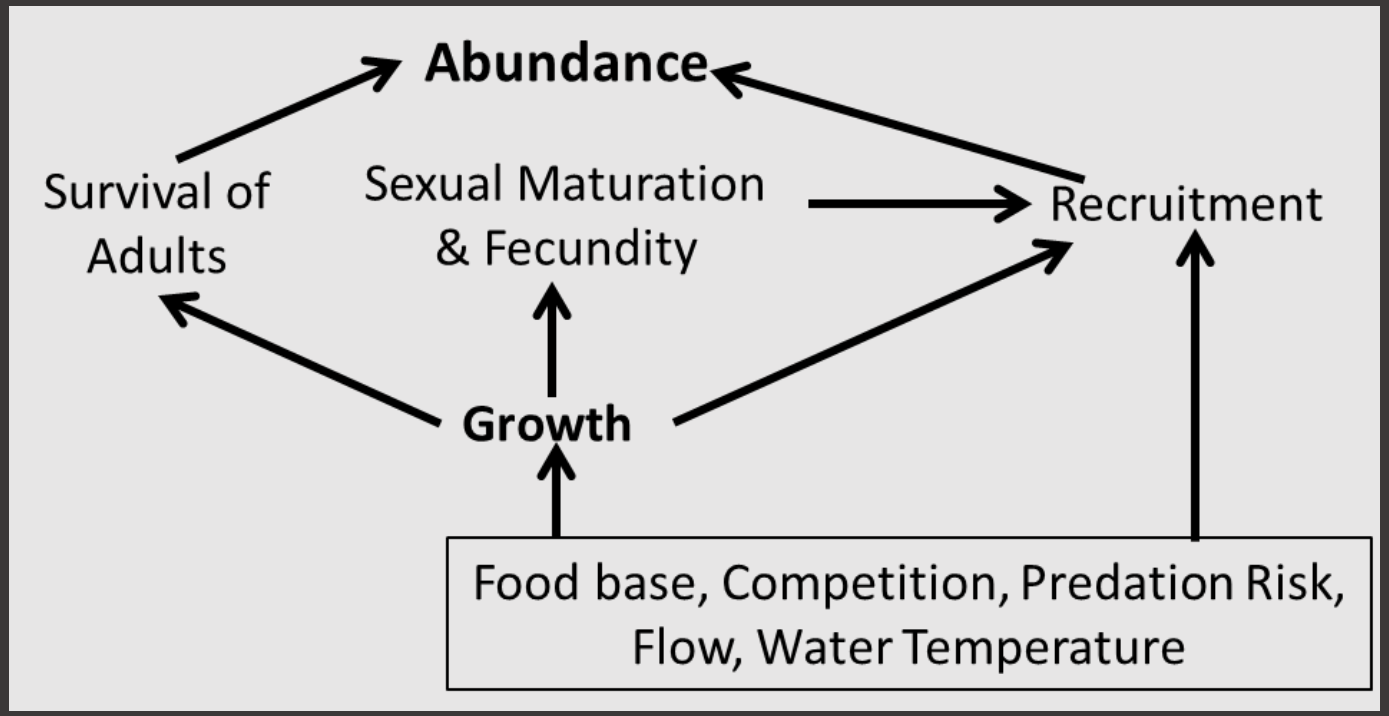
Population Dynamics of Rainbow (*Oncorhynchus mykiss*) and Brown (*Salmo trutta*) Trout in Glen Canyon

Funded through Project H. LTEMP Goals: Rainbow Trout Fishery, Humpback Chub, Recreational Experience

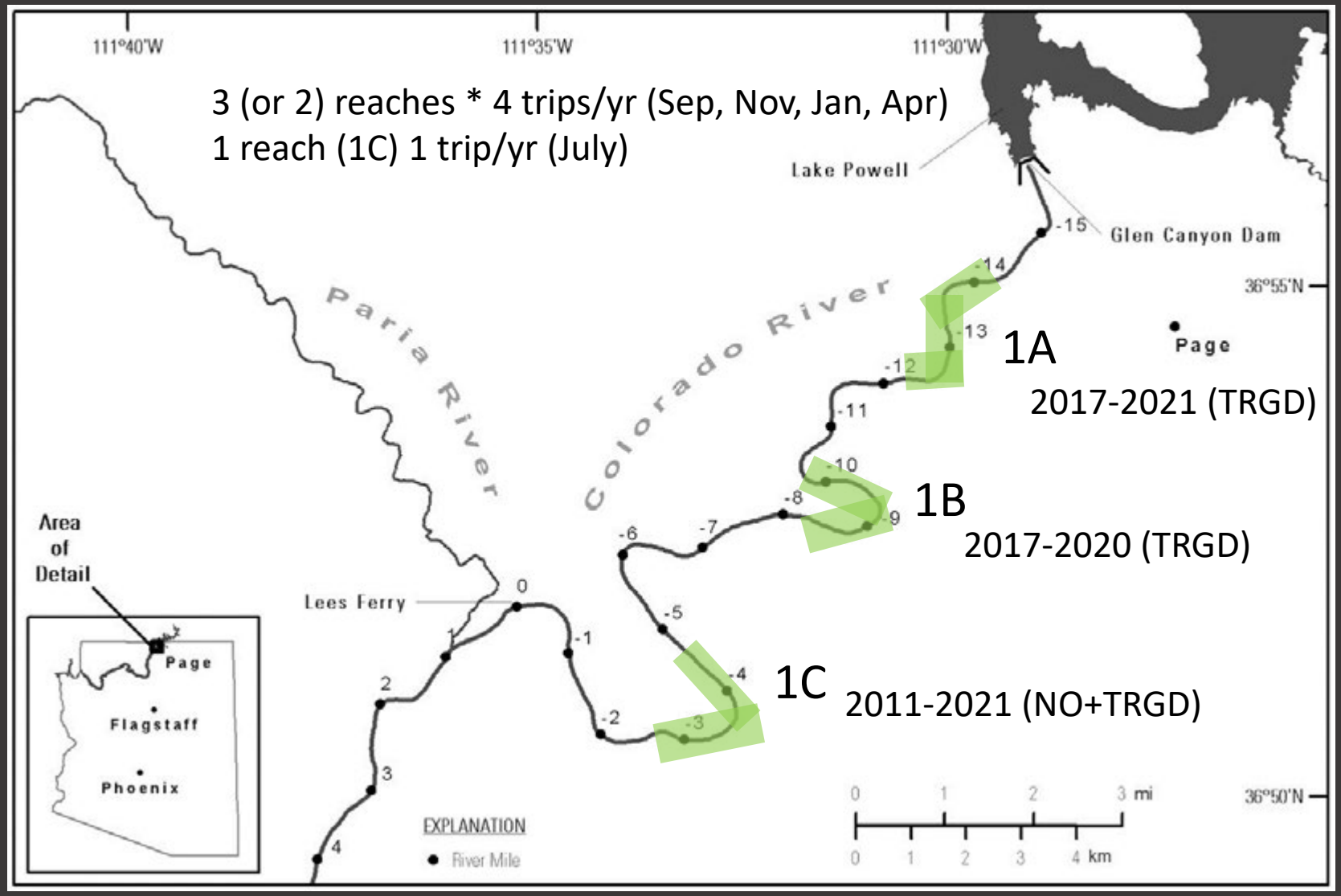
Trout Recruitment and Growth Dynamics (TRGD)



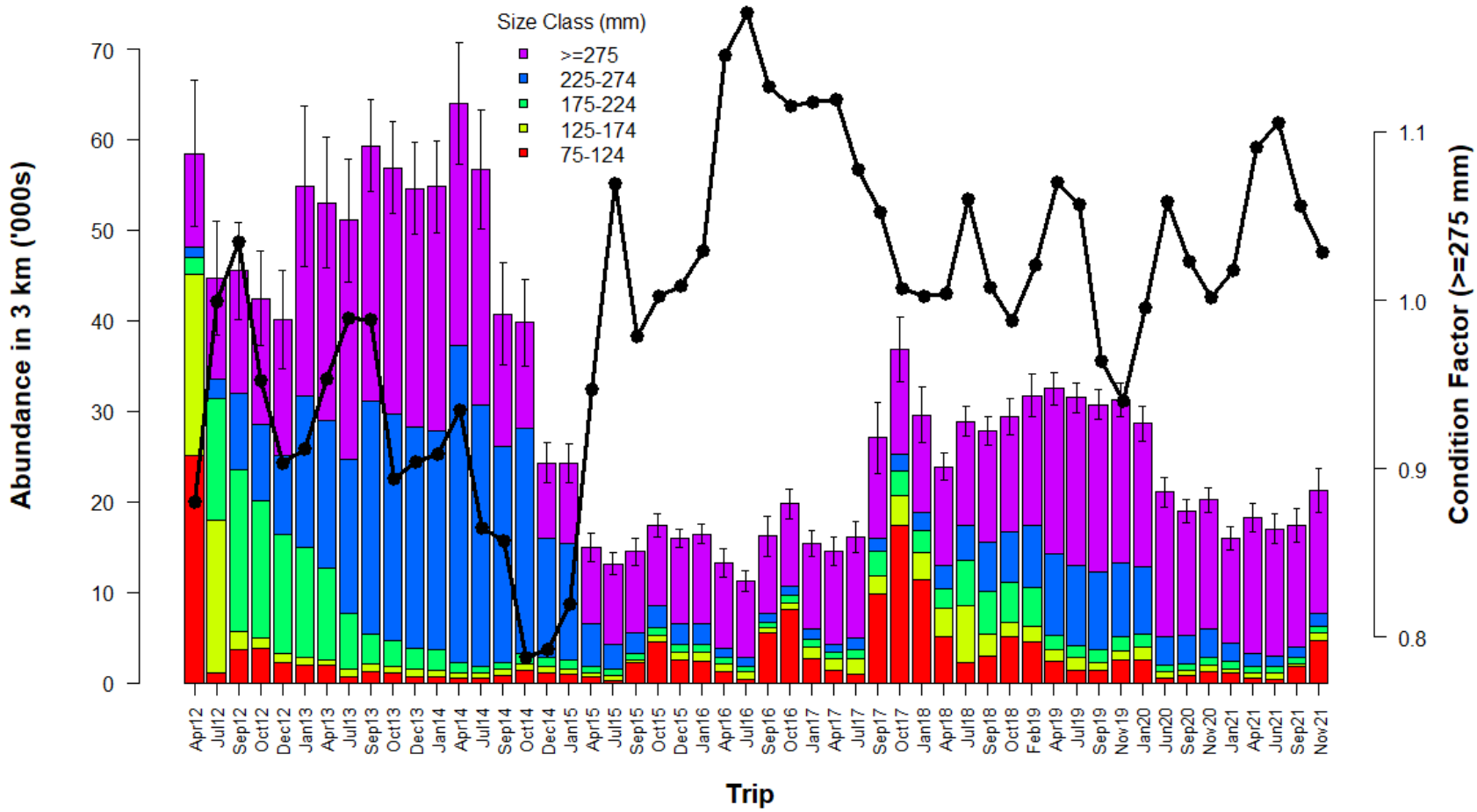
Estimate vital rates (growth, survival, recruitment, % capable of spawning) to understand causes for abundance trends

Relate vital rates to GCD operations (discharge and Lake Powell elevation) and other factors (competition, predation, prey availability)

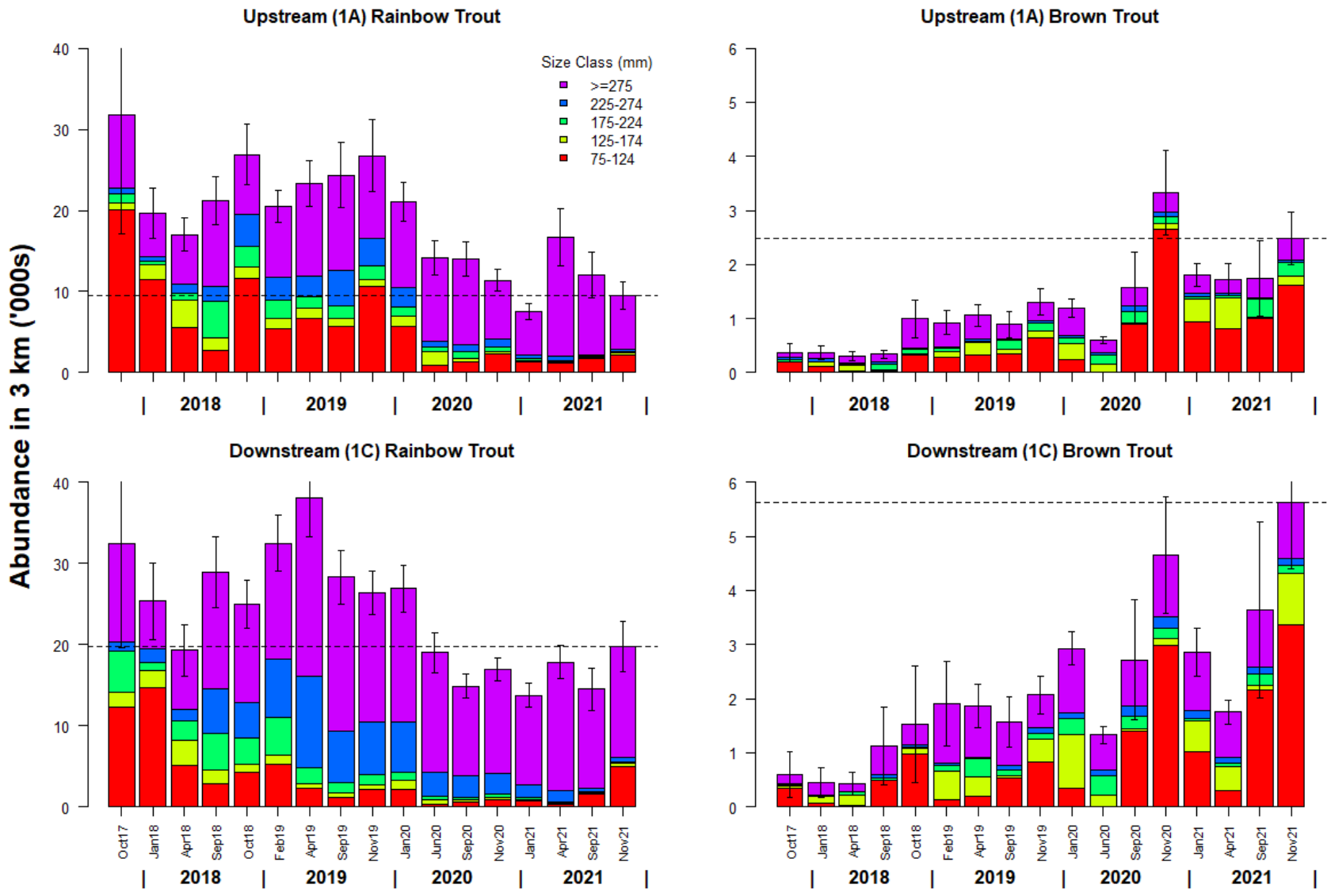
TRGD Sampling Reaches in Glen Canyon



Rainbow Trout Abundance (1C)

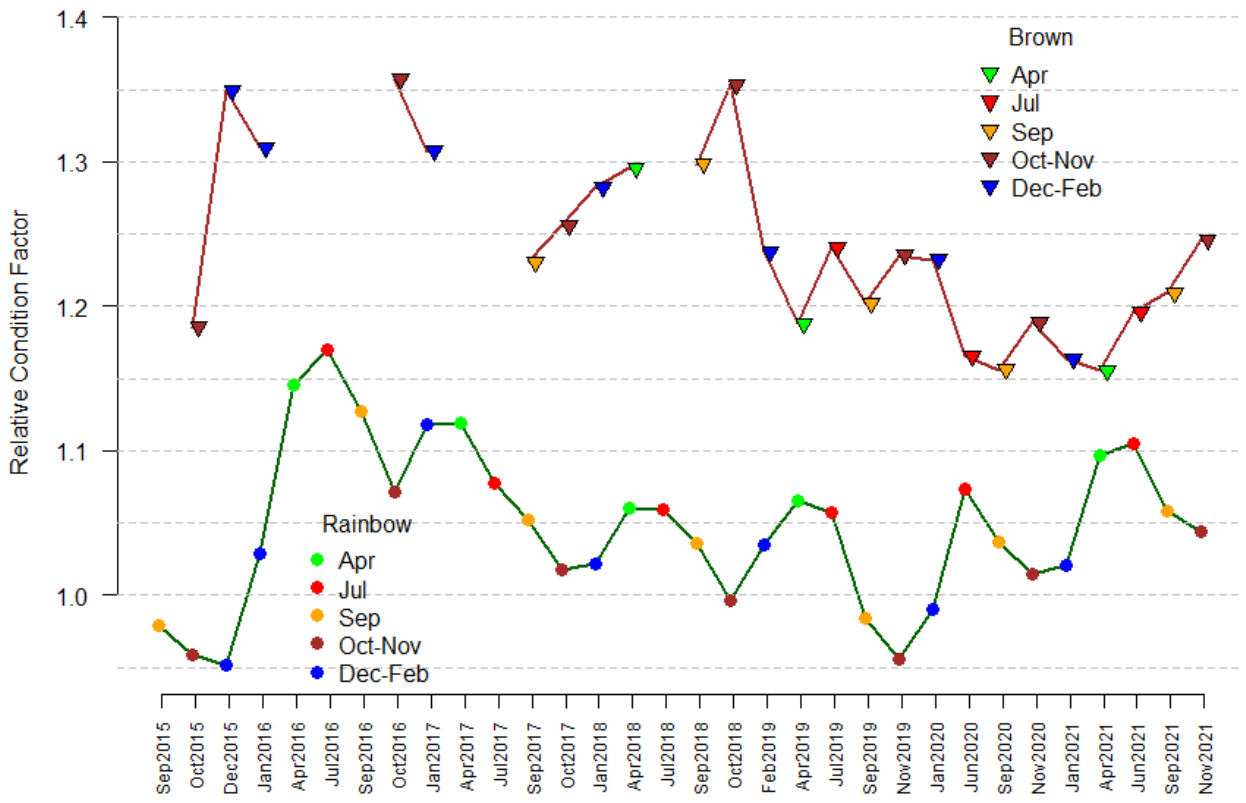


Recent Rainbow and Brown Trout Abundance Trends



Preliminary Data. Do not Cite or Quote.

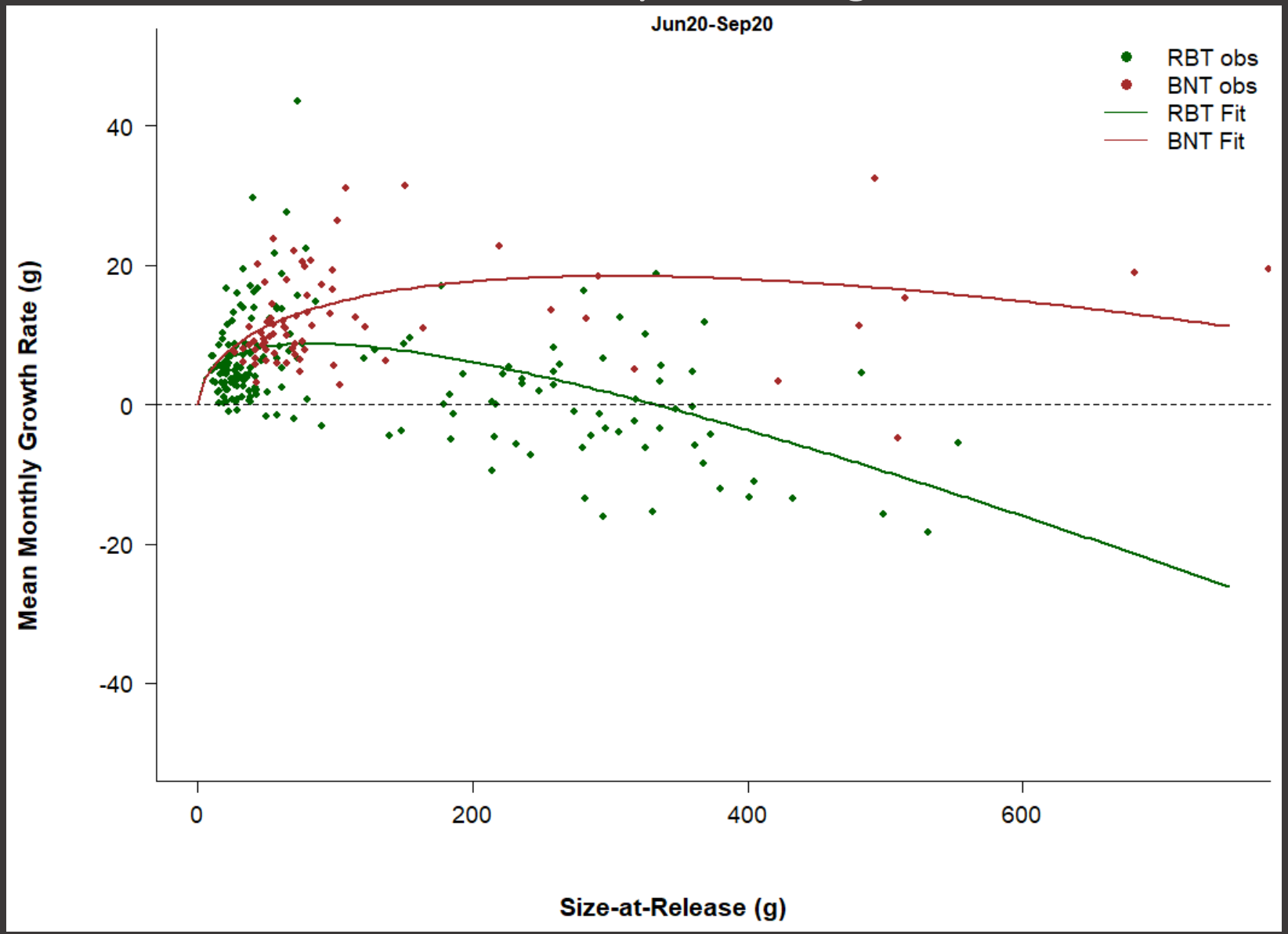
Brown and Rainbow Trout Condition Factor



2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021

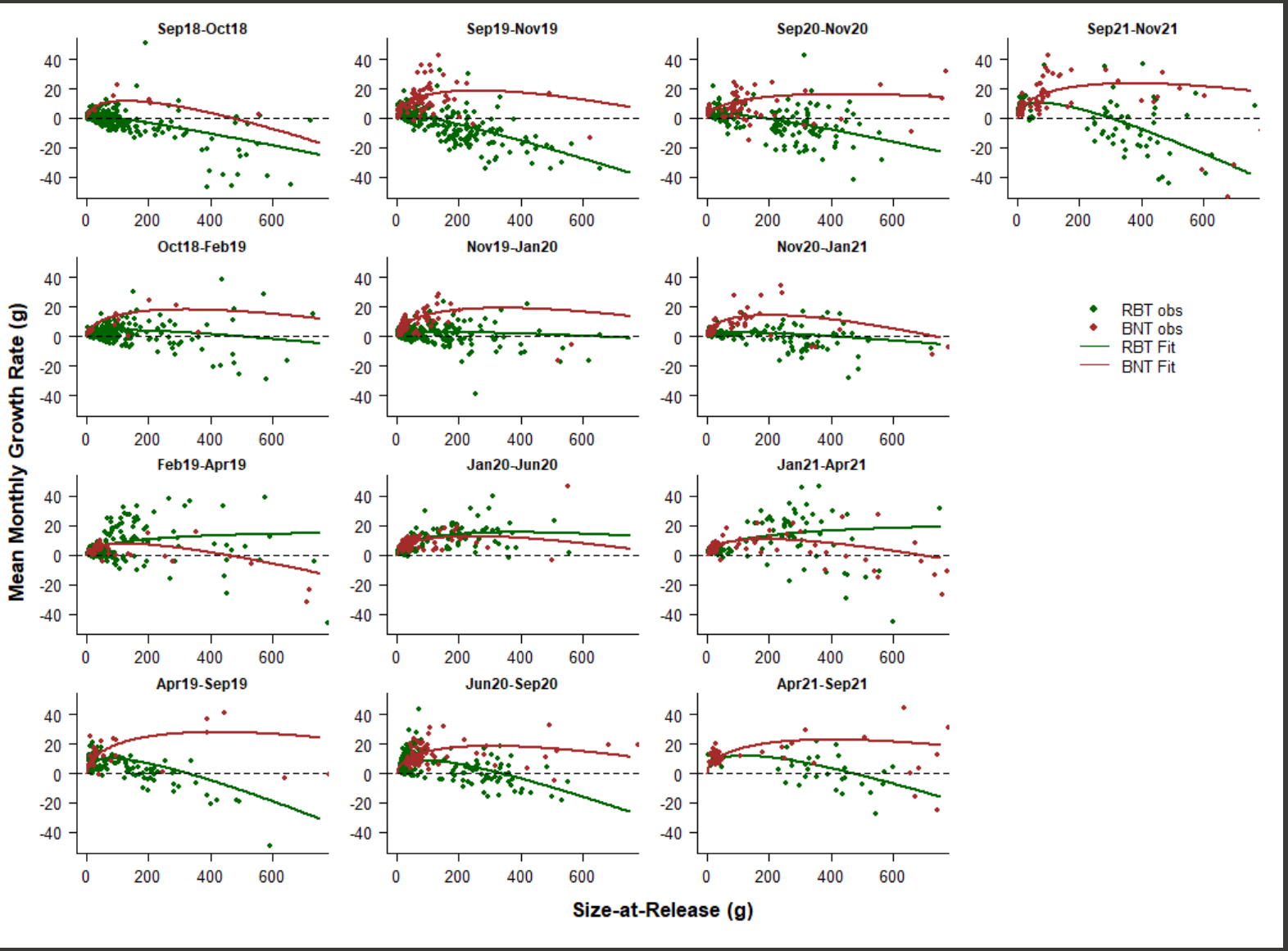
Preliminary Data. Do not Cite or Quote.

Brown Trout Grow Much Faster than Rainbow Trout, and Brown Trout Rarely Lose Weight



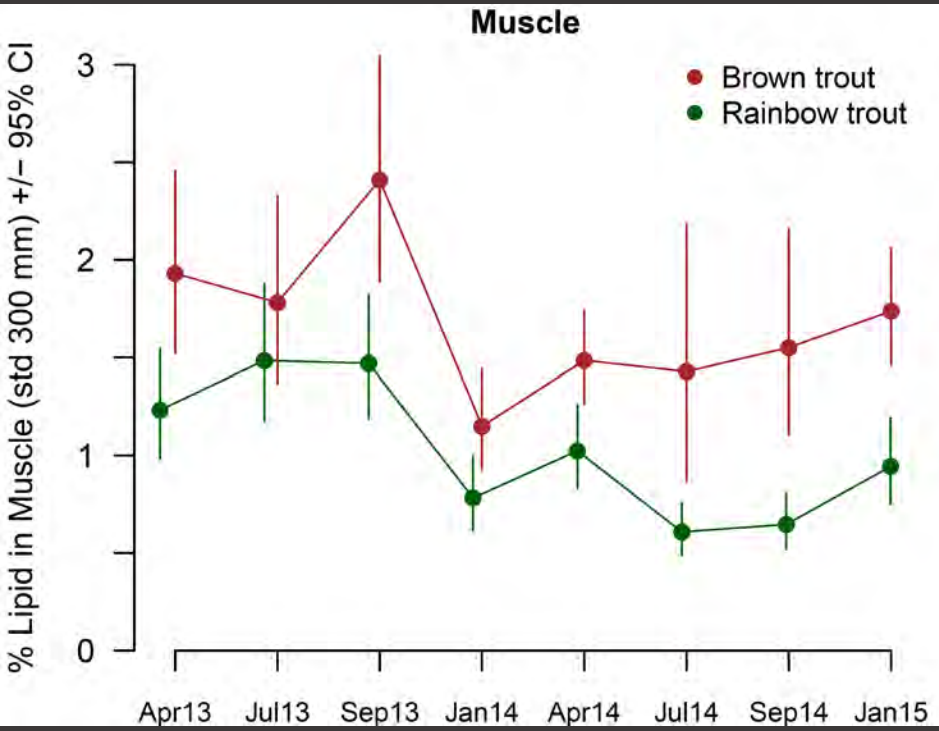
Preliminary Data. Do not Cite or Quote.

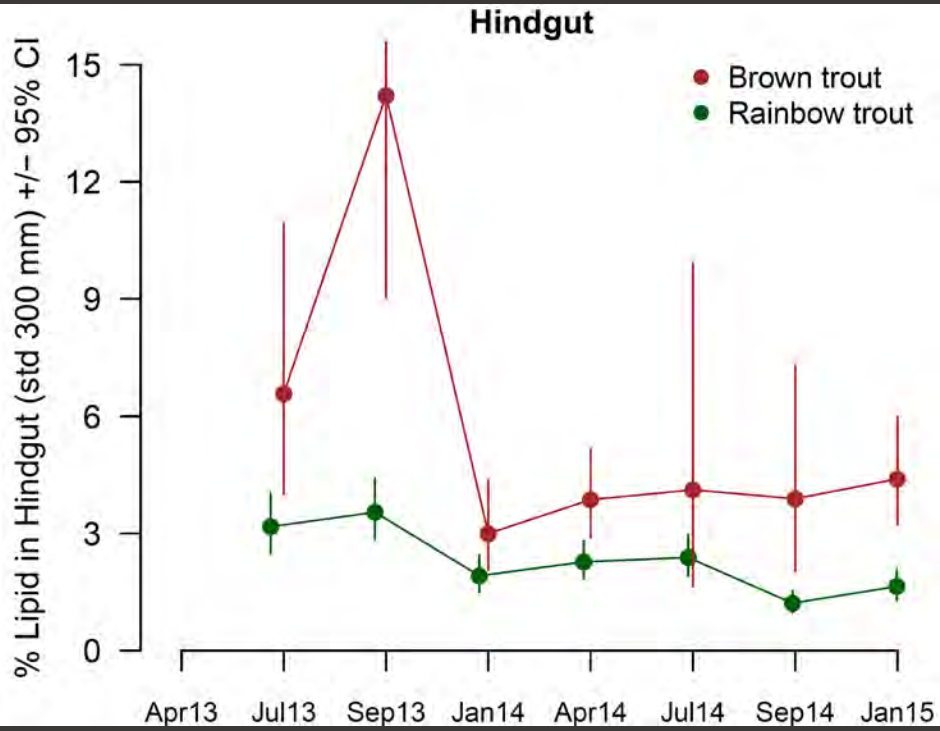
Brown Trout Grow Faster than Rainbow Tout in all Seasons Except Late Winter-Spring (January-April)

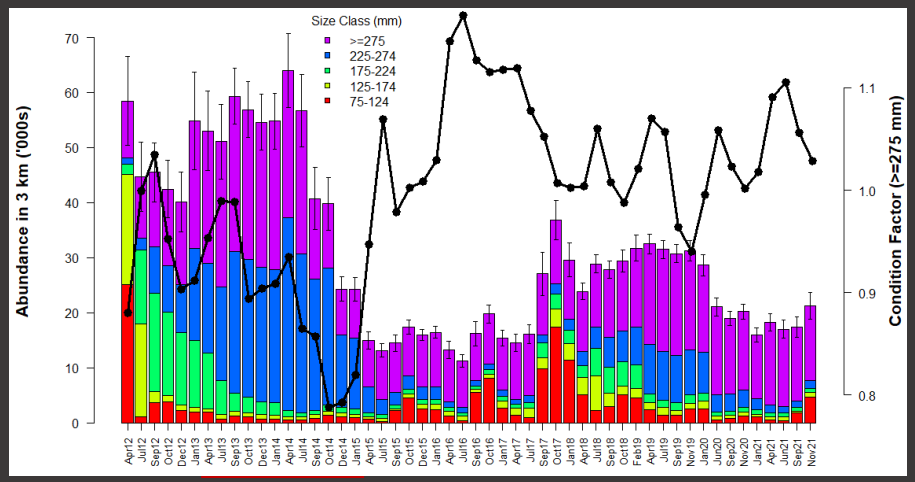


Preliminary Data. Do not Cite or Quote.

Brown and Rainbow Trout Lipid (fat) Levels





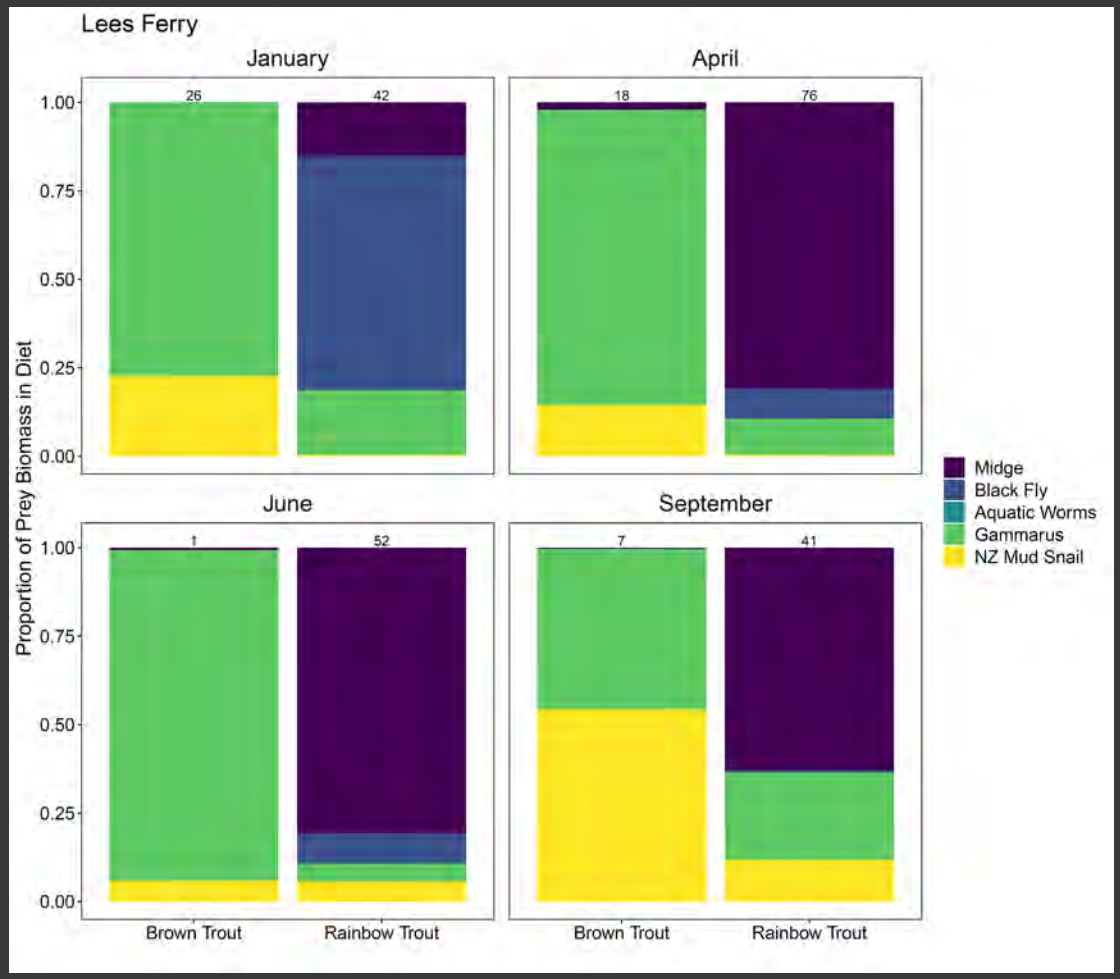


K. Dibble, unpublished data

Preliminary Data. Do not Cite or Quote.

Differences in Brown and Rainbow trout Feeding Strategies an Important Cause of Differences in Growth, Condition Factor, and Lipid Levels

Digestible portion of brown diet dominated by Gammarus vs. Midges & Blackflies for rainbow

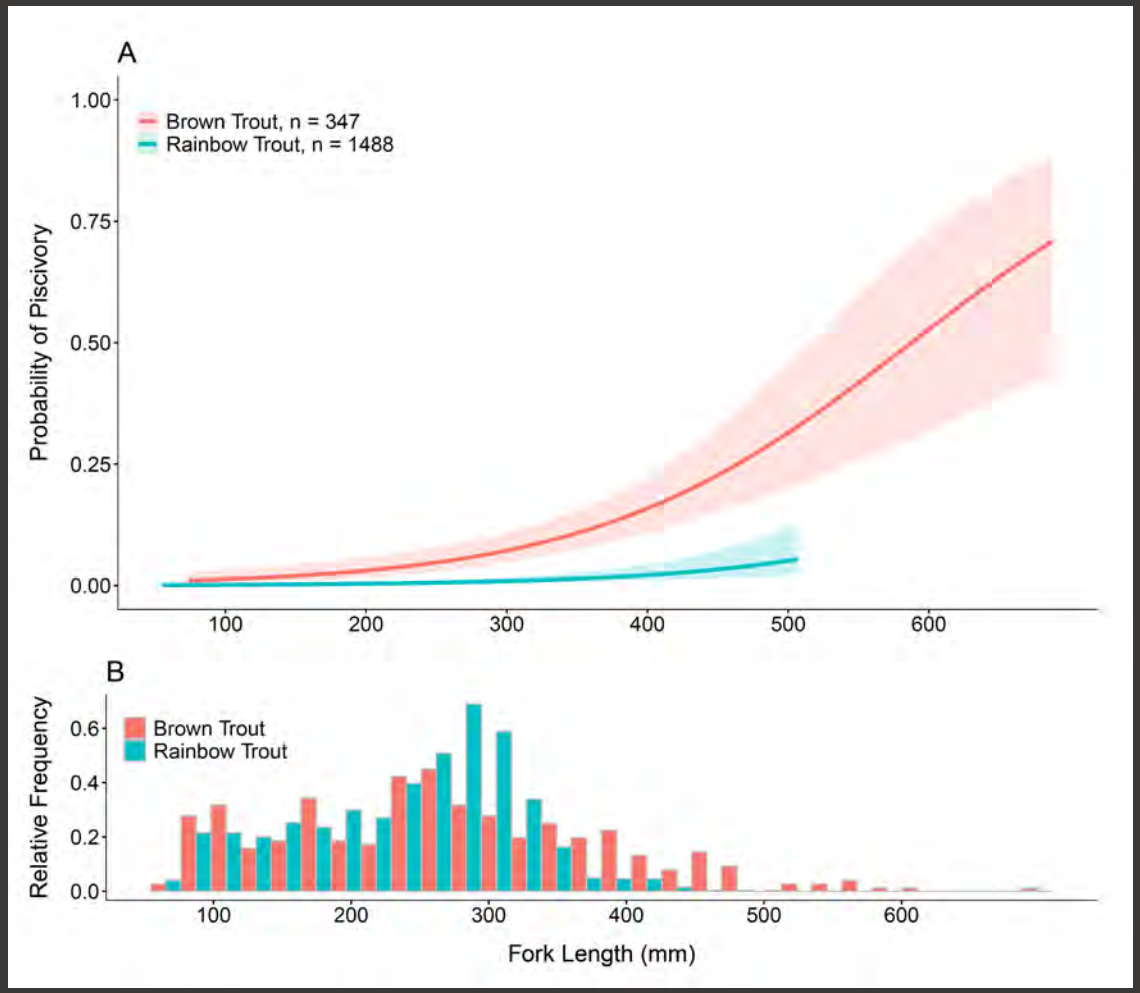


M. Dodrill and T. Kennedy, unpublished data

Data from '12-'15
Preliminary Data. Do not Cite or Quote.

Differences in Brown and Rainbow Diets May Explain Differences in Growth and Condition

Consumption of fish much more common for browns than rainbows



M. Dodrill and T. Kennedy, unpublished data
Preliminary Data. Do not Cite or Quote.

Major Patterns in Trout Dynamics in Glen Canyon

- Rainbow trout abundance is low and dominated by larger and older individuals. Abundance of larger fish will decline if recruitment remains low.

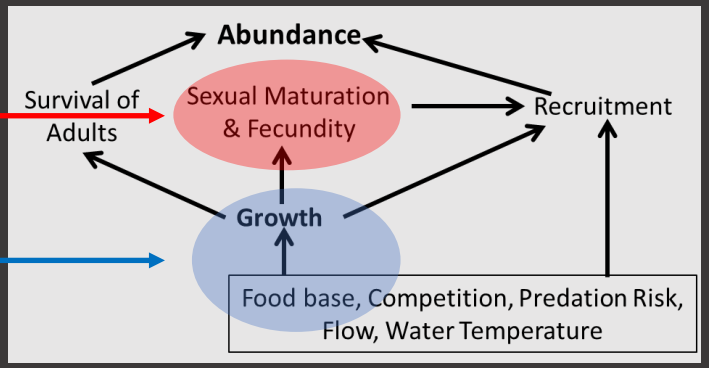
- Brown trout population is increasing rapidly due to high recruitment and high survival rates of 75-124 mm size class.

- Brown trout grow much faster than rainbow trout, and have higher condition factor and lipid levels, likely because they feed more effectively on benthos and fish.

- Next talk: Brown trout enter the reproductive cycle at smaller size and become spawning capable at younger ages. These characteristics are likely an important factor driving high rates of brown trout recruitment.

next talk

this talk



Acknowledgements

- **Logistical, administrative, and technical support:** Glen Bennett, Carol Fritzinger, Seth Felder, Dave Foster, Dave Ward, Ann-Marie Bringhurst, Tom Gushue

- **Field work:** Thanks to the many boatmen, biologists, and technicians!