

# Belt AML biota monitoring



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# Monitoring outline

- Contaminants of concern:
  - Al, As, Be, Cd, Cu, Fe, Th, Zn
  - Al (dissolved), Fe (TR) baseflow exceedences
- Benthic macro-invertebrates (BMIs)
  - population indices
  - metals analysis
- Fish
  - population indices
  - metals analysis
    - brown trout
    - white suckers
    - rocky mountain sculpin



# Sampling sites

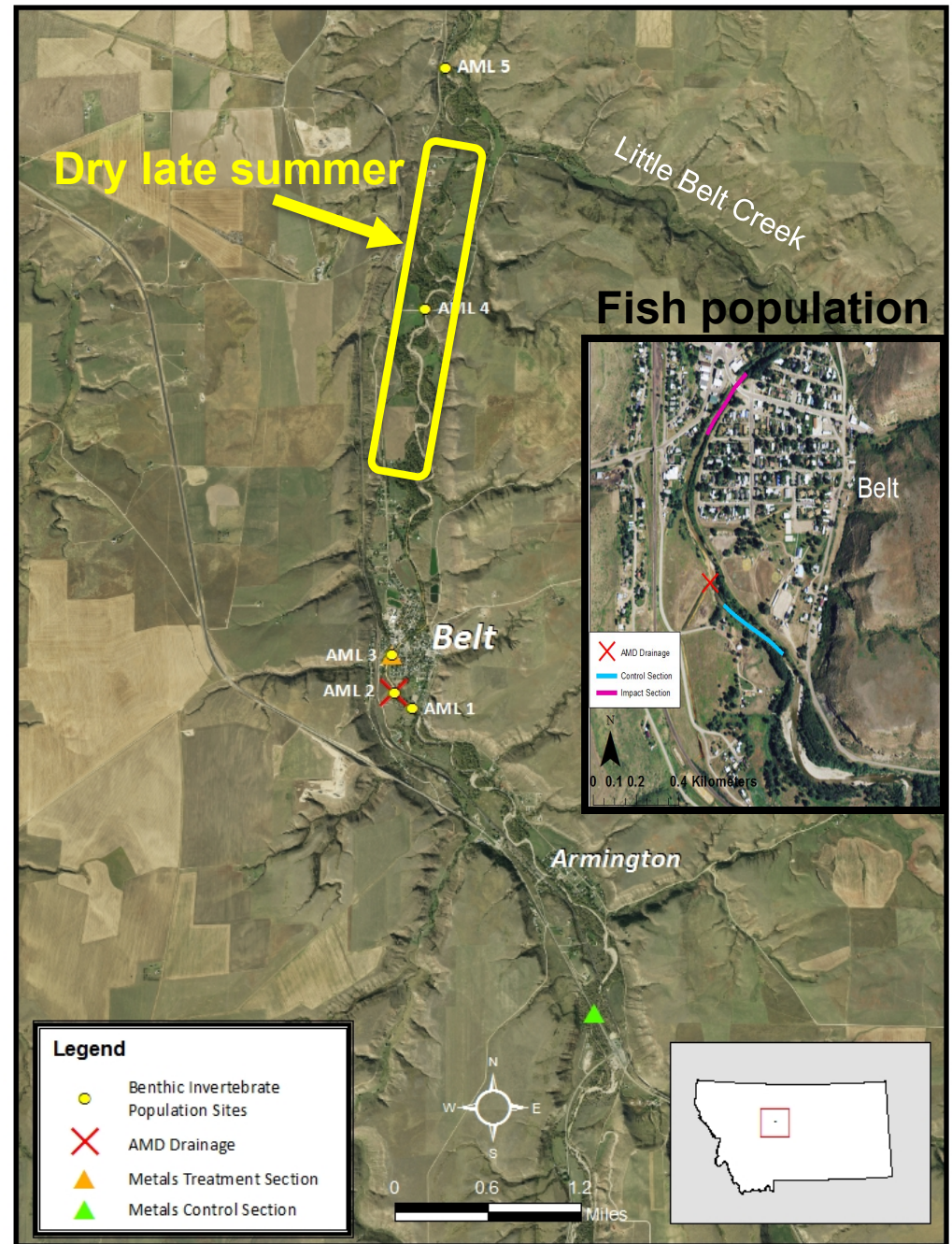
BMI – population indices

- AML1 – 5 ●

Fish – population indices

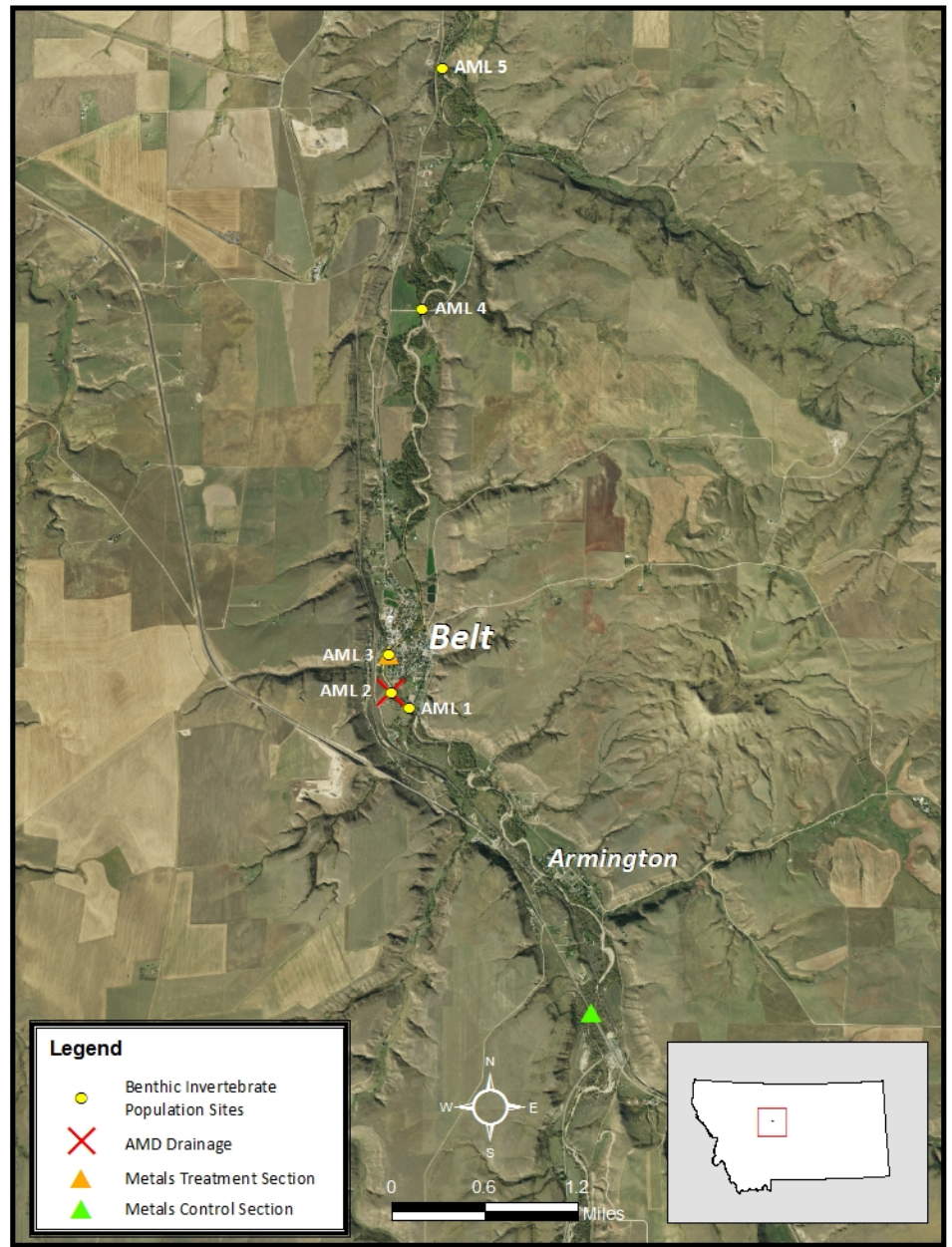
Fish and BMI metals

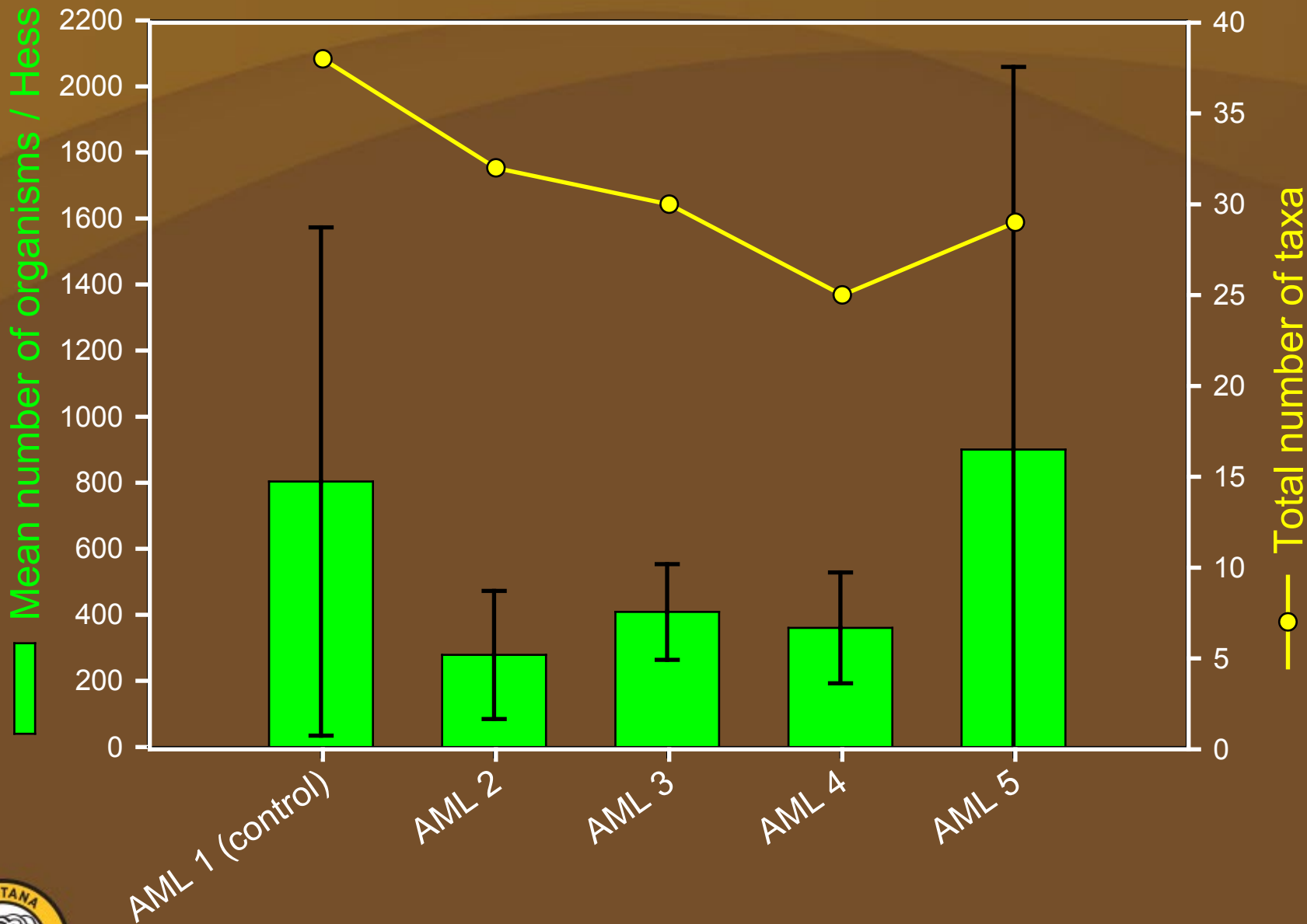
- Upstream (control)
  - Armington junction ▲
- Downstream (impacted)
  - Belt ▲



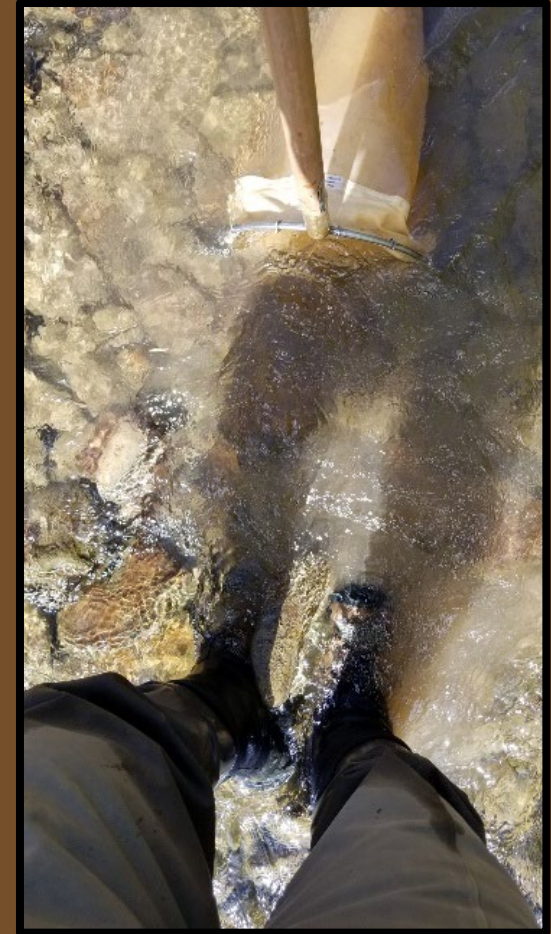
# BMI population indices

Collected 7-13-2018





# Benthic macro-invertebrate metals sampling



# Benthic macro-invertebrates sampled



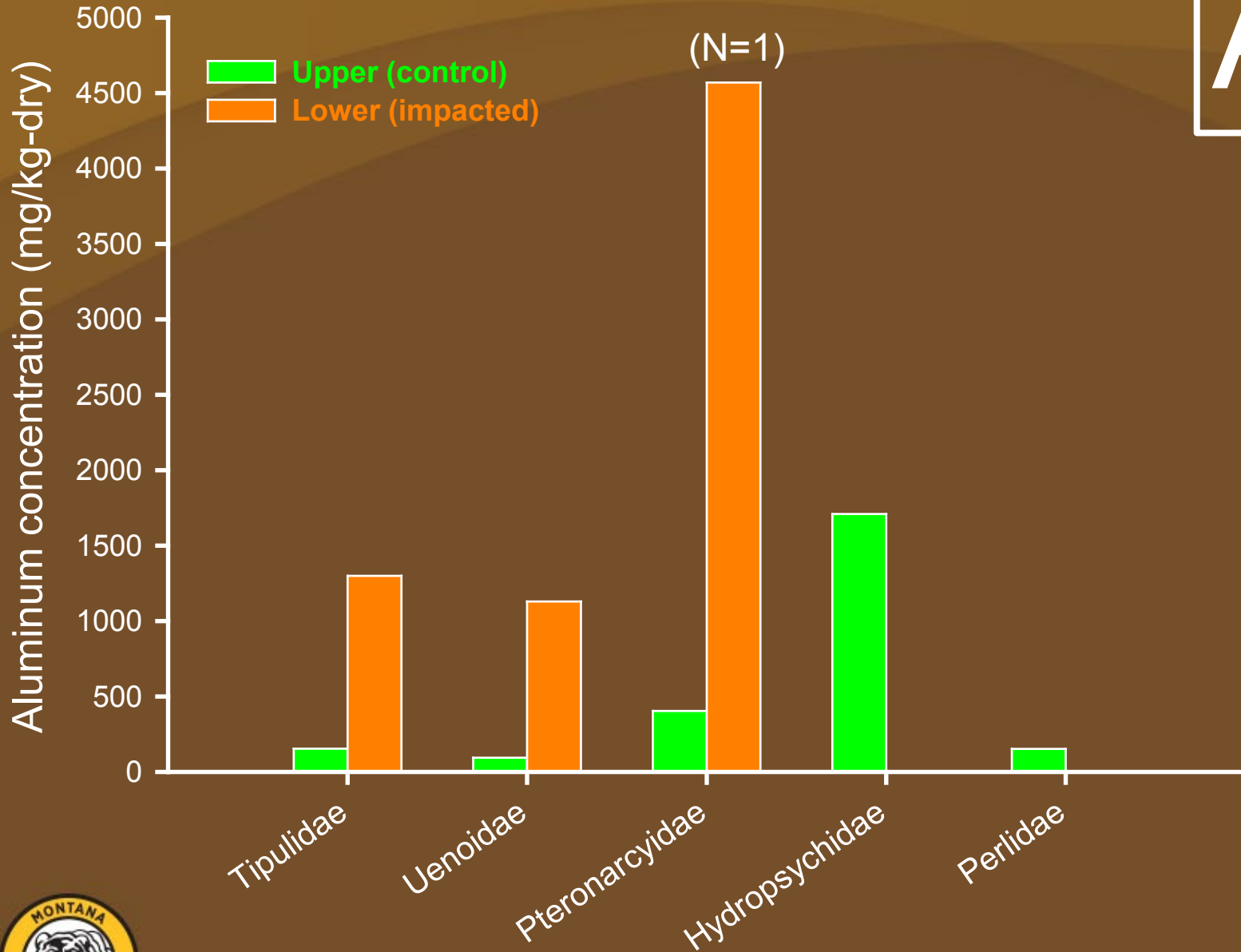
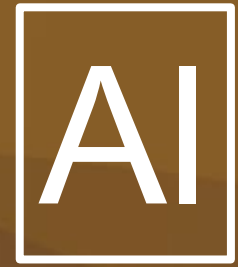
Upstream  
(control)

Downstream  
(impacted)

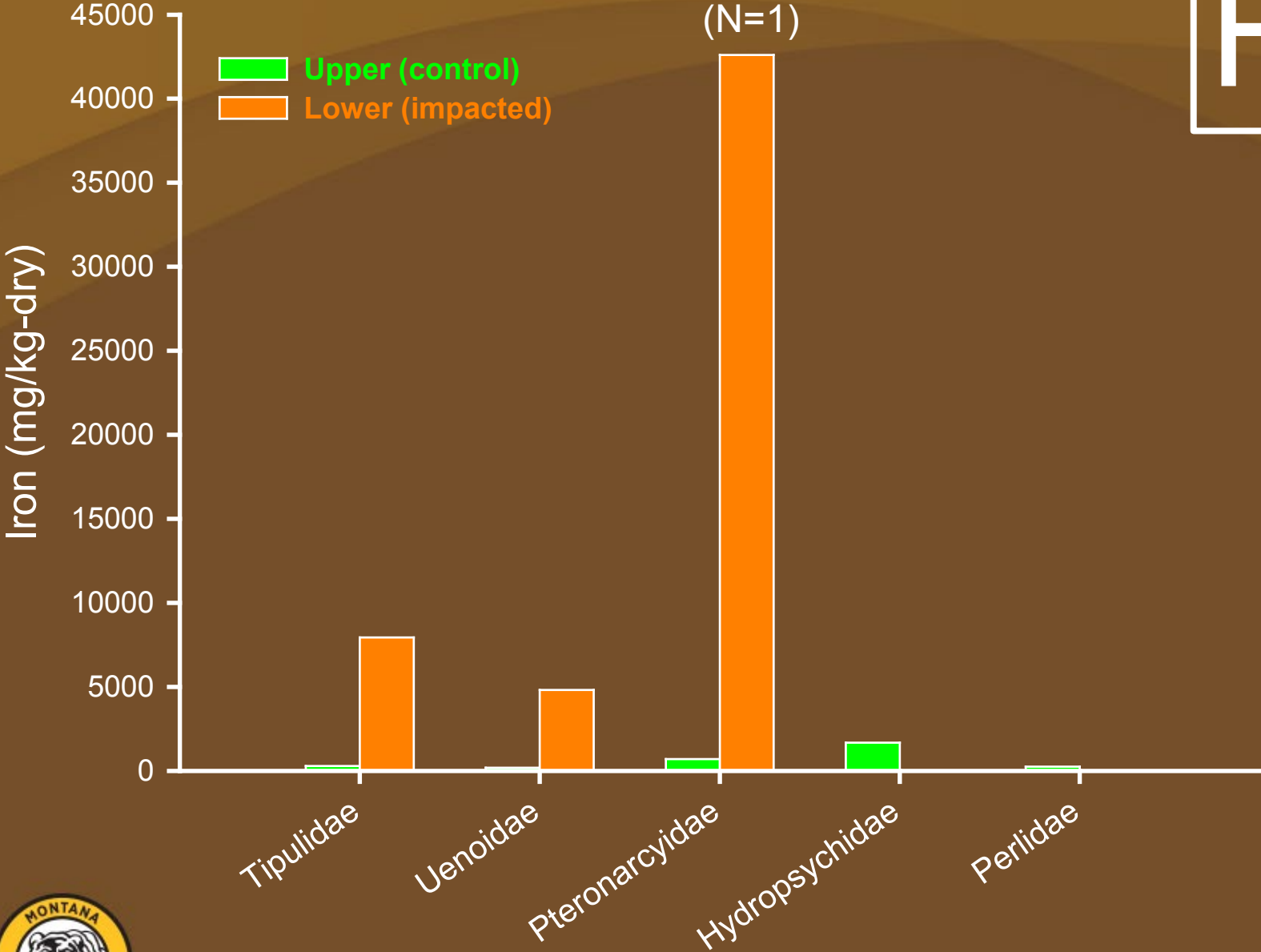




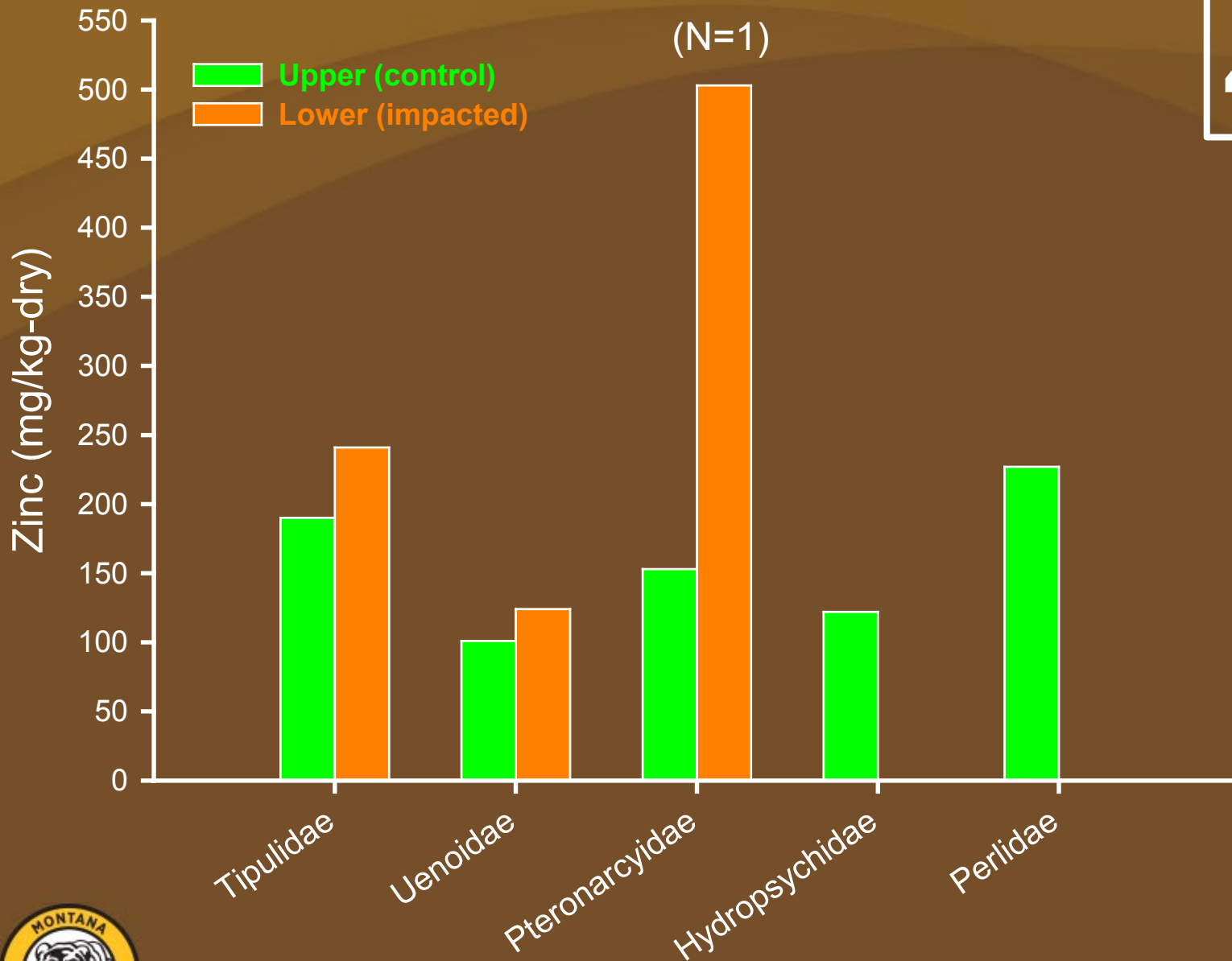




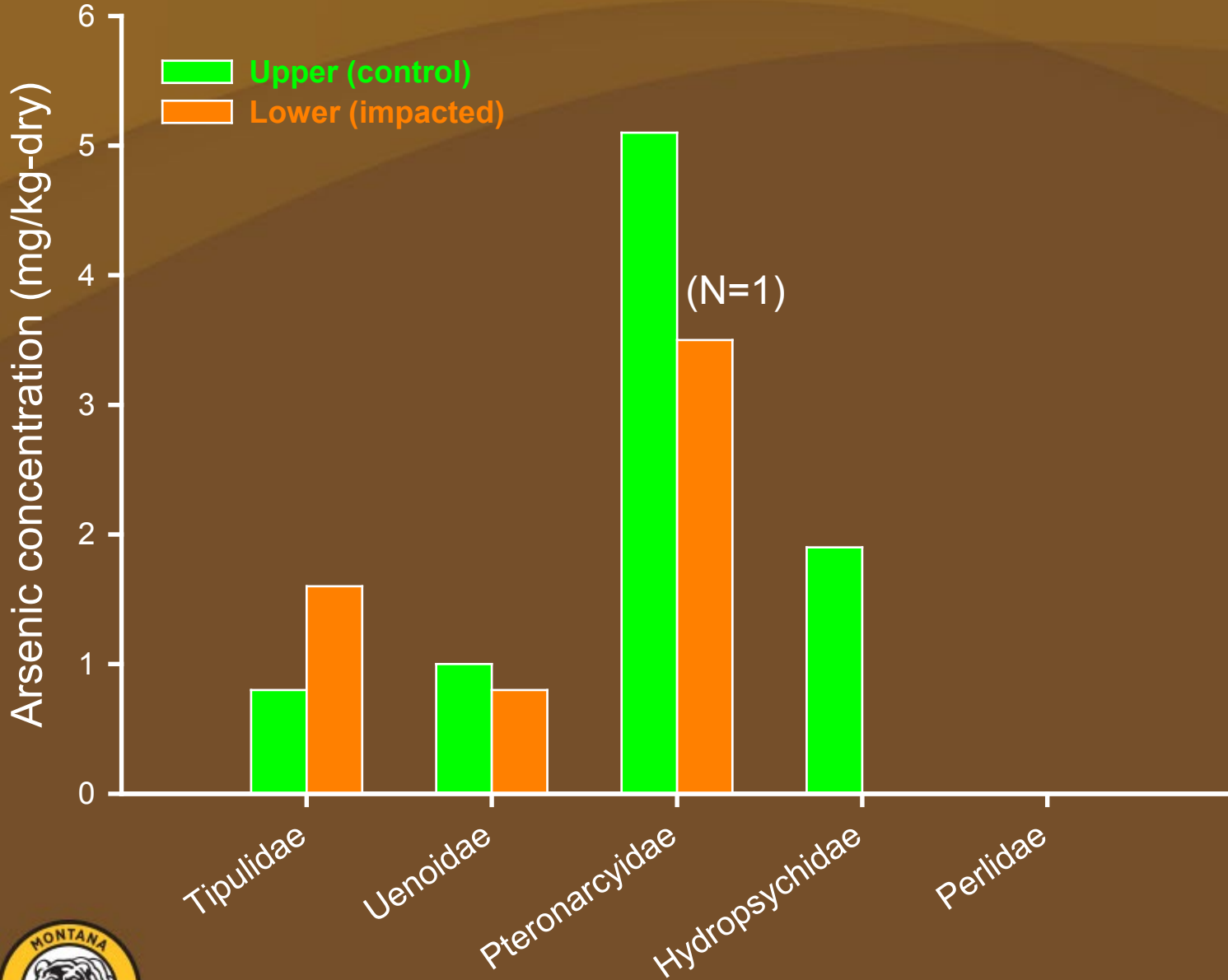
Fe

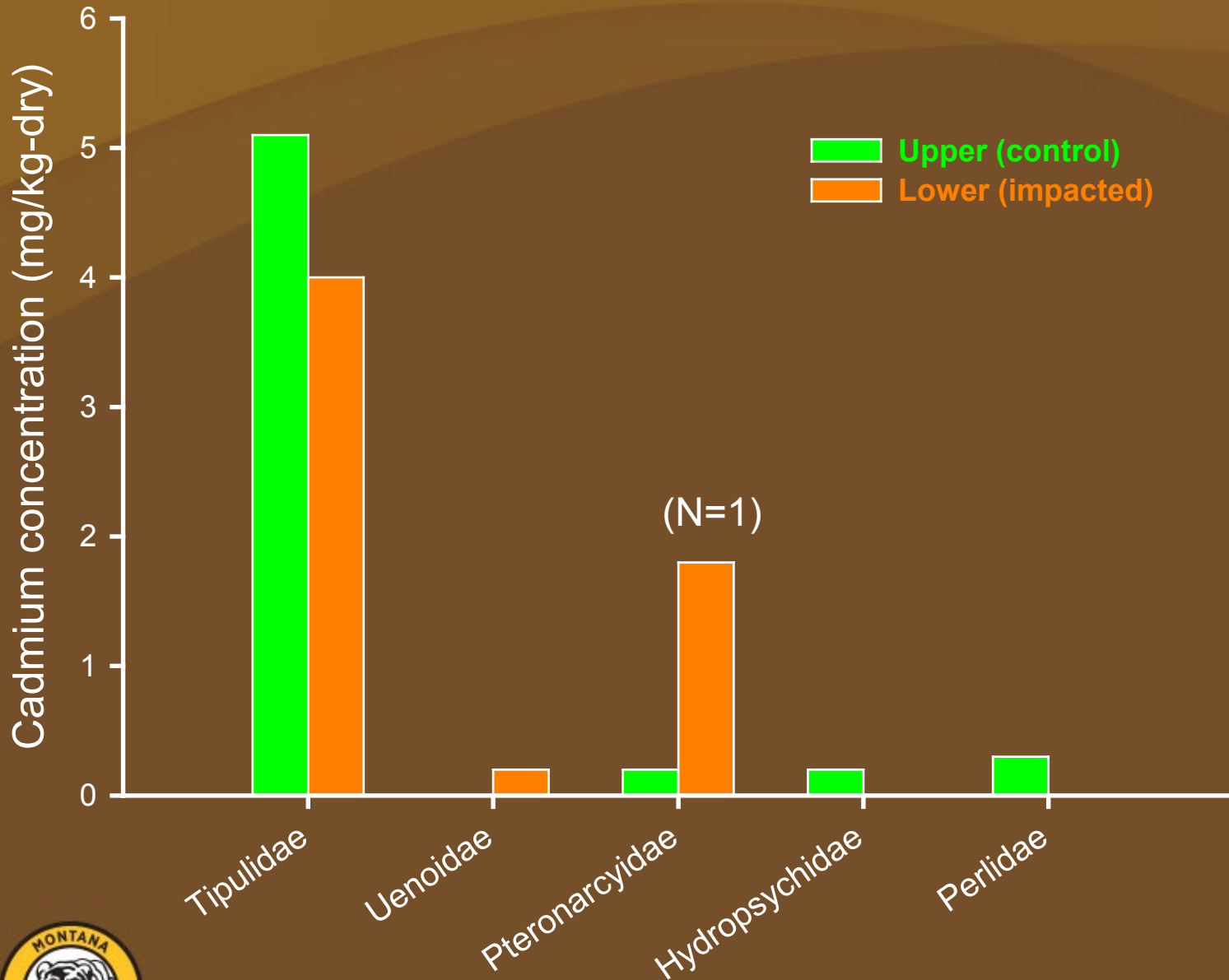


Zn

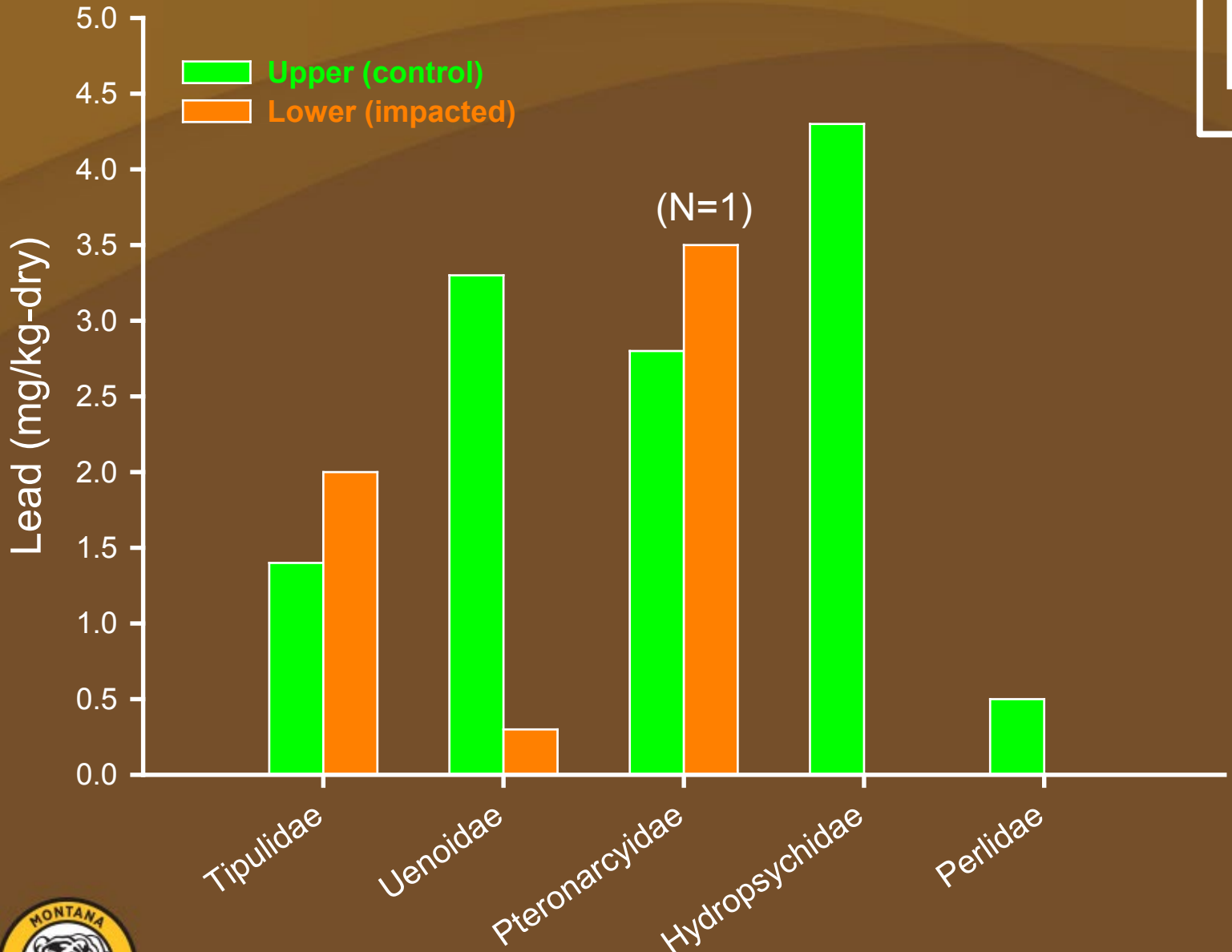


As





Pb



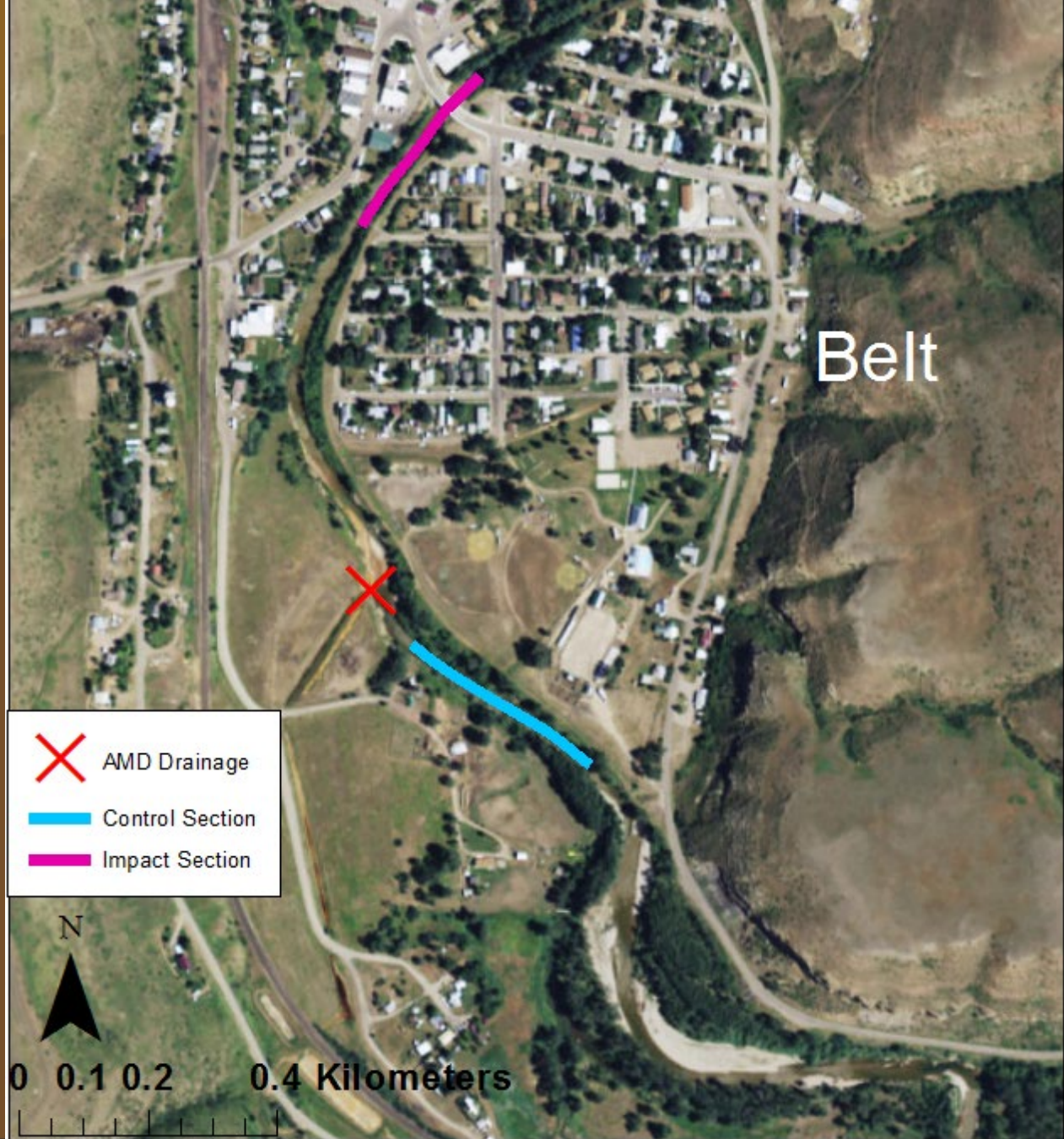
# Fish sampling – population indices



# Fish sampling – population indices

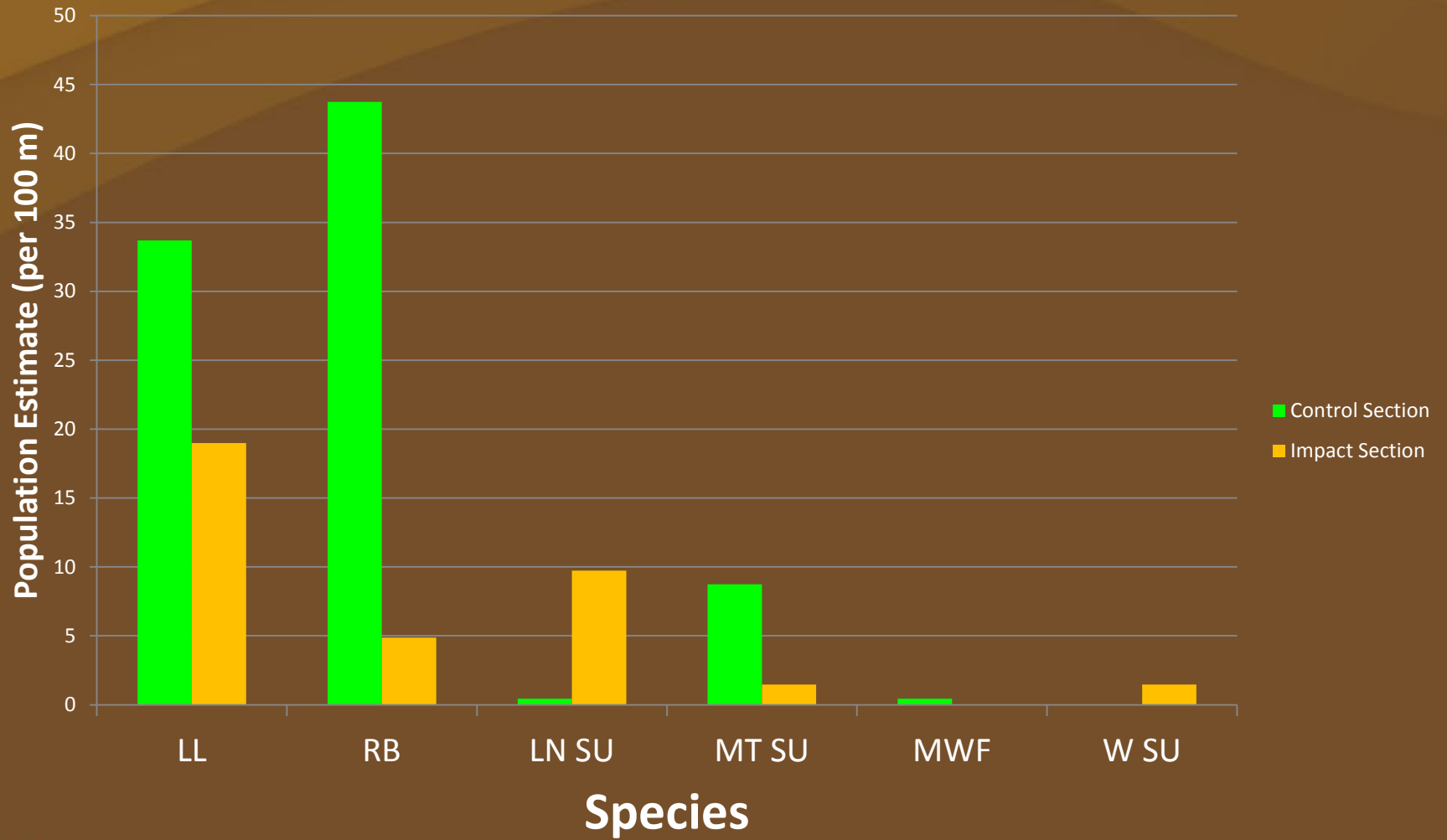


Property IGFA (Artist Duane Raver)

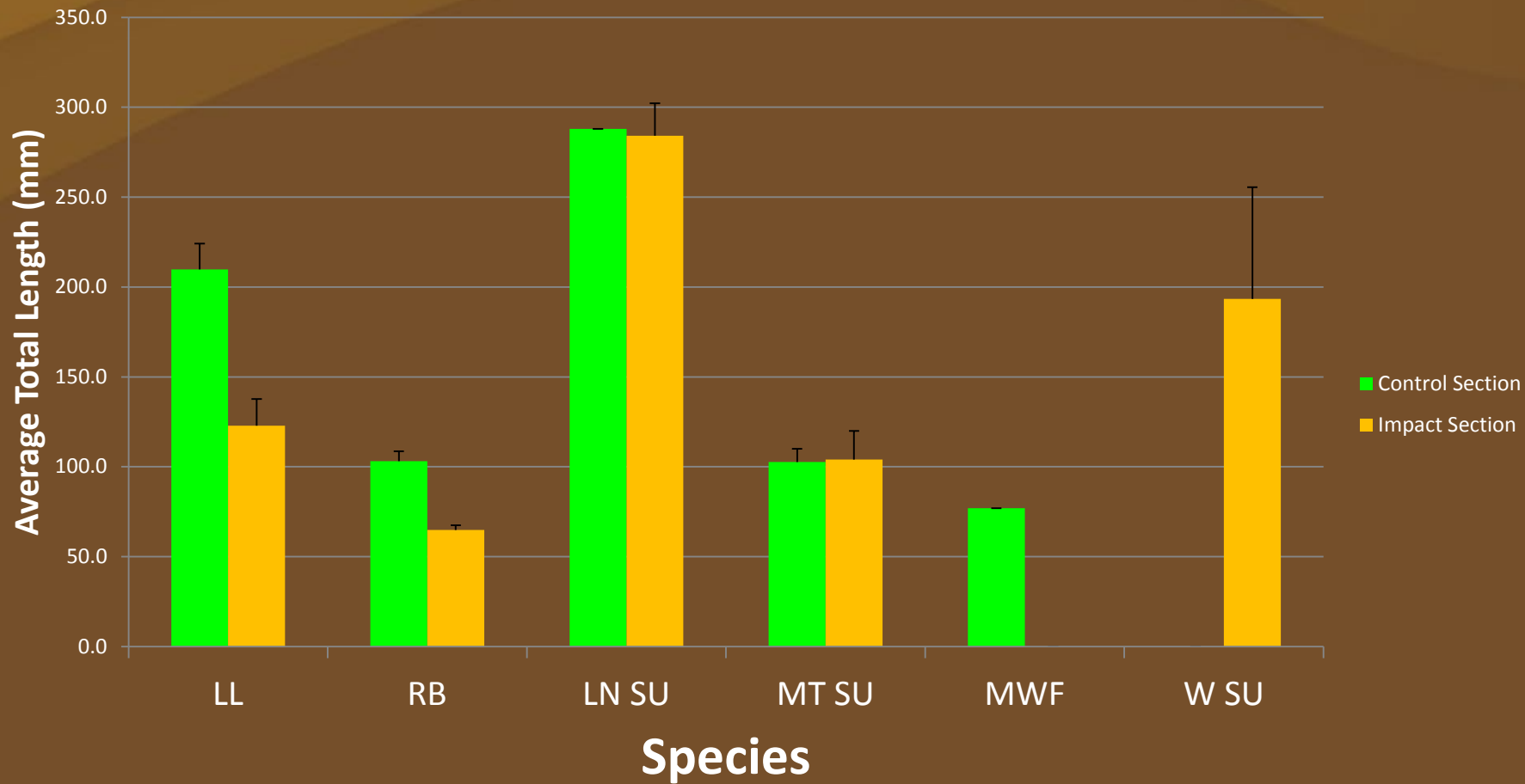




# Population Estimates



## Average Lengths of Fish Sampled



# Fish sampling – metals



# Fish species sampled

Brown trout (5/site; 291-376 mm TL)

- Fillet – Hg (FCA)
- Liver (metals)



White sucker (whole-body; 117-187 mm TL)

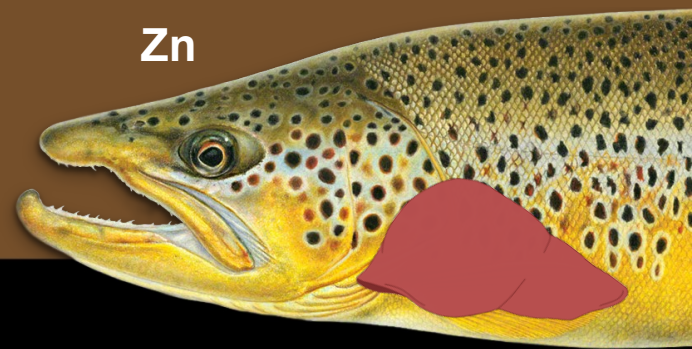
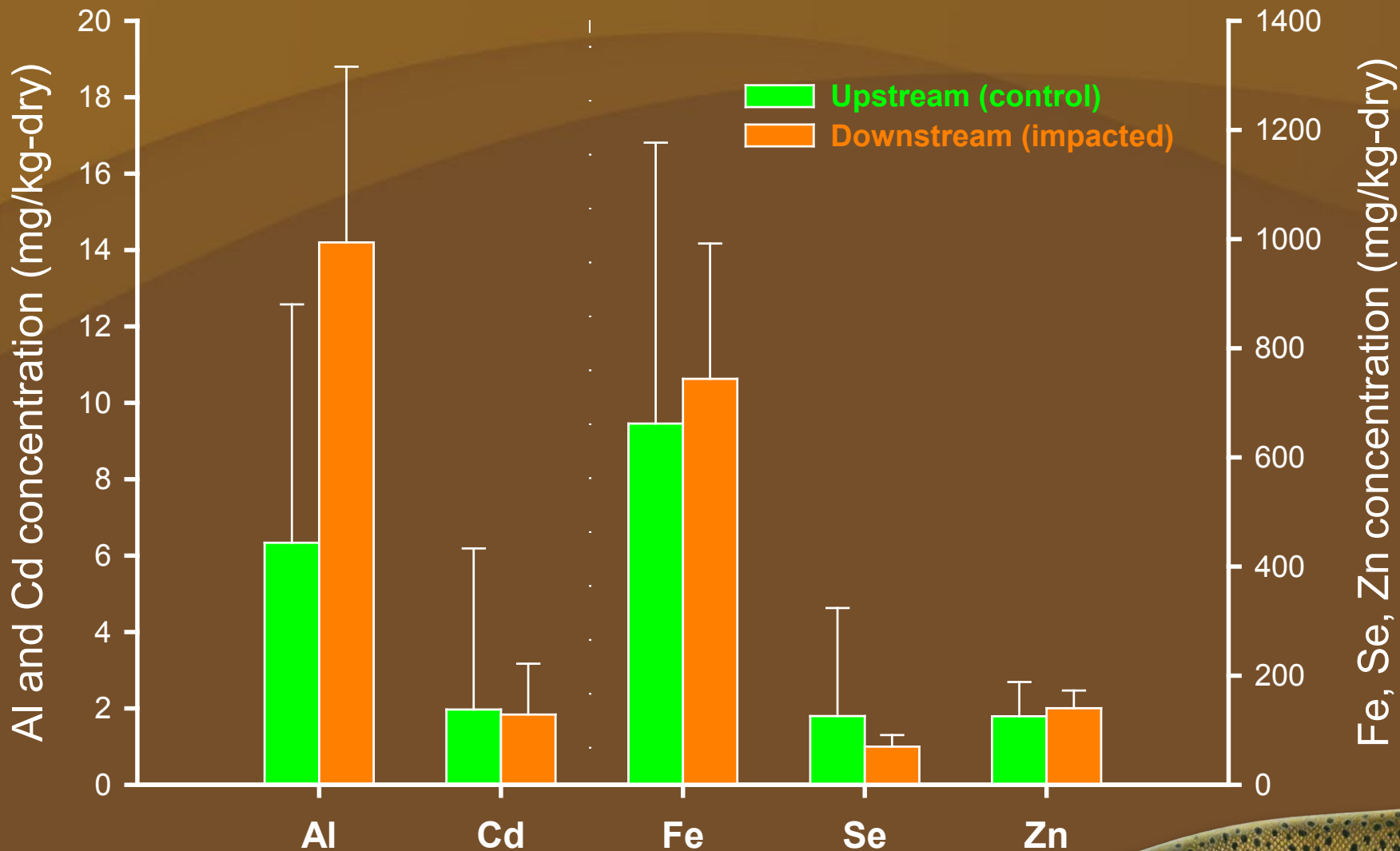
- Upstream 3 composites, 4 fish (12)
- Downstream 3 comp. 3 fish (9)

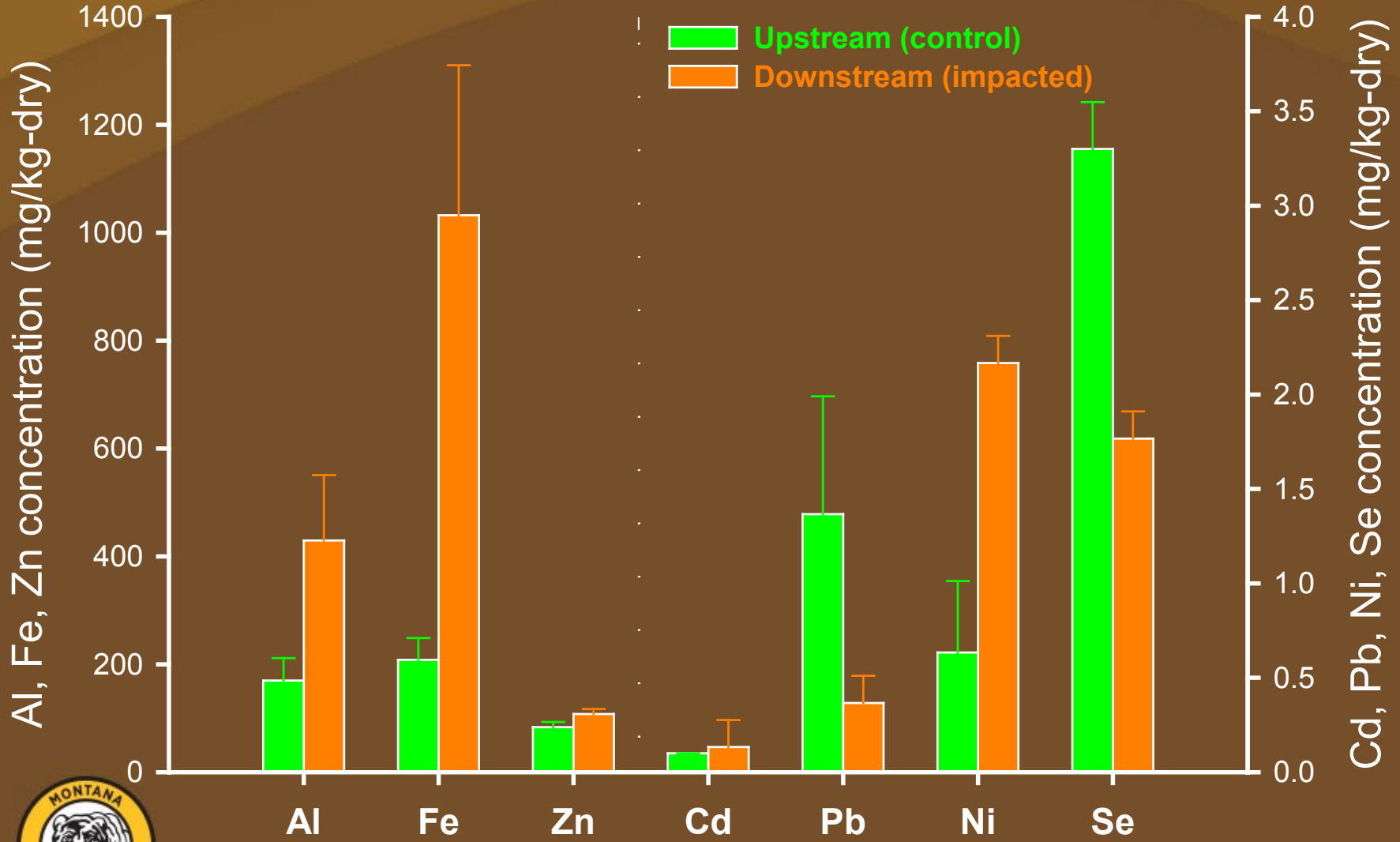


Rocky mountain sculpin (whole-body; 64-88 mm TL)

- 2 composites, 5 fish (10)



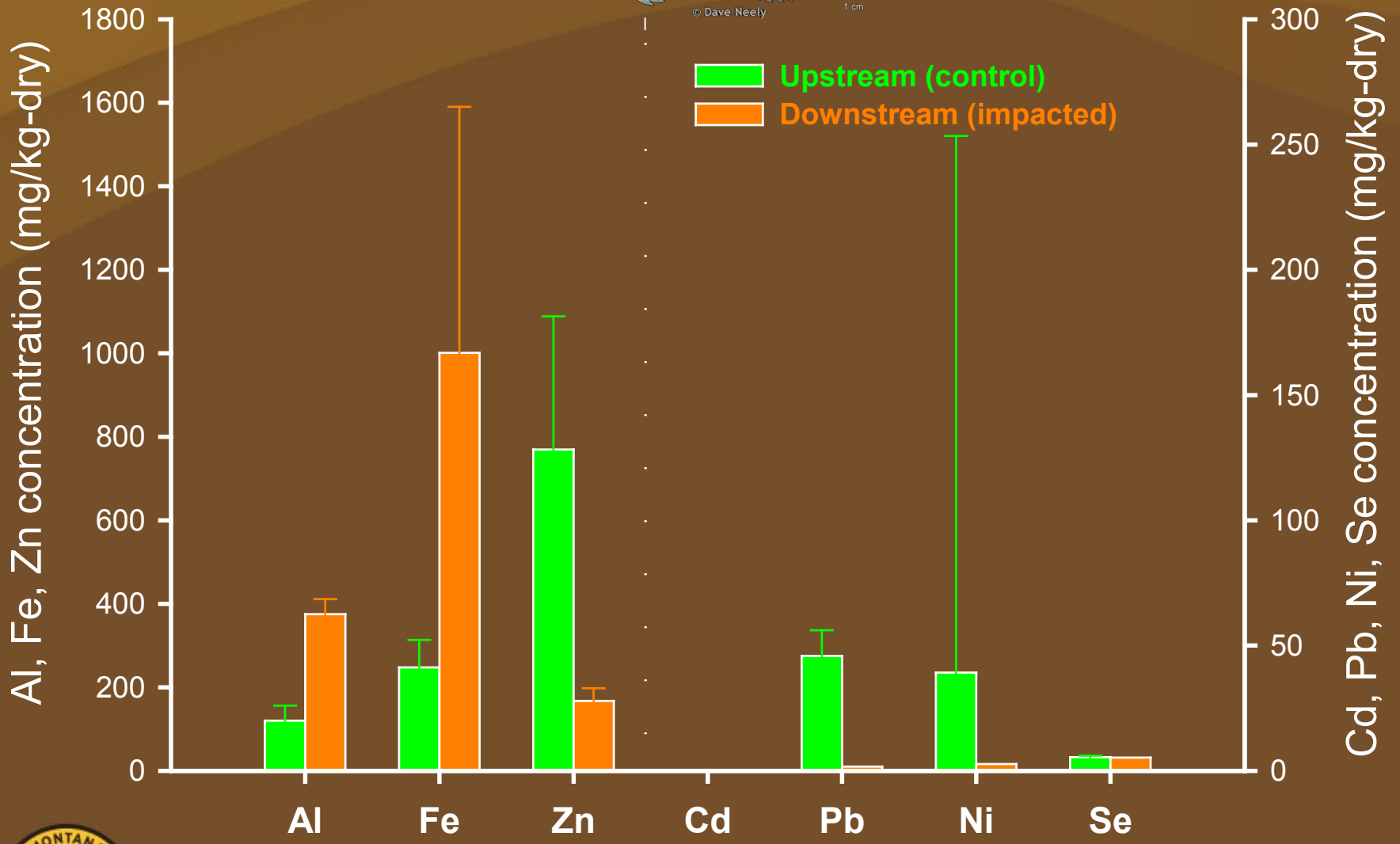


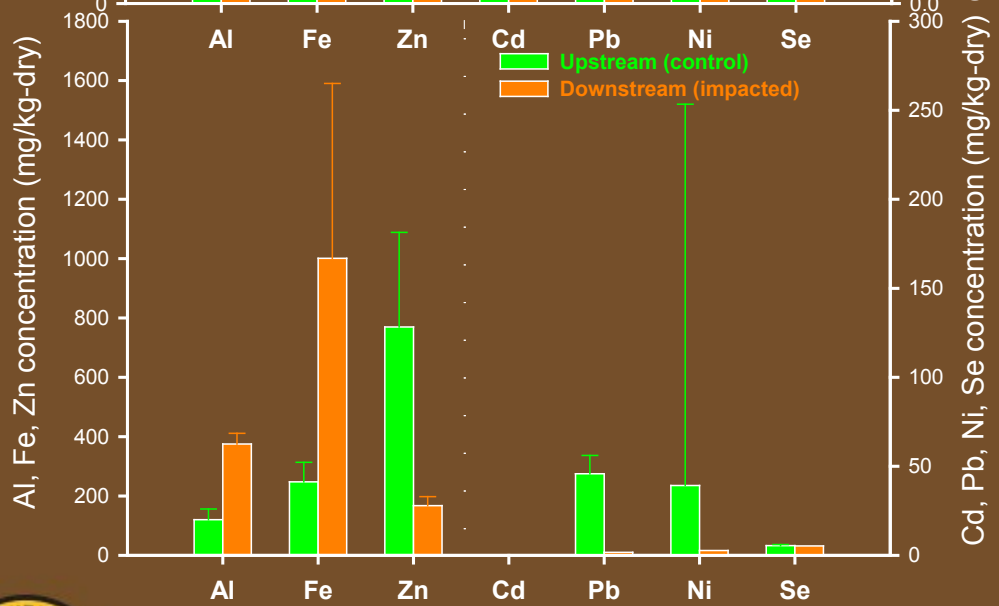
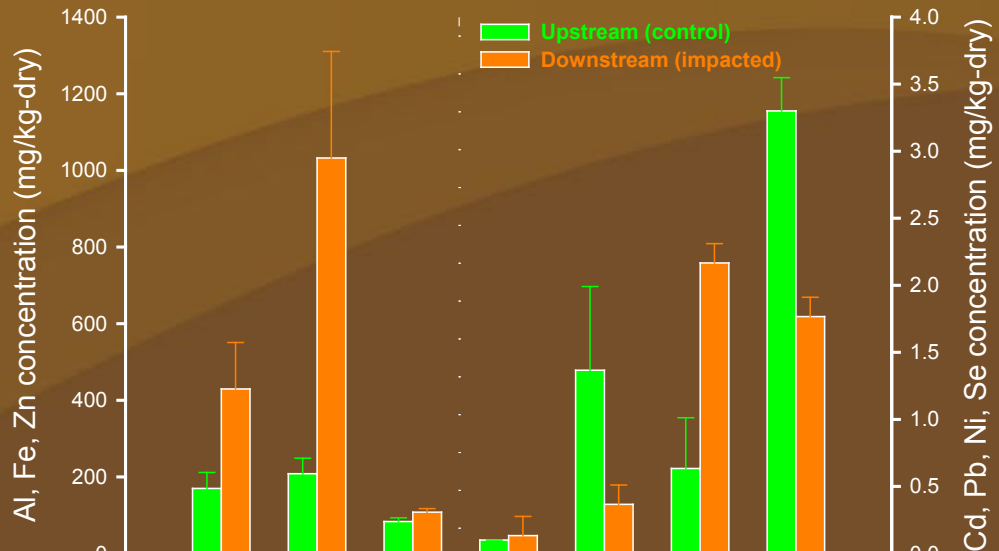




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1 cm





- Benthic inverts, diatoms, algae, debris



- Immature aquatic insects, small fish





# Summary

## Baseline biota metal concentrations

- Al and Fe elevated in all biota at impacted site

## Biota population indices

- Mean # organisms & total taxa reduced at first 3 sites downstream
- Mean # recovered by AML 5, but taxa # still lower
- Trout density and size reduced at impacted site



