

Establishing a Baseline for Post-Restoration Biomonitoring in Nome Creek

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Background

- Stream restoration may improve disturbed streams^{1,2}
- Stream biomonitoring determines restoration's effects on stream health^{3,4}
- Bureau of Land Management (BLM) began restoring Nome Creek in 2023
- Goal to establish baseline data for future post-restoration monitoring

What does restoration look like?

Photos below show a Nome Creek reach before and after restoration.



Figure 1: Nome Creek prior to restoration. Reach is just upstream of the U.S. Creek Road bridge.

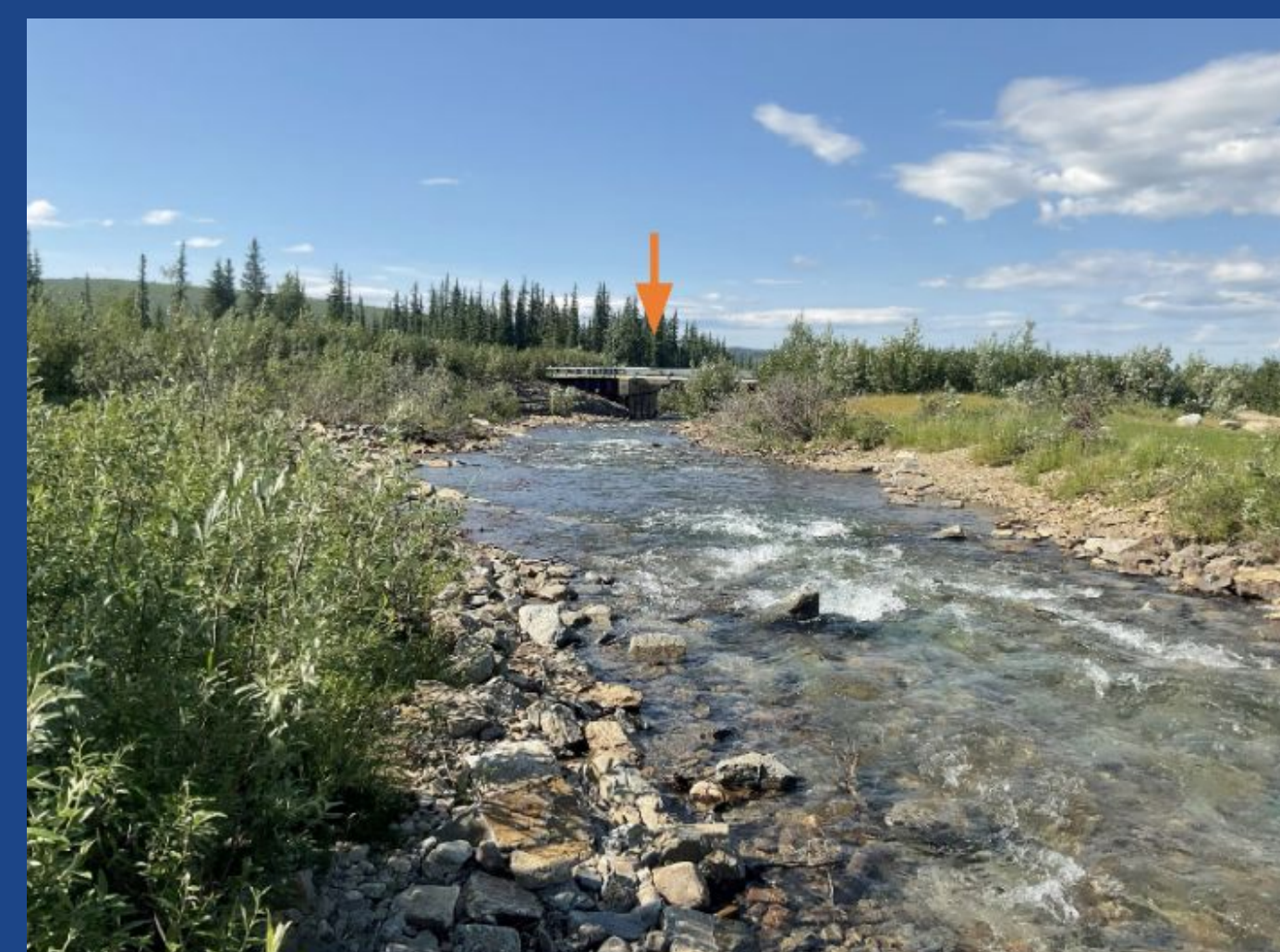


Figure 2: Nome Creek post-restoration. Reach is the same as in Figure 1.

Hypothesis & Predictions

- Hypothesis: Harrison's aquatic community similar to Nome's due to similar history of disturbance and stream characteristics
- Prediction: We'll see similar taxonomic richness and concentration of aquatic macroinvertebrates across Nome and Harrison Creek

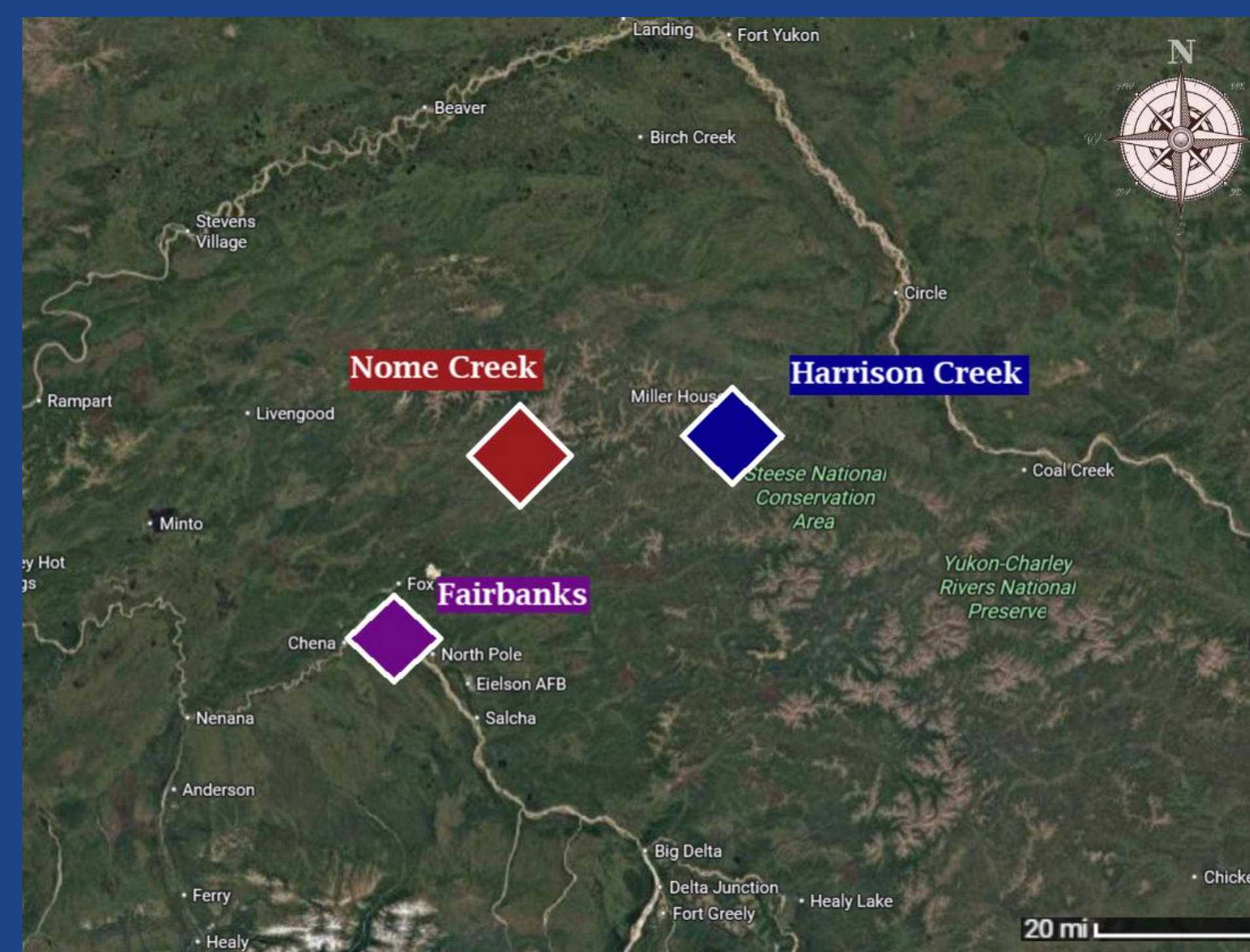


Figure 3 (left): Map of interior Alaska showing where Fairbanks, Nome Creek, and Harrison Creek are located. Nome Creek is in the White Mountains National Recreation Area. (Google Maps)



Figure 4 (above): BLM Biologist Manny May installs drift nets to sample macroinvertebrates. Photo credit: Emmanuel May, 2024.

Method

- Drift samples collected in 2024 by BLM
- Analyzed one sample per stream; processing more
- Samples identified in lab
- Concentration and taxonomic richness calculated for each stream

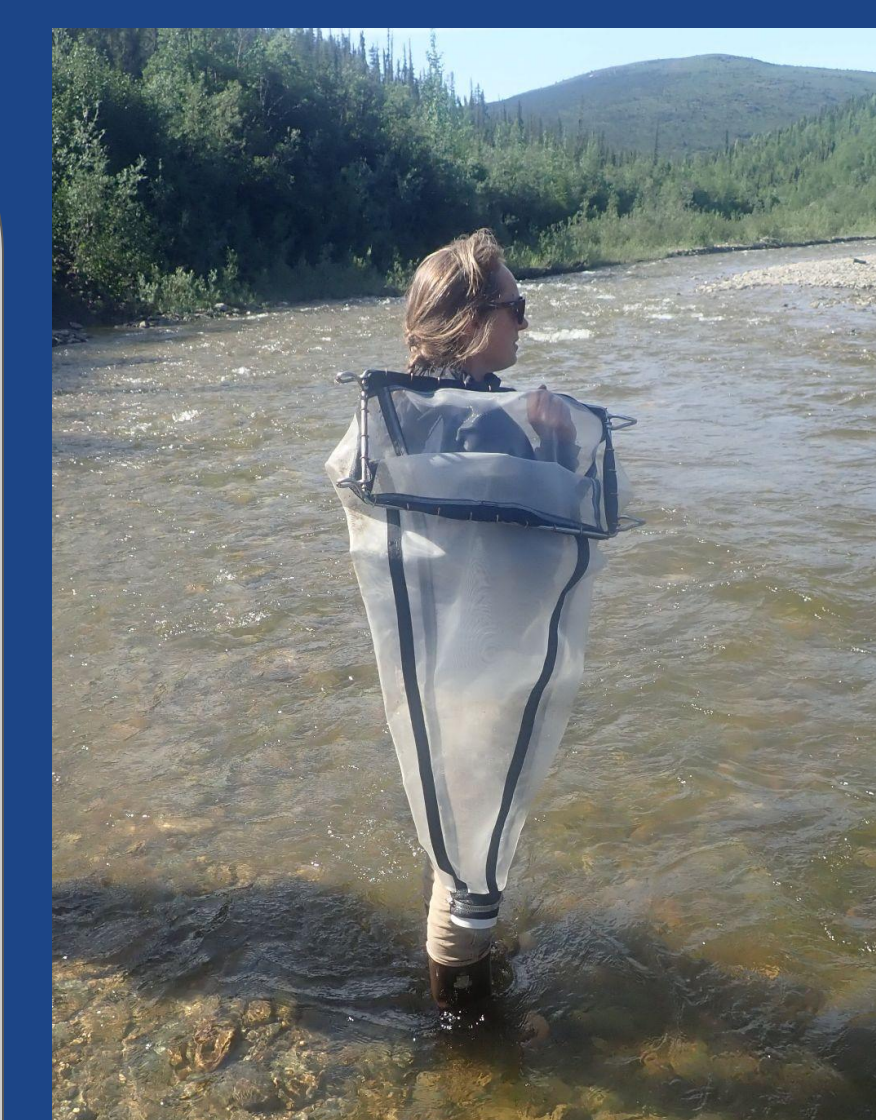


Figure 5: A drift net. Credit: Emmanuel May, 2024.

Results

While pre-restoration concentration was lower in Nome Creek compared to Harrison, taxonomic richness was similar in both streams.

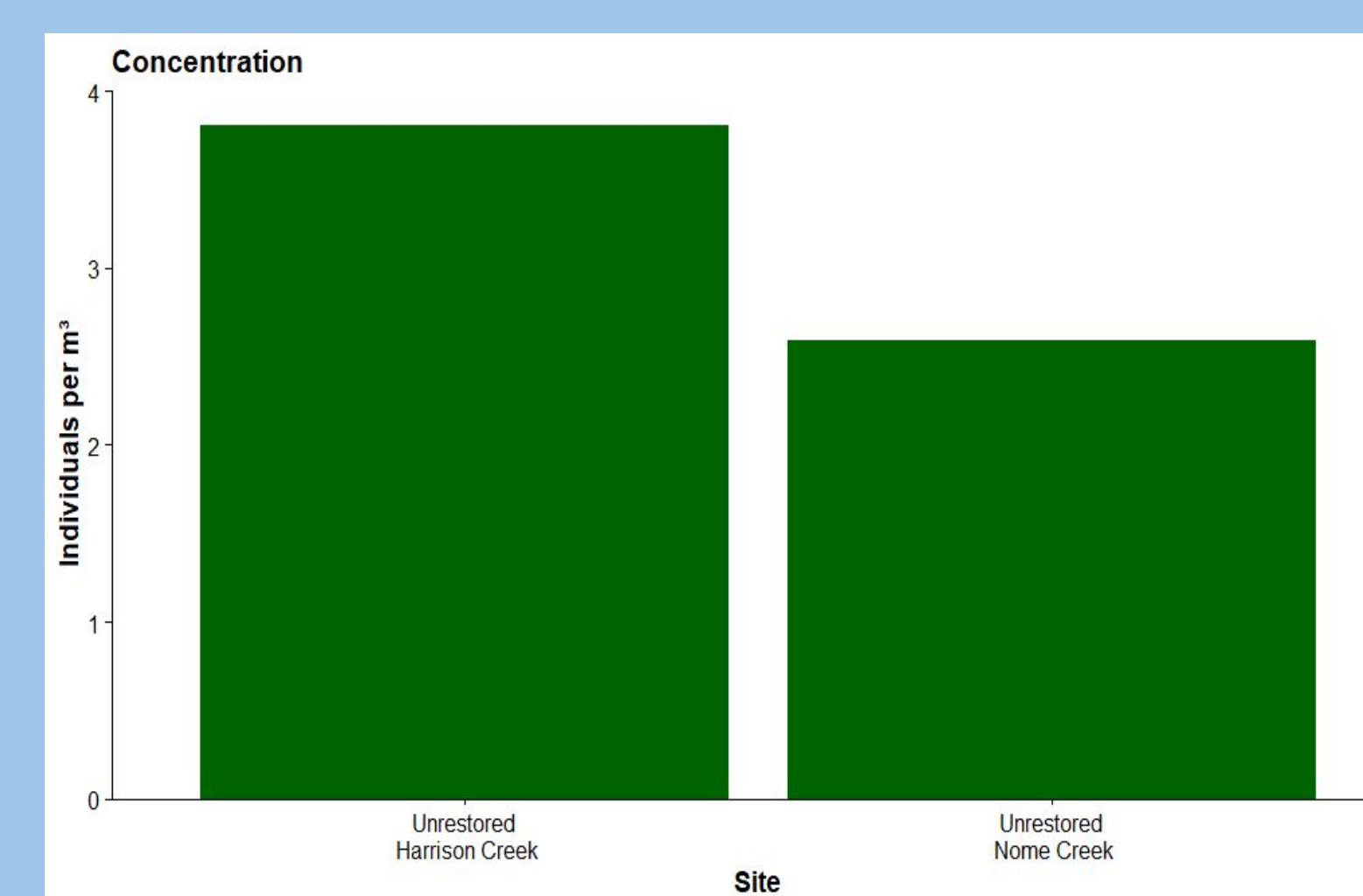


Figure 6: Number of individuals per m³ of flowing water per stream site.

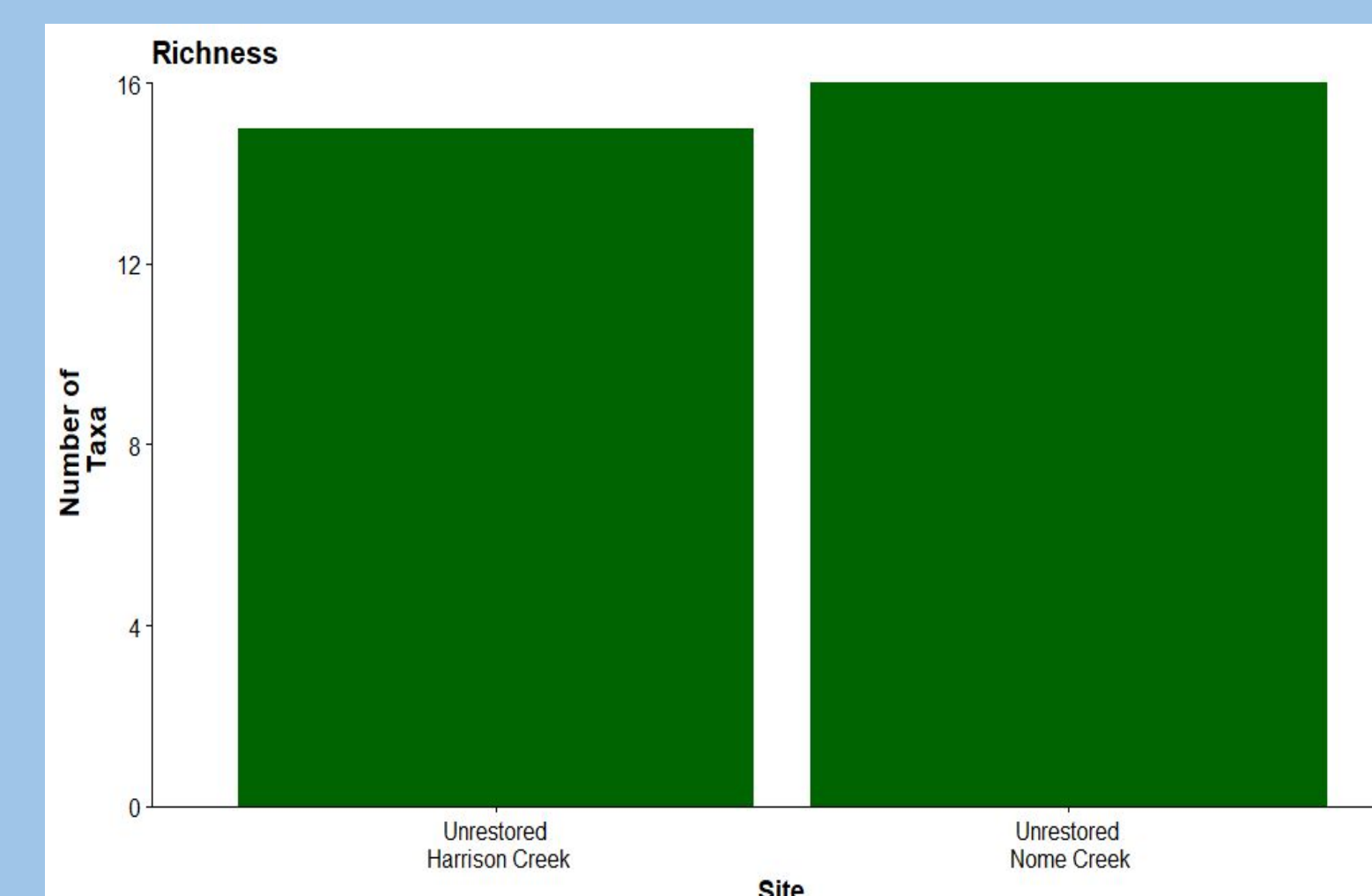


Figure 7: Number of unique taxa present in each sample.

Study Sites

- Nome Creek — mined stream in White Mountains (being restored)
- Harrison Creek — mined stream 40 mi. east of Nome Creek (no prior restoration)
- Vetting Harrison as reference stream for post-restoration biomonitoring of Nome Creek

Discussion

- Baseline data for creeks established
- Limitations: low sample number
- Next Phase: processing more samples; comparing restored portions of Nome Creek to samples from Harrison Creek; adding biomass
- Upcoming Project: incorporating macroinvertebrate data from 2025 and 2026 for comprehensive study



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