University of Exeter

THE ROYAL SOCIETY

Noise Pollution

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- CRIOBE Research Station
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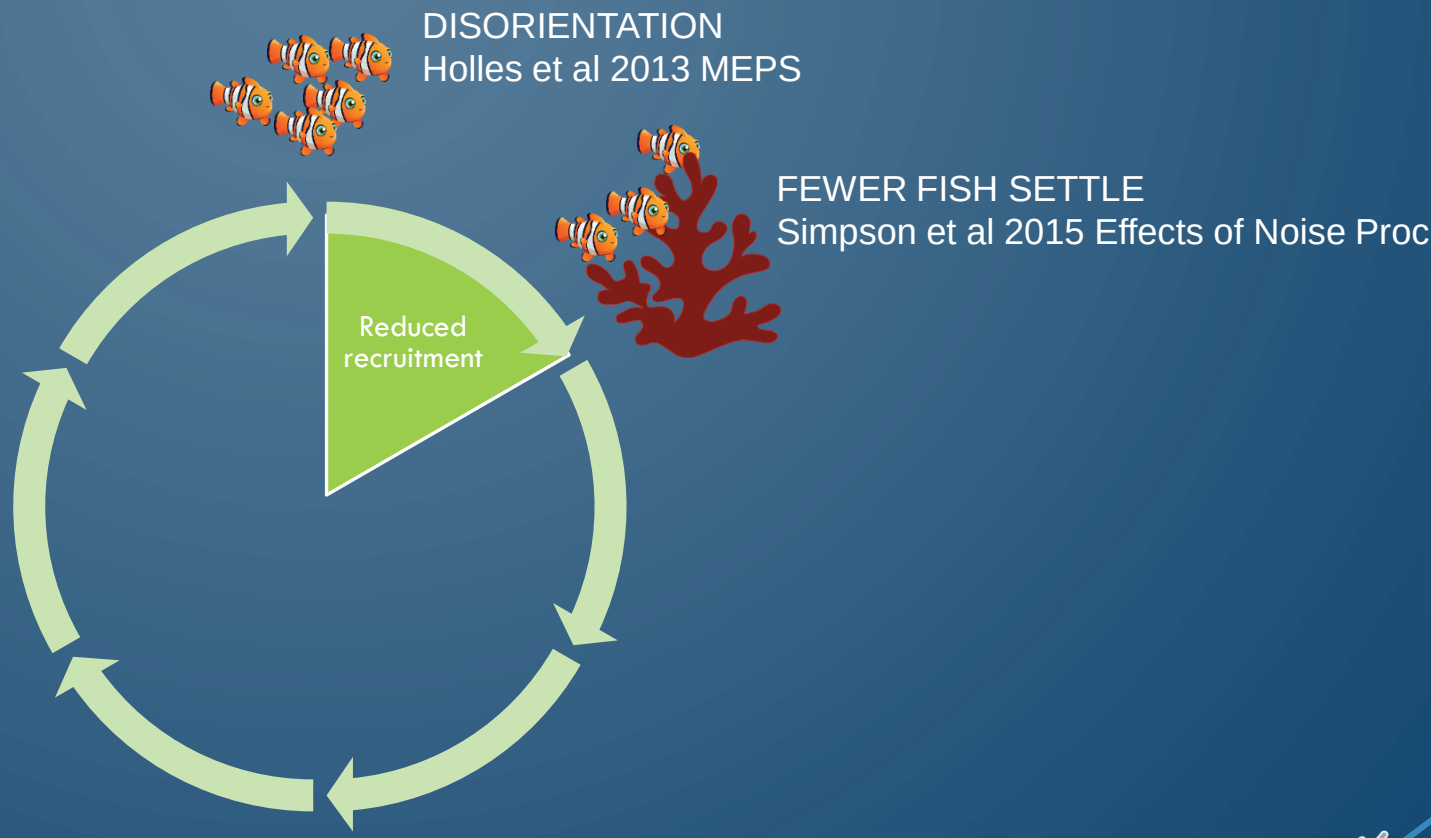
Noise pollution impacts all parts of the life cycle

Noise is bad news for reefs



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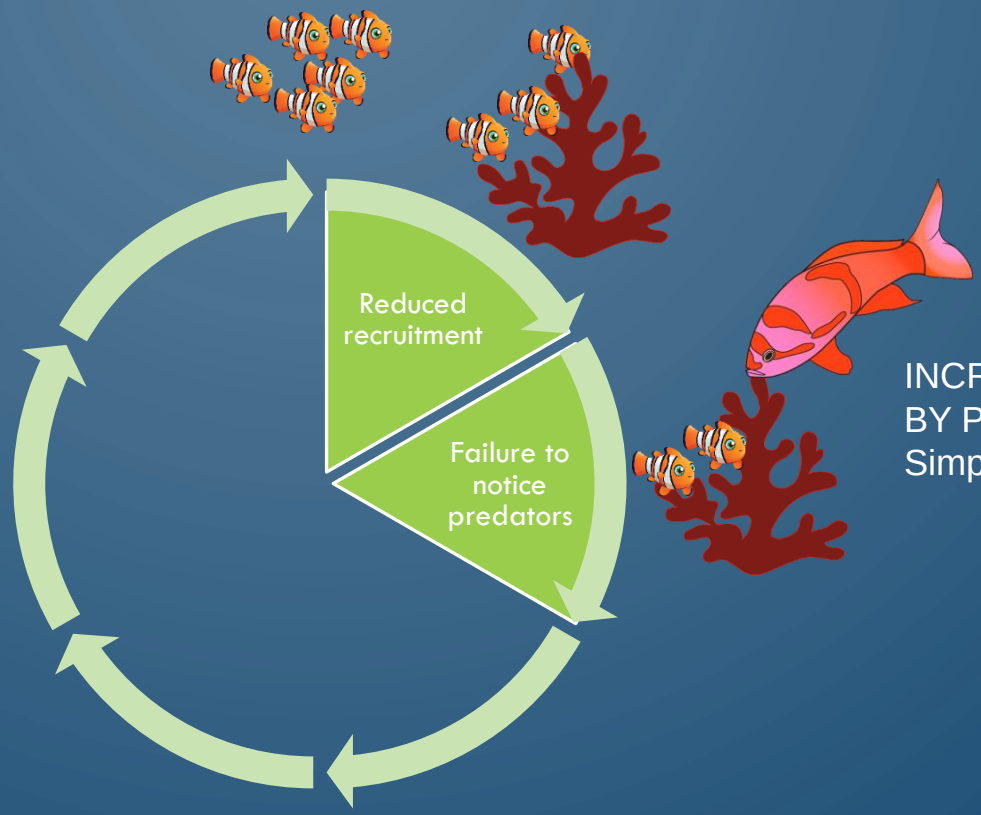

INCREASED MORTALITY BY PREDATION
Simpson et al 2016 Nat Comms

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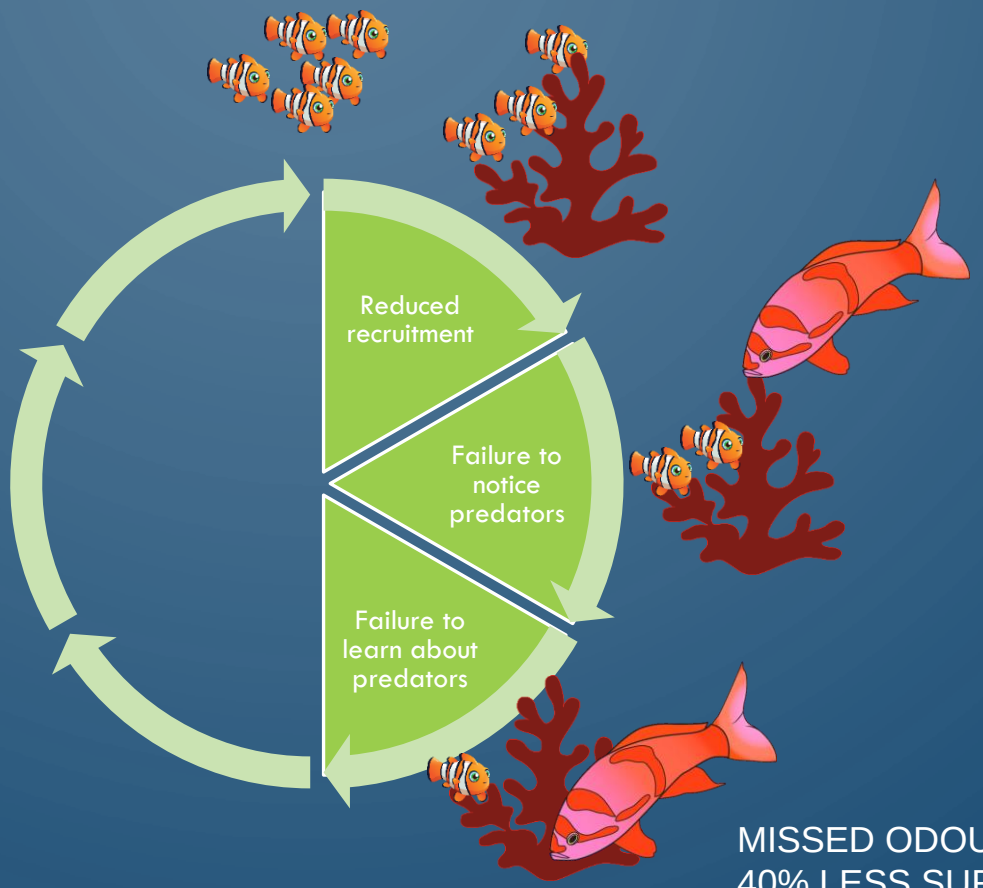

MISSED ODOUR CUES
40% LESS SURVIVAL
Ferrari et al 2018 Proc B

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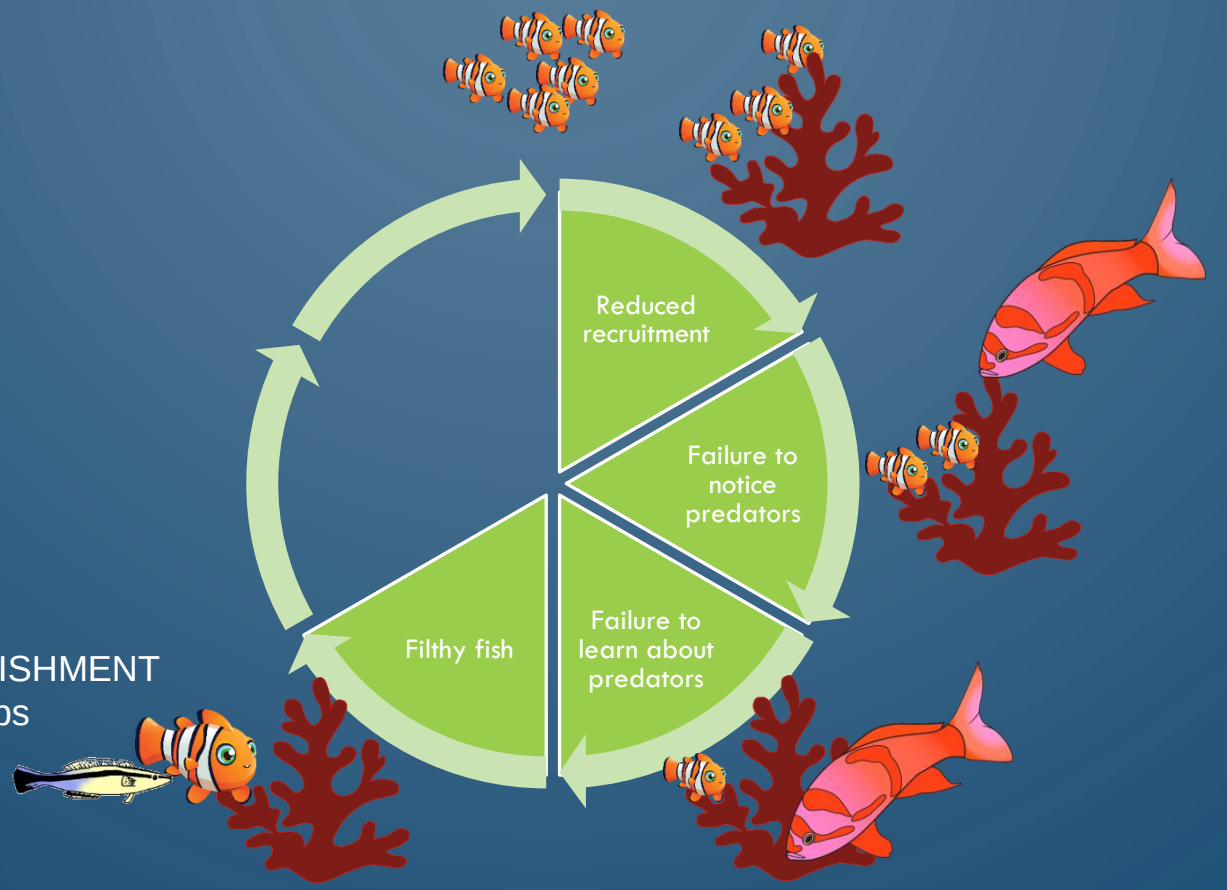

MORE CRIME LESS PUNISHMENT
Nedelec et al 2017 Sci Reps

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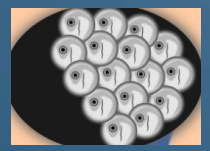
Noise is bad news for reefs

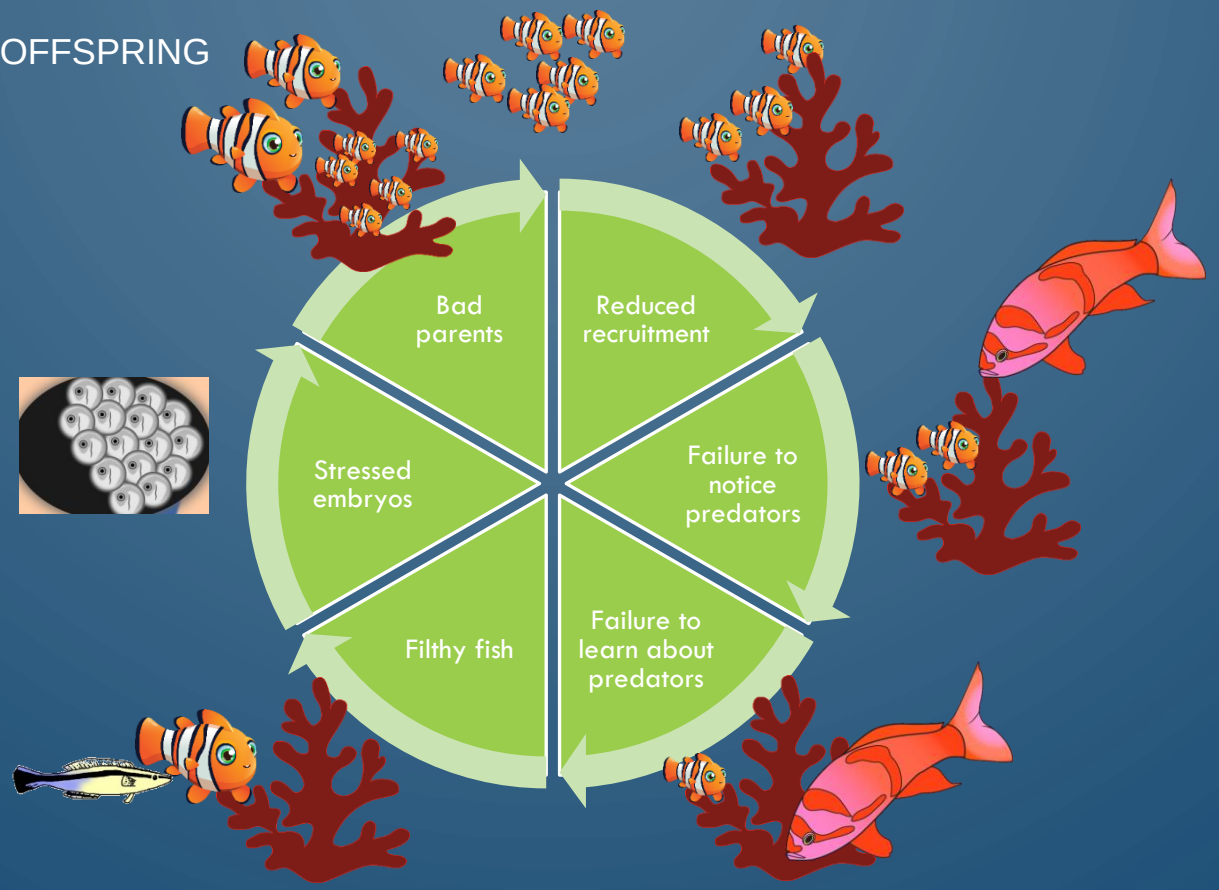
INCREASED HEART RATE
Fakan and McCormick 2019 Mar Poll Bullet

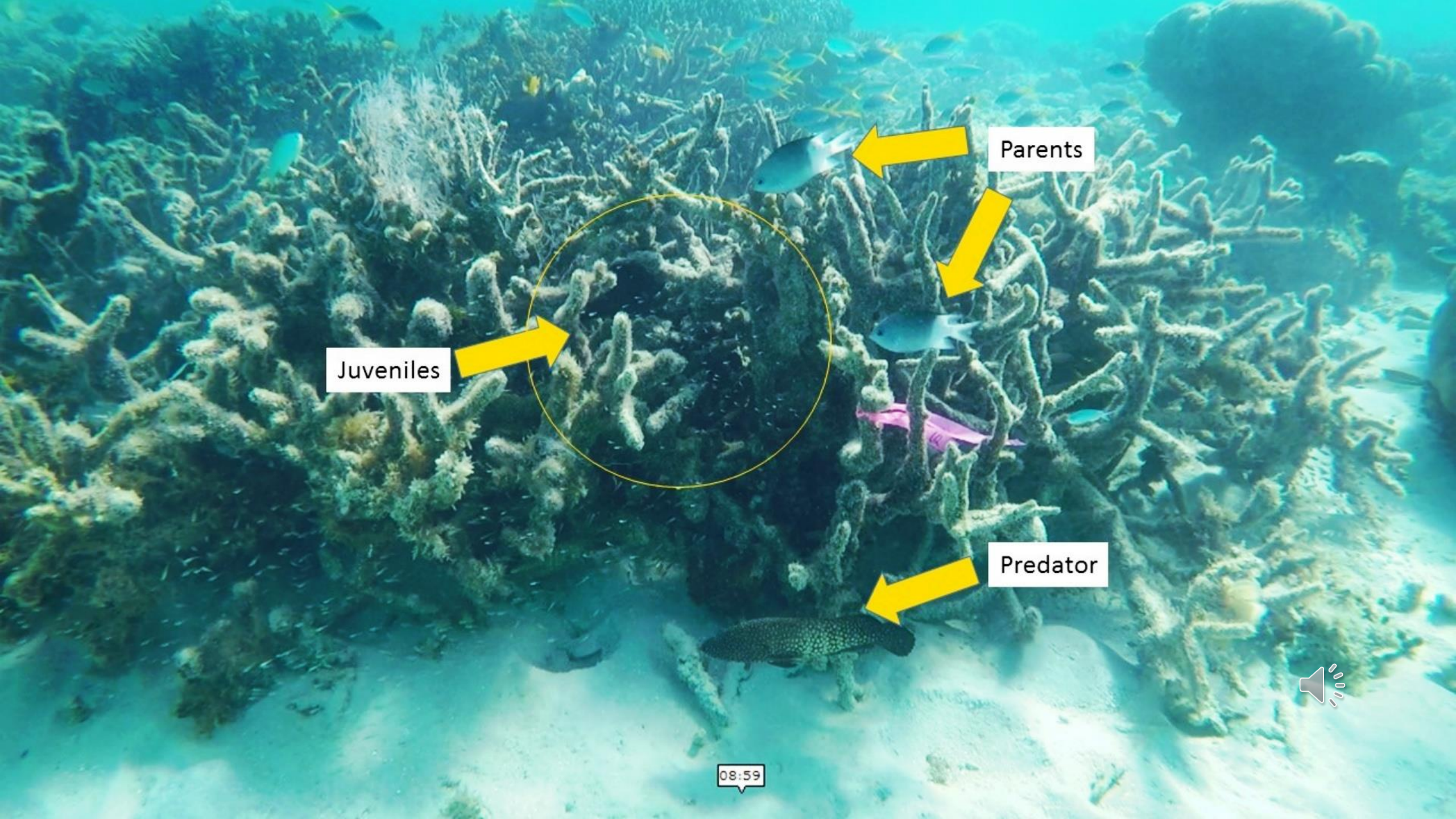


NOISE POLLUTION IMPACTS ALL PARTS OF THE LIFE CYCLE

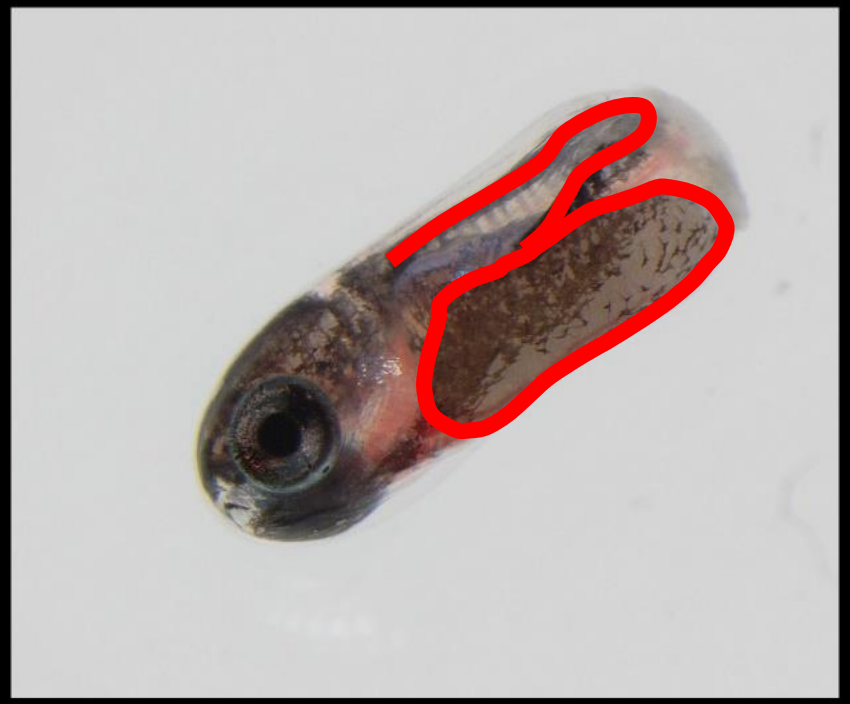
Noise is bad news for reefs

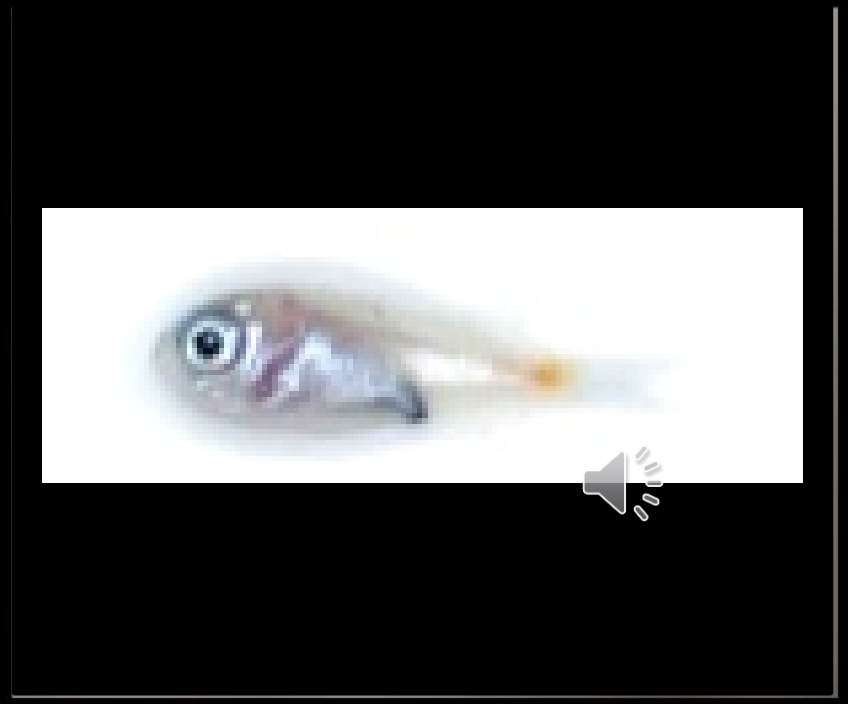
FEWER NESTS PRODUCE OFFSPRING
Nedelec et al 2017 Proc B




Parents
Juveniles
Predator
08:59

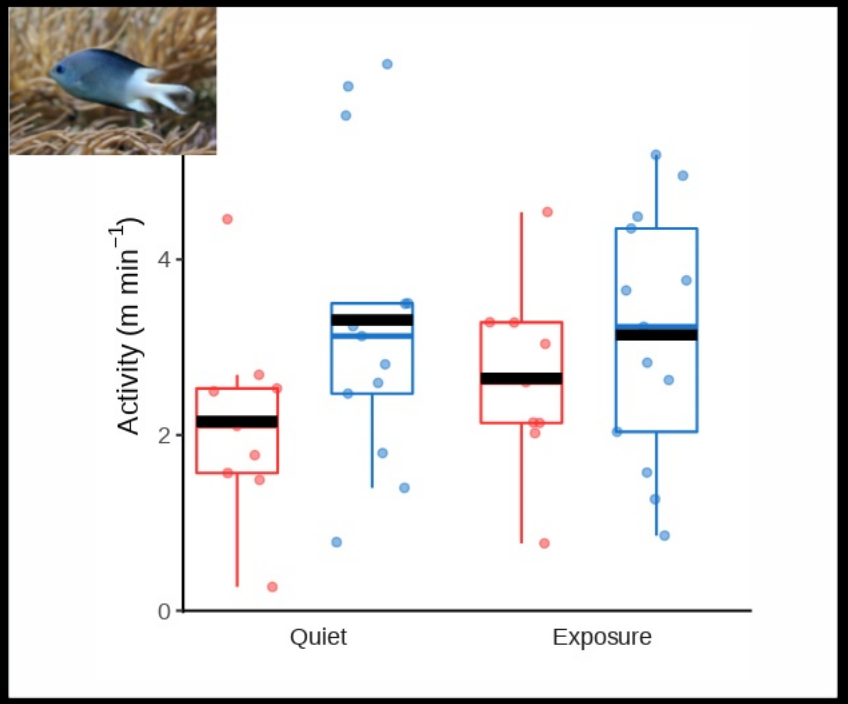
Lab study

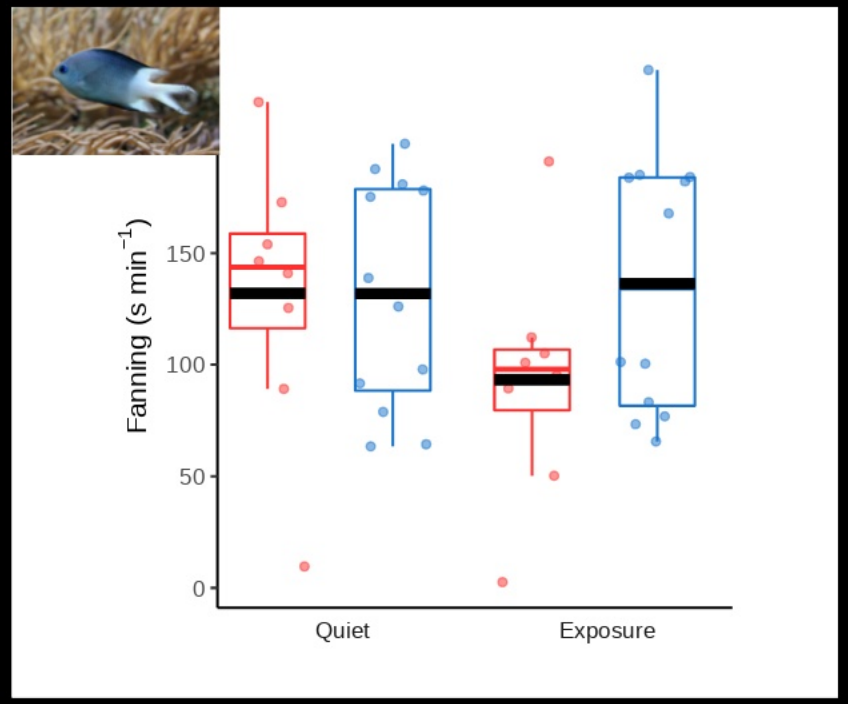


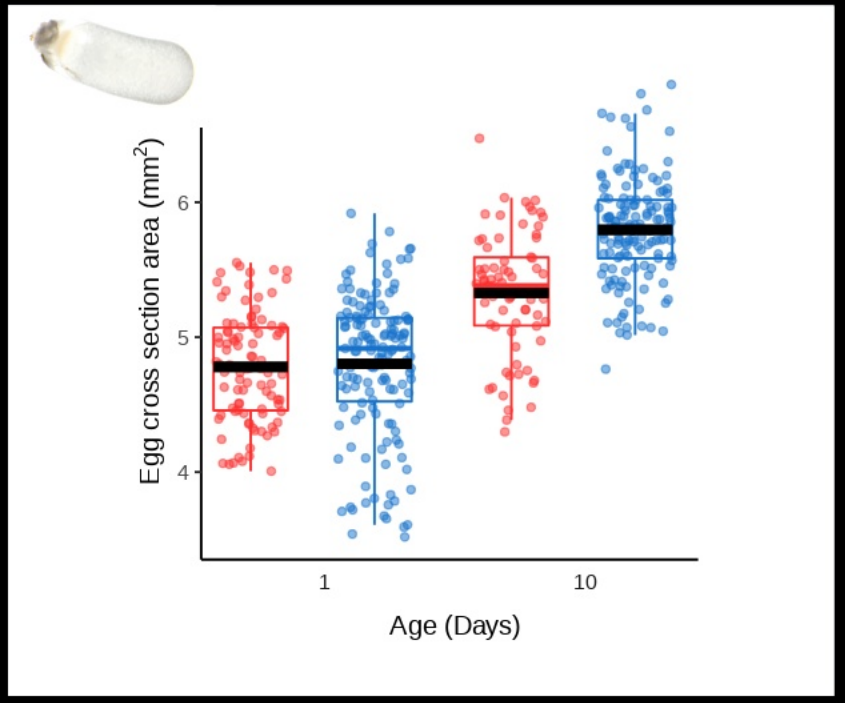


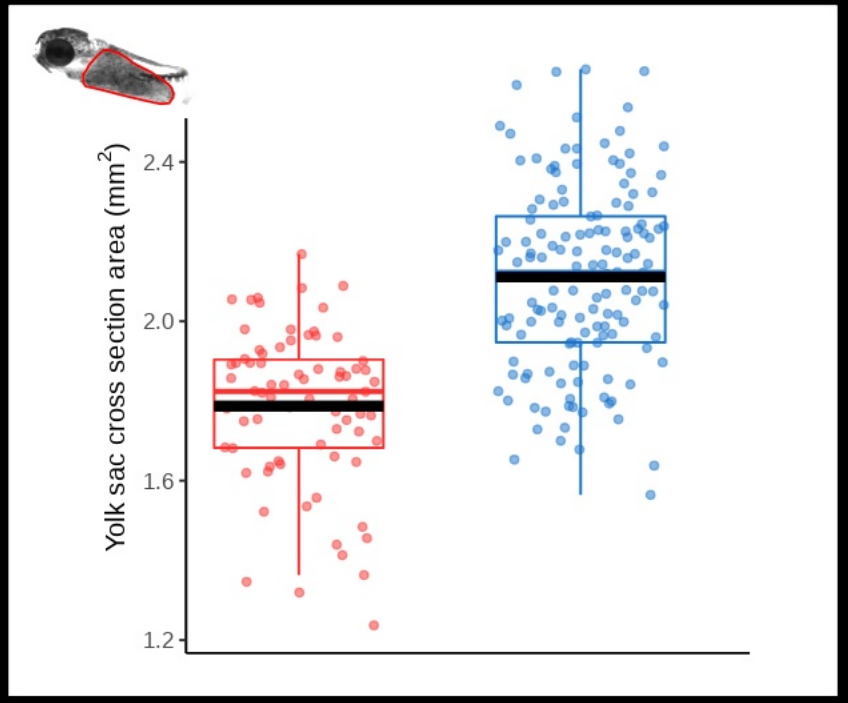

Guarding
Oxygenating eggs

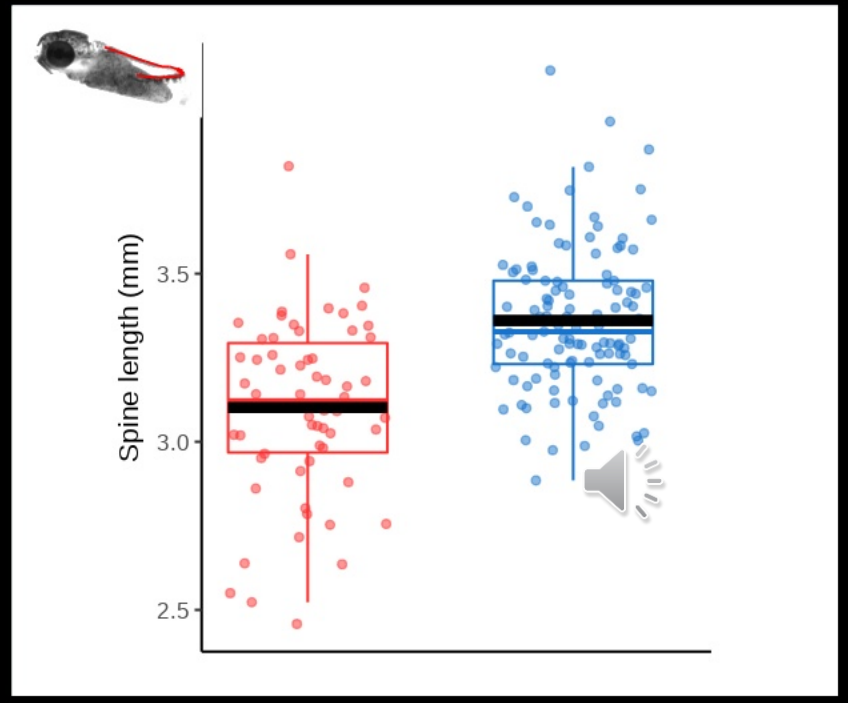
Embryonic development







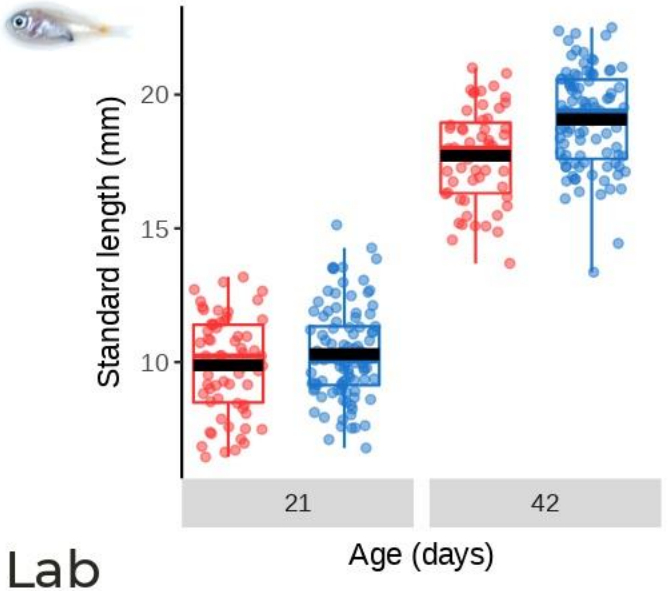




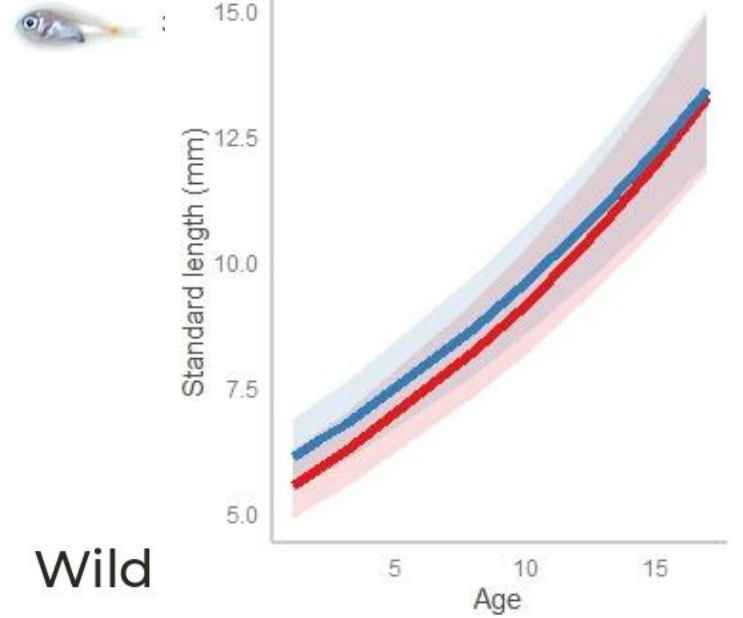
Juvenile growth and survival

Busy boating

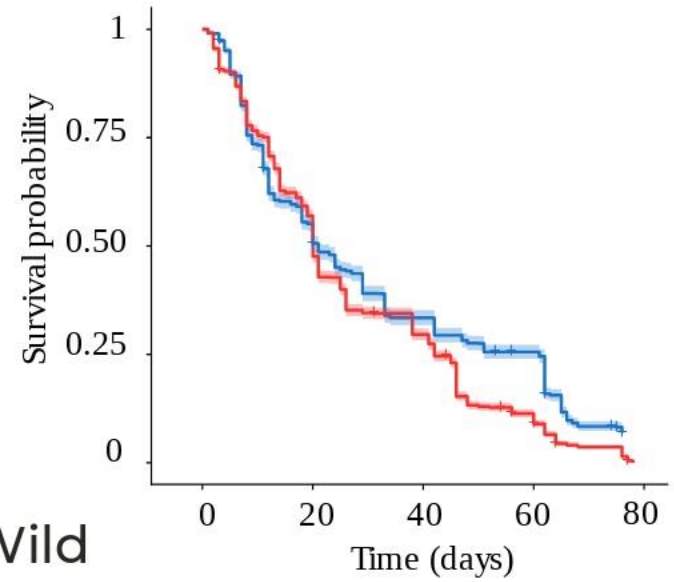
Limited boating (wild) or
No boating (laboratory)



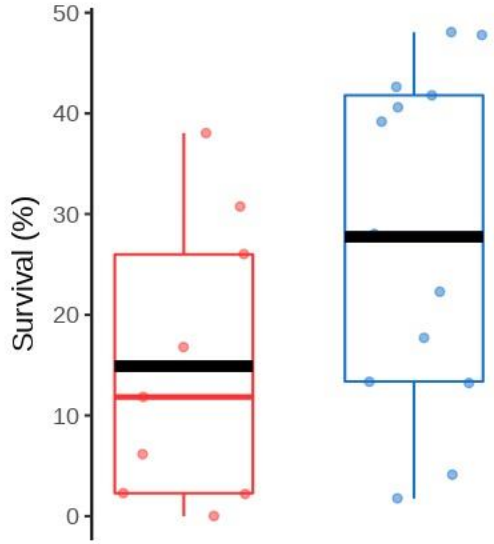
Lab



Wild

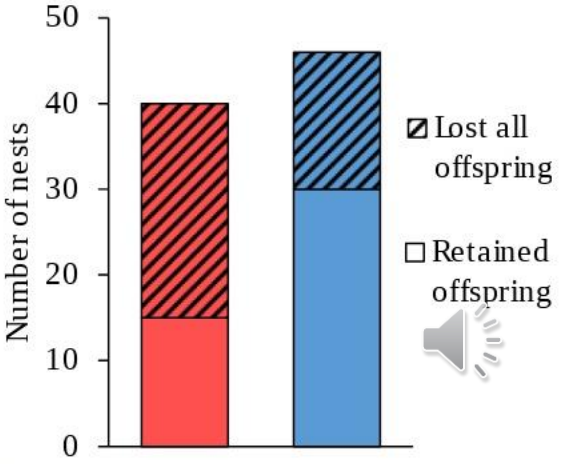


Wild



Lab

(trend)



Wild

“The resilience of coral reef systems depends on the ability of fish populations to recover from shocks such as heatwaves and hurricanes, making reproductive success a critical measure of effective management.”

Protecting coral reefs

Perturbations push system towards tipping point

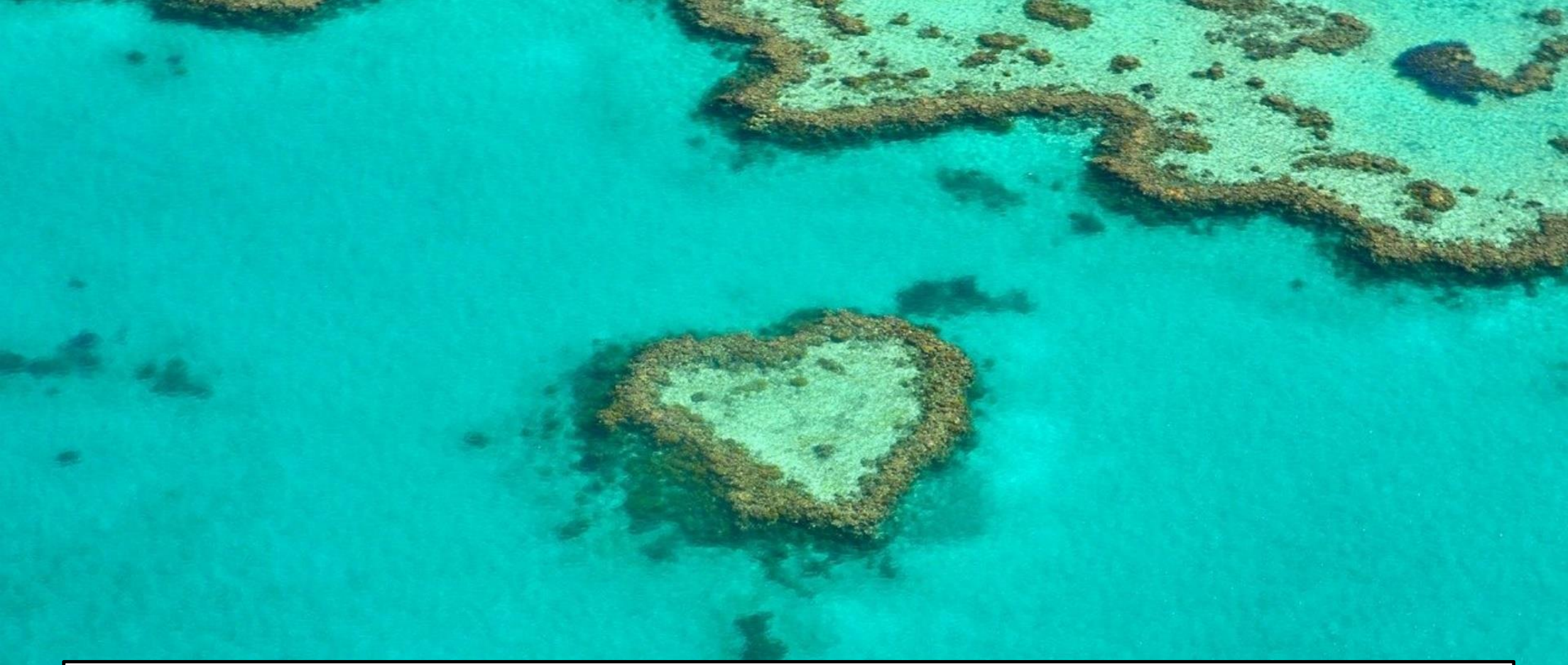
- Hurricanes
- Heatwaves
- Disease outbreaks

Managing local threats can build resilience

Tipping point

Stable state 1
Healthy coral reef

Stable state 2
Degraded coral reef



Thanks for listening