KIRITIMATI

FISHERIES AND CONSERVATION ON THE WORLD'S LARGEST ATOLL

BAUM LAB RESEARCH REPORT – *UPDATE OCTOBER 2015*

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APRIL/MAY 2015 KIRITIMATI FIELD SEASON

The Baum Lab team conducted a field season to resample previously tagged coral colonies and to assess coral reef community structure. This field team included Danielle Claar (PhD Student, University of Victoria), Jamie McDevitt-Irwin (MSc Student, University of Victoria), Kristina Tietjen (Scientific and dive technician), John Burns (PhD Student, University of Hawaii), and Lisa Szostek (Undergraduate student, University of Victoria). This two-week field season (April 29th 2015 – May 13th 2015) was very successful, and the team conducted scientific surveys at 9 sites, and deployed temperature measurement instruments at an additional two sites. Along with our coral monitoring, we conducted 3D surveys of the reef for the first time on Kiritimati, providing us with insight into how the structure of the coral reef affects the biology of the reef organisms. The sum of research samples collected during this successful field season is detailed below.

KIRITIMATI FIELD SEASON - APRIL/MAY 2015		
RESEARCH SAMPLES COLLECTED	**NUMBER**	**SCIENTIFIC PURPOSE**
Coral Colony Photographs	355	To understand how corals change over time, and to understand how they respond to stressful events in the ocean
Coral Tissue Samples	355	
Water Samples	36	To create a full picture of the coral reef environment
Sediment Samples	36	
Instruments Serviced	15	To create a long-term ocean temperature record on Kiritimati
Benthic Photographs & Video	226	To determine coral cover, and biological community structure on the seafloor
3D Coral Reef Surveys	7	To map the 3D structure of the coral reef
Permanent Sites Photographed	23	To follow coral health and abundance over time
Coral Mucus Samples	27	To understand how corals protect themselves
Water Microbial Samples	37	To find out what type of bacteria live in the seawater around the reef
Surface Water Samples	84	To obtain baseline water quality measurements

JULY 2015 KIRITIMATI FIELD SEASON

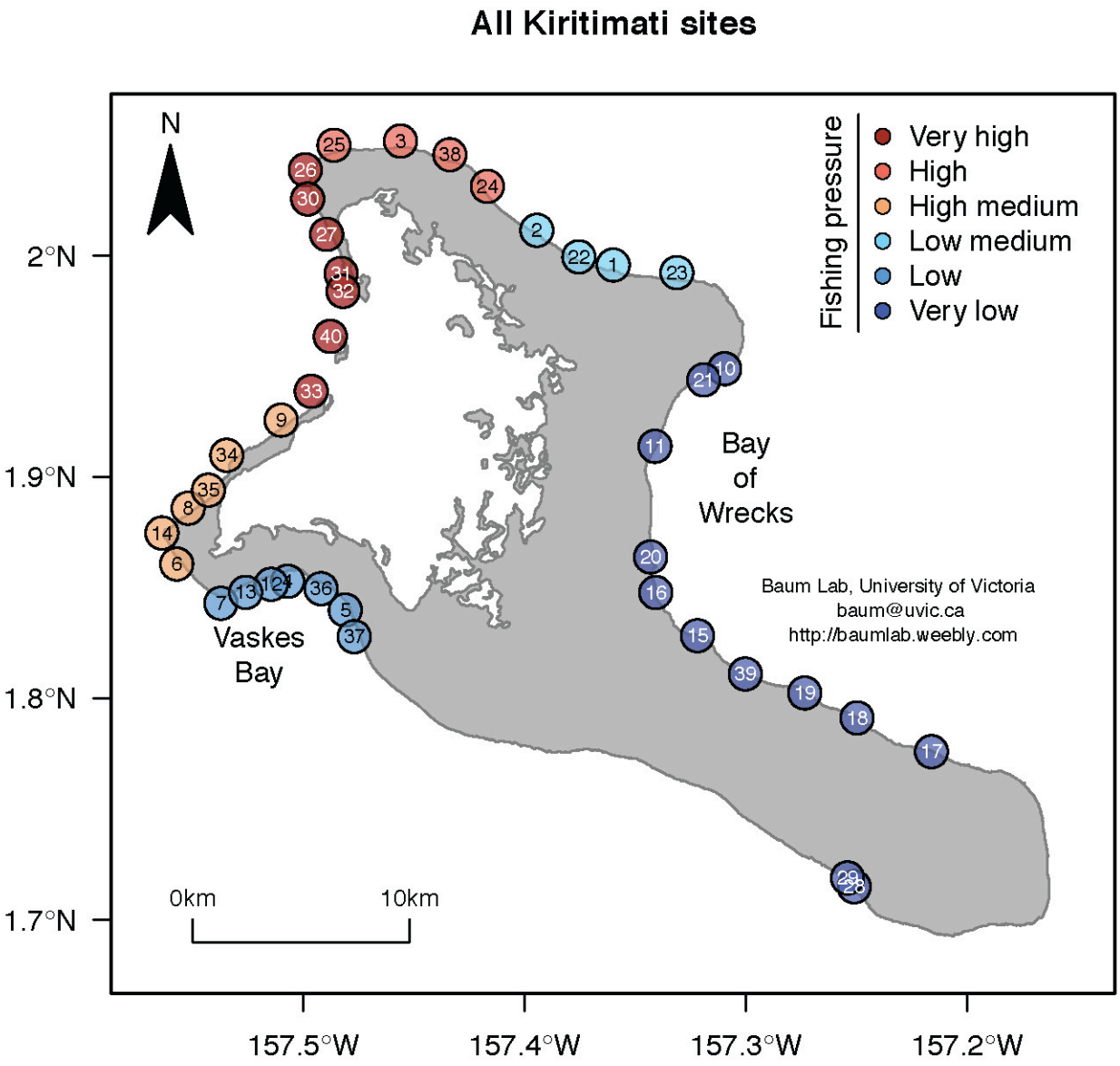
Due to the onset of the third ever major global coral bleaching event[1], the Baum Lab team returned to Kiritimati to resample previously tagged coral colonies and to assess the effects of warming ocean waters due to El Niño. This field team included Danielle Claar (PhD Student, University of Victoria), Jamie McDevitt-Irwin (MSc Student, University of Victoria), Kristina Tietjen (Scientific and dive technician), Kieran Cox (MSc Student, University of Victoria) Lisa Szostek (Undergraduate student, University of Victoria), Scott Clark (Scientific and dive technician, UC Santa Barbara), and Sean Dimoff (Undergraduate student, University of Hawaii). This three-week field season (July 1st – 29th 2015) was exceptionally successful, and the team conducted scientific surveys at 17 sites, and conducted instrument maintenance at an additional two sites. Coral bleaching was documented around the island, and the Baum Lab is currently working to collaborate with NOAA (USA) and international organizations to describe the bleaching status on Kiritimati Island. The sum of research samples collected during this successful field season is detailed below.

KIRITIMATI FIELD SEASON - JULY 2015		
RESEARCH SAMPLES COLLECTED	**NUMBER**	**SCIENTIFIC PURPOSE**
Coral Colony Photographs	501	To understand how corals change over time, and to understand how they respond to stressful events in the ocean
Coral Tissue Samples	501	
Water Samples	48	To create a full picture of the coral reef environment
Sediment Samples	54	
Instruments Serviced	10	To create a long-term ocean temperature record on Kiritimati
Benthic Photographs & Video	420	To determine coral cover, and biological community structure on the seafloor
3D Coral Reef Surveys	13	To map the 3D structure of the coral reef
Coral Mucus Samples	220	To understand how corals protect themselves
Water Microbial Samples	56	To find out what type of bacteria live in the seawater around the reef
Surface Water Samples	117	To obtain baseline water quality measurements
Fish Surveys	34	To assess fish abundance and diversity
Urchin Surveys	34	To assess urchin abundance and diversity
Fish (Herbivore) Observations	490	To figure out the eating habits of herbivorous fish (what kind of algae do different species prefer?)

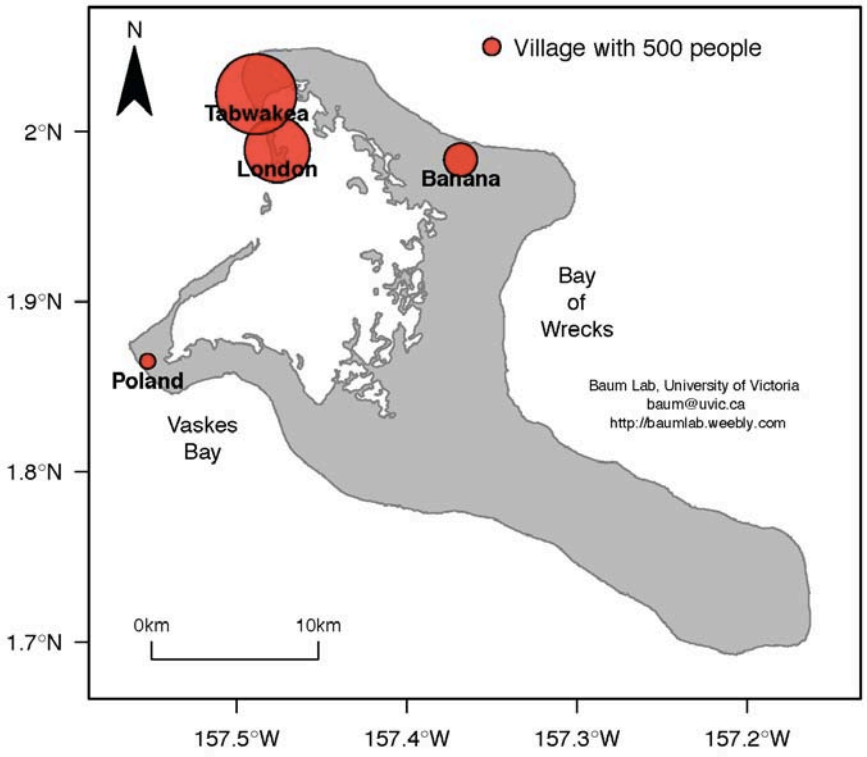
[1](http://www.noaanews.noaa.gov/stories2015/100815-noaa-declares-third-ever-global-coral-bleaching-event.html)

BAUM LAB KIRITIMATI RESEARCH UPDATES

In addition to conducting two field seasons during the last six months, we have also produced new maps of Kiritimati. These maps include 1) A new map of all Baum Lab sites on Kiritimati; 2) A map of human population size on Kiritimati (based on the 2010 Kiribati Government census); and 3) A map of all of our current water quality logger locations. Water quality loggers (blue) measure temperature, salinity, dissolved oxygen, pH, chlorophyll *a,* and turbidity; Sea-Bird loggers (green and purple) collect high quality temperature measurements; HOBO loggers (yellow and purple) collect basic temperature measurements as well as light measurements.



Kiritimati human population



All loggers currently deployed