In the wild baby turtles seek vegetation, but not if they have been kept in captivity

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Background

- Australian short-necked freshwater turtles *Emydura macquarii* have declined 69% since the 1980s[1]
- Decline is linked to little recruitment due to invasive European foxes destroying nests[2]
- Rearing in captivity and releasing hatchlings is a potential conservation solution[3]
- Habitat requirements of hatchlings are unknown, but aquatic vegetation is likely to be a crucial habitat
- Aquatic vegetation is also in decline[4]

Aims

- Do *E. macquarii* hatchlings select aquatic vegetation over bare habitat?
- Are post-release *E. macquarii* movements and habitat selection different after a short time in captivity?

Methods

AQUARIA EXPERIMENT

A

B

- 36 one-year old captive *E. macquarii*
- Two treatments: plants available (A) or not (B)
- Filmed for two days to assess whether they select the plants side when plants available

FIELD EXPERIMENT - RADIO-TRACKING

- Hatched 6 clutches in laboratory (N = 149)
- Released 18 turtles upon hatching ('fresh') with radio-transmitters, tracked daily
- Released other 18 turtles after one month in captivity ('captive') - hard release
- Compared movements and habitat selection of fresh and captive hatchlings and random locations with 1 m^2 quadrats.

Results - Aquaria experiment

All error bars: ± SE

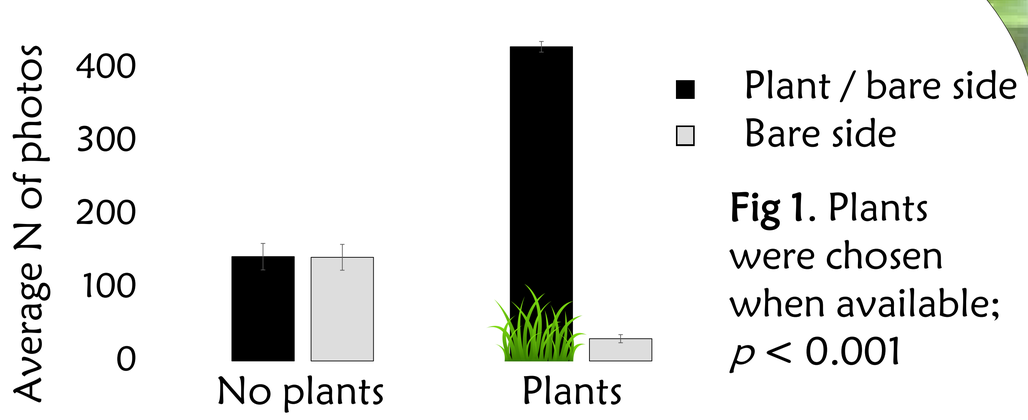


Fig 1. Plants were chosen when available; $p < 0.001$

Results - Field experiment

- Transmitters found damaged by predators: fresh 2/18; captive 7/18

Fig 2. No captivity effect in daily movement; $p = 0.794$

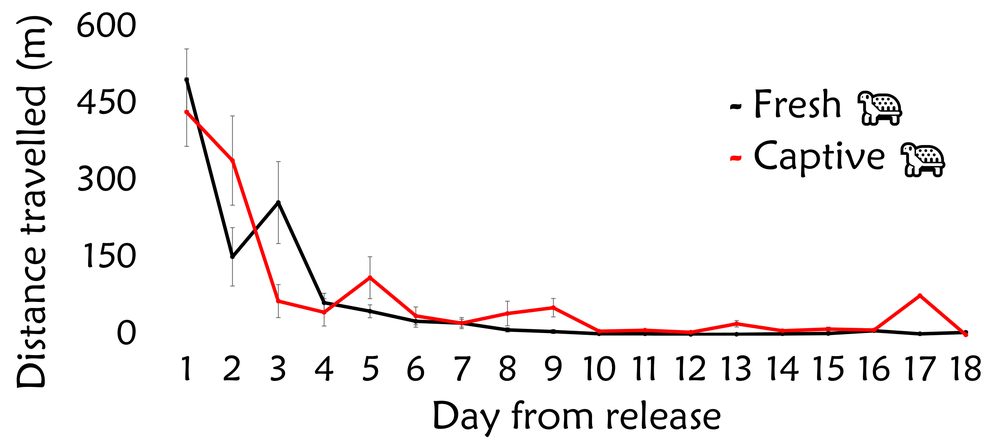


Fig 3. Captive hatchlings did not seek vegetation

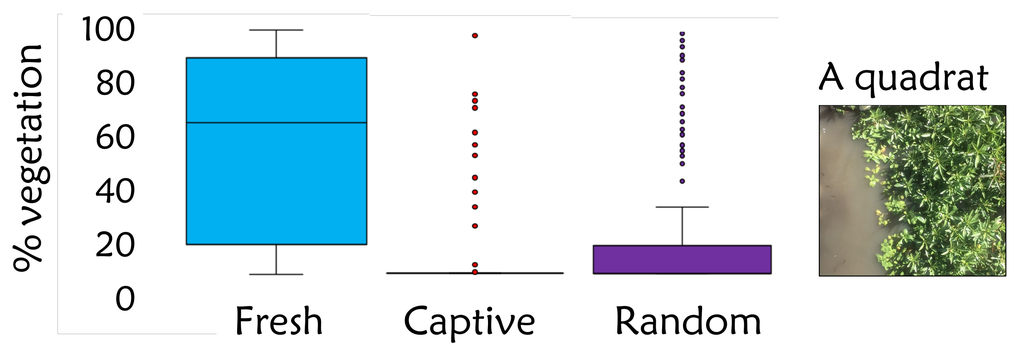
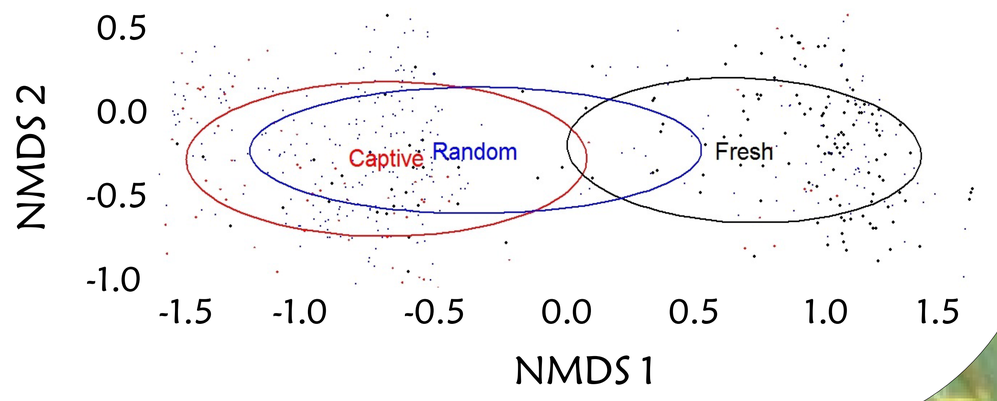


Fig 4. Habitat selected was different among groups; $p < 0.001$



Conclusions

- One-year old turtles in aquaria preferred plants to bare habitat
- Fresh and captive hatchlings had similar movement patterns, but selected different habitats
- We advise that hatchlings should be released immediately after they hatch, where aquatic plants are abundant.

Scan here for photos and a video of our hatchlings release:

References

1. Chessman, B. C., 2011. *Wildl. Res*, 38, 664-671.
2. Spencer, R. J., Thompson, M. B., 2005. *Conserv. Biol.*, 19, 845-854.
3. Spencer, R. J., Van Dyke, J. U., Thompson, M. B., 2017. *Conserv. Biol.*, 31, 1340-1349.
4. Kingsford, R. T., 2000. *Austral Ecol.*, 25, 109-127.

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