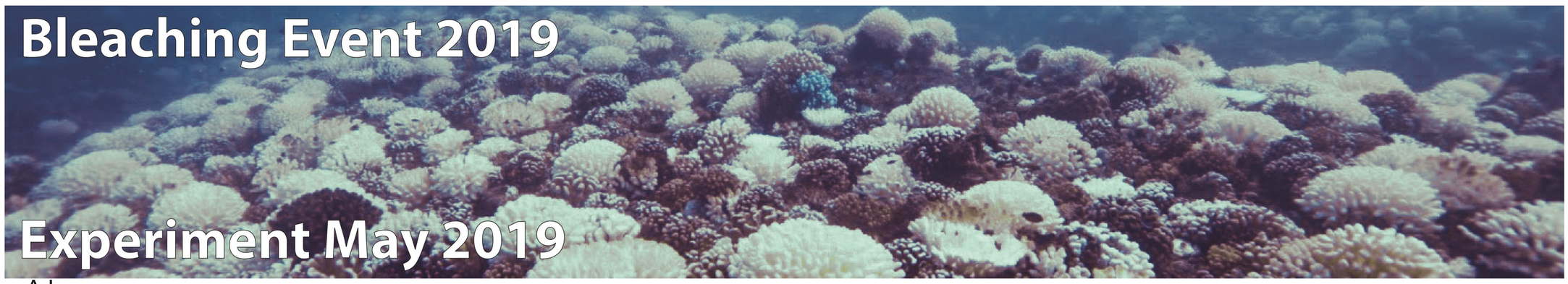


A.I

Coral Nubbin Collection:

Non-Bleached

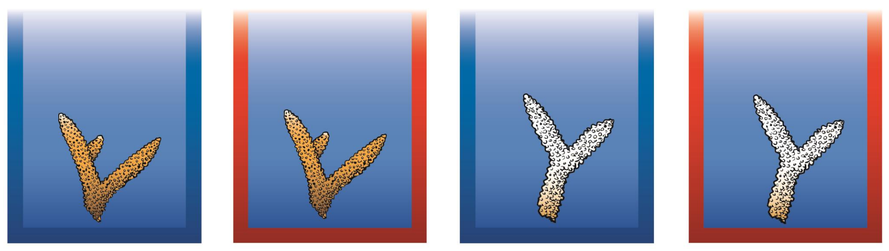
28° C 30° C

Bleached

28° C 30° C

A.II **7 Day incubation**

n = 3 **n = 3** **n = 3** **n = 3**



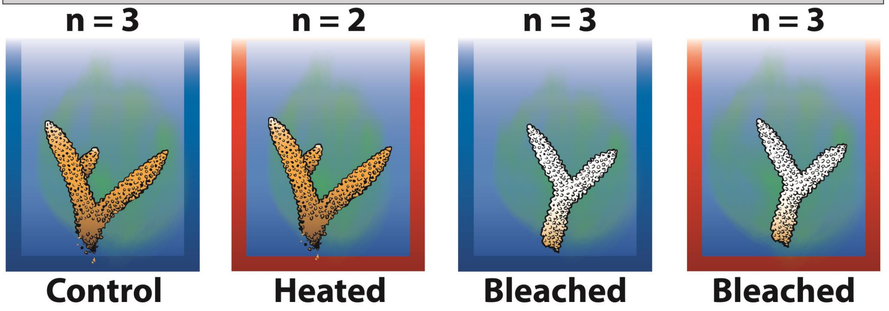
Control **Heated** **Bleached** **Bleached + Heated**

A.III

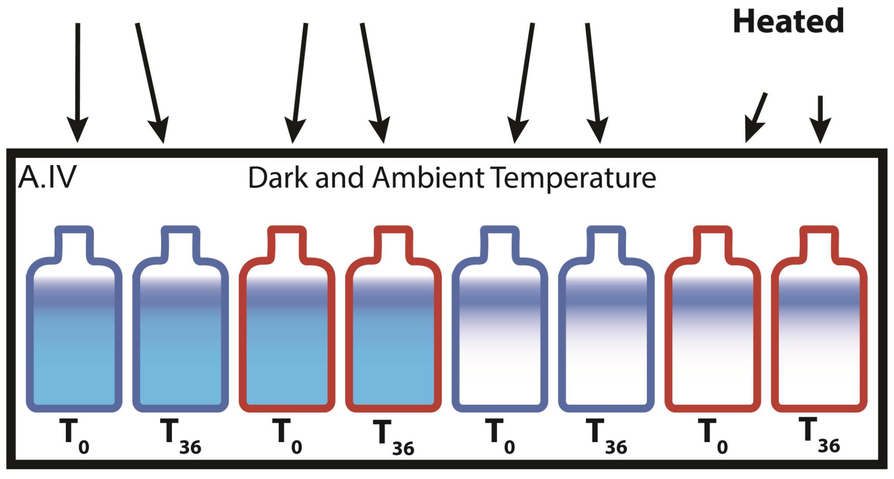
2/3 Water Replacement with 0.22µm filtered Seawater

3 Hour DOM Exudation

n = 3 **n = 2** **n = 3** **n = 3**



Control **Heated** **Bleached** **Bleached + Heated**

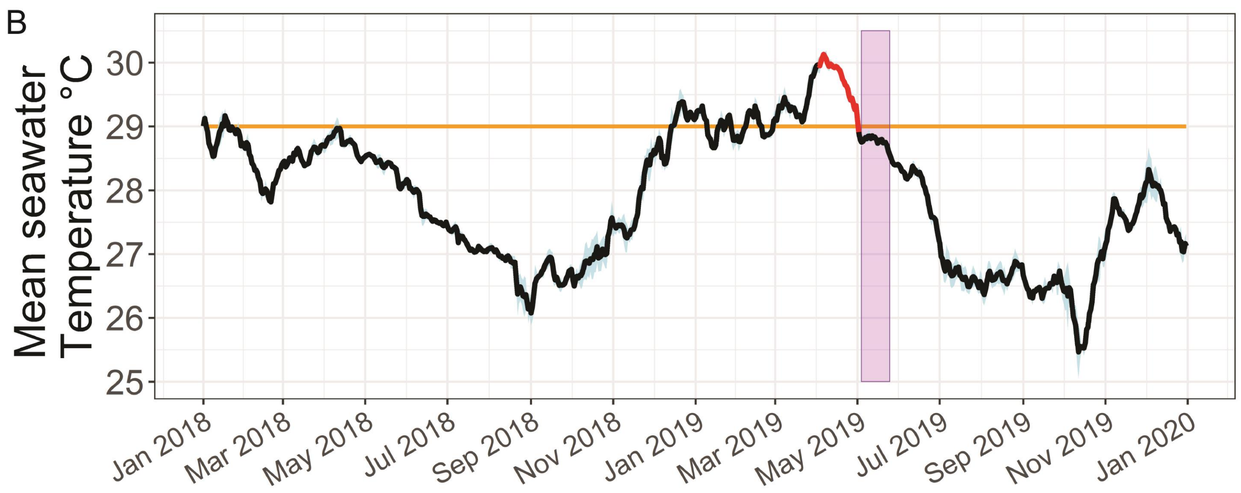


A.V **0.22µm filtration for DNA analysis**

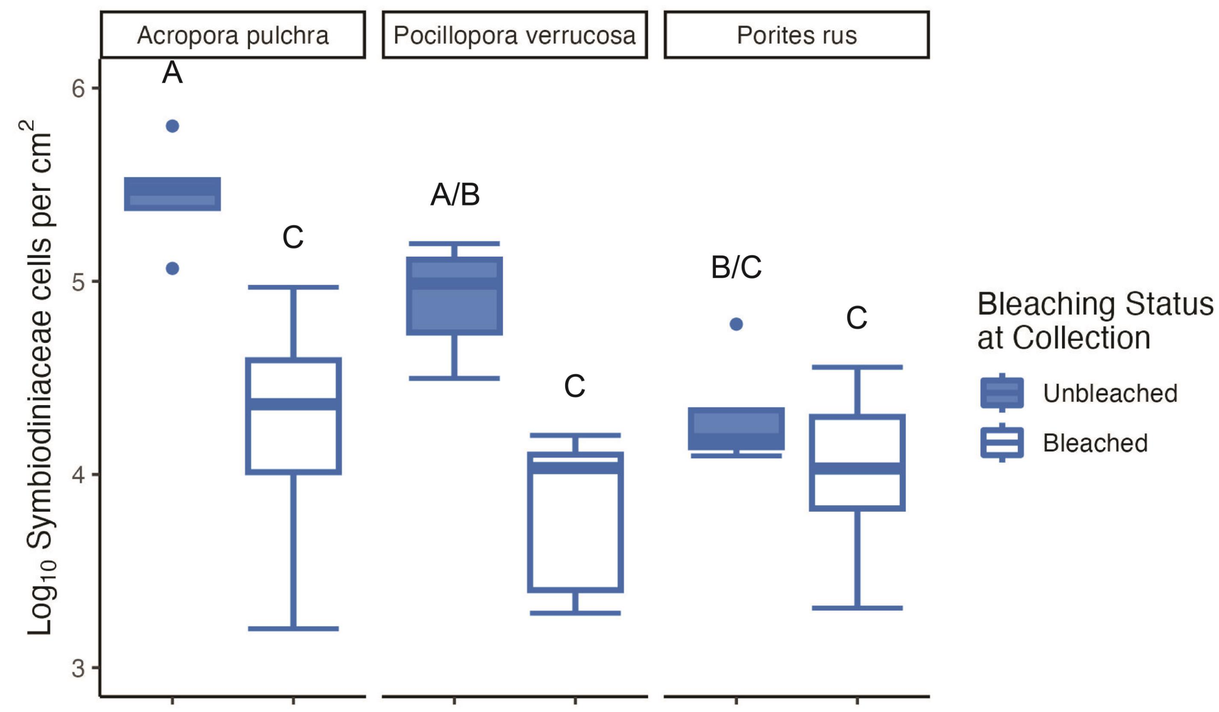
Sampled for DOC analysis

Solid Phase Extraction of DOM

B

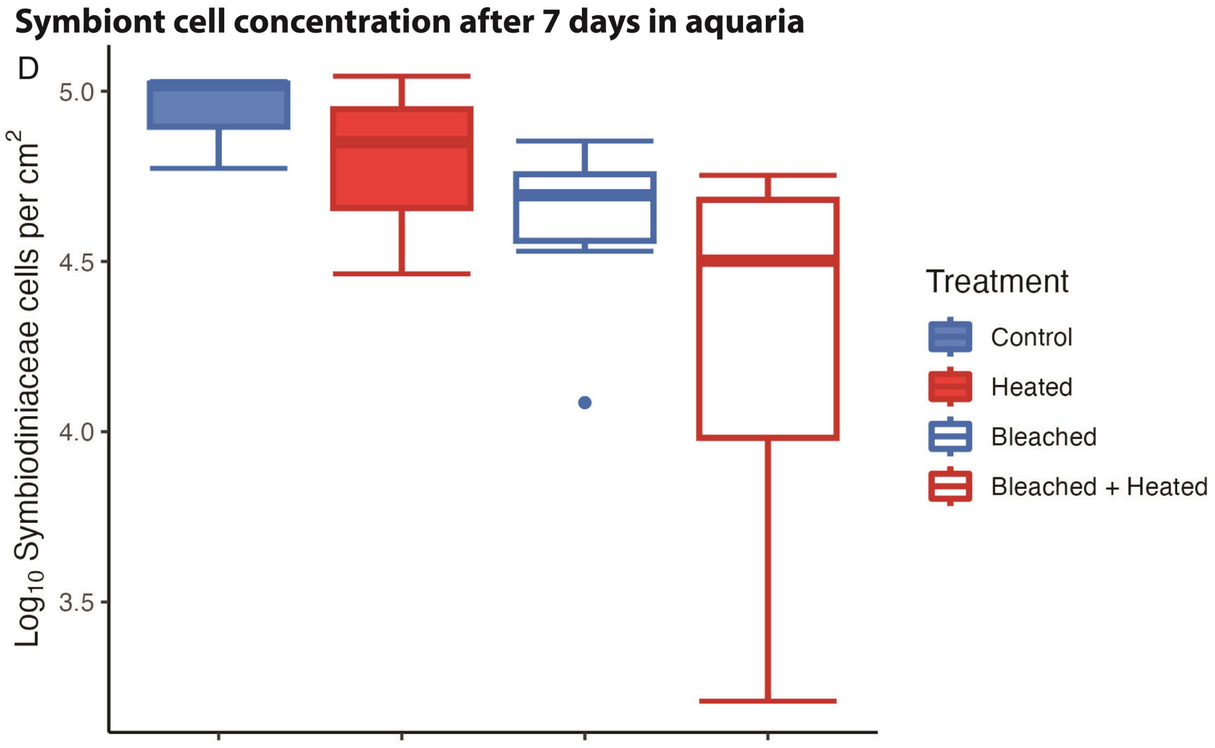


Symbiont cell concentration at Collection



Symbiont cell concentration after 7 days in aquaria

D



Picture bleached reef, May 2019, by Linda Wegley Kelly
Coral art adjusted from Jeneses Imre, dreamstime.com

<u>Figure 1</u>: Field collections and experimental design. Unbleached and bleached corals were collected from a reef in Mo'orea, French Polynesia immediately following a bleaching event. Picture on top: the LTER1 fore reef in Mo'orea, French Polynesia representative of the status of the reef where both bleached and unbleached corals were present. **A.I-A.V)** Overview of the experimental design. In addition to the four treatments two negative controls of ambient and heated water were run in parallel but are not shown in the overview. **A.I)** Coral nubbin collection of non-bleached and bleached corals. **A.II)** 7 day pretreatment in flow through aquaria at ambient or heated water temperatures. **A.III)** DOM exudation, **A.IV)** 36 hour dark bottle incubation, **A.V)** and sampling of DNA (16S), DOC, and DOM. **B)** Mean seawater temperatures over the period from January 1st 2018 until December 31st 2019 from three fore reef LTER sites. Standard deviation depicted in blue. The orange line indicates the thermal stress accumulation threshold level of 29°C (Leinbach et al., 2021; Pratchett et al., 2013; Speare et al., 2021). Bleaching was first observed in April 2019 (Leinbach et al., 2021), indicated by the start of the red line, which continued until the temperature levels dropped under the thermal stress accumulation threshold. The experiment, indicated by the purple block, was started immediately after temperatures dipped below the thermal stress accumulation threshold. **C)** A subset of collected nubbins of the three coral species (*Acropora pulchra, Pocillopora verrucosa, Porites rus)* were sacrificed after the three day acclimatization period for symbiont cell concentration analysis to validate the observed bleaching status at collection **D)** Symbiont cell concentrations of the coral nubbins from the different treatments after seven days in the aquaria.