

## EB WP-2

# Summary of the biology, ecology and stock status of billfishes in the WCPFC, with a review of major variables influencing longline fishery performance

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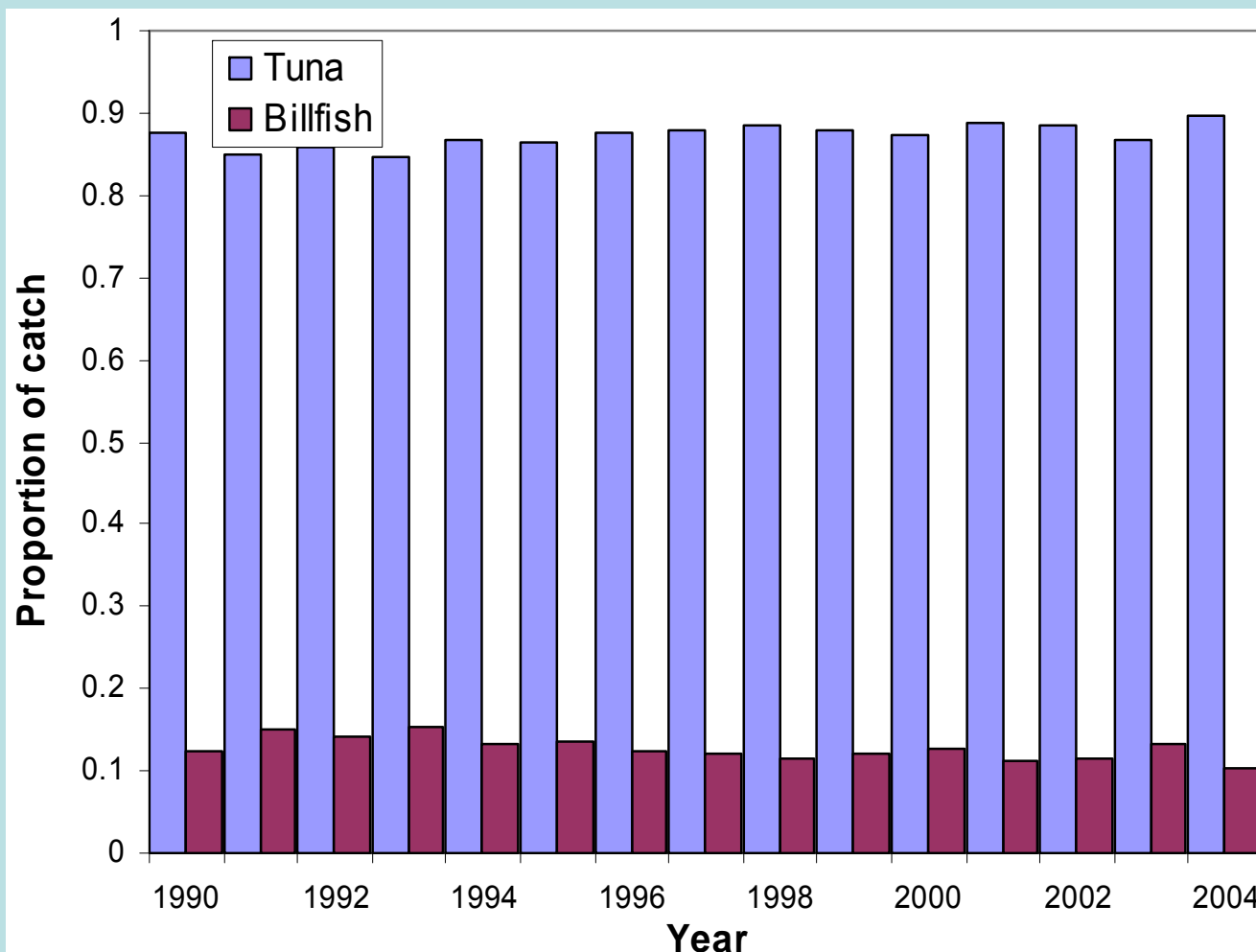


# Introduction

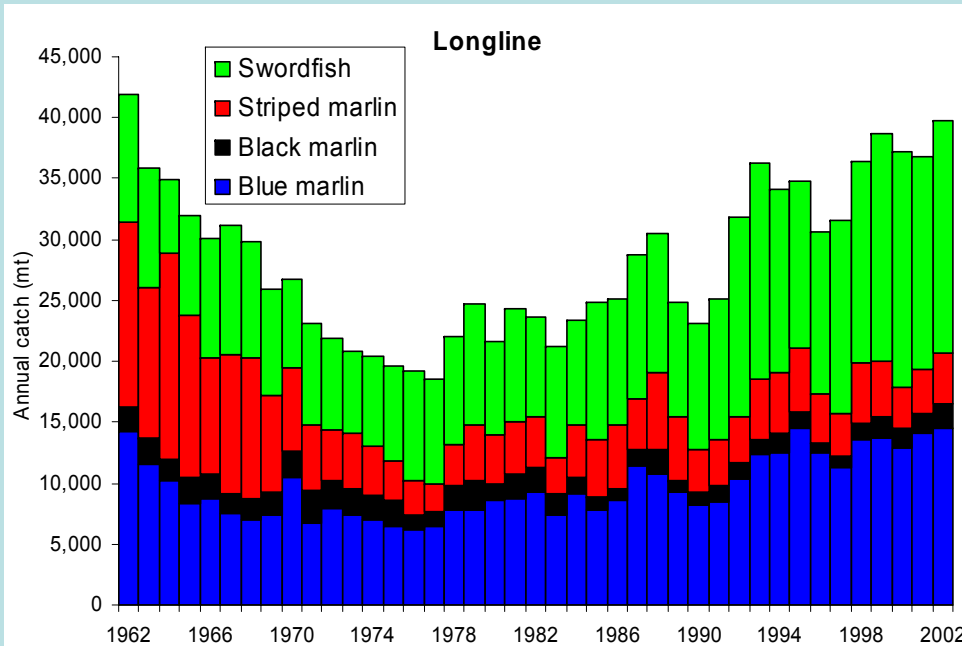
- Tunas dominate catches of industrialised fisheries of the WCPFC
- Fisheries also interact and catch a wide range of other species
- Some species retained (commercial bycatch)
- For example, billfishes



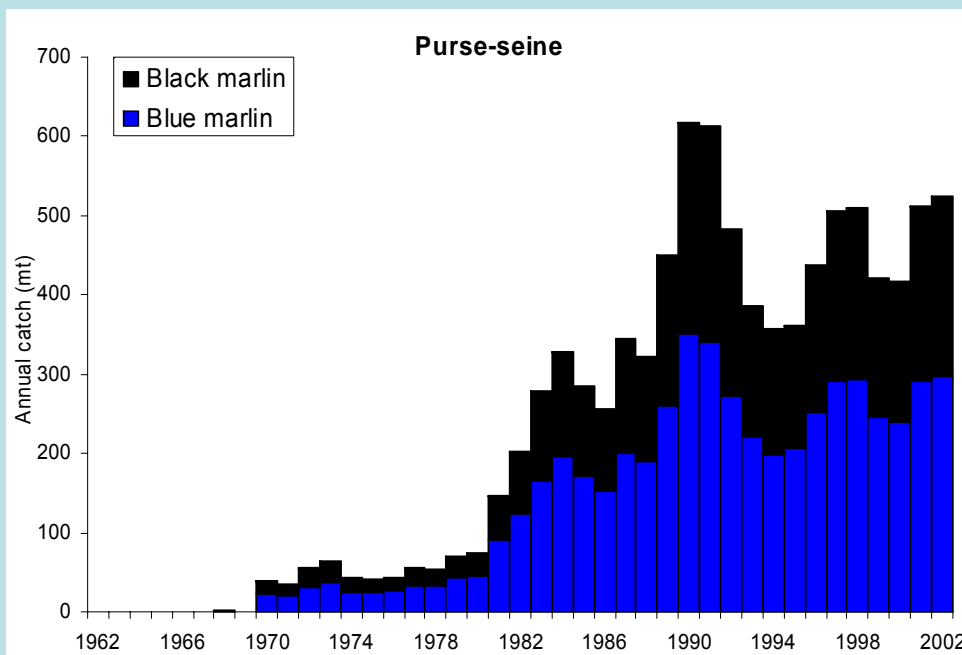
# Proportion of billfishes in longline catches



# Introduction

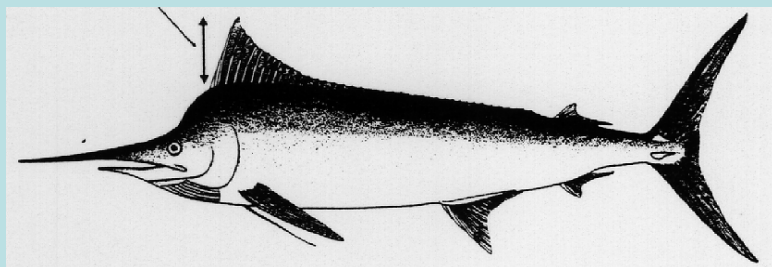


- Billfishes are also important for sportfisheries



# Biology and ecology

- 6 species in WCPFC region and Pacific



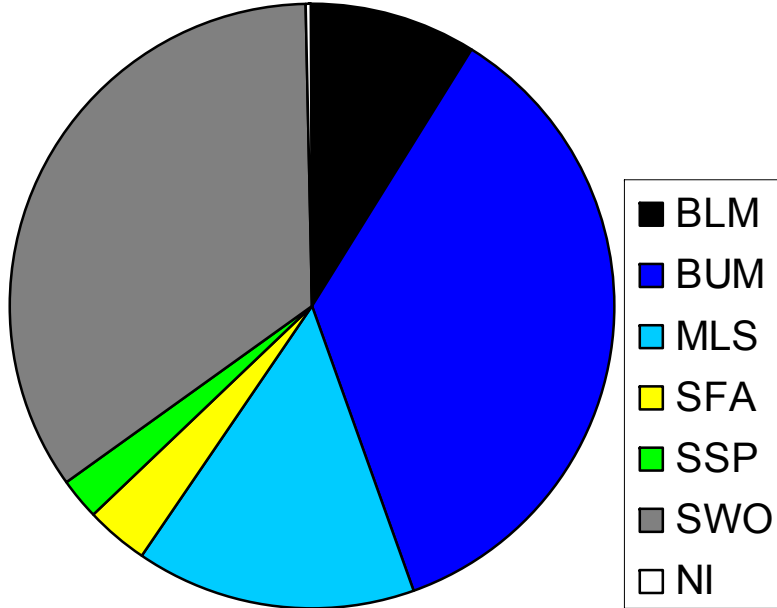
# Biology and ecology

- Rapid growth rate
- Sexual differences in growth
- Mature at 2–5 years; longevity >10+ years
- Capable of spawning year-round
- Spawning areas for blue, black and striped marlin in the Pacific only identified from WCPFC area
- Large scale movements common
- Surface species (> 120 m), except swordfish
- Wide distributions, but preferences for tropic or temperate regions

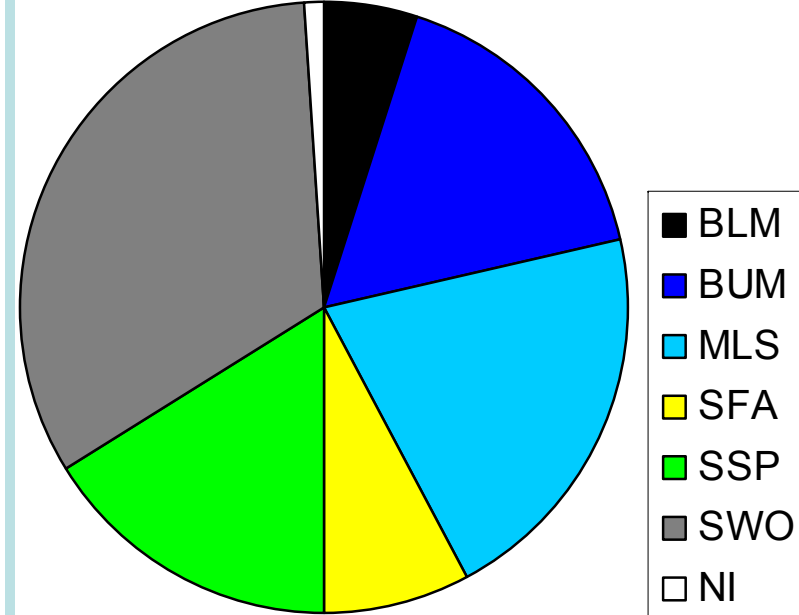


# Billfish catches: Logsheet v observer data

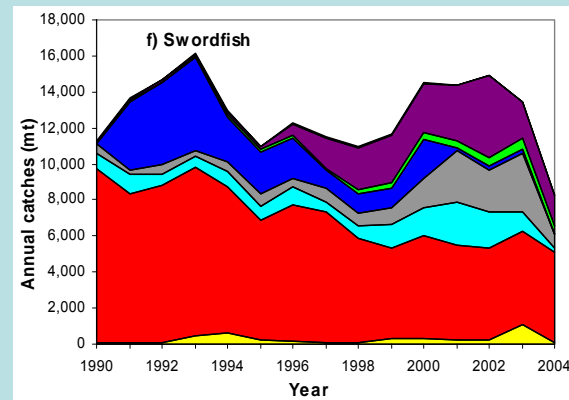
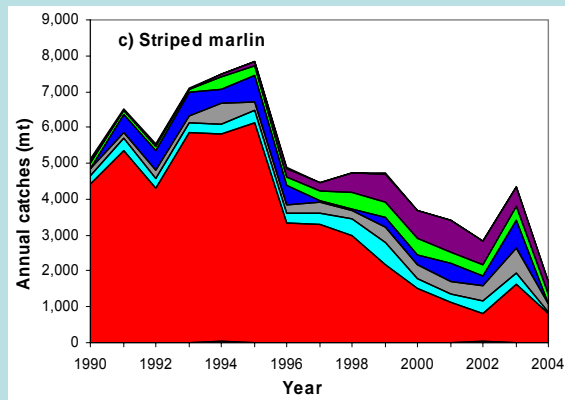
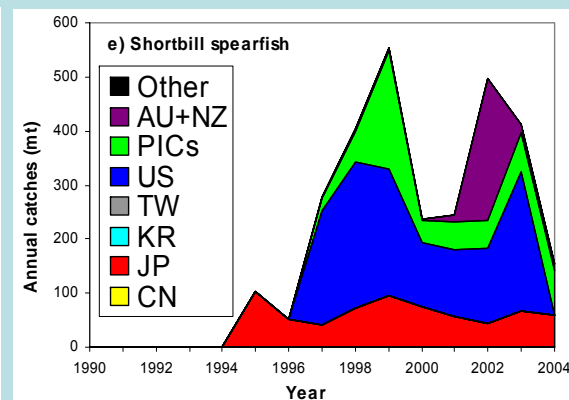
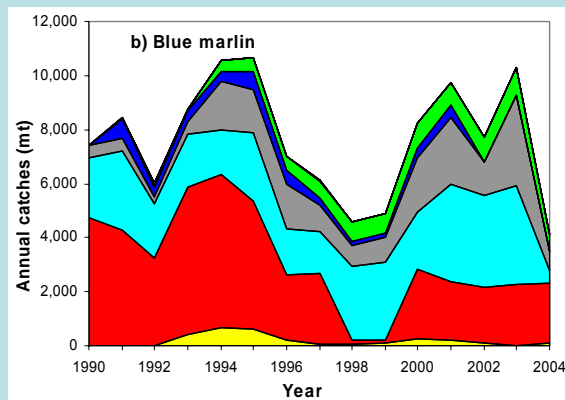
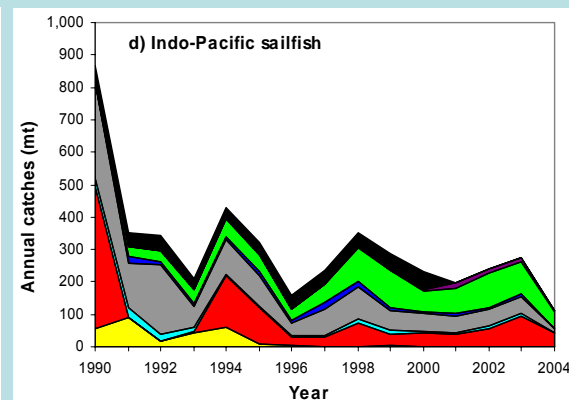
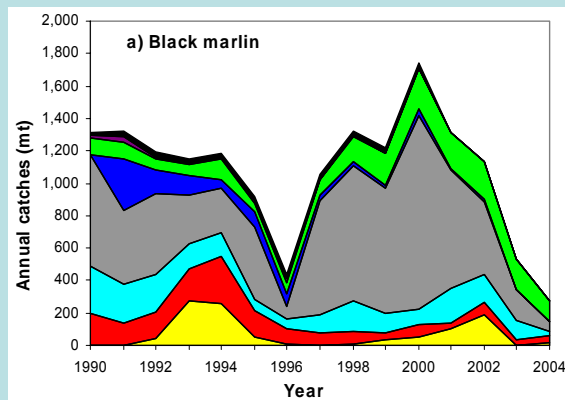
Logsheet data, 1990- 2004  
n = 759,379 billfish



Observer data, 1990- 2004  
n = 23,390 billfish

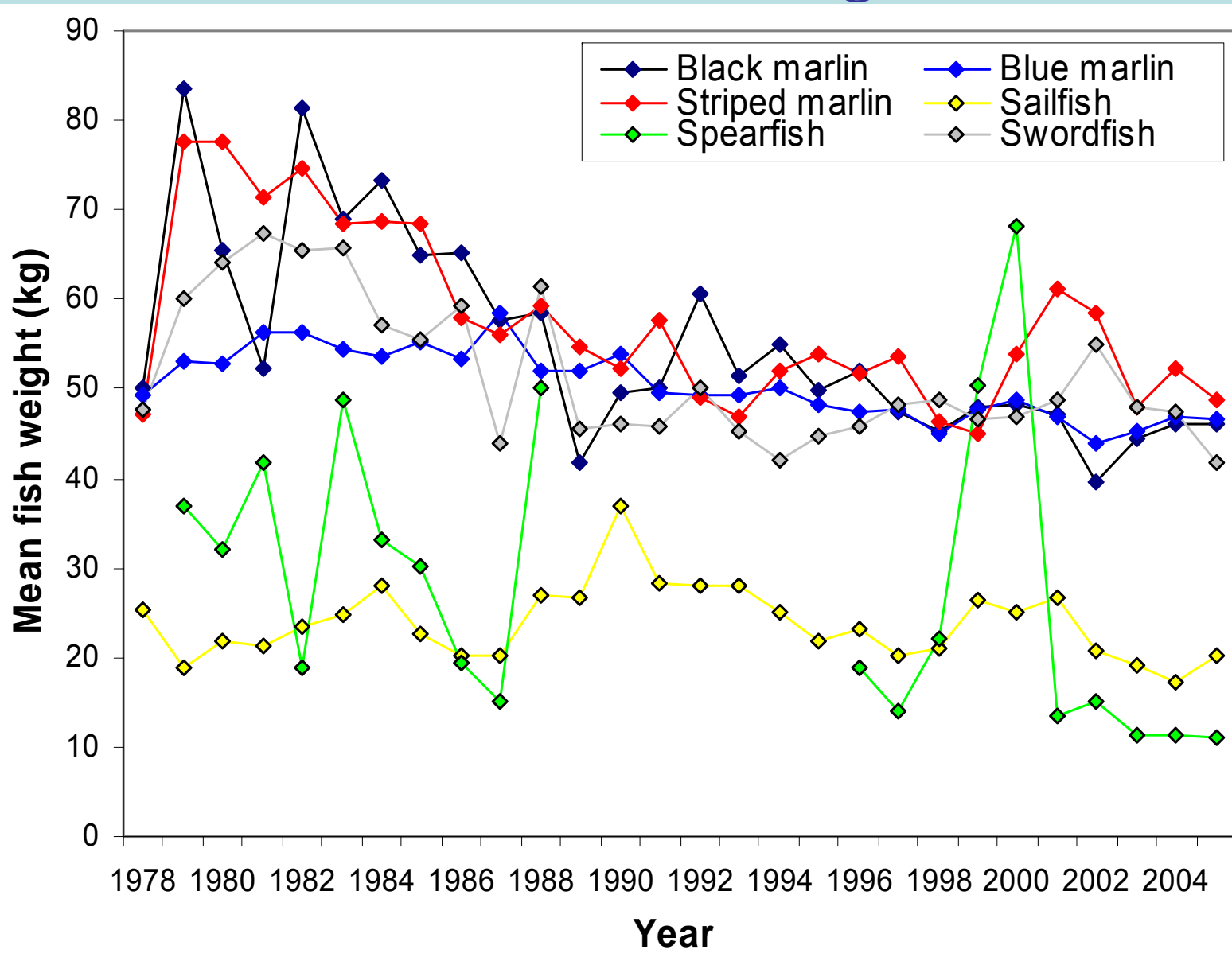


# Billfish catches: species and main flags

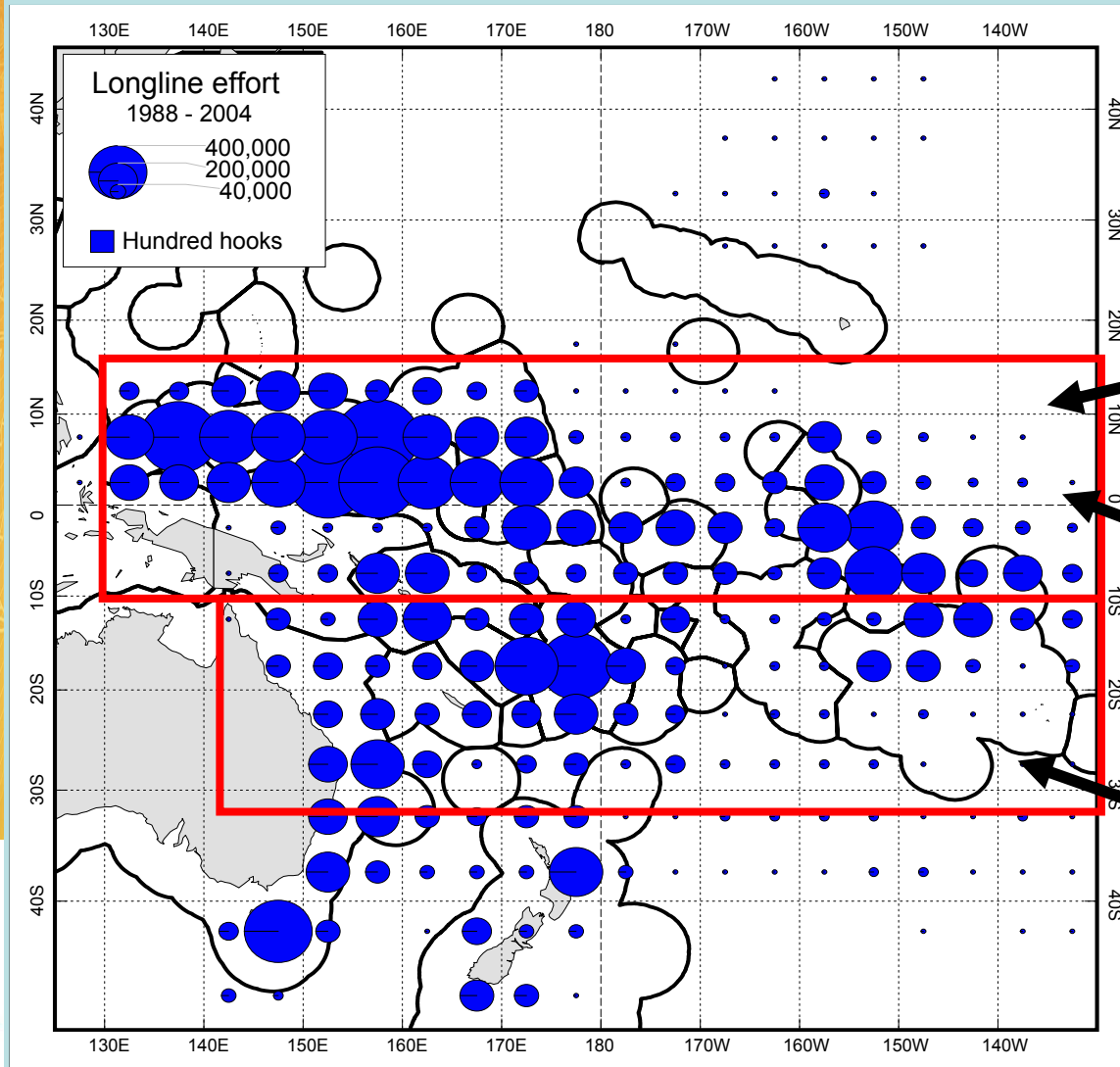




# Billfish catches: average size



# Three fisheries examined



Tropical shallow  
Longline  
<10 HBF

Tropical deep  
Longline  
≥ 10HBF

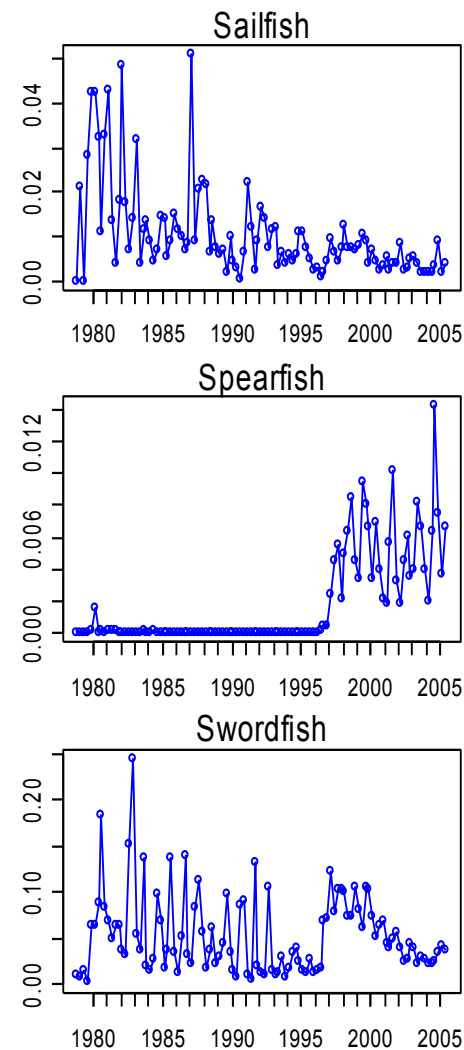
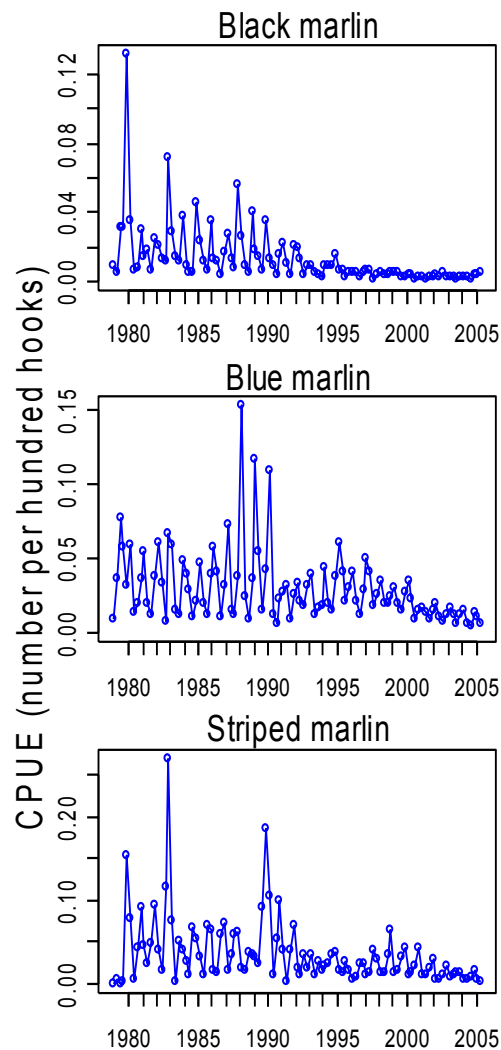
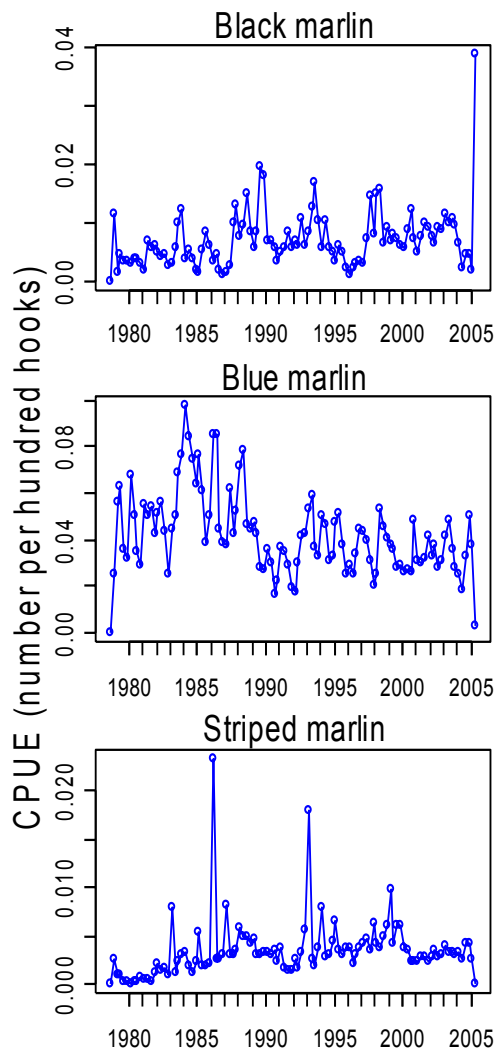
Temperate albacore  
longline



# Billfish CPUEs: Latitude

Western Tropic

Western Temperate Pacific Longline



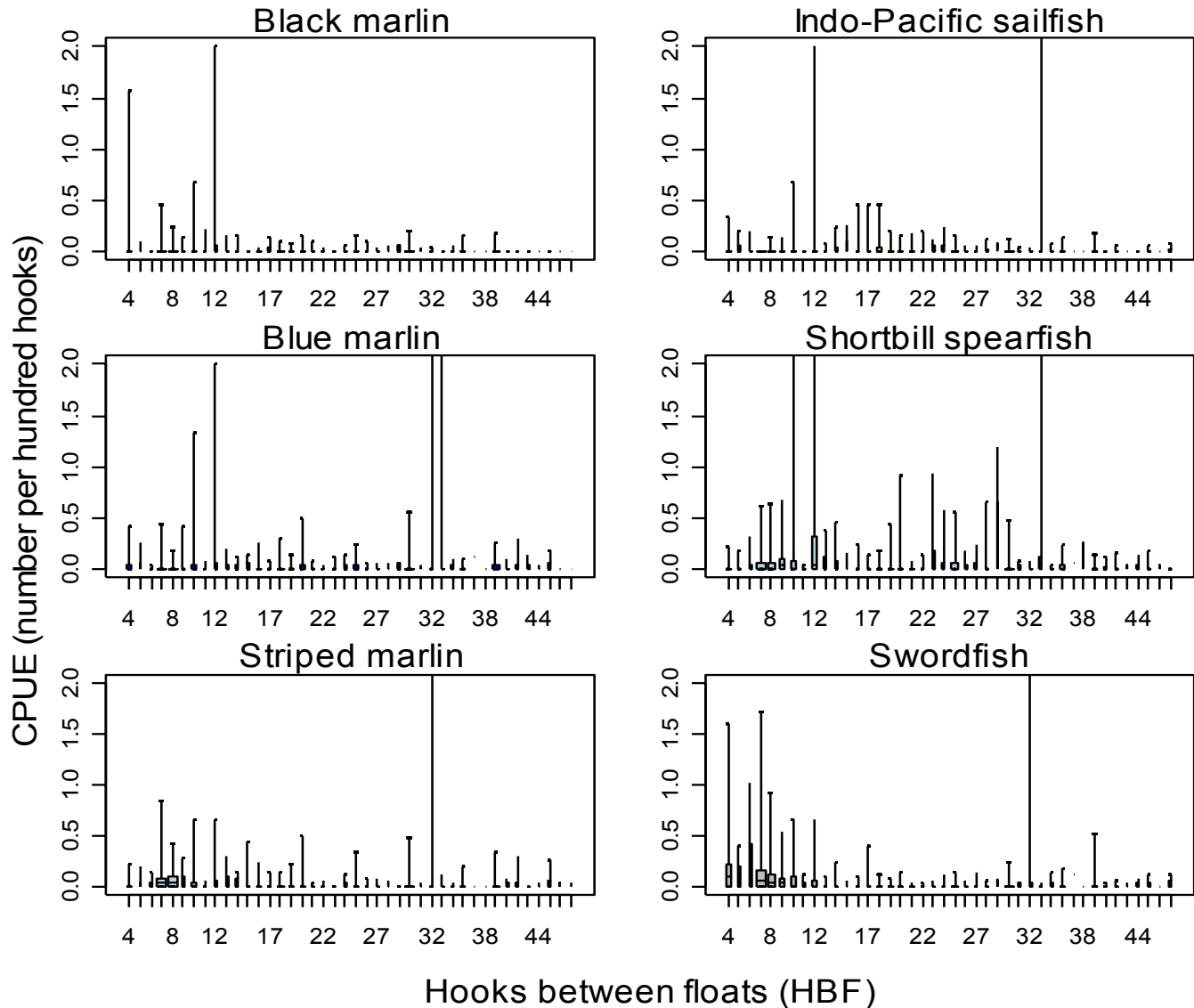
Q1

Quarter



# Billfish CPUEs: Hooks between floats (HBF)

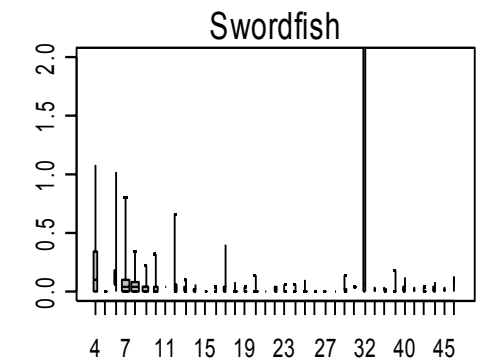
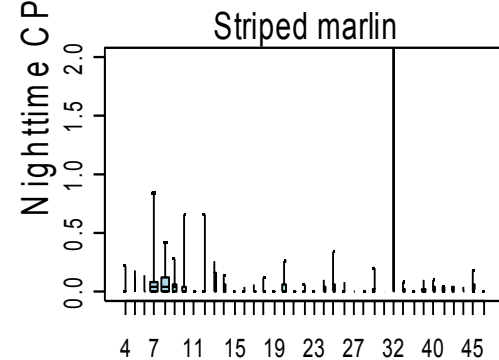
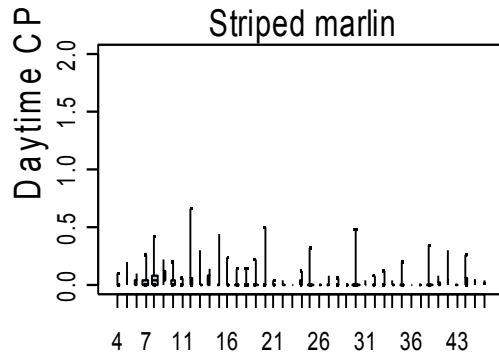
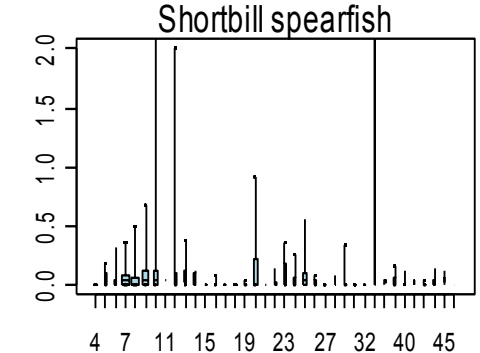
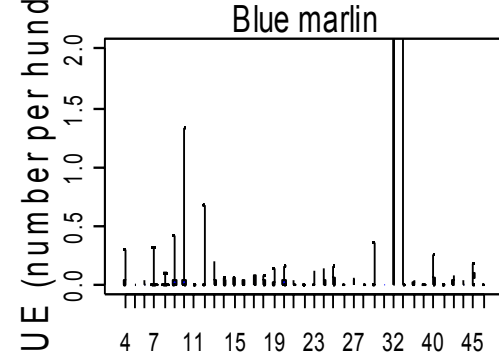
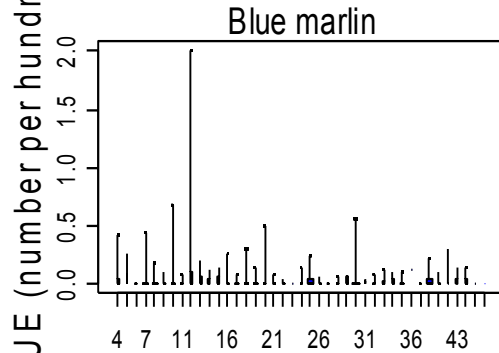
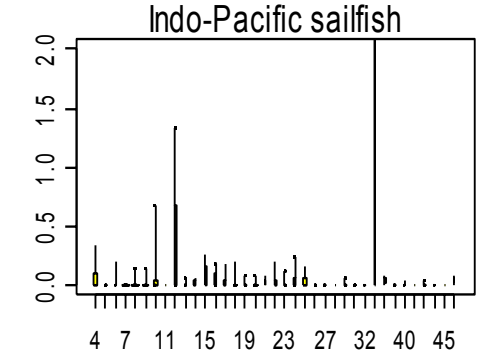
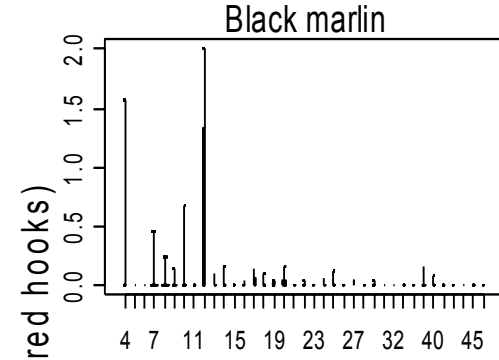
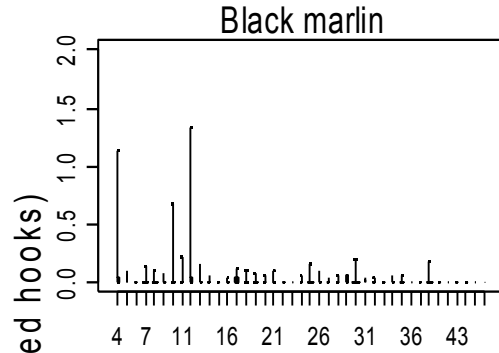
## Western Temperate Pacific Albacore Longine



# Billfish CPUEs: Set time and HBF

Western Temperate Pacific

Western Temperate Pacific Albacore Longline



Hooks between

Hooks between floats (HBF)



# Stock assessments

## Blue marlin

- MFCL Pacific-wide assessment by Kleiber et al. (2003)
- Fully exploited but not overfished
- Updated assessment a priority (SCG-3)

## Black marlin

- No formal assessments
- Similar level of data as for striped marlin
- Next species for SA?



# Stock assessments

## Striped marlin

- Underexploited in EPO, but uncertainties
- Two assessments underway
  - SW-WCPO
  - North Pacific

## Indo-Pacific sailfish

- No formal assessments
- Status is uncertain



# Stock assessments

## Shortbill spearfish

- No formal assessments
- Status is uncertain

## Swordfish

- Assessments on north and south EPO stocks indicate they were not overfished (IATTC)
- Preliminary MFCL assessment for north Pacific stock (Kleiber and Yokawa 2002)
- Swordfish fisheries developing in WCPO and EPO





# Uncertainties

- Future stock assessments and management would be assisted by accurate information on:
  - age-estimates
  - growth rates (sizes-at-age for biological processes)
  - movements and habitat preferences
  - stock structure

**Where is best value of more resources:  
stock assessments or biology and ecology?**



# Potential areas for future consideration ?

- Newly developing billfish longline fisheries
- Interactions between longline and sports fisheries



# Acknowledgements

- Colin M. and Manu S.
- Adam L. and John H.



Secretariat of the  
Pacific Community

