



Managing Recreational Fisheries in Maryland: Two Survey-Based Approaches Examining Harvest Rates and Participation



MIAMI

Rebecca Wagner
Mentor: Dr. Scott Knoche
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Part One: Brook Trout Creel Survey

Introduction

- Brook trout are a popular target for recreational fishing
- Regarded by conservationists as an indicator species
- Concern: population extirpated throughout most of Maryland
- Survey will help provide MD DNR with current population and fishing effort

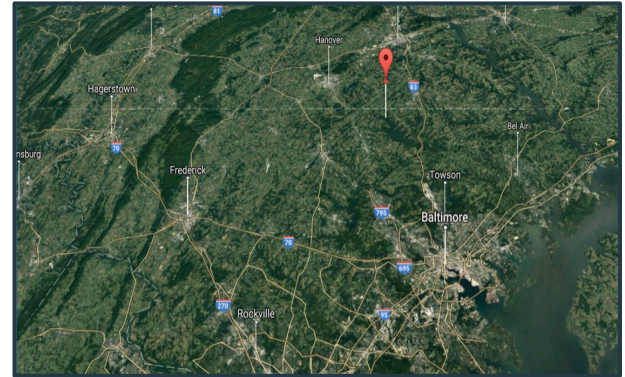
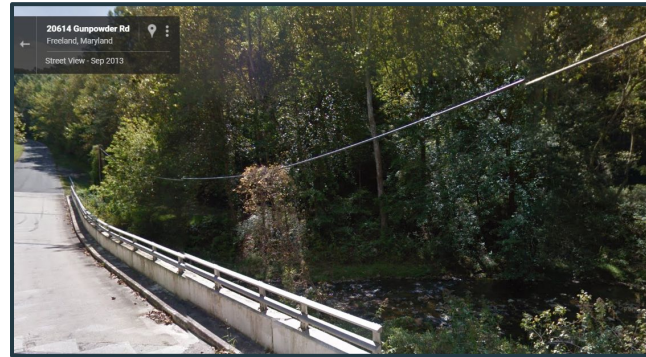


Research Objective

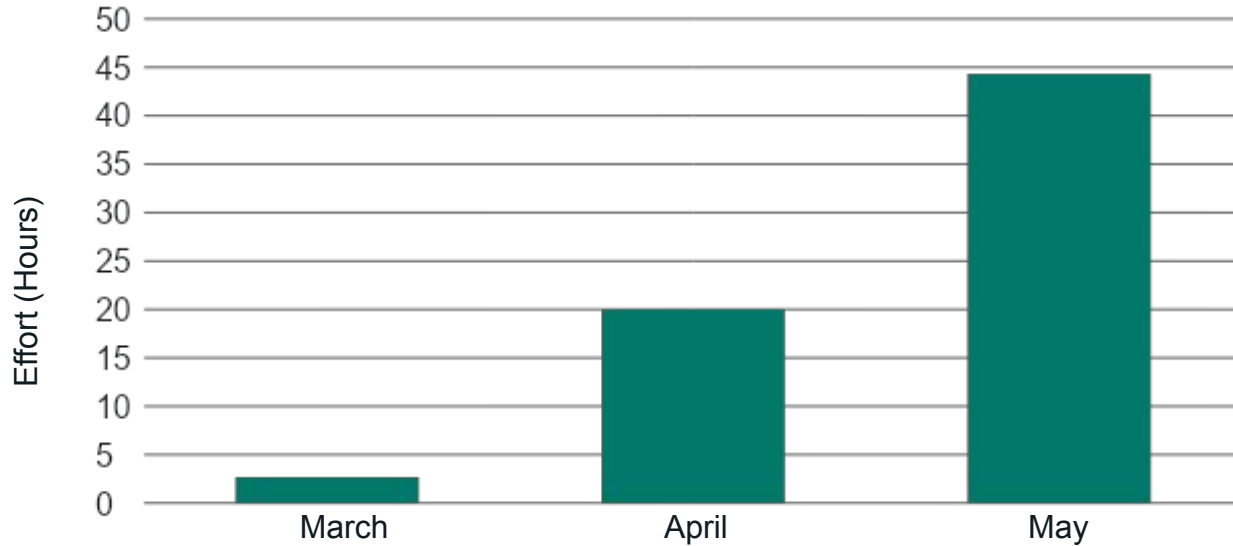
Objective: *Implement a creel survey to estimate brook trout fishing effort, catch, and harvest in a key watershed in Maryland*

Methods

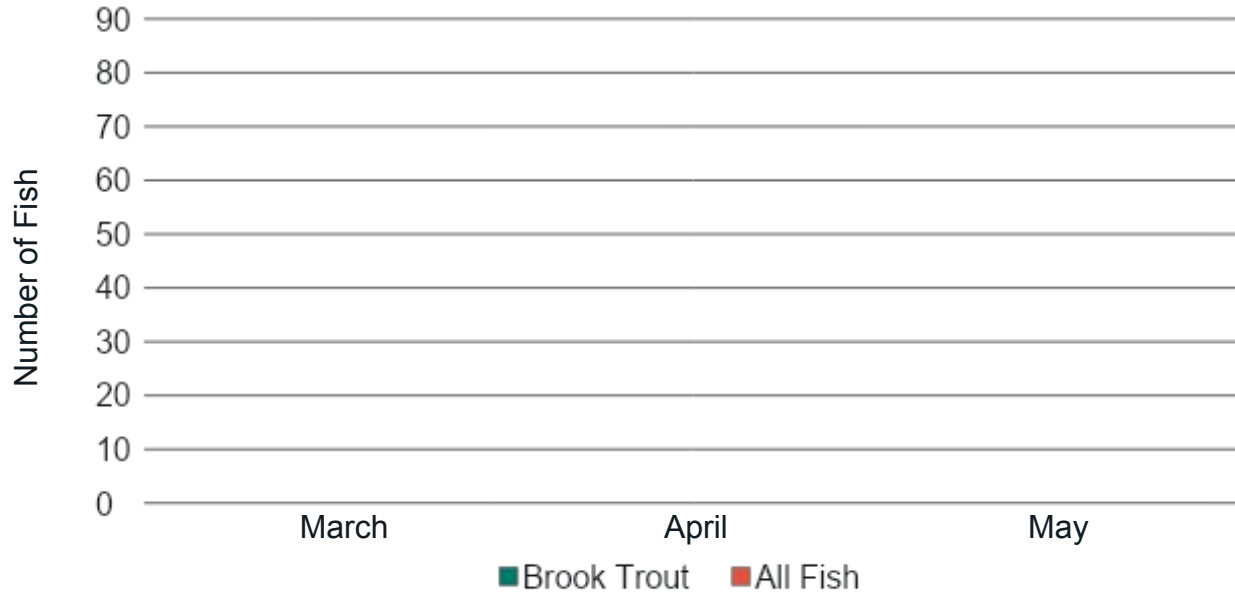
- Who?
 - Survey personnel: MD DNR
 - Target: recreational anglers
- What?
 - Access point survey
- Where?
 - Upper Gunpowder River
- When?
 - Implemented on randomly selected days and times



Results: Estimated Effort



Results: Estimated Catch



Results: Estimated Harvest

- No anglers reported harvesting fish
- First glance: overharvest does not appear to be a concern
- However, fish mortality from live bait may be a potential problem





Part Two: Factors Influencing Angler Participation

Introduction

- 227,000 anglers hold licenses, and anglers spend 2.5 million days fishing in Maryland each year
- Maryland recreational fishing provides valuable revenue for the state
- Survey will help managers improve fishery quality by understanding preferences
- Better management has the potential to increase recruitment and retention



Research Objective

Objectives:

*Quantify factors affecting angler participation
in terms of license purchases and trips taken*

*Examine how these factors differ between
demographic groups of interest*

Survey Methods and Focus

- **Methods**

- Survey sent to 4,300 anglers with current fishing licenses (25.1% response rate)
- Conducted online and with mail (up to four contacts)

- **My Focus**

- Examine factors influencing participation
- How participation is affected by individual characteristics

29.

For this question, please think about what factors affect how often YOU go fishing in Maryland Non-Tidal Waterways. Please indicate how much you agree or disagree with the following statements:

I WOULD GO FISHING MORE OFTEN IN MARYLAND NON-TIDAL WATERWAYS IF...

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
I was able to catch more fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
access to fishing sites was better	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I knew when and where to fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
environmental quality was higher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
regulations were less restrictive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
fishing areas were less crowded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
fishing was less expensive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had somebody to go with	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was able to catch larger fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had more leisure time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Statistical Analysis

- Methods
 - Assign numerical values to priority responses
 - Determine means for each factor
 - Determine most important factors among respondents
 - Use two sample t-tests to compare importance between groups
 - Millennials vs other generations
 - Anglers who fished vs anglers who did not fish in 2015

Results: All Respondents

I WOULD GO FISHING MORE OFTEN IN MARYLAND NON-TIDAL WATERWAYS IF.....		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Average
	I was able to catch more fish	4%	10%	31%	36%	20%	3.57
	access to fishing sites was better	3%	10%	32%	37%	18%	3.56
	I knew when and where to fish	5%	10%	30%	38%	17%	3.51
	environmental quality was higher	4%	10%	41%	32%	14%	3.43
	regulations were less restrictive	9%	21%	45%	17%	8%	2.93
	fishing areas were less crowded	5%	12%	37%	32%	14%	3.40
	fishing was less expensive	9%	19%	44%	19%	9%	3.02
	I had somebody to go with	9%	18%	38%	25%	10%	3.08
	I was able to catch larger fish	5%	10%	35%	33%	17%	3.47
	I had more leisure time	5%	7%	27%	29%	33%	3.79



Results: Millennials

- Very different priorities from other generations
- Observed that millennials placed a higher importance on the following factors:
 - The ability to catch more fish ($p < 0.01$)
 - Crowding of fishing areas ($p < 0.01$)
 - The expense of fishing ($p < 0.01$)
 - The ability to catch larger fish ($p < 0.01$)
 - Having more leisure time ($p < 0.01$)



Results: Non-Fishing License Holders

- Similar priorities as respondents who did fish
- Observed that non-fishing anglers placed a lower importance on the following factors...
 - Catching more fish ($p < 0.01$)
 - Catching larger fish ($p < 0.01$)
- 2nd most important factor: accessibility to fishing sites



Recommendations to Management

- Results may indicate a need to increase the number of fishing options close to cities
 - Less time needed to take trips
- Work to appeal to millennial anglers
 - Increase stocking
- Work to appeal to anglers who did not fish
 - Increase accessibility
 - More paths, ramps
- Evaluate the most important factors to maintain and increase license purchases and trips



Thank you!