



Identifying Benthic Macroinvertebrates for Habitat Assessment of Copeland Creek, a Sonoma County Urban Waterway

Hanna Aghajan, Eva Brown, Payton Burger, Aaron Carr, Rebecca Franco, Logan Poncia, Sydney Pontius, Rebecca Kopel, & Dr. Nick Geist

Department of Biology, Sonoma State University, Rohnert Park, CA 94928



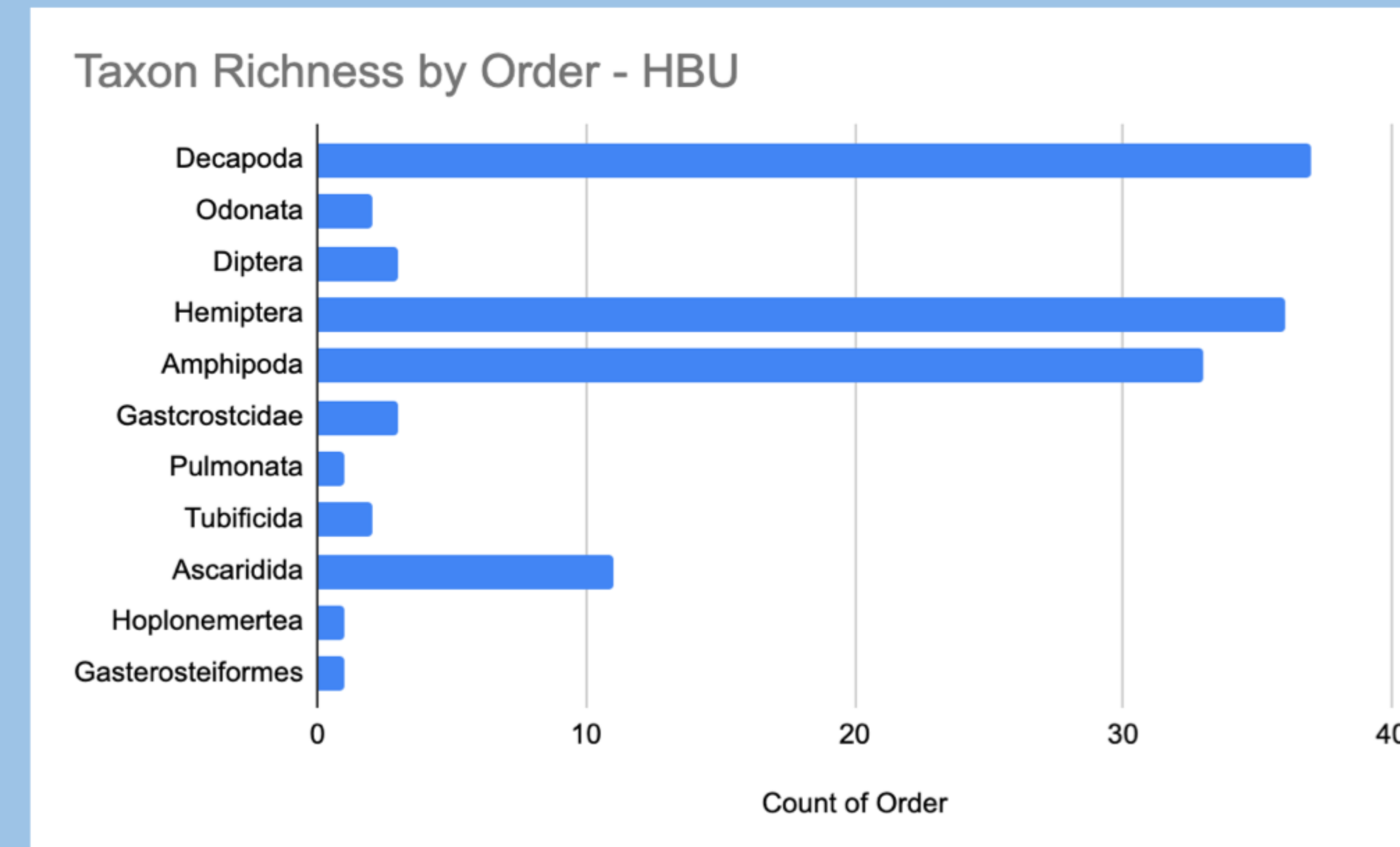
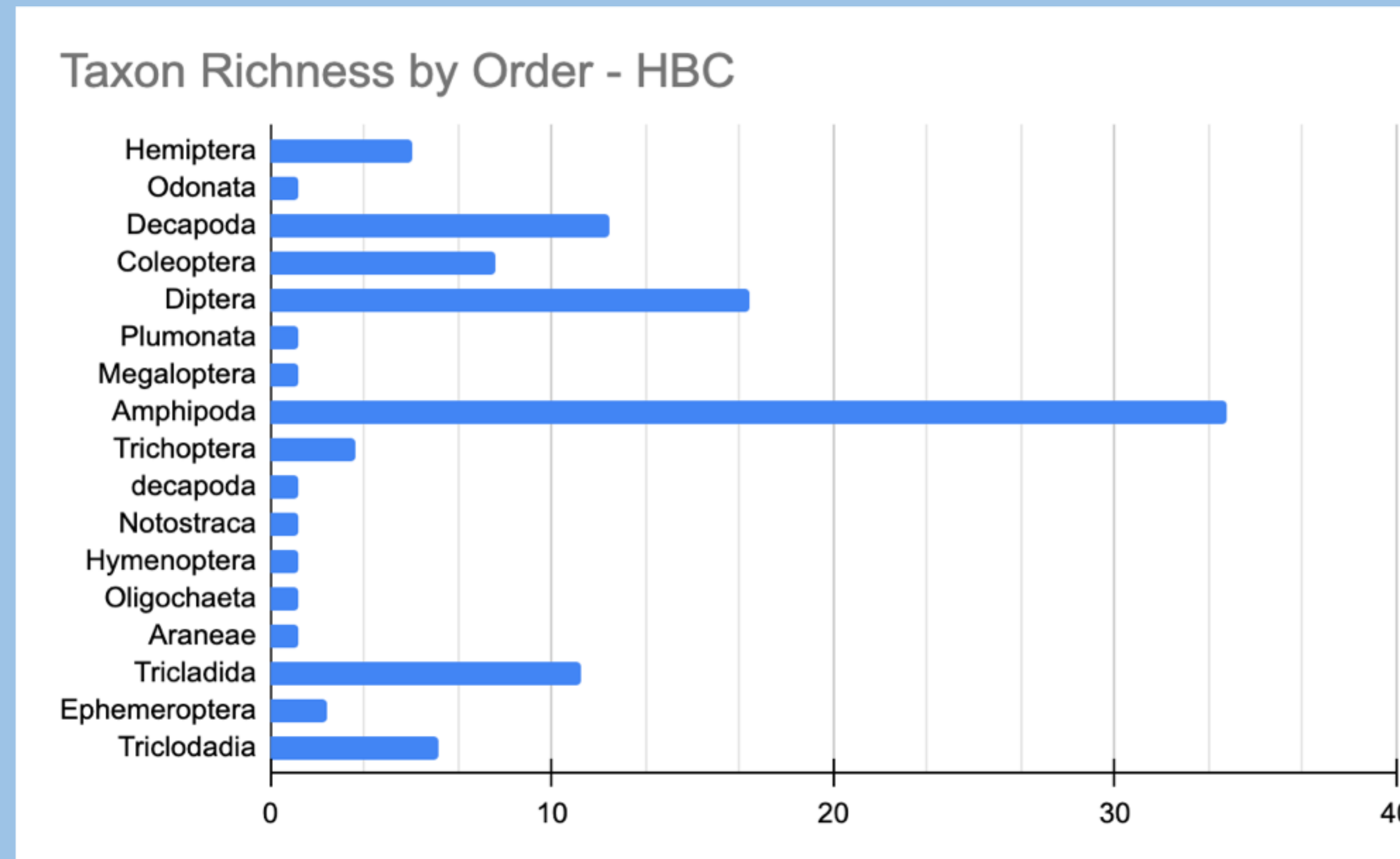
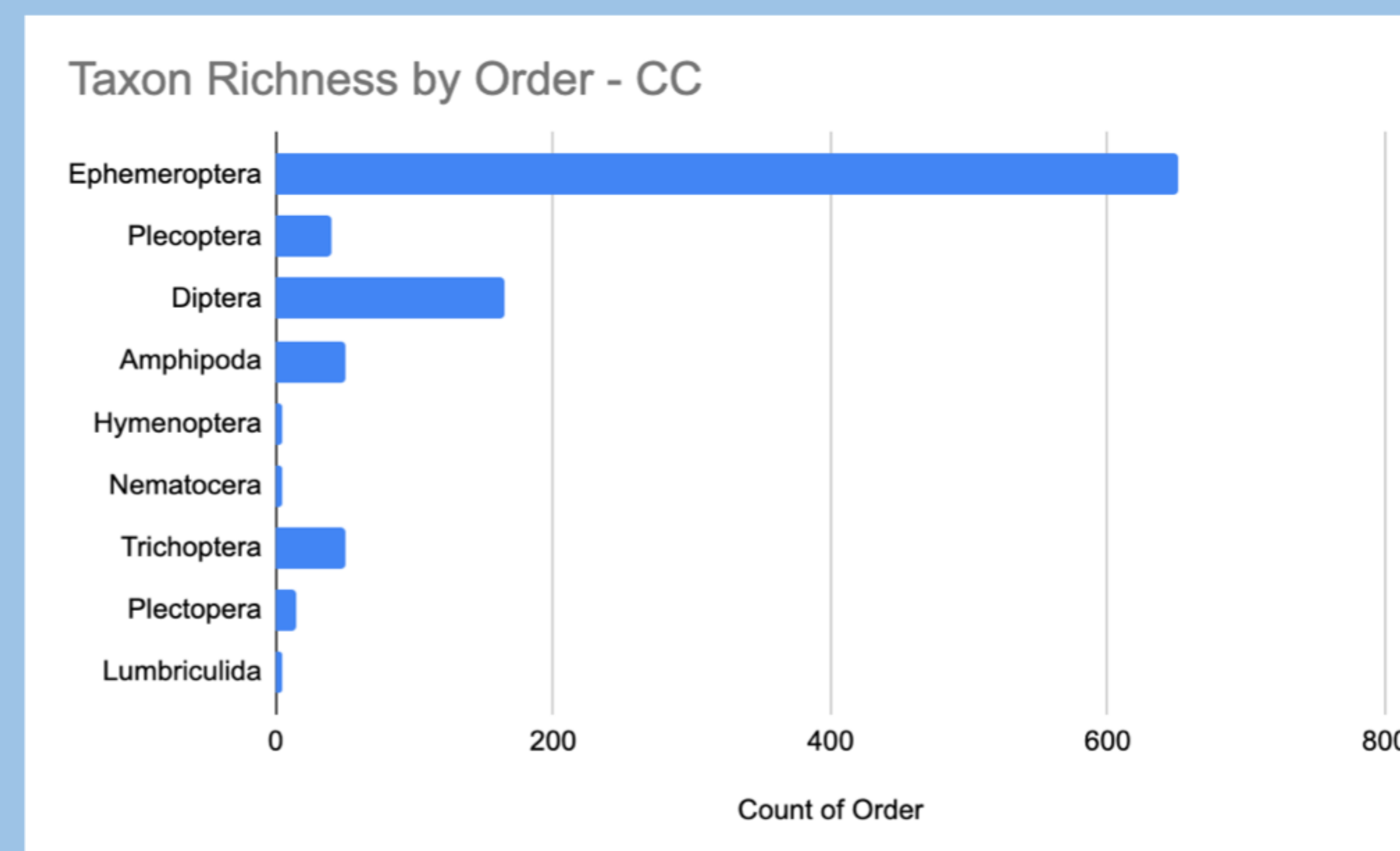
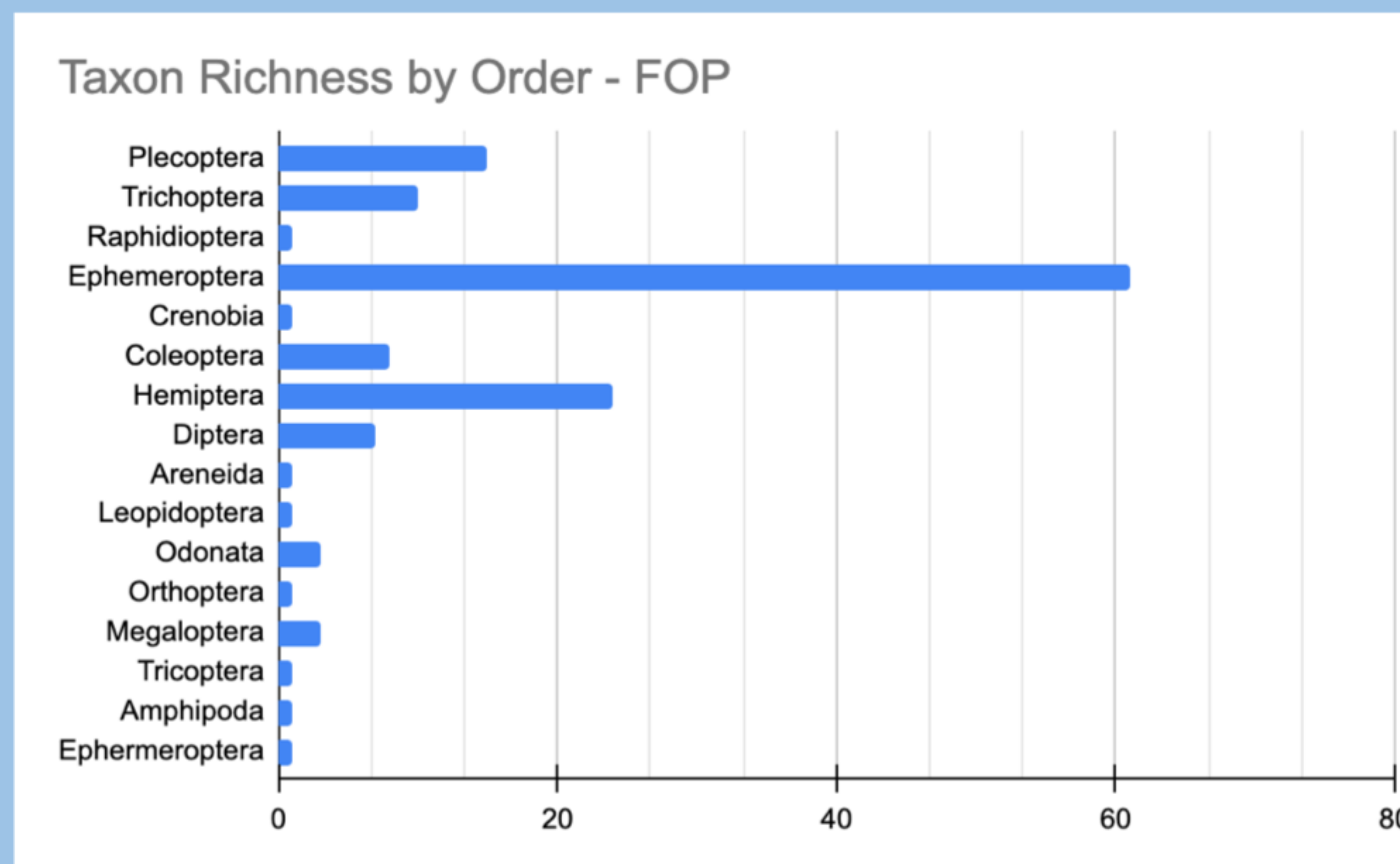
INTRODUCTION

Freshwater ecosystems contain exceptional biodiversity and are also among the most vulnerable environments on Earth. Riverine biota, notably benthic macroinvertebrates (BMI), are highly sensitive to water quality and are often more useful as biological indicators of environmental condition than standard water quality measurements. Our research allows us to examine and evaluate habitat degradation of this local freshwater ecosystems by evaluating populations of BMI at various locations along our waterways. Prior to major mitigation efforts, it is imperative that we identify the location and extent of urban impact on these critically important environments.

METHODS

BMI were collected from four different sites: Fairfield Osborn Preserve (FOP), Copeland Creek (CC) on the SSU campus, a channelized reach of Hinebaugh Creek (HBC), and a highly urbanized reach of Hinebaugh Creek (HBU). Dichotomous keys were used to determine the taxonomy of these organisms to at least family level. Taxonomic classification of the preserved specimens required identification of distinctive individual morphology (e.g., antennae, prolegs, cerci, gills, eye shape, etc.).

RESULTS



TOLERANT
(LOW WATER QUALITY)



Gammaridae (Scud)



Chironomidae (Non-biting midge)



Corixidae (Water boatmen)

SENSITIVE
(HIGH WATER QUALITY)



Heptageniidae (flatheaded mayfly)



Hydropsychidae (Netspinning Caddsfly)



Ameletidae (Comb-mouthed minnow mayfly)



Perlidae (Stonefly larvae)

DISCUSSION

Preliminary analysis of specimens suggests location and season influence the biodiversity profile in Copeland Creek and nearby tributaries (see figures above). Our data indicate that increased creek bed disturbance results in fewer "pollution sensitive" taxa in affected areas. Our assessment of environmental condition through sampling and analysis of BMI within Copeland Creek (CA) and its tributaries supports mitigation methods to restore biodiversity. Continued sampling will be performed by the Geist lab to add further data to the profile of taxon richness of BMI within the Laguna de Santa Rosa Watershed.

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