

# How does velocity and wood decay class influence stream macroinvertebrate diversity?



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## Introduction

**Near-bed current velocity** influences the distribution of macroinvertebrates on benthic substrates (Wellnitz et al. 2001), but this relationship on **wood** has not been studied. Like mineral substrates, submerged wood offers hard surfaces for macroinvertebrate colonization. However, wood **decays** much more readily, potentially altering habitation suitability (Hax and Golladay 1993). Additionally, wood is often fixed to the stream bank, more stable, and less subject to burying than mineral substrates. For these reasons, wood may be the primary substrate for colonization in sandy-bottom, forested streams.

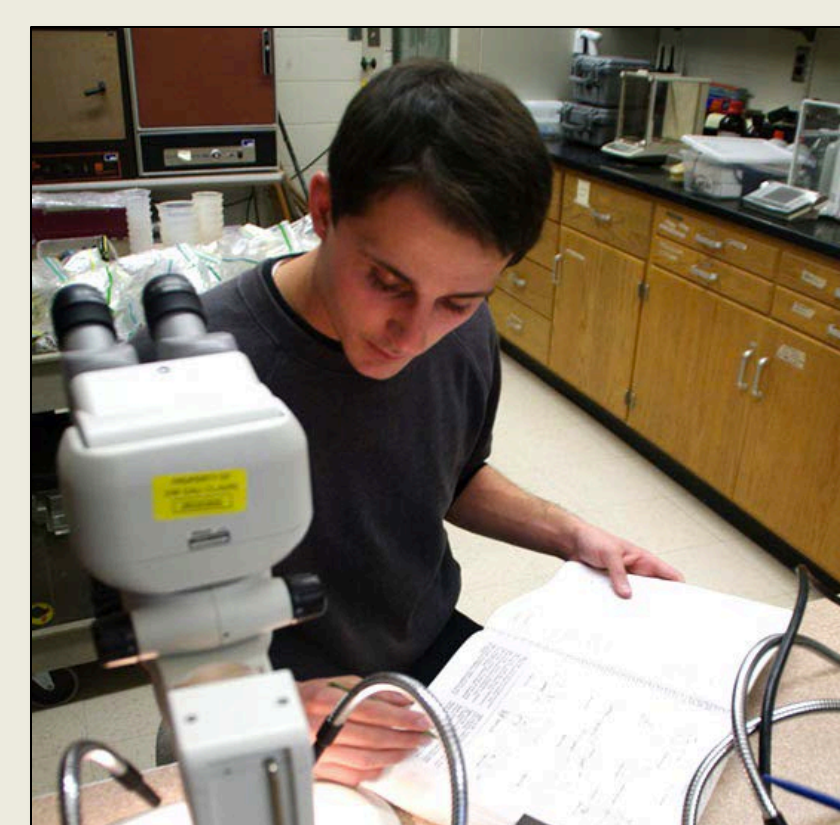
To study the influence of current velocity and wood on the streambed distribution of macroinvertebrates, we sampled submerged wood surfaces in Beaver Creek, a sandy-bottomed stream in Wisconsin. We **hypothesized** that benthic diversity will be greater on rough, bark-covered wood vs. smooth, bark-free wood and will show a positive relationship to near-bed current.

## Methods

20 submerged wood pieces were sampled, ranked by decay class, and measured for near-bed current velocity.

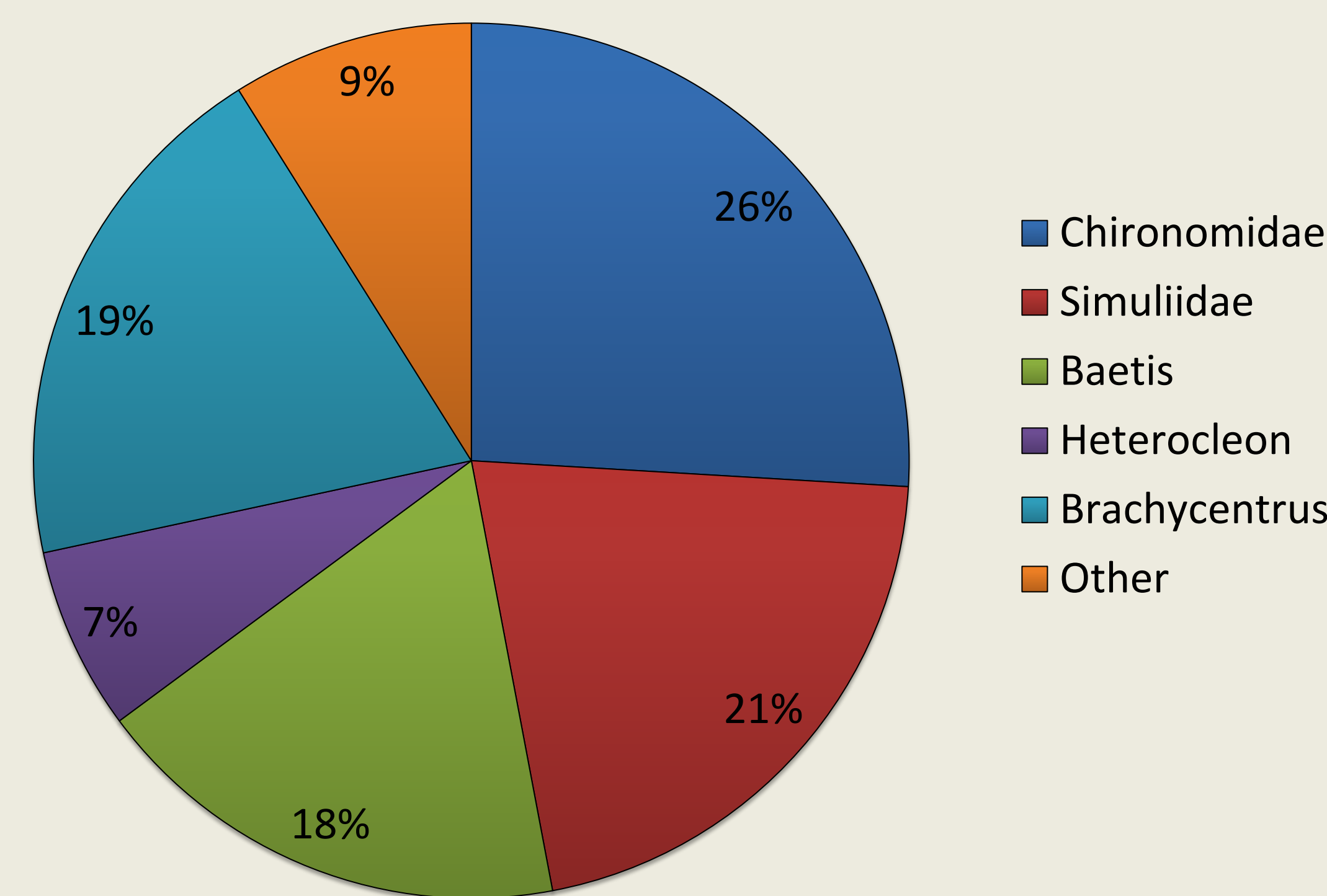


A Surber sample was taken 1-m downstream of each wood piece to assess benthic composition of the streambed.



Benthic macroinvertebrates were identified to genus in the lab and counted.

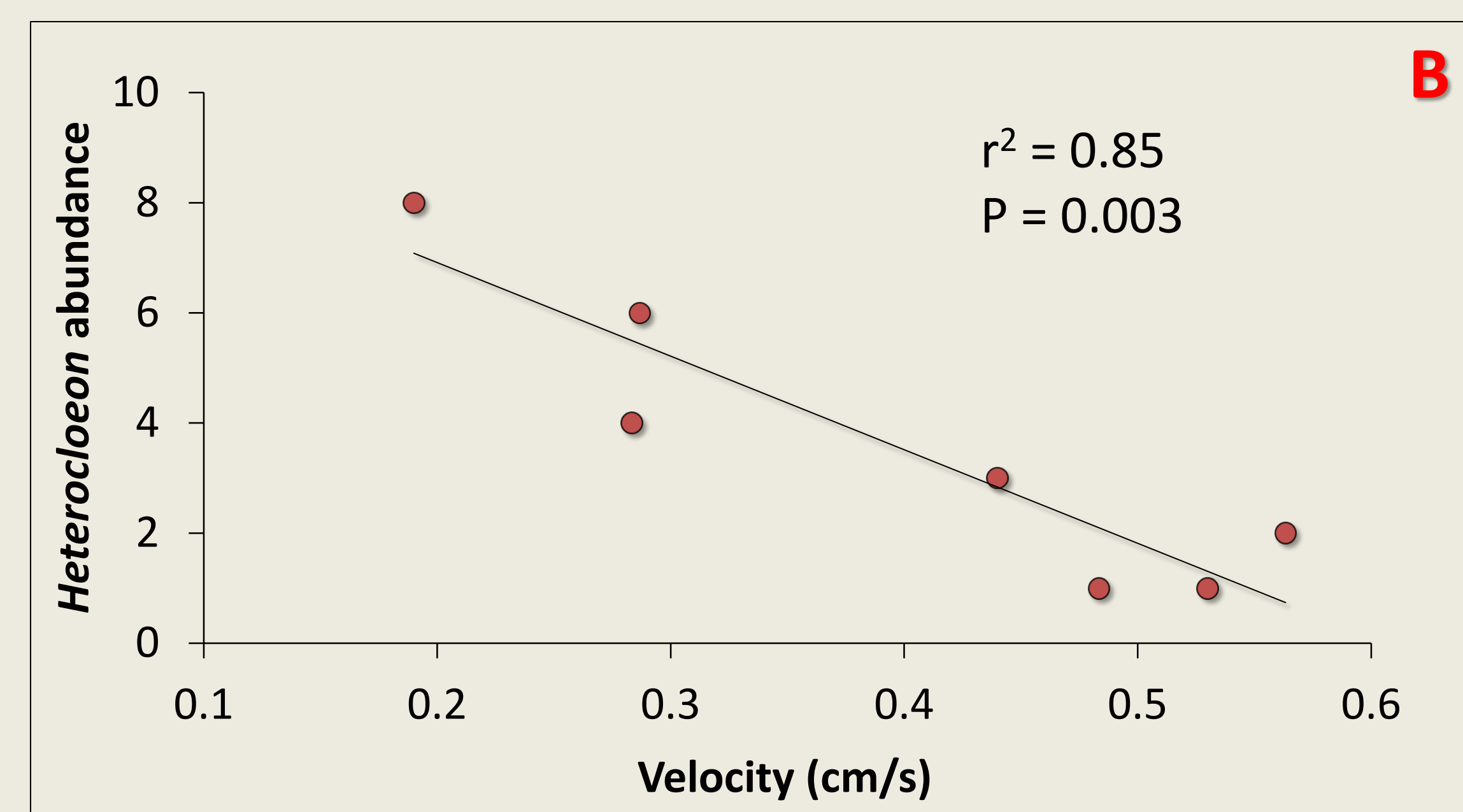
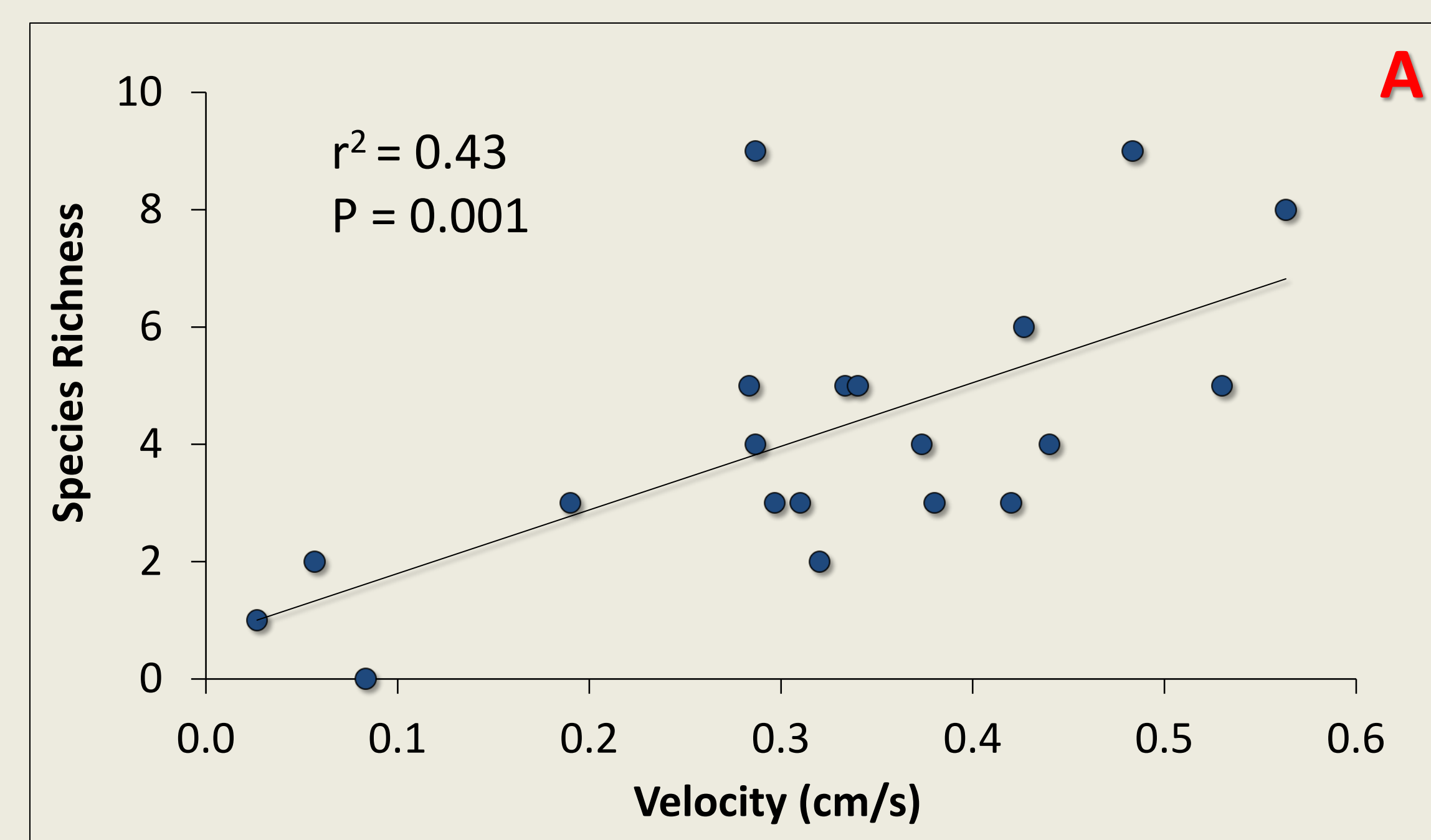
## Results



**Figure 1:** Five major taxa were found in Beaver Creek. Most common were Chironomidae (26%), followed closely by Simuliidae (21%), and *Brachycentrus* (19%).



**Figure 3:** Species abundance was nearly 5 times greater on wood pieces than on the stream bed.



**Figure 2:** Species richness increased with velocity (A), but this relationship varied among individual taxa, as was seen for the mayfly, *Heterocloeon* (B).

## Conclusions

- Current velocity plays a significant role in shaping benthic assemblages that are found on wood in Beaver Creek.
- Wood pieces in sandy-bottomed streams may act as “oases” where macroinvertebrates can obtain stable habitat.
- The lack of any significant relationships between macroinvertebrate parameters and wood decay class suggests that decay class is not an important factor determining macroinvertebrate abundance on wood.



## Acknowledgments

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## Literature Cited

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