Do bug flows result in better fishing?

David Rogowski

Arizona Game and Fish Department
Is fishing better during bug flows?

CFS at Lees Ferry guage

Date

31. Jul. 2018
2. Aug. 2018
4. Aug. 2018
6. Aug. 2018
8. Aug. 2018
10. Aug. 2018
12. Aug. 2018
14. Aug. 2018
16. Aug. 2018
18. Aug. 2018
AGFD Creel survey

• 6 days a month
  – 2 weekdays
  – 4 weekends
• Both walk-in and boat access

• For this comparison
• boat anglers: April-August
• Years (2015-2018)

Photo by Dale Gauthier 1 July 2018
Analysis

• Linear model
  – **Response variable:**
    • average angler CPUE per day (Rainbow Trout/hour)
  – **Explanatory variables**
    • Day of year (DOY: 91-243, e.g. April-August)
    • Guided (Y/N)
    • Weekend vs weekday
    • Year (2015-2018)
    • Bug flows (Y/N)
  – Conducted a stepwise procedure forward/backward to select best model (based on AIC)
### Full model results with interactions

**Type III sums of squares**

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>Sum of Sq</th>
<th>RSS</th>
<th>AIC</th>
<th>F value</th>
<th>Pr(&gt;F)</th>
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</thead>
<tbody>
<tr>
<td><strong>Year</strong></td>
<td>3</td>
<td>0.115</td>
<td>2.22</td>
<td>-998</td>
<td>3.73</td>
<td>0.0123</td>
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<td><strong>Day of year</strong></td>
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<td>0.458</td>
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<td><strong>Weekend/day</strong></td>
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<td>-1004</td>
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<tr>
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<td>2.24</td>
<td>-992</td>
<td>12.9</td>
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<td>3.39</td>
<td>-900</td>
<td>124</td>
<td>&lt; 0.0001</td>
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<td>0.102</td>
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</table>
## Model results

Type III sums of squares

<table>
<thead>
<tr>
<th></th>
<th>Df</th>
<th>Sum of Sq</th>
<th>RSS</th>
<th>AIC</th>
<th>F value</th>
<th>Pr(&gt;F)</th>
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<tbody>
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<td>1.32</td>
<td>3.64</td>
<td>-903</td>
<td>122</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Model results

- Least square means – takes into account other variables (e.g. Year, DOY, weekend/weekday, guided)
Model results for boat anglers
2018 data only

G. Andrejko
Conclusions

• Preliminary results indicate fishing is better during bug flows

• Why?

  • **Response of fish**
    • Behavior – movement, more accessible?
    • Less insects to eat in drift, trout hungrier, more likely to strike a lure?

  • **Response of anglers**
    • Change in behavior/technique (guides?)
    • Accessibility to certain riverine features
Acknowledgements

• AGFD: Pilar Wolters, Kristy Manuell
• AGFD interns
  – Marshall Lindsay (2018)
  – Daniel Pasminski (2017)
  – Christina Madonia (2016)
• Steve Harding