

# A methodology in benthic sampling for citizen scientists

Jeremy Carton

Dr. Robert Paul

St. Mary's College of Maryland



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# The Problem

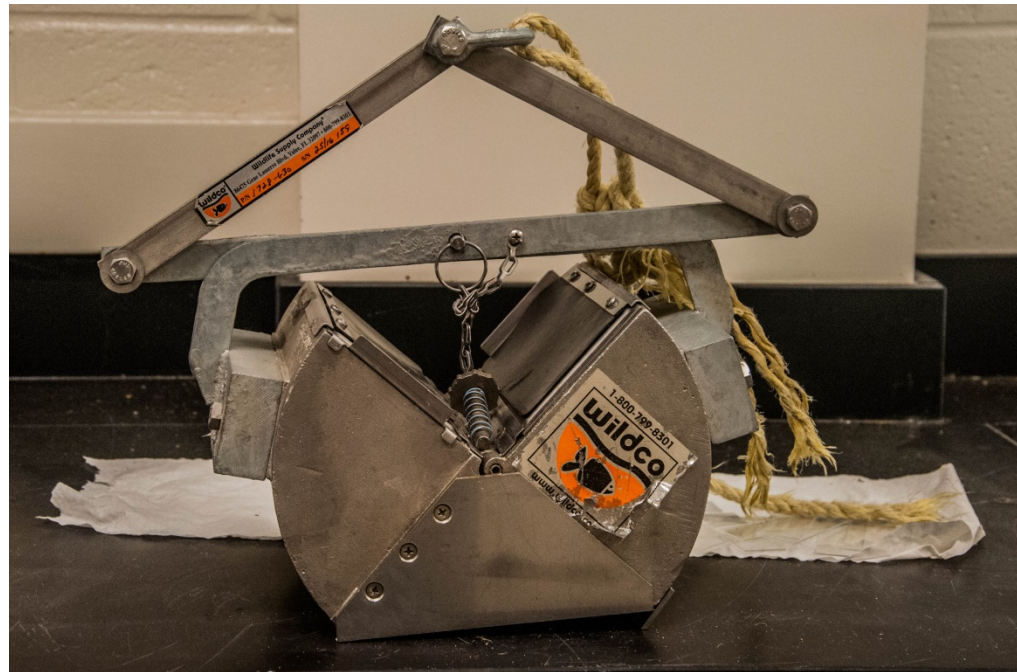
- \* Data Gap of Shallow Water Benthic Data
- \* Benthic Sampling is expensive
- \* Needs
  - \* Fill Shallow Water Benthic Data Gap
  - \* Inexpensive monitoring solution



# Objectives

- \* Design a Sediment Sampler
- \* Create Effective Methodology
  - \* Must be easy to use by citizen scientists
  - \* Effective in multiple sediment types
- \* Test With Citizen Scientists

# Design





# Site Identification

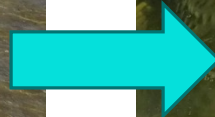


# Site Sampling



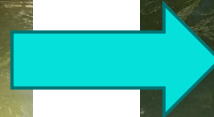


# Using the Sampler





# Using the Sampler





# Using the Sampler



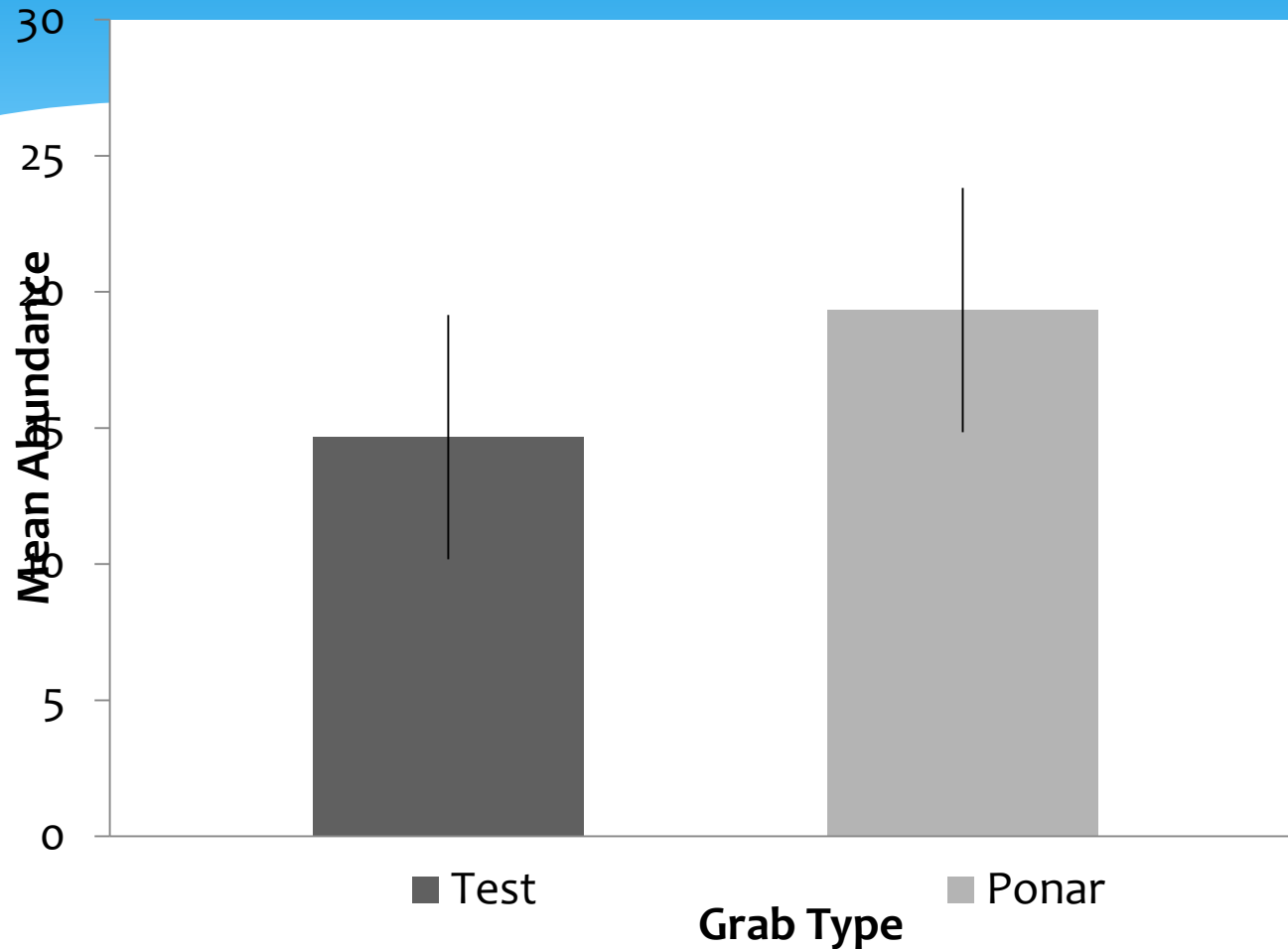


# Sample Analysis



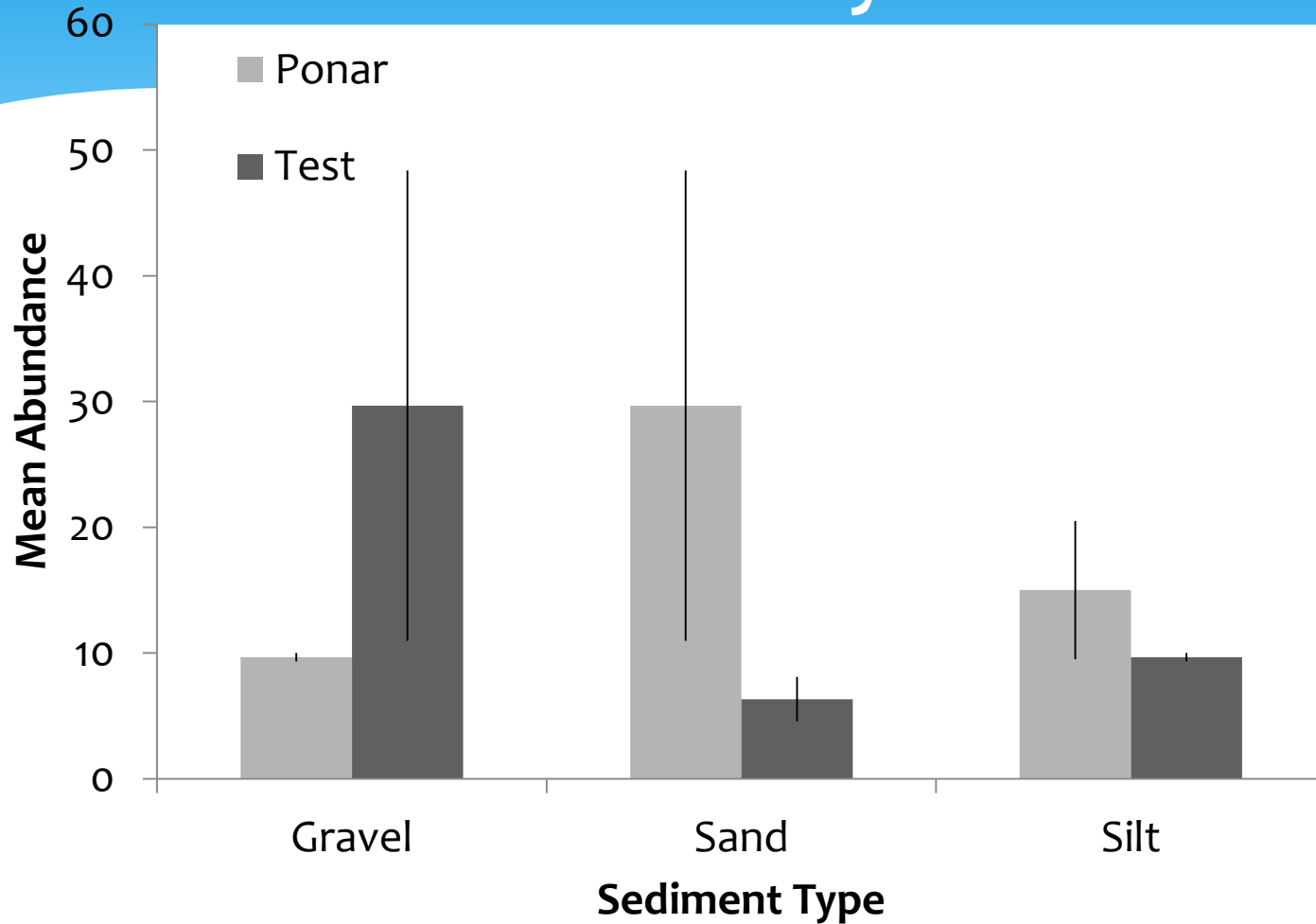


# Results



Mean abundance of organisms between the Test grab samples versus the ponar grab samples (T-test,  $P=0.56$ )

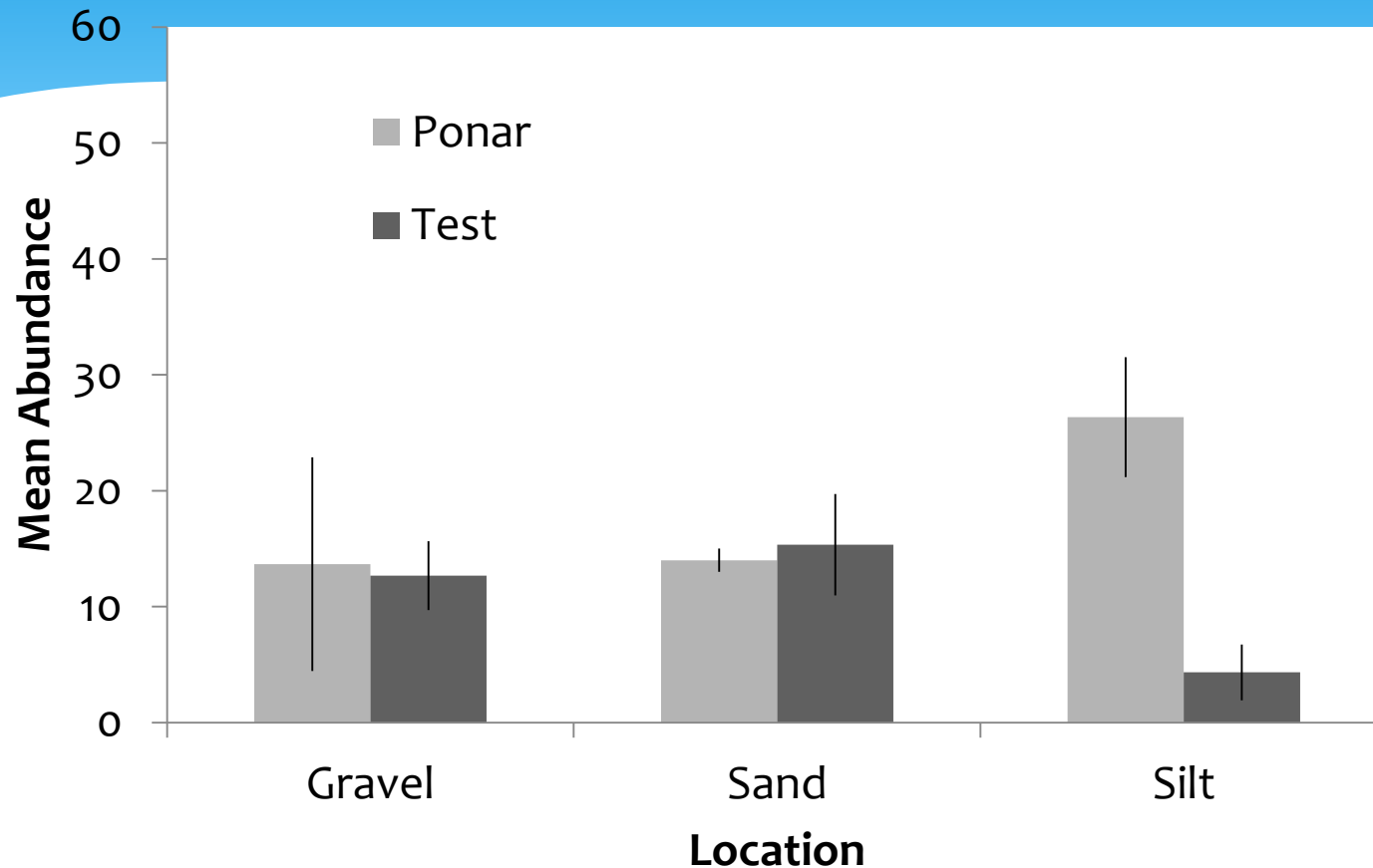
# Preliminary Data



Ponar Grab vs. Test Grab (ANOVA, gravel  $p=0.208$ , sand  $p=0.457$ , silt  $p=0.865$ )

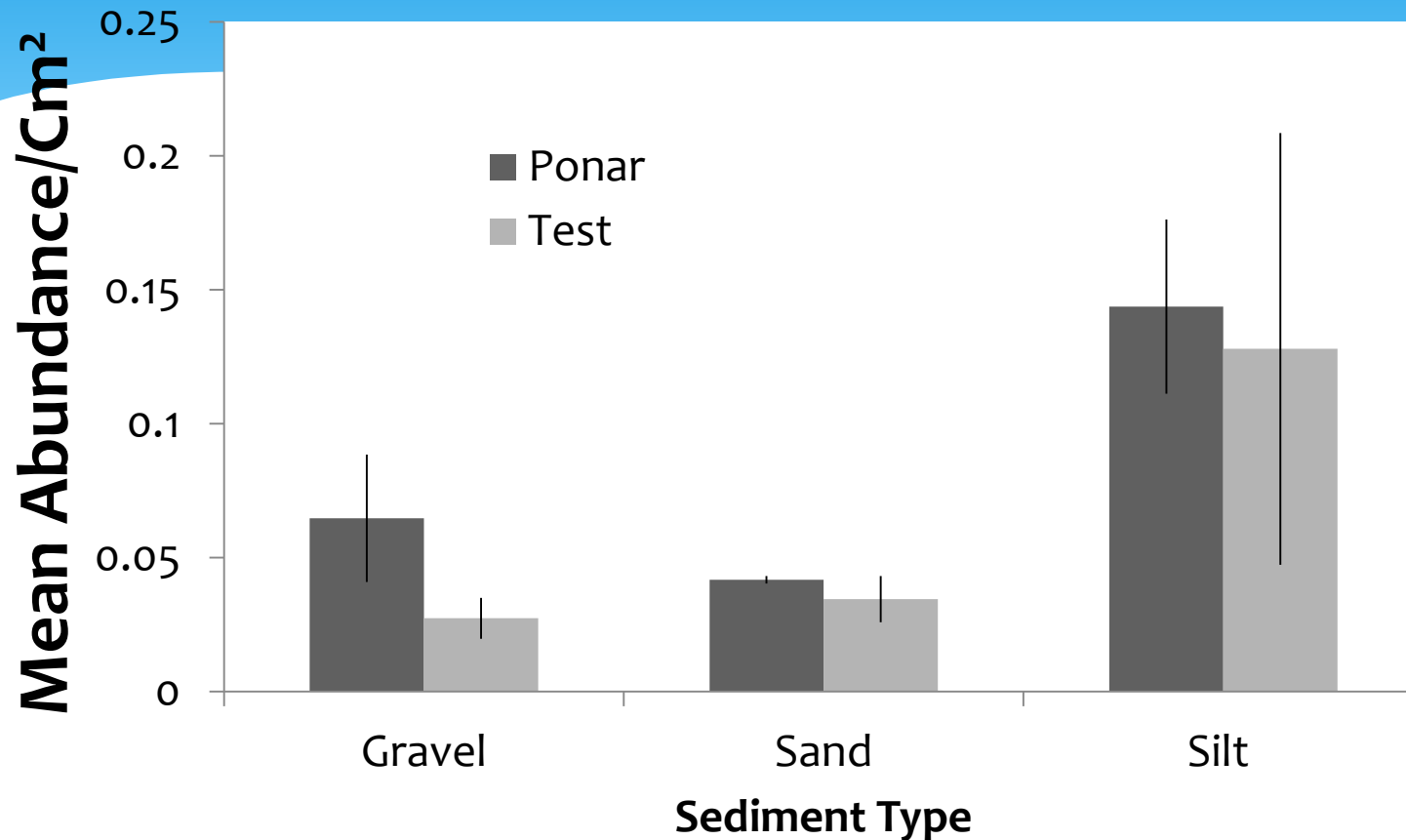


# Citizen Data



Ponar Grab vs. Test Grab. Collection and processing done by citizen Scientists ( ANOVA, gravel  $P=0.869$ , sand  $P= 0.781$ , silt  $P= 0.085$ )

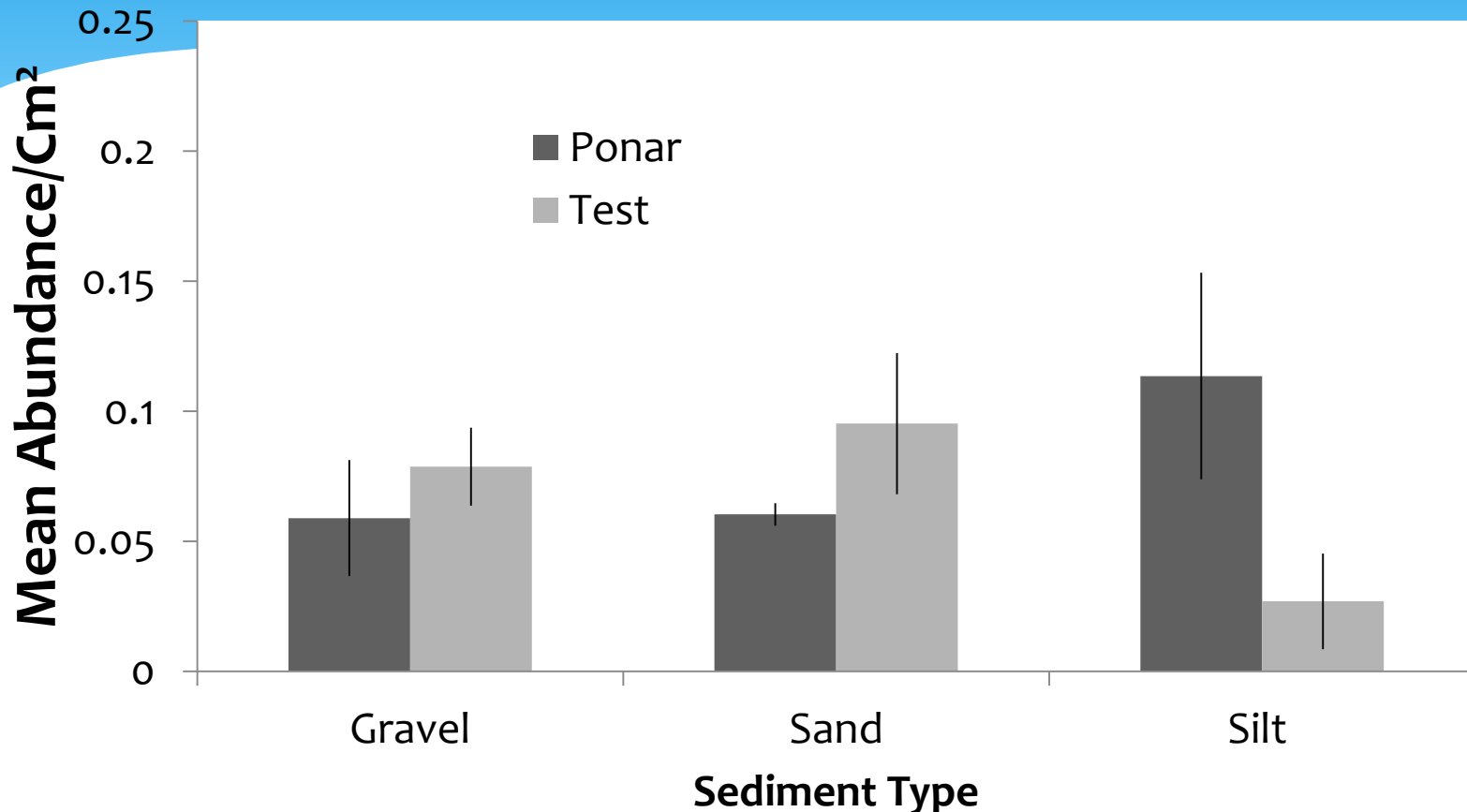
# Preliminary Data



Comparison of mean abundance of organisms/cm<sup>2</sup>  
( ANOVA, gravel  $P=0.208$ , sand  $P=0.457$ , silt  $P=0.865$ )  
preliminary field sample.

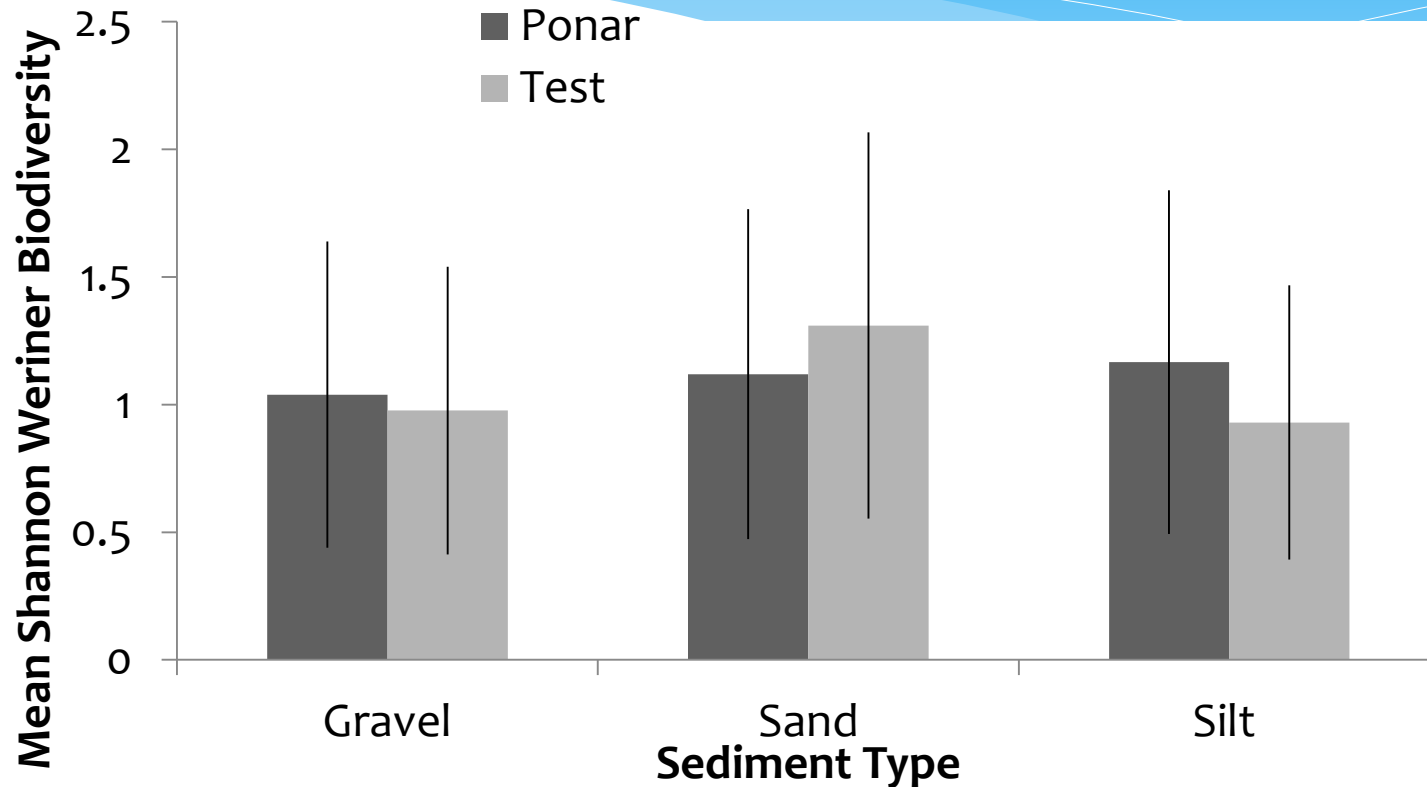


# Volunteer



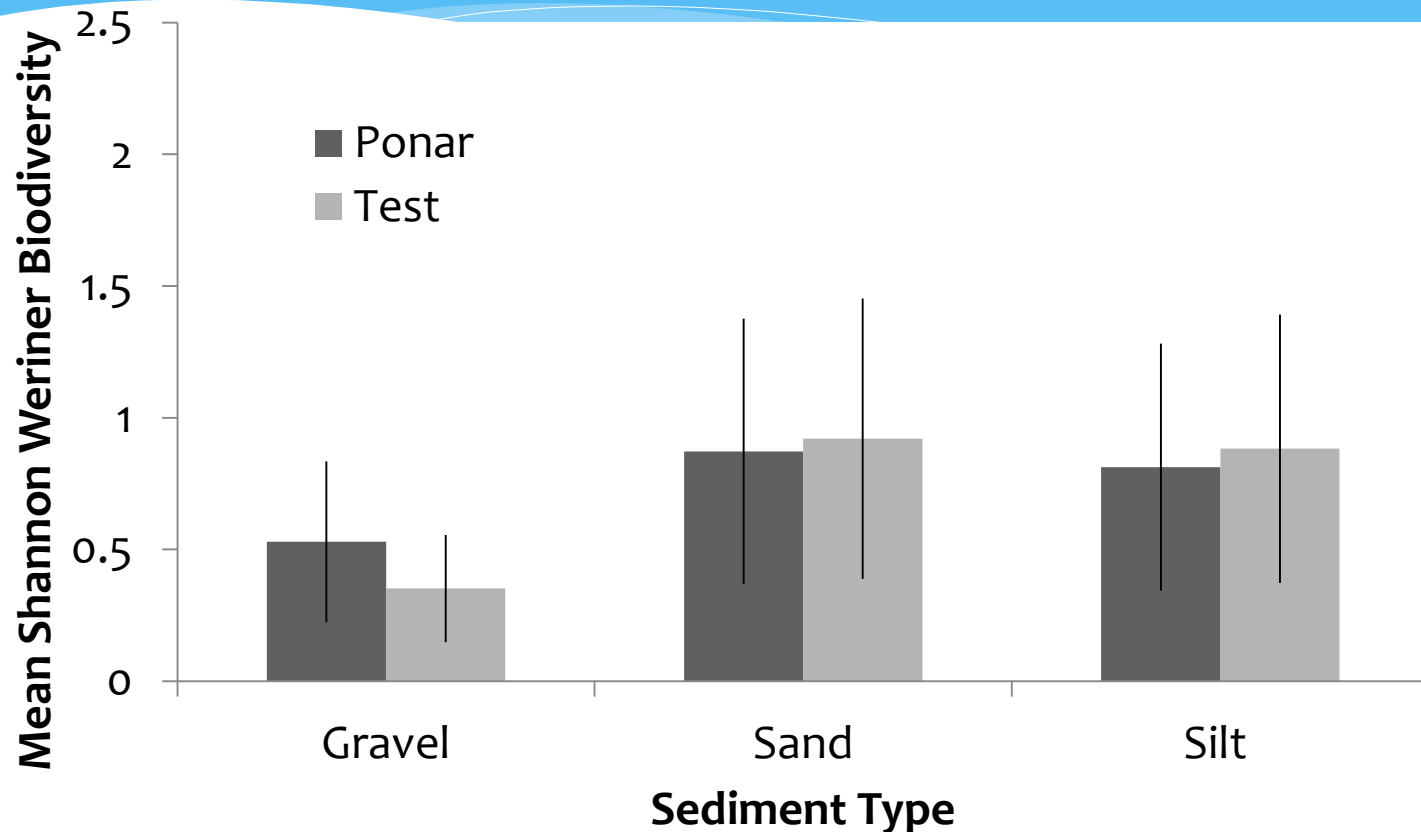
Mean abundance of organisms/cm<sup>2</sup> (ANOVA, gravel  $P=0.119$ , sand  $P=0.273$ , silt  $P=0.502$ ) samples collected in the field by volunteers

# Preliminary Data



Comparison of Biodiversity (ANOVA, gravel  $P=0.139$ , sand  $P=0.188$ , silt  $P=0.683$ ).

# Volunteer



Biodiversity comparison by sediment volunteer treatment ( ANOVA, gravel  $P=0.712$ , sand  $P=0.891$ , silt  $P=0.827$ ).

# Conclusion

- \* Sampler is as effective as ponar grab
  - \* Is suitable to be used as a device for citizen scientists
  - \* An individual corer costs approx. \$15
  - \* A Ponar Grab Costs approx. \$1000
- 
- \* New and exciting opportunity for education
  - \* Establish greater connection with the community
  - \* Fill the data collection needs



# Acknowledgements

- \* Dr. Robert Paul
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