

Predation on mushroom corals by the short spined crown-of-thorns starfish at Ningaloo Reef



John Keesing



Two types of crown of thorns starfish

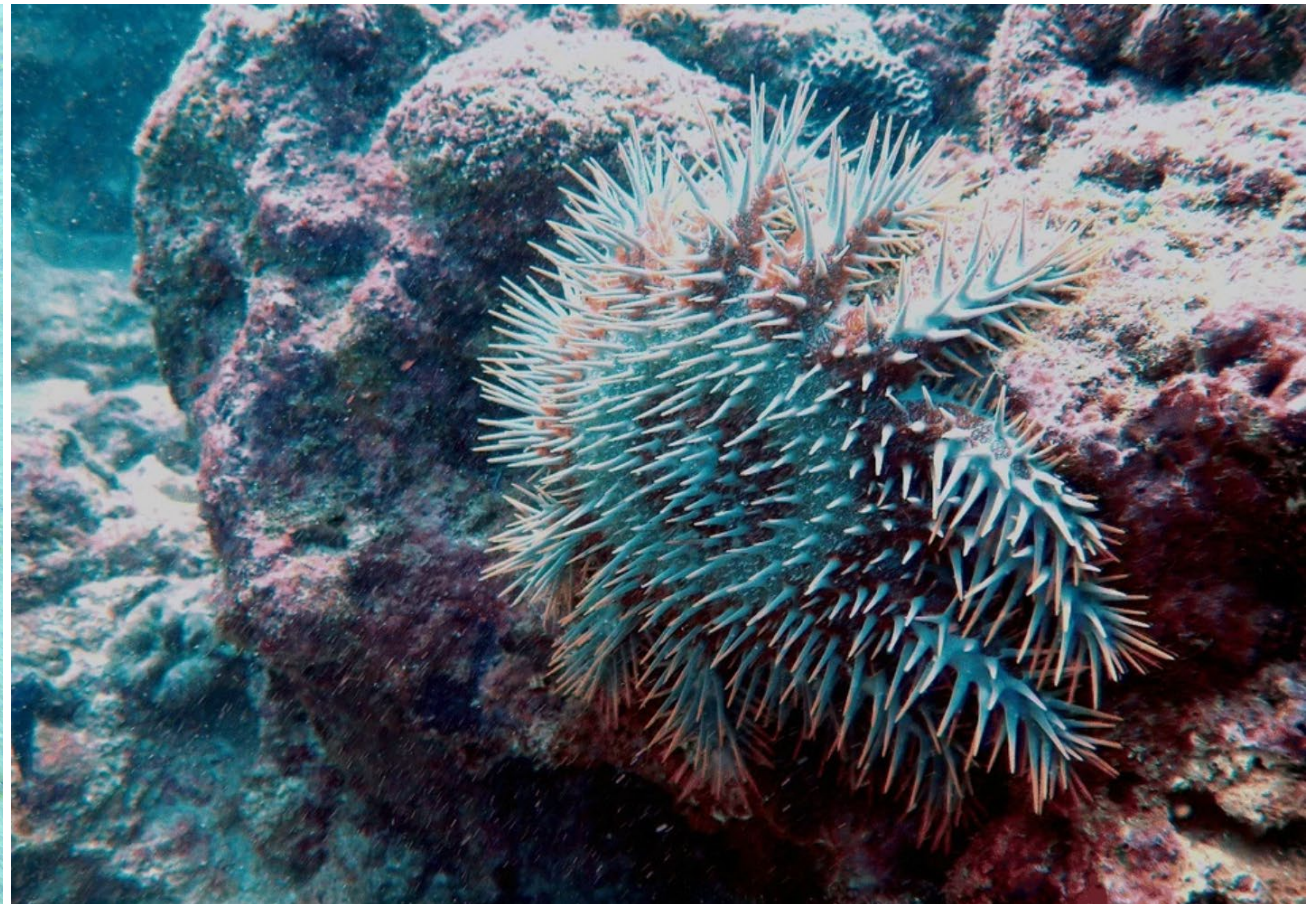


Photo Dan Godoy

Acanthaster brevispinus

Short spined crown of thorns starfish

- first record for WA was at Ningaloo in 2006

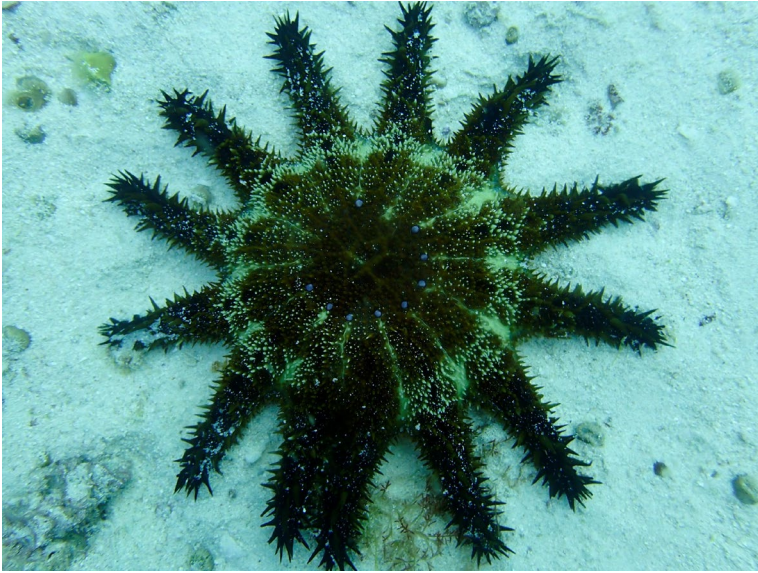


Acanthaster planci / solaris

Pacific crown of thorns starfish

- high densities in the Pilbara (13-320 per ha, Haywood et al. 2019)
- rare at Ningaloo

Two types of crown of thorns starfish – traditional view of contrasting biology



Acanthaster brevispinus

Short spined crown of thorns starfish

Deep-water, mostly > 20 m

Soft sediment habitats

Mollusc feeder, scavenger

Not known to outbreak

Only known to occur at low densities

Not sympatric with *A. planci*



Acanthaster planci / *solaris*

Pacific crown of thorns starfish

Shallow water, mostly < 20 m

Coral reef habitats

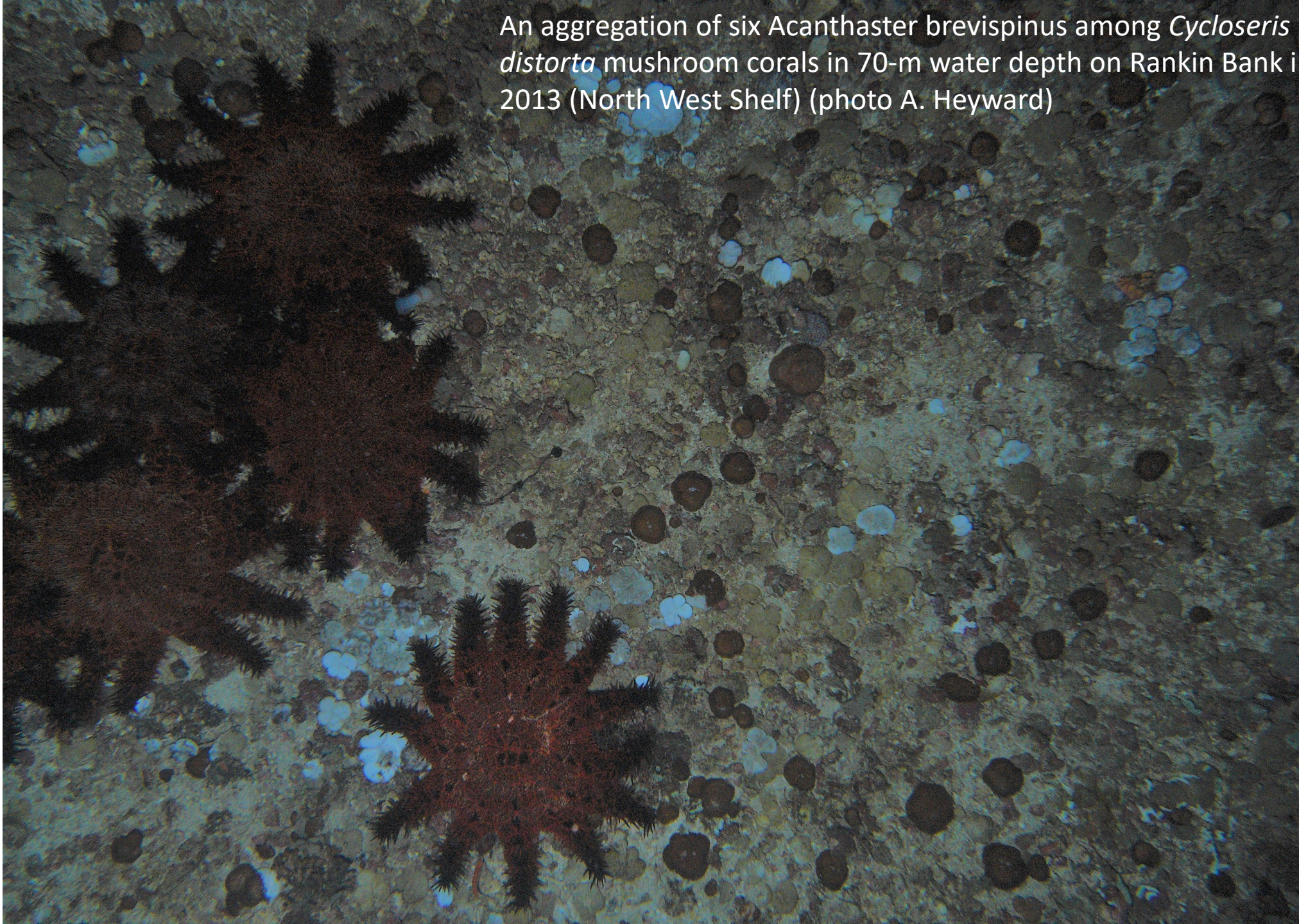
Almost exclusively corallivore

Undergoes, population outbreaks (> 10-15 per ha)

Can be present at high or low densities

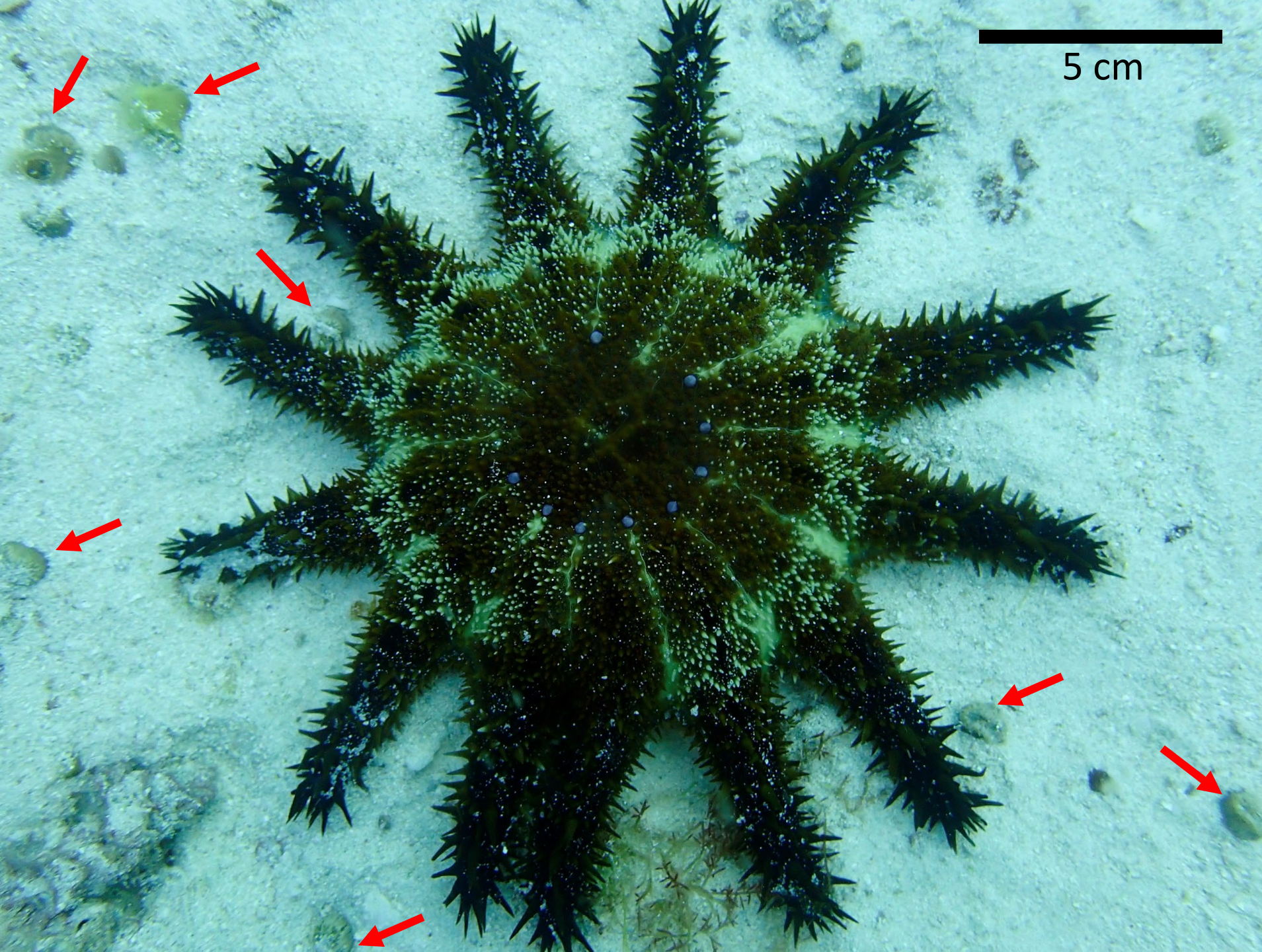
Not sympatric with *A. brevispinus*

An aggregation of six *Acanthaster brevispinus* among *Cycloseris distorta* mushroom corals in 70-m water depth on Rankin Bank in 2013 (North West Shelf) (photo A. Heyward)



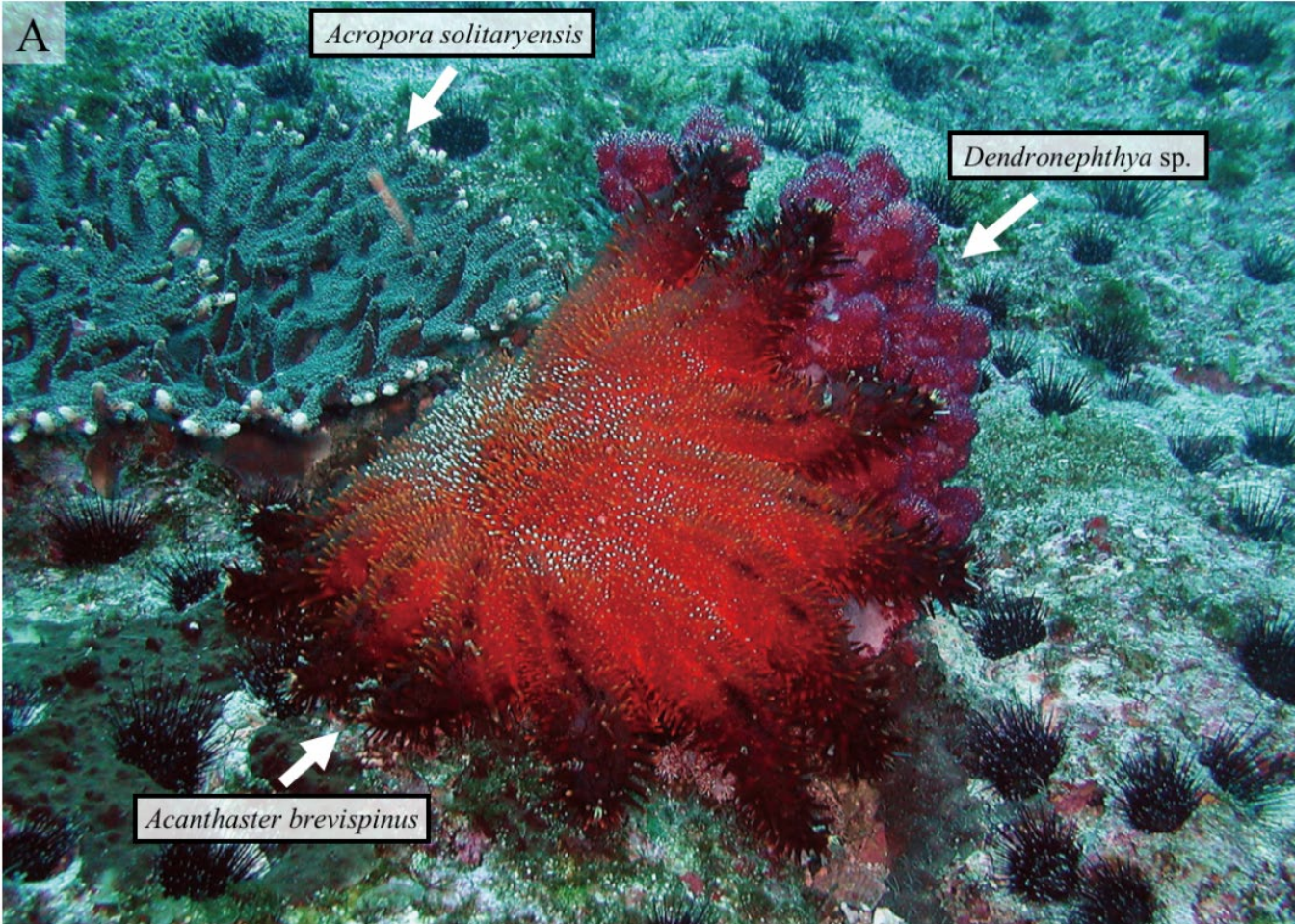


Acanthaster brevispinus collected while consuming mushroom coral *Cycloseris distorta* From 38 m depth off Ningaloo Reef (2022)



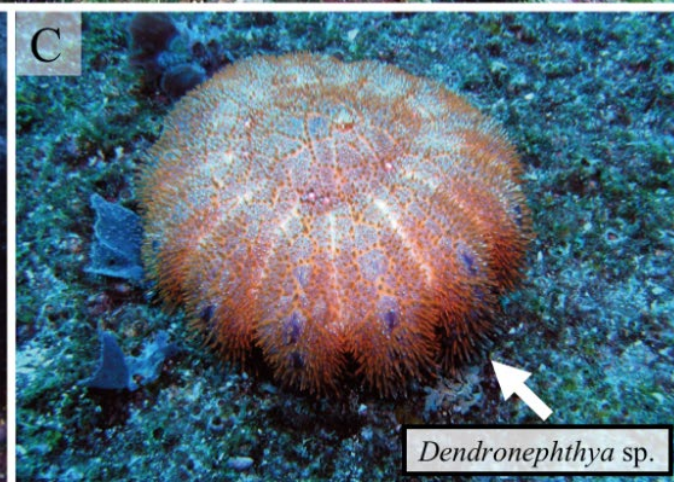
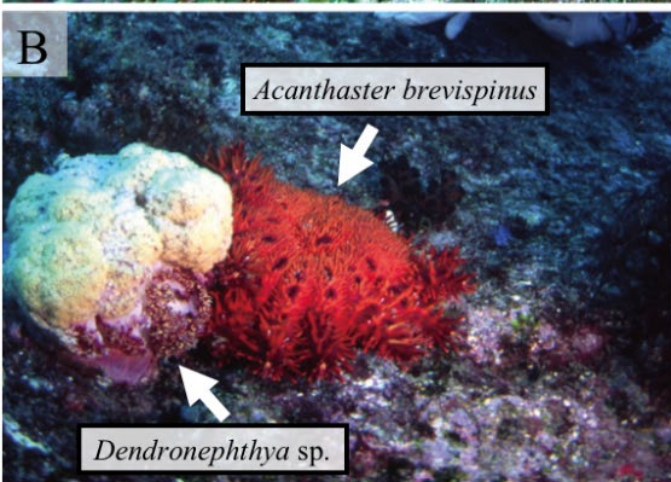
Acanthaster brevispinus consuming *Heteropsammia cochlea*, Capricorn-Bunkers group of reefs, southern Great Barrier Reef. Several hundred observed at a density of 7.6 per 100 m² (2020)



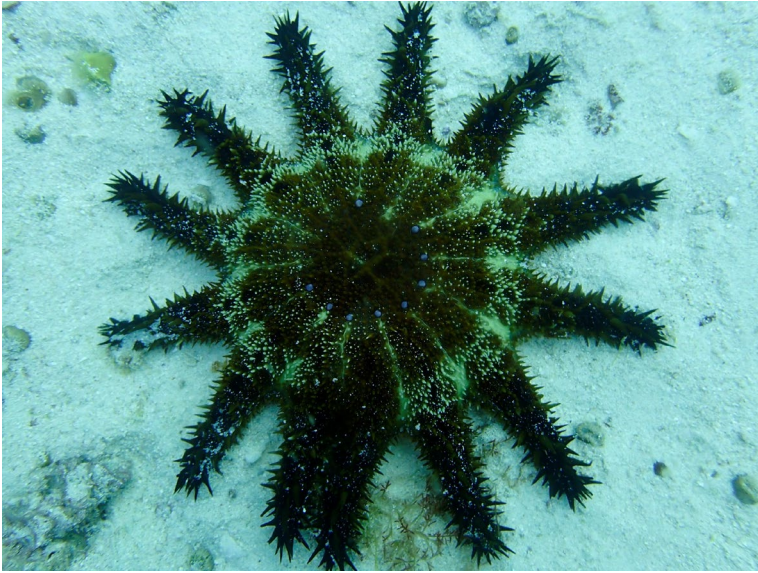


Acanthaster brevispinus consuming soft coral *Dendronephthya* in 18-20 m off southern Japan at a density of 20 per 100 m²

Yuasa et al. 2017. Bull Mar Sci. 93(4):1009–1010.



Two types of crown of thorns starfish – traditional view of contrasting biology



Acanthaster brevispinus
Short spined crown of thorns starfish

Deep-water, mostly > 20 m

~~Soft sediment habitats~~ Yuasa et al. 2017

~~Mollusc feeder, scavenger~~ Yuasa et al. 2017 Keesing et al. 2023

Not known to outbreak

~~Only known to occur at low densities~~ Yuasa et al. 2017
Keesing et al. 2023

~~Not sympatric with *A. planci*~~ Yuasa et al. 2017



Acanthaster planci / *solaris*
Crown of thorns starfish

Shallow water, mostly < 20 m

Coral reef habitats

Almost exclusively corallivore

Undergoes, population outbreaks (> 10-15 per ha)

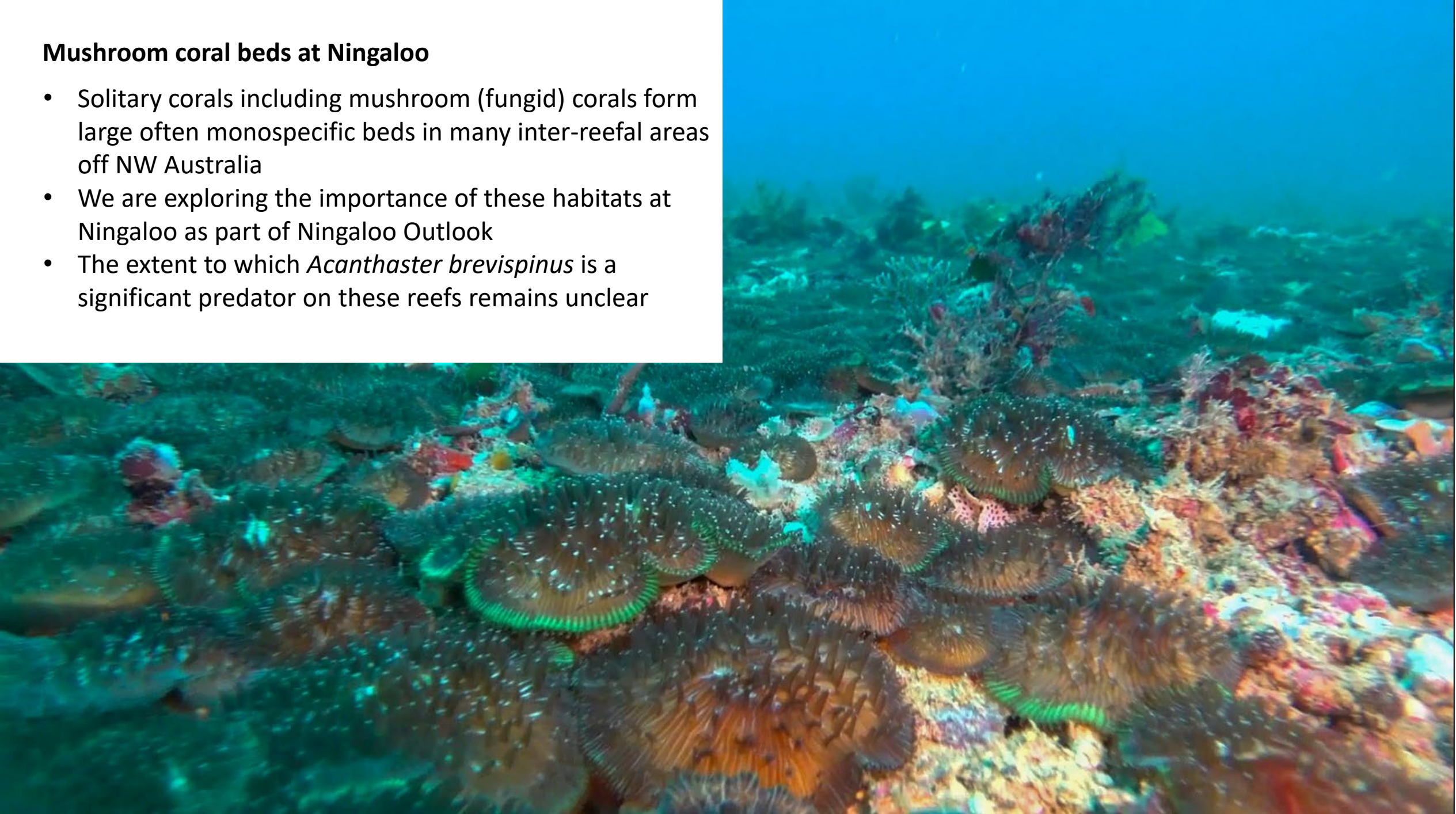
Can be present at high or low densities

~~Not sympatric with *A. brevispinus*~~ Yuasa et al. 2017




Mushroom coral beds at Ningaloo

- Solitary corals including mushroom (fungid) corals form large often monospecific beds in many inter-reefal areas off NW Australia
- We are exploring the importance of these habitats at Ningaloo as part of Ningaloo Outlook
- The extent to which *Acanthaster brevispinus* is a significant predator on these reefs remains unclear



The short spined crown-of-thorns starfish *Acanthaster brevispinus* is a corallivore too

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