Winners and Losers - Do food subsidies matter?

Food Webs, Prawn Trawling and the Effects of Marine Parks

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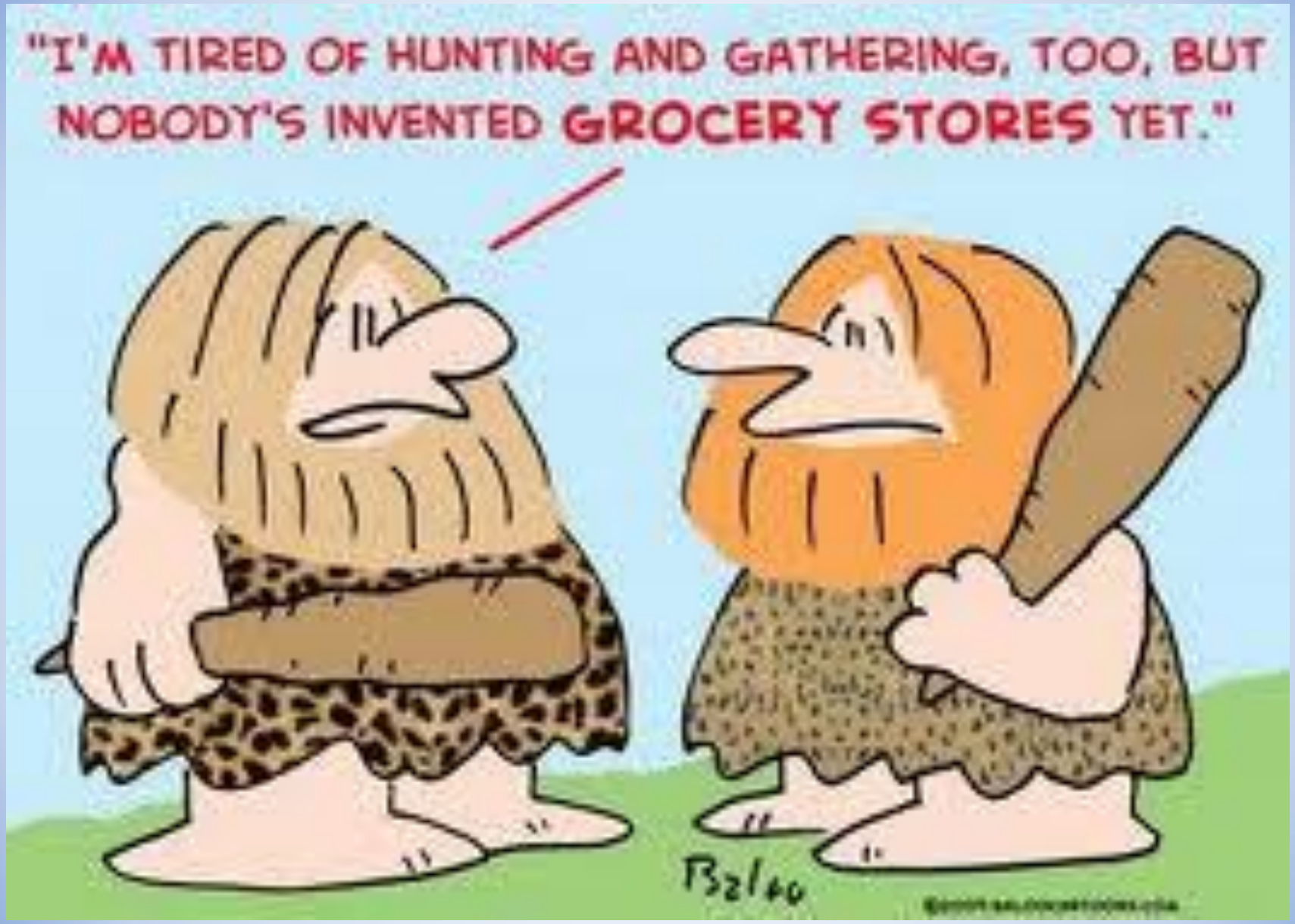
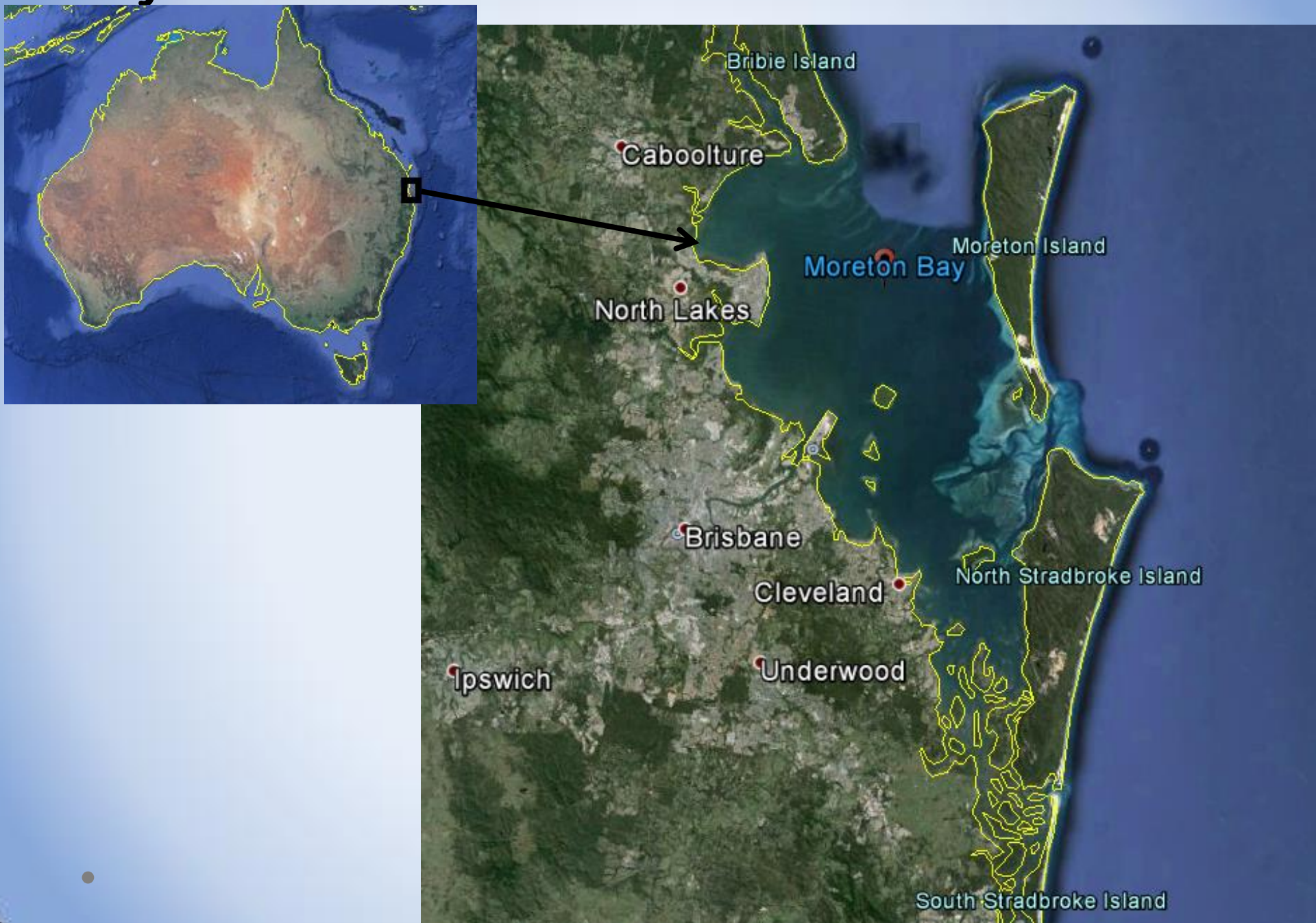

"I'M TIRED OF HUNTING AND GATHERING, TOO, BUT NOBODY'S INVENTED GROCERY STORES YET."

Aims

- Assess the influence of food subsidies on a coastal food web
- Winners and losers of food subsidies
- Changes in food subsidies with the establishment of a marine park

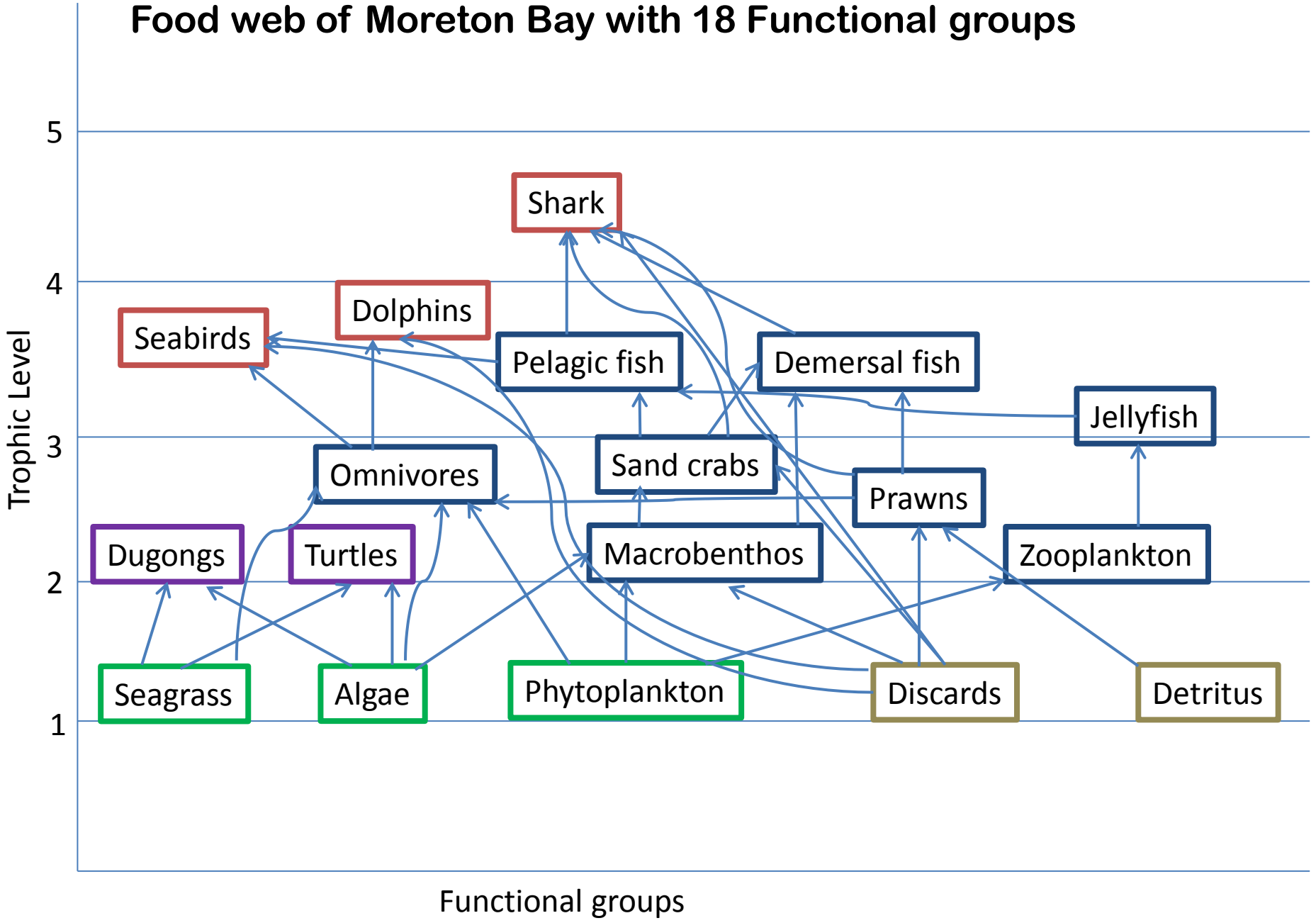
Study site


Bribie Island
Caboolture
Moreton Island
Moreton Bay
North Lakes
Brisbane
North Stradbroke Island
Cleveland
Underwood
Ipswich
South Stradbroke Island

Methods

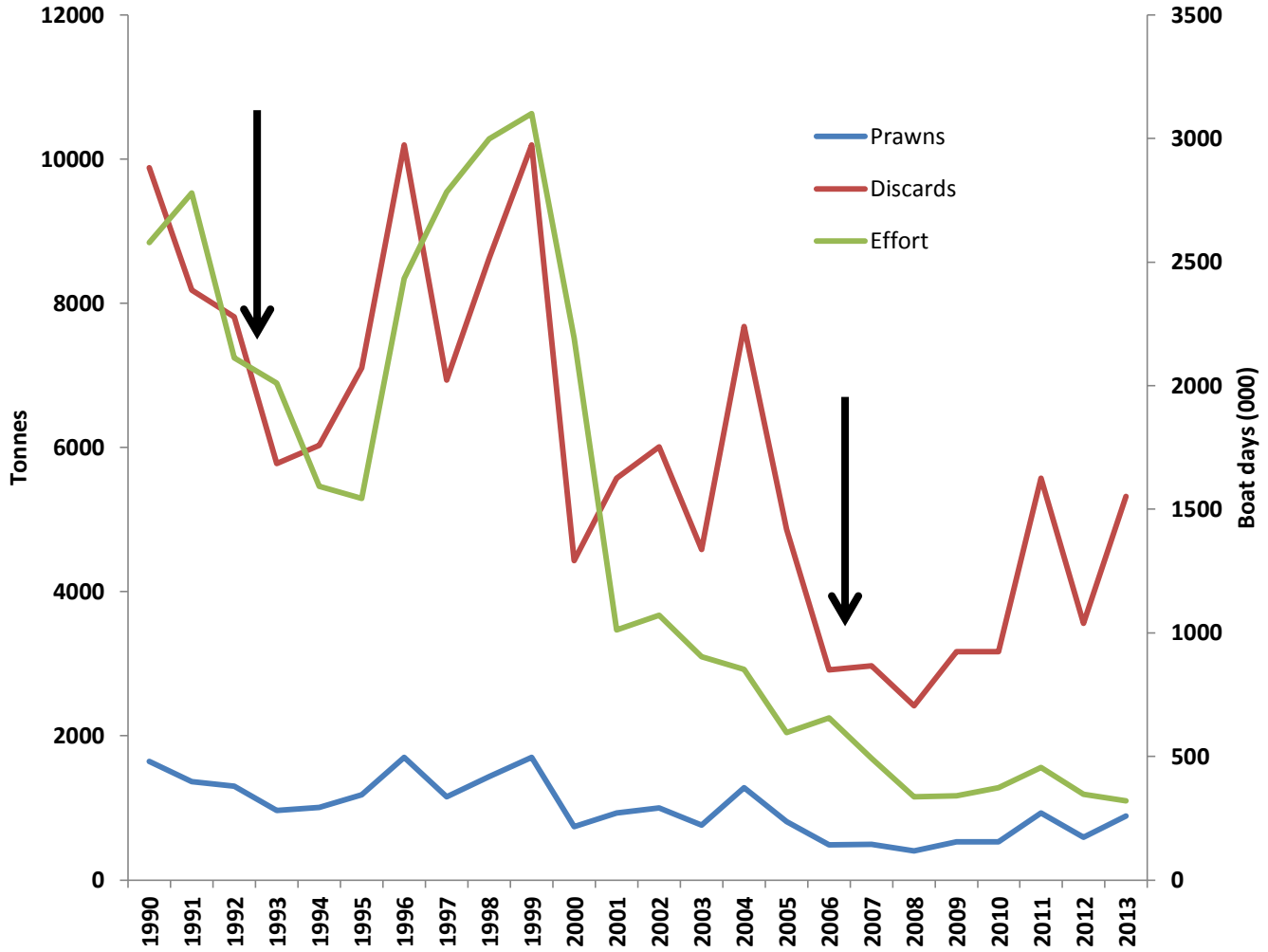
Ecopath:
Input parameters: B, P/B, Q/B, EE
Diet matrix

Ecosim:
Catch & Effort data

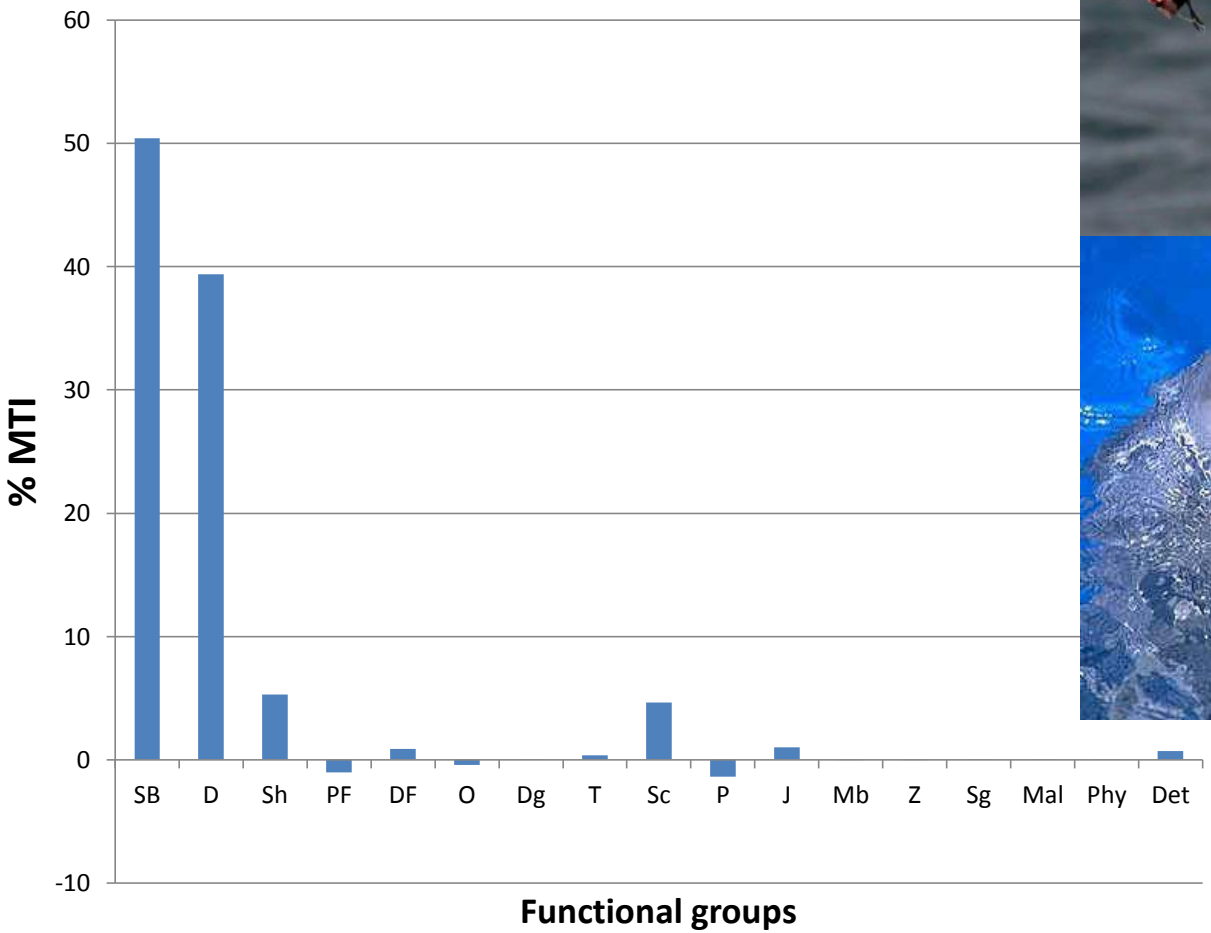

Food web of Moreton Bay with 18 Functional groups
Trophic Level
5
4
3
2
1
Shark
Dolphins
Seabirds
Pelagic fish
Demersal fish
Jellyfish
Omnivores
Sand crabs
Prawns
Dugongs
Turtles
Macrobenthos
Zooplankton
Seagrass
Algae
Phytoplankton
Discards
Detritus
Functional groups

Results and Discussion

Prawn trawling effort reduced;
Decreasing trend in prawn production & discards



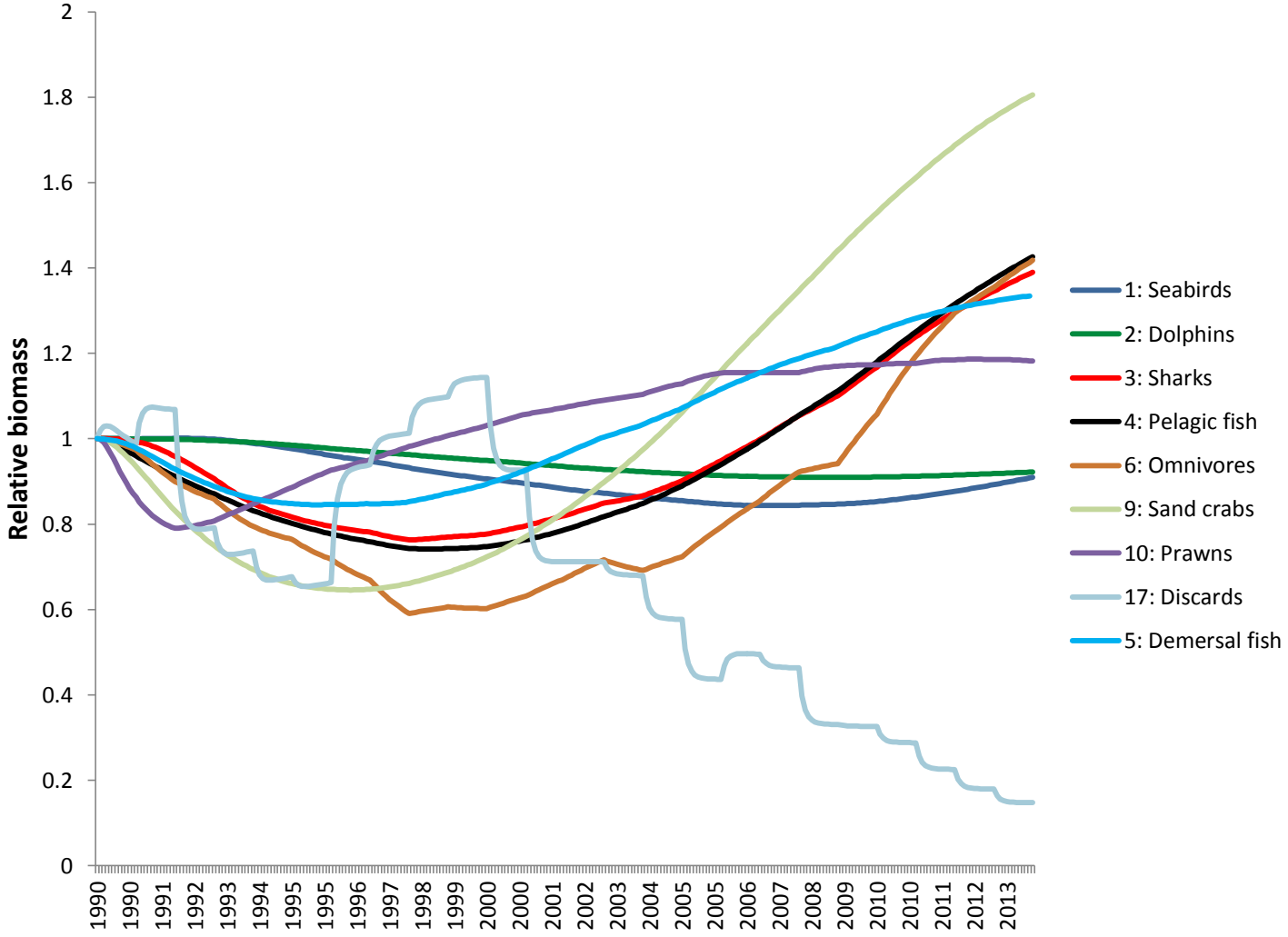
Big winners, little losers



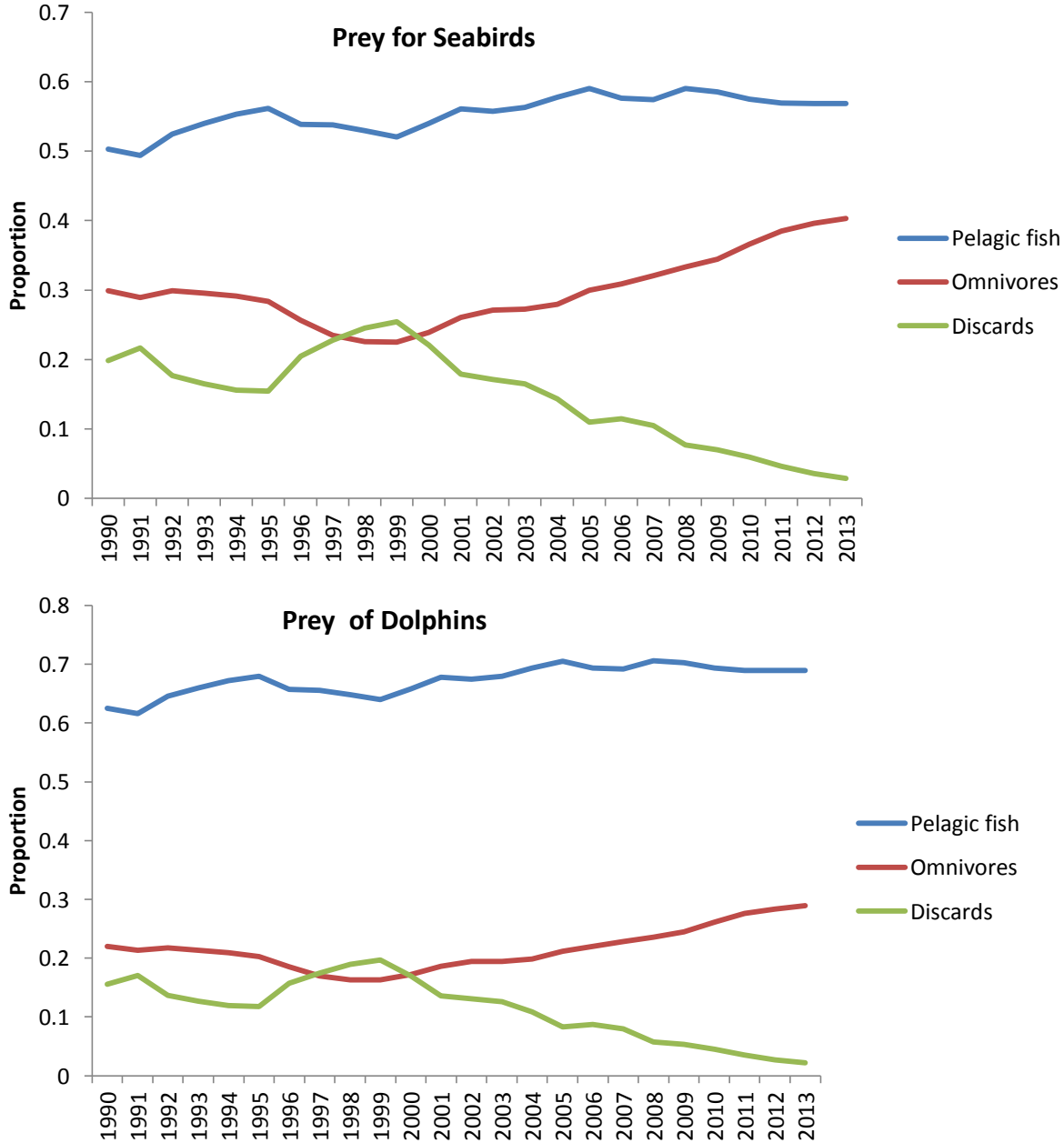
The percentage mixed trophic level impacts of discards on the other groups
(SB- Seabirds, D- Dolphins, Sh- Sharks, PF- Pelagic fish, DF- Demersal fish, O- Omnivores, Dg- Dugongs, T- Turtles, Sc- Sand crabs, P- Prawns, J- Jellyfish, Mb- Macrobenthos, Z- Zooplankton, Sg- Seagrass, Mal- Macroalgae, Phy- Phytoplankton, Det- Detritus)

Model estimated changes in relative biomass

↓discards = ↑sand crabs, fishes & prawns



How did the winners manage?



Conclusions

Winners – top predators

Losers- few; very low impact

Reduction of effort = discards – positive impact on crabs, fishes and prawns

Winners maintain biomass; switch to alternative prey

Acknowledgements

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