



Pacific  
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# PROJECT 68: A SHORT NOTE ON THE DEVELOPMENT OF SEABIRD BYCATCH ESTIMATES

WCPFC-SCI4-2018/EP-WP-03

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# OVERVIEW

- WCPFC has introduced a range of CMMs aimed at mitigating seabird bycatch in longline fisheries (CMM 2017-06 and predecessors)
- CMM 2015-03 requested SC to estimate seabird in mortality in all fisheries covered by WCPFC
- SC12 developed ToRs for the estimation of seabird mortality (Project 68)
  - Scope of work was reiterated by SC13 and priority increased from medium to high
- Scientific Services Provider (SPC) was contracted to undertake Project 68 in late April 2018



# SCOPE AND REPORTING SCHEDULE

- Scope of Project 68 will include:
  - Estimate total number of seabirds killed per year across WCPFC fisheries
  - Assess whether there is any detectable trend in mortality
  - Identify limitations in available data
  - Generate advice on what further analyses can be undertaken (at species or species-group level) given available data
  
- Reporting schedule
  - EB-WP-03 provides a short overview of progress Focussing on longline fisheries
  - A final report will be prepared for SC15 in 2019
  - Subject to funding, updated estimates with additional data and methodological improvements will be provided in 2020

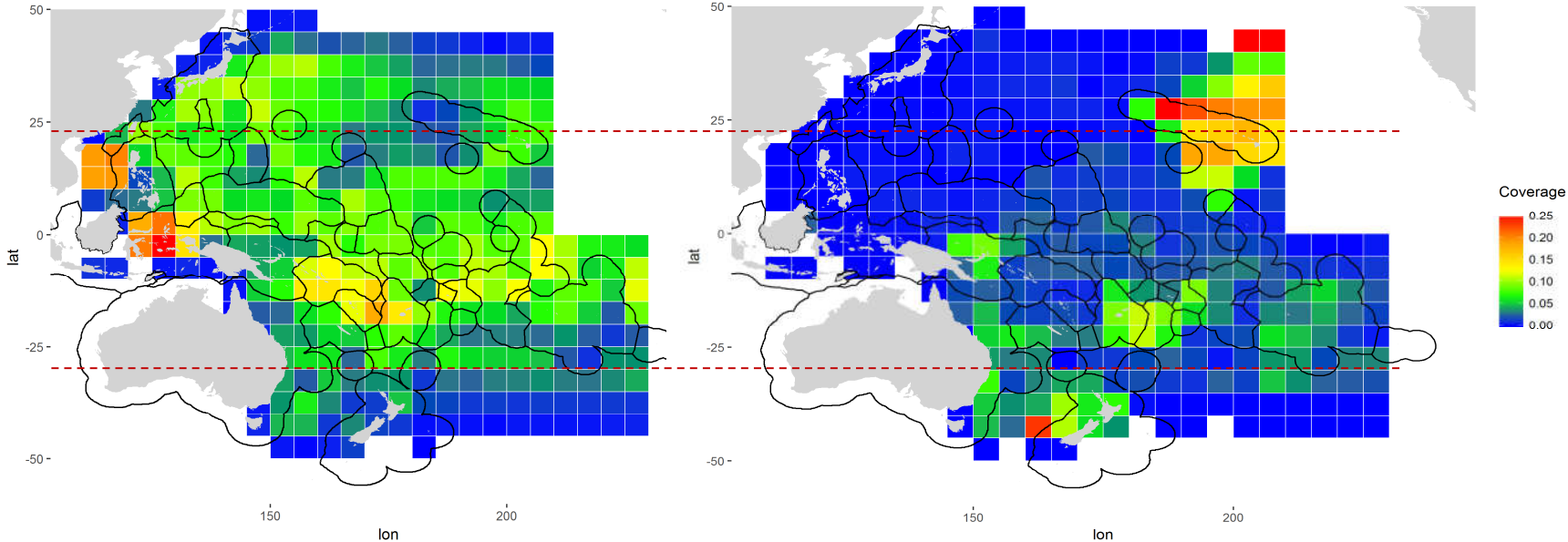


# LONGLINE OBSERVER COVERAGE (2007-2017)

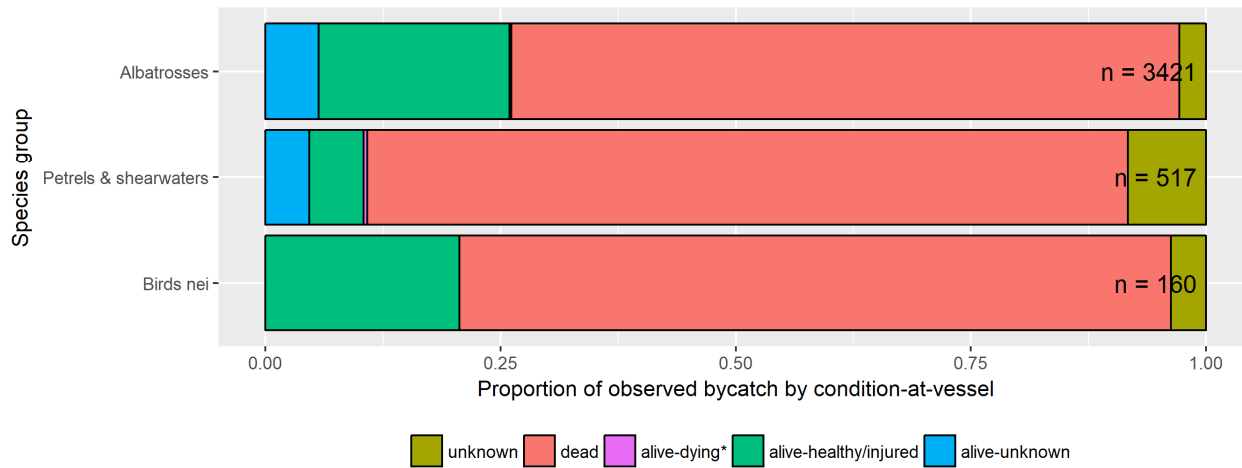
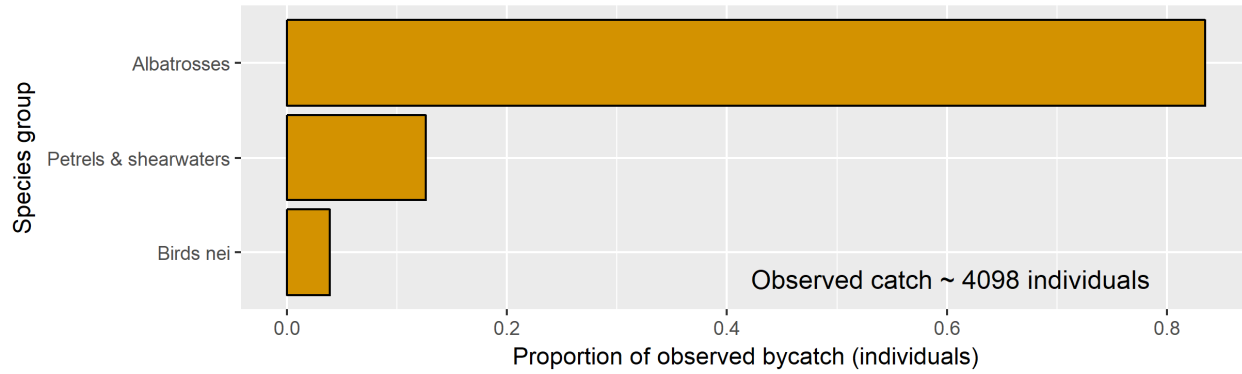


Total effort

Observer coverage



# SEABIRD INTERACTIONS - SUMMARY

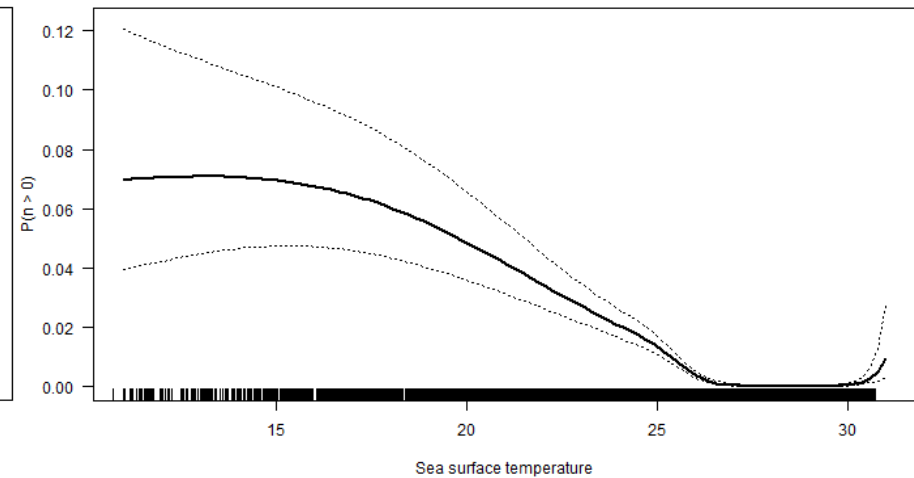
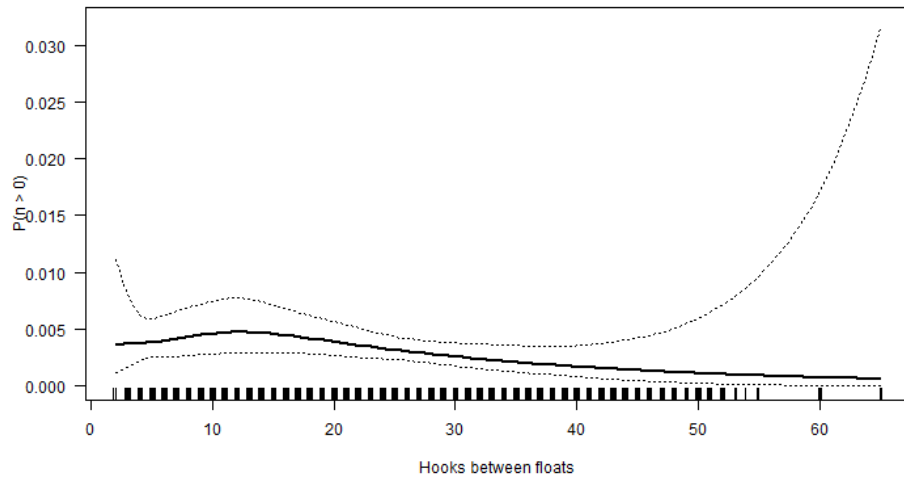
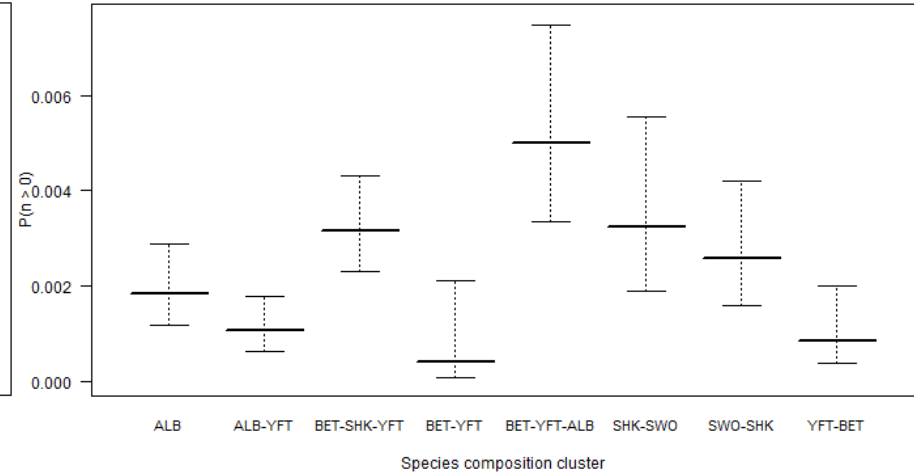
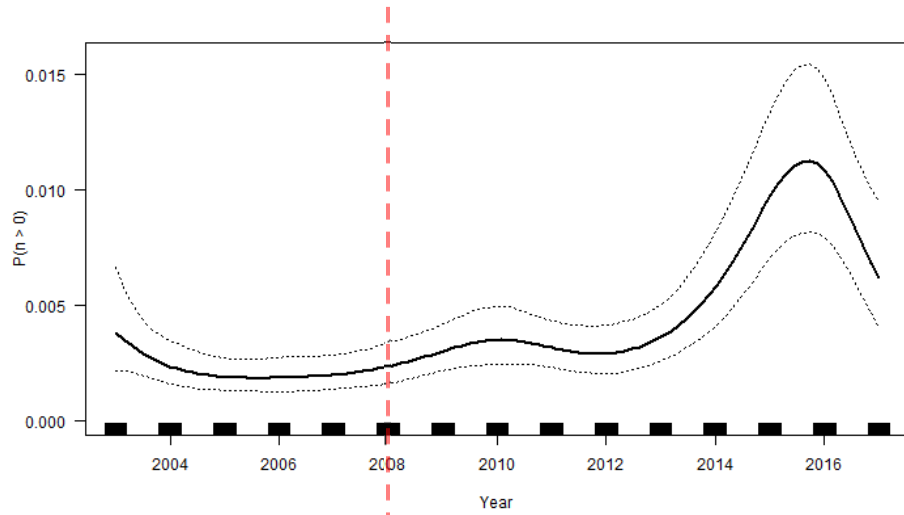


# PRELIMINARY CATCH RATE MODELS

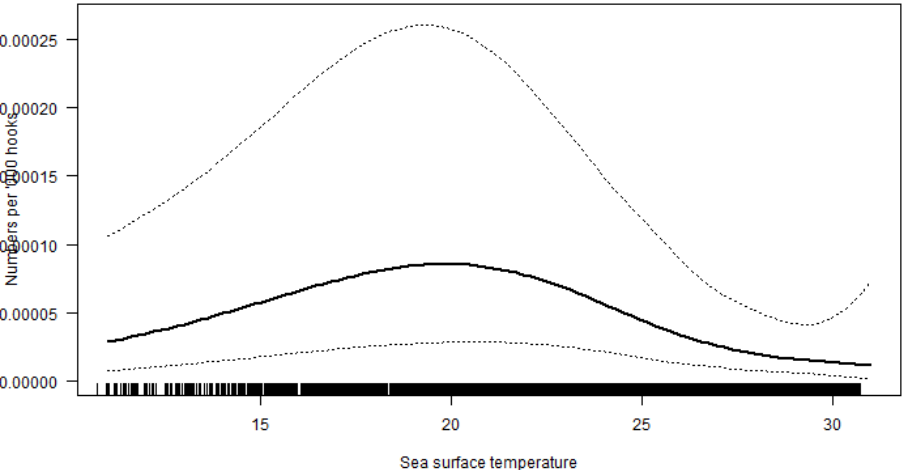
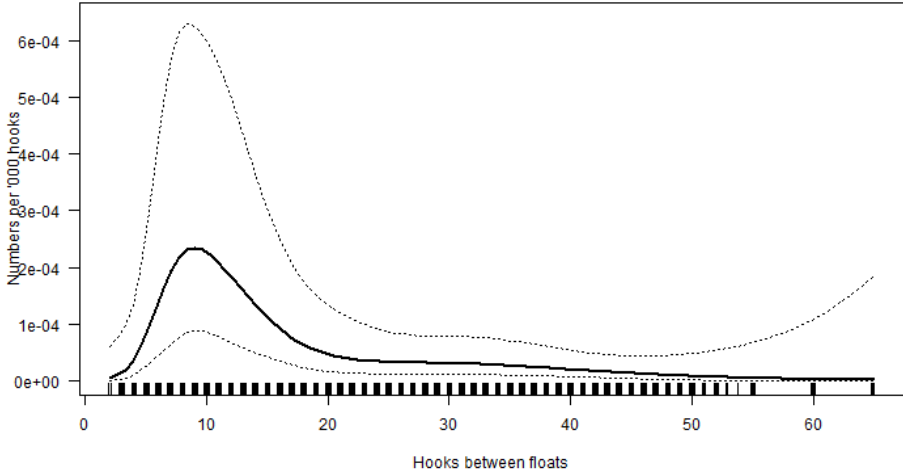
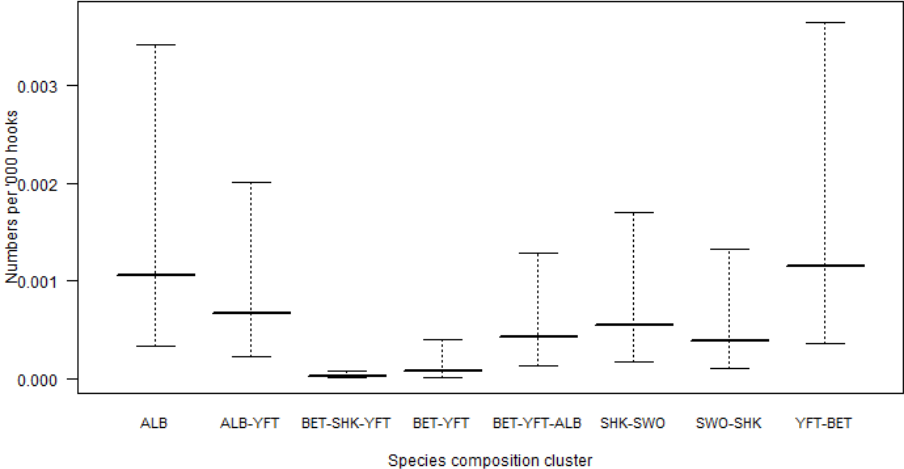
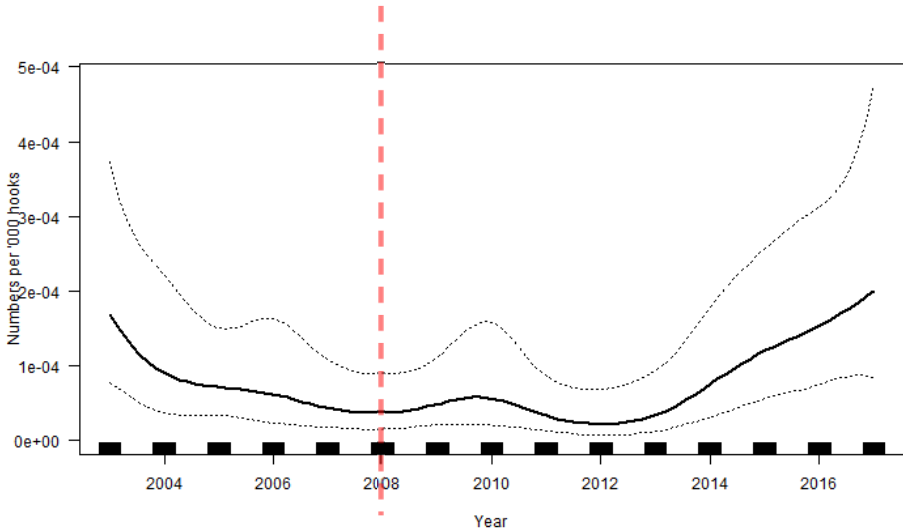
- Applied modelling framework from ST-WP-03
- Effects for year, HBF, SST and catch composition
- (Quasi) Poisson for petrels & shearwaters, delta-lognormal for albatrosses
- CVs of estimated catch rates  $\sim$  30 to 60 %



# ALBATROSSES (PRESENCE/ABSENCE)



# PETRELS & SHEARWATERS





# DISCUSSION OF PRELIMINARY MODELS

- Catch records are based on observations at haul-back
  - Need to account for cryptic mortality when estimating total catches & mortalities
- Models suggest declining catch rates for increasing HBF
  - HBF may be correlated with (un-modelled) variables (e.g. set time)
- CVs of catch rate estimates will be imprecise
  - Particularly if estimated at a species level
- Despite this, appears likely that temporal trends in catch (rates) will be detectable



# DISCUSSION



- SPC observer data provides low observer coverage in large regions of north temperate region
  - Extrapolation of observed catch rates from other areas may not be robust
- SPC holds little/no representative observer data for some fisheries
  - Seabird catch and mortalities won't cover these fisheries
- Preliminary models suggest differences between shallow and deep set fisheries
  - HBF-specific effort data available
  - Issues encountered as part of wider longline bycatch analysis
- Preliminary models at species group level
  - Not clear if sufficient data for robust analyses at species level

# WORK PLAN



- Review & collate available information
  - Part I reports, published literature on catches / catch rates
  - Available information on seabird distributions
  - (Loading outstanding non-standard LL observer data for 2017)
- A number of seabird bycatch initiatives ongoing
  - ABNJ Seabird component (EB-IP-05)
  - JP-NZ collaboration (EB-WP-09)
- Finalise catch rate models & approach to raise from catch rate estimates to catches and mortalities
- Small technical workshop with invited experts in rare bycatch event estimation methods

# RECOMMENDATIONS

- SC consider the work undertaken to date
- SC take note of high latitude areas with substantial fishing effort and limited observer coverage
- SC take note of fisheries for which SPC holds little / no representative observer data, for which seabird bycatch estimation is unlikely to be achievable
- SC consider the proposed work plan in the context of the work undertaken to date



# ACKNOWLEDGEMENTS



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**THANKS FOR LISTENING!**