

Drought Effects on Chicagoland Macroinvertebrates



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BACKGROUND:

In 2021, moderate drought was seen in the Chicagoland area; this resulted in either unfilled or early dry-down of wetland habitats. Macroinvertebrates need a sufficient hydroperiod to complete their lifecycle and therefore can be heavily affected by drought.

METHODS:

1. From 2020-2023, six small seasonal forested wetland sites in the Chicagoland area were sampled every April and June for macroinvertebrate communities using standard dip-net procedure.
2. We sorted through each sample collecting all the macroinvertebrates.
3. Using a dichotomous key, we identified insects to genus; other taxa to Order.
4. We calculated Total Abundance and Taxon Richness; we tested for effects of hydroperiod and season on these responses.

CONCLUSIONS:

Abundance and diversity of the aquatic macroinvertebrate communities declined the year following drought and shows signs of recovery two years post-drought. Hydroperiod in the previous year predicted diversity in the sample year. This study suggests that macroinvertebrate communities are strongly affected by shorted hydroperiods, and recovery may take multiple years.

Aquatic macroinvertebrate recovery varies by season and taxa two years after the 2021 drought event.

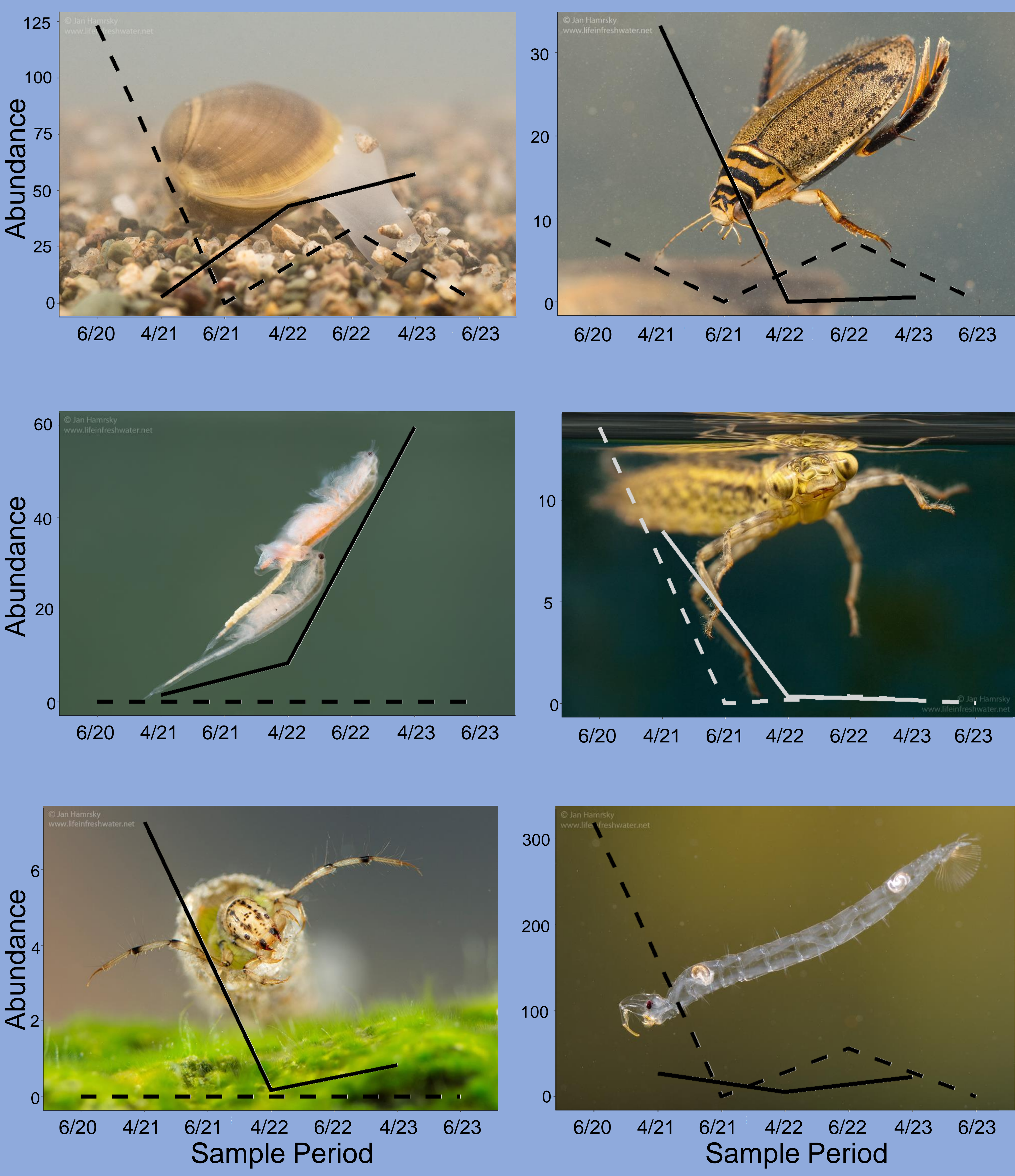


Figure 1: Change in abundance of select taxa. Left column: Sphaeriidae, Anostraca, and Trichoptera. Right column: Coleoptera, Odonata, Diptera. Solid line shoes trend in April samples; dashed line shows trend in June samples.

RESULTS: Total Abundance and Richness

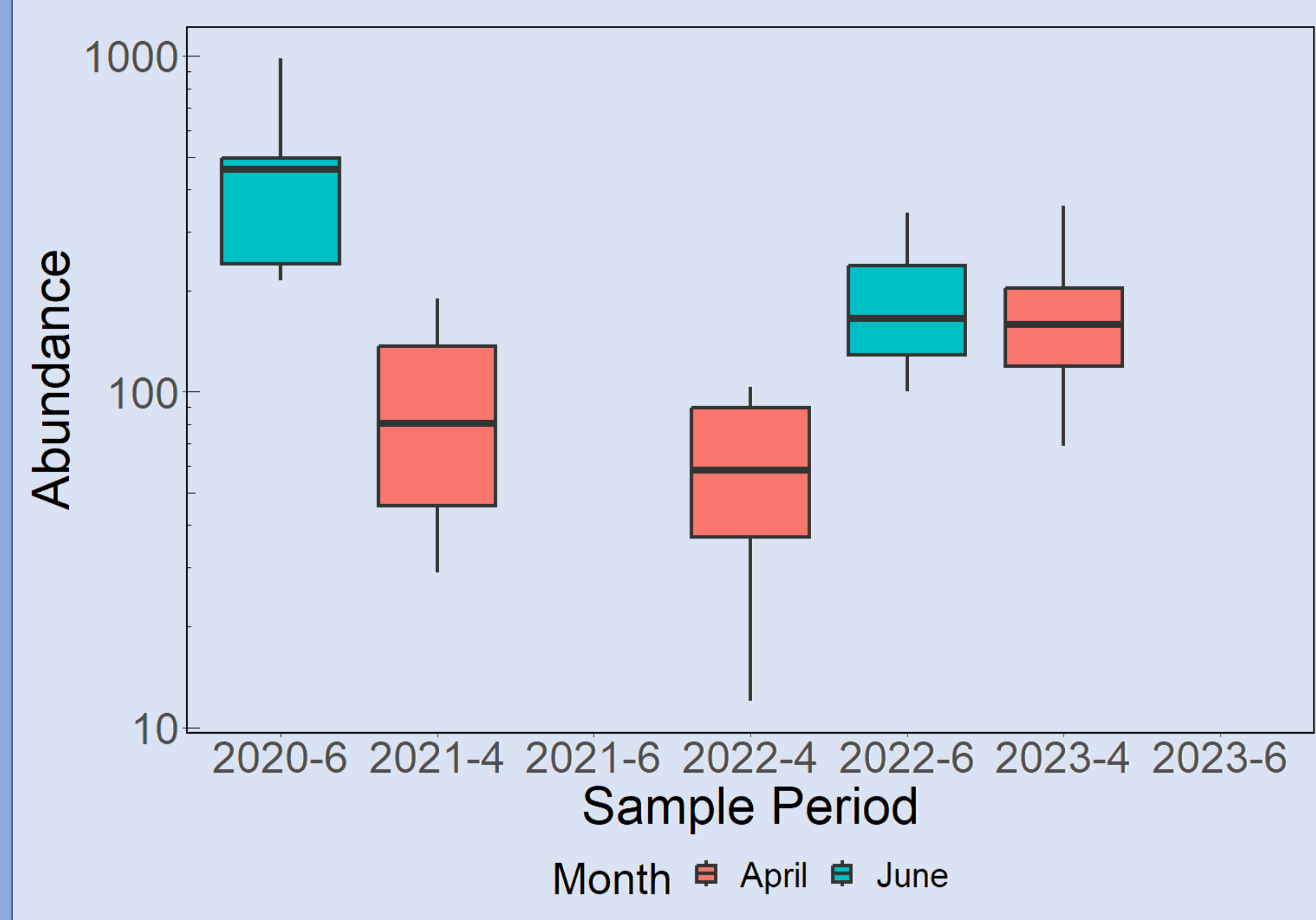


Figure 2: Total invertebrate abundance from 2020-2023. All wetlands were dry in June 2021 and June 2023 resulting in no samples collected. Y Axis is log10 scale.

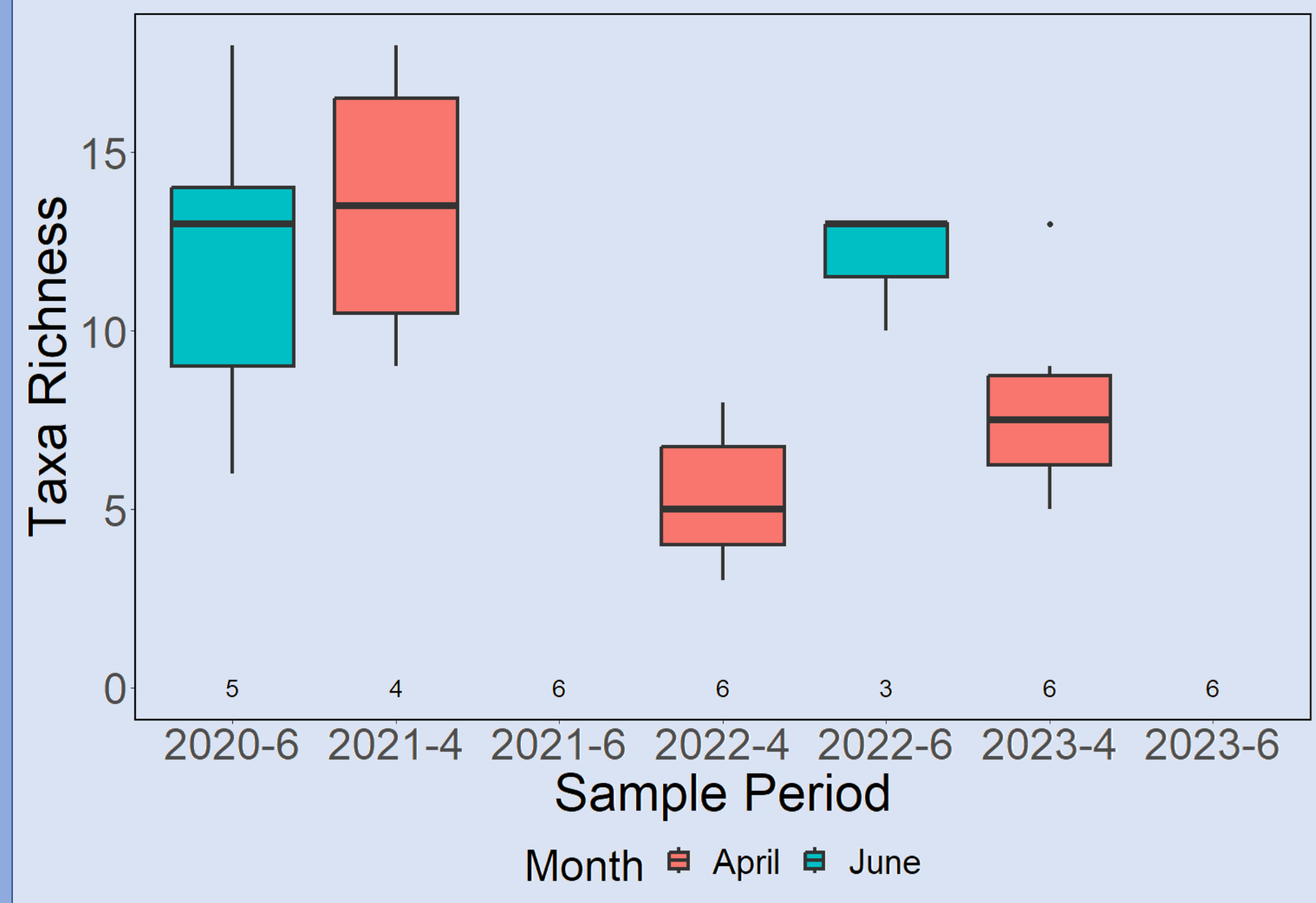


Figure 3: Average taxon richness from 2020-2023. Number at bottom indicate sample size (number of ponded wetlands, except in 2021 and 2023, which were dry in June).

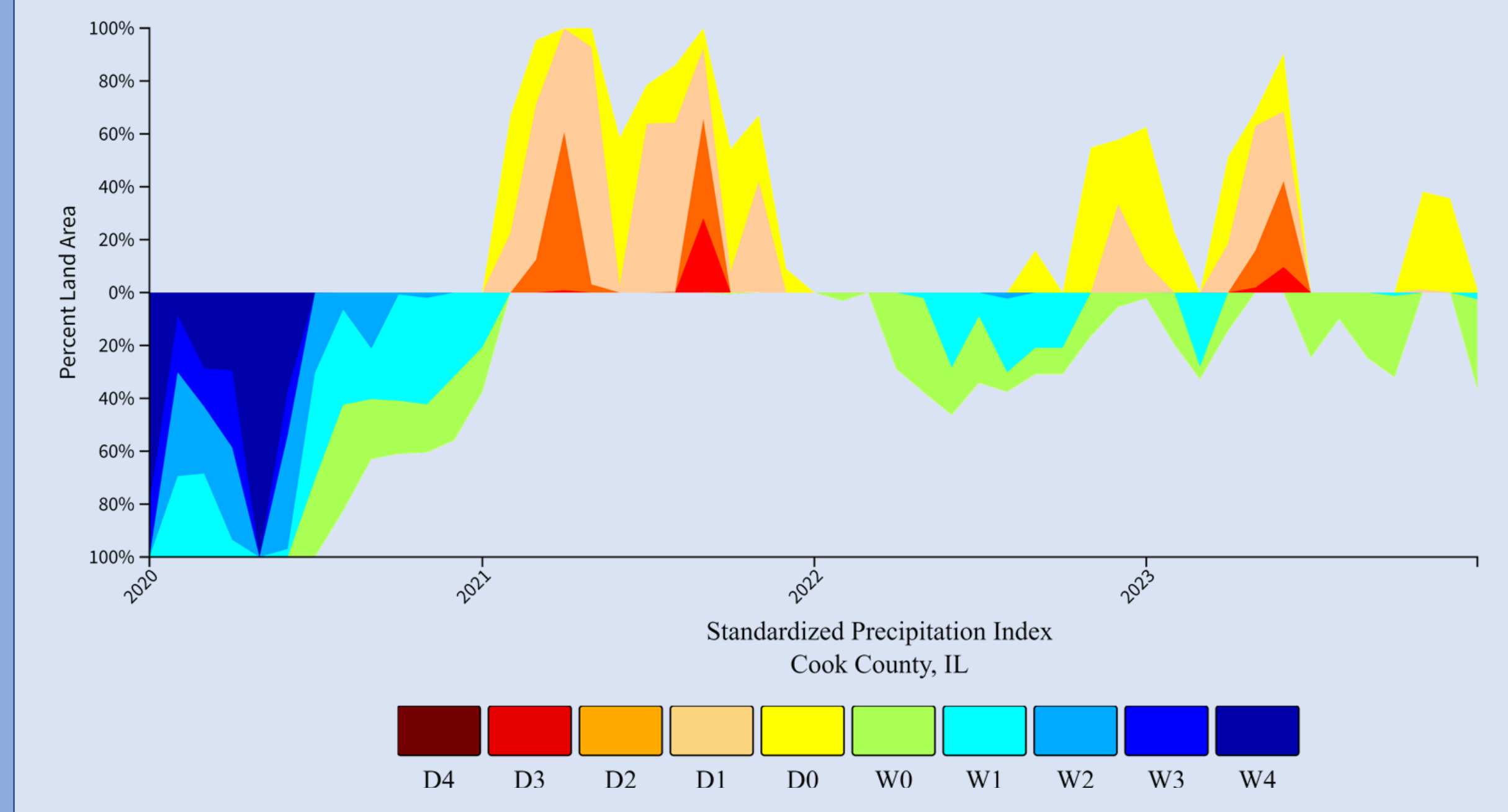


Figure 4: Standardized precipitation index for Cook County IL, 2020-2023.