MARINE ANIMAL ECOLOGY GROUP

Marine Time Machine: Using marine lakes to understand marine species community structures in a future

2019 - 2023

Researcher	Supervisor	Promotor
Ludi Parwadani Aji	Dr. Lisa Becking	Prof. dr. A. J. Murk

Motivation

Two major issues for marine coastal ecosystems and their biodiversity are increasing sea surface temperature and nutrient concentrations. The combined effect of increasing temperature and eutrophication can have negative impact to benthic organisms such as corals and molluscs, but could enhance the expansion of macroalgae, sponges, and cyanobacteria. Therefore, the reefs of the future will likely look and function differently from current coral dominated ecosystems. A major challenge to science is to understand and predict the response of marine species composition and community from environmental perturbation. In an attempt to fill this knowledge gap, marine lakes of Raja Ampat, Indonesia will be used as model systems to study future climate change scenarios and to predict the responses of coastal species communities under different degrees of eutrophication.

Aims and Objectives

Marine lakes of similar ages, sizes and with high organic matter loads, but differing in temperature regimes (30-37°C), I will work on the following research objectives:
(1) make a taxonomic overview of molluscs in marine lakes and coastal area of Papuan water (2) quantify the variation in composition of species communities and functional groups of molluscs in relation to temperature gradients represented marine lakes, (3) quantify the influence of environment to the composition and structure of major benthic communities in the marine lakes and reef areas, (4) develop new understanding of shifts in foodweb structure among major benthic groups under predicted climates change scenarios with increased eutrophication.

Method

Mollusc species diversity as well as their functional traits in marine lakes and coastal areas of Papua will be recorded and identified to assess differences in community composition and functional diversity of mollusc among sites under different scenarios. Furthermore, temporal and spatial variation in the total benthic community composition among marine lakes and reefs in response to environmental change will be assessed and the related shift in the energy flow from primary producers to consumers. Thus, food web structure will be elucidate across natural communities in the marine lake model systems.
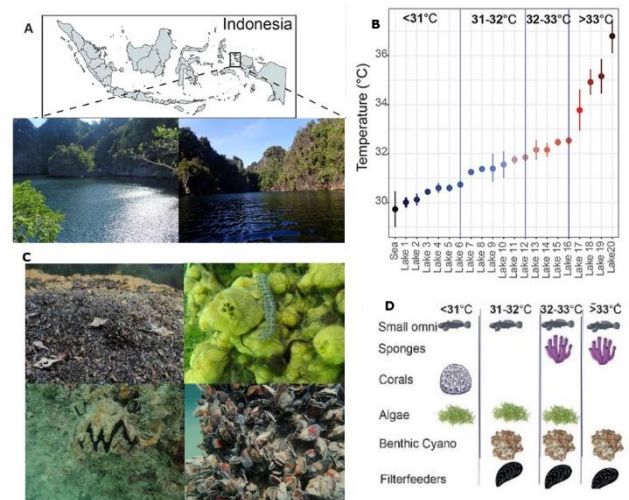

Figure 1. A. Sampling area B. Mean temperature of marine lakes C. Benthic biota of marine lakes D. shift in dominant benthic groups (Adapted from Becking)

CV Researcher;   Ludi Parwadani Aji

Graduated;   James Cook University, 2011

Hobbies;   Diving, underwater photography and travelling

e-mail;   ludi.aji@wur.nl

tel;   +31623875394

website;

WAGENINGEN UNIVERSITY
WAGENINGEN UR