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Movement of an exploited coral reef teleost across temporal and spatial scales

Leanne grew up diving in Sydney and Port Macquarie and moved to Townsville to further her passion for all things marine. Her BSc (hons) investigated the influence of habitat complexity on estuarine fish assemblages, after which, she focused on prawn trawl bycatch at the Northern Fisheries Centre, before working on multiple fishery projects with the Fishing & Fisheries Research Centre at JCU.

Little movement information is available for the redthroat emperor (*Lethrinus miniatus*), despite its importance to coral reef fisheries. Although sustainable management of this species requires knowledge of movement patterns, tag-recapture studies have been unsuccessful. Previous research has shown large scale movement for some individuals, but it is uncertain whether this is typical, or a direct response to changes in the environment. This led to a stock assessment assuming no movement among reefs due to lack of data. However, if movement among reefs or zones does occur, efficiency of marine park zoning for this species may be reduced and multiple protected zones may be of benefit. Similarly, it is important to understand how this species may move when changes in environmental conditions occur. *L. miniatus* is not protected during spawning season by temporal fishing closures unlike coral trout and other reef species.

Leanne's PhD research aims to understand the movement patterns of *L. miniatus* over multiple scales on the Great Barrier Reef (GBR). Space and depth utilisation are investigated using acoustic telemetry in the southern GBR, which can indicate how effective marine park zoning is for protection and whether movement is linked to changes in environmental conditions. Otolith microchemistry is used to provide insight into broad-scale movement along the GBR. These two approaches will provide information beneficial to the management of emperors in tropical fisheries.

Redthroat emperor are not maximally exhausted and do not accumulate excessive amounts of lactate when they are caught, making them an ideal species to catch, fit with acoustic transmitters and release. Interesting movement data have already been obtained from tagged fish.



Publications

- Currey, L.M. et al., 2013. Blood lactate loads of redthroat emperor *Lethrinus miniatus* associated with angling stress and exhaustive exercise. *Journal of Fish Biology*, 83(5), pp.1401–1406. Available at: <http://doi.wiley.com/10.1111/jfb.12216>
- Currey, L.M. et al., 2013. Comparative biology of tropical *Lethrinus* species (Lethrinidae): challenges for multi-species management. *Journal of fish biology*, 82(3), pp.764–88. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/23464543>
- Currey, L.M. et al., 2011. Where do they go? Nobody knows! Initial movement findings of an important fishery species around Heron Island. In *Australian National Network in Marine Science Conference*. University of WA, Perth, Australia.
- Currey, L.M., Heupel, M.R. & Simpfendorfer, C.A., 2013. Stay or stray: examination of reef-based movement of redthroat emperor. In *2nd International Conference on Fish Telemetry, July*. Grahamstown, South Africa.
- Sweet, M. et al., 2012. Evidence of melanoma in wild marine fish populations. *PloS one*, 7(8), p.e41989. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3411568&tool=pmcentrez&endertype=abstract>
- Tobin, A., Currey, L. & Simpfendorfer, C., 2013. Informing the vulnerability of species to spawning aggregation fishing using commercial catch data. *Fisheries Research*, 143, pp.47–56. Available at: <http://linkinghub.elsevier.com/retrieve/pii/S0165783613000143>
- Williams, A.J., Ballagh, A.C., et al., 2008. Harvest patterns and effort dynamics of indigenous and non-indigenous commercial sectors of the eastern Torres Strait reef line fishery. *Continental Shelf Research*, 28(16), pp.2117–2128. Available at: <http://linkinghub.elsevier.com/retrieve/pii/S0278434308001313>
- Williams, A.J., Currey, L.M., et al., 2008. Population biology of coral trout species in eastern Torres Strait: Implications for fishery management. *Continental Shelf Research*, 28(16), pp.2129–2142. Available at: <http://linkinghub.elsevier.com/retrieve/pii/S0278434308001325>
- Currey, L.M., Heupel, M.R., Simpfendorfer, C.A., Williams, A.J. 2014. Inferring movement patterns of a coral reef fish using oxygen and carbon isotopes in otolith carbonate. *Journal of Experimental Marine Biology and Ecology* 456: 18-25. <http://dx.doi.org/10.1016/j.jembe.2014.03.004>