KIMBERLEY MARINE

RESEARCH STATION ● CYGNET BAY

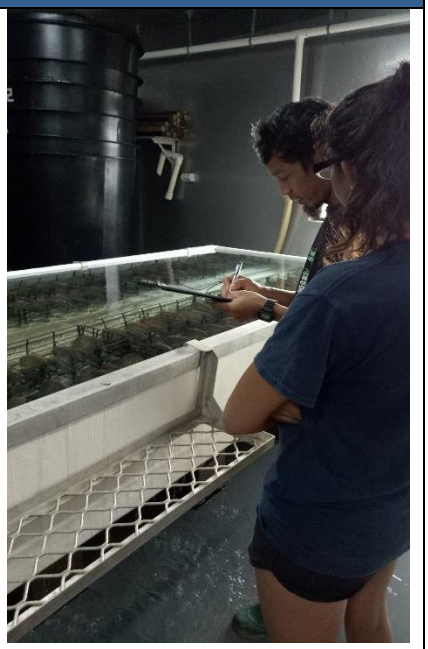
NOVEMBER – DECEMBER 2017

Croc Creek, visited during the Cygnet Bay Pearls Christmas celebration (photo by Cherie)

News from the Research Station

Pearl Oyster Research

It's been a busy few weeks in the hatchery as interns and hatchery staff work around the clock to run a study investigating health issues in the pearl oysters, *Pinctada maxima.* Wild harvest and cultivated populations of *P. maxima* have experienced a decline in health across locations in the Kimberley; however, the cause of this decline remains unknown. In collaboration with Dr Cécile Dang, Principal Research Scientist at WA Department of Fisheries, the purpose of this study is to assess whether bacteria may be associated with the health issues observed in *P. maxima*. The interns have enjoyed the problem solving processes and discipline required in running the experiment and maintaining 40 pearl oysters in captivity.



In the hatchery: Garata teaching Eashani how to rate an oyster's health status (Photo by Cherie)

There's something about eDNA

In mid-December KMRS hosted visiting scientists Mike Travers and Dion Boddington from Division of Fisheries, who were investigating the application of environmental DNA (eDNA) in species detection within King Sound. They

battled rough weather travelling across locations within King Sound to collect precious water samples, which they processed back in the KMRS lab. eDNA are DNA samples collected from an environmental sample, such as water, rather than from an organism itself. The idea is that when an animal interacts with its environment, then traces of its DNA are left behind, this can come from sources such as skin, mucous, feaces etc. DNA detected in the water sample can then be identified to a species level as based on available gene banks, thereby allowing scientists to assess the diversity of species in a location. There is still much research to be done in order to refine this science, as it's a multifaceted concept, such as what are the spatial and temporal scales of its application. The King Sound is a highly unique environment, with enormous hydrodynamic forces, and the work Mike and Dion are carrying out will no doubt pave the way for future species diversity estimates in this unique system.

Coral bleaching affects thermally tolerant Kimberley reefs

Corals that occur along the Kimberley coast have a natural capacity to withstand the high water temperatures off north west Australia, however, a recent study published in *Nature* has revealed that up to 80% of coral in the Kimberley's inshore reefs were bleached during a global mass bleaching event of 2016. The study, which was led by Dr Verena Schoepf, was carried out in partnership with Western Australia Marine Science Institute and ARC Centre of Excellence for Coral Reef Studies, and was also provided in field support by KMRS. This study has demonstrated that thermally tolerant corals that exist in naturally extreme environments are still vulnerable to extreme heat stress events. To read more: https://www.nature.com/articles/srep17639

Aerial view of a bleached inshore Kimberley reef in April 2016. Photo by Claire Ross and Steeve Comeau, UWA.

Other research from the interns

Rock Oyster Projects: It has been exciting times for the KMRS interns as we enter the rock oyster spawning period, which is typically marked by the onset of the wet. Monthly recruitment tiles that are placed in the intertidal zone, within both Andy's (UWA Masters student) project and the KMRS monitoring project, have started to record rock oyster spat recruitment. The first stage of an oyster's life is as a tiny larva, once the larvae find an appropriate surface to permanently settle on, they are referred to as spat. Andy's project aims to assess if spat show preferential recruitment to different substrate types, whereas the KMRS project aims to assess if shore height is a factor in recruitment.

In the lab: Oyster spat and barnacle found on a KMRS recruitment tile (photo by Cherie)

Oyster and Biofouling Sampling: KMRS interns got up close and personal with oyster and biofouling samples this month, dissecting a number of species and samples taken from around the farm. Both interns, Cherie and Eashani, became experts in their anatomy after only a few solid hours of dissections. The pearling oysters are sampled monthly, with organ samples being excised and stored for as part of a long-term physiological monitoring program. This month, interns also sampled other bivalves that grow on the oyster panels,

which were sent to Dr Cécile Dang for analysis.

That's a Wrap for 2017! The interns have had a very busy few weeks in the lead up to the annual Christmas shutdown period, completing all fieldwork and data collection to ensure a smooth transition into the new year. Sampling was done for all three ongoing oyster projects, coral monitoring, monthly water sampling, oyster sampling, phytoplankton sampling, and all while sharing the oyster husbandry duties that are essential to the oyster study within the hatchery. It has been a fantastic lesson in time management and adaptability, as not only must the interns plan fieldwork around the tides, they now must also remain alert and adaptable to severe weather changes associated with the wet season.

Oyster dissections (photo by Cherie)

Wet weather approaching during field work (photo by Cherie)

Around the Farm

Completion of First Ops: In November the pearling team completed a mammoth operation of seeding pearl oysters with nuclei and donor mantle tissue, which marks the beginning of the pearl production process. The whole pearling team worked like a well-oiled machine and cheers of excitement could be heard as the final shell was seeded.

Members of the pearling team excited to be finished 2017's first ops (photo by Garata)

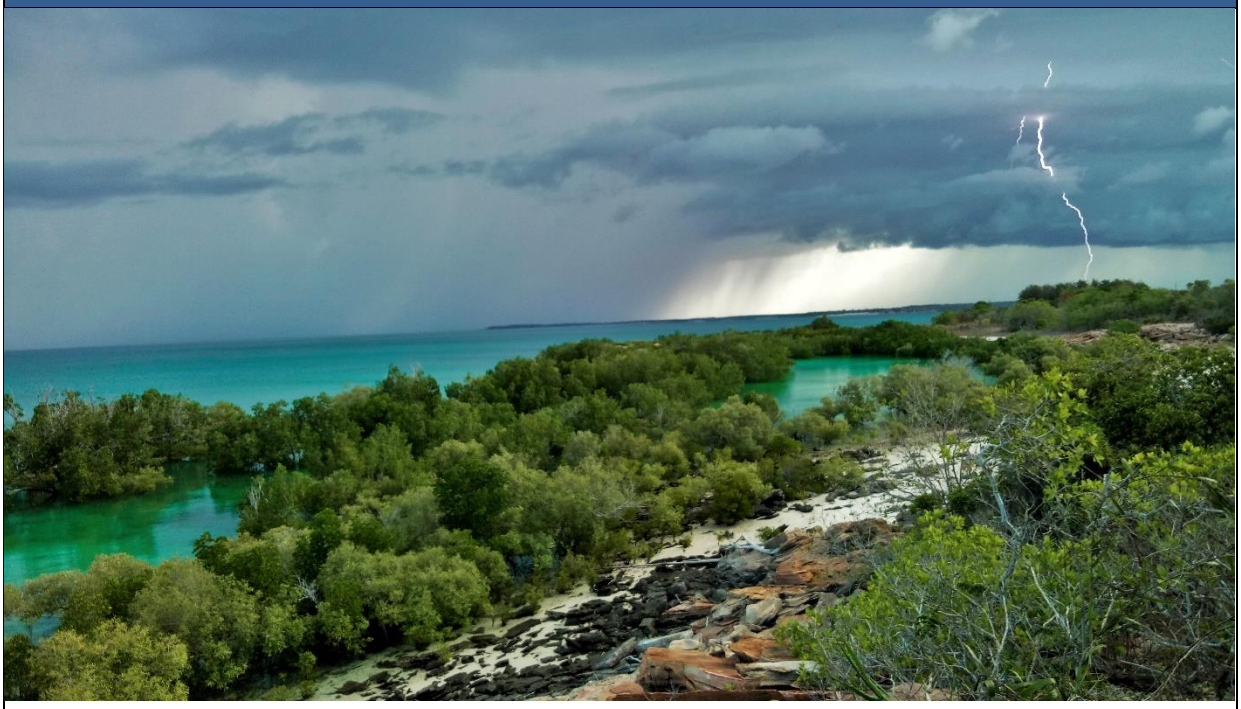
Meat Harvest: With barely a moment to spare after completing first ops, the next operation of harvesting pearl meat from retired shell was already well underway. Crew and extra staff were called in to duty to lend a hand harvesting the pearl meat. It was an exciting mix up of activities for the pearling team, who pumped the music and raced through the piles of to-be-harvested shell, collecting Keshi pearls along the way.

Staff News

In December, Cygnet Bay staff joined together for a special end of year Christmas celebration, Kimberley style! The fast boats were taken on a marine adventure across the King Sound, stopping for swims and picnics at Silica Beach, Croc Creek, and Edaline Beach. Everyone had a ball and the sights were breath taking!

With the conclusion of this month we now say farewell to KMRS intern Cherie and welcome to our new intern, Eashani Haria. Eashani is a recent graduate in Marine Science and Environmental Science from Murdoch University, and she is keen to gain experience in aquaculture and the unique marine environment of the Kimberley.

Photo of the Month



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