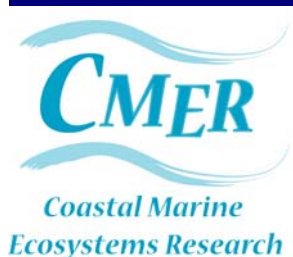


Midwest Region



Mat Vanderklift
CSIRO Marine & Atmospheric
Research



Glenn Hyndes
Edith Cowan University

Major (recent) research programs



SRFME

CSIRO

Collaborative partners (ECU, Murdoch, UWA, WA Museum)

Food web model

CSIRO / Murdoch

Deep water lobster

WA Fisheries / UWA

Ecosystem monitoring

U Tas / DEC

Major issues

Habitat alteration

e.g. dredging, new harbour developments

Anthropogenic inputs

e.g. addition of nutrients

Extraction

e.g. commercial & recreational fishing

Climate change

e.g. temperature and storminess



Science needs and approaches

1. Species-environment relationships

From description....

quantifying distribution and abundance

identifying environmental controls

connections between landscape elements

... to building predictive models...

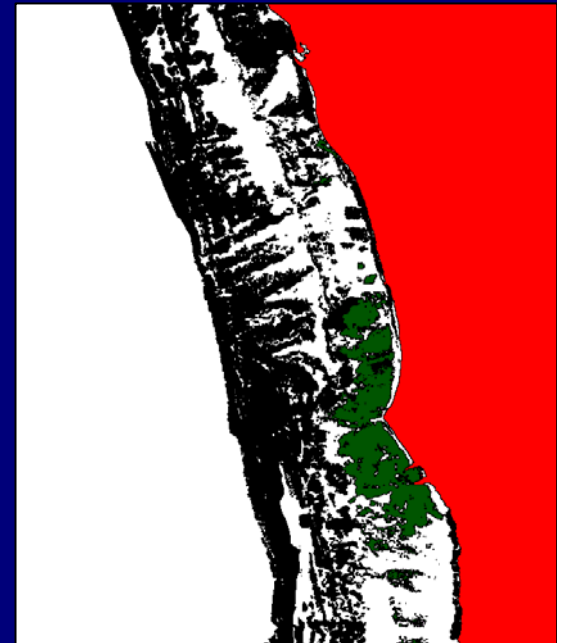
predict distribution and abundance

how species respond to changes in
environment

... to testing predictions.

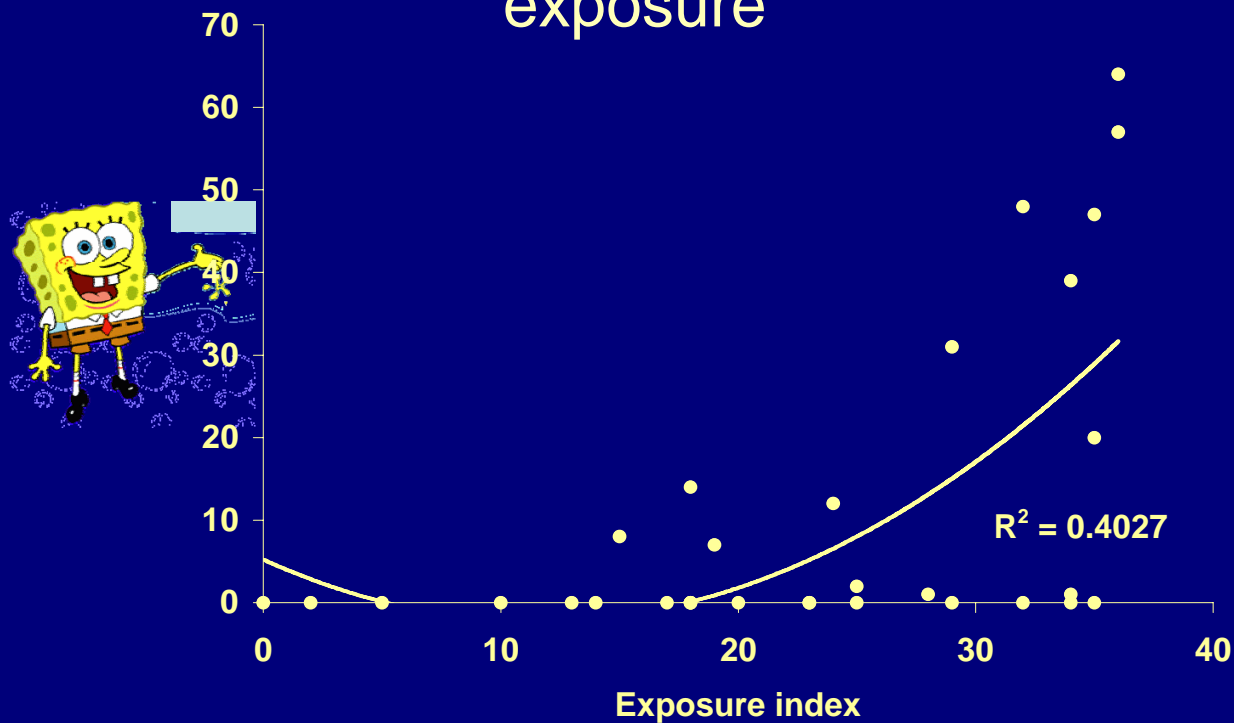
hypothesis-testing surveys

manipulative experiments



From description....

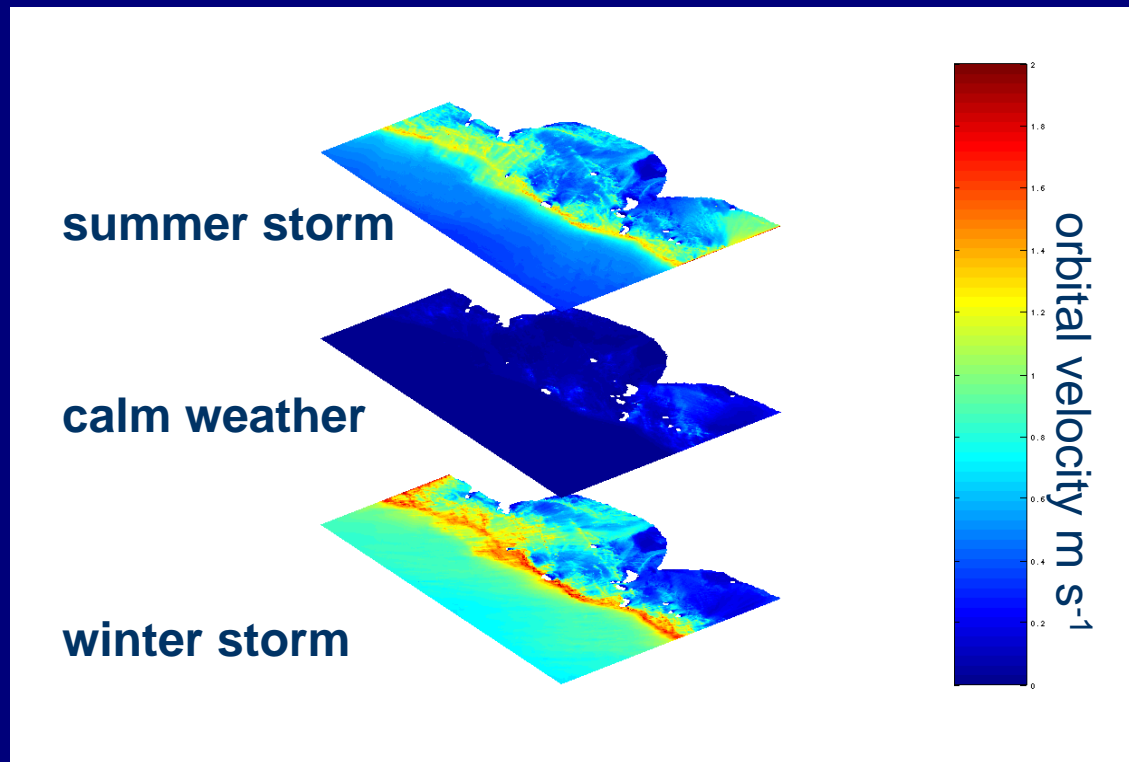
Non-linear relationship between
sponge abundance and wave
exposure



Jane Fromont
SRFME
Collaborative

... to prediction

Spatial patterns of wave exposure that can be used to predict distributions



Phillip England
SRFME core
project

Broader perspectives

Variation in
abundance of
western rock
lobsters

~ 40% of explained
by reef
characteristics

~ 19% is explained
by what is growing
next to the reef



Lachlan MacArthur
Glenn H, Russ B, Mat V
SRFME Collaborative

... and experimental tests

Effects of reducing light (e.g. dredging plume)



Control



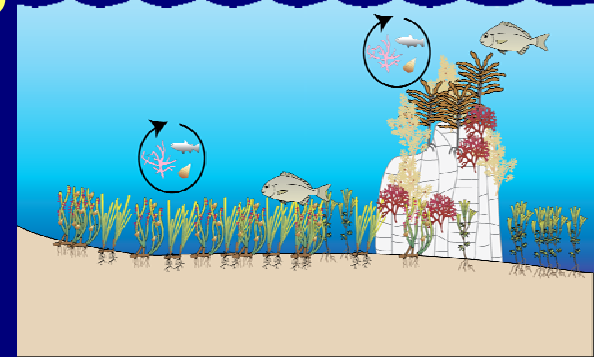
Shaded



Paul Lavery
Kathryn McMahon
SRFME
Collaborative

Science needs and approaches

2. Food webs



From description....

- what are the important trophic interactions

- how do these vary in space and time

... to building predictive models...

- building predictive trophic models

- how might trophic interactions have changed

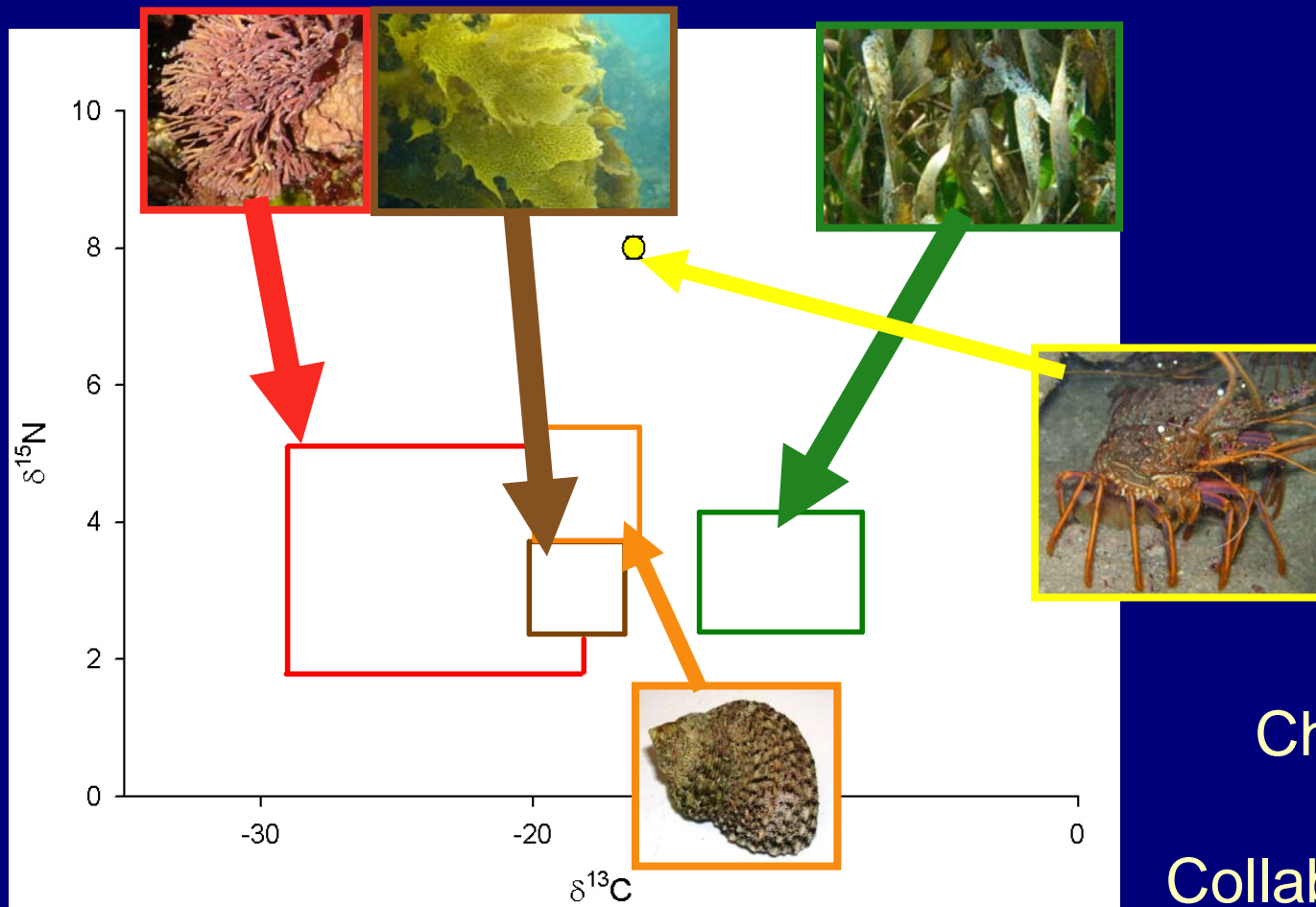
... to testing.

- test intensity of interactions

- assess outcomes of modifying food webs (large-scale)

Characterising food web

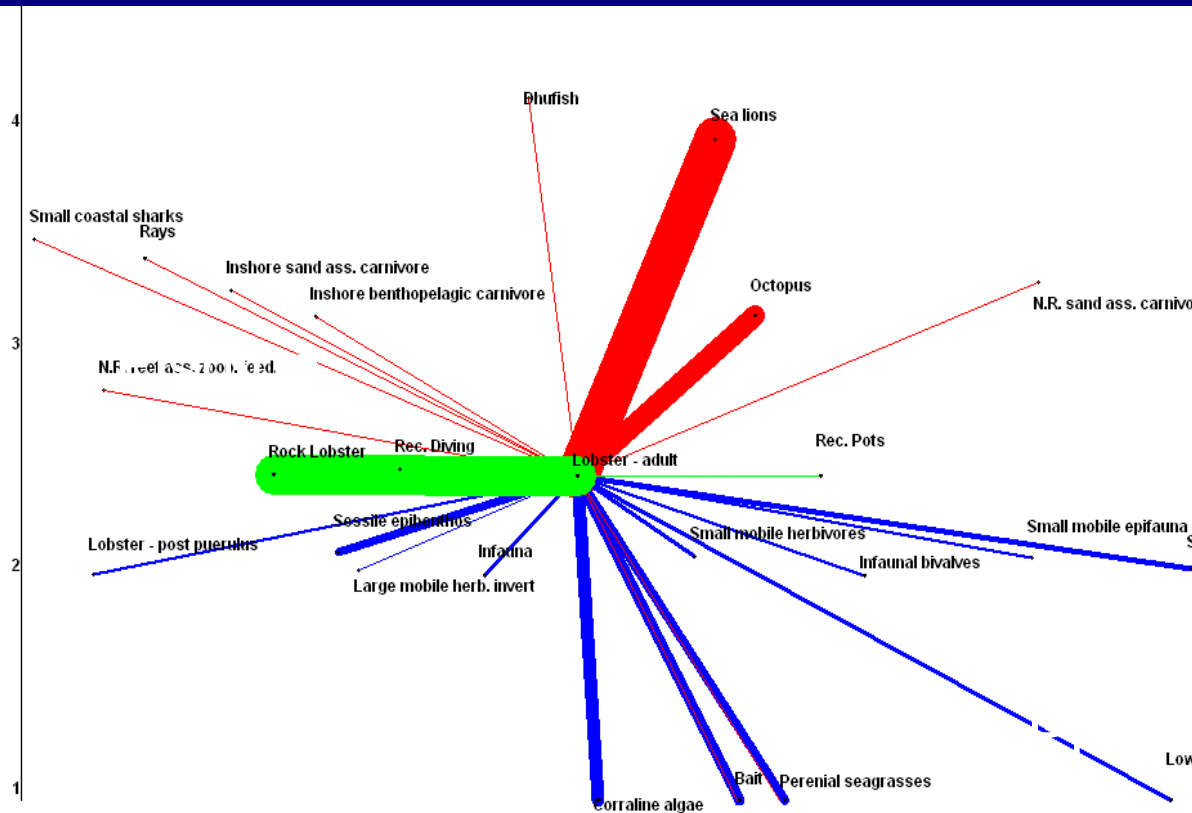
Describing the diet of (inshore) lobsters



Glenn Hyndes
Christine Hanson
SRFME
Collaborative project

Predictive trophic models

Mass balance model of trophic relationships involving lobsters



Hector Lozano-Montes
CSIRO

Future directions?

- Move from descriptions to testing predictions
 - do our predictive models accurately predict where species (and habitats) occur?
 - do models predict functional changes?
- Experimental tests of responses
 - individual level responses (e.g. nutrients)
 - ecosystem level responses (e.g. effects of fishing)