

Project Update: August 2018

Over the past 3 months I have been carrying out fieldwork in Hong Kong, presenting and attending workshops that will be vital in the successful completion and dissemination of results of the project. Sampling trips were carried out at the Ting Kok mangrove forest (22°28'22.7"N 114°12'50.9"E) (**Fig 1 & 2**). The initial design was to carry out three sampling trips at two locations (Ting Kok and Tung Chung 22°16'54.2"N 113°55'40.7"E) during the spring tides around the new moon cycles only. Due to logistical constraints however, Tung Chung was dropped and the focus was solely on the Ting Kok mangrove with a more intense field sampling schedule which was hence carried out during new and full moon to get a comparison of larval communities at different lunar stages. In total, 4052 larval specimens have been collected thus far which comprise four different taxa (post-larval and larval shrimp, crab, fish and molluscs) occurring in the four microhabitats sampled in the area. These larvae still need to be identified to their lowest possible taxonomic level. Trials on the larval physiology have been conducted to measure metabolism through micro-respiration experiments at two different temperatures representing 1) the average temperature these larvae are subjected to and 2) the upper temperature extremes experienced by larvae inhabiting specific microhabitats.

Ting Kok is a special site of scientific interest (SSSI) and 42% of the original mangrove cover has been lost due to reclamation projects since the 1970s. The information gathered here, will be made available to contribute to the Ting Kok+ Project which consists of local community fishermen, Green groups (NGOs), and a multi-institutional team that study marine biodiversity and ecology and will be used to inform conservation management in the Tolo area. The specific output of this research will contribute to understand the dynamics of early life stage of taxa, some of which are commonly gathered as food resource by the local communities.

I attended a 3-day workshop titled: "Is there life after PO₂?" presented by Simone Babbini of the University of Florence. The workshop was aimed at providing training in a novel technique in animal physiology by measuring O₂ concentrations of invertebrate body fluids as well as analysis of the data recorded using such methodology. Alternative to respiration, this technique provides a method of quantifying oxygen diffusion into the blood and delivery of this oxygen to the breathing apparatus. For the purpose of the workshop, we used sesamid and fiddler crabs as model species (**Fig.3**).

During my research visit I administered a workshop to post-graduate students and research assistants at the University of Hong Kong on how to build inexpensive, efficient light traps that can be used in aquatic systems (mangroves in this particular instance) for sampling invertebrate and fish larvae (**Fig.4**). I also, co-presented a workshop on novel larval physiological techniques using the micro-respirometry equipment: SensorDish® Reader (SDR) by PreSens Precision Sensing GmbH (Regensburg, Germany). This instrument is a non-invasive reader for the detection of oxygen in small volumes, and it includes a 24-chamber glass microplate (Loligo® Systems, Tjele, Denmark) which comprises 24 independent chambers each fitted with an oxygen sensor spot for high throughput respiration measurements (Fig 4). In addition to these two workshops, I have delivered a seminar that was open to the public at The University of Hong Kong titled "The nursery role of mangrove microhabitats: An invertebrate and fish larval perspective" (**Fig 5**).



Fig 1: Deploying a light trap in a tidal creek at the Ting Kok mangrove forest, Hong Kong. Francesca Porri ©. **Fig 2:** A light trap used to sample invertebrate and fish larvae placed in the pencil roots of *Avicennia marina* at the Ting Kok mangrove forest, Hong Kong. Lyle Vorsatz©.

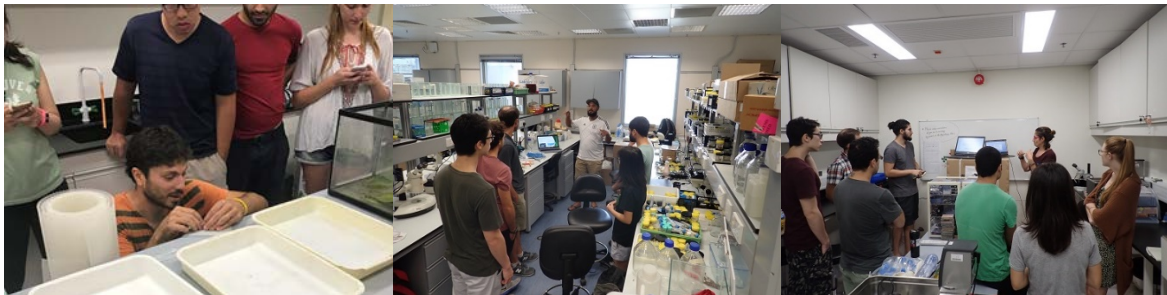


Fig 3: Delivering a presentation to students before the hands-on section of the workshop on "How to build inexpensive, efficient light traps for sampling invertebrate and fish. **Fig 4:** Presentation administered on larval respiration by co-presenter Francesca Porri. Lyle Vorsatz©. **Fig 5:** Simone Babbini demonstrating how to mount crabs on mesh in preparation for the extraction of haemolymph to measure the oxygen concentration in the crab's blood. Lyle Vorsatz©.