Remote underwater stereo-video: a technique for assessing changes in fish communities

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PhD Objective's

Compare and contrast the ability of different fish sampling techniques to obtain accurate and precise measurements of fish abundance, diversity and length

Assess the performance of Marine Protected Areas in restoring and/or sustaining fish communities

Underwater stereo-video

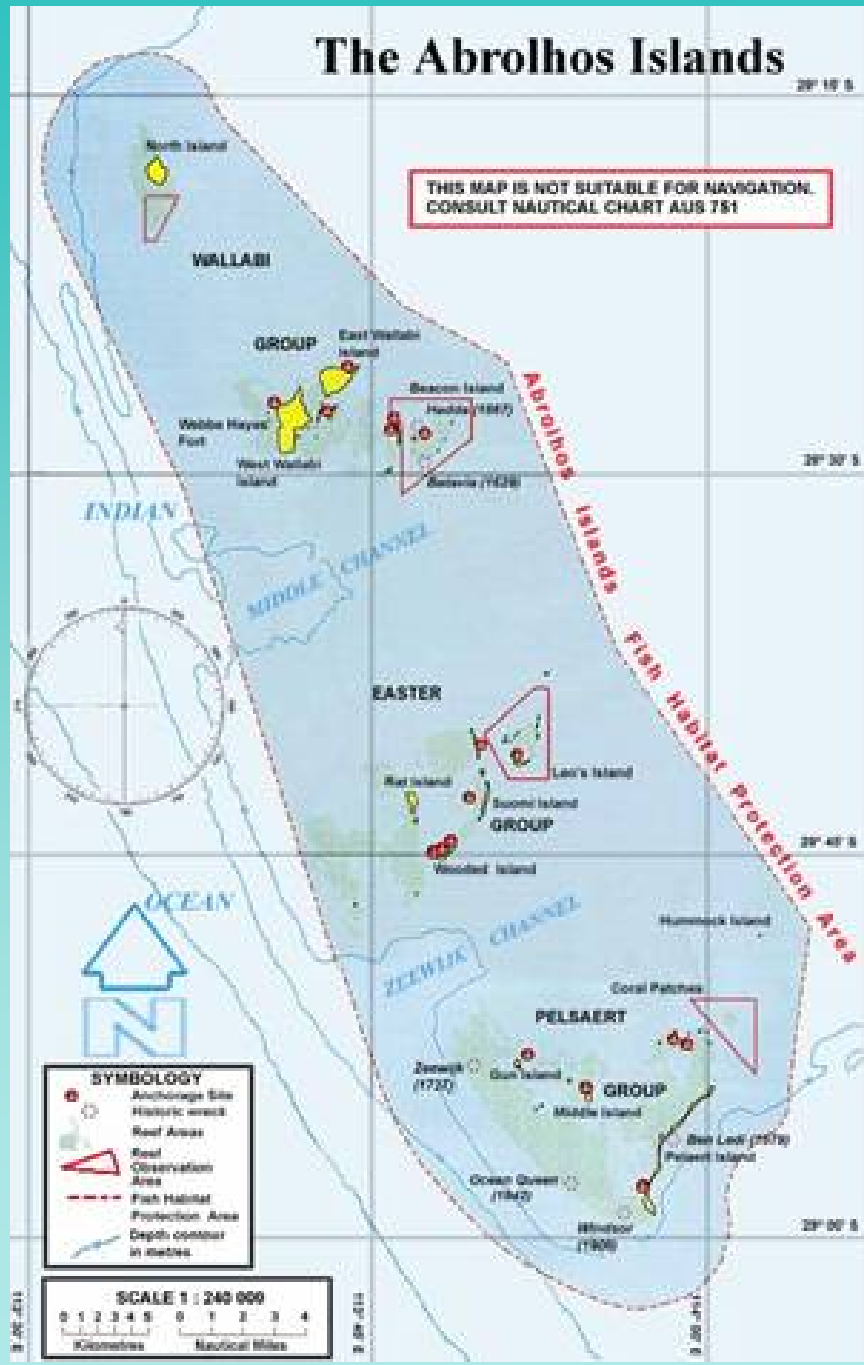

Vision Measurement System - Photo ID: 2 Camera ID: 2 Epoch ID: 4385 Image: trvrabrolhos.avi
File Information View Settings Image Processing Photogrammetry Automation Sequences Objects Window Help
coral_trout
Photo ID: 1 Camera ID: 1 Epoch ID: 4385 Image: trvlabrolhos.avi
coral_trout
404.8+-0.5 px 0.5
coral_trout
426.8+-1.0 px 0.6
Photo ID: 2 Camera ID: 2 Epoch ID: 4385 Image: trvrabrolhos.avi
coral_trout
404.8+-0.5 px 0.5
coral_trout
426.8+-1.0 px 0.6
Length measurements
4 Intersection solutions OK
NUM
start
11:05 AM

PhD progess

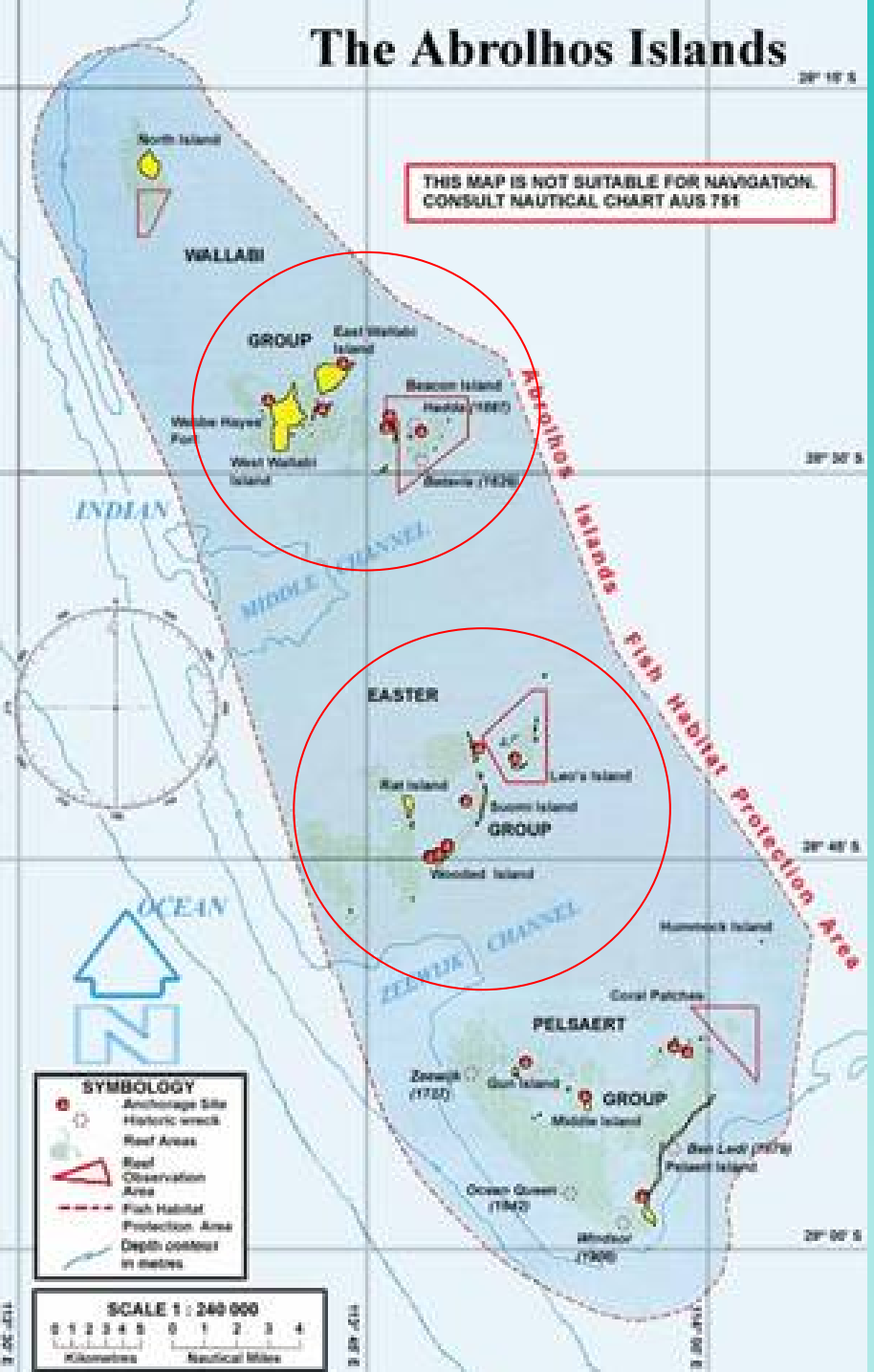
- Underwater stereo-video analysis: design, calibration and fish sampling procedures. Guidelines for use.
- “Behaviour of temperate and sub-tropical reef fish towards a stationary SCUBA diver” (paper in prep)
- CRC milestone: “A review of techniques for assessing changes in fish assemblages”
- “A comparison of temperate reef fish assemblages recorded by three underwater stereo-video techniques” (submitted to *Marine Biology)*

Progress cont..

Houtman Abrolhos Islands




Abrothos Piper



Background

Baldchin groper

Coral Trout

Department of Fisheries: Results

- Baldchin groper: irregular responses, don't respond to protection
- Coral trout: more abundant in MPA's.
- Strong decline in numbers in MPA in last few years: attributed to illegal fishing.
- No skilled divers!- Need a different technique….

Progress cont..

Houtman Abrolhos Islands

- Comparison of stereo-video and UVC techniques
    - Baited remote
    - Unbaited remote
    - Underwater visual census
    - UVC with swimmable video system

- Large scale study: Comparison of baited remote stereo-video, to UVC at the Abrolhos Islands.

- Monitoring the performance of MPA’s and the effect of fishing on reef fish assemblages at the Abrolhos Islands using baited remote stereo-video

Baited remote stereo-video surveys at the Abrolhos Islands

Measure the r hness and length of:

- ALL FISH SPE
- FISH IN SHAL nd limits of SCUBA)
- FISH FROM THREE ISLAND GROUPS (Pelsaert, Easter and Wallabi groups)
- FISH FROM 120 DIFFERENT SITES IN UNDER 6 DAYS (efficiency and reduction in field costs)

Further advantages

- Permanent record of fish and habitats
- Visually demonstrating patterns observed
- Safer: removes divers from the water
- Unobtrusive: examine fish deterred by divers

Some preliminary results

Field work is complete!

November 2004:

- Identified 130 fish species from 37 families:
  - 3 new species to the Islands

Some preliminary results

November 2004:

- Species more abundant in MPA's:
  - e.g. dhufish, sweetlip emperors
- Species more abundant in fished locations:
  - e.g. western king wrasse, moon wrasse

Analyses to do..

- Measurements of fish length
- Abundance and diversity from May trip
- Statistical comparisons of relative abundance, diversity and length of fish:
  - Effect of fishing?
  - Differences between depths?
  - Between Island groups?
  - Interaction effects?
  - Interesting species-specific patterns?
- Completion of thesis within a year

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Department of Fisheries
Fish for the future

CRC for Coastal Zone Estuary & Waterway Management

The University of Western Australia
Faculty of Natural and Agricultural Sciences