Tidal Influences on Food Availability to Shorebirds on Coastal Mudflats

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Tidal Cycles and Shorebirds

- Shorebirds follow the tide feeding on newly exposed food items.
- Tides determine feeding and roosting schedules for many species.
- Many species feed at night if feeding habitat is available at that time.

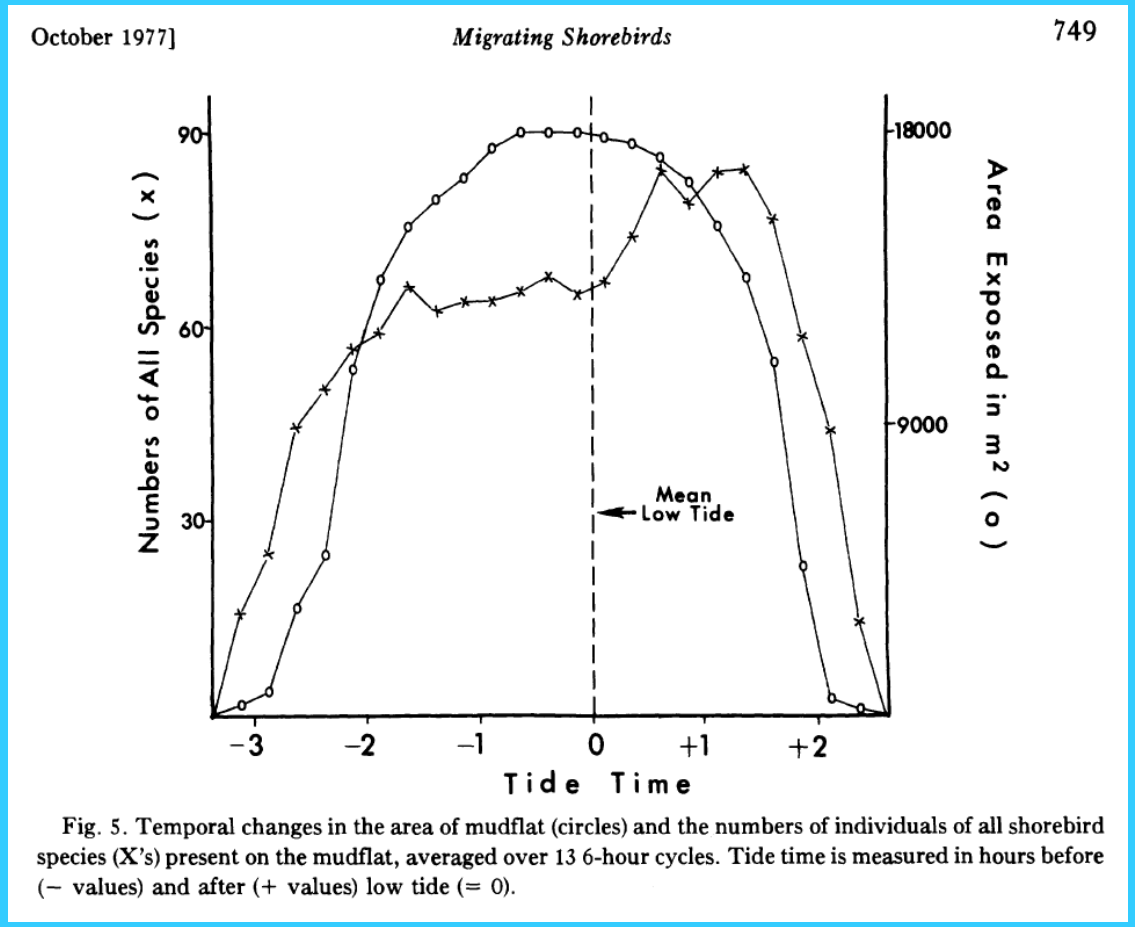
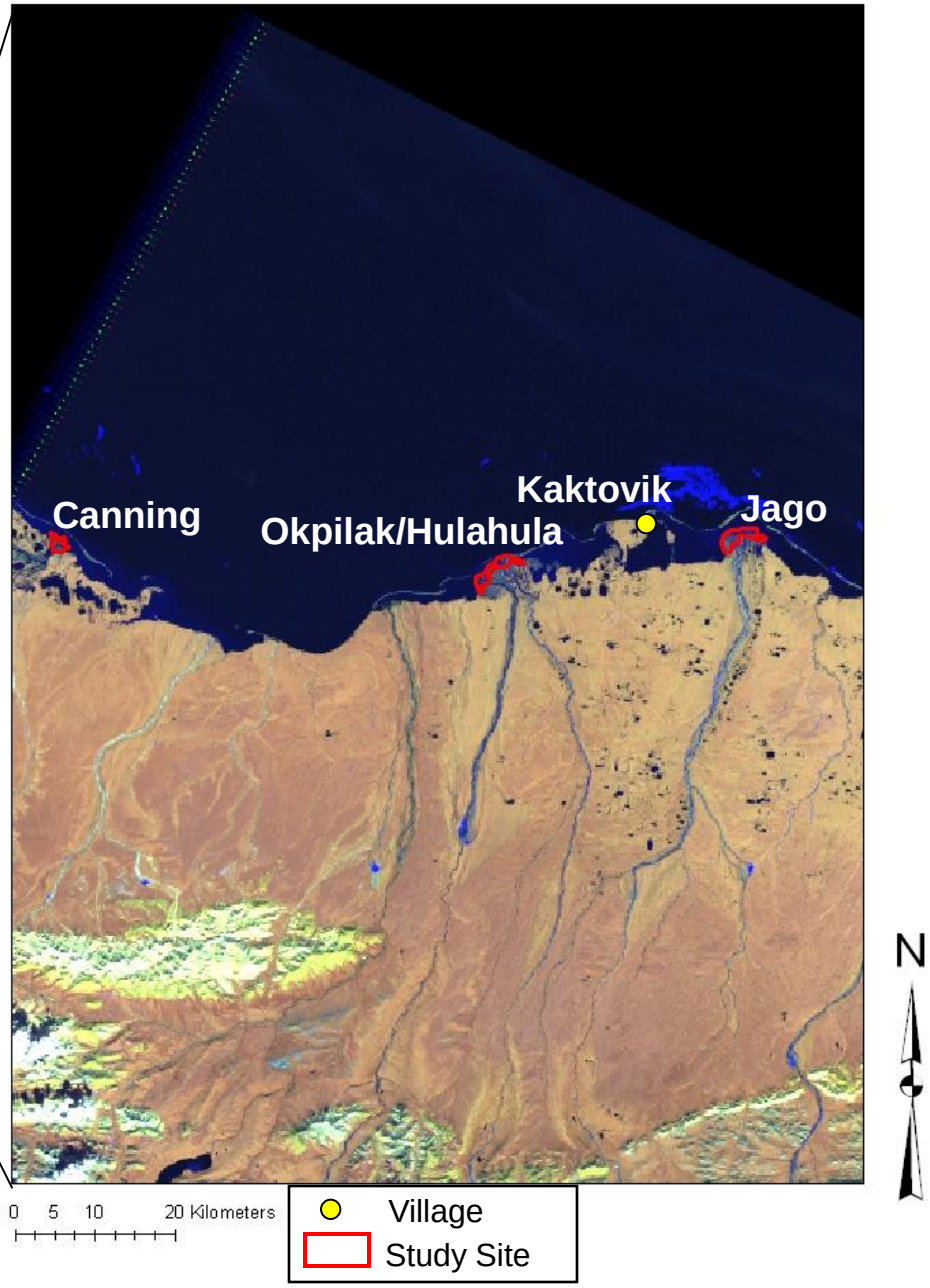


Fig. 5. Temporal changes in the area of mudflat (circles) and the numbers of individuals of all shorebird species (X's) present on the mudflat, averaged over 13 6-hour cycles. Tide time is measured in hours before (− values) and after (+ values) low tide (= 0).

Burger et al. 1977

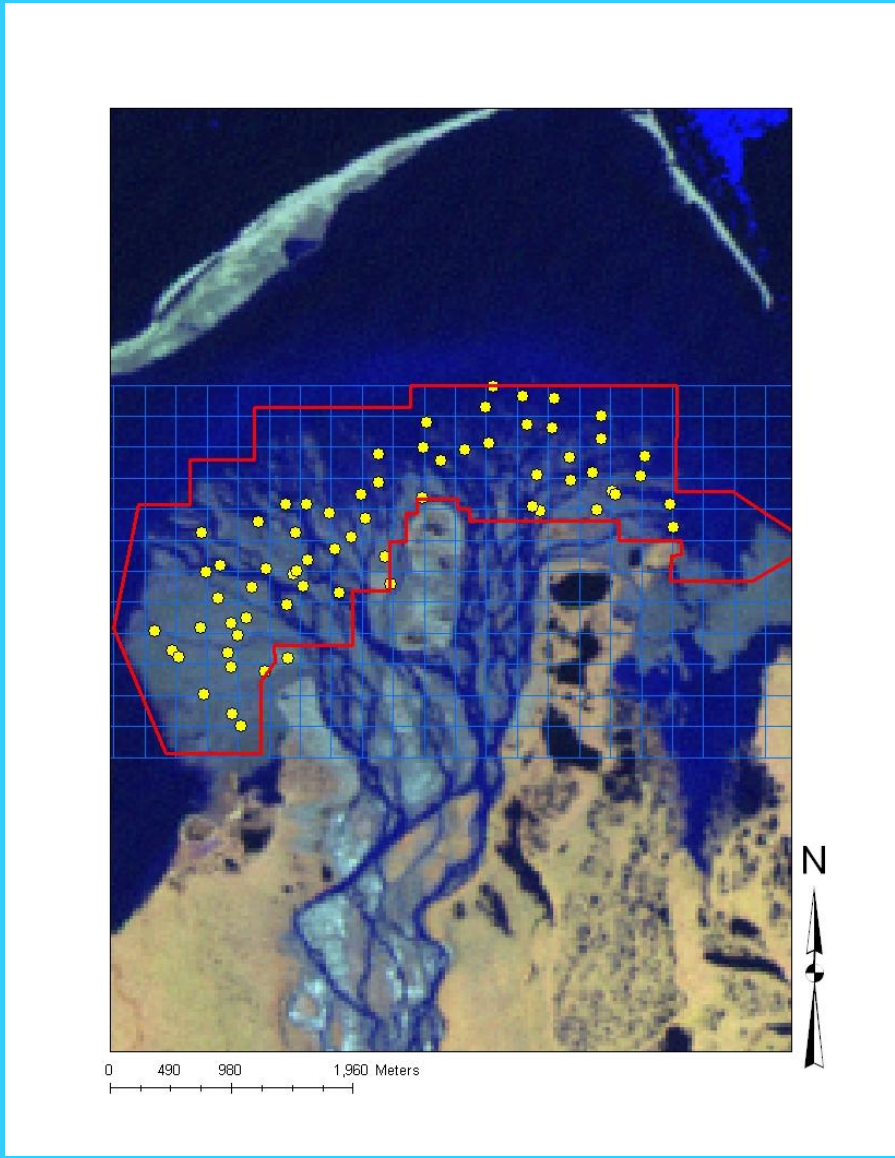
Study Area

- Presenting 2010 data
- Focusing on the Jago Delta



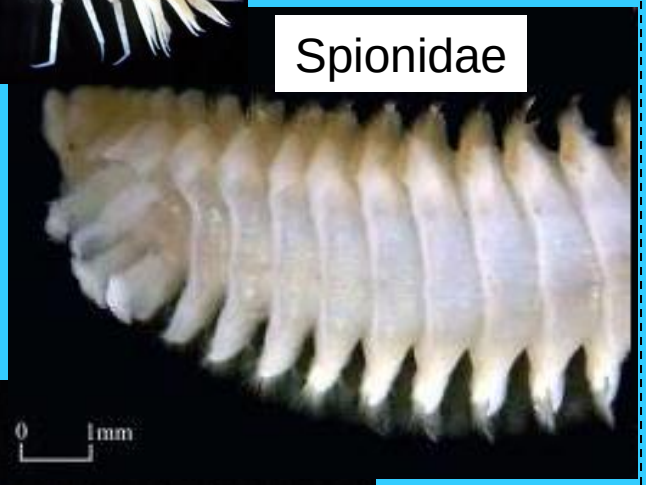
Methods - Invertebrates

- 250 m grid cells
- Point randomly selected in each cell
- Inverts collected during 3 periods
  - Early: July 15 – July 31
  - Mid: August 1 – August 14
  - Late: August 15 – August 31
- 0.01 m^2 core collected 5 cm deep
- Paired soil core also collected

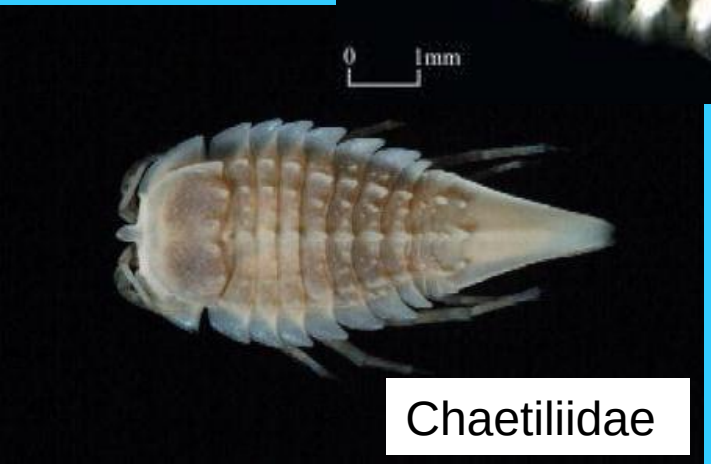


Saltwater Invertebrates

Amphipoda



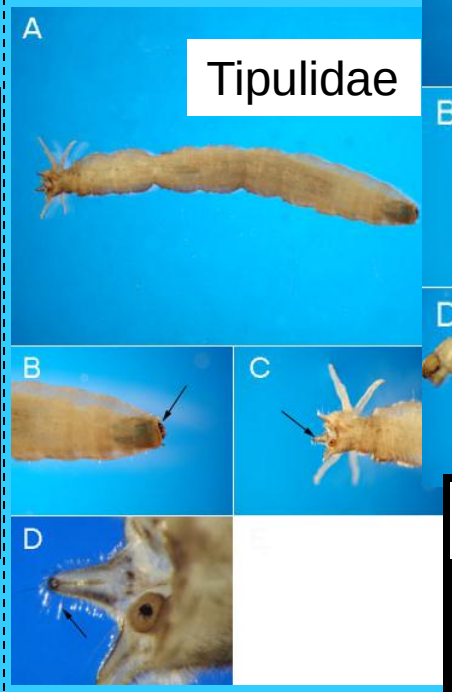
Spionidae



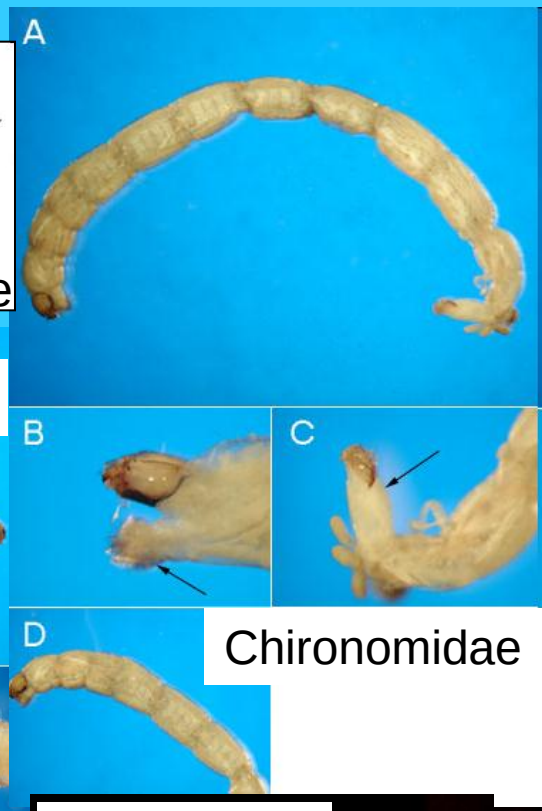
Chaetiliidae

Freshwater Invertebrates

Culicidae



Tipulidae



Chironomidae

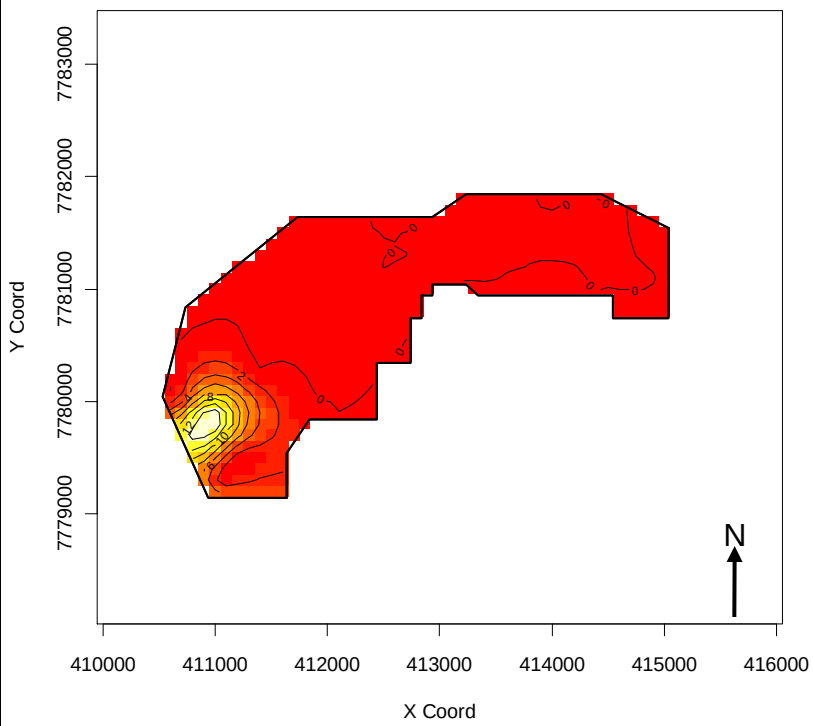
Oligochaeta

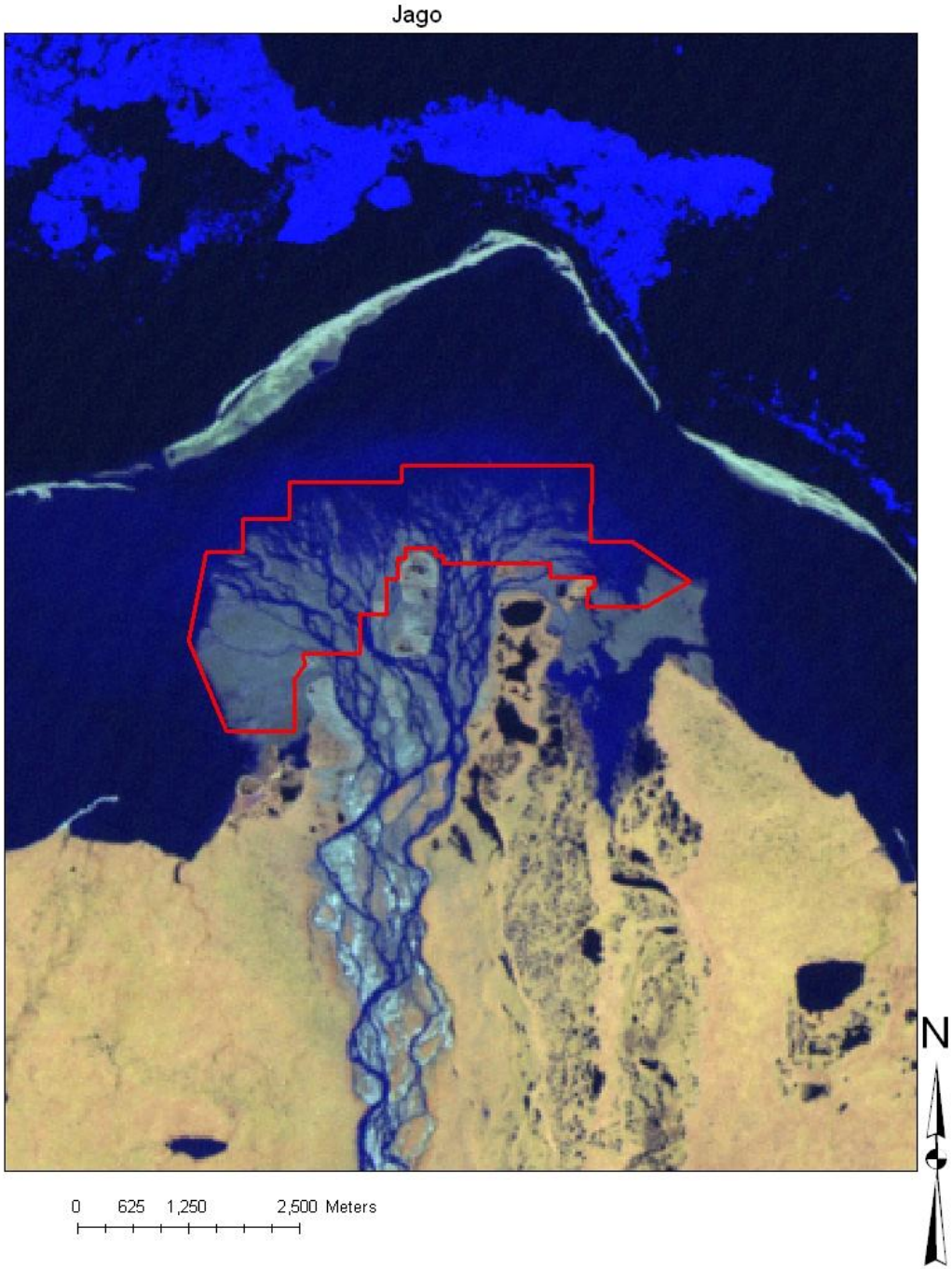
Photos from the web

Salinity at the Jago

Tone Values

Low High

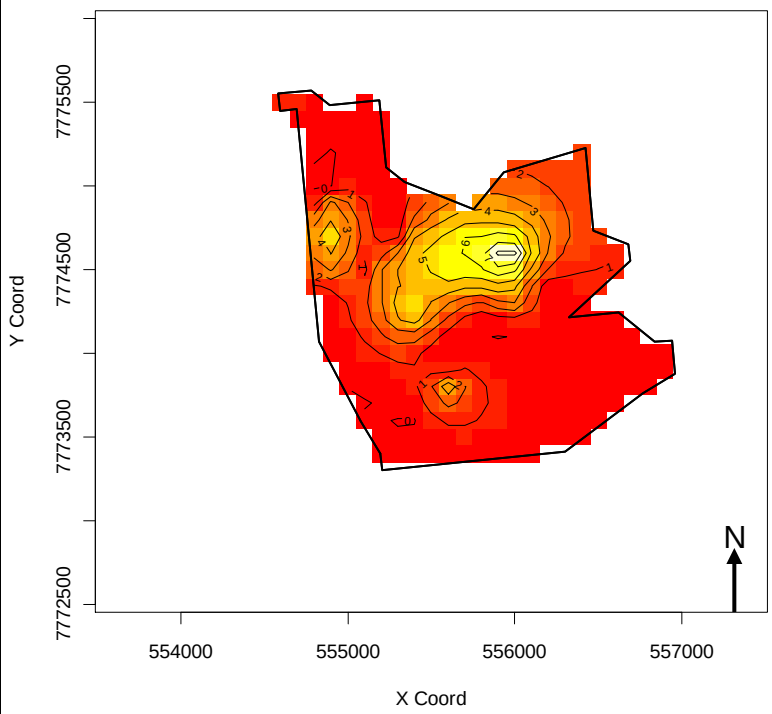




Salinity at the Canning

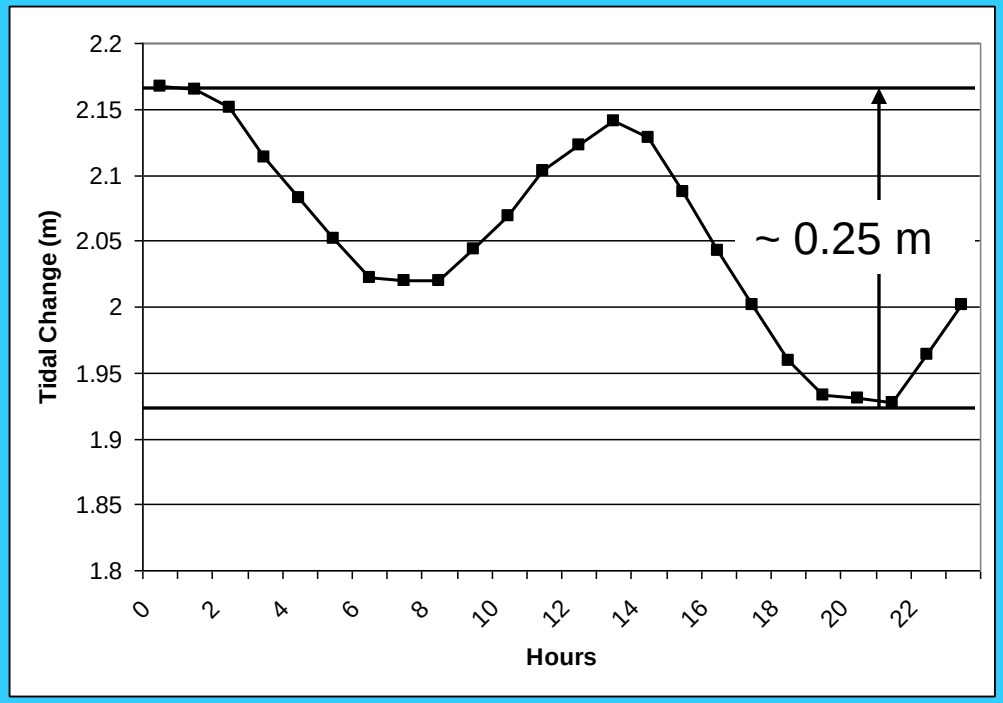
Tone Values

Low High

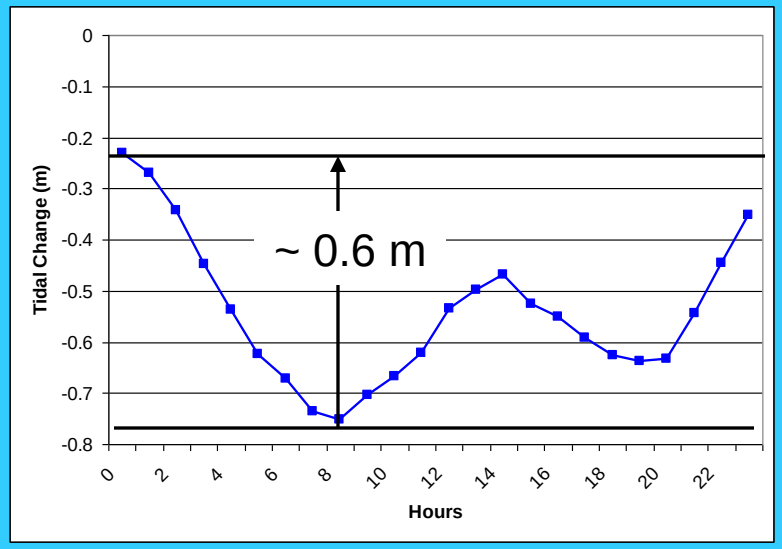


Tidal Change

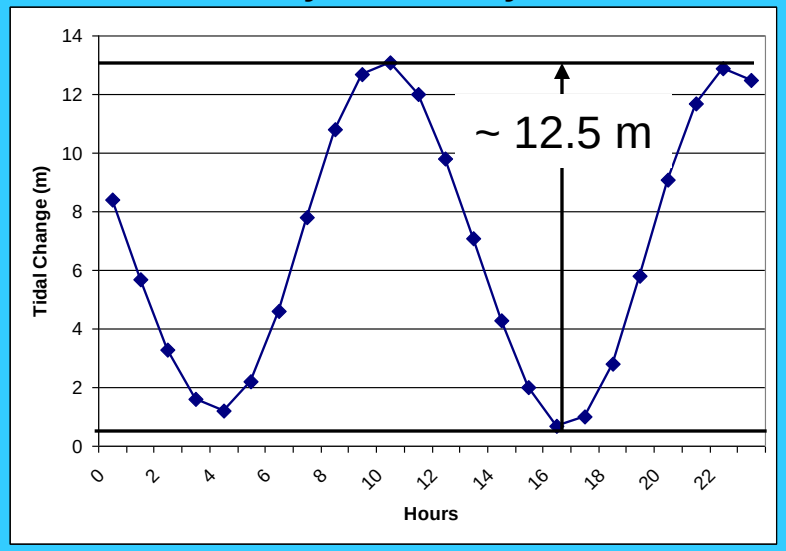
Jago Delta



Nome

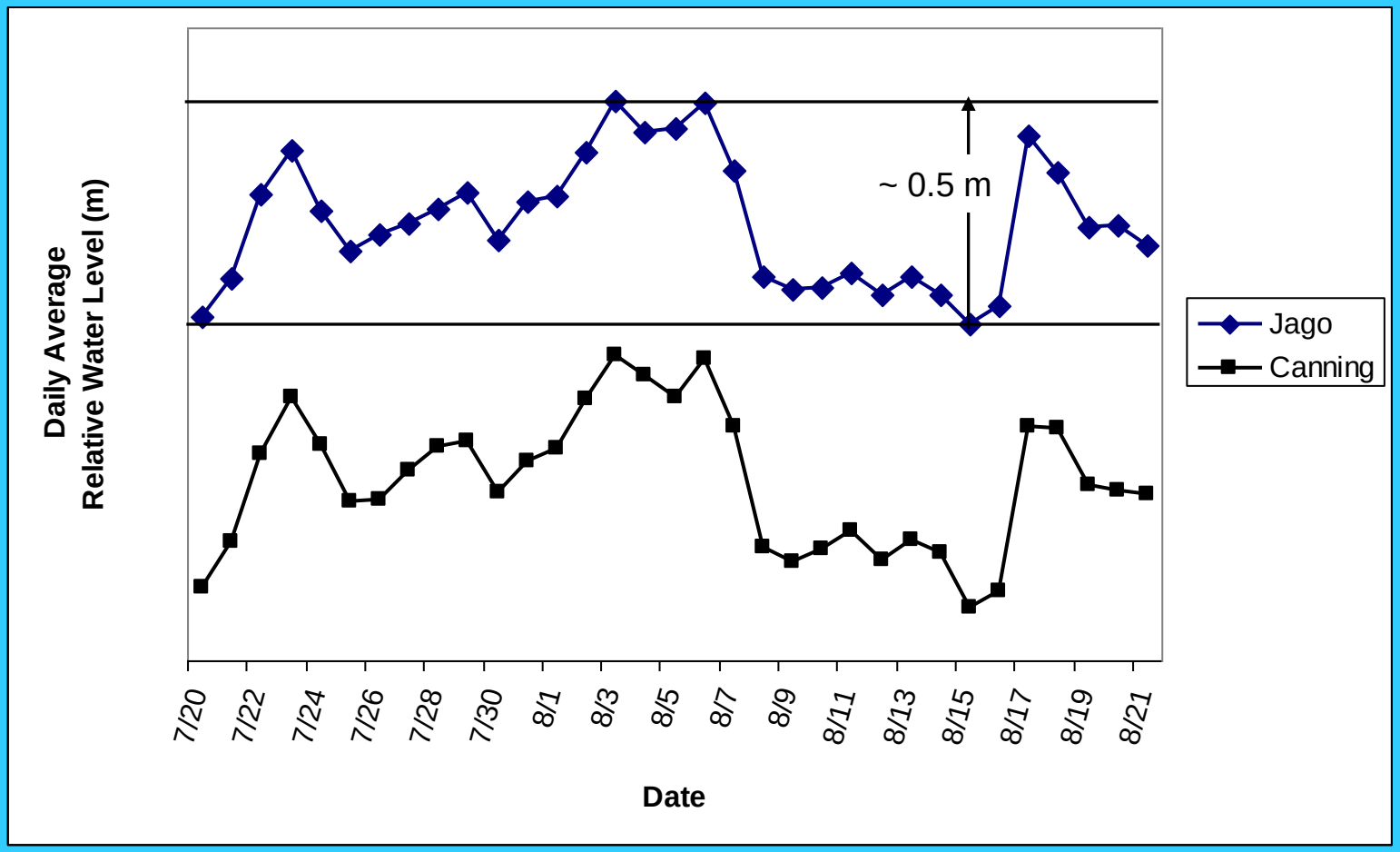


Bay of Fundy



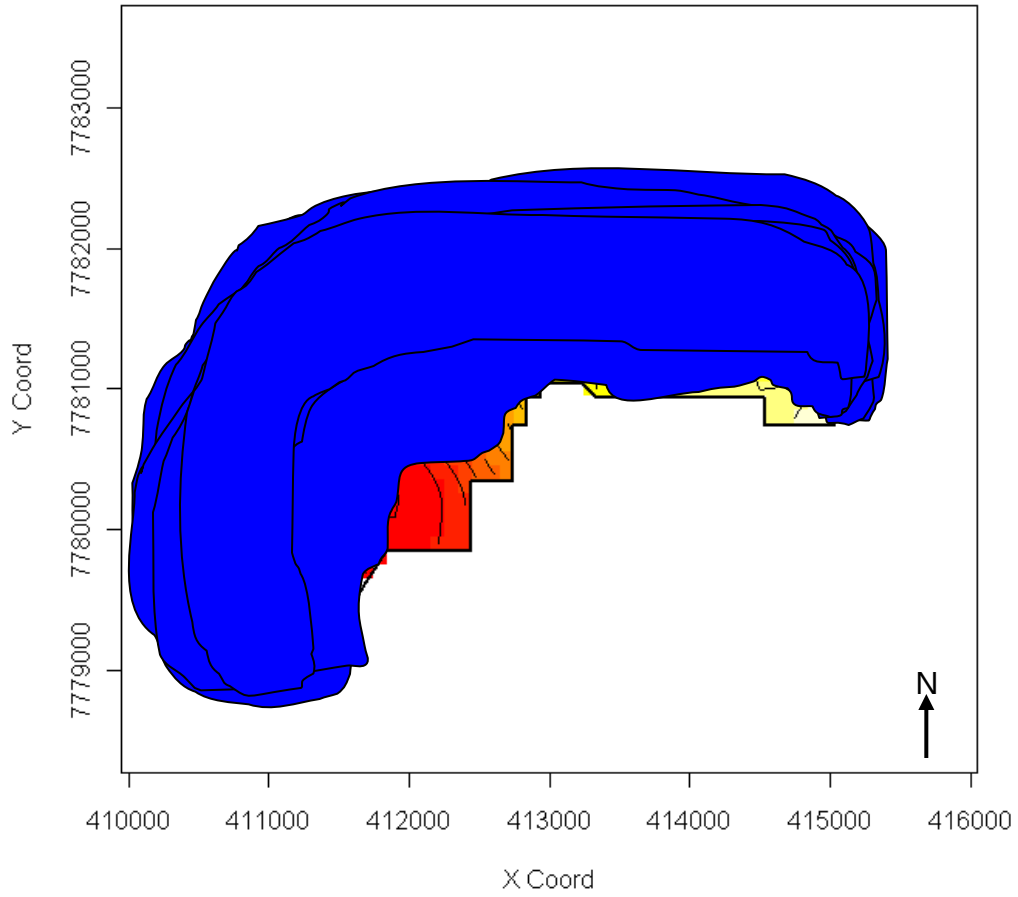
- Beaufort Sea tides
  - Slight lunar influence ≤ 30 cm
  - Seiche – unpredictable weather patterns drive water levels

Seiche for 2010

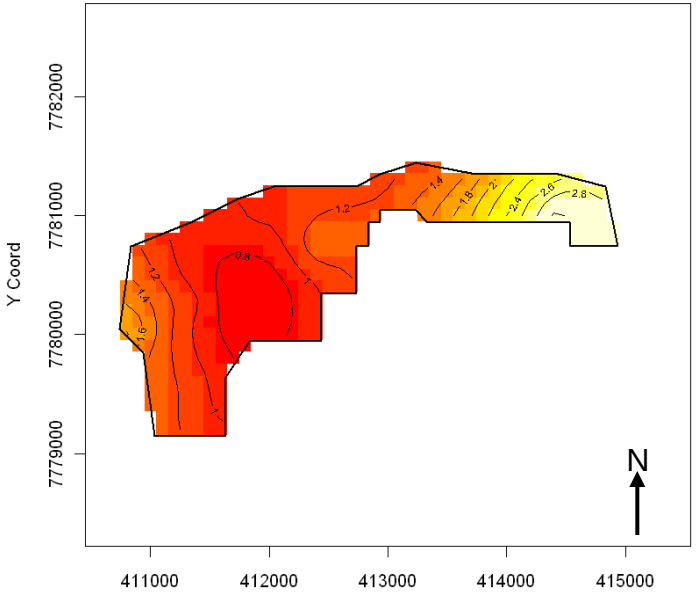


Distribution of All Invertebrate Taxa

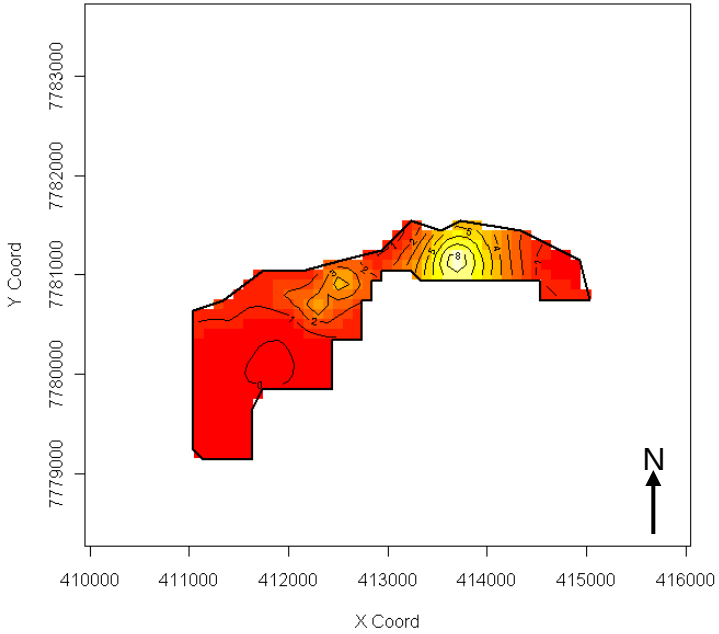
Late Season



Early Season



Mid Season

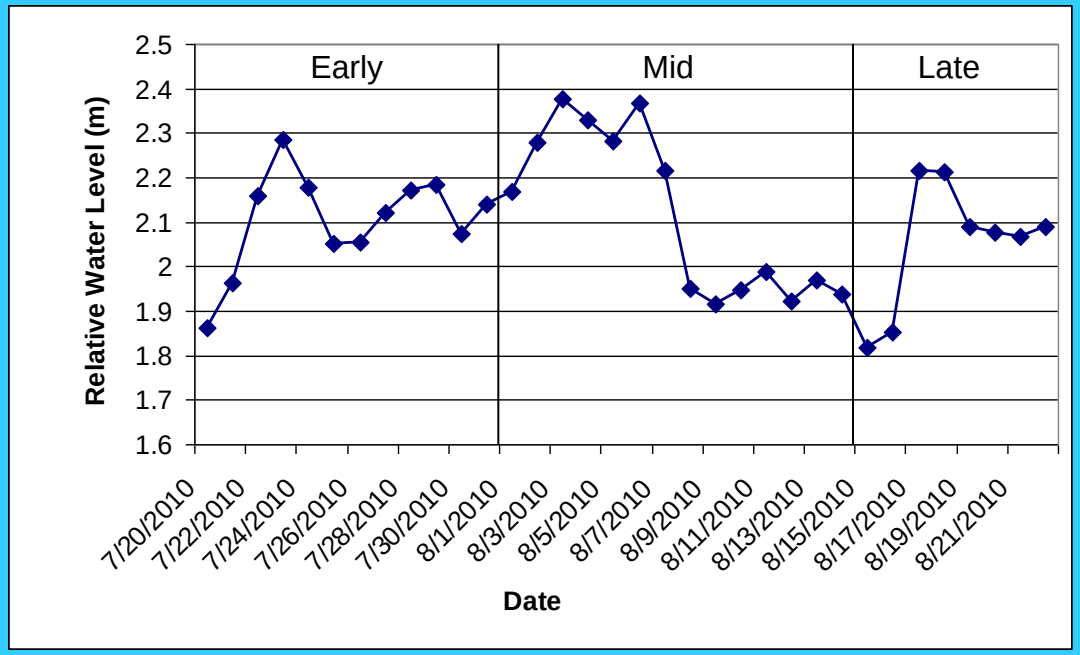


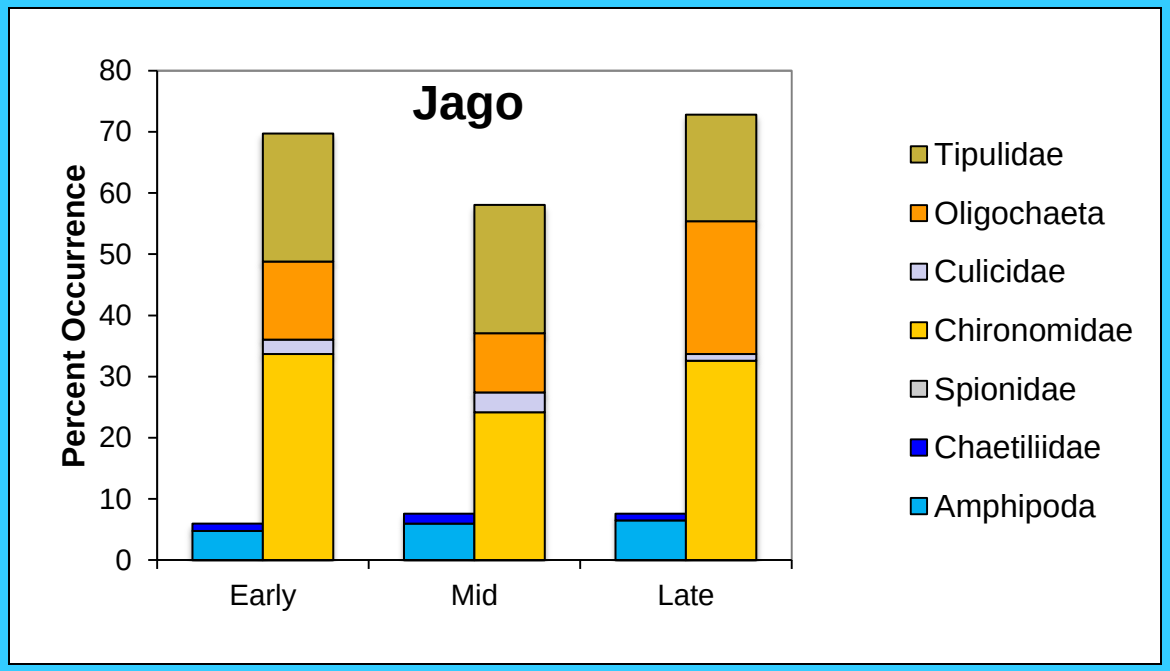
Tone Values

Low High

Freshwater Invertebrates

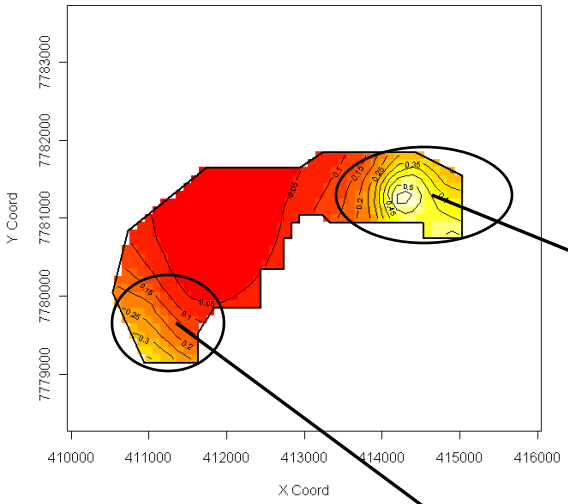
Saltwater Invertebrates



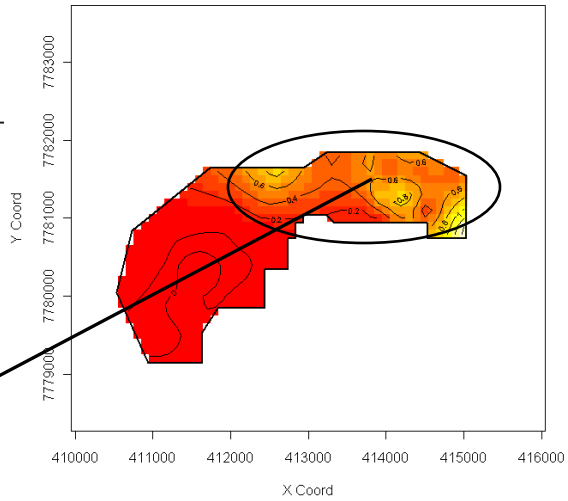


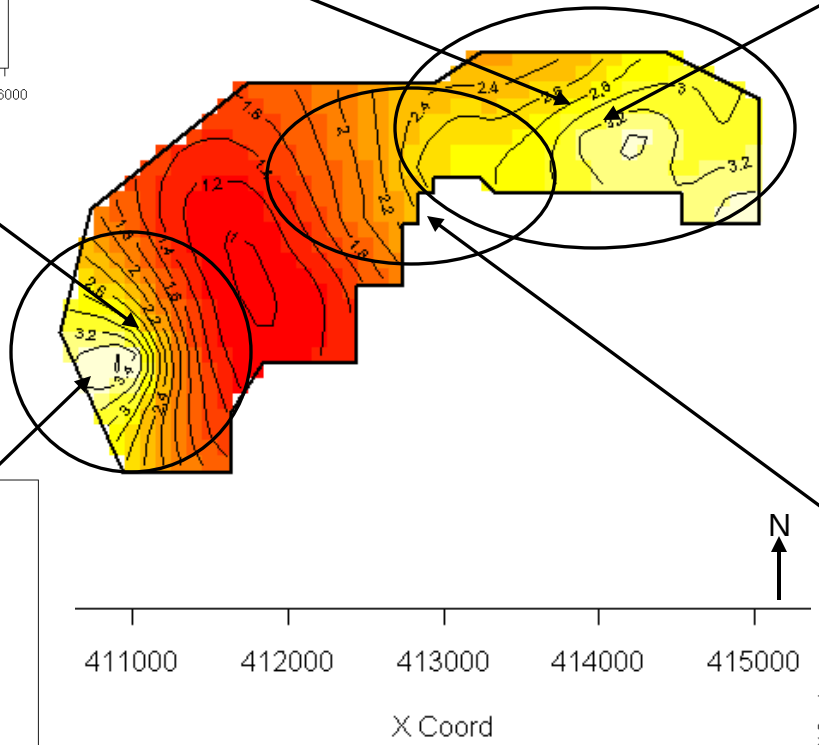
All Invertebrates

Oligiocheate

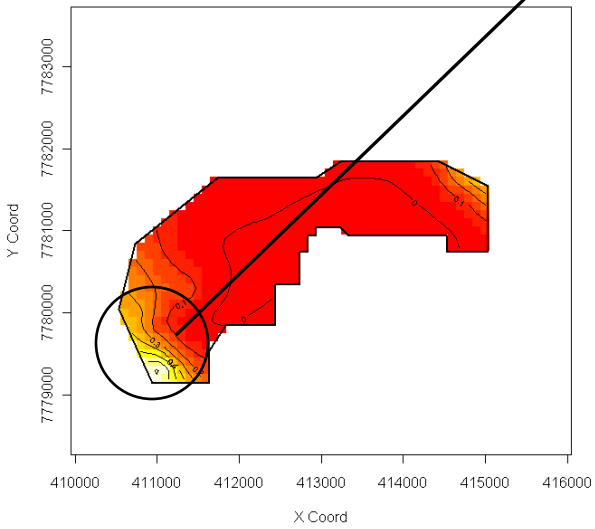


Chironomid

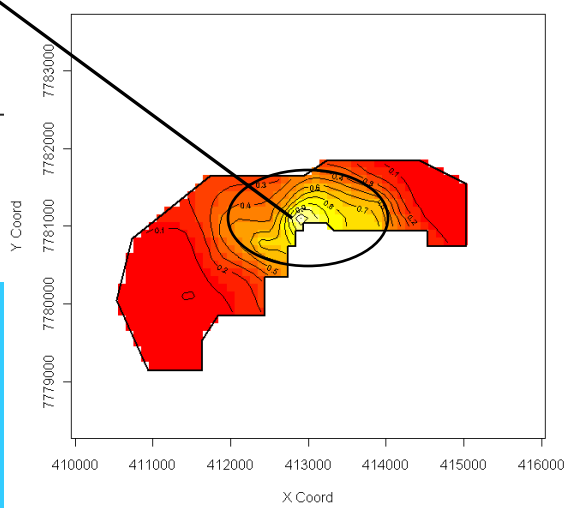




Amphipod



Tipulid

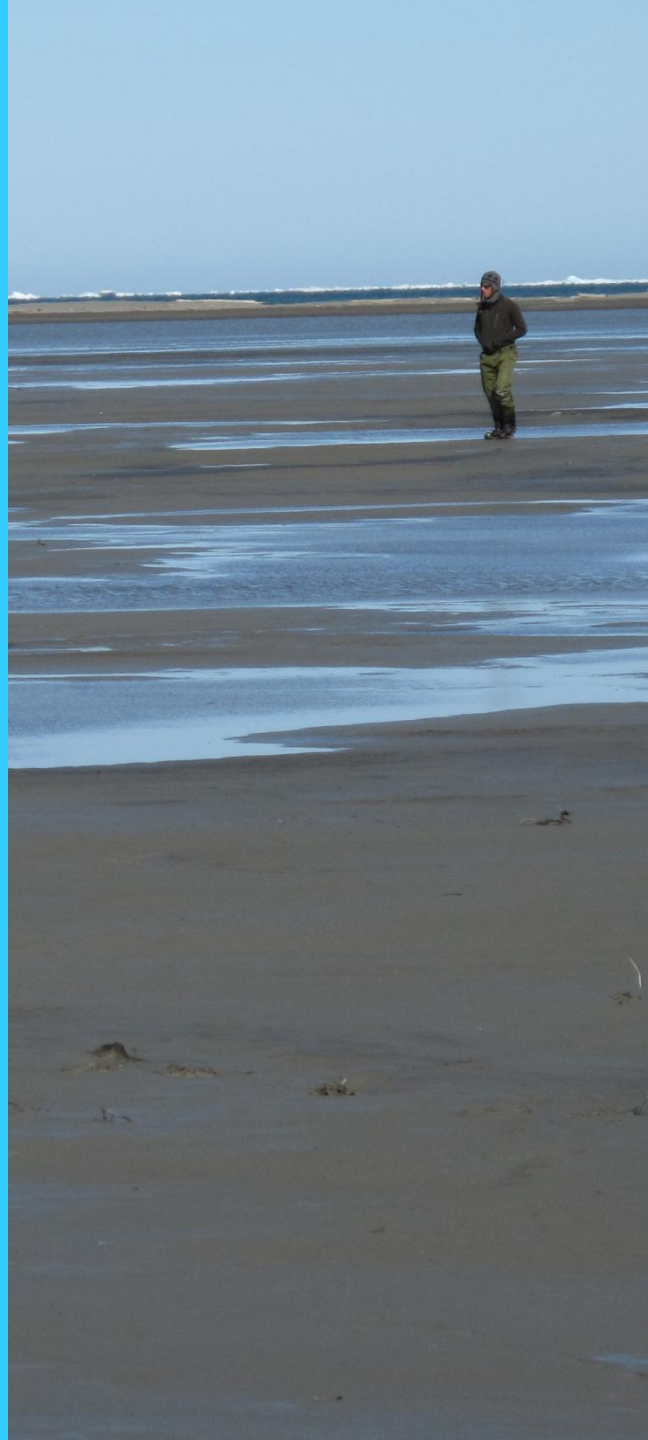


Tone Values

Low High

Summary

- Freshwater invertebrates are often available
- Saltwater invertebrate availability is unpredictable
- High and low tides make saltwater invertebrates available
- We expect climate change will bring more variability to this system making it more unpredictable



Acknowledgements

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