Influence of watershed characteristics on stream invertebrate and organic matter density

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INTRODUCTION

The objective of this study was to determine the differences in food availability, aquatic drift and invertebrate export within glacial and non-glacial streams.

Taken by Molly Tankersley.

FIGURE 1: Students Connor Johnson (Right) and Mollie Dwyer (Left) standing in Montana creek.

BACKGROUND

The chosen study sites was upstream of the McGinnis creek/Montana Creek confluence near Juneau, Alaska. McGinnis Creek watershed is predominantly snow fed with high elevation glacial coverage. Montana Creek watershed is a lower elevation forested watershed with peatland areas.

FIGURE 2: Mcginnis Creek (Right) / Montana Creek (Left) confluence.

METHODS

1

FIGURE 3: Drift nets were placed in each stream. Sampling time was recorded in Minutes.

2

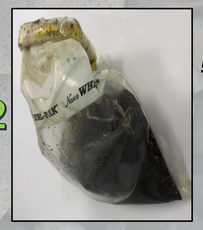

FIGURE 4: Contents were preserved with ethanol in whirlpaks.

3

FIGURE 5: Samples were separated and analyzed in small portions at a time.

4

FIGURE 6: Invertebrates were picked out by hand from small separated portions.

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FIGURE 7: Invertebrates from samples were ID'd and and mass was determined with length/weight regressions.

6

FIGURE 8: *Organic matter from each sample was ashed and weighed.*

RESULTS

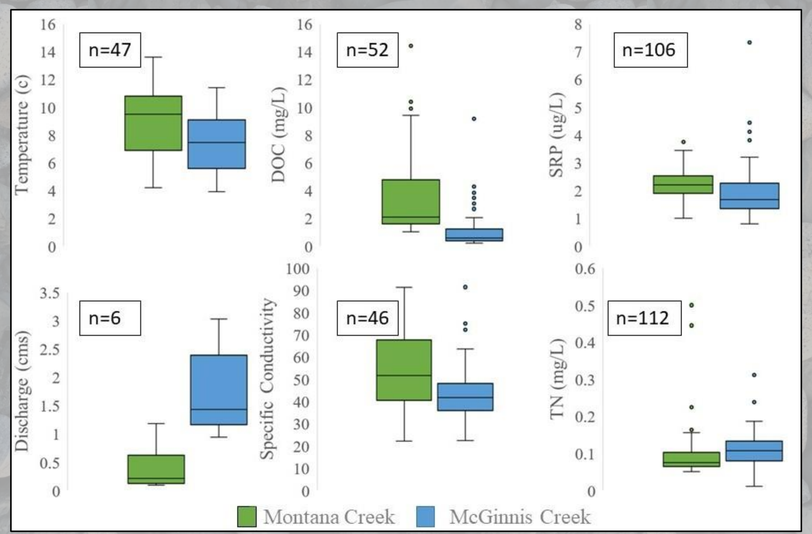


FIGURE 9: *Chemical and physical characteristics of Montana and McGinnis creek confluence dataset (left).*

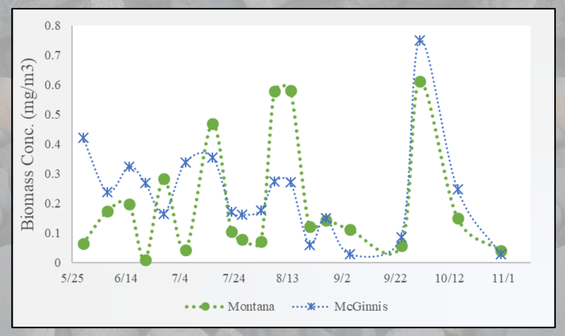


FIGURE 10: *Biomass concentrations (ash free dry mass) for both Montana Creek and McGinnis Creek (above).*

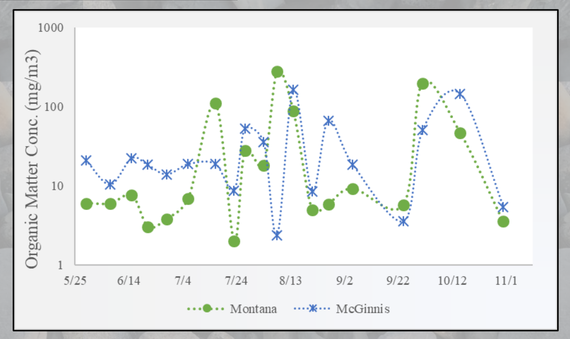
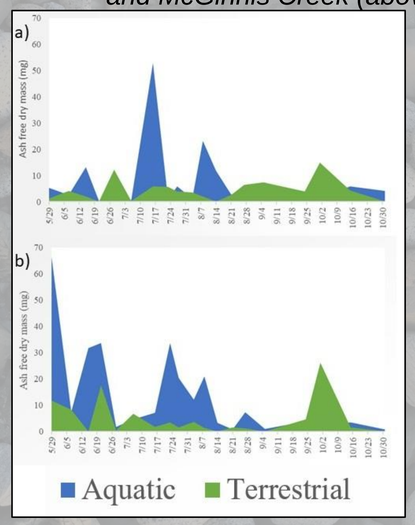


FIGURE 11: *Organic matter concentrations for both Montana Creek and McGinnis (above). Note: y-axis is on log scale*



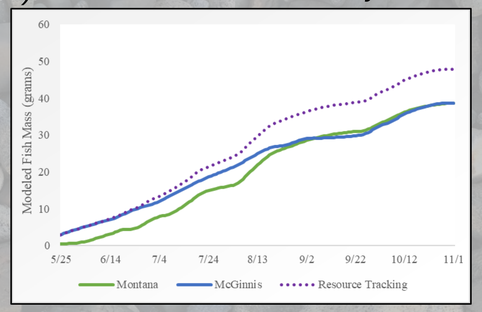


FIGURE 12: Relative ratio of terrestrial and aquatic invertebrates from **a)** Montana Creek and **b)** McGinnis Creek (left).

FIGURE 13: Modeled fish growth using Biomass and water temperature from each stream. Resource tracking line depicts fish growth if organisms take advantage of biomass in both streams (above left).

CONCLUSIONS

- Results highly variable.
- Developing fish will benefit by using both streams resources.
- No obvious trend in organic matter and invertebrates being higher in Montana nor McGinnis creek.
- Terrestrial invertebrate peaks (Fig 12) suggest a sudden increase in discharge.
- Majority of taxa retrieved from both streams are Diptera and Ephemerotpera.

ACKNOLWEDGEMENTS

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