

# Microbiome Composition of Azooxanthellate Coral and Seawater in the South Sea

Seonock Woo

Korea Institute of Ocean Science and Technology, Busan 49111, Republic of Korea

## Abstract

The warm current running from tropical Philippines through subtropical Taiwan to the temperate region Korea, the Kuroshio transfers heat from lower to higher latitudes. It warmed most rapidly in 1981–1998, when sea surface temperatures rose by 1.5°C (0.9°C/decade), almost 7 times the global rate. This affected the physiological responses of corals as well as the corals habitat range. We chose *Eleutherobia rubra*, a azooxanthellate soft coral around Korea to investigate the microbiome composition and to compare with the habitat seawater microbiome change along the year. This study focused on the identification of the microbiome from *E. rubra* and seawater from its habitat and its diversity and the microbiome composition change in four seasons. As results, Proteobacteria was mainly found with 53.5% and secondly Bacteroidetes with 9.9% from all coral samples and Proteobacteria with 47.6% and Bacteroidetes with 25.6% from seawater. The family, Endozoicomonadaceae with 26% and Spirochaetaceae with 8.5% were found from the coral samples along the four seasons and the family, Flavobacteriaceae with 16.4% and Pseudomonadaceae with 10.8% from seawater. *Endozoicomonas elysicola* was the species showing the highest count rate from the coral samples and *Psuedomonas gramnis* was the species showing the highest count rate from the seawater samples and any endozoicomonas species was found in the seawater samples.

## Materials and Methods

The soft coral colonies were collected at water depths of approximately 15-25 m near Geojedo, Korea using standard scuba techniques in March, May, August and December in 2019. After collection, coral were directly frozen in the liquid nitrogen and conserved under the -80°C until the DNA extraction. Library was constructed according to the 16S metagenomics sequencing library preparation part #15044223 and the sequence was done as paired-end type with Illumina platform.

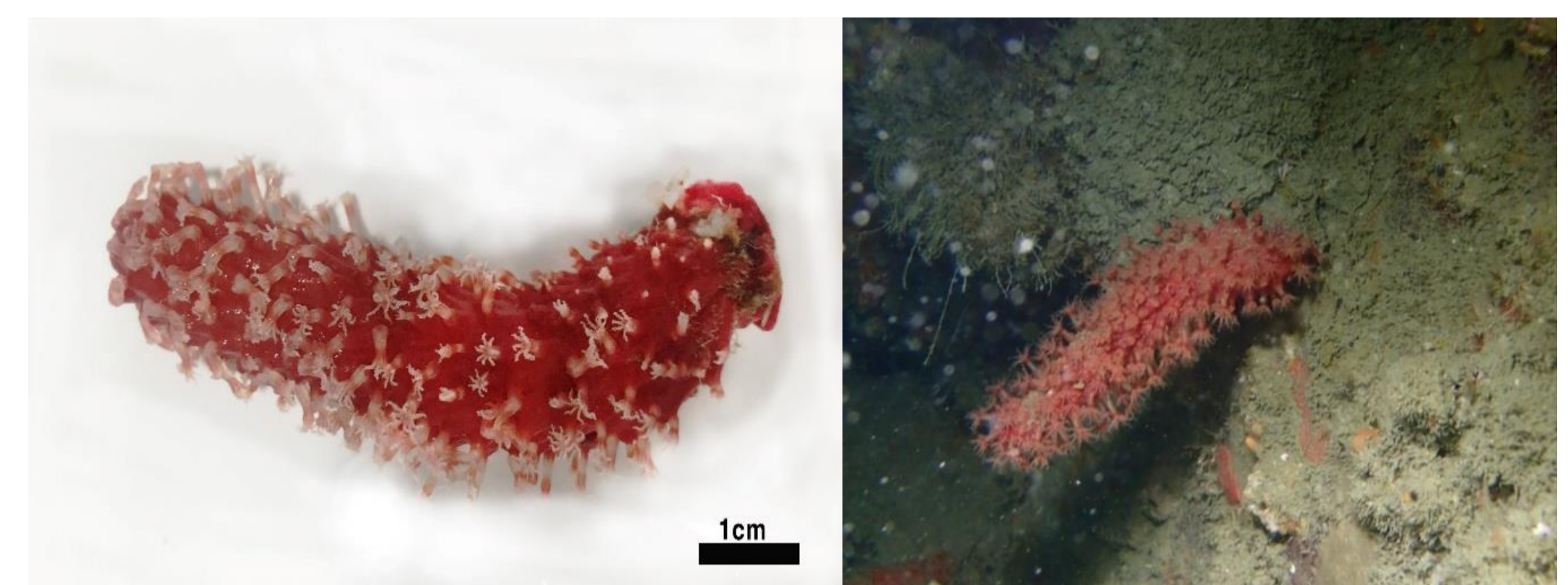


Fig 1. *Eleutherobia rubra*

## Results



Fig 2. OTUs of coral and seawater samples (top left, right) and community diversity of coral and seawater samples (bottom left and right)

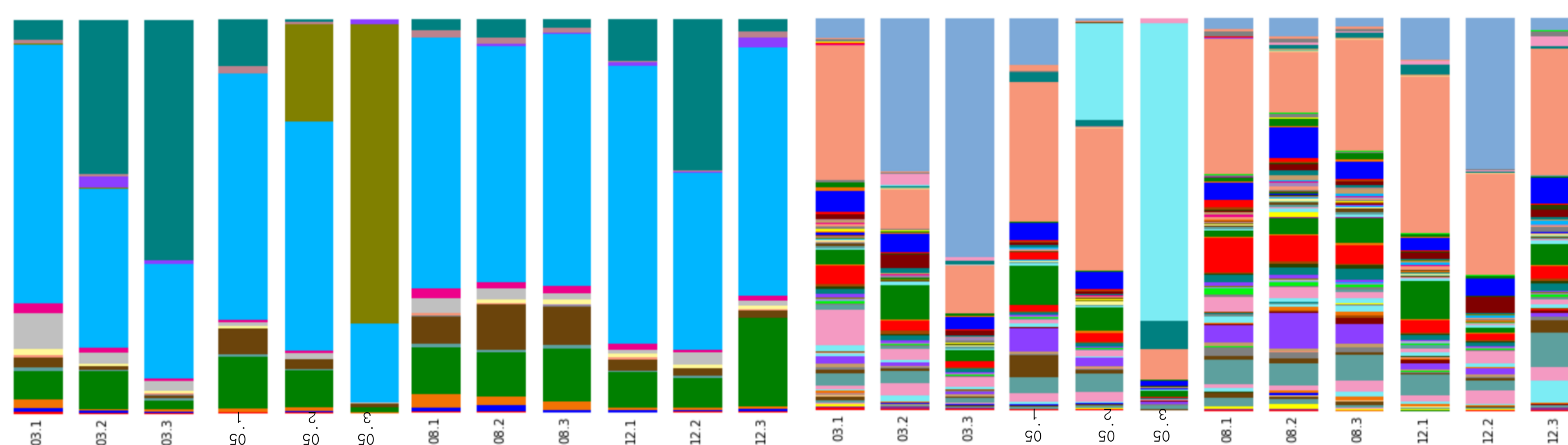
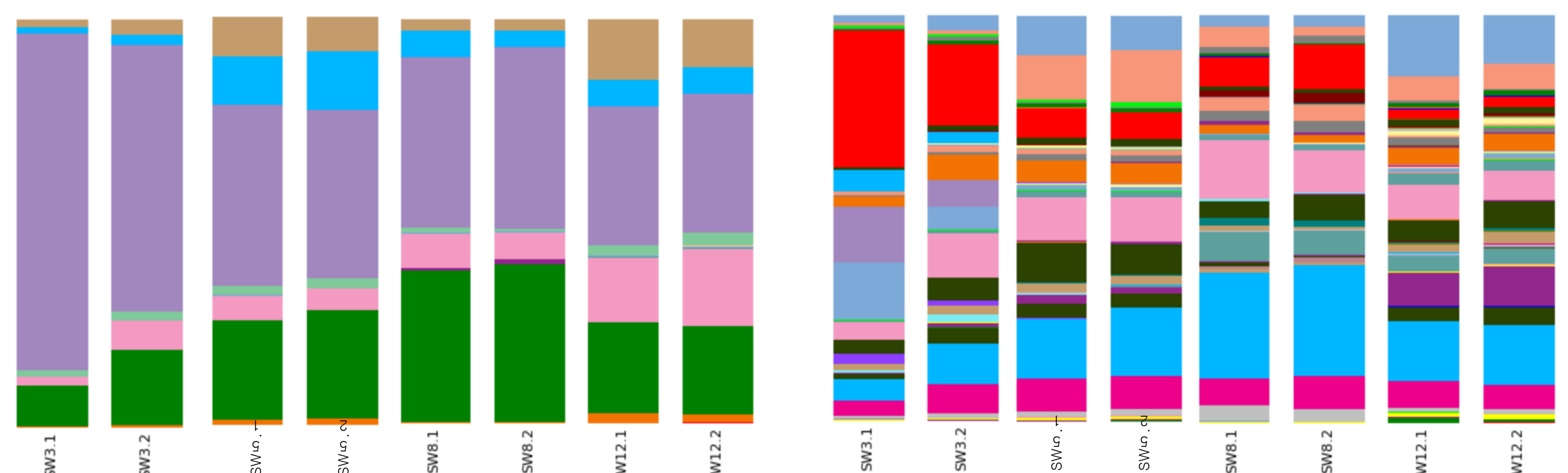


Fig 3. Taxonomic composition from phylum level (left) and genus level (right) of coral samples in Mar, May, Aug, and Dec in 2019

Fig 4. Taxonomic composition from phylum level (left) and genus level (right) of seawater samples in Mar, May, Aug, and Dec in 2019



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