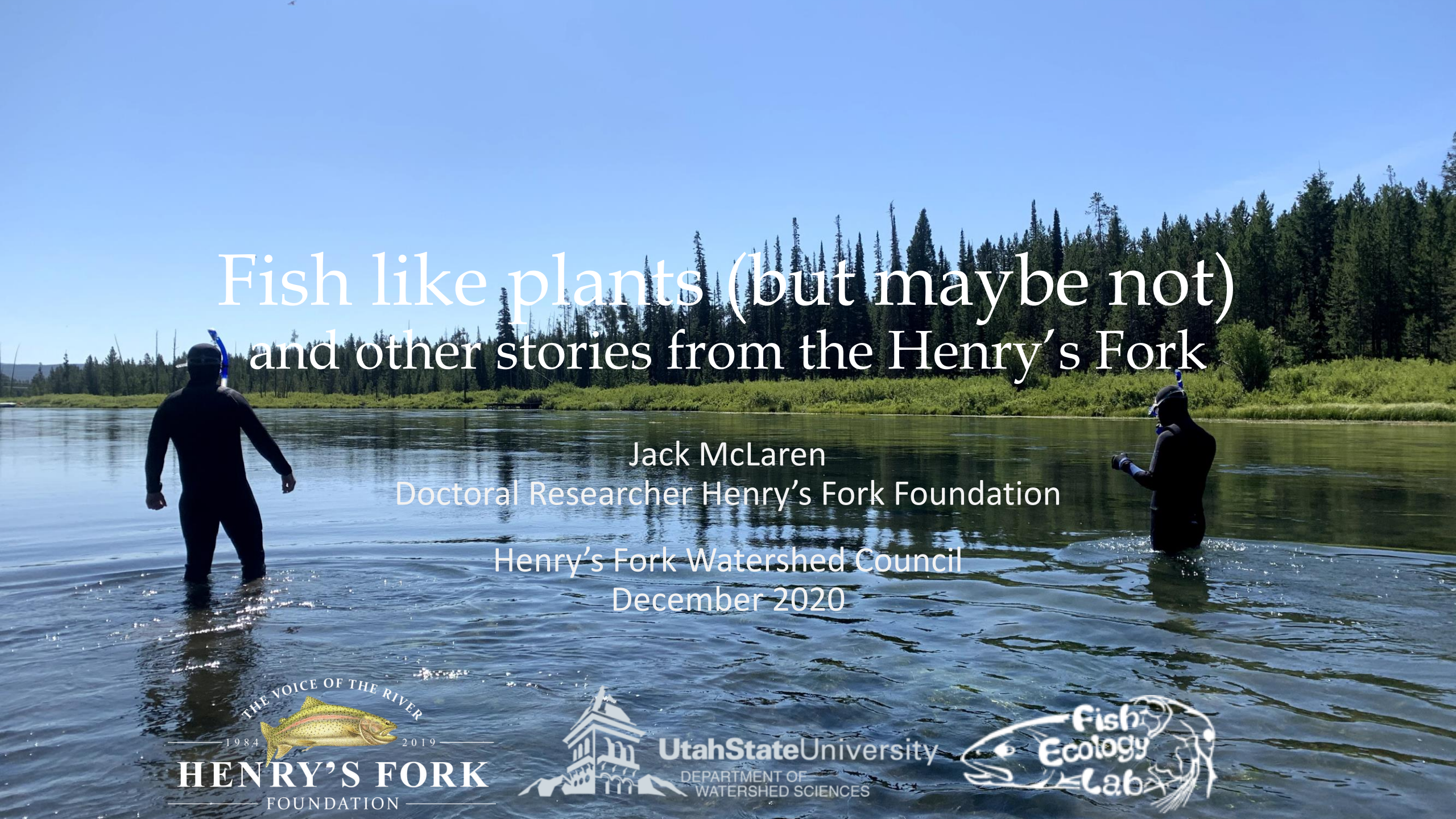

Fish like plants (but maybe not)
and other stories from the Henry's Fork

Jack McLaren
Doctoral Researcher Henry's Fork Foundation

Henry's Fork Watershed Council
December 2020

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1984 2019
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The Upper River Fishery: an opportunity

- Economic:
  - Part of HF's $30 million impact
  - Center of relatively fast commercial and second-home development

https://www.marriott.com/hotels/travel/idasl-springhill-suites-island-park-yellowstone/

The Upper River Fishery: an opportunity

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- Economic:
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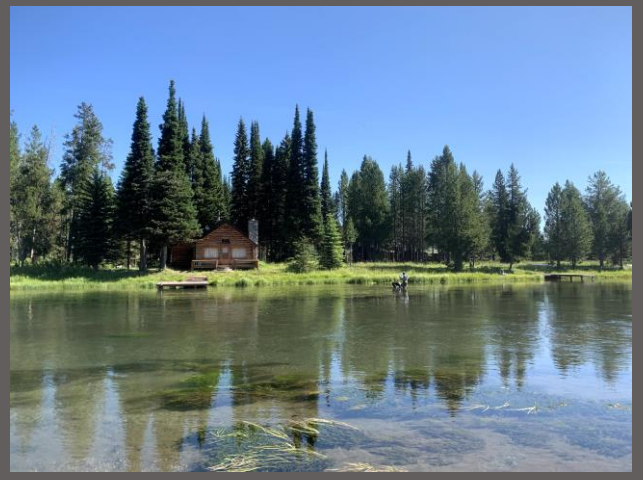
  - Refugia against drought and water shortage
  - Spawning habitat for native and non-native sport fish
- Social
  - Popular family fishery
  - Aesthetically beautiful

https://www.marriott.com/hotels/travel/idasl-springhill-suites-island-park-yellowstone/



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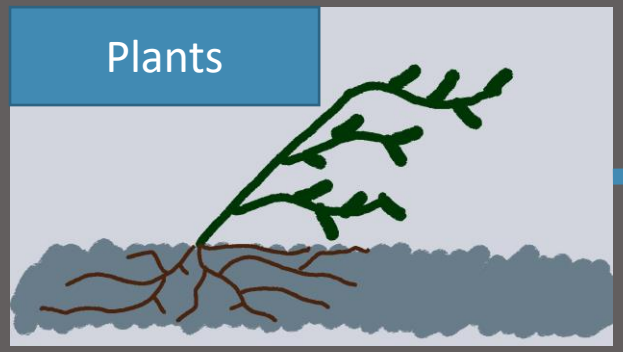
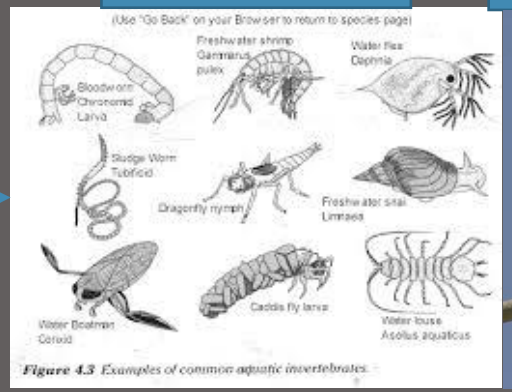
The problem with the Upper River Fishery

- The Henry's Fork upstream of Island Park Reservoir has been in decline for a long time, but we're not certain why
- One theory: submerged aquatic plants

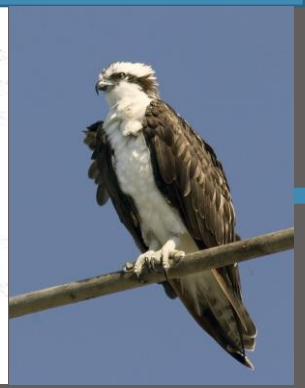
Plants



Food



Shelter



More and bigger fish

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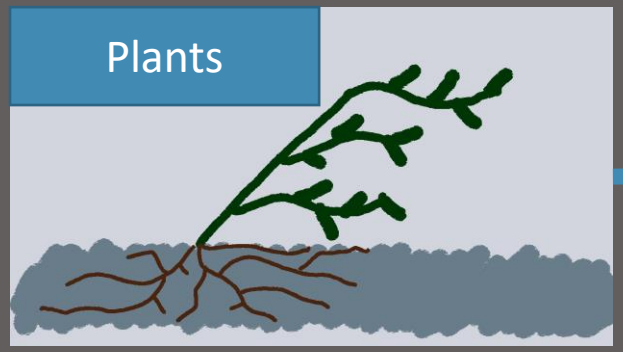
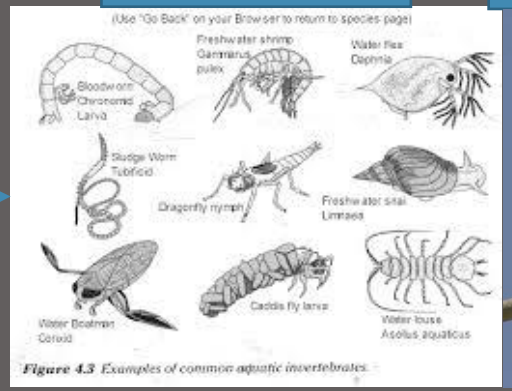
The problem with the Upper River Fishery

- Locals tell us submerged plants are in decline in the Henry's Fork
- Perhaps submerged plants can act like kelp or coral in the oceans

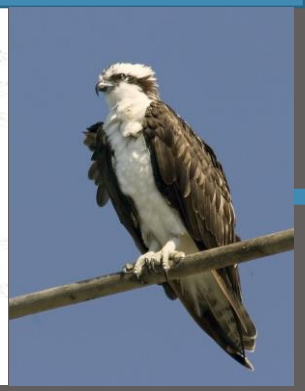
Plants



Food



Shelter



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Fish habitat use study

Question:

How do fish use submerged plants for habitat in the upper Henry's Fork?

Hypotheses:

Fish will prefer deeper water

Fish will be found in or near submerged vegetation

Fish habitat preferences will vary based on location

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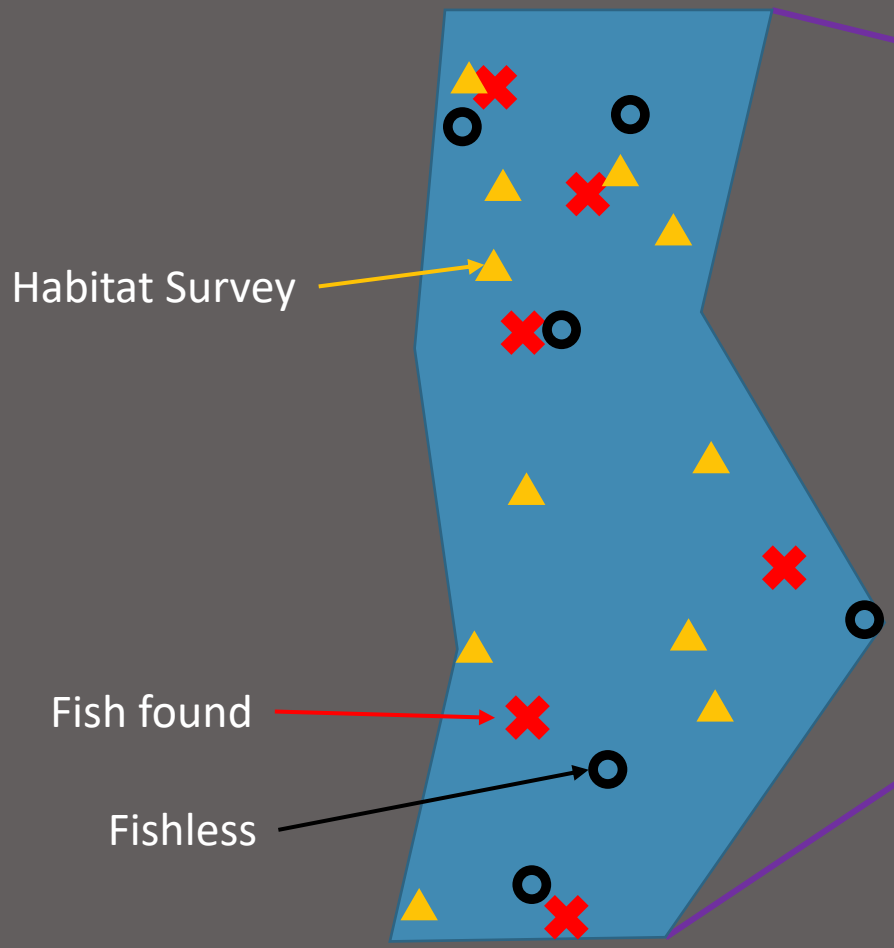

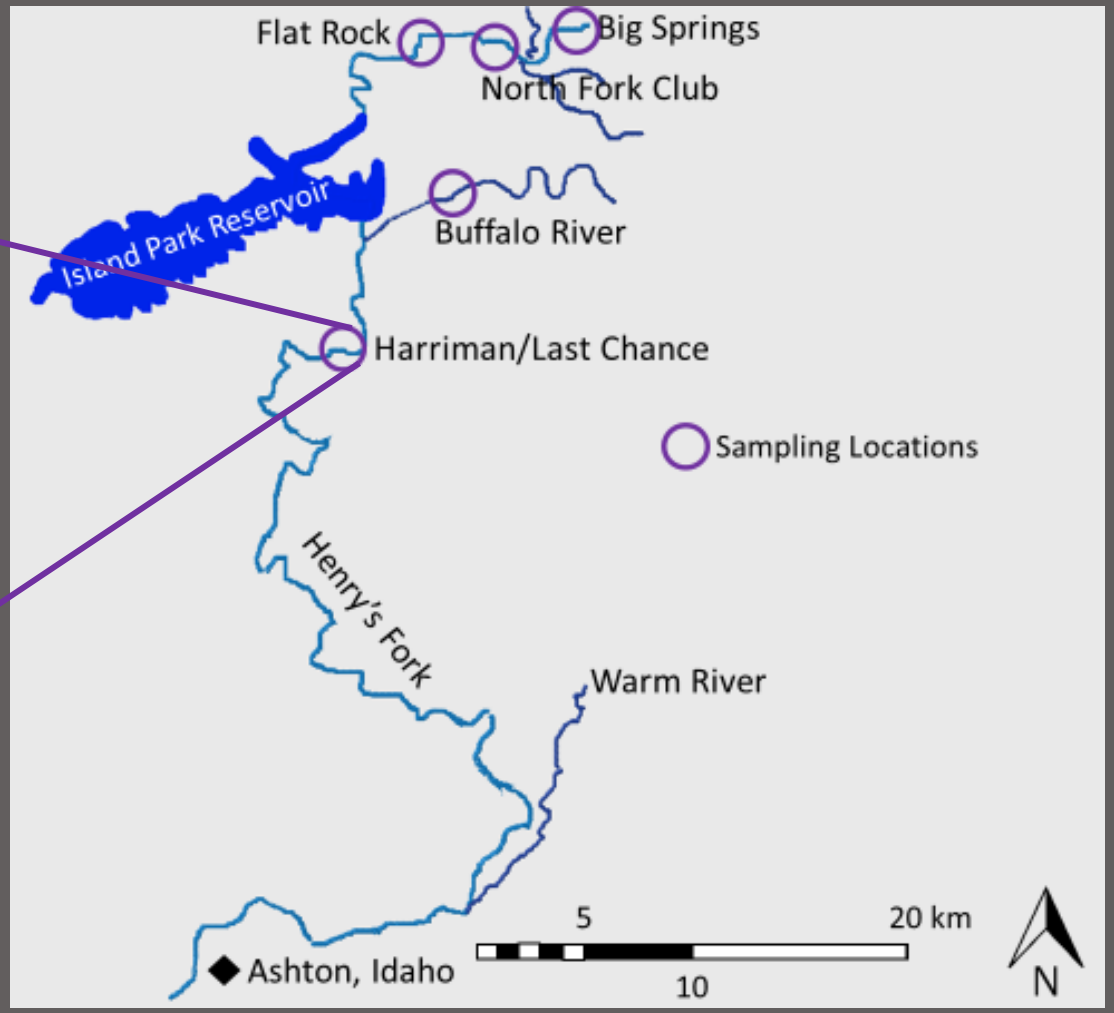

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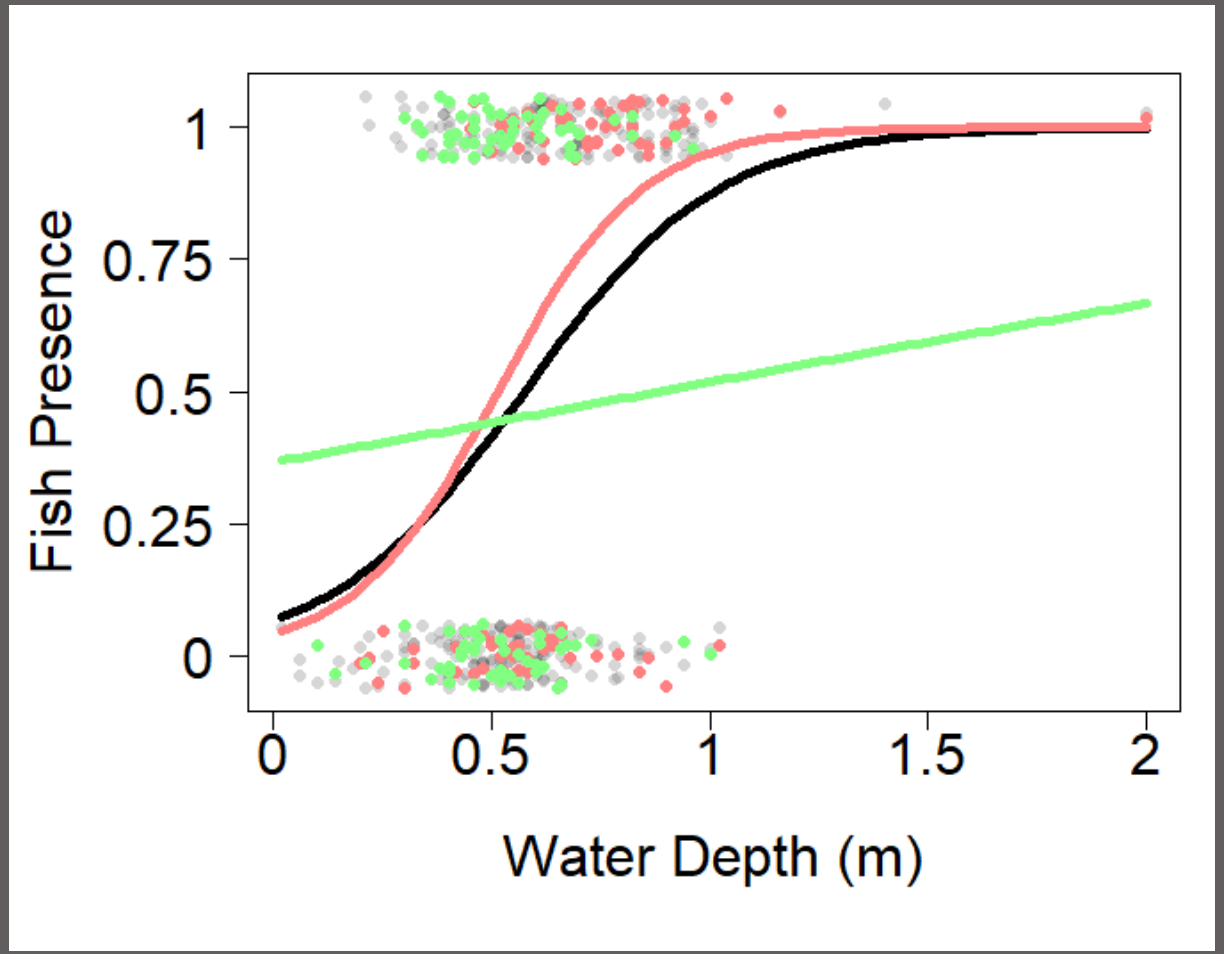
Fish prefer greater depths



Fish Size:

All

Big

Small

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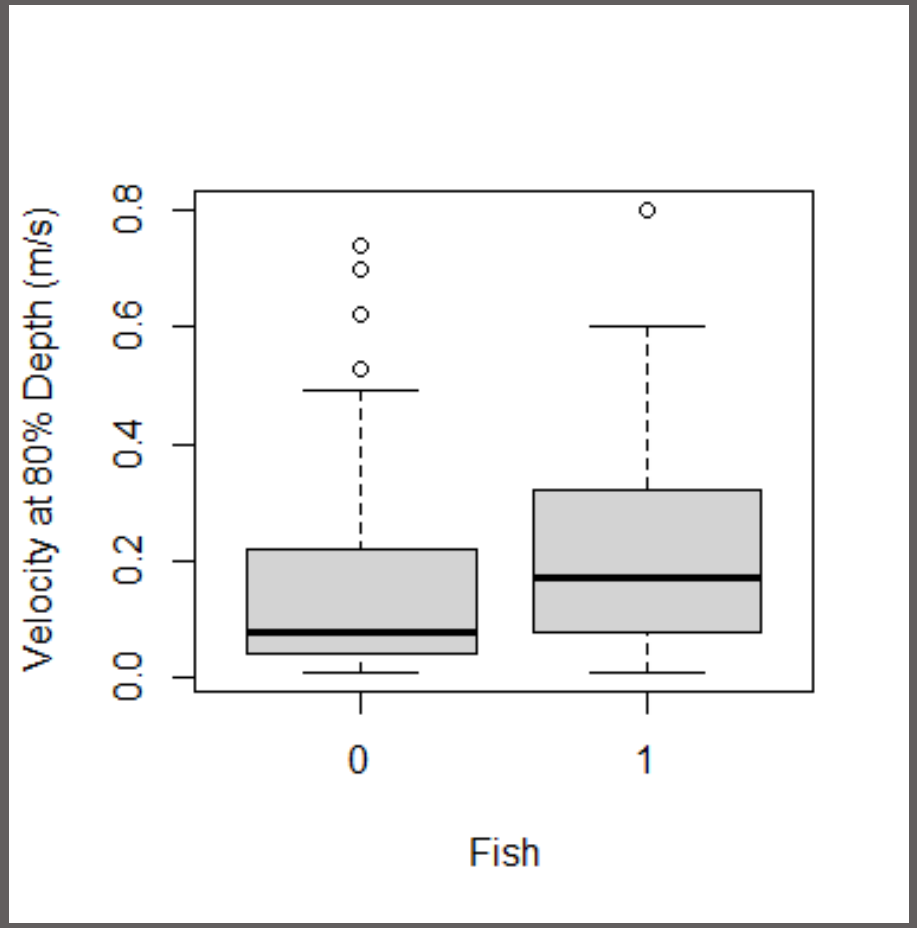
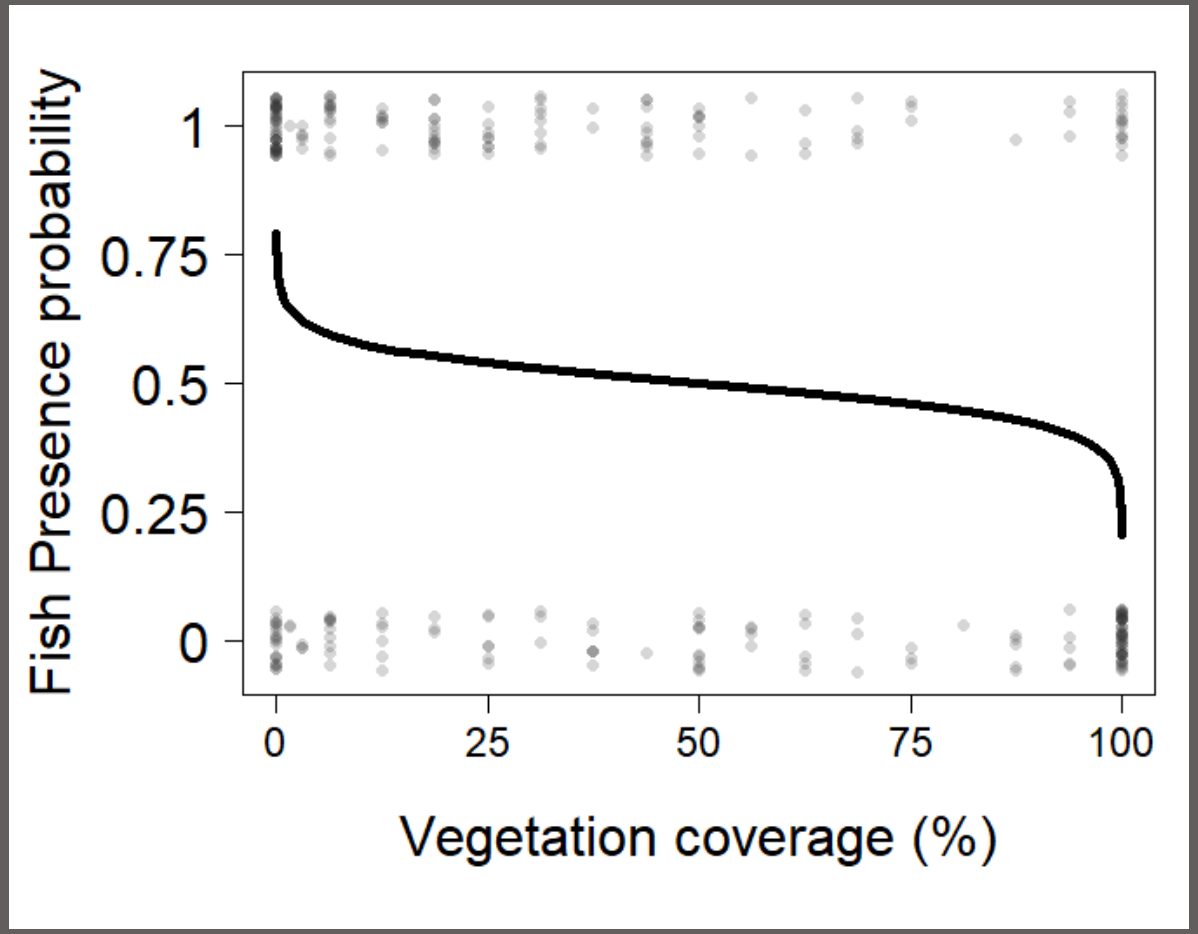
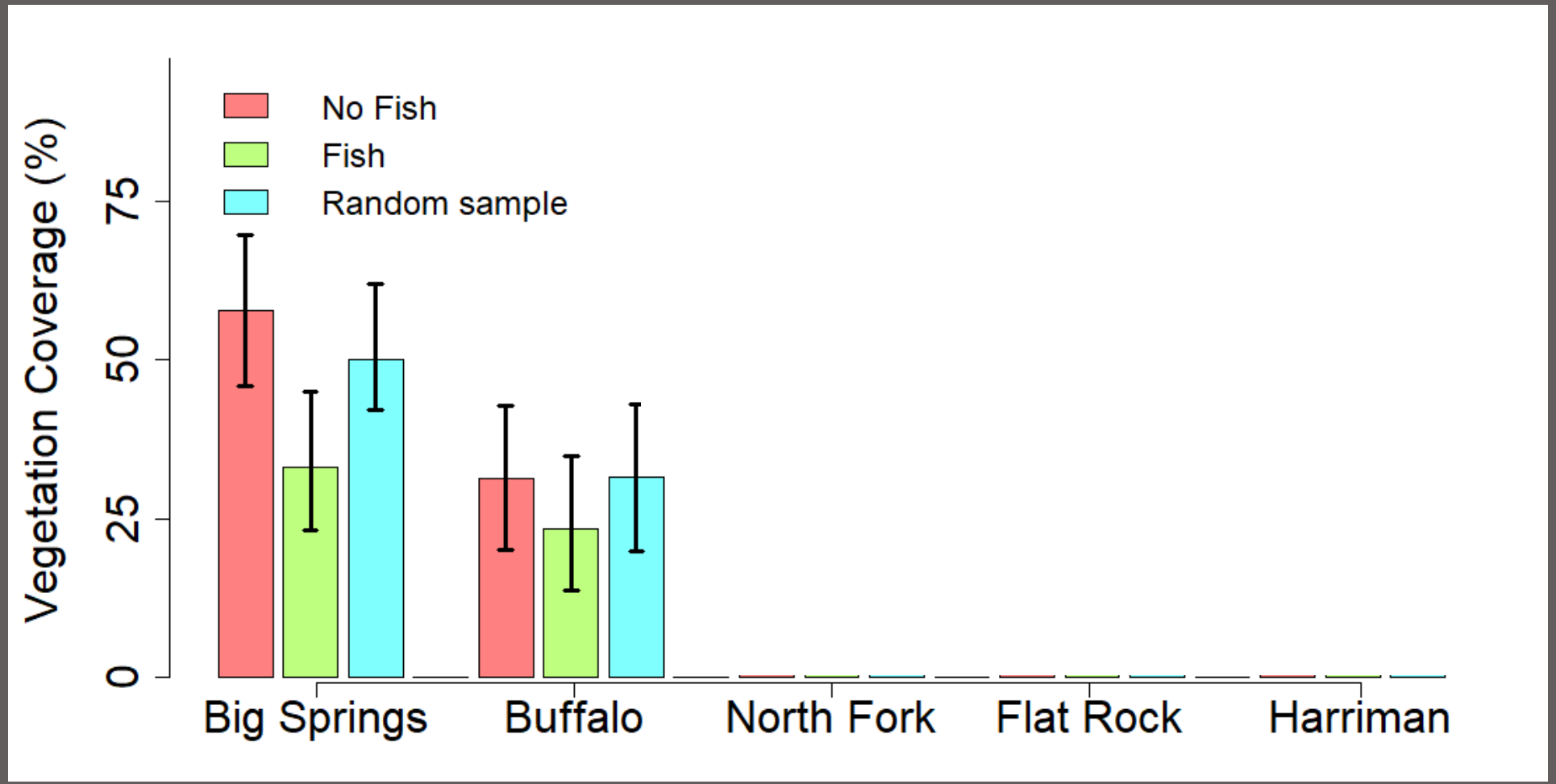
Fish prefer greater depths, higher velocities



Fish prefer greater depths, higher velocities, and fewer plants



Habitat selection vs. total availability



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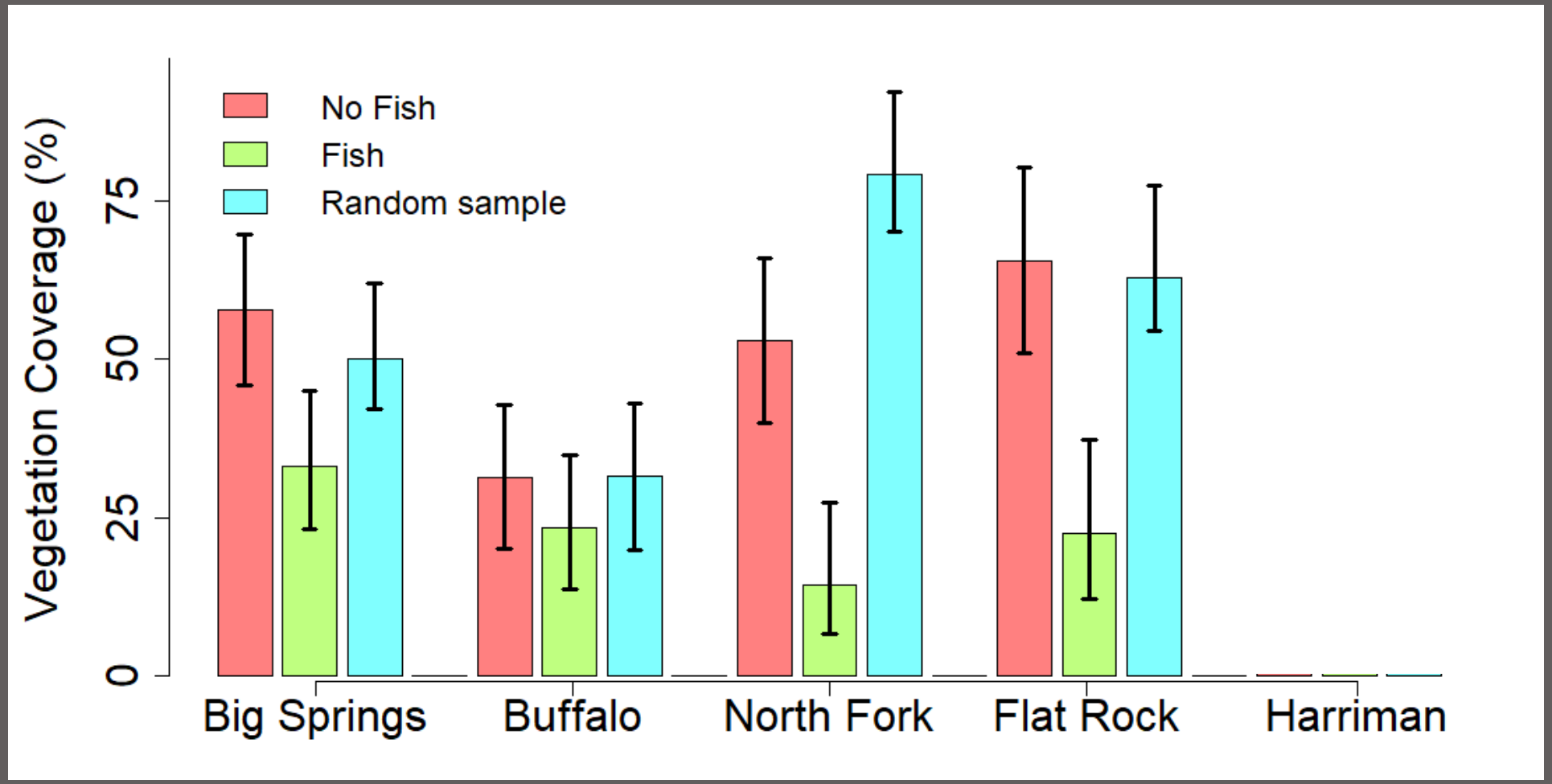
Habitat selection vs. total availability



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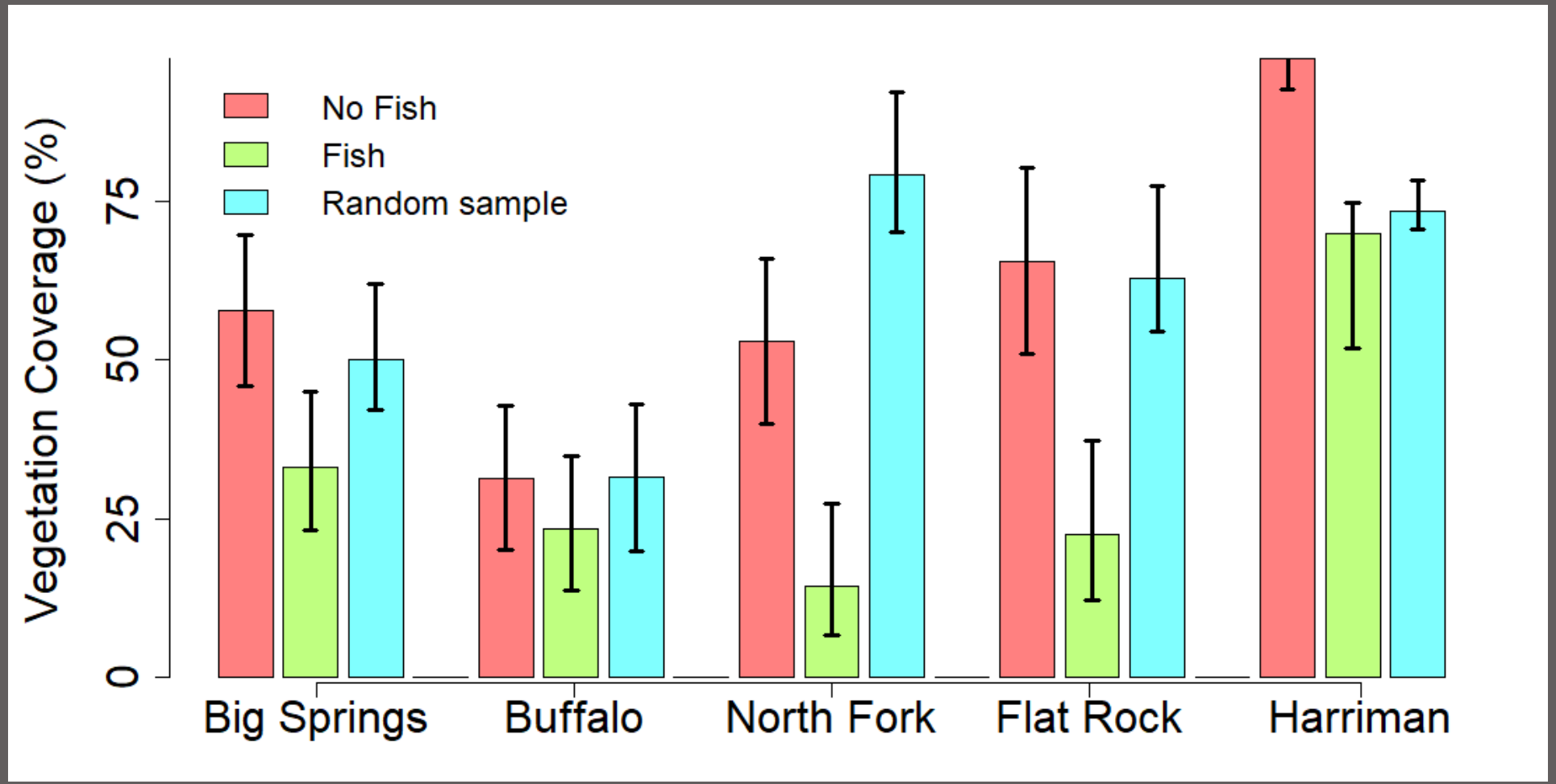

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Conclusion: The relationship between fish and plants is complicated

Question:

How do fish use submerged plants for habitat in the upper Henry's Fork?

Hypotheses:

Fish will prefer deeper water ✓

Fish will be found in or near submerged vegetation ✗

Fish habitat preferences will vary based on location ✓

Future questions

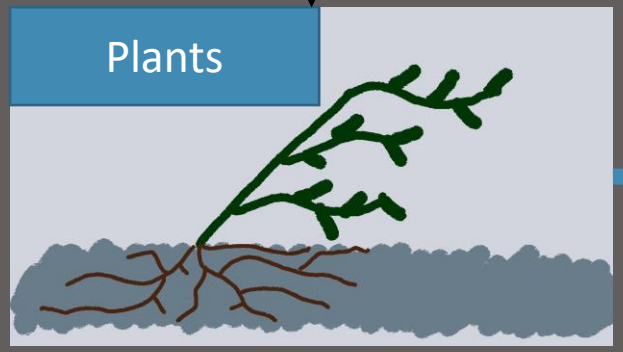
- More study of current results: does time of year make a difference?
- Bioenergetics & Ecosystem metabolism: how important is food for fish?
- Bigger picture
  - What role does Island Park Reservoir play?
  - How do nutrients fit into this picture?

Benefits

- Reduce uncertainty
- See the big picture

Nutrient management

Plants



Food

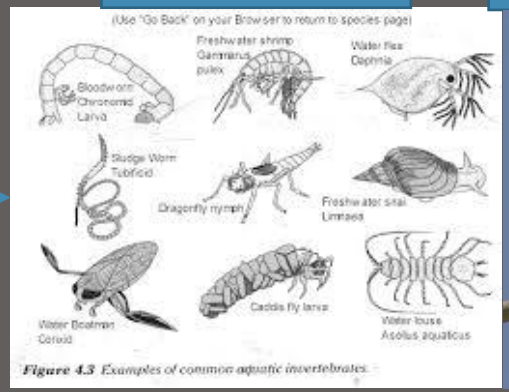
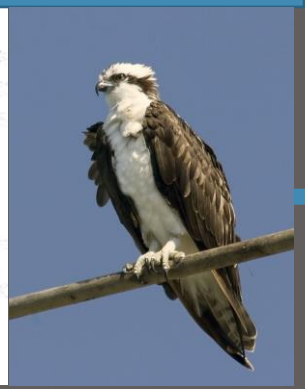


Figure 4.3 Examples of common aquatic invertebrates.

Shelter



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