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Honours 2013

School of Marine and Tropical Biology

AIMS@JCU Research pilot grant

Supervised by:

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Dr. Mark McCormick (JCU)

The influence of a warming climate on the aerobic metabolism and predator defence strategies of puffer fishes

Originally from Tasmania, Georgia moved to Townsville in 2009 to undertake a BSc at JCU majoring in Marine Biology. During her undergraduate degree, she gained experience in a wide range of tropical reef research disciplines including aquatic animal ecophysiology. With a keen interest in reef fish respiratory physiology, Georgia successfully competed for an AIMS@JCU pilot award which allowed her to complete an Honours project under the supervision of Tim Clark and Mark McCormick.

Georgia's project was concerned with the influence of a warming climate on the aerobic metabolism and predator defence strategies of pufferfishes. Pufferfishes have an iconic and extreme predator defence strategy which involves inflating themselves to several times their normal size. They achieve this by rapidly gulping large volumes of water into their stomach with the intent of becoming too large to swallow.

By taking measurements of oxygen consumption during the inflation behaviour of Black-Saddled Tobies (*Canthigaster valentini*) acclimated at both current and climate change predicted temperatures, Georgia identified that pufferfish have an excellent capacity for oxygen uptake during inflation and that the inflation response is a very energetically taxing activity to perform. She also discovered that the physical condition and efficiency of the inflation response declined at temperatures just a few degrees above current summer averages, which may negatively impact upon the ability of *C. valentini* to successfully defend themselves against predation and survive the rising temperatures of their environment.

Georgia was awarded First Class Honours for her research, and has since moved back to Tasmania to pursue an interest in salmon aquaculture.

