

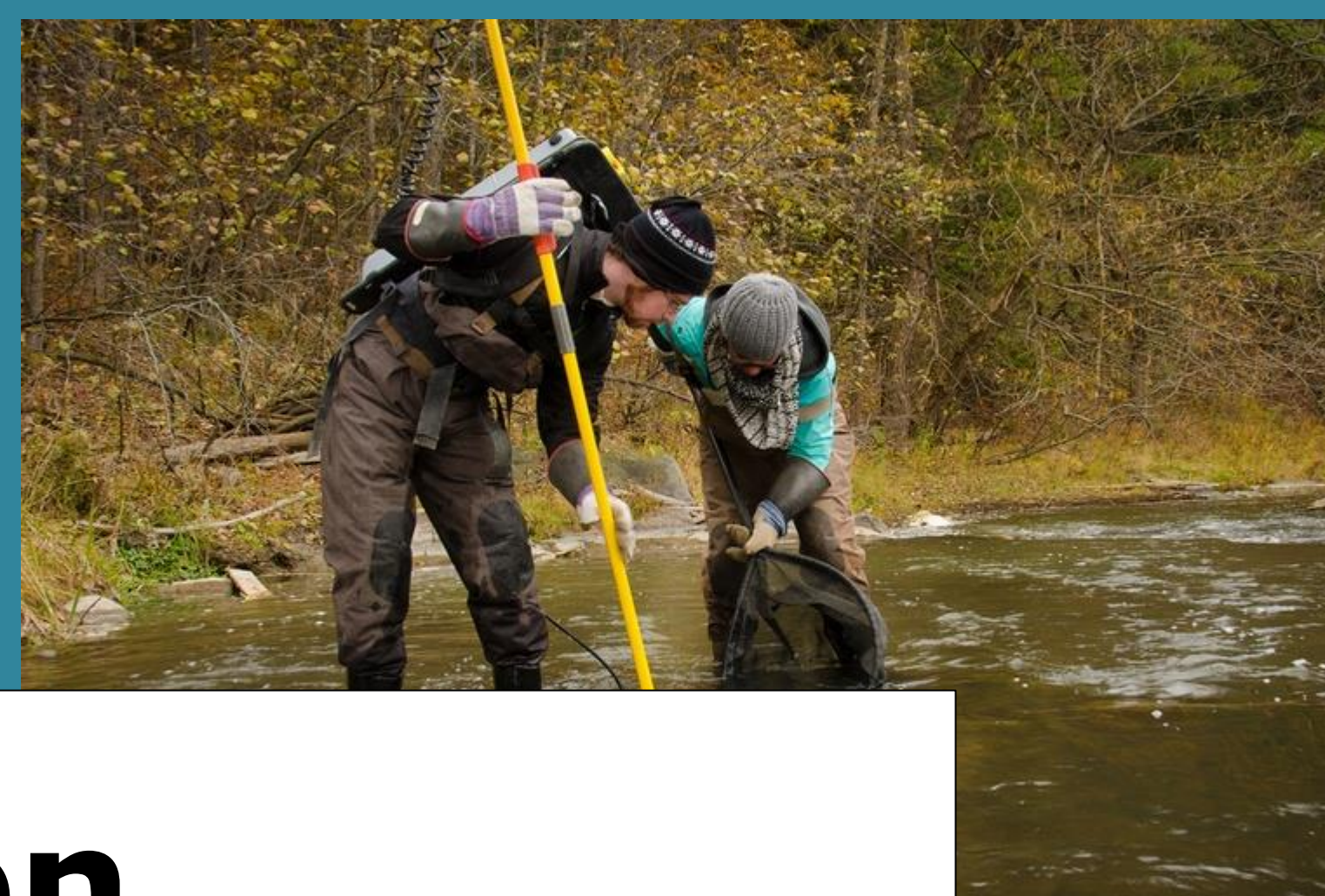
# Direct comparison of "electro-bugging" and kick sampling for assessing stream macroinvertebrate biodiversity



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## Introduction

### Kick Sampling and Electro-bugging

Kick sampling is the traditional method used to survey benthic macroinvertebrates in streams. This involves holding a D-Net underwater while disturbing the substrate using kicking motion. Once samples are collected, they are processed in the lab by physically picking through dirt and rocks to find the specimens which is a time consuming and arduous process.

"Electro-bugging" is a new sampling method that uses backpack electrofishing to collect macroinvertebrates samples. This method gathers much less debris in the samples and makes processing much faster and easier.

This study compares both methods directly to determine which method is more suitable to survey benthic macro-invertebrate biodiversity.



## Methods

### General methodology

- ❖ Two different areas of a stream were chosen
- ❖ Within these 2 areas, sampling was done on three different substrates: gravel, cobble and large cobble
- ❖ A pair of kick sample and an electro-bugging sample was taken on each substrate.
- ❖ A total of twelve samples was preserved in ethanol taken to the lab and processed.
- ❖ The invertebrates were sorted, identified, and counted by taxonomic order.



## Results

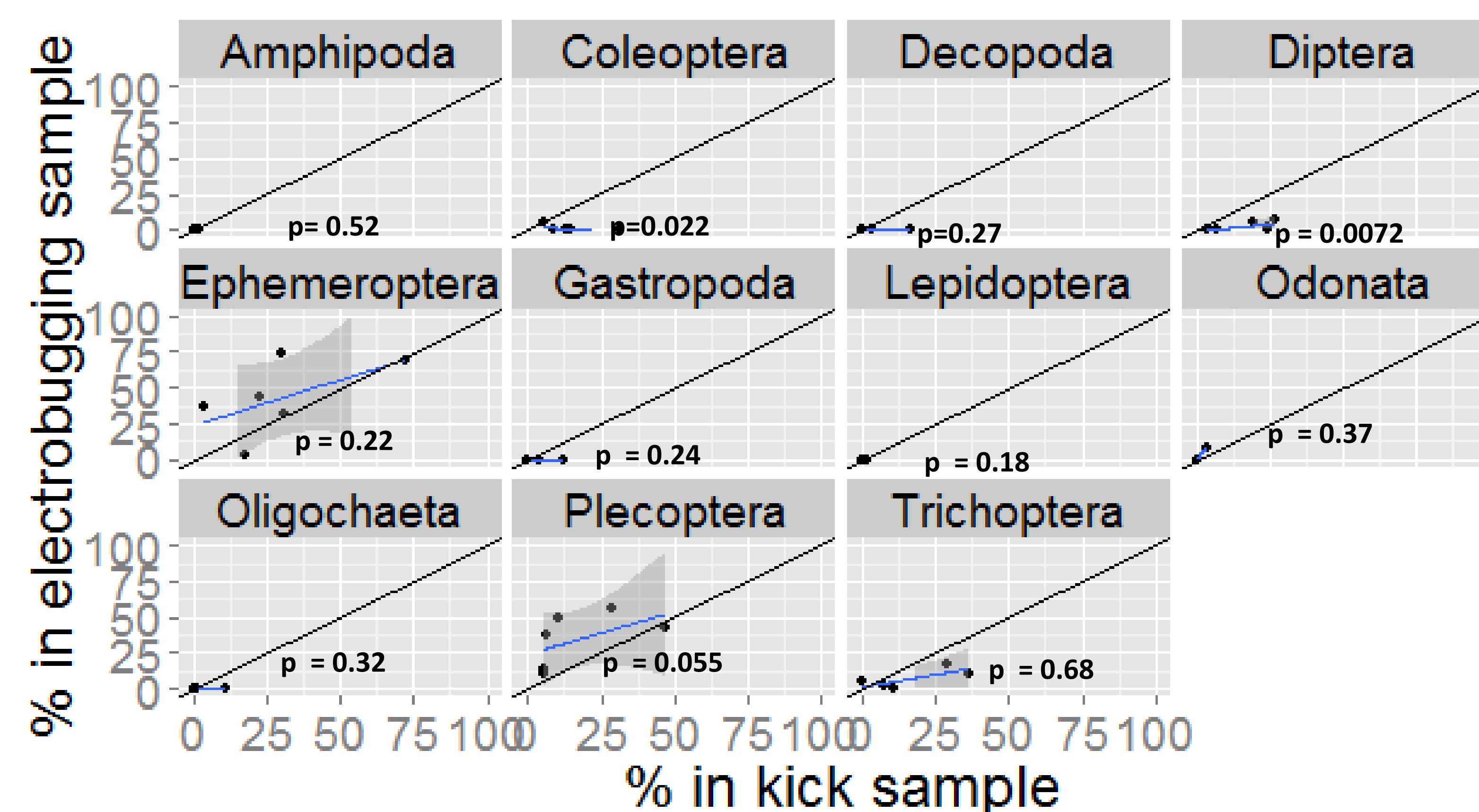


Figure 1: Plot of individual orders by the percent abundance found in electro-bugging samples as a function of the percent abundance in kick samples. P values are from paired t-tests.

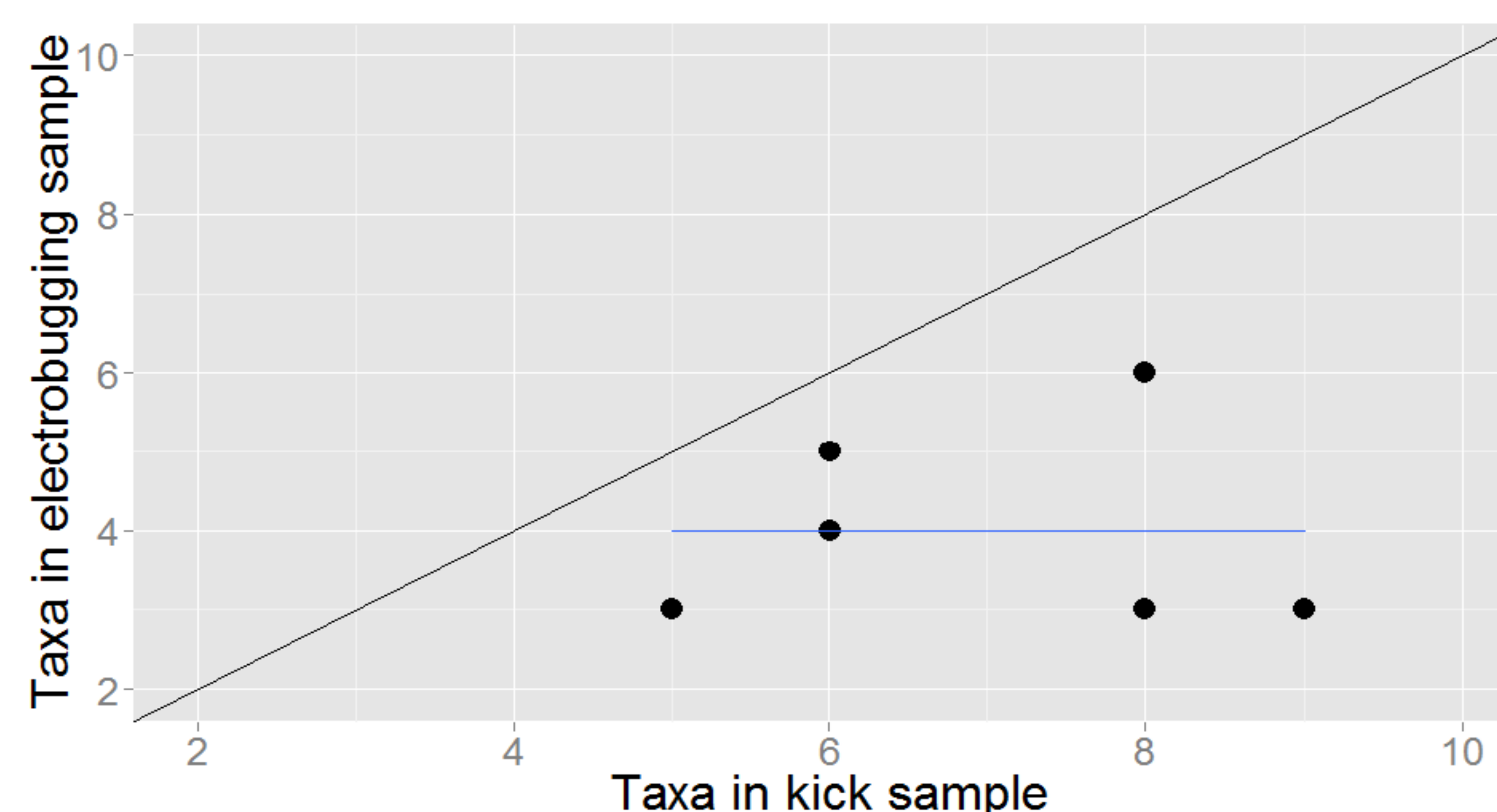


Figure 2: Total taxa collected in electro-bugging samples as a function of total taxa collected in kick samples. The diagonal represents the 1:1 line. The substrate is coded as follows: G = gravel, C = cobble, LC = large cobble.

- ❖ Taxa richness was greater in kick samples than in electro-bugging (paired t-test,  $p=0.014$ )
- ❖ Although % composition differed between kick and electro-bugging samples, these differences were not statistically significant (F-test on Order:Method interaction,  $p=0.14$ )

## Conclusions

- ❖ Taxa richness is greater in kick sampling than in electro-bugging
- ❖ More samples need to be taken in order to make conclusions on whether the method affects the percent abundance of each individual order collected
- ❖ Generally, to assess the biodiversity of benthic invertebrates, it is best to continue using kick sampling methods until electro-bugging is sufficiently proven to be more effective.



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