



ningaloo  
outlook

**BHP**



# Shallow reefs – an assessment of 2017

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## Ningaloo Outlook – A partnership between BHP and CSIRO

WESTERN COASTAL/OCEAN & ATMOSPHERE  
[www.csiro.au](http://www.csiro.au)

*Ningaloo Outlook is a BHP-CSIRO Industry-Science Marine Research Partnership investing A\$5.4 million over five years to gather new knowledge on the Ningaloo reef and its important ecological values*



# Objective: Provide annual assessment of the status of key ecological values at Ningaloo i.e. corals, fish





Welcome To Yinigudura country



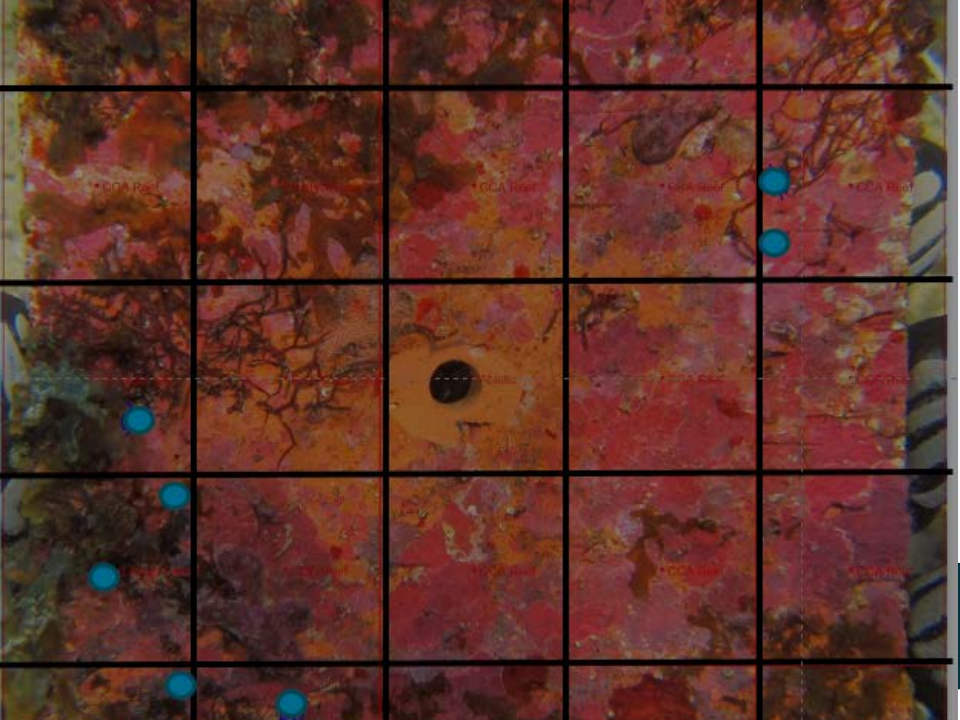
Why are shallow reefs important?







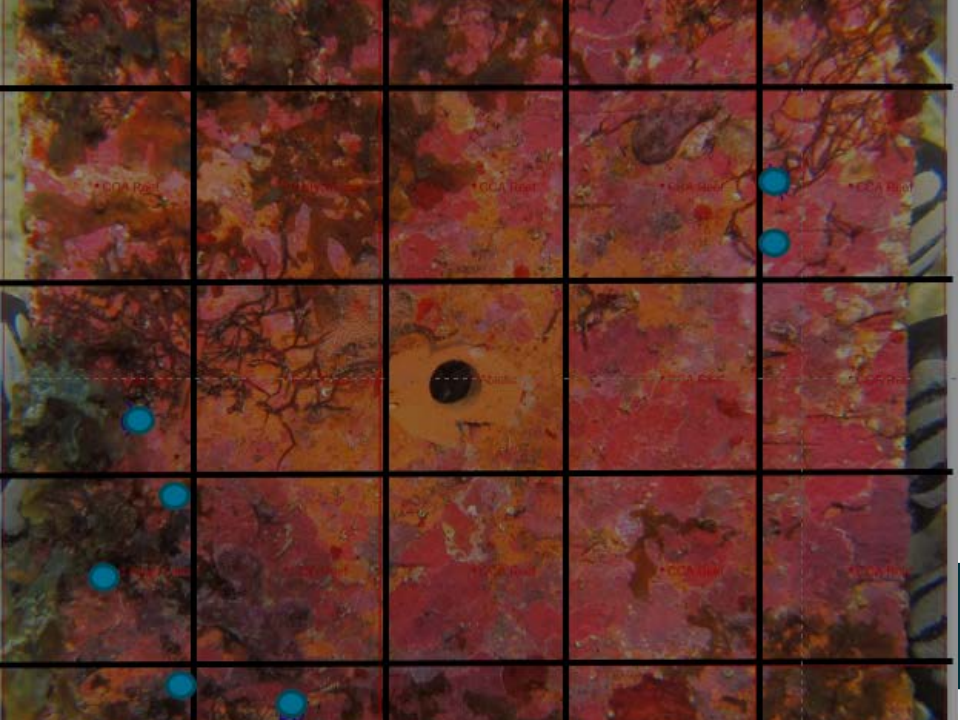
What have we done this year?





Reef slope

What have we done this year?





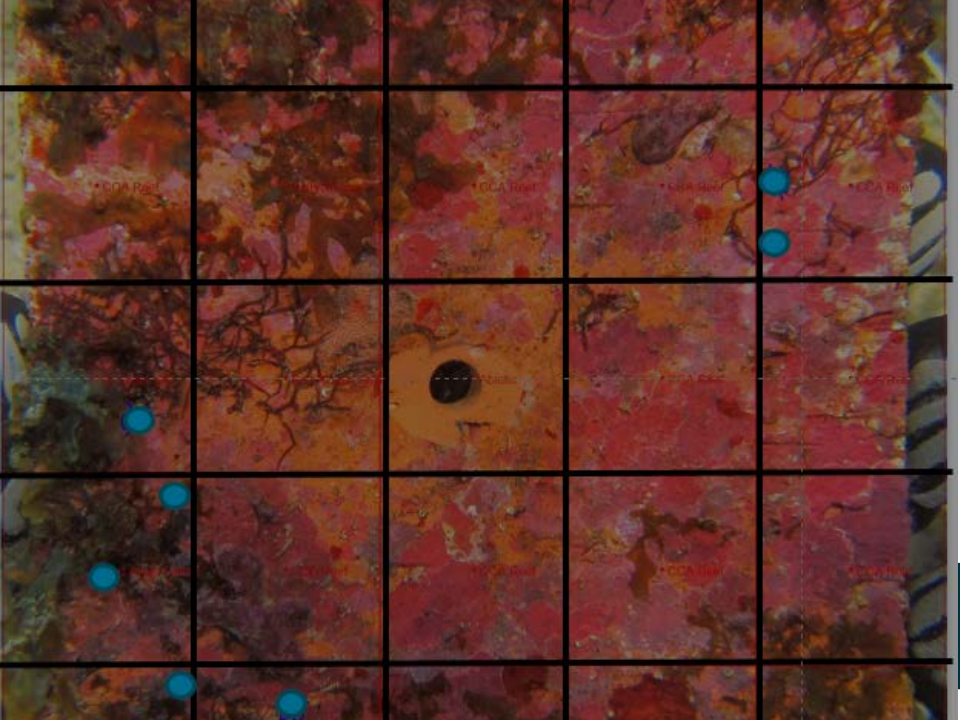


Reef slope



Production and bioerosion

What have we done this year?







Reef slope

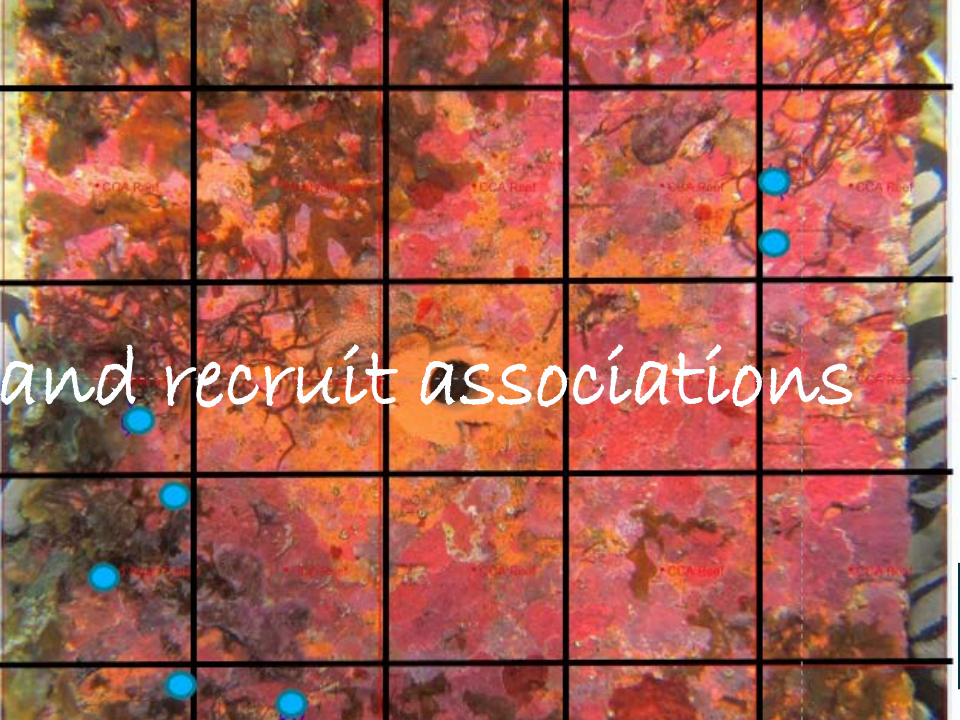


Production and bioerosion

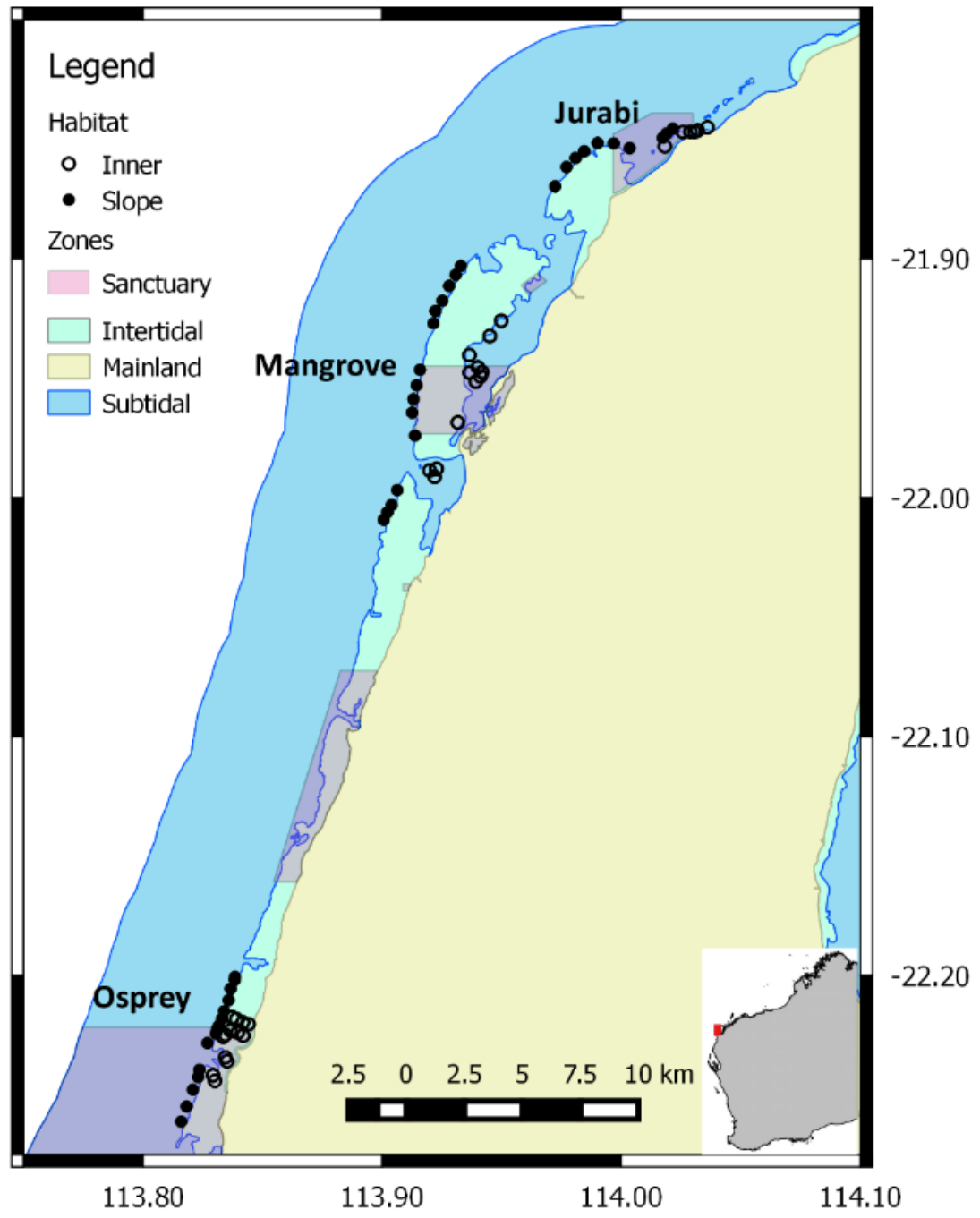
What have we done this year?



Settlement assemblages and recruit associations



Settlement assemblages and recruit associations







Reef slope

16% fish and 12%  
coral surveys

**What have we done this year?**

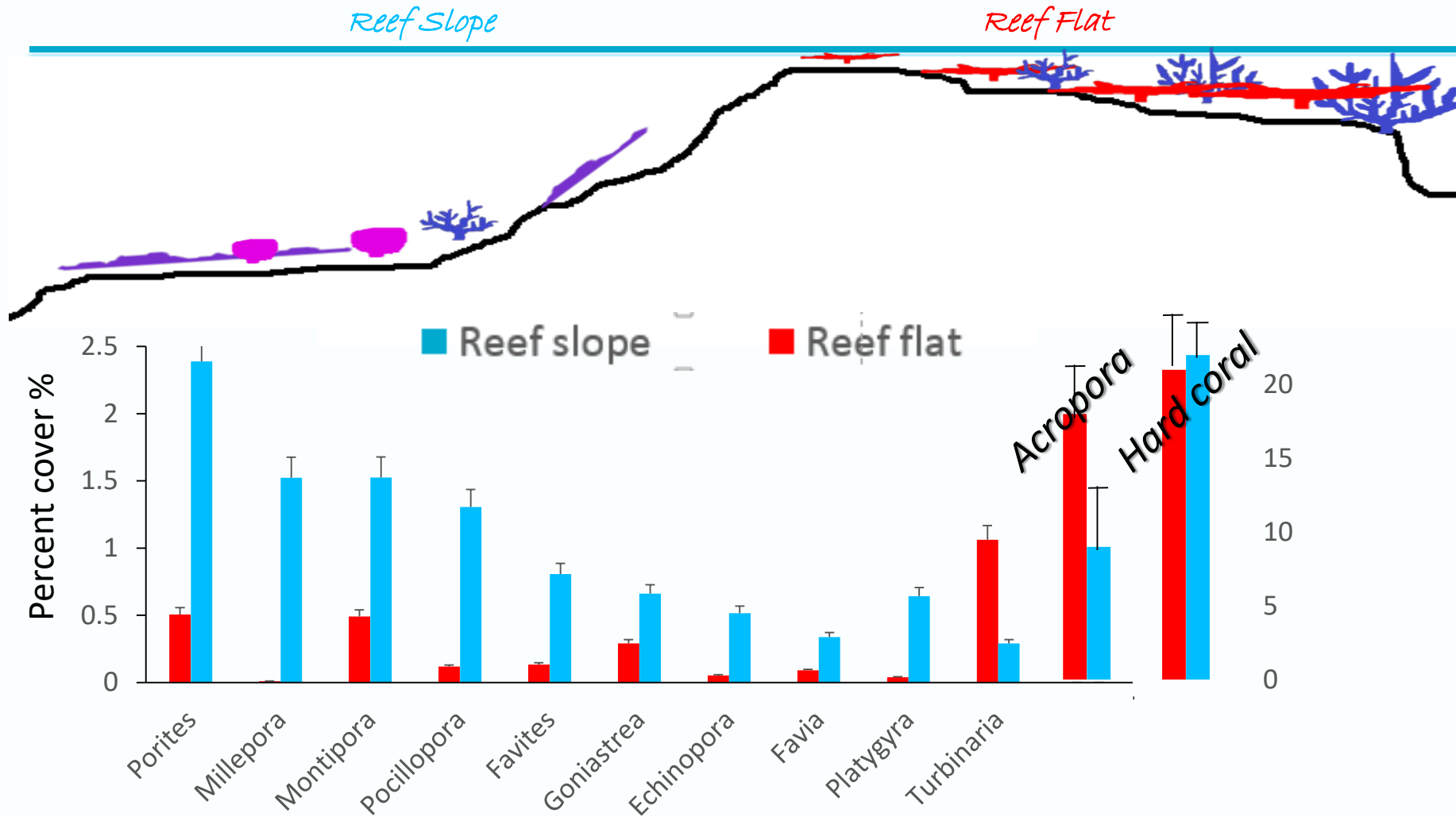


Production and bioerosion

Settlement assemblages and recruit associations

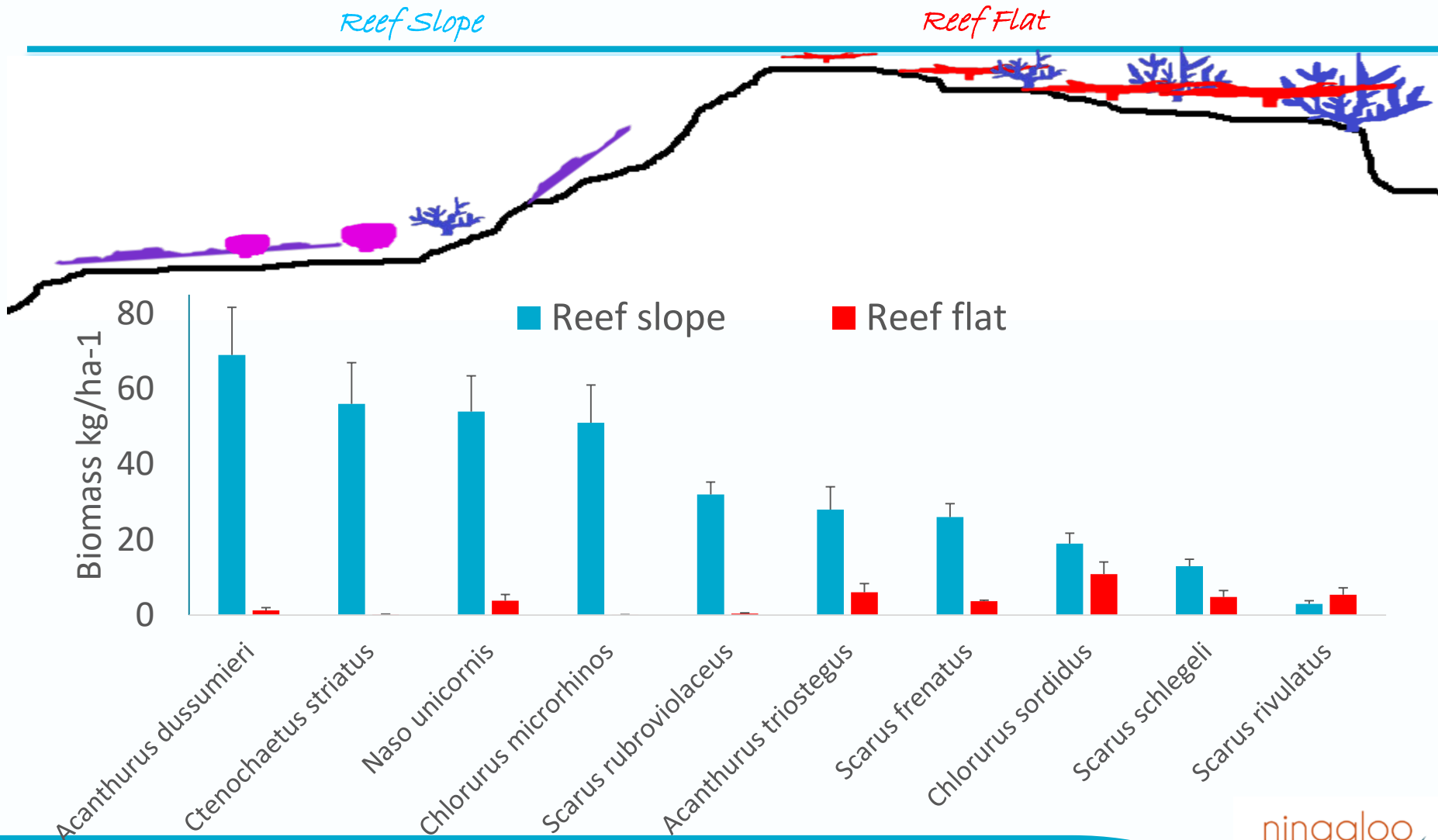


# Reef slope – new data on coral genera



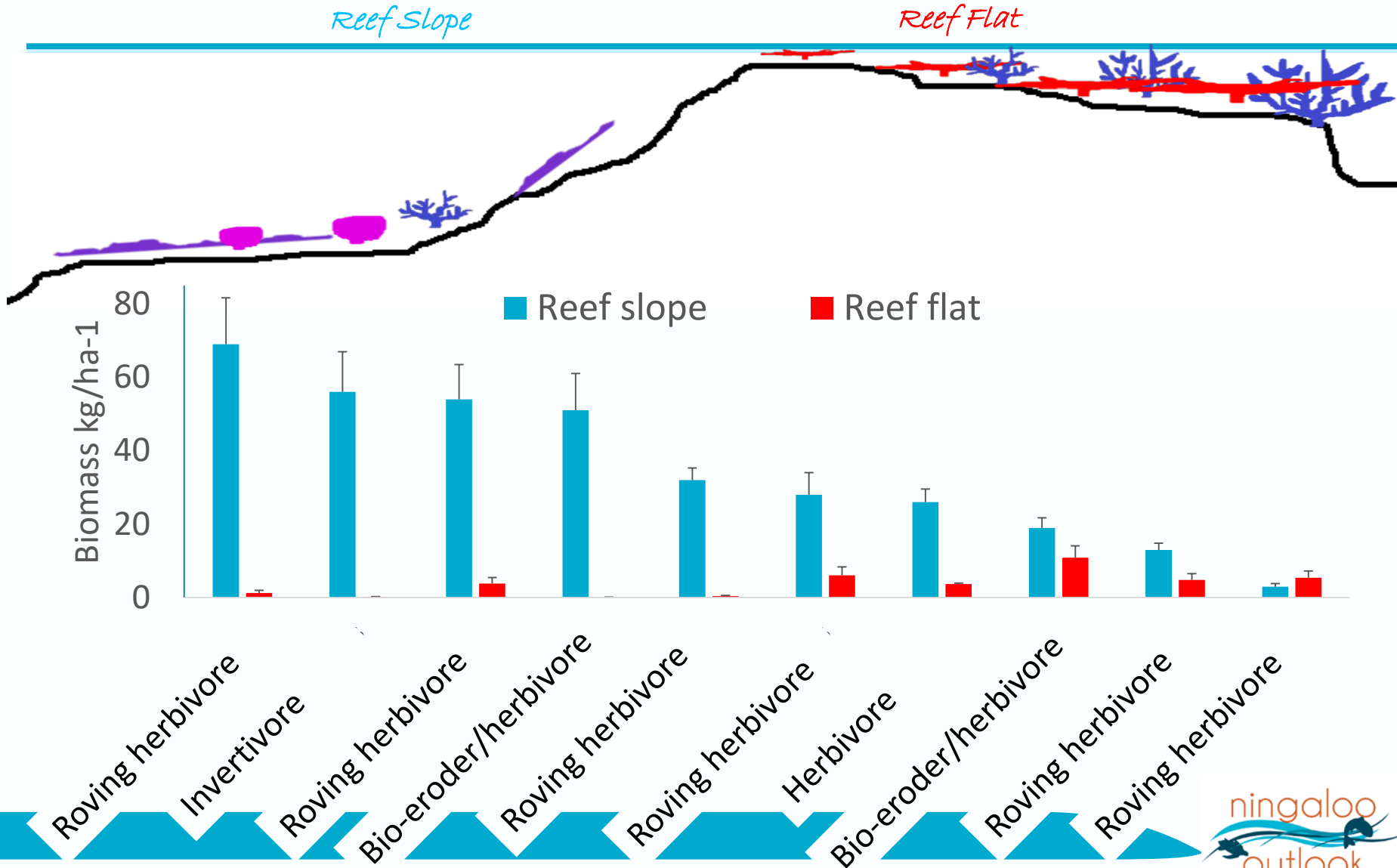


# Reef slope – new data on fish species



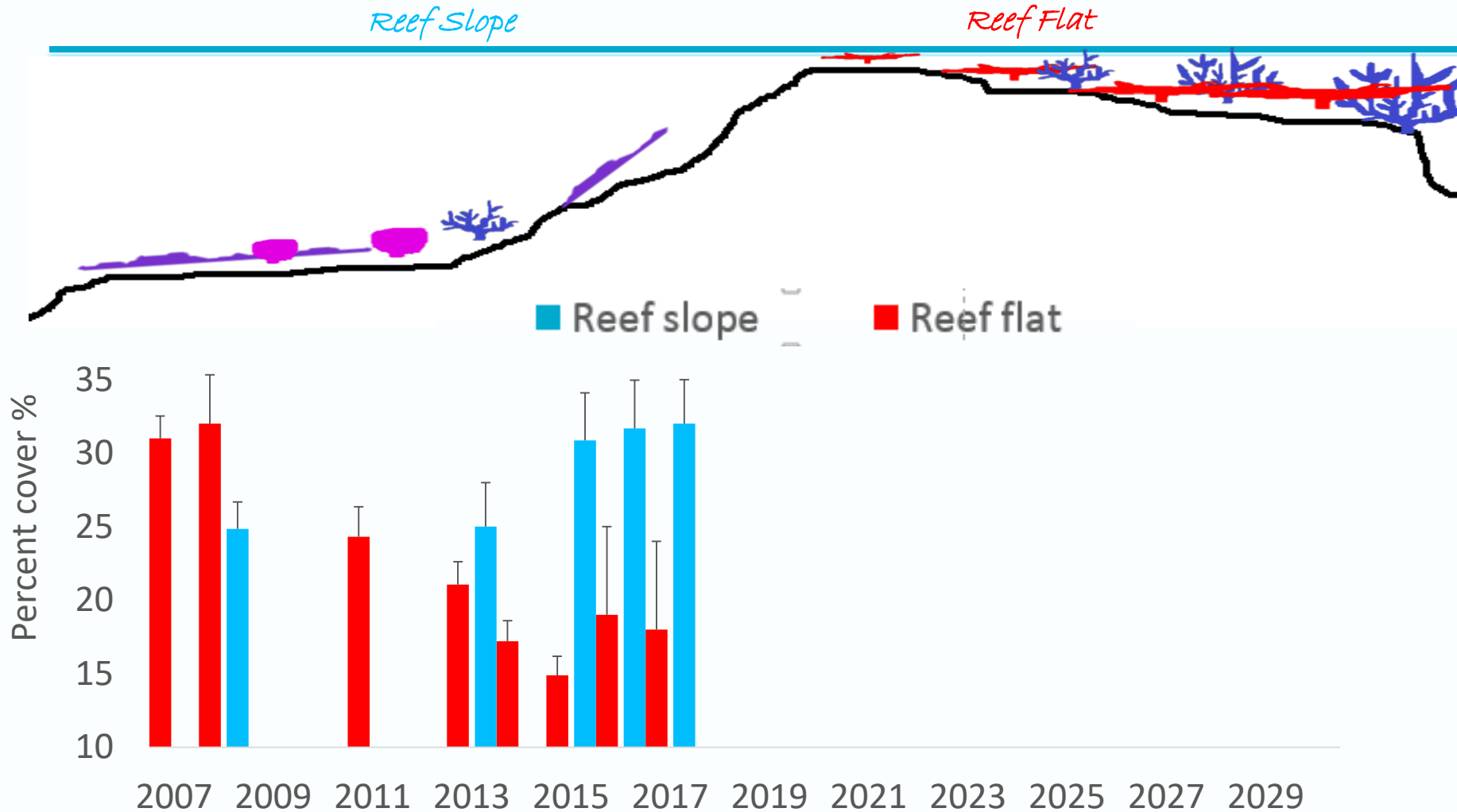


# Reef slope – new data on fish species



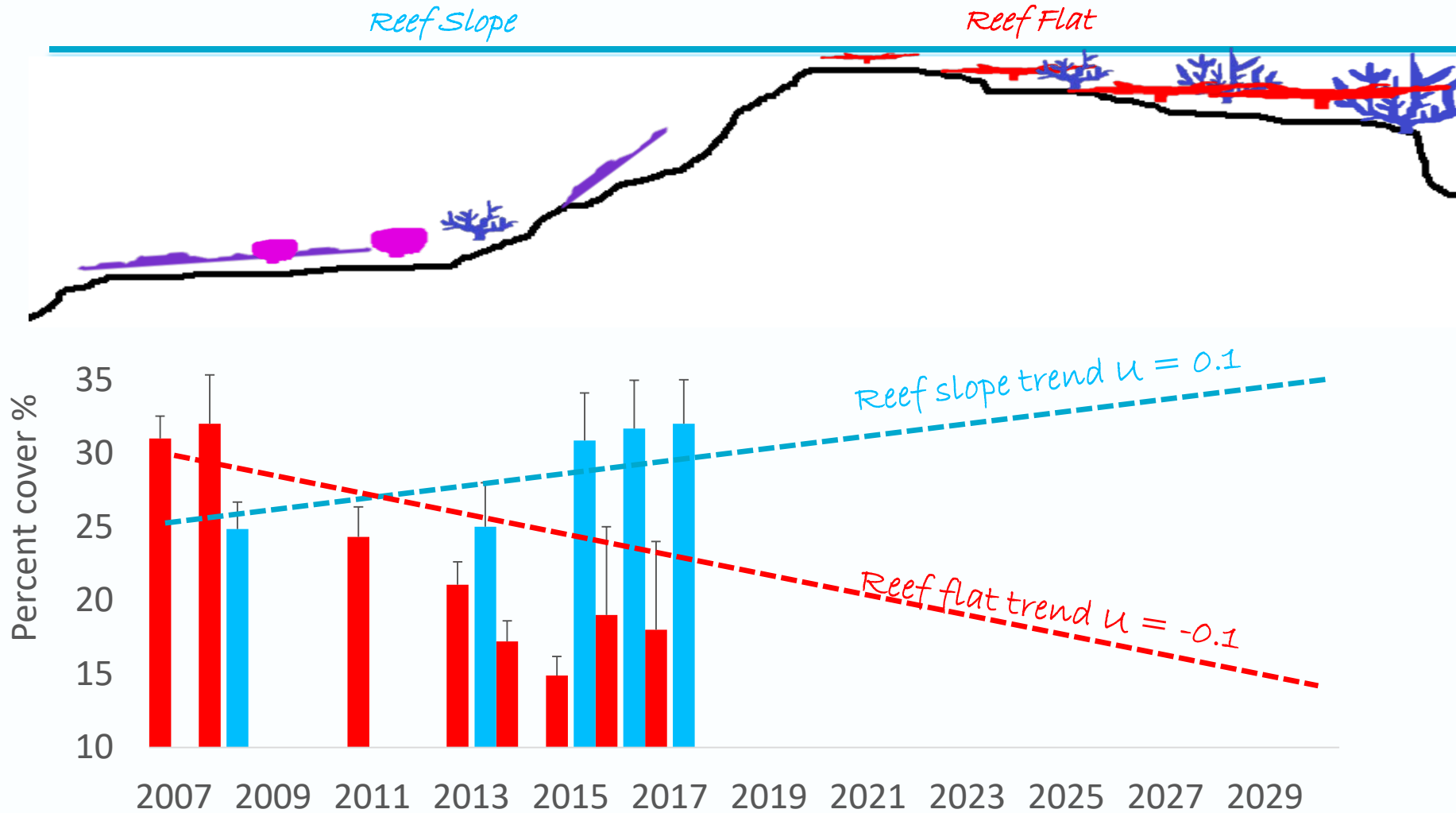


# Annual trends in coral cover last 10 years





# Annual trends in coral cover last 10 years





Reef slope

New data on fish and coral compositions

**What have we done this year?**



Production and bioerosion



Settlement assemblages and recruit associations



Reef slope

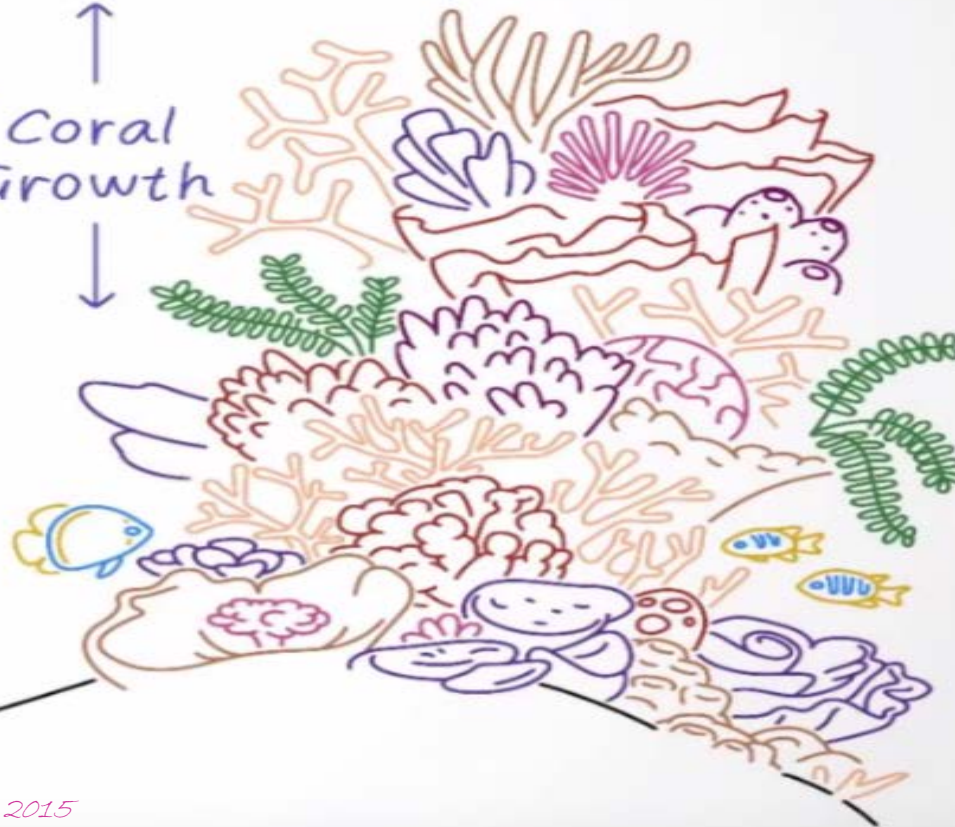
Production and bioerosion

**What have we done this year?**

Settlement assemblages and recruit associations

Predicted Sea-level rise 0.4 to 0.7m

Coral Growth

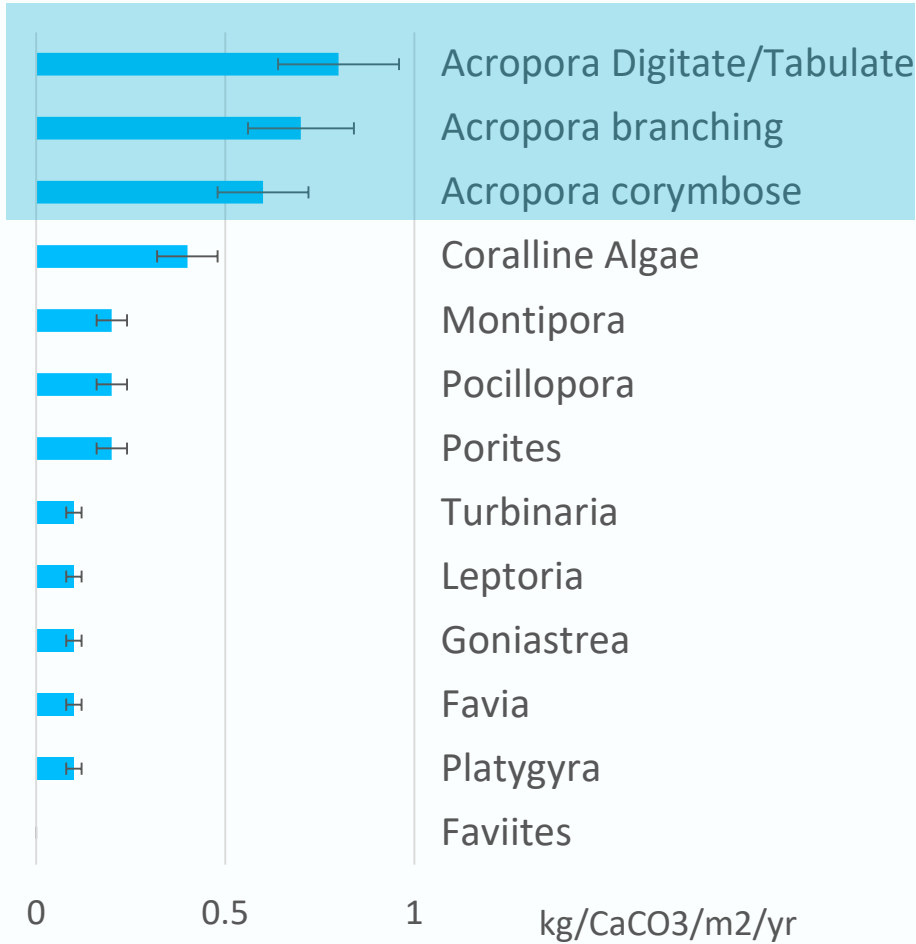


M.Saunders 2015

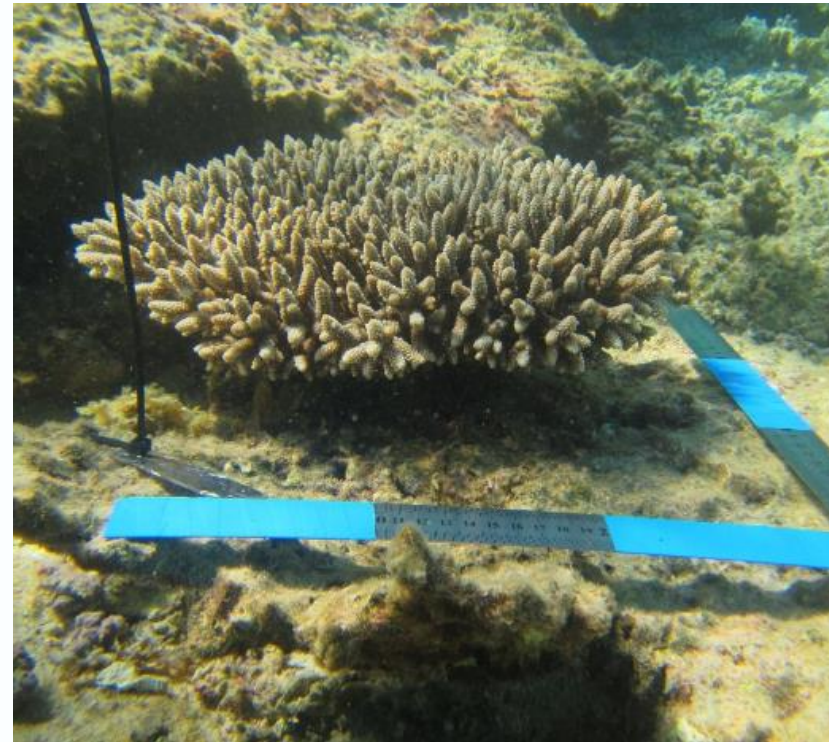


# How are we improving production estimates

Mean production 3.3 kg/CaCO<sub>3</sub>/m<sup>2</sup>/yr

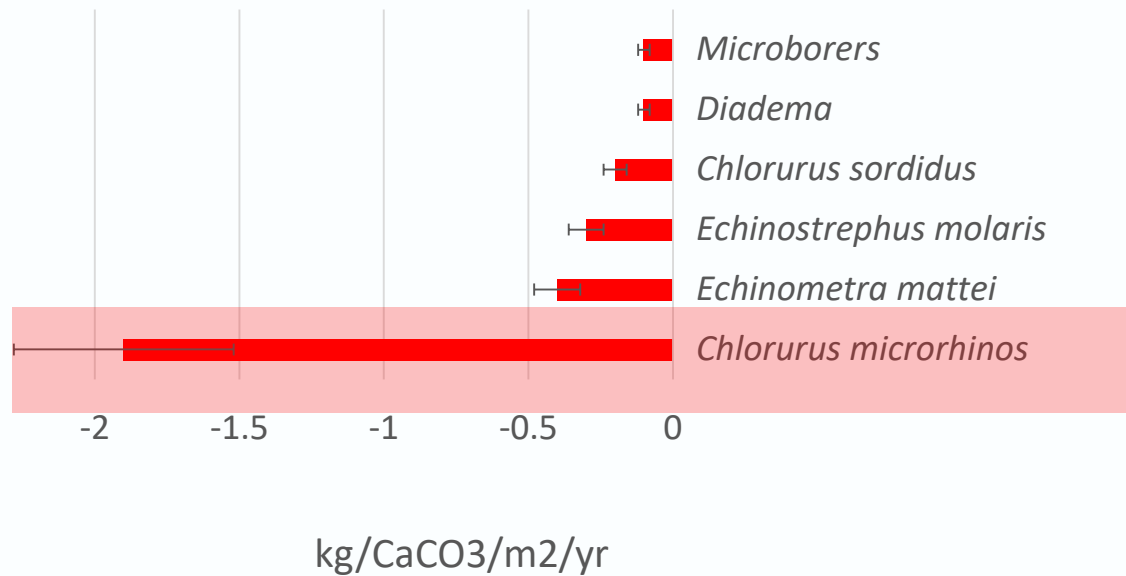


*Acropora* growth rates



# How are we improving bioerosion estimates?

Mean bioerosion 2.9 kg/CaCO<sub>3</sub>/m<sup>2</sup>/yr



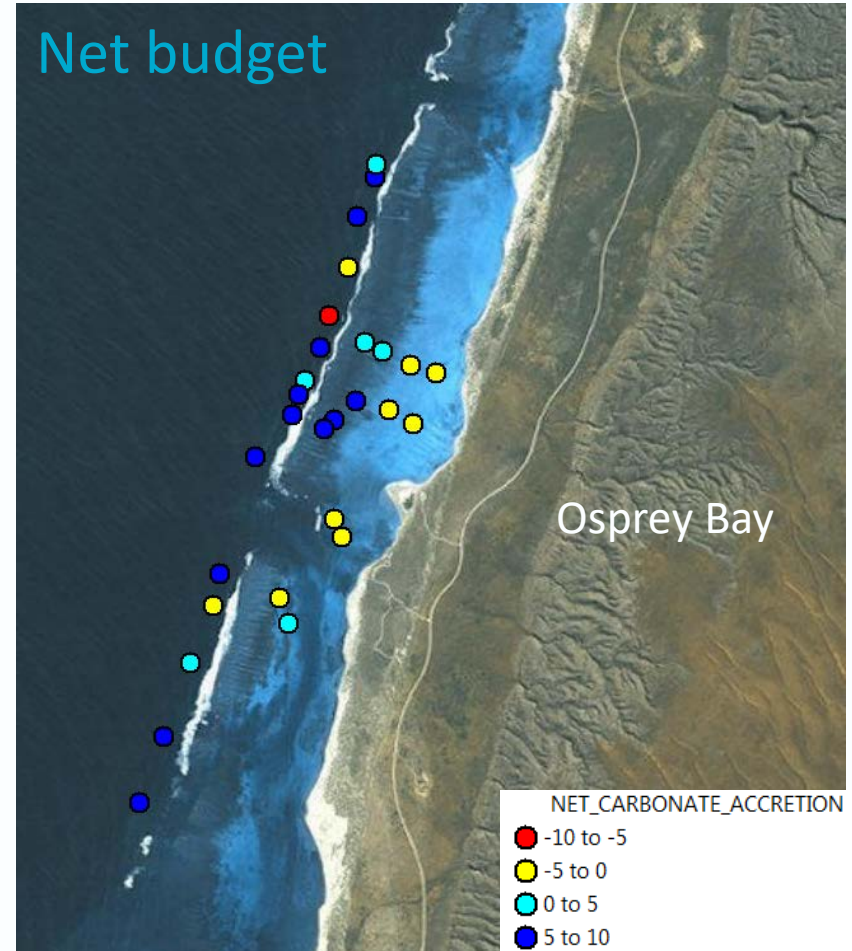
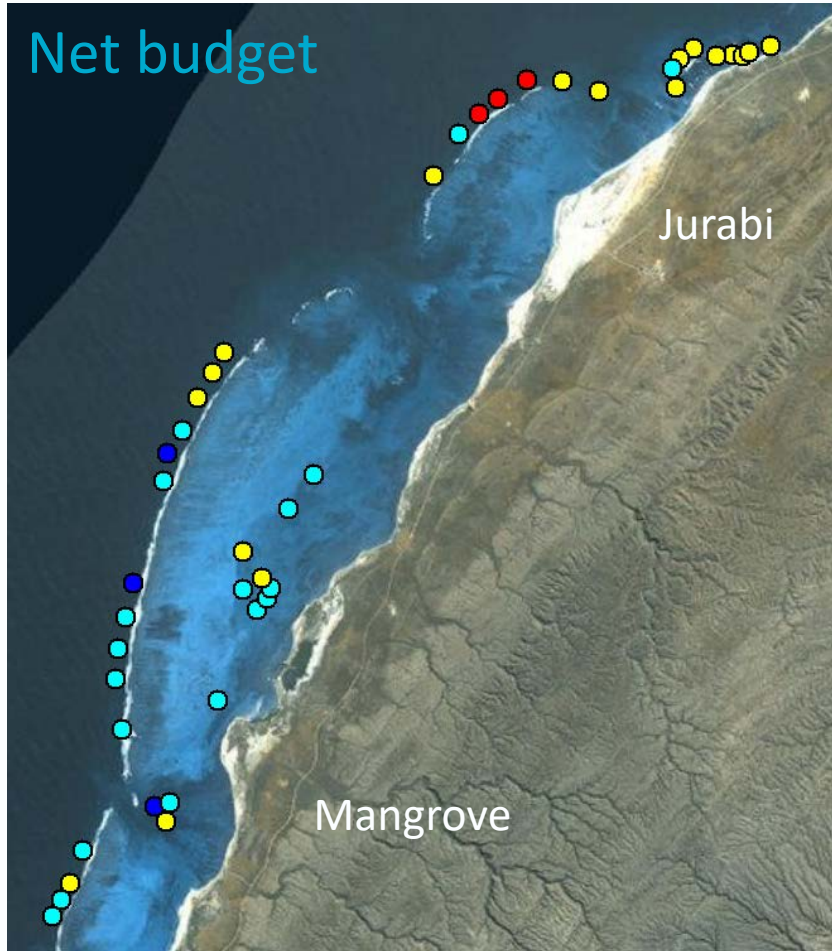
## Parrotfish bite rates



Photo Andy Lewis

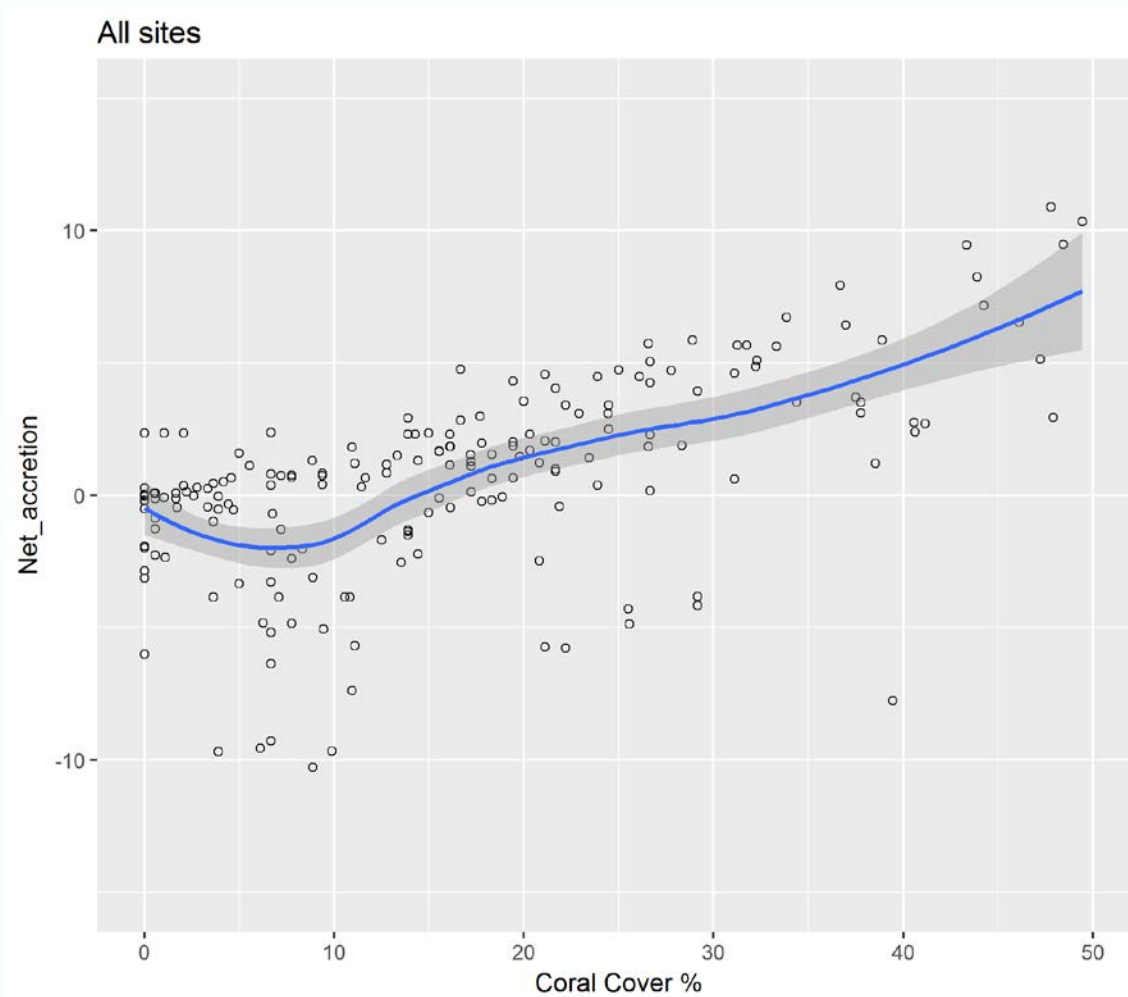


# Net budget



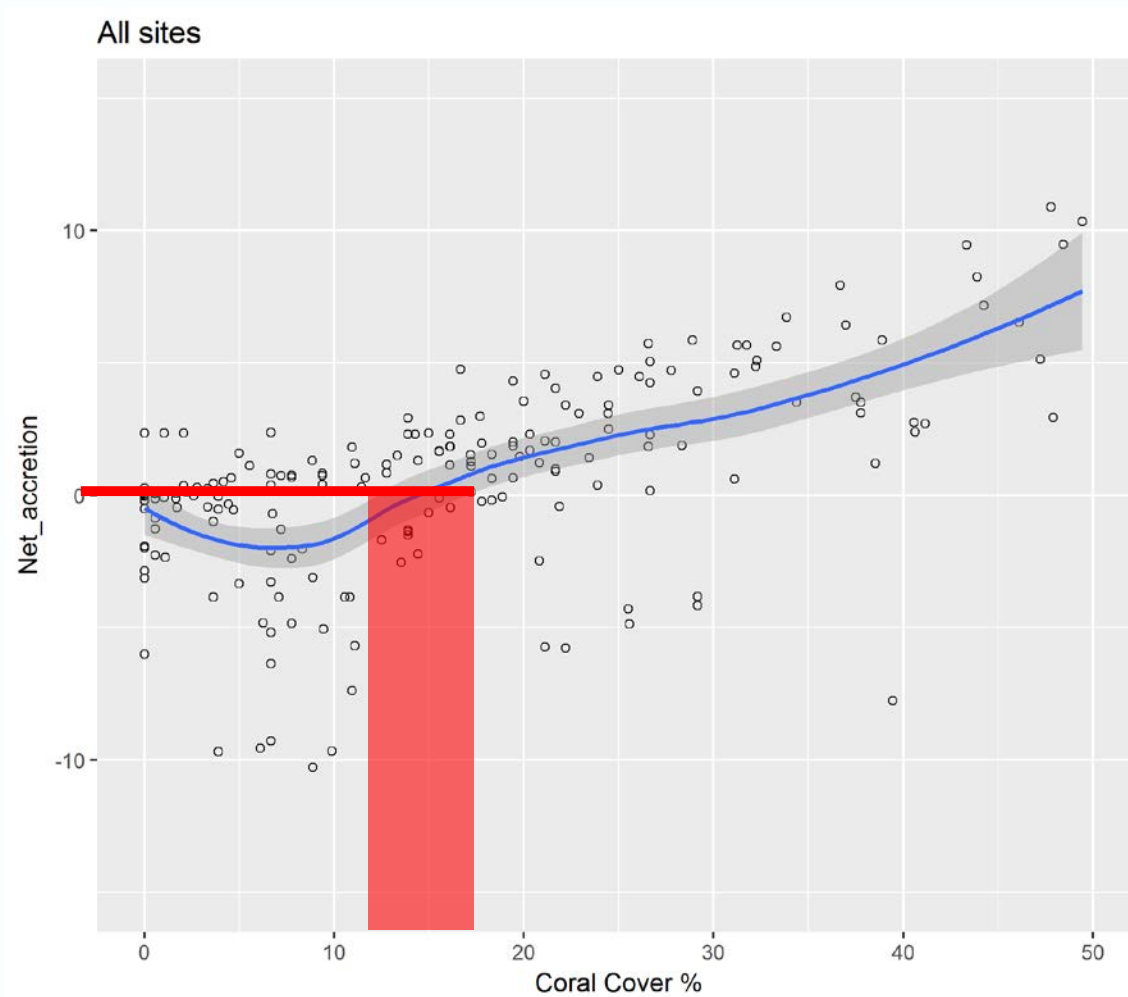
(mean  $2.46 \pm 2.01$  G)

# Estimated coral cover for positive budget

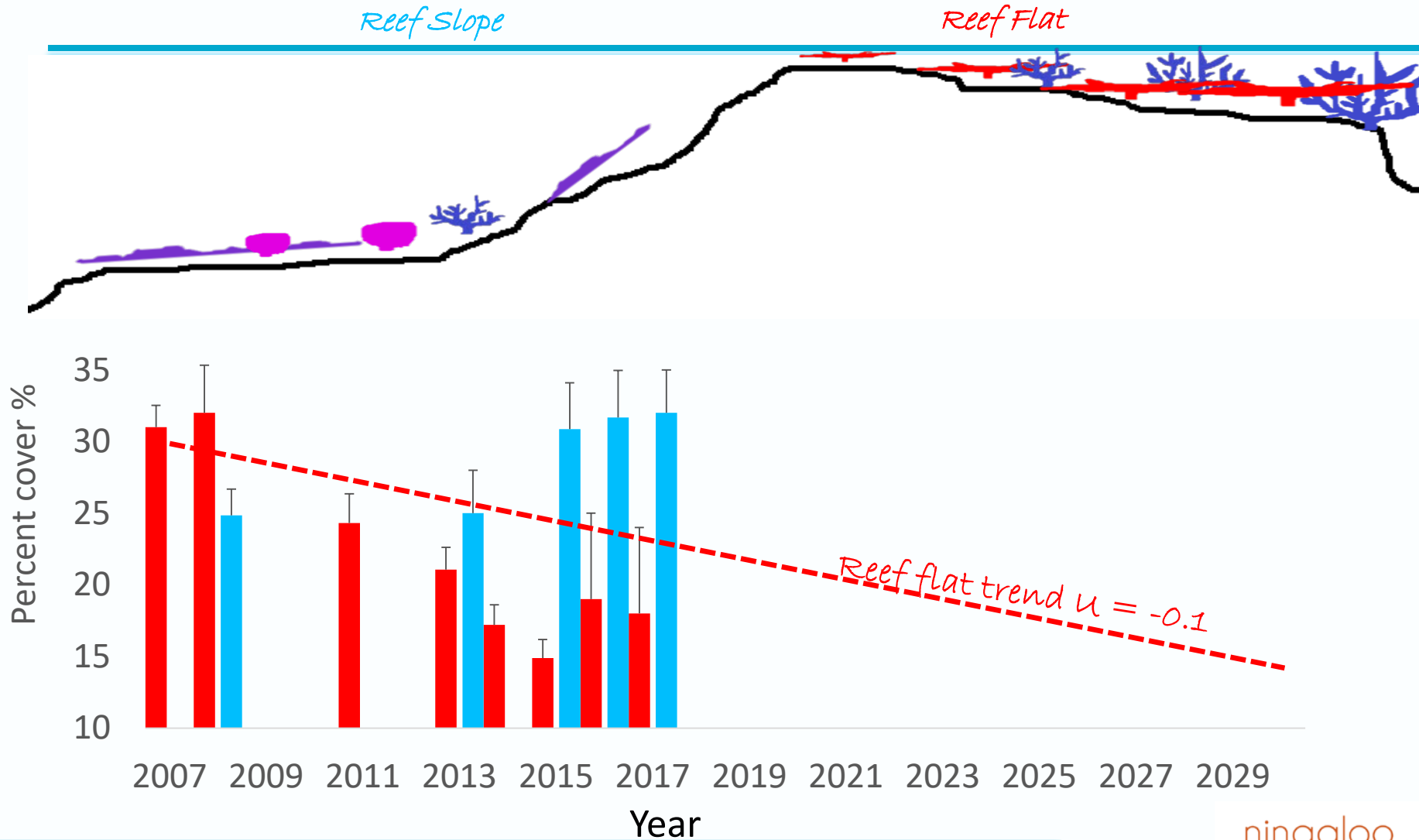




# Estimated coral cover for positive budget

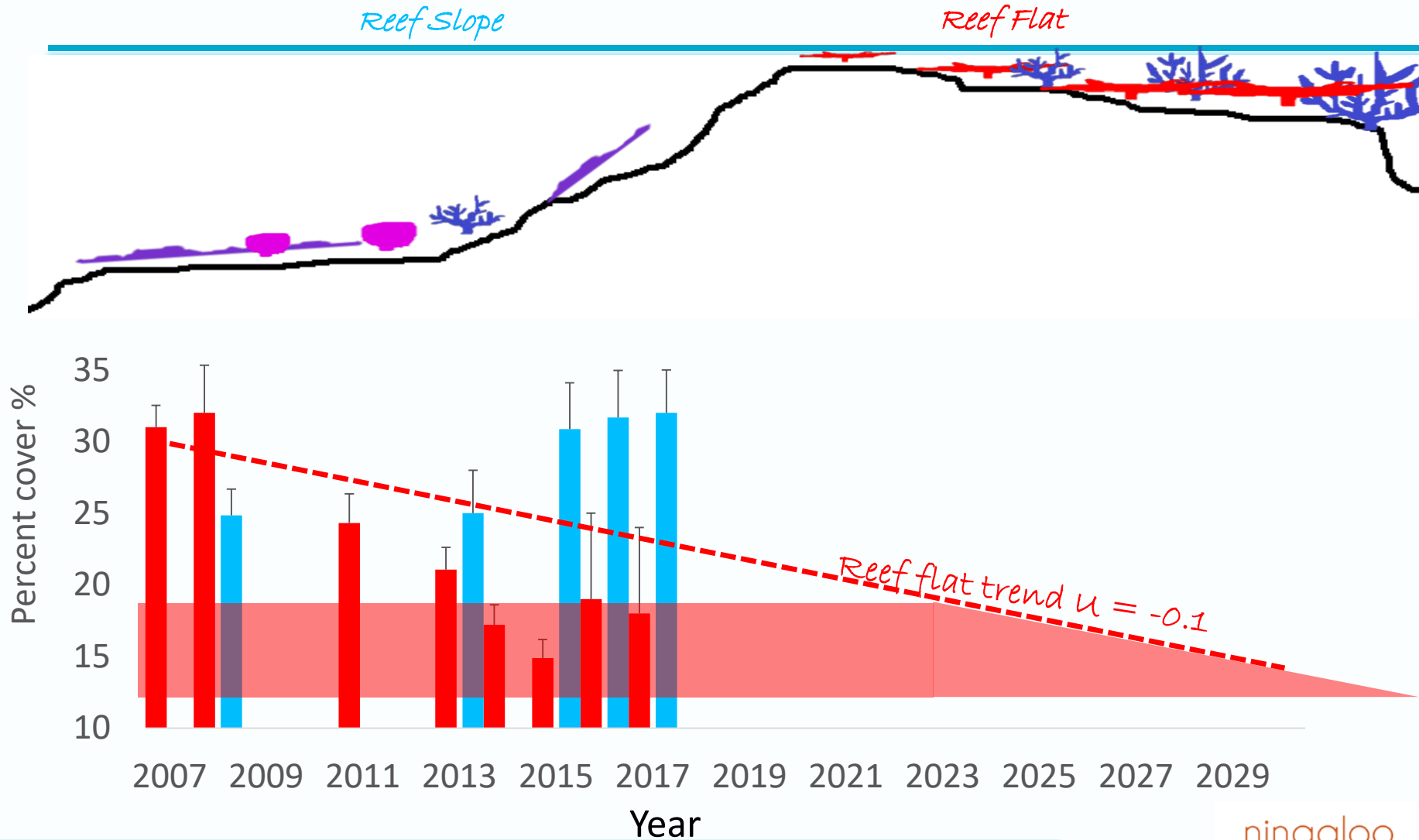


# Annual trends in coral cover last 10 years





# Majority reef flat sites –ve budget from 2023



Reef slope

Production and bioerosion

- Improve estimates of reef growth

**What have we done this year?**

Settlement assemblages and recruit associations

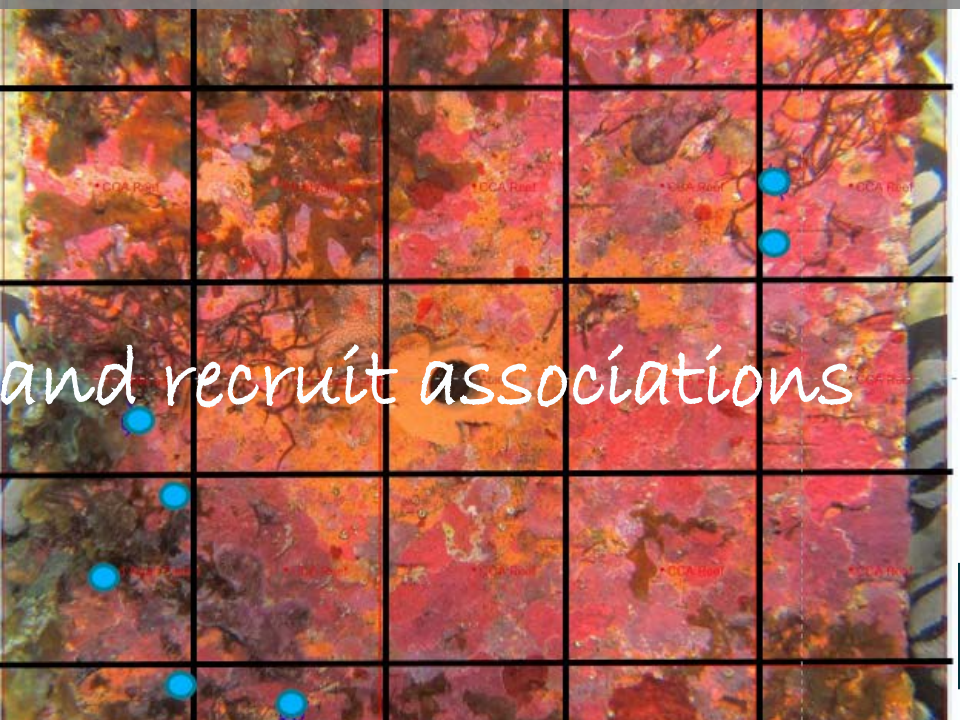


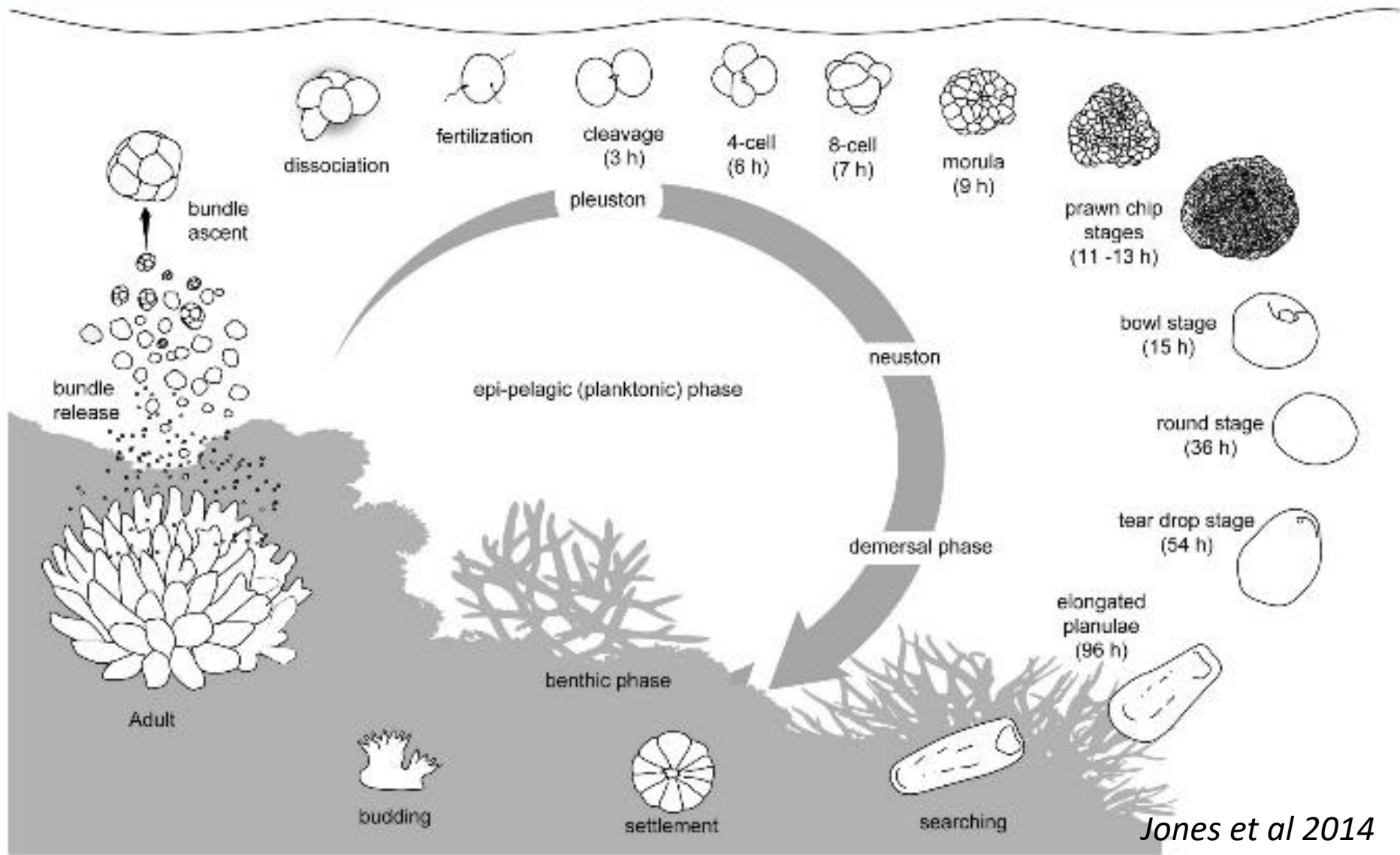
Reef slope

Production and bioerosion

What have we done this year?

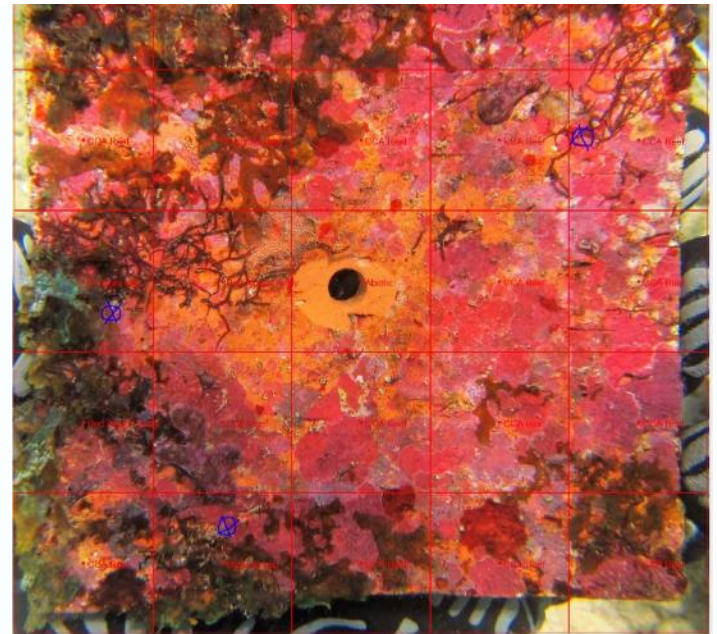
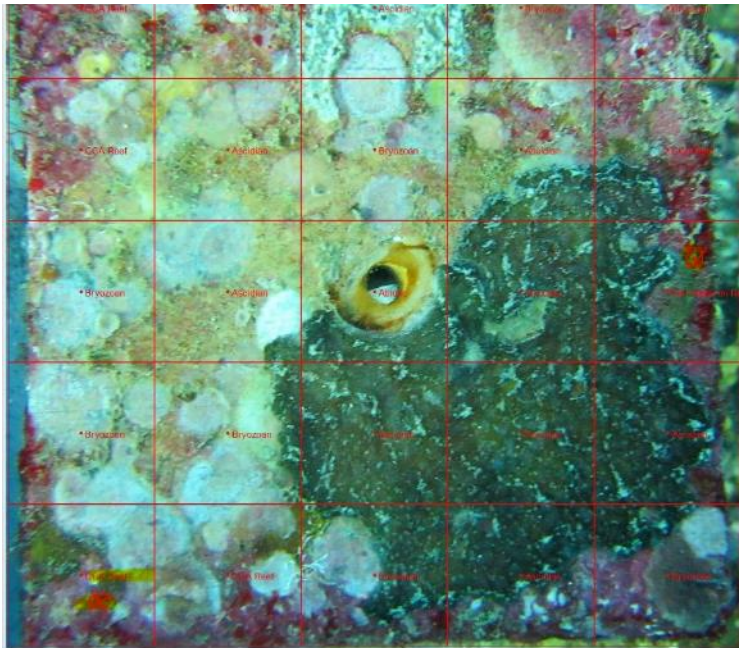
Settlement assemblages and recruit associations



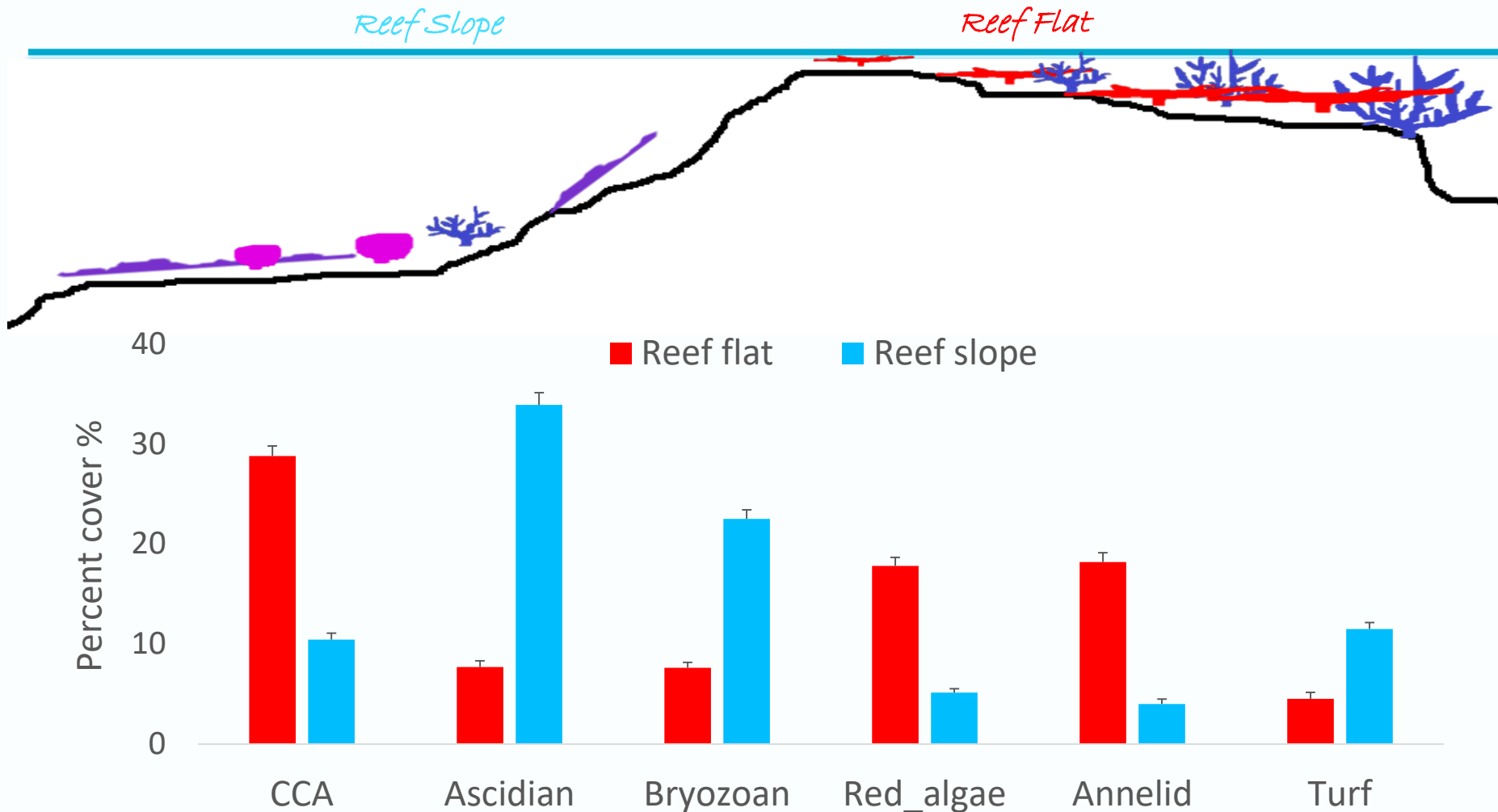




# Early life history assemblages

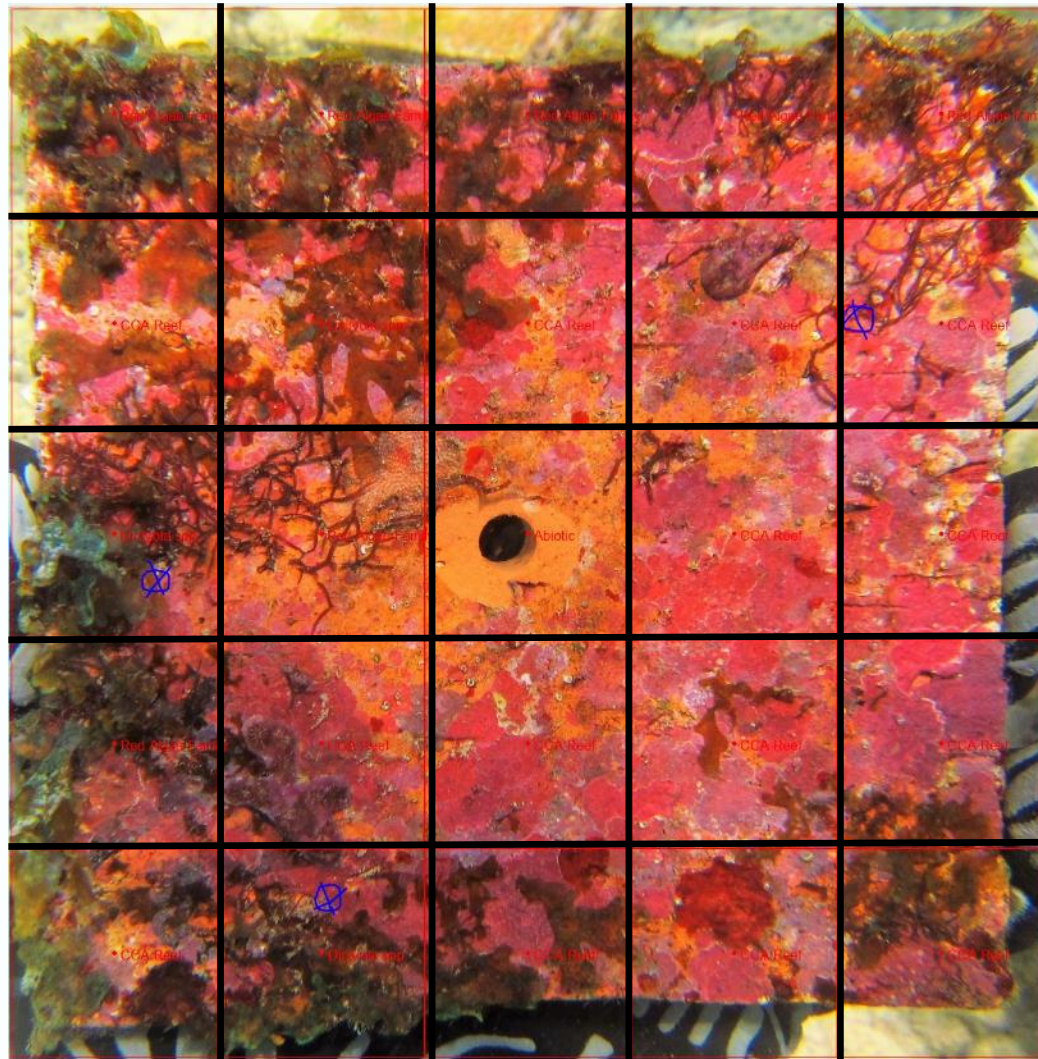


# New data on early life history assemblages

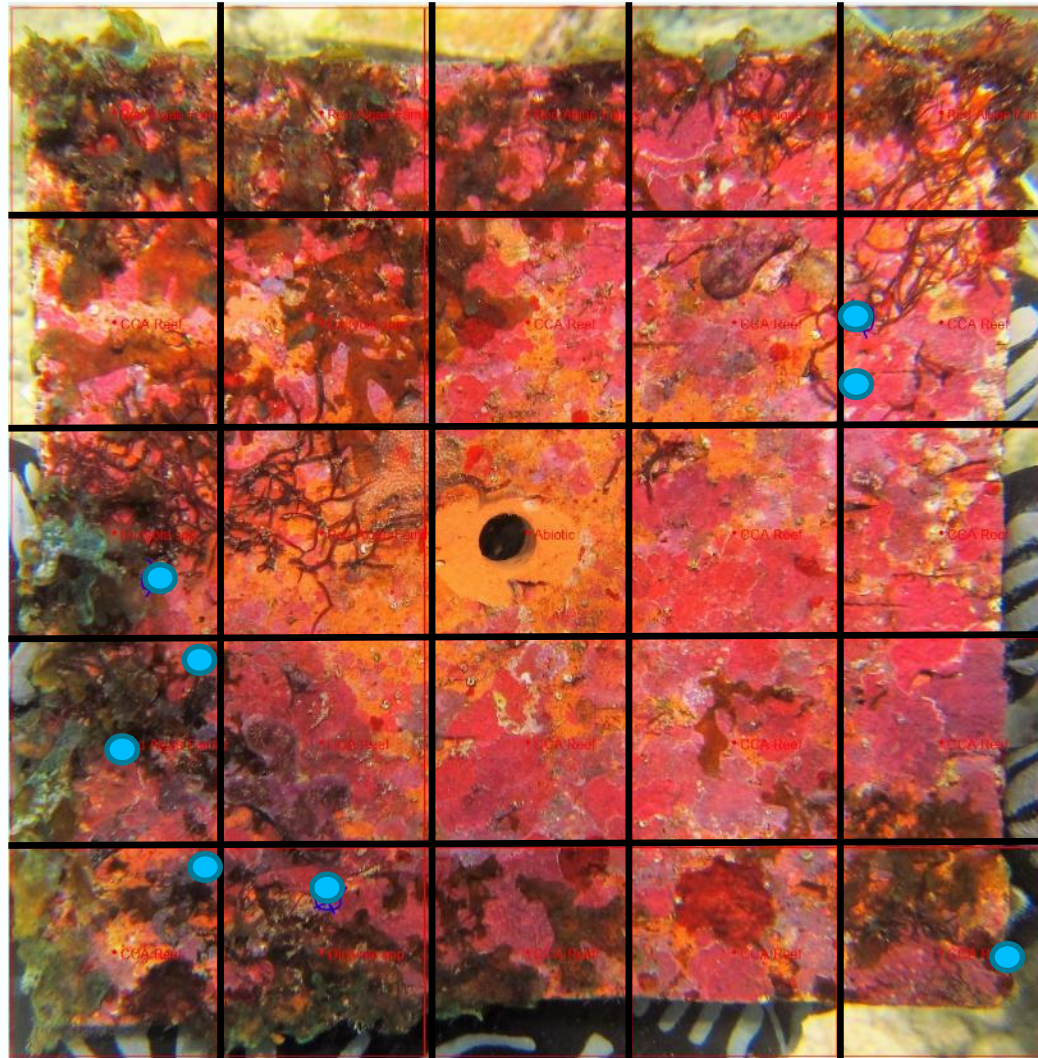




# Coral settlement associations

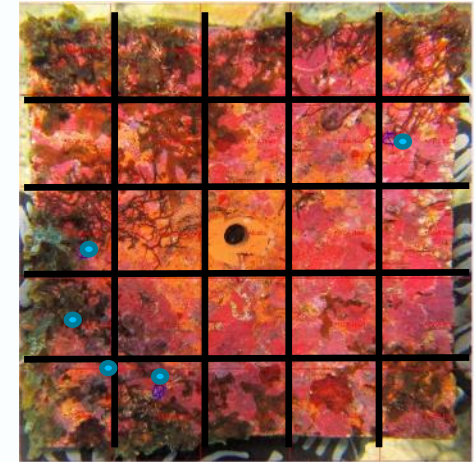
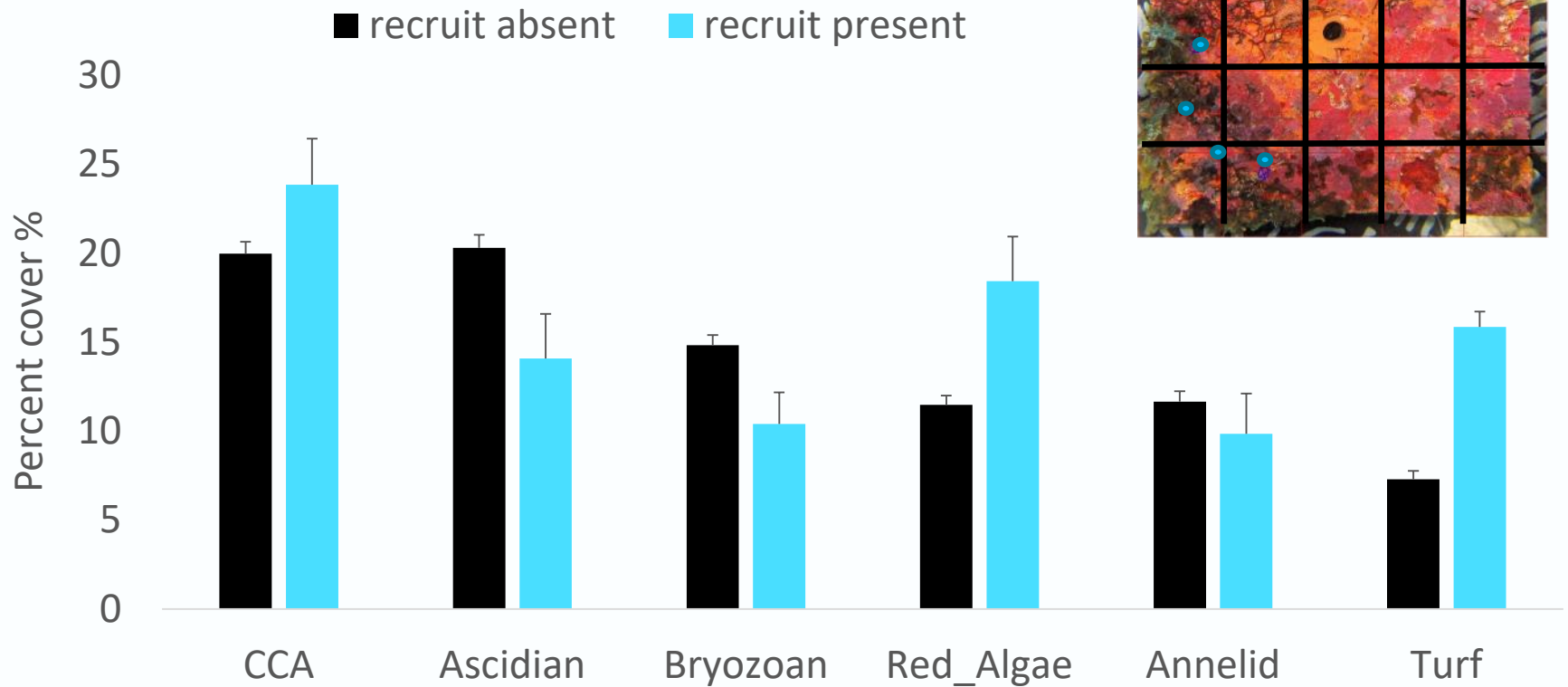


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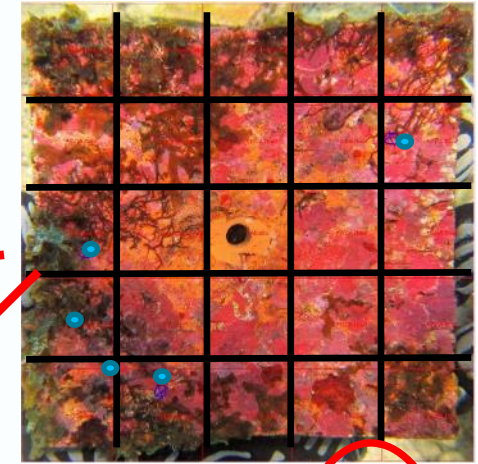
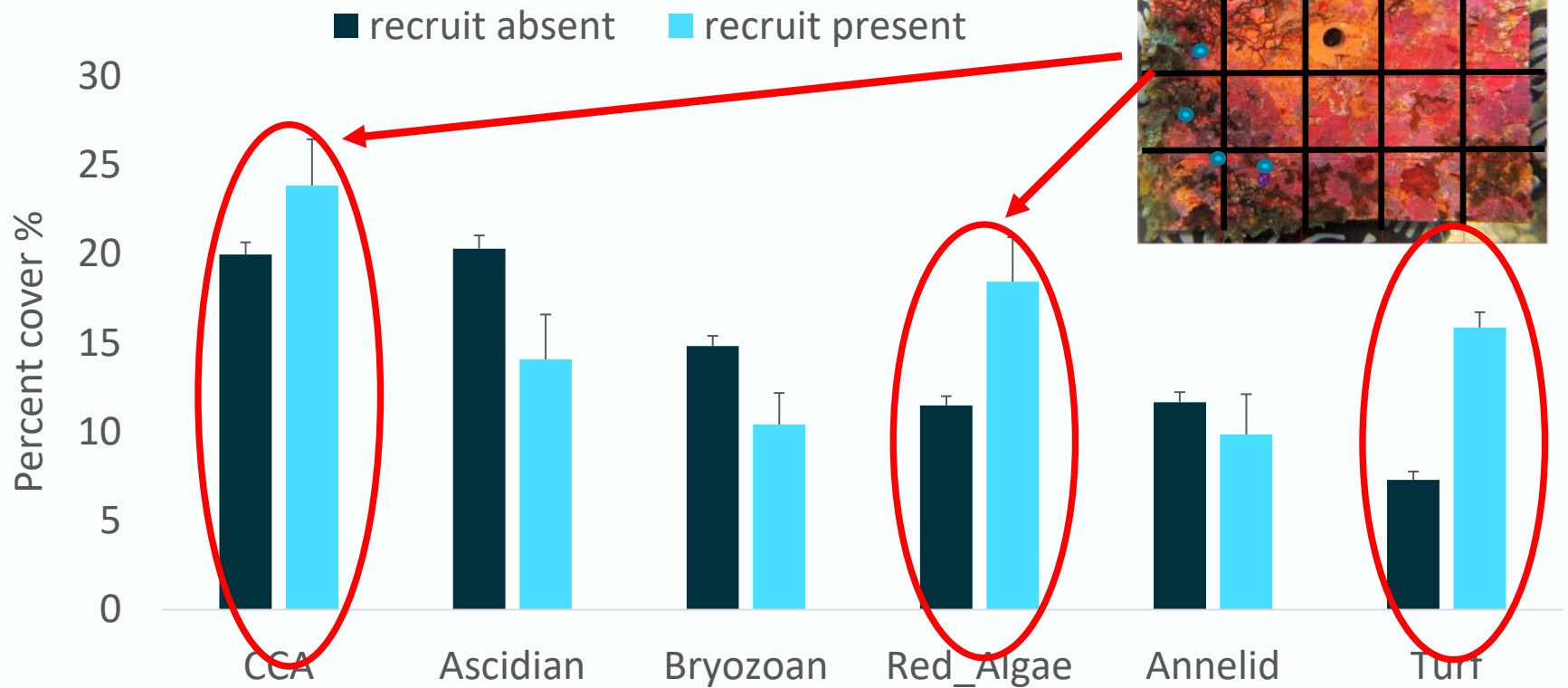




# Coral settlement associations

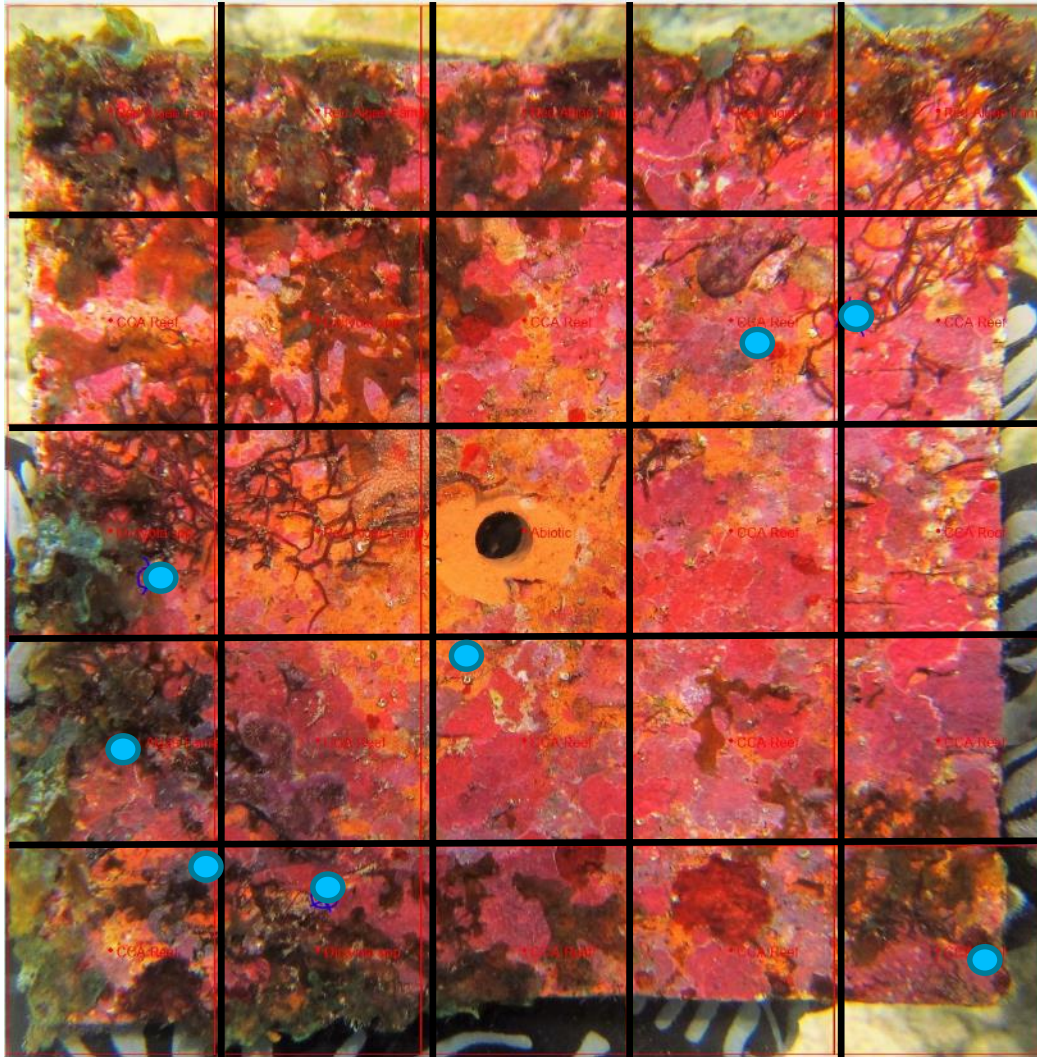


# Coral settlement associations





# Coral settlement associations



Recruits were likely to occur:

- 4.8 x **more** with red algae
- 4.4 x **more** with CCA
- 5.6 x **less** with ascidians
- 4.3 x **less** with bryozoans



## Reef slope

- New data on fish and corals



## Production and bioerosion

- Improve estimates of reef growth



## Settlement assemblages and recruit associations

- Identified strong associations





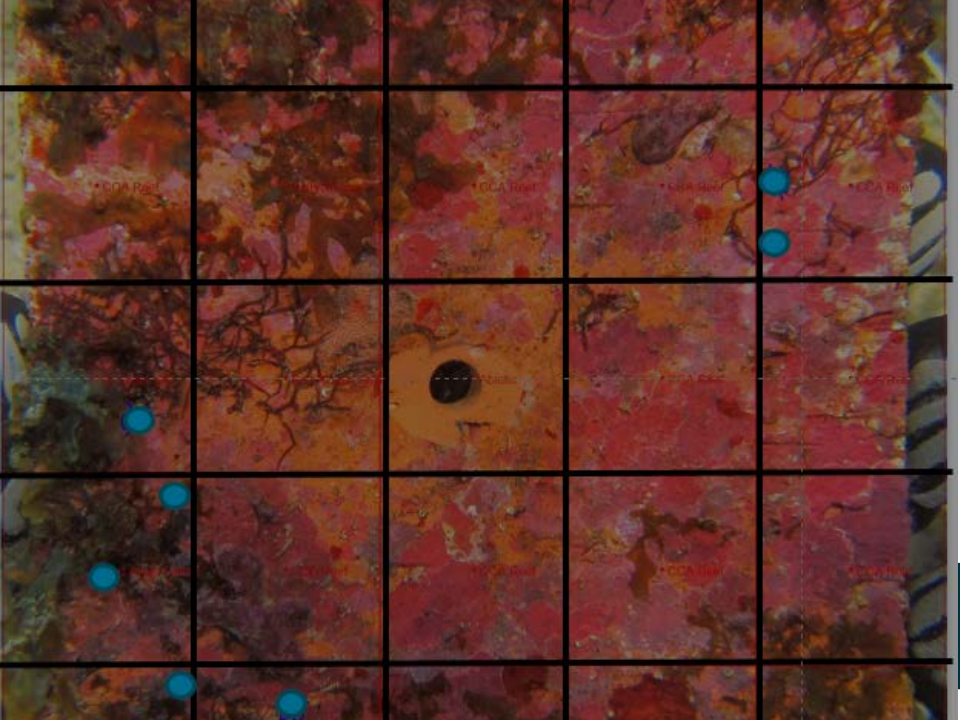


Surveys in May  
2018



Coral growth  
Bioerosion  
Physical erosion

**The next 12 months**



# Thank you!



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## Acknowledgements

- BHP-CSIRO Ningaloo Outlook Marine Research Partnership
- DBCA staff in Perth and Exmouth
- Reef check team
- Susie Bedford and CCG members
- Margaret Miller for data wrangling
- C. Perry, S. Wilson and M.O'Leary
- Jo Myers, Jamie Small and the extended team