

Ecological Monitoring of Black Creek Before and 1-Year After Barrier Mitigation

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Monitoring Location and Design

- Three sampling points within each downstream and upstream location within the study site.
 - Macroinvertebrates collected and aquatic habitat attributes recorded at each sample point.
 - Downstream macroinvertebrates collected using kick-sampling in riffle habitats, upstream samples collected using benthic Ponar grab and suspended multiplate colonization samplers.
 - Pre-removal data collected 2022-2023-2024
 - Post-removal data collected 2025-2026
- (Presenting 2025 data, 2026 still to be processed)



Barrier Mitigation Goals

- 1) Allow upstream passage of resident fishes and migrating salmonids above the former Youngs Mill Dam
- 2) Eliminate liability issues, safety concerns, and future maintenance costs to an aging and outdated dam structure
- 3) Improve stream habitat and biodiversity surrounding the original dam.

Rainbow Trout



Chinook Salmon



Barrier Structure Changes Post Mitigation

Original Dam Structure



Re-Engineered Step-Pool Design



Downstream View

2023 Pre-Step Pool



2025: Post-Step Pool



Upstream View



August 2023
Original Impoundment

June 2025
7-mo. after mitigation barrier

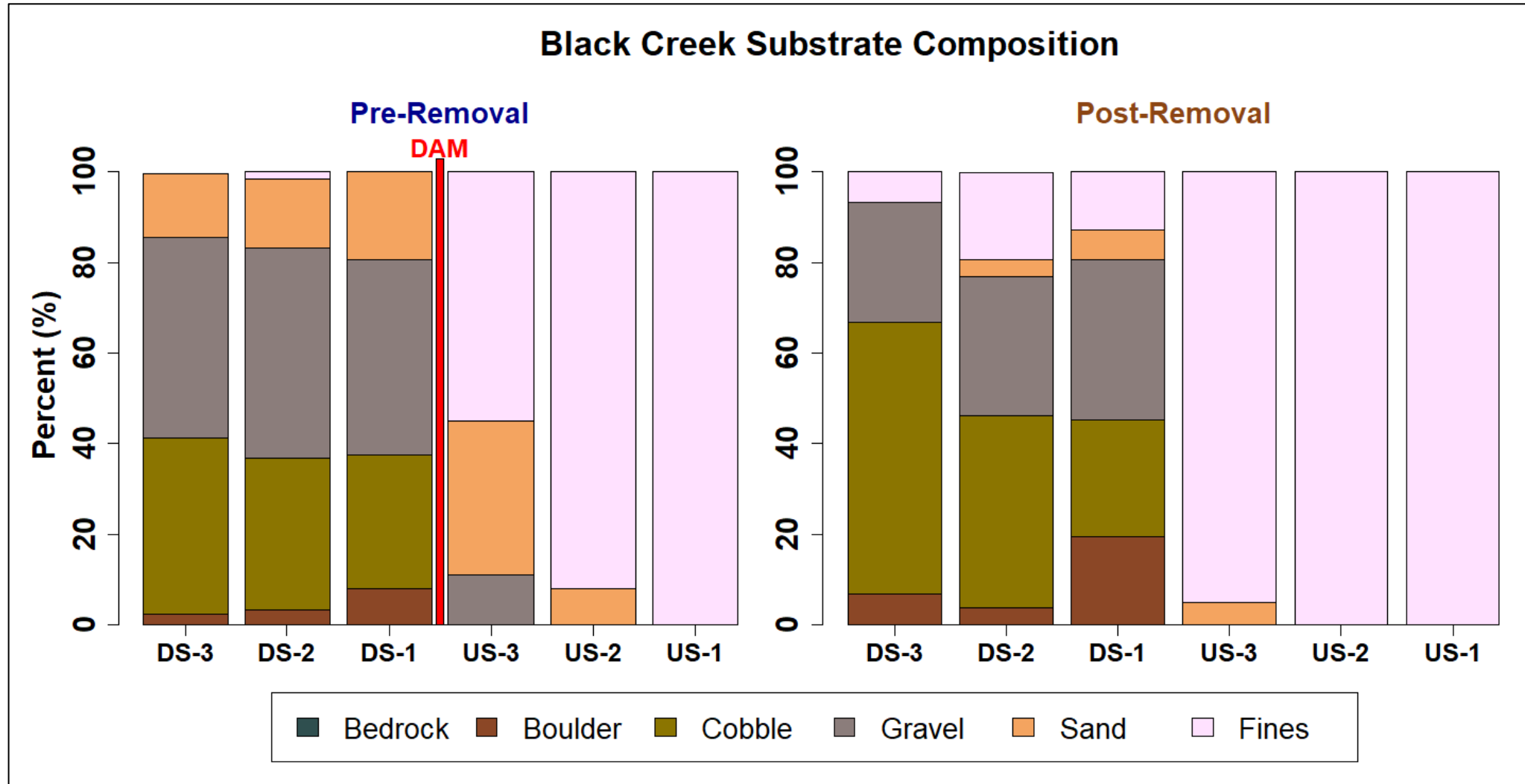


June 2026
1.5yrs after mitigation barrier



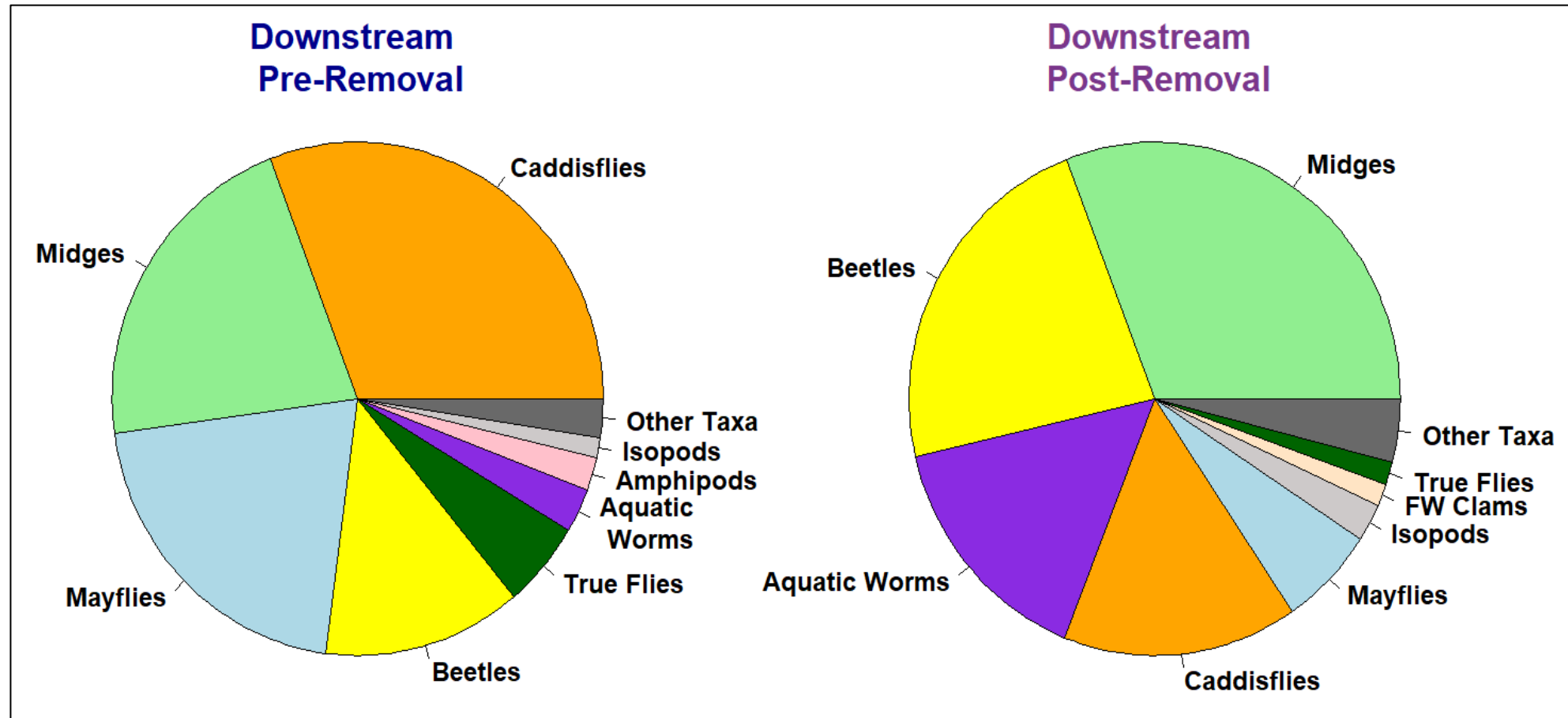
Instream Habitat Attributes

- Downstream reach coarsens with addition of step-pool boulders and armoring, increase in fine sediments emigrating from impoundment.
- Upstream reach benthic habitat remains similar to pre-mitigation years.



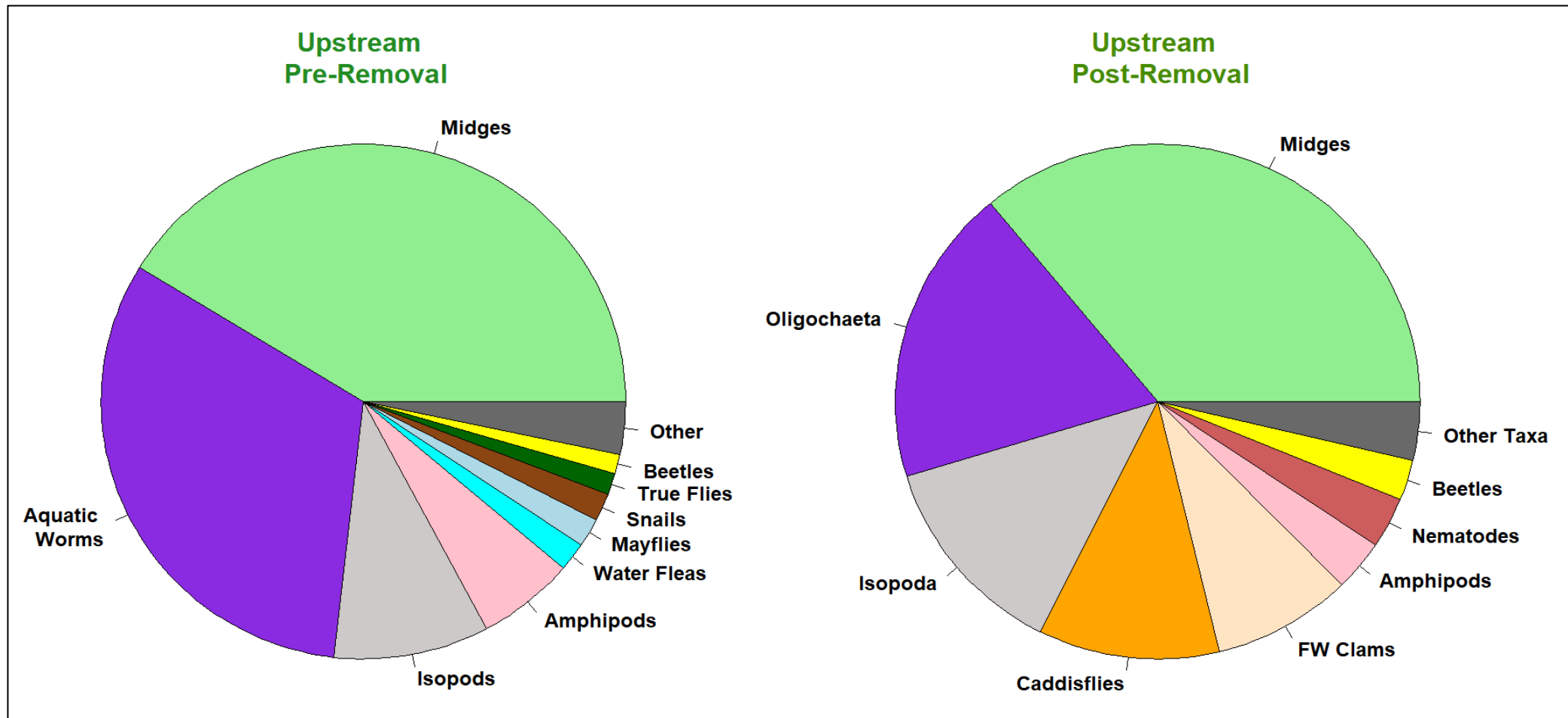
Downstream Macroinvertebrate Community

- Macroinvertebrate taxa representation during 1st year post-mitigation similar to pre-removal
- Increase in aquatic beetles, aquatic worms, and midge larvae.
- Short-term colonization of midges and aquatic worms due to emigration from impoundment during the lowering of water level and sediment movement.



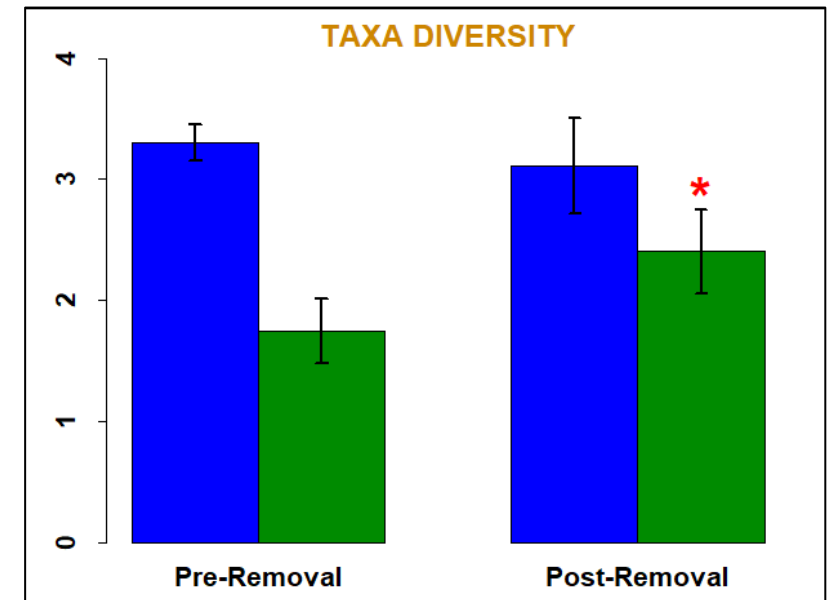
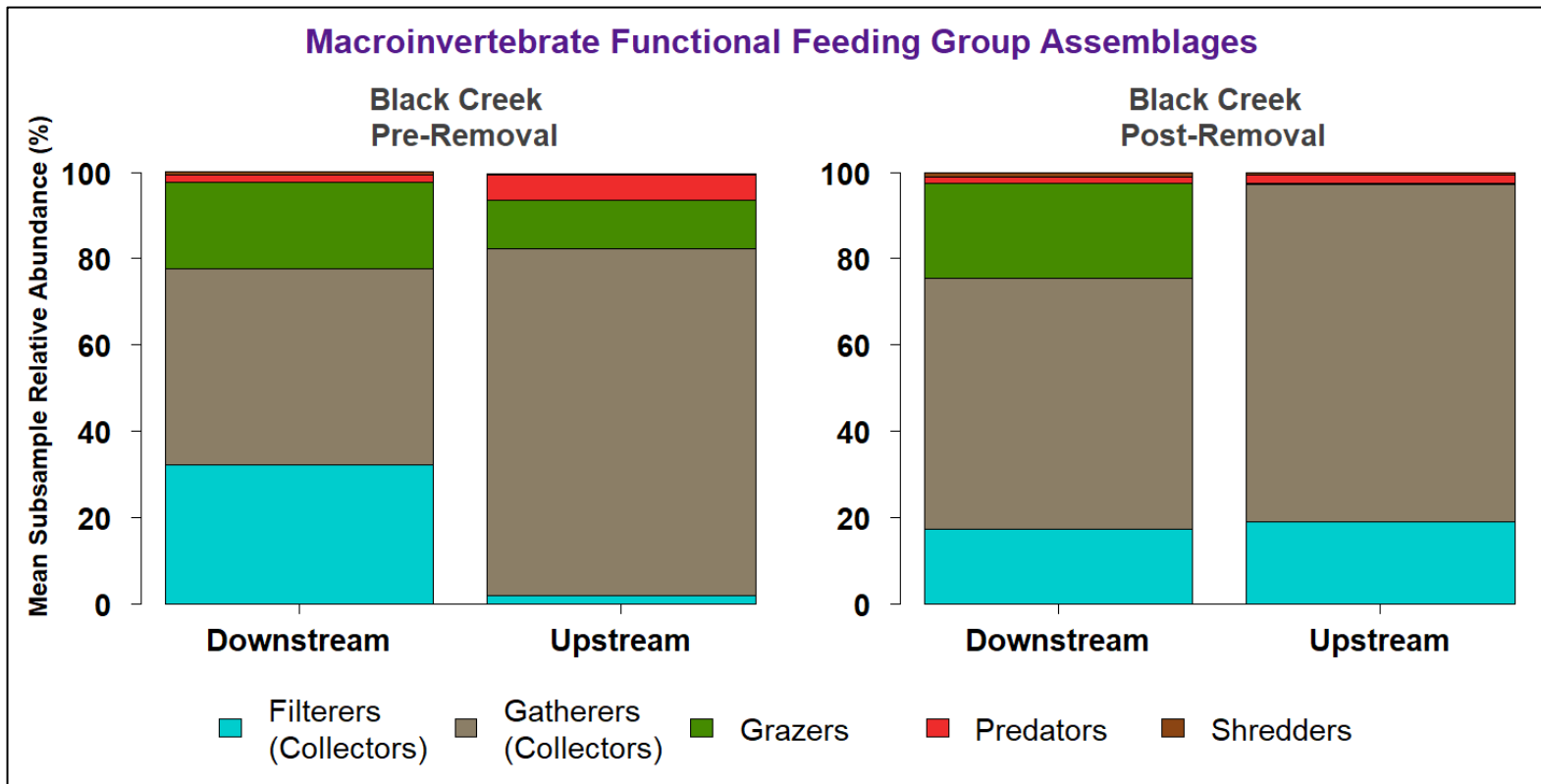
Upstream Macroinvertebrate Community

- Decreases in aquatic worm and midge larvae abundance
- Increase caddisfly and aquatic beetle abundance
- Community demonstrates early reorganization as habitat type shifts from pond to meandering stream



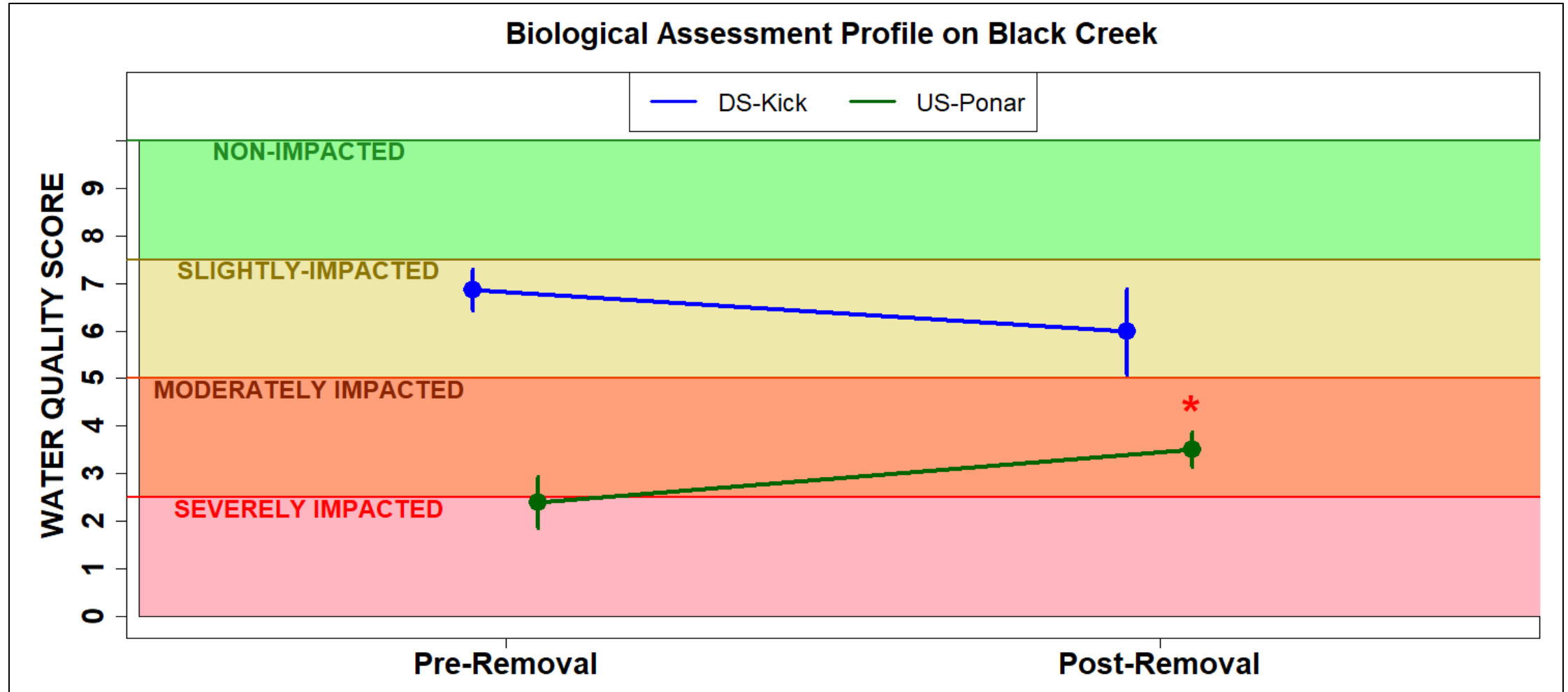
Gradual improvements in ecosystem function

- Increase in filter-feeders (mostly caddisflies) and decrease in dominance of collector-gatherers.
- Species diversity increases significantly within upstream reach



Biological Impairment and Water Quality Indices in Flux

- Downstream reach BAP score decreases slightly but remains non-impaired and slightly impacted.
- Upstream reach BAP score significantly increases and improves one designation tier but remains biologically impaired after one year.



Year-1 Post-Mitigation Ecological Summary

- Achieved 2 of 3 initial goals: Eliminating liability/maintenance costs and providing upstream fish passage (Scott P.)
- Instream habitat and ecological improvements show promising signs but post-removal reorganization often takes three years or more to full manifest.
- Upstream water quality metrics increasing incrementally but significantly.
- 2026 field collection data will provide further insight into continual improvements to the Black Creek aquatic ecosystem.

Thank you for your attention