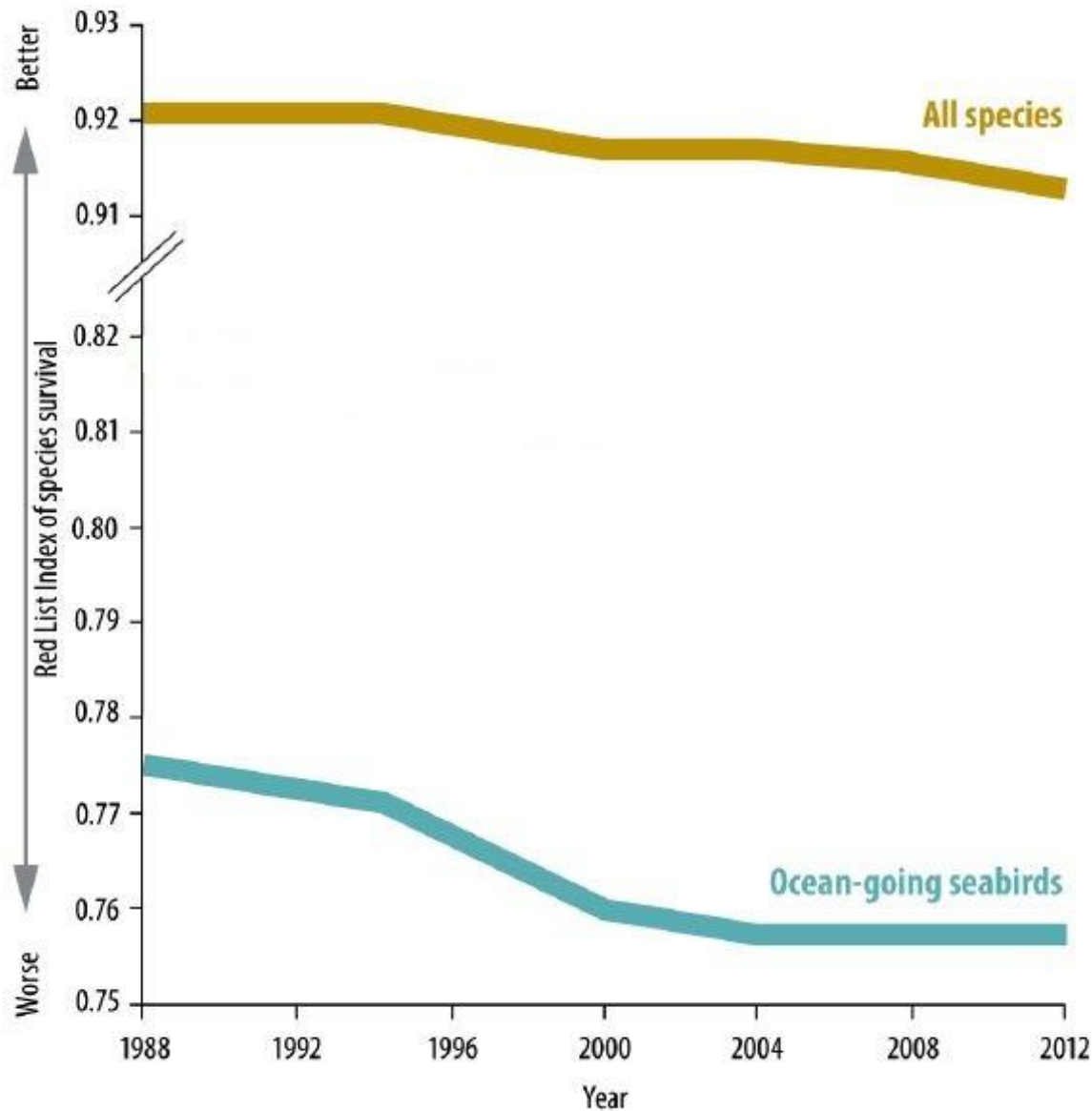


Outline

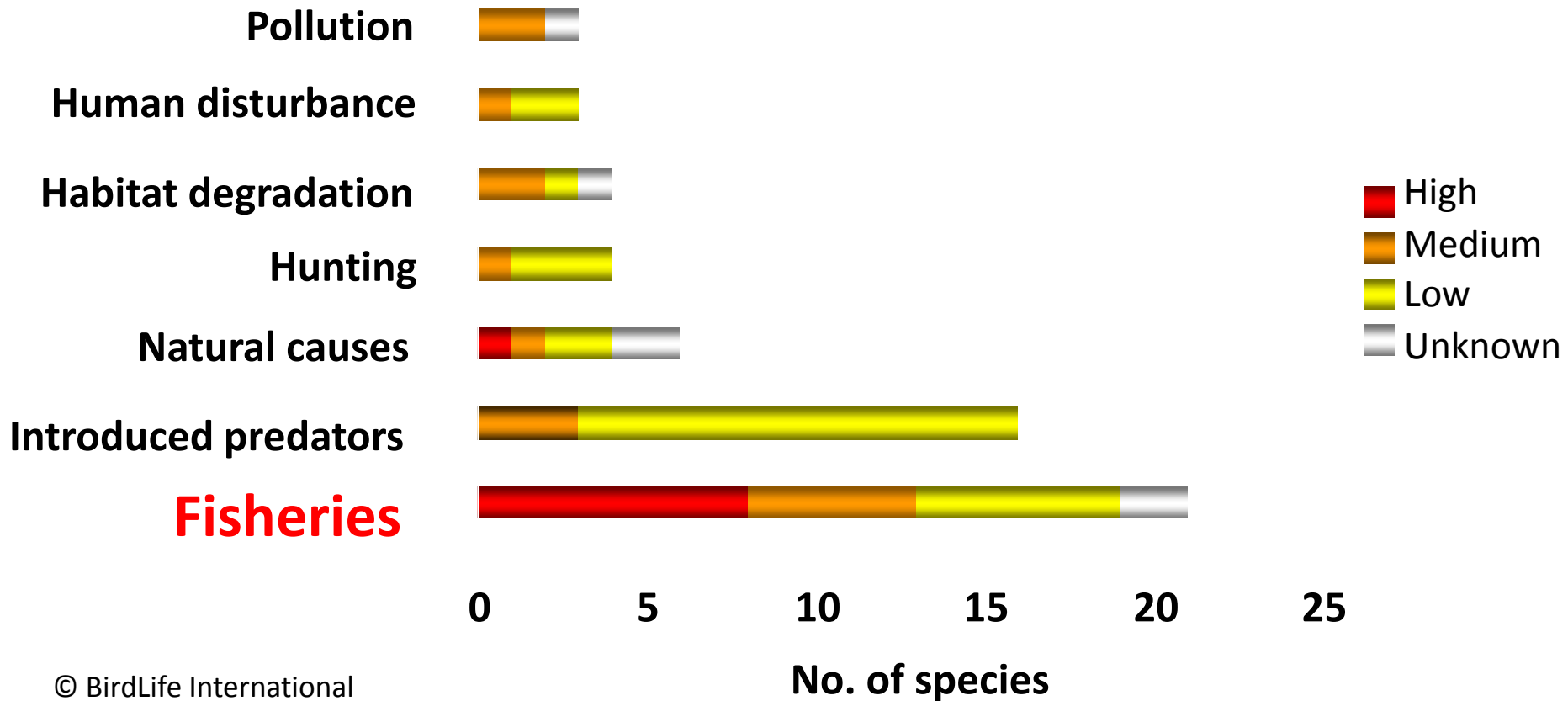
- Problem
- South African Hake Fishery
- Methods
- Results + Conclusions
- Future work
- Question time



Red List Indices for selected species-groups

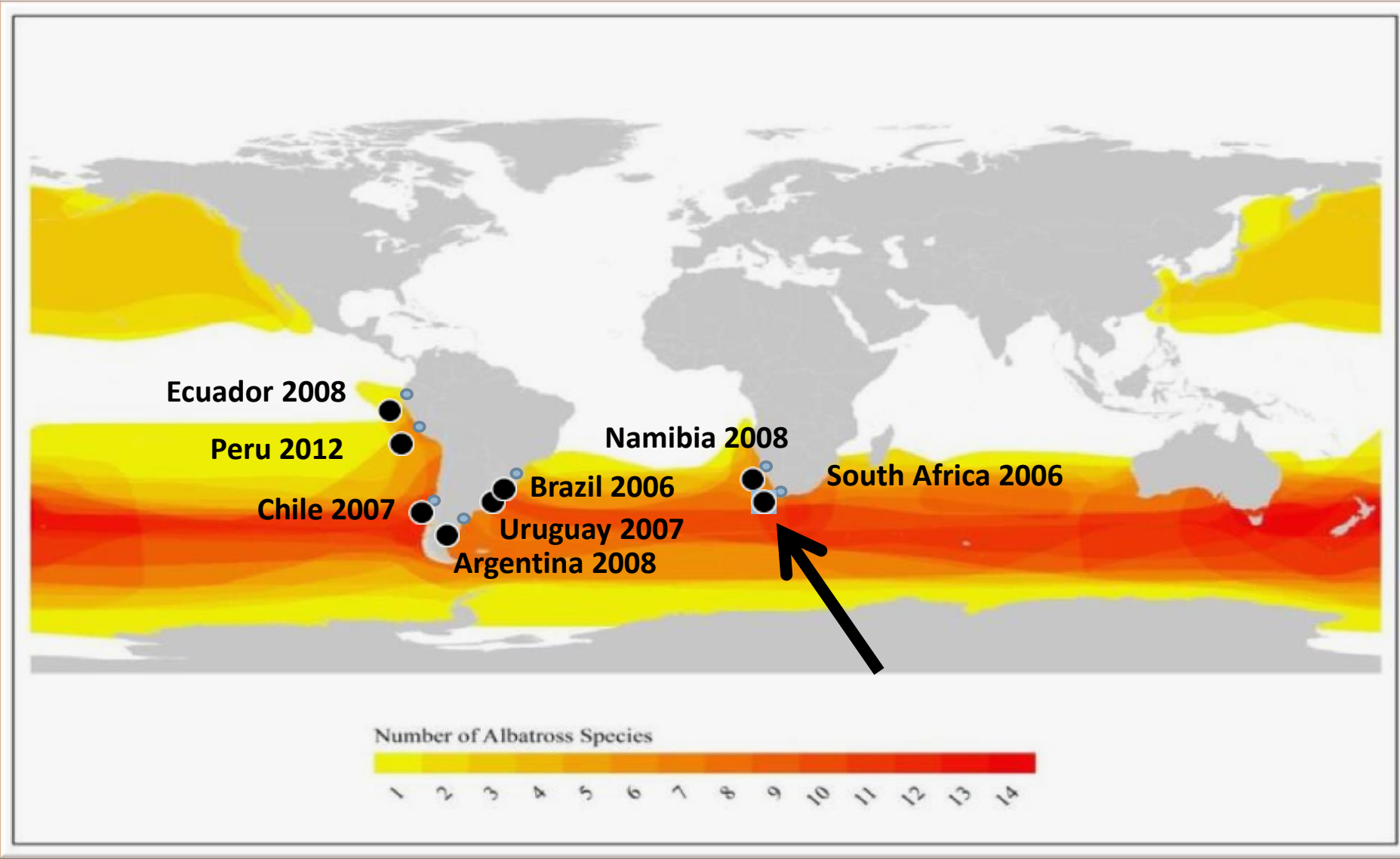


Threats to albatrosses and petrels



Problem

15 out 22 albatross species threatened with extinction



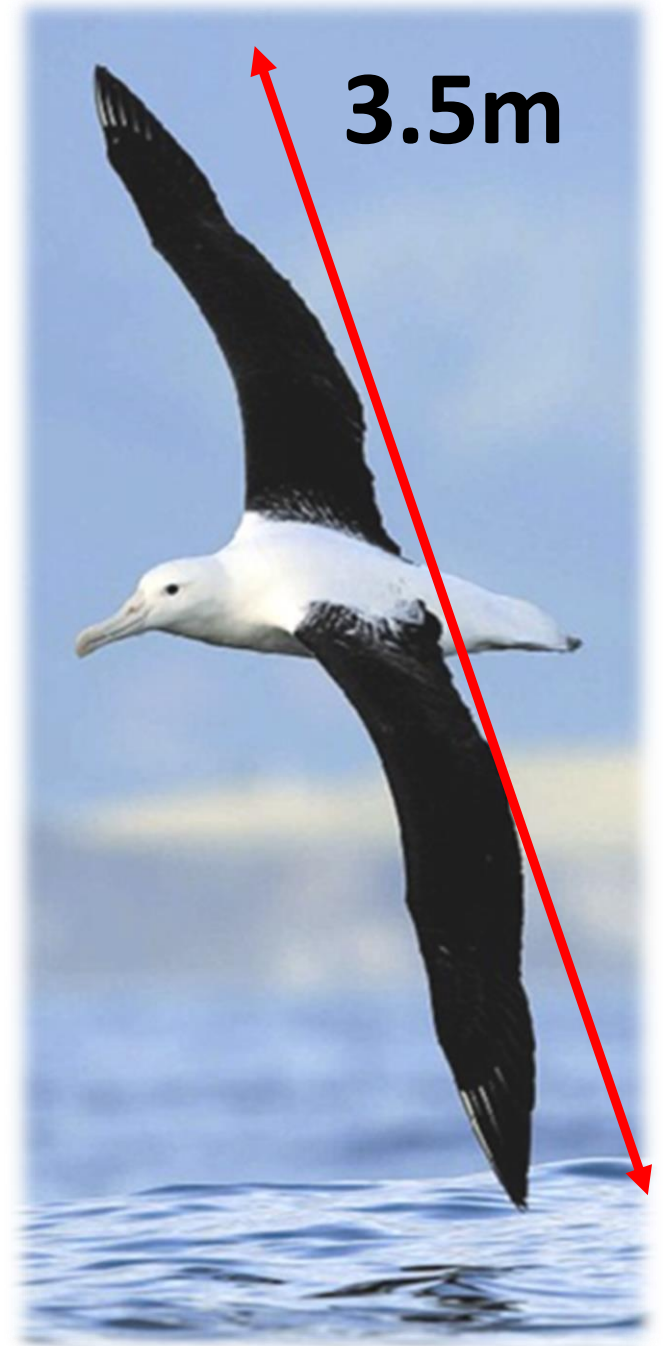
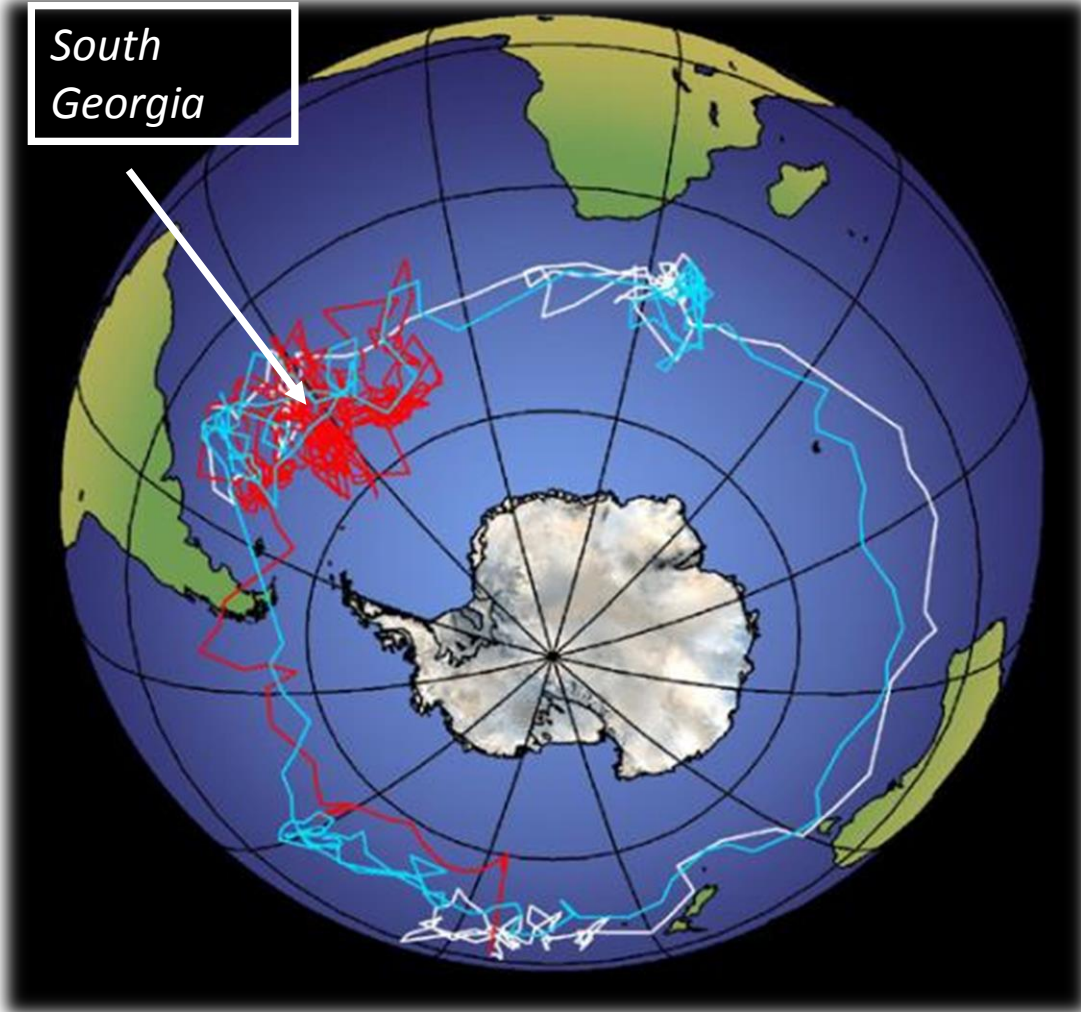
> 300 000 seabird mortalities annually



**Low observer coverage makes full
assessment of mortality difficult**

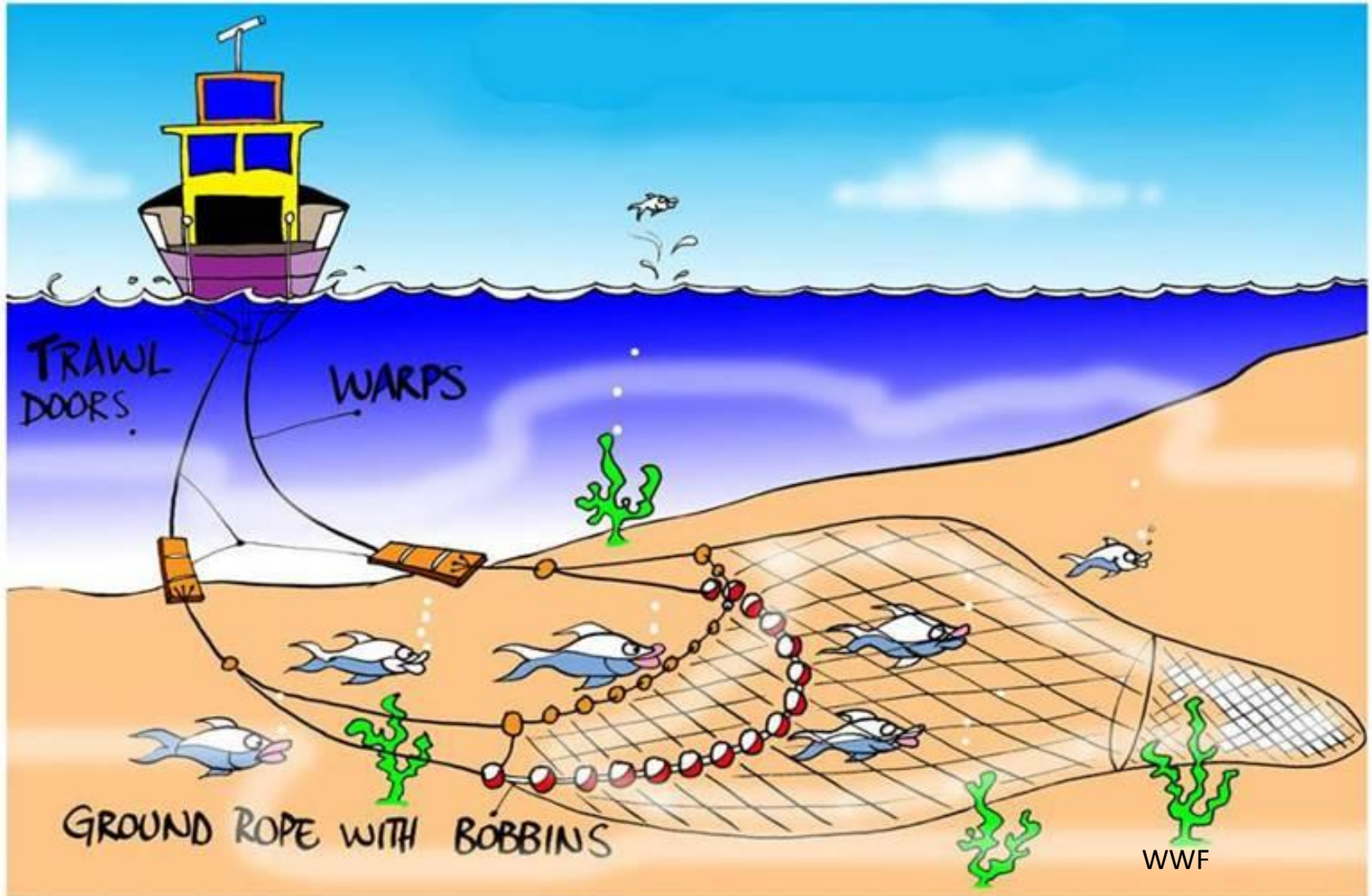


Travel large distances



Trawl Fisheries

Deep-sea trawl: 1990s (factories – offal)



Seabird bycatch



Nets



Cables





SA deep-sea trawl fishery

- 🕒 MSC certification
- 🕒 2004-05: investigate seabird bycatch (Watkins et al. 2008)
 - ➔ **18 000 seabirds**
- 🕒 Urgent action required: BSLs lines introduced; monitored
- 🕒 AIM: Investigate bycatch since BSL implementation



Methods: Data collection

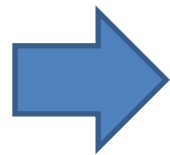


🕒 2006 – 2010

🕒 19 vessels, 64 trips, 782 trawls, 690 hours, 0.2-1.3 % fishing effort

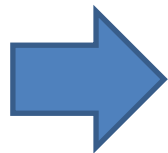
🕒 Positional, operational +enviro data

🕒 Cable interactions: light, heavy, killed (incl. poss. mortalities)



Birds per hour

🕒 Fishery log book data accessed



Scale up rates to fishery using effort

Methods: Interaction rates

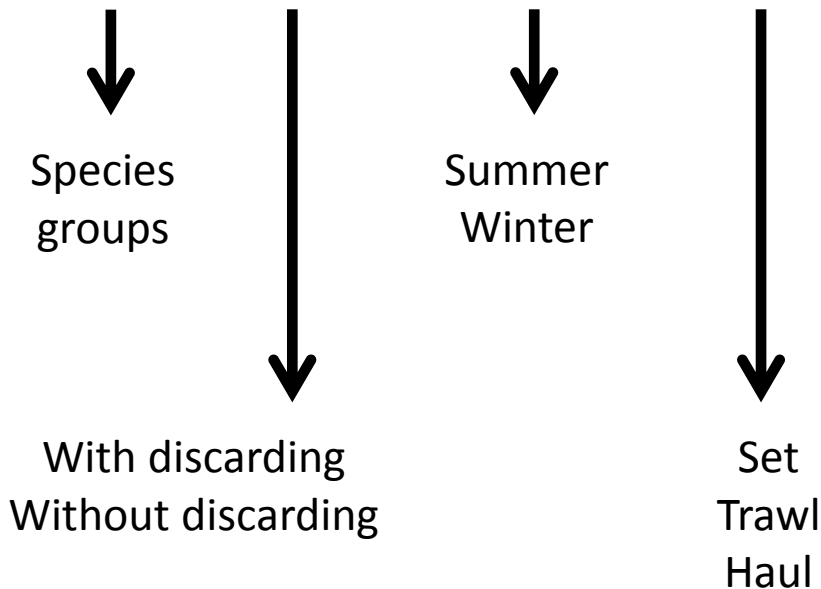
① 1st approach - zero-inflated GLMz model

→ <15% variance was explained

② 2nd approach – stratified approach adopted



③ Interaction rates are calculated across various strata



Rates

- ⦿ Require fewer assumptions
- ⦿ Best for comparing trends
- ⦿ Although rates alone are insufficient to achieve conservation goals (low rates \sim population collapsed)
- ⦿ NB to look at total fishing effort

Logbook data used to extrapolate rates up



HUGE successes

- ④ **90% fewer mortalities (all birds; ~1000)**
- ④ **99% fewer albatross mortalities (<100)**
- ④ **Expected to improve further – changed regulations**



Key Results

- ④ Winter + setting phase = highest rates
- ④ BSLs responsible for 73-95% of reduction (~Falkland Islands)
- ④ Due to halving in fishing effort
- ④ No discards = seabird-cable collisions almost non-existent



Next Steps

- ④ Freezer vessels (~35% effort) + night trawls
- ④ Monitor changes to regulations
- ④ Discard management (costly + safety implications)
- ④ Strong case for mandatory BSL adoption (cheap)



Thank you!

The research is available:
Animal Conservation 17: published online

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