

## INTERIM REPORT: PADDY PALLIN GRANT SERIES (MARINE)

### *“Uptake of aquaculture waste by keystone reef species”*

Dr. Camille White, Institute for Marine & Antarctic Studies, University of Tasmania

Aquaculture of Atlantic salmon (*Salmo salar*) in Tasmania is currently expanding, with the potential for adverse interactions with reef ecosystems a significant concern. As reef ecosystems in Tasmania have broad conservation, social and economic values, there is a need for better understanding of how these systems may respond.

This project has two main aims:

1. To determine existing food sources of key mobile invertebrate species (abalone, sea urchins and benthic crustaceans) within reef ecosystems in south-east Tasmania over an annual cycle; and
2. To investigate the extent to which aquaculture waste may supplement the diet of these keystone species, both directly and indirectly.

To complete these aims there are three main components of work:

1. Sample collection
2. Laboratory analysis
3. Data analysis and report writing

#### *Sample collection*

Juvenile black-lip abalone (*Haliotis rubra*) were collected at each site on every sampling trip, as were reef crabs (*Plagusia chabrus*). Initially, we also intended to collect sea urchins (*Heliocidaris erythrogramma*), however, they were not common inhabitants at our sites, and therefore brittlestars (*Ophiothrix caespitosa*) were collected instead. Each time animals were collected, we also collected potential food sources, including the dominant algae species, bryozoans, sponges and encrusting biota. Samples of feed pellets from adjacent salmon farms have also been collected.



Samples have been collected from reefs around northern Bruny Island, adjacent and distant to a site of aquaculture expansion in Storm Bay, southern Tasmania. Samples were collected in December 2016, April 2017 and August 2017, with the final collection scheduled for December 2017. We also had the opportunity to collect samples from the Southern Channel region, where several salmon farms operate, in July 2017. We intend to collect from this region again in November 2017.

#### *Laboratory analysis*

Dietary input of various food sources to abalone, reef crabs and sea urchins will be determined through fatty acid analysis. The majority of these samples will be run for fatty acid analysis in December 2017, with any remaining samples to be finished in early 2018.

#### *Data analysis and reporting writing*

No progress has been made against this work component yet, but data analysis and report writing will commence around December 2017, once the fatty acid data is available. It is intended that this work will be published as a peer-reviewed paper in a scientific journal.