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Dear Professor Cottingham and editors at *Ecology*,

Please find attached our manuscript entitled: "Local environment and sampling bias drive prevalence estimates in fish communities" which we would like you to consider for publication in *Ecology*.

Understanding mechanisms underlying the spatial patterns and context-dependencies of infection metrics is essential to predict distribution patterns and infection levels as parasitic disease are responding to global change. Since studies are constrained by context-dependencies such as spatial scaling, biological scaling and sampling design, a multi-scale approach to investigating host-parasite ecology is imperative. Despite this recognition, current knowledge of sources of variation in parasite infection across spatial scales remains poor.

In this paper, we investigated sources of variation in infection prevalence estimates across sampling methods focusing on data on the black spot disease in littoral fish communities across 15 lakes varying in morphometric attributes and, local biotic and abiotic conditions. We analyzed infection prevalence data at the fish-community level for context-dependencies through three spatial scale levels (landscape-, lake- and site-scale) in order to investigate (i) the effect of increasing sampling effort on landscape prevalence estimation (random resampling accumulation curves) through different sampling methods (ii) the distribution of observed lake prevalence estimates across the landscape and (iii) the importance of ecological predictors on infection prevalence on a site-scale sampling.

We believe that this work will be of interest to a broad readership of ecology researchers as it integrates methodological elements as well as key interests of landscape and community ecology in the understanding of disease ecology. Assessing sources of variation of biological metrics is fundamental to issue accurate comparative studies, but still overlooked in parasite ecology. Our manuscript is currently at 49 pages, and we believe that this length is justified by the fact that we cover three different analyses at different spatial scales as well as multiple sampling methods as a potential source of bias in field surveys. Also, 14 of these pages are references and we believe that it is necessary to bring knowledge from spatial ecology, disease ecology and sampling in aquatic systems altogether.

All authors have agreed to the submission of this manuscript, and the manuscript is not under evaluation elsewhere. We declare no conflicts of interest. Thank you for considering our manuscript for publication in Ecology. We look forward to hearing back from you.

Sincerely,

M. Sc. Juliane Vigneault, Prof. Sandra Ann Binning and Prof. Éric Harvey