Title: Utilization of eDNA metabarcoding to assess coral reef health in Okinawa, Japan

Abstract (193 words)
Environmental DNA (eDNA) metabarcoding has great potential in assessing comparative total biodiversity, and facilitating robust comparisons across a wide variety of sites and taxa. In particular, eDNA combined with next-generation sequencing can help address the huge critical data gaps in our understanding of marine biodiversity, especially in regions with high levels of understudied diversity such as the coral reefs of the Indo-Pacific region. Within this region, Okinawa is known for its high levels of marine biodiversity and endemicity, and also for the threats shallow coral reef ecosystems face from a variety of stressors including local-scale coastal development and over-exploitation to global scale threats such as climate change. In this study, we generated eDNA metabarcoding sequences from sediment and seawater samples from various reefs in Okinawa, Japan. At the same time, we developed a simple methodology to assess the relative health of these reefs based on anthropogenic and natural stressors. We discuss our eDNA results in comparison to coral reef health, identify potential bioindicator taxa, and explore the relative biodiversity of coral reef communities across sites. Our results indicate that taxa asides from the corals (Scleractinia) can provide robust information on coral reef health.

Key words: Biodiversity, Coral reefs, Environmental DNA, Next-generation sequencing

Short description (120 characters): Utilization of eDNA metabarcoding to assess general health of wide range of coral reefs in Okinawa.

Presenter:
Assoc. Prof. James Reimer, University of the Ryukyus, Okinawa, Japan
e-mail: jreimer@sci.u-ryukyu.ac.jp
Co-authors:
Dr. Joseph DiBattista, Curtin University, Perth, Australia
Ms. Piera Biondi, University of the Ryukyus, Okinawa, Japan
Mr. Giovanni Masucci, University of the Ryukyus, Okinawa, Japan
Dr. Michael Stat, Curtin University, Perth, Australia
Prof. Michael Bunce, Curtin University, Perth, Australia