



CRC Reef
Research
Centre

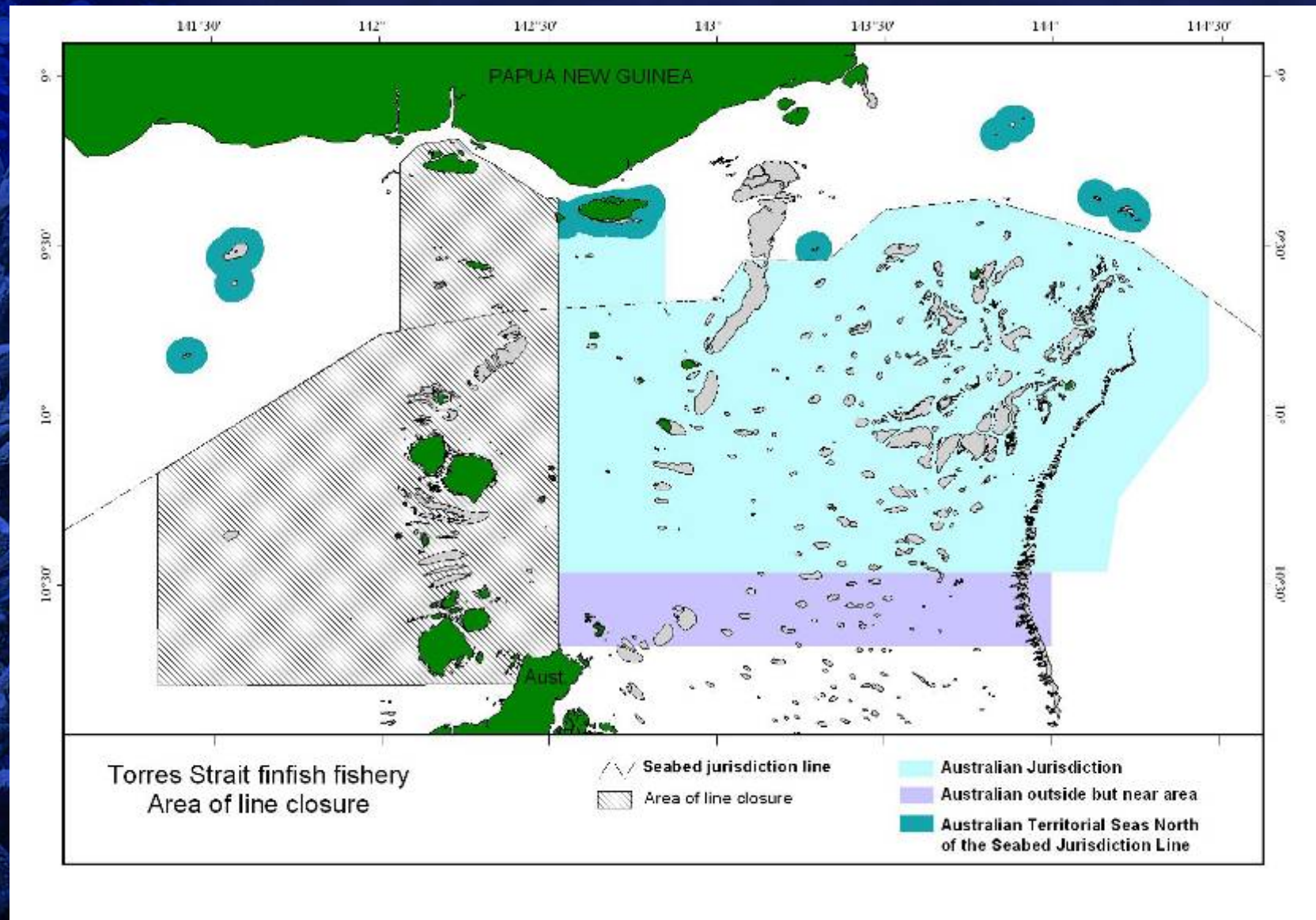


Population biology of three coral trout species in the eastern Torres Strait

Ashley Williams,
Gavin Begg, Cameron Murchie &
Leanne Currey

CRC Reef Research Centre
James Cook University

Torres Strait Reef Line Fishery



Characteristics

Non-Islander Commercial



- Dories (~5m)
- Main vessel (12-20m)
- Hook and line
- Sold to mainland
- Annual harvest ~120t

Islander Commercial



Murray Is

- Dinghies (~5m)
- Island-based
- Hook and line
- Sold to community freezer
- Annual harvest ~30t

Islander Subsistence



Murray Is

- Beach/dinghies
- Island-based
- Hook and line, spear, net, rock wall trap (sai)
- Consumption

Multi-Species



Over 50 species in Non-Islander commercial catch

**Main
commercial
species**

Common coral trout
(*Plectropomus leopardus*)



Barred-cheek trout
(*Plectropomus maculatus*)



Passionfruit trout
(*Plectropomus areolatus*)



Blue-spot trout
(*Plectropomus laevis*)





Management Arrangements

- Fishery managed by Torres Strait Protected Zone Joint Authority (PZJA) - AFMA and QDPI&F
- No management restrictions for Islander subsistence fishing
- Minimum size limits e.g. 38cm TL for all coral trout species
- Gear restrictions
 - Limited number of hooks
 - Maximum boat length (20m)
- Management considering
 - Seasonal spawning closures
 - Area closures
 - Total allowable catch (TAC) or effort (TAE)



Objective

- To determine whether it is appropriate to manage the coral trout species complex as a single species



Methods

- **Population biology of 3 species of coral trout**

- Common coral trout (CCT)
- Barred-cheek trout (BCT)
- Passionfruit trout (PFT)



- **Parameters estimated**

- Species distribution
- Age distribution
- Total mortality (catch curves)
- Growth (VBGF)
- Spawning seasonality (GSI and reproductive stages)
- Size at sex change (protogynous)

Sample collection

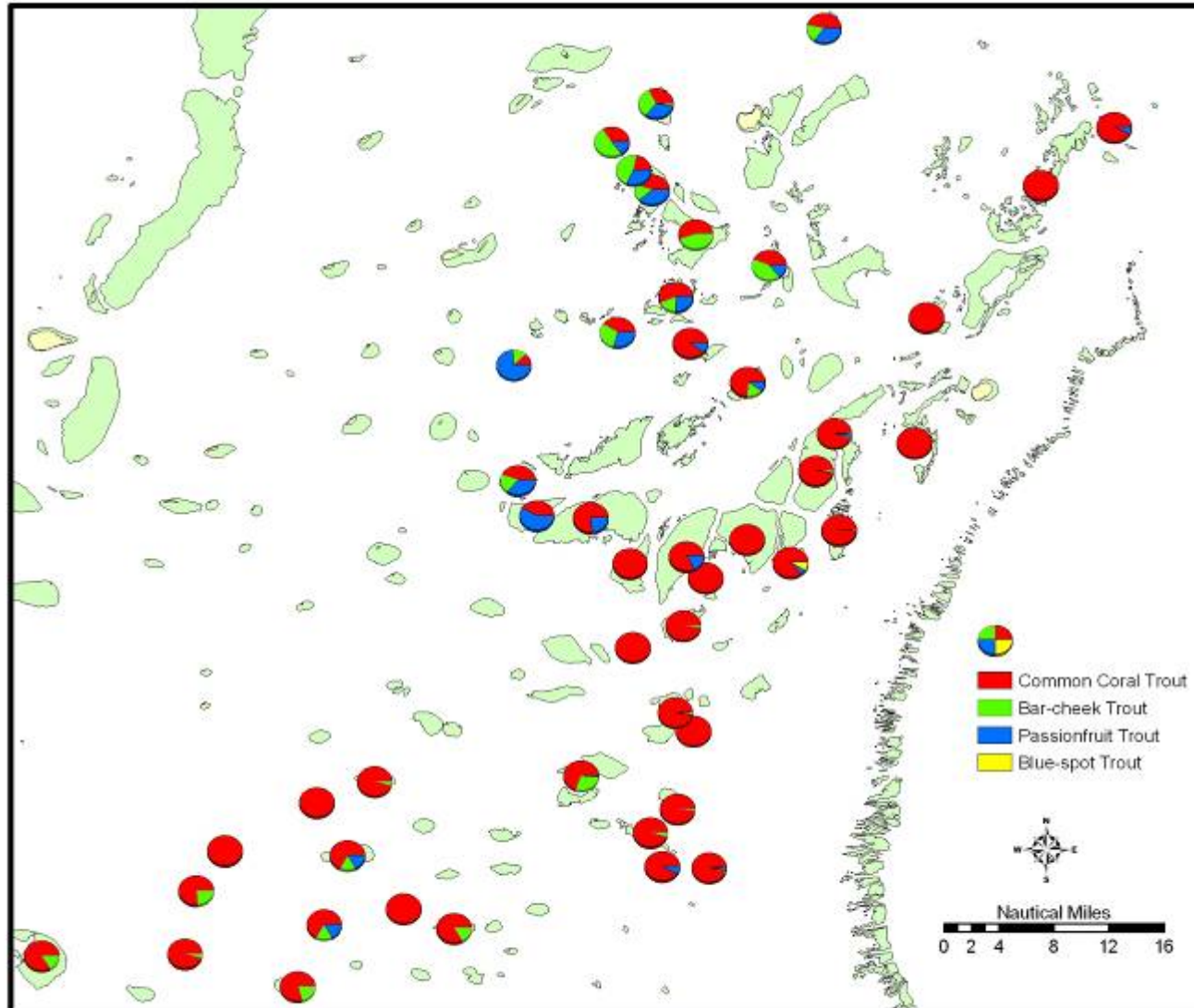
Samples of coral trout collected from

- **Observer surveys**
 - non-Islander sector
 - 54 observer days
 - Precise location, length, weight, age, sex etc.



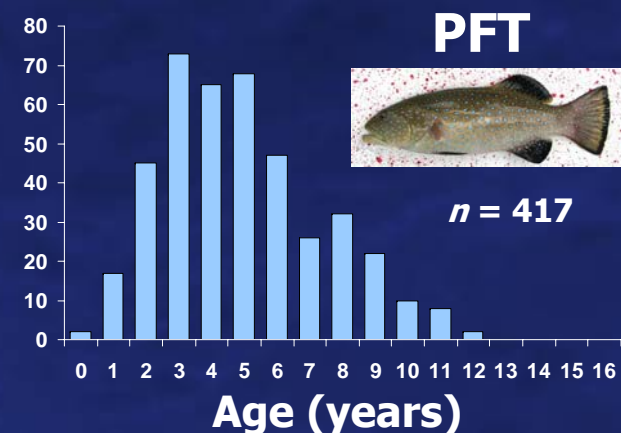
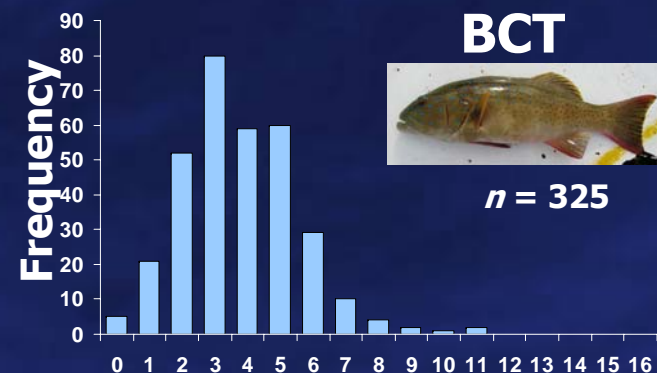
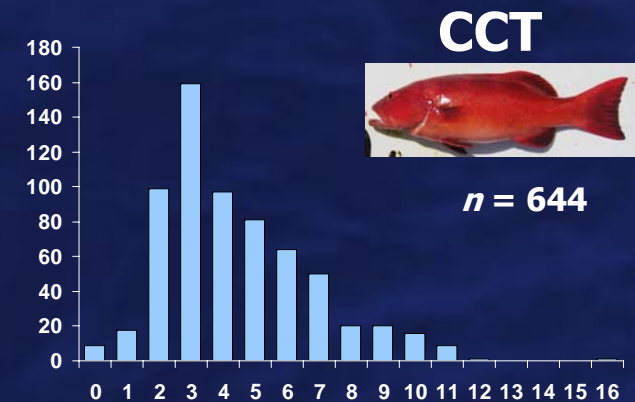
- **Fleet samples (fish frames)**
 - Islander and non-Islander sectors
 - Collected monthly over 2 years
 - General location, length, age, sex
 - Non-representative sample of catch

Distribution



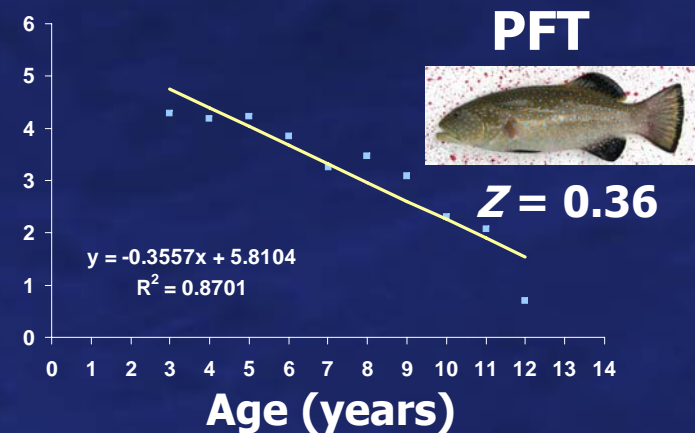
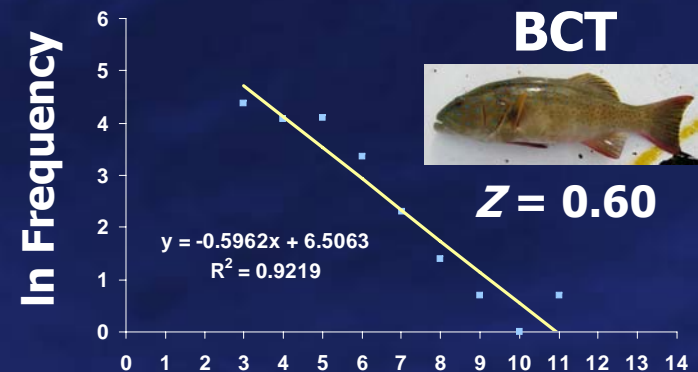
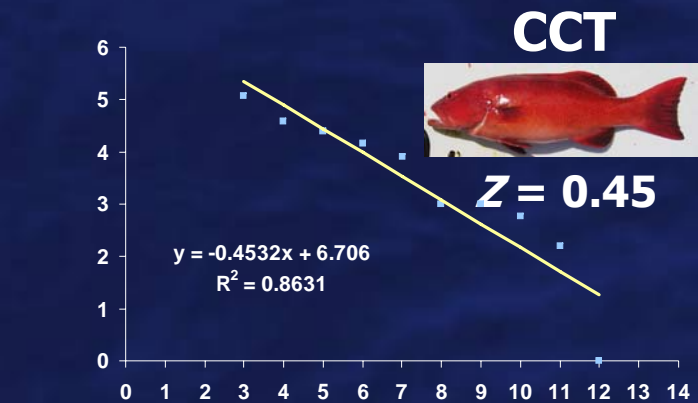
Age distribution

- Similar age distributions
- Max age 11 to 12 years
- Age at recruitment to fishery 3yo
- Higher proportion of older (>8yo) passionfruit trout



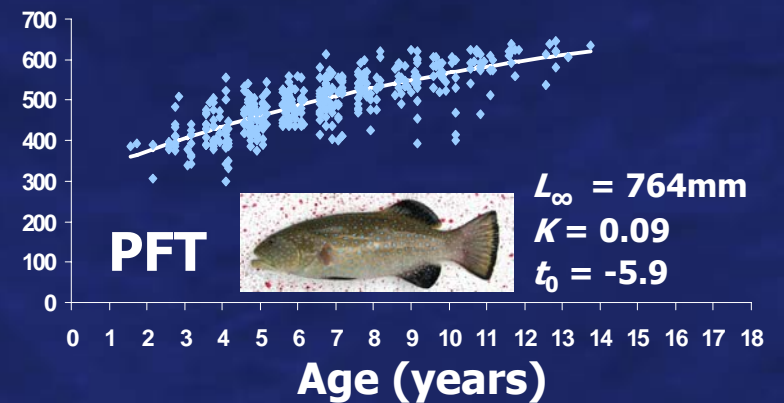
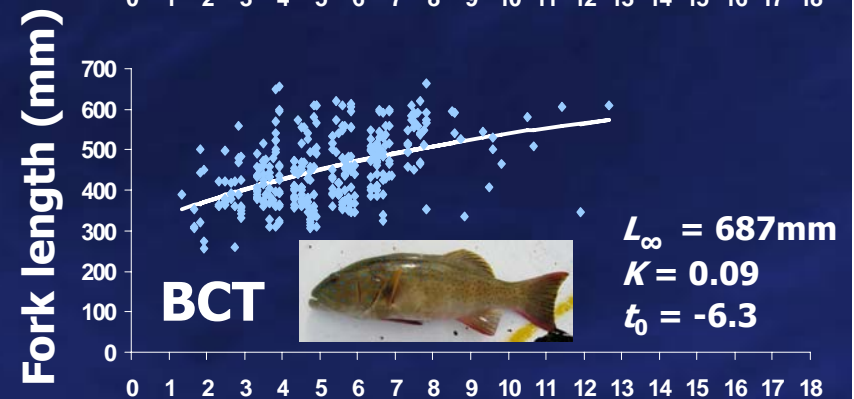
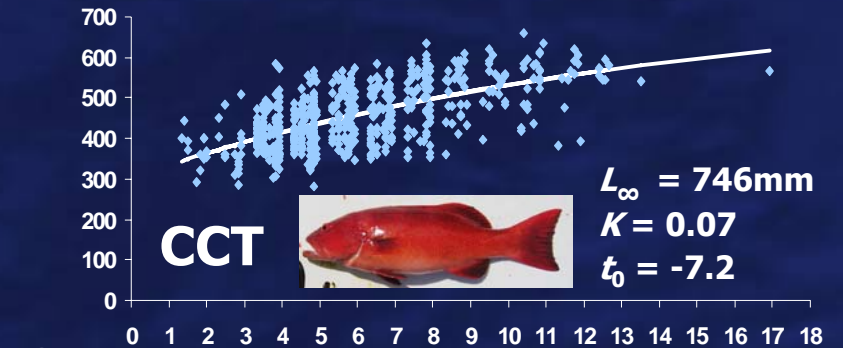
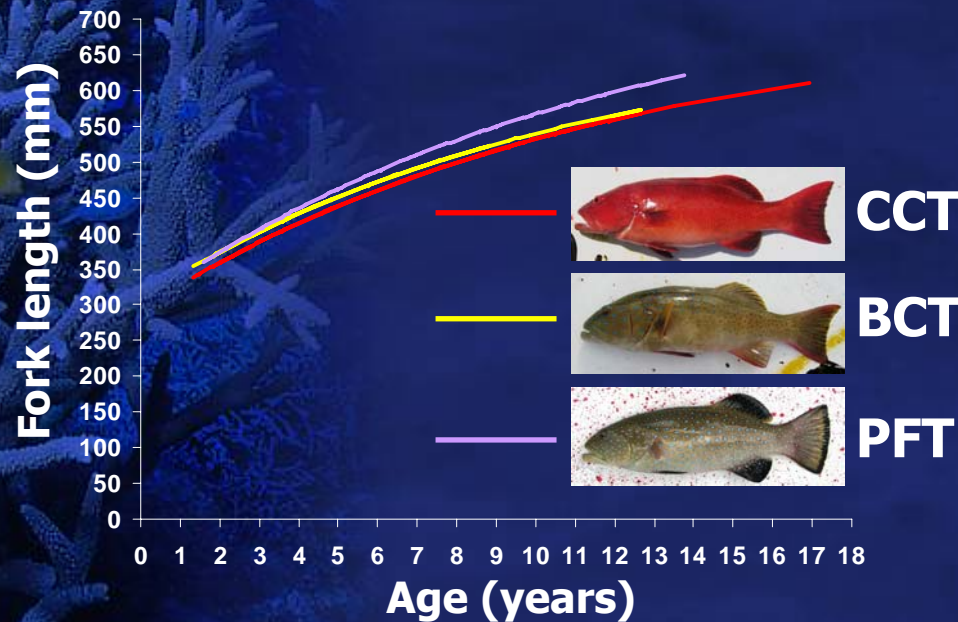
Total mortality

- Age-based catch curves
- Highest Z for barred-cheek trout
- Lowest Z for passionfruit trout



Growth

- Large variation in size-at-age
- Potentially poor description of growth, but comparable among species
- Passionfruit trout growth differs from other 2 species



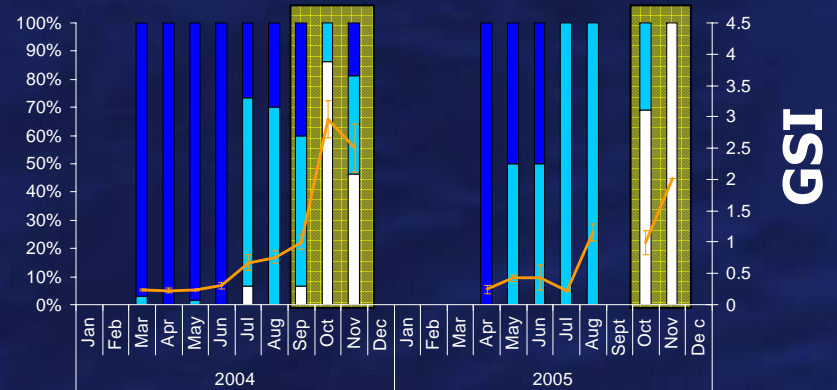
Spawning season

CCT



- Sep – Nov
- Some spawning in July 2004

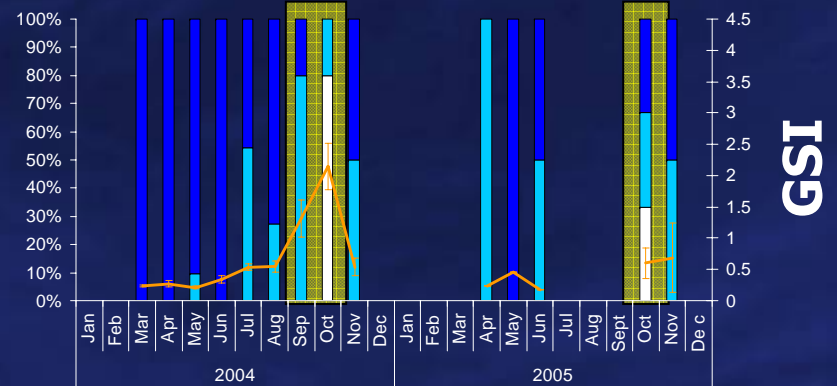
■ Resting
■ Ripe
■ Running Ripe
— Ave GSI



BCT



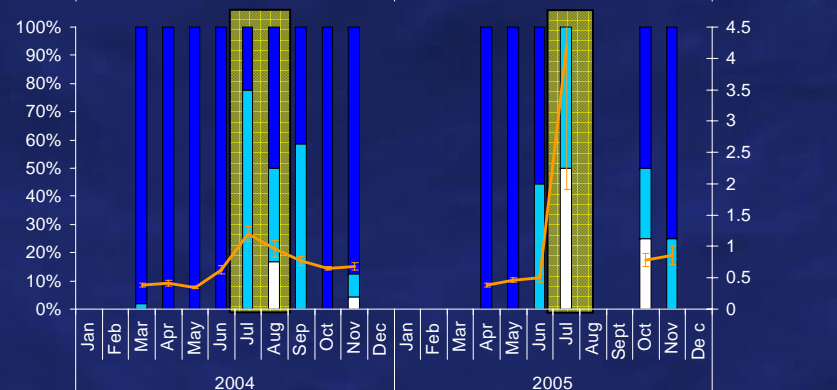
- Sep - Oct



PFT



- Jul – Aug (Nov)
- Protracted spawning season



Size at sex change



CCT

- No immature
- Broad size range of all stages
- 50% male @ 510mm



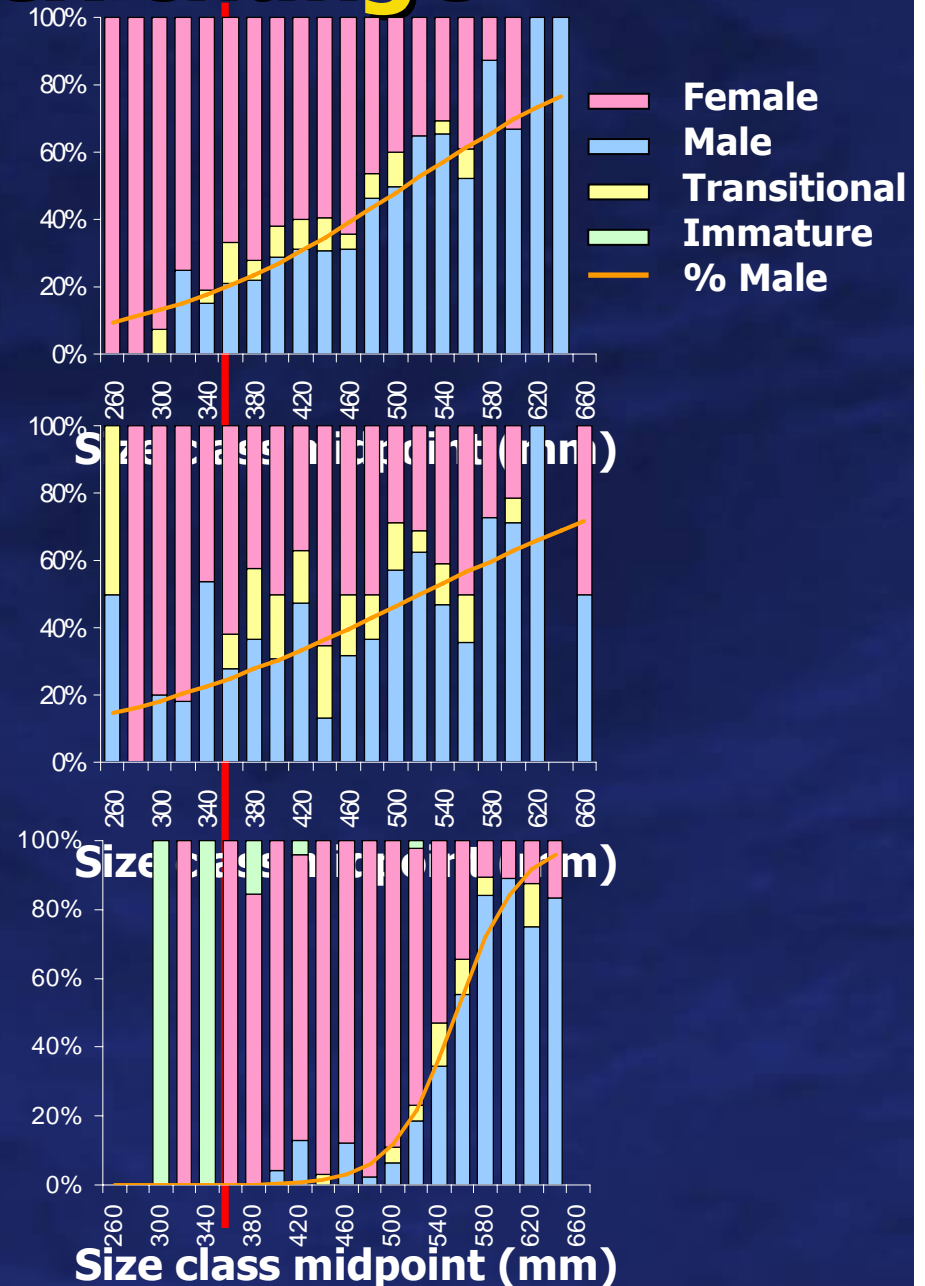
BCT

- No immature
- Broad size range of all stages
- 50% male @ 518mm



PFT

- Immature as large as 520mm
- Narrower size range of males & transitionals
- 50% male @ 555mm



Summary

Common coral trout

Barred-cheek trout

Passionfruit trout

Distribution



≠



≈



Max age



≈



≈



Mortality



≈



>



Growth



≈



≠



Spawning season



≈



≠



Size@sex change



≈



>





Management implications

Results suggest...

- Common coral trout and barred-cheek trout may be managed effectively as a single species
- Passionfruit trout may need to be managed as a separate species

Specific management measures

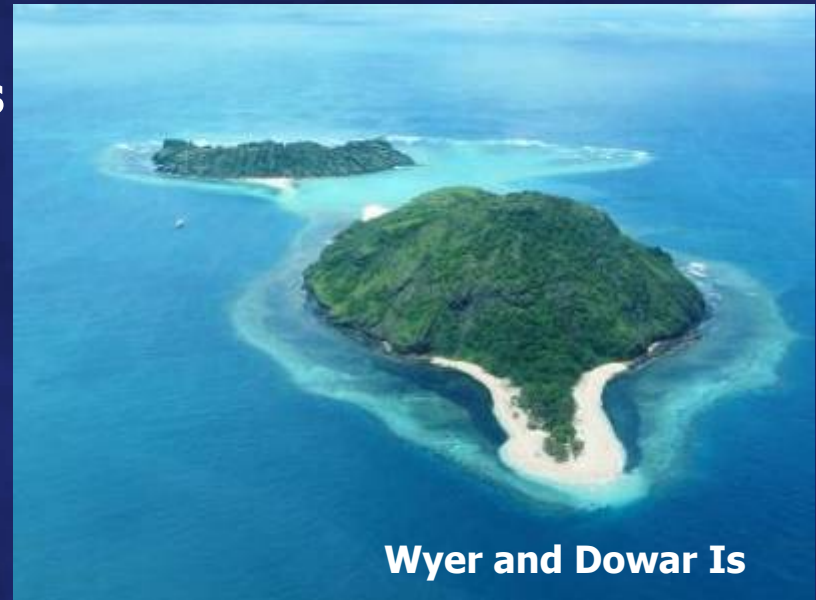
- Spawning closures may need to be species-specific (or encompass peak spawning times of all species)
- Minimum size limit may need to be larger for passionfruit trout to give some protection to males (or maximum size limit)





Acknowledgements

- CRC Reef Research Centre
- CRC Torres Strait
- James Cook University
- Australian Fisheries Management Authority
- QLD Department of Primary Industries and Fisheries
- Islander and non-Islander fishers
- Island community councils
- Traditional owners
- Island freezer staff
- F&F staff and students



Wyer and Dowar Is