Ana Miller-ter Kuile

E-mail: ana.miller-ter.kuile@lifesci.ucsb.edu

Tel: 719-580-1002

June \_\_, 2020

To the editors of *Molecular Ecology Resources*:

Enclosed, please find a manuscript my co-authors and I believe would be ideally suited for *Molecular Ecology Resources*. In this article, entitled, “Effects of surface sterilization on diet DNA metabarcoding data of invertebrate consumers in mesocosms and natural environments”, we present results from a surface sterilization treatment of invertebrate consumers prior to diet DNA metabarcoding aimed at exploring the effects of surface contaminants on diet DNA data. We believe this study directly relates to the scope of *Molecular Ecology Resources* by providing validation and improvement of DNA metabarcoding as a molecular tool for diet studies across taxa in a wide range of environmental contexts.

Our findings provide evidence from an open terrestrial environment that surface sterilization does not appear to be a necessary step in most cases in validating diet DNA metabarcoding data from DNA extracted from full body parts (without gut dissection) of invertebrate consumers. However, in a contained environment (a mesocosm), we saw marginal evidence of the effects of surface sterilization on consumption measures of an offered diet item, suggesting that there are some contexts in which surface sterilization protocols should be incorporated into DNA metabarcoding workflows. We believe this study to be timely and of general interest as DNA metabarcoding continues to provide valuable insight into a range of consumptive interactions in invertebrate consumers (e.g. host-parasitoid, predator-prey, consumer-fungus) across environmental contexts, including aquatic, marine, terrestrial, and experimental mesocosms. However, the field has not addressed the potential problem of environmental contamination and systematic fixes (e.g. surface sterilization). Our study provides validation for past and future studies that use this approach and provides suggestions of environmental contexts in which surface sterilization steps may be necessary. Validating and refining methods and protocols in the field of diet DNA metabarcoding will continue to expand the utility of this method in large-scale ecological questions, such as the maintenance of biodiversity and ecosystem functions.

We look forward to hearing your thoughts on this work. Please feel free to contact me with any questions about this material. On behalf of my co-authors, I thank you for your consideration of our submission.

Sincerely,

Ana Miller-ter Kuile