



Oregon State
UNIVERSITY

Fish Diets in Upper Willamette Reservoirs

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**US Army Corps
of Engineers®**





Chinook

Oncorhynchus tshawytscha



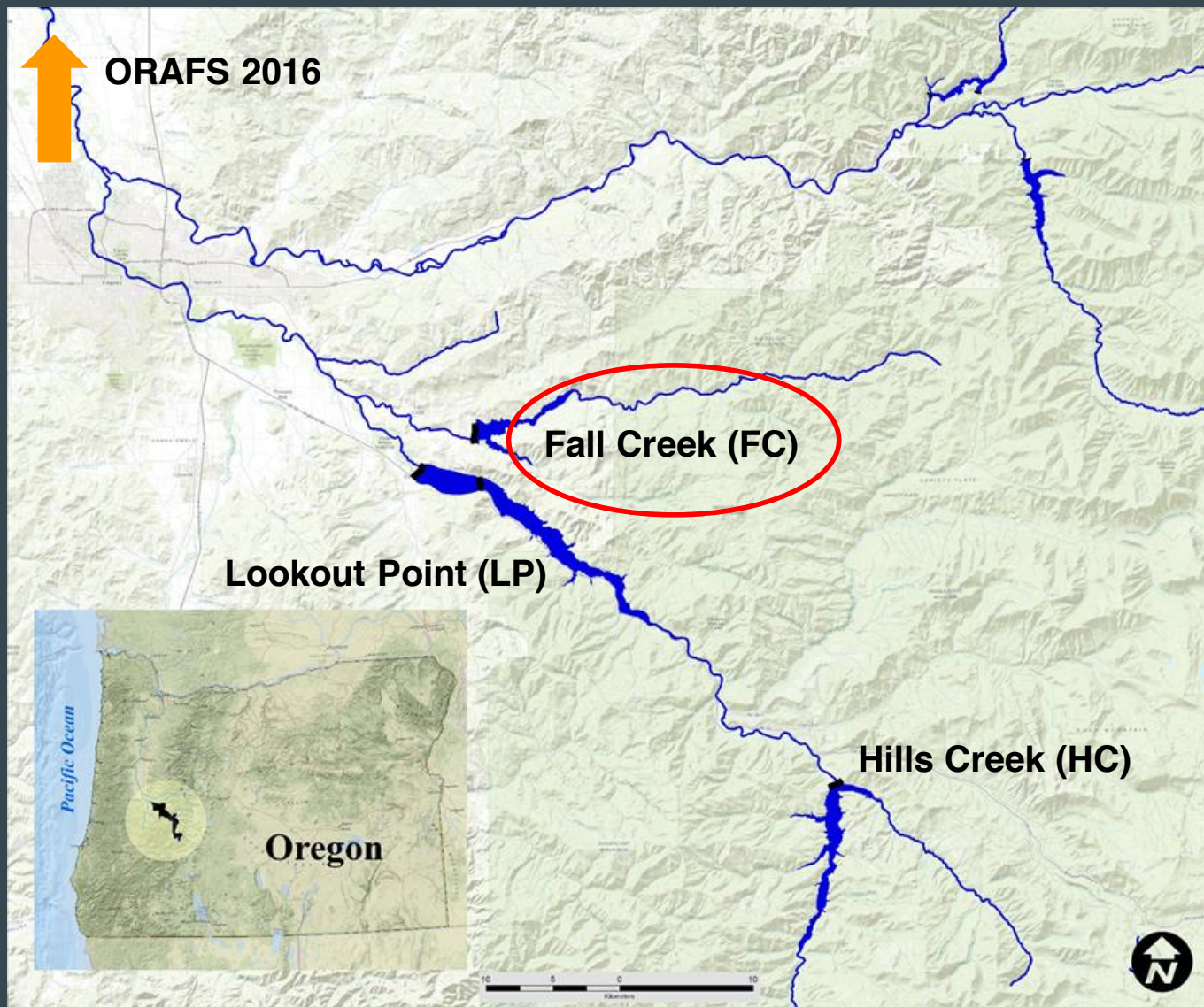
Bluegill

Lepomis macrochirus



Largemouth Bass

Micropterus salmoides







Methods

- Gut samples were lethal takes from other projects
- These projects provided us with weights and information on aquatic insects and fish from the reservoirs
- Stomachs were removed and preserved in ethanol
- Preserved guts were dissected and contents analyzed



Data Analysis

- Proportions were taken from guts with contents
- Biomass was calculated from dry mass of specimens collected from the same three reservoirs.
- Fish Biomass was calculated by average weight of comparable prey fish collected from reservoirs, then converted using a dry mass equation.

Categories

- Daphnia
- Terrestrial Insects
- Other Terrestrial
- Aquatic Insects
- Other
- Fish

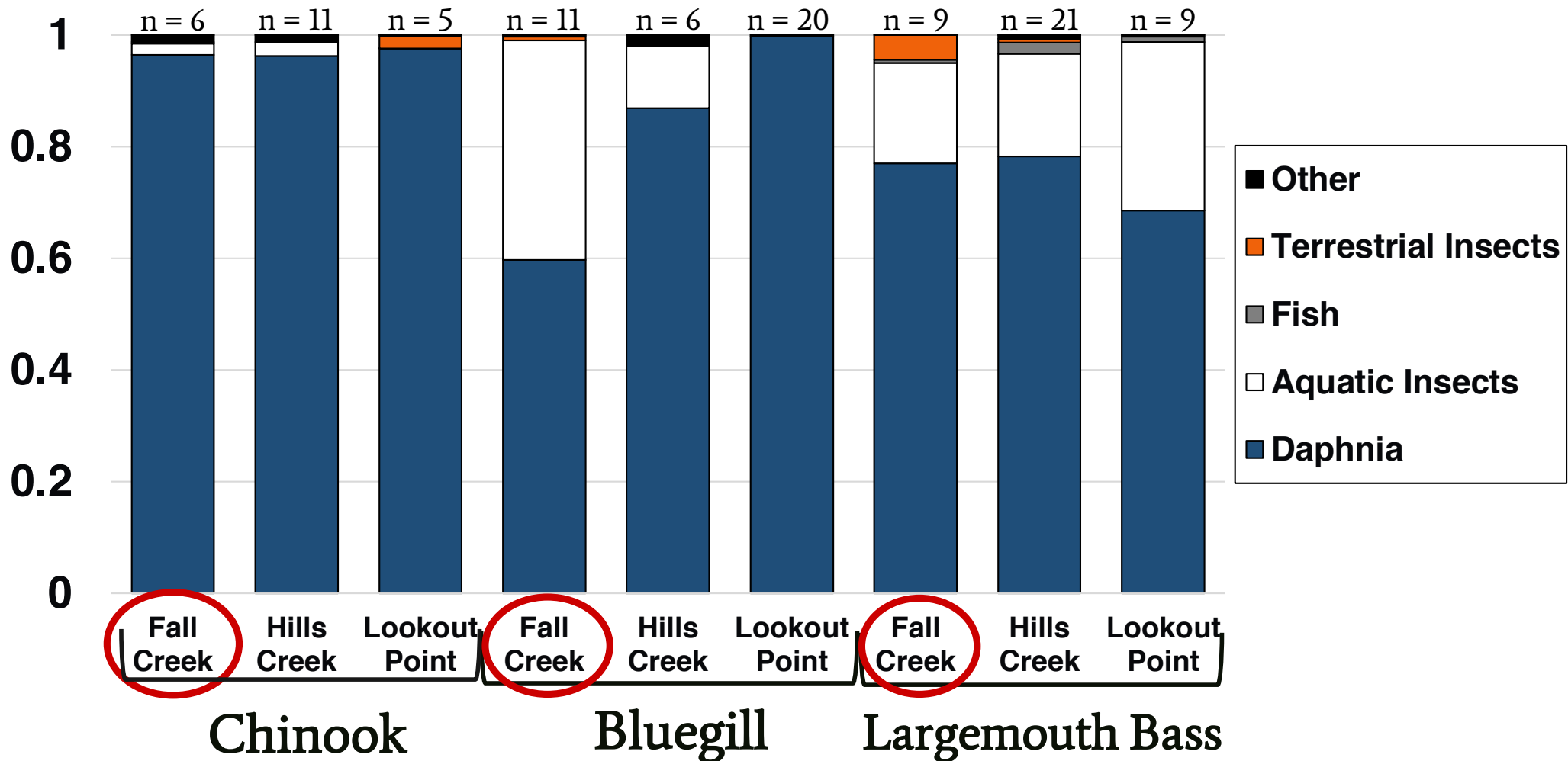


1.1 mm

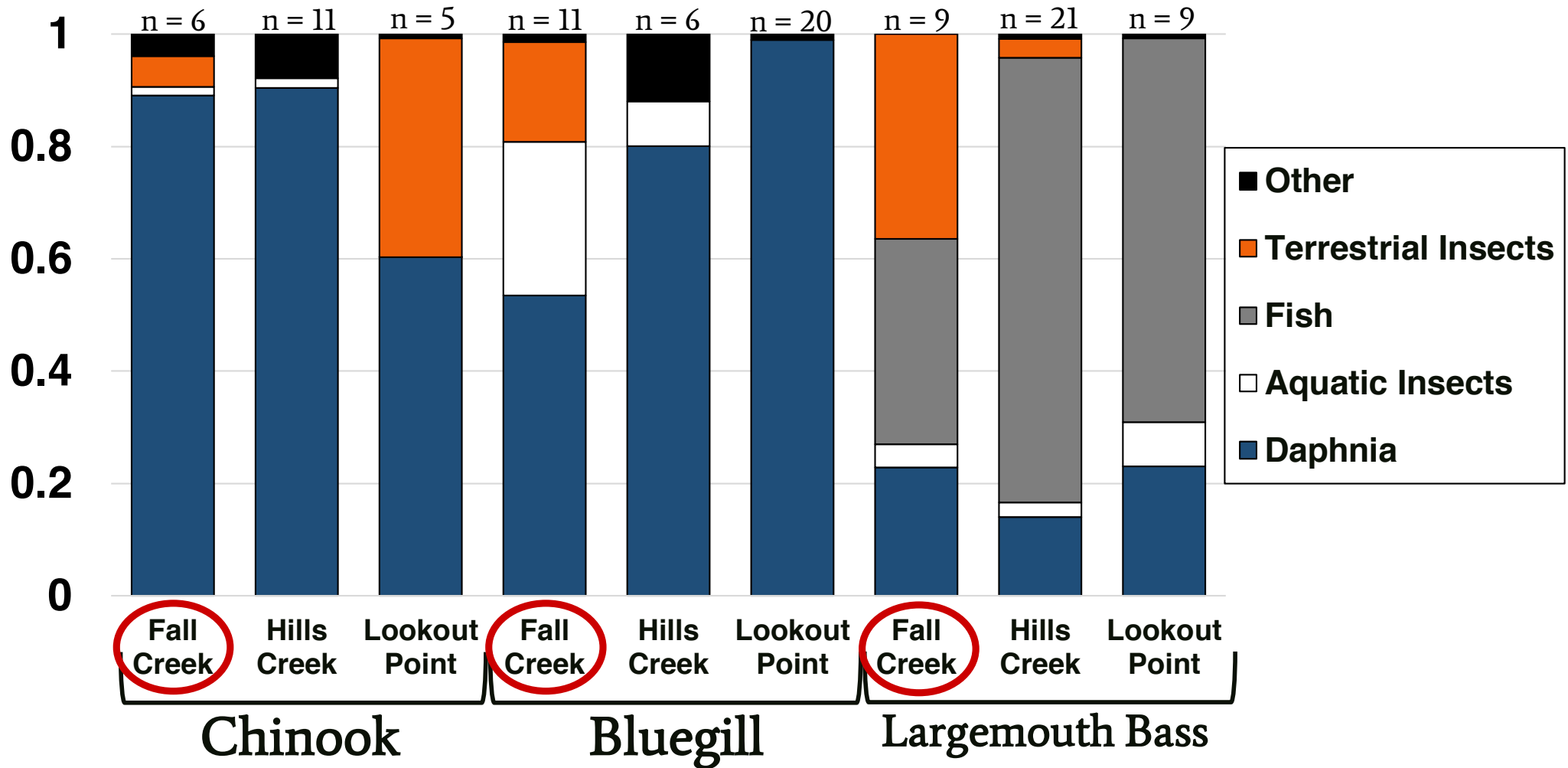


Daphnia photo courtesy of discoverlife.org

Proportion of Counts



Proportion of Biomass



Index of Relative Importance

- Proportion of count, numerous but very small items can overwhelm the analysis
- Proportion of biomass, singular large items overwhelm the analysis
- IRI integrates these proportions and the frequency of occurrence for a more appropriate analysis of contents

$$\% \text{ IRI} = \frac{(\% \text{ by number} + \% \text{ by weight}) * (\% \text{ frequency of occurrence})}{\sum \text{IRI}} * 100$$

What we expected to see:

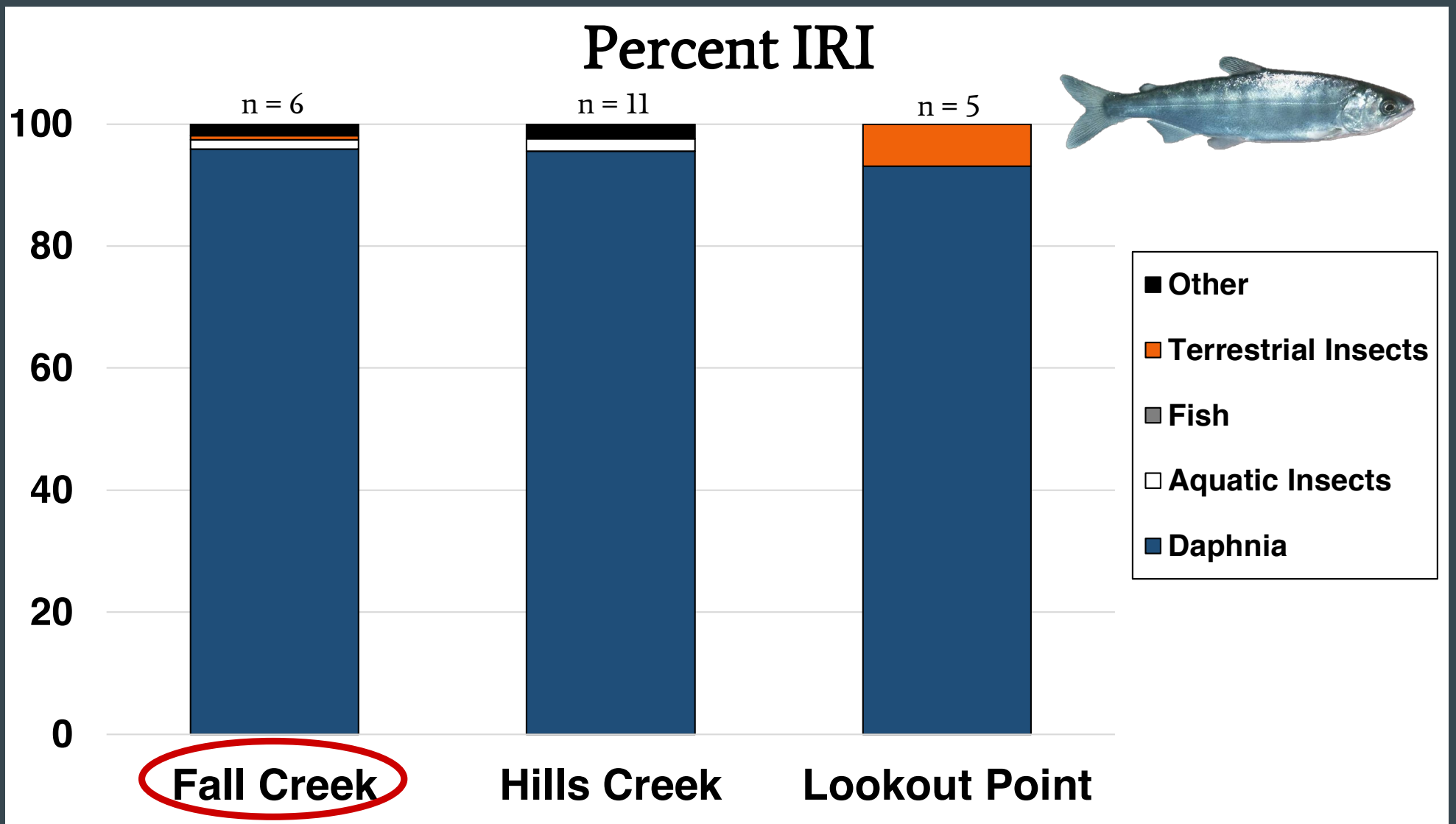


Chinook

What we expected to see: Daphnia?



Chinook



What we expected to see:



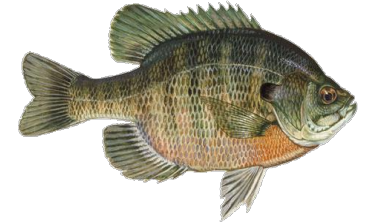
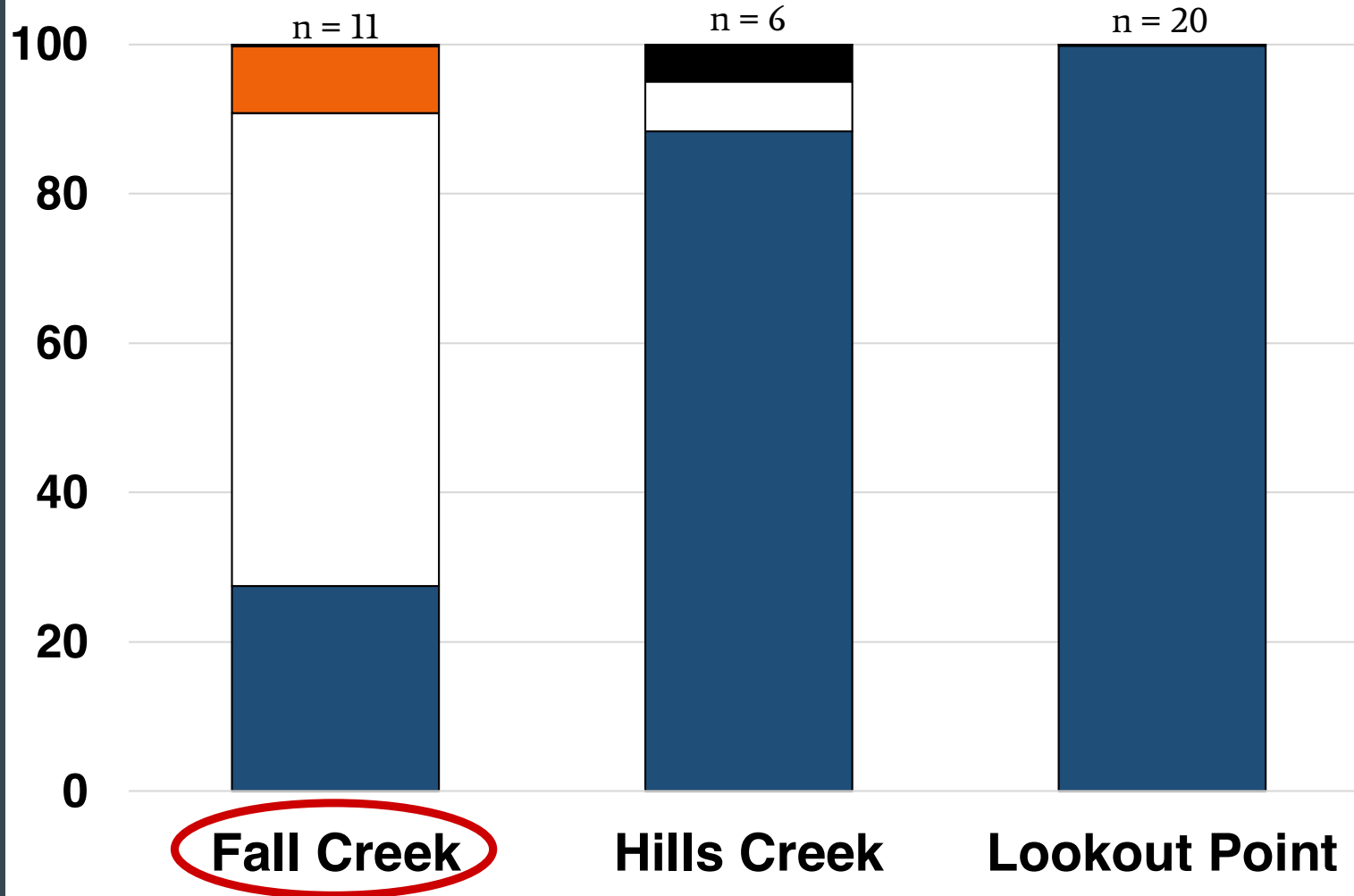
Bluegill

What we expected to see: Daphnia?



Bluegill

Percent IRI



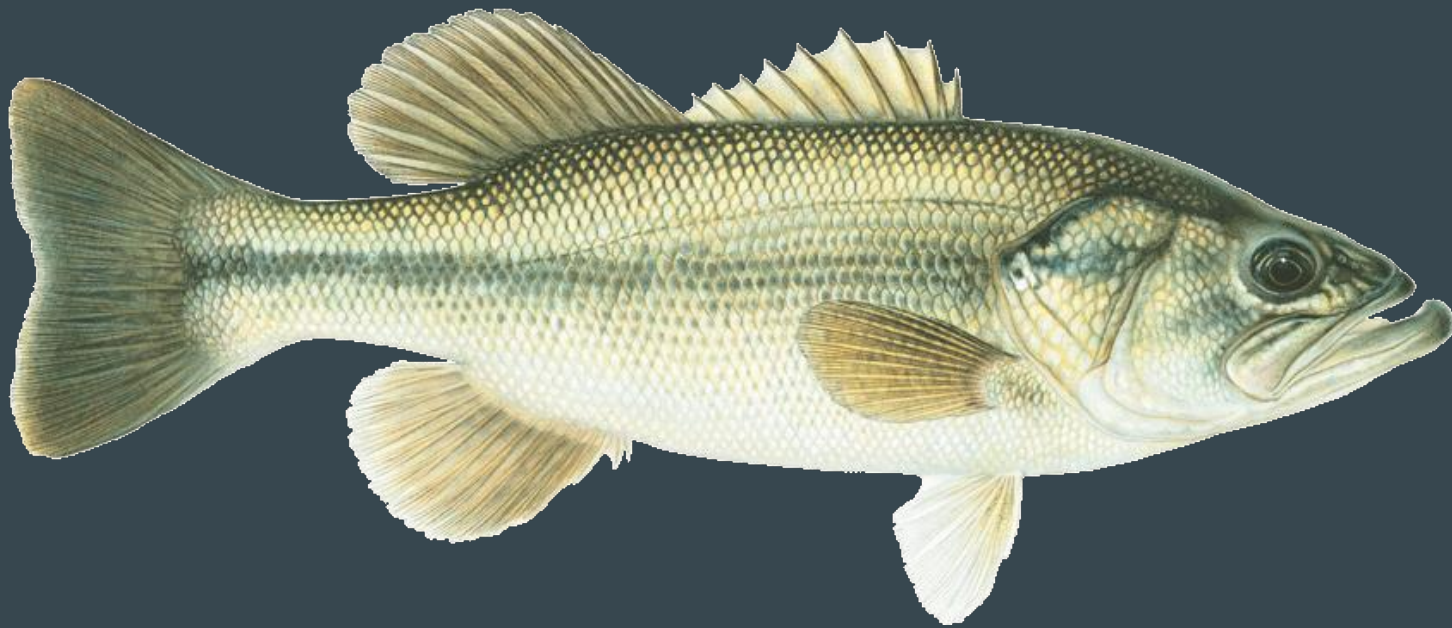
- Other
- Terrestrial Insects
- Fish
- Aquatic Insects
- Daphnia

What we expected to see:



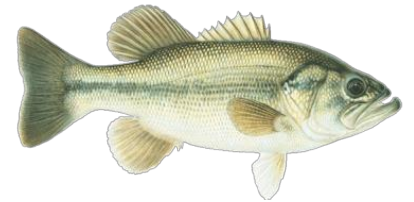
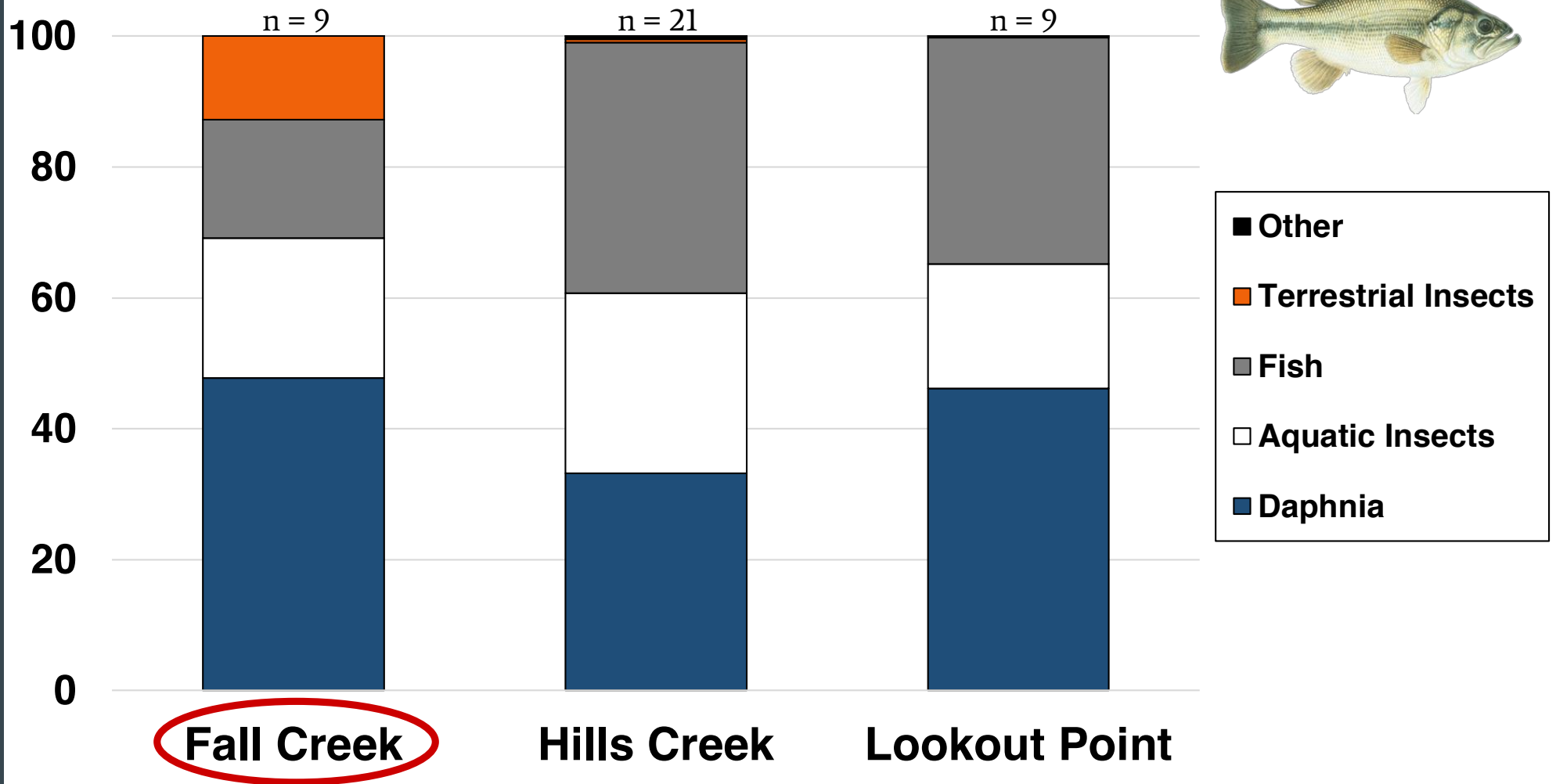
Largemouth Bass

What we expected to see: Fish?



Largemouth Bass

Percent IRI



Interesting Findings



Bass found inside the stomach of another bass

- Species: Largemouth Bass
- Location: Hills Creek
- Size: 97 mm, 13 grams

Interesting Findings

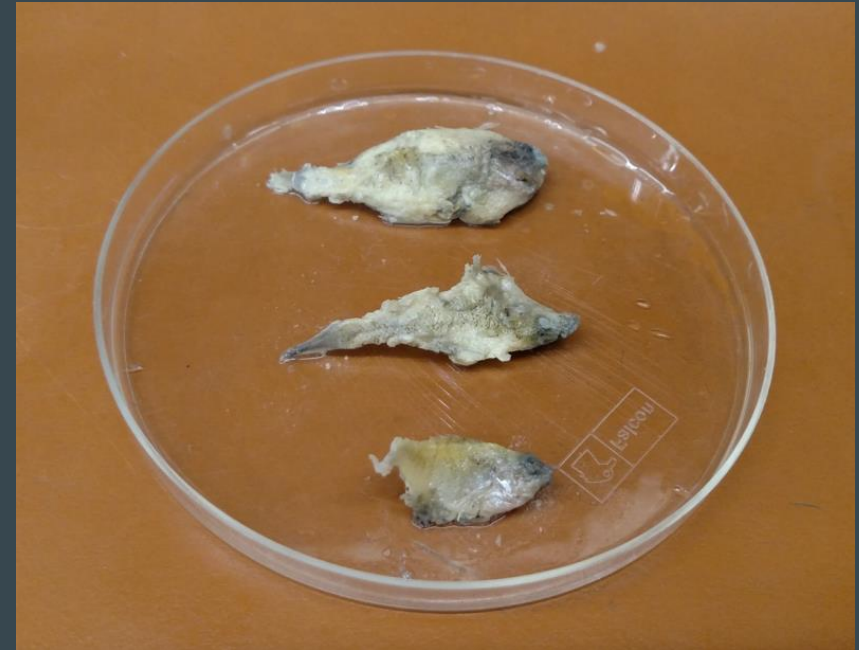
SPIDERS



- Species: Chinook
- Location: Fall Creek
- Size: 198 mm, 89.2 grams

Interesting Findings

- Species: Smallmouth Bass
- Location: Lookout Point
- Size: 141 mm, 48.2 grams



4 fish found in this stomach,
appear to be bluegill

Next Steps



- Size vs. diet analyses
- Additional samples and species
 - Rainbow Trout
- Comparing stomach contents to stable isotope ratios

Acknowledgments

- Kailin Mackereth
- Bill Gerth
- OSU Fisheries and Wildlife Mentorship Program
- Fish
 - Army Corps of Engineers
 - ODFW

Questions?