

TAFI
Tasmanian
Aquaculture
and Fisheries
Institute

**Interactions between abalone
and macroalgae**

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CSIRO-UTAS joint program in quantitative marine
science*



Background

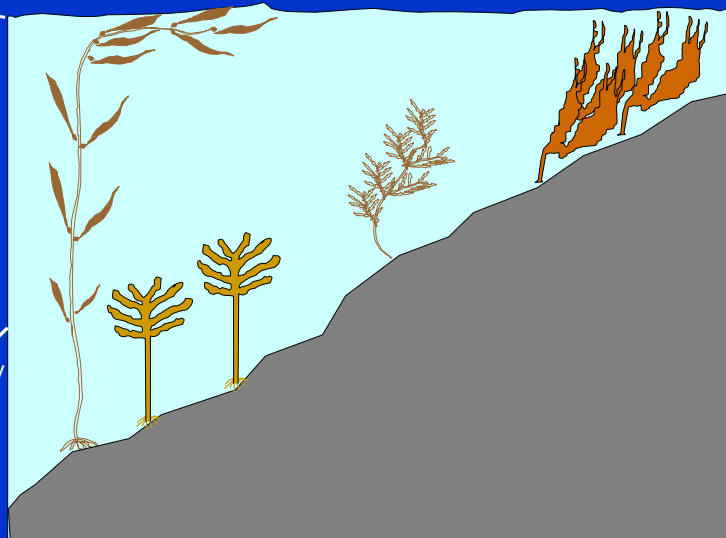
- Abalone key herbivore
- Importance of macroalgae
 - Food
 - Habitat, recruitment
- Effects of abalone fishing
 - Required for Ecosystem Based Management (EBM)
- Understanding species interactions, underlying processes integral part of EBM

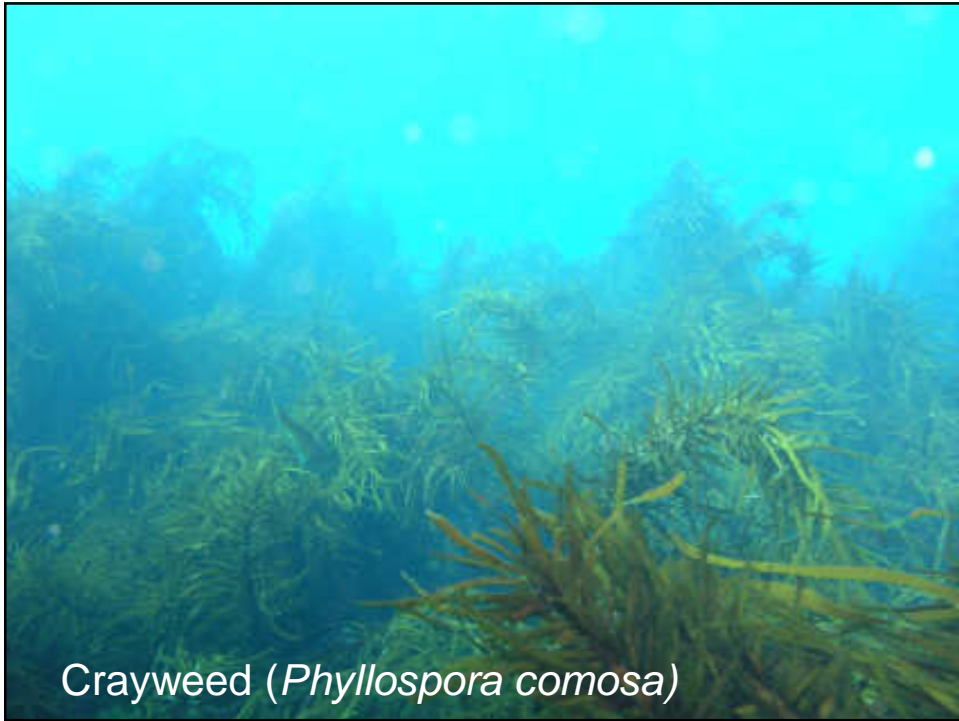


Generalised structure of a temperate reef

Surface canopy
(0-30 m)

Sub-Surface canopy
(0-2 m)



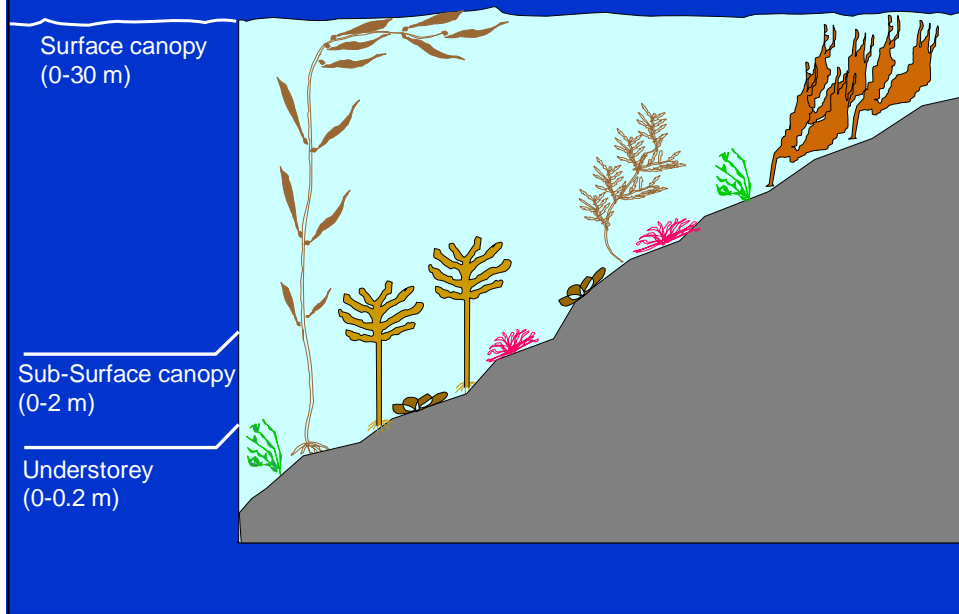


Crayweed (*Phyllospora comosa*)

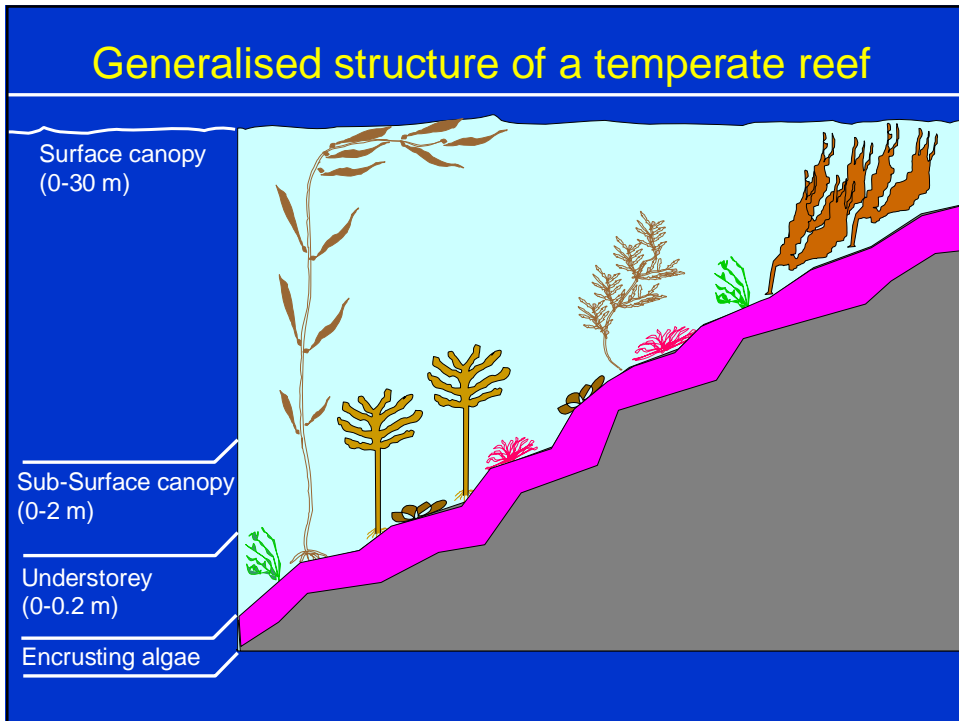


Strapweed (*Lessonia corrugata*)

Generalised structure of a temperate reef



Understorey red algae





Encrusting algae

Diver observations



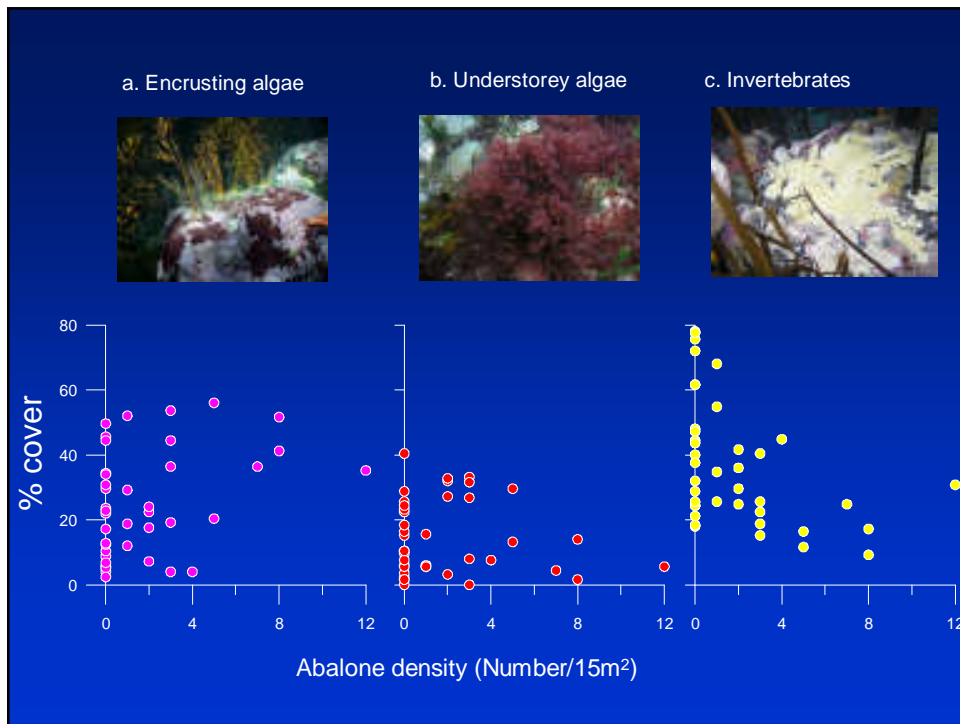
Encrusting algae dominant

Abalone
depletion?
→



Sessile invertebrates dominant





Key questions

- Do abalone play a role in structuring benthic communities?
 - What is the ecological role of abalone?
 - Does abalone activity maintain encrusting algal dominance?
 - What mechanisms are involved?
 - Grazing, mucus, bulldozing?



Approach

1. Large-scale experiments

- Broad Scale Survey
- Manipulative experiment

2. Small-scale experiments

- Fine-scale interactions
- e.g. Attachment preference



Home-site characteristics

- Methods
 - Algal cover beneath abalone ('homesites')
 - Availability of different benthic groups
 - 3 regions; Bruny Island, Nubeena, East Coast
 - 3 sites per region



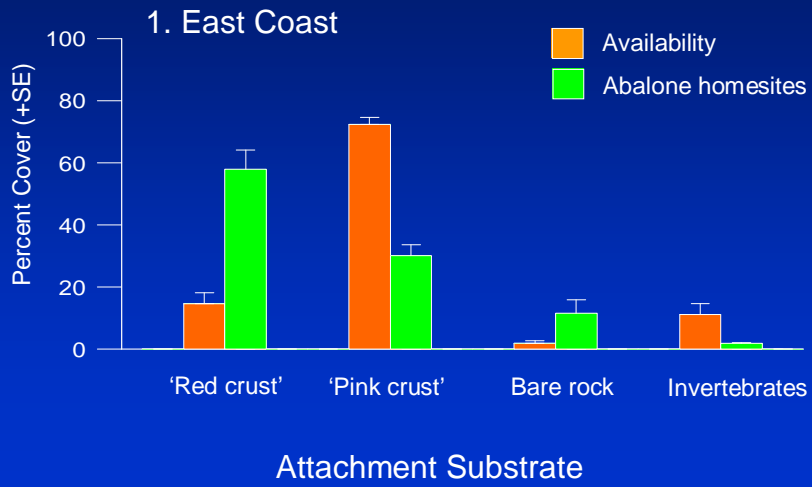
Attachment preference



Abalone 'homesite'



Attachment preference



Attachment preference



Home-site features

- Adult abalone show strong preference for “red crust”
- Further work
 - Are abalone selective or is the home site a good place for ‘red crust’?
 - Underlying mechanisms (surface texture?)
 - Is ‘red crust’ limiting? – can it influence carrying capacity of a reef?



Outcomes

- Ecological role of abalone
 - Implications of depletion on ecosystem function
- Ecosystem management options
 - critical density required?
- Enormous scope for further research
 - eg. feeding ecology, productivity, habitat-recruitment relationships



Acknowledgements

- Abalone Research Group (Mike Porteus, Karen Miller, Chris Jarvis, David Tarbath, Tim Karlov)
- MRL and FRDC for research support

