

# **Data Limited Issue Toward Implementing Ecological Risk Assessment for Sea Turtles and a Proposal for Future Research Plans**

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# Introduction

## ■ CMM 2018-04: Conservation and Management on sea turtle

Requiring CCMs to report sea turtle interaction and mitigation data

- Part2 Annual Reports
- ROP observer records
- Purse Seine records
- Shallow-set longline incident reports

? *Should additional data be included as SciData?*

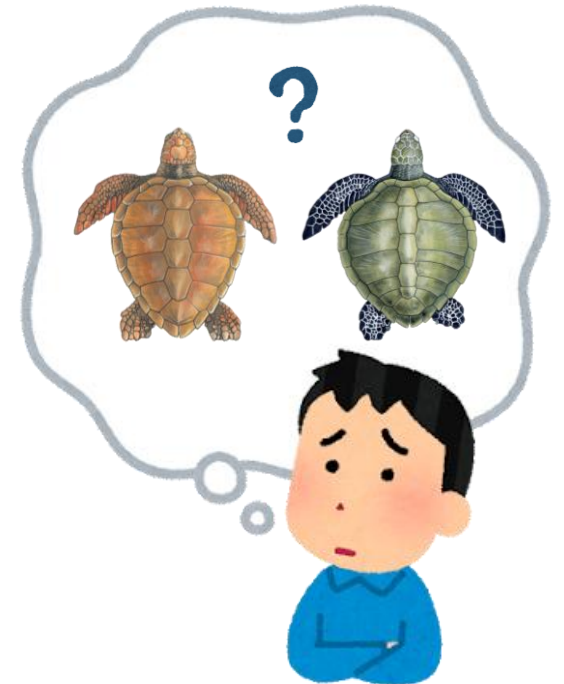
## ■ Aims for this paper

Considering the scientific value of new reporting items

- Clarifying the issues underlying several data sources
- Sharing the importance of **the purpose** for the analysis
- Understanding the importance of evaluation before finalizing the requirements

# Logbook-Derived Datasets

- Logbook is recorded by the master of vessel
- Logbook data is used as official catch and effort data in stock assessments etc.
- There is several limitations and challenges
  - Species misidentification
  - Underreporting
  - Recording heterogeneity



# Observer-Derived Datasets



## ■ Data collection under the WCPFC ROP

- General information on the operations and catches
- Detailed gear attributes such as line materials and FADs information
- Information on bycaught sea turtles and bycatch mitigation measures

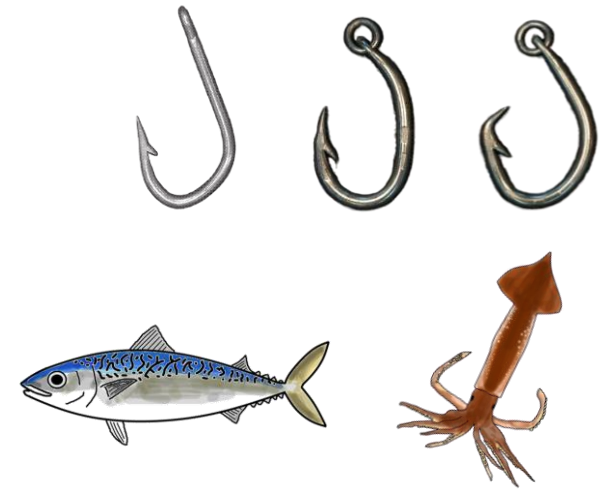
## ■ Challenges and solutions

- Observed efforts are decreasing with shrinking total efforts
- Combining datasets with multiple CCMs will improve the bycatch estimates

# Experimental Design for Evaluation of Mitigation Efficacy

## ■ Necessity of treatment-control comparisons

- Aggregate operational data reported under paragraph 7(b) is generally insufficient for the analysis
- Collecting data in more detail



## ■ Randomization and expected standardized methods

- Paired comparison under treatment conditions
- Standardize minimum sample size and reporting format
- Consistent methods with other RFMO contexts

# Risk Assessment

## ■ High uncertainty in simple estimates

- No. of bycatch are estimated by fishing effort and bycatch rates
- This approach may produce incorrect outcomes

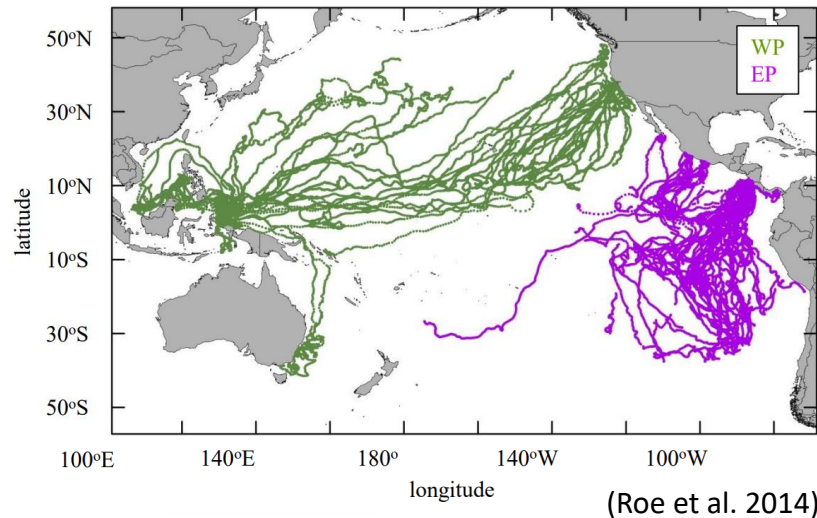
## ■ Incorporating distribution and life-history data

- Distribution is not uniform in the fishing ground of tuna longline
- Fisheries depended information alone is insufficient for evaluation of the effects
- Independent habitat and/or distributional information would be needed
- Life-history traits (e.g., age, reproduction, and growth etc.) are also important

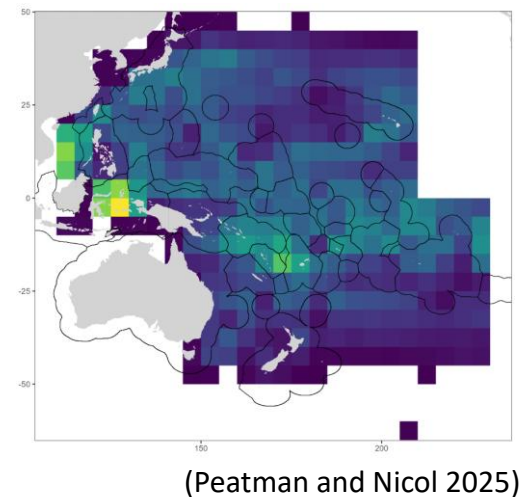
# Risk Assessment

## ■ Spatially explicit fisheries risk assessment (SEFRA)

- Detailed risk assessment needs a plenty of life-history data
- SEFRA approach is a candidate option as developed for seabirds in the CCSBT
- Analysis of the spatial and temporal overlap between fisheries and species
- Quantitatively assessing the risk of species
- Ecological traits (e.g., distribution and seasonal movements) could be used
- Enables to conduct more realistic evaluations of sea turtle vulnerability



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# SUGGESTED RECOMMENDATIONS

## ■ The SC22 is invited to recommend that;

- reporting requirements be revised based on an explicit assessment of whether each data element is usable for risk assessment on sea turtle bycatch and/or for evaluating the effectiveness of bycatch mitigation measures, rather than being added as a general reporting obligation;
- logbook-based data collection be treated as a lower priority relative to other data sources, given the statistical limitations, namely species misidentification, underreporting, and inconsistent recording practices;
- observer datasets be pooled across multiple fleets to improve spatio-temporal coverage for risk analysis, rather than relying on increases in nominal coverage alone;
- standardized identification protocols of sea turtle species be developed for observer programs, which may include but are not limited to at-sea photographic documentation followed by shore-based expert verification;
- risk assessment models and mitigation efficacy verification frameworks for sea turtles be designed with reference to comparable approaches applied to other bycatch species and to relevant initiatives undertaken by other tuna RFMOs.