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August 29th, 2023

Dear Dr. Christina Karlsson Rosenthal, Dr. Tobias Goris, and Reviewers,

We recently submitted a manuscript (COMMSBIO-23-1194) entitled “Coral thermal stress and bleaching enrich and restructure reef microbial communities via altered organic matter exudation” to Communications Biology and wanted to thank you all for your thoughtful, constructive, and thorough reviews. As your previous assessment indicated that a revised manuscript would be considered for publication if we are confident we can address the various reviewer concerns, we are providing along with our submission a full cover letter explaining in detail the revisions made. We found the reviews to be encouraging and favorable of the study and impact, with reviewers having criticisms which we are confident we fully addressed in the response and this revised manuscript.

Associate editor Dr. Tobias Goris synthesized the main reviewer suggestions, stating: “In particular, you should add details and discuss the differences between the three different coral species. A functional prediction of the microbiome might be difficult with the limited sequence data available, but could be included and very carefully discussed as well. In general, some more details should be added to the methods, results and discussion as requested by the reviewers as seen below.”

In our below response to reviewers and in the revised manuscript, we acknowledge the importance of potential coral species-specific differences in the DOM exudation response to thermal stress/bleaching. This is an important area of ongoing research, but not the focus of this manuscript. The stated goal of this experiment was to mimic the natural composition of coral communities on Mo'orea to gain understanding of the general coral community response to thermal stress/bleaching. For this reason, our experimental design combining 3 common Mo'orea coral species in individual aquaria and not focusing on species-specific differences is justified. We hope this has been clarified, and its limitations discussed adequately, in the revised manuscript.

Secondly, in our response to reviewers we discuss the merits and significant limitations of functional potential prediction of bacterioplankton communities in this system. In brief, while functional prediction of microbial communities can be helpful, it is both a) beyond the scope of this manuscript and b) has major drawbacks and is likely inaccurate for our 16S data due to a lack of many microbial genomes from coral reef water column samples.

We hope that all additional comments have been adequately addressed in the response to reviewers and that the editor and reviewers will consider our revised manuscript for publication in Communications Biology.

Thank you for your consideration,

A handwritten signature in blue ink, appearing to read 'Wesley J. Sparagon', with a long horizontal flourish extending to the right.

Wesley J. Sparagon, on behalf of my coauthors:

Milou Arts and Dr. Andreas Haas from the Royal Netherlands Institute for Sea Research
Zach Quinlan, Dr. Linda Wegley Kelly, Irina Koester, and Dr. Lihini Aluwihare from Scripps
Institution of Oceanography

Jacqueline Comstock and Dr. Craig Carlson from University of California Santa Barbara

Dr. Pieter Dorrestein from University of California San Diego

And Jessica Bullington and Dr. Craig Nelson from University of Hawai'i at Mānoa