A study on riverine organisms in Wanang III River

Presentation by:
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Jiri Richta
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Outline

• Introduction
• Research question?
• Methodology
• Results
• Summary
• Acknowledgements
Introduction

- Riverine communities are made up of vertebrates, invertebrates, plants and their micro-habitats.
- Community composition: includes groups
  - Fish
  - Amphibians
  - Reptiles
  - Crustaceans
  - Insects
  - Molluscs
  - Plants
Research question

Is there a difference in Species diversity of macro-invertebrates and vertebrates among different habitats in Wanang III river?
Methodology

Study Area

• Wanang river, located western slope of the Swire Station
• Vegetation: tall grass and overhanging trees

• Method- Kick sampling (kick net mesh = 1mm)
• Sampling along river bends in shallow mud, sand and gravel micro-habitats

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Particle size</th>
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<tbody>
<tr>
<td>Mud + organic matter</td>
<td>&lt;0.5mm</td>
</tr>
<tr>
<td>Sand</td>
<td>&gt;0.5&lt;1.0mm</td>
</tr>
<tr>
<td>Gravel</td>
<td>&gt;1.0mm</td>
</tr>
</tbody>
</table>
Digitam creek
Wanang III river
Helipad
Swire station

50 hectare plot
Sampling design

Sites

Habitats
### Results

Univariate Tests of Significance for number of species (Spreadsheet1)

Over-parameterized model

Type III decomposition; Std. Error of Estimate: 1.527525

<table>
<thead>
<tr>
<th></th>
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<tbody>
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<td>Intercept</td>
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<td>3619.267</td>
<td>1</td>
<td>3619.267</td>
<td>5.00000</td>
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<tr>
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<td>12.467</td>
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<td>1.6584</td>
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<td>10.00000</td>
<td>7.73333</td>
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<td>2.333</td>
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</table>
habitat; LS Means
Current effect: F(2, 10) = 38.642, p = .00002
Type III decomposition
Vertical bars denote 0.95 confidence intervals
## Results

### Univariate Tests of Significance for total.indi (Spreadsheet1)

**Over-parameterized model**

*Type III decomposition; Std. Error of Estimate: 8.077747*

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habitat; LS Means
Current effect: F(2, 10)=12.021, p=.00219
Type III decomposition
Vertical bars denote 0.95 confidence intervals
## Results

### Univariate Tests of Significance for index of div. (Spreadsheet1)

Over-parameterized model

Type III decomposition; Std. Error of Estimate: .1160674

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habitat; LS Means

Current effect: $F(2, 10) = 11.490, p = .00256$

Type III decomposition

Vertical bars denote 0.95 confidence intervals
Variability among sites and habitats
Preference of families

TipM.S 3
NauM.S 3
TipM.S 2
NauM.S 2
TipM.S 1
NauM.S 1
Tadpole

Gravel
Sand
Mud
GobGloss
Elm
Ath
LepM.S 2
UniM.S 1
Gom
Bit
EleM.S 1
Apo
MelGloss
Pyr
Mud

- Others: 1%
- Hemiptera: 16%
- Epiproctopora (Anisoptera): 12%
- Decapoda: 20%
- Perciformes: 12%
- Diptera: 6%
- Zygoptera: 10%
- Ephemenoptera: 3%
- Coleoptera: 2%
- Gastropoda: 2%
- Trichoptera: 16%

n = 532
Others 1%

Sand

Hemiptera 14%

Perciformes 12%

Decapoda 8%

Gastropoda 6%

Trichoptera 17%

Epiproctopora (Anisoptera) 28%

Diptera 12%

Ephemeroptera 1%

Coleoptera 1%

Zygoptera 0%

n = 199
Gravel

- Hemiptera: 53%
- Decapoda: 17%
- Trichoptera: 8%
- Diptera: 6%
- Ephemeridae: 5%
- Coleoptera: 0%
- Epiproctopora (Anisoptera): 6%
- Perciformes: 2%
- Others: 1%
- Gastropoda: 1%
- Zygoptera: 1%

n = 421
Summary

• Significant difference among mud, sand and gravel habitats in
  – Number of species (mud = largest, sand=least)
  – Total number of individuals (mud = largest, sand=least)
  – Simpsons Index of diversity : large species diversity in mud compared to sand and gravel.
  – The largest variability was between gravel and sand
Acknowledgements

- Binatang Research Center
- Jan Leps and Vojtech Novotny
- Bonnie and Absolom
- Participants

References:
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TRU!