

Aquatic Biomonitoring at Greens Creek Mine, 2010

presented by Kate Kanouse (ADF&G)



From left: Dave Barto (USFS), Kate Kanouse (ADF&G), and Ryan Kreiner (USFS)



Aquatic Biomonitoring Program

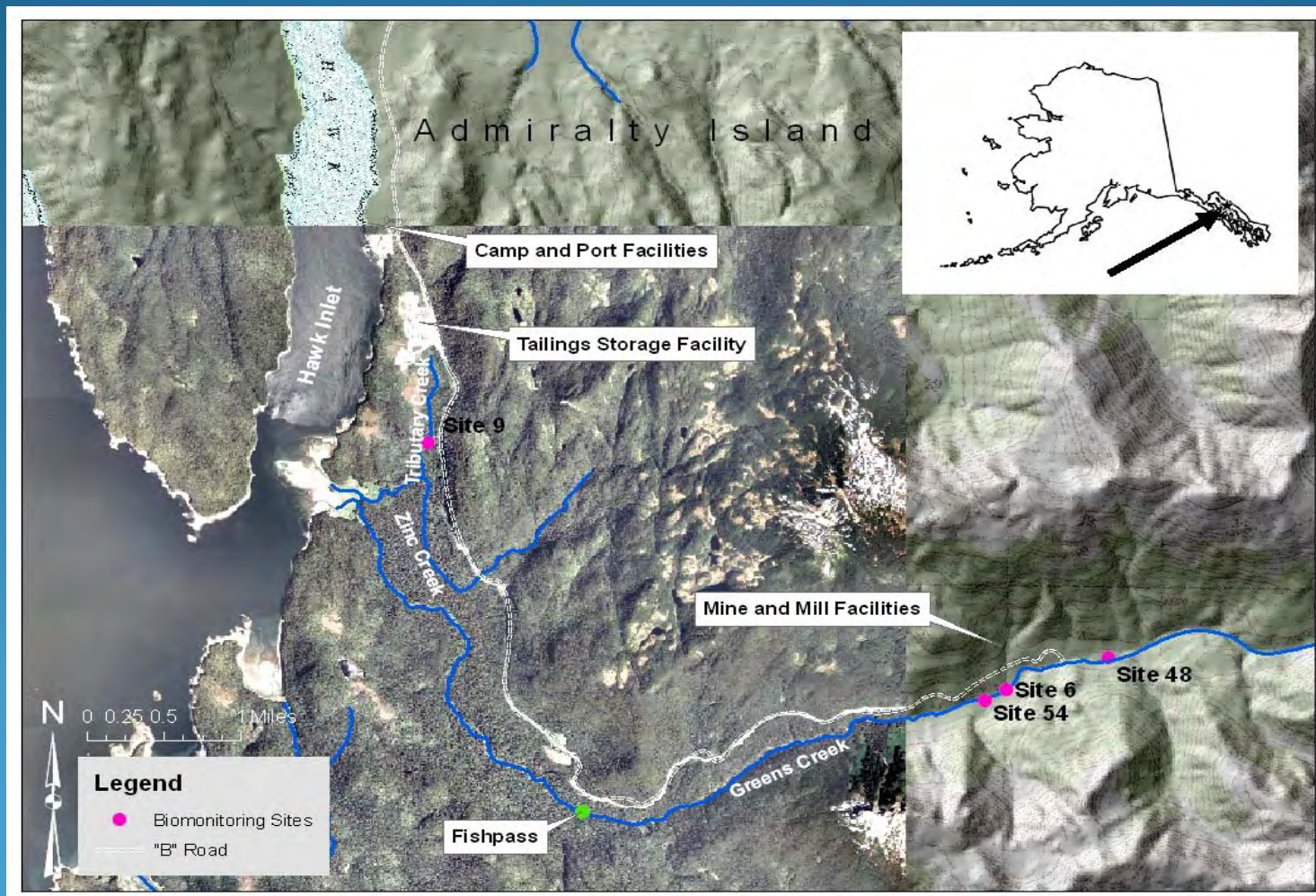
- Purpose
- Location and schedule of monitoring
- Program components
- 2010 results
- Comparisons among sites
- Conclusions

Purpose of the program

Document existing conditions of aquatic biological communities in select reaches of Greens Creek and Tributary Creek.



Location and schedule

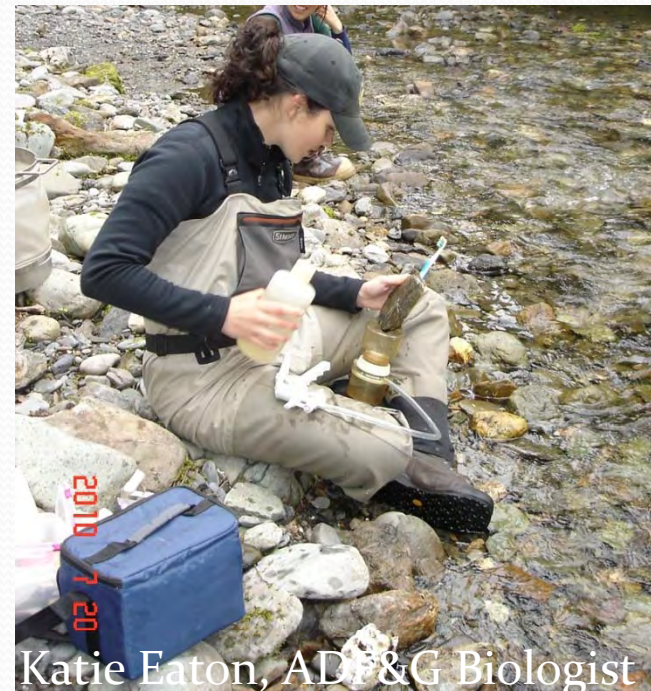


Program Components

- Periphyton biomass
- Benthic macroinvertebrate density and richness
- Juvenile fish abundance
- Juvenile fish whole body metals concentrations of Ag, Cd, Cu, Pb, Se, and Zn
- Microtox lab testing (discontinued in 2004)

Program components

- Periphyton biomass, estimated by chlorophyll a concentrations



Program components

- Benthic macroinvertebrate density and richness



Katie Eaton, ADF&G Biologist

Program components

- Juvenile fish abundance and whole body metals of Ag, Cd, Cu, Pb, Se, and Zn



2010 Results

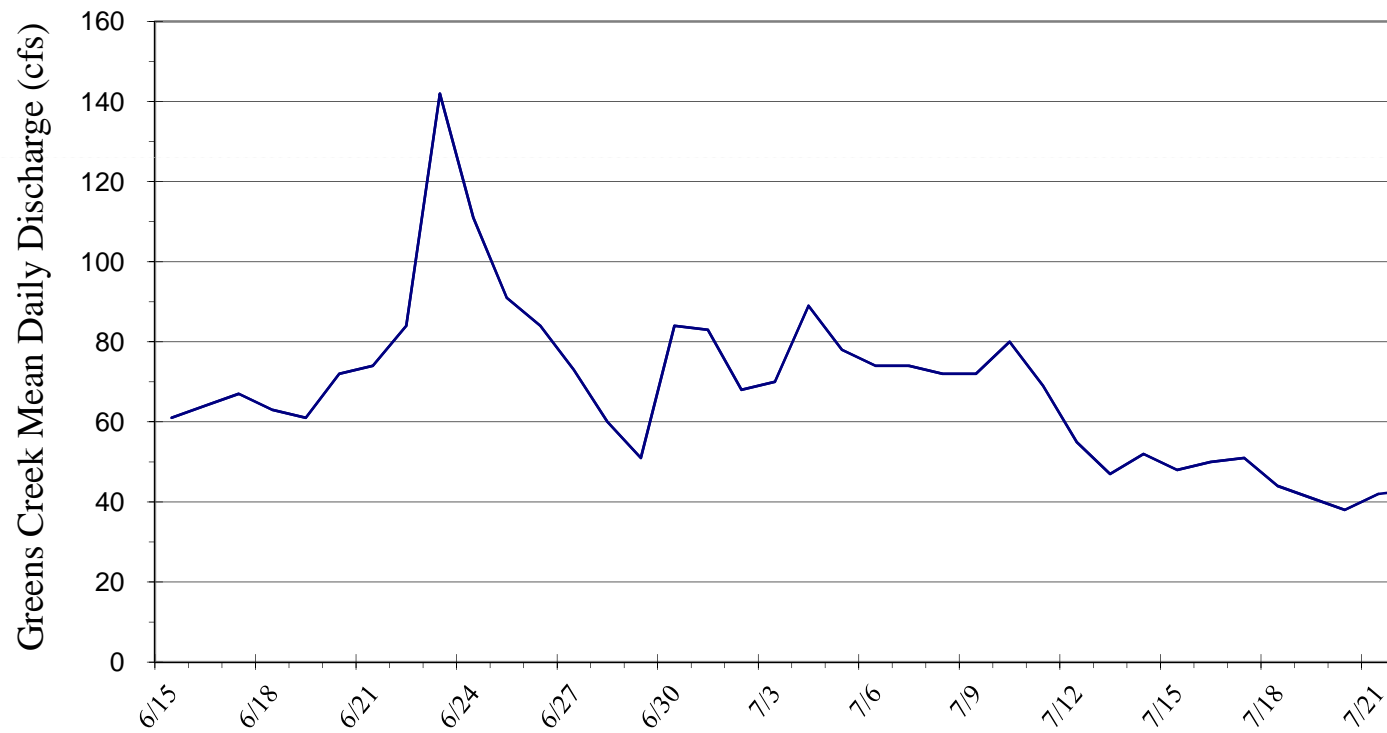
Sites sampled:

- Greens Creek sites 48 and 54
- Tributary Creek Site 9

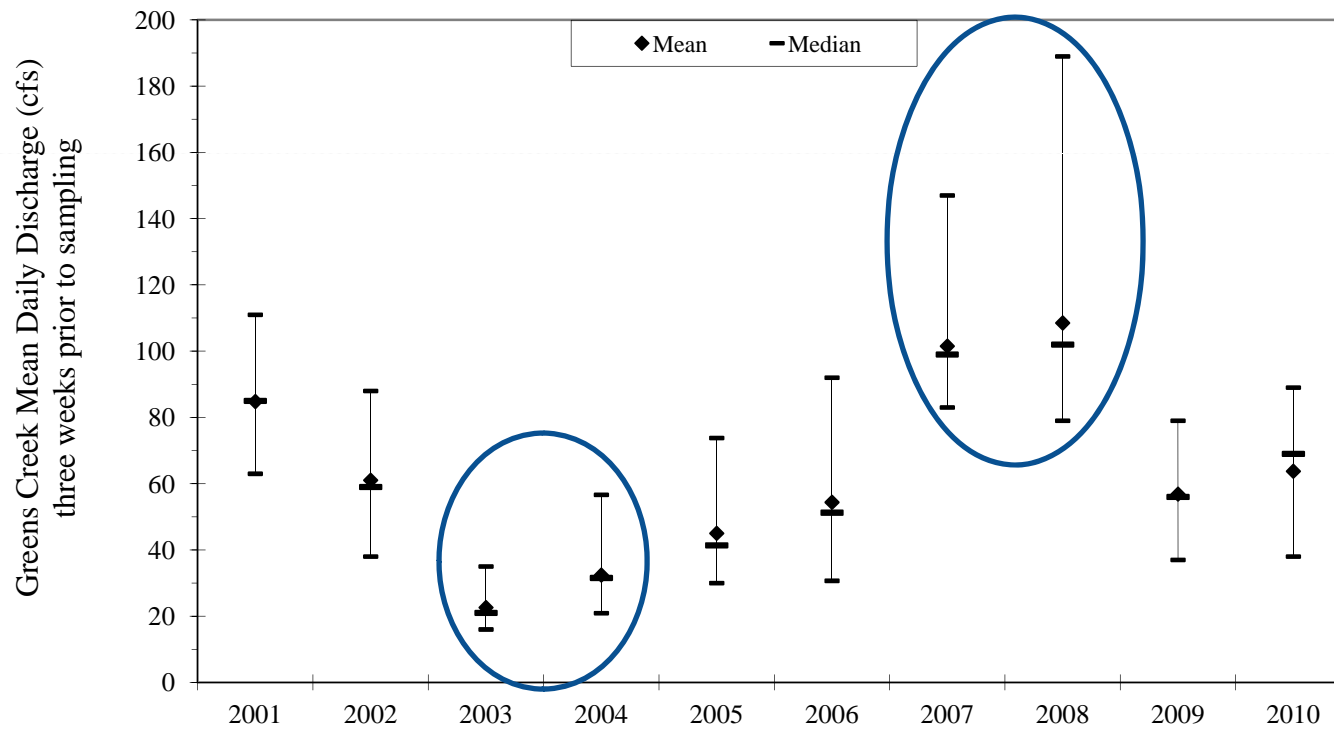


Ryan Kreiner, USFS Biologist

2010 Stream Flow



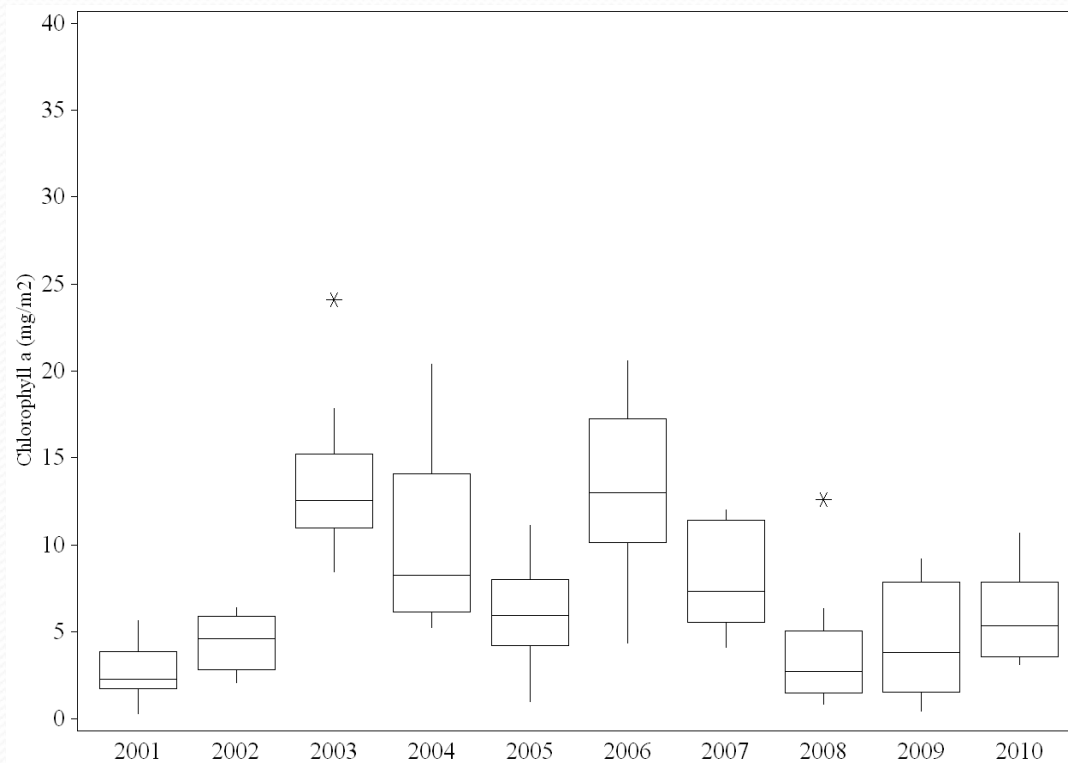
2001-2010 Stream flow



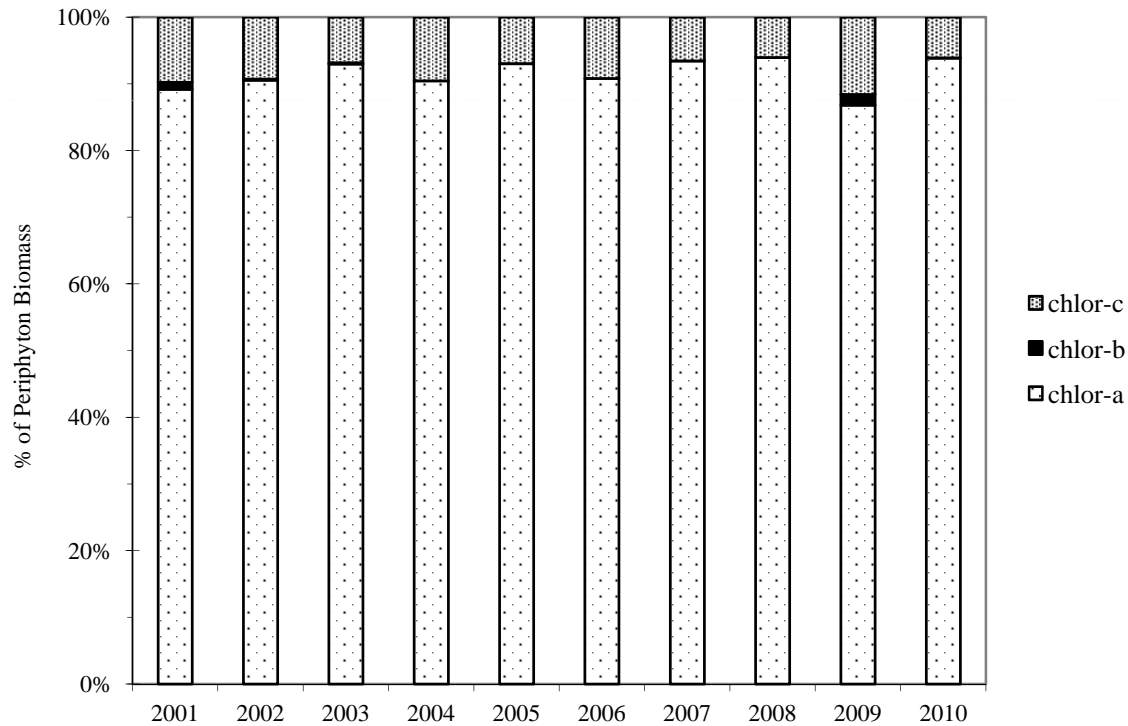
Greens Creek Site 48



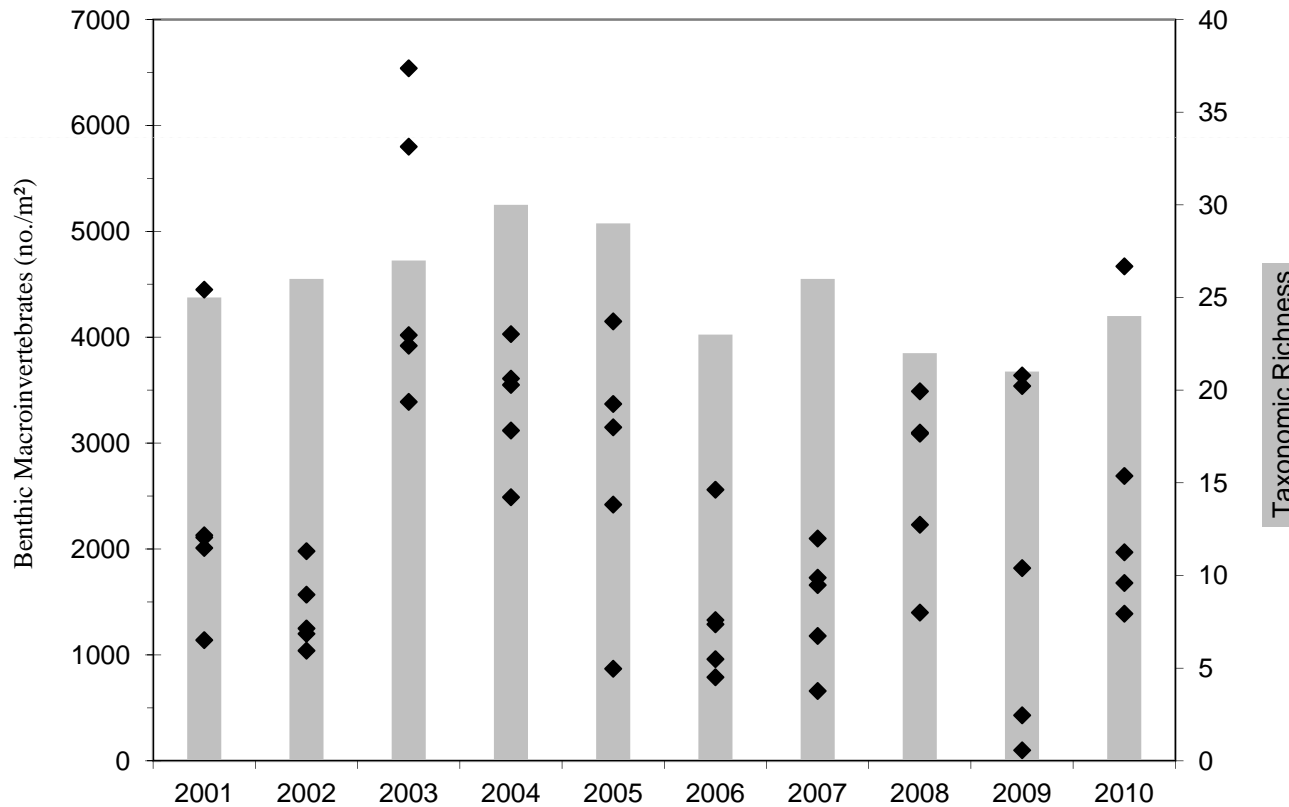
GC Site 48 – Periphyton abundance



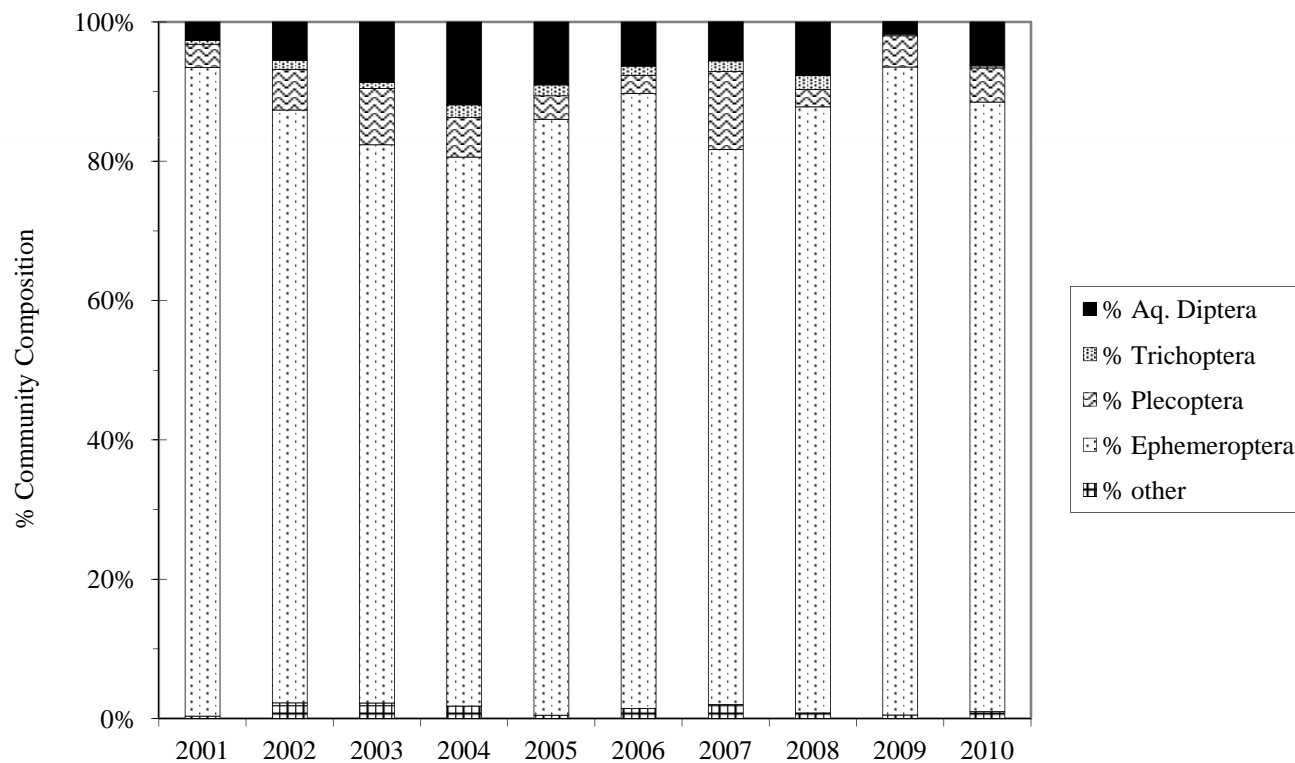
GC Site 48 – Periphyton composition



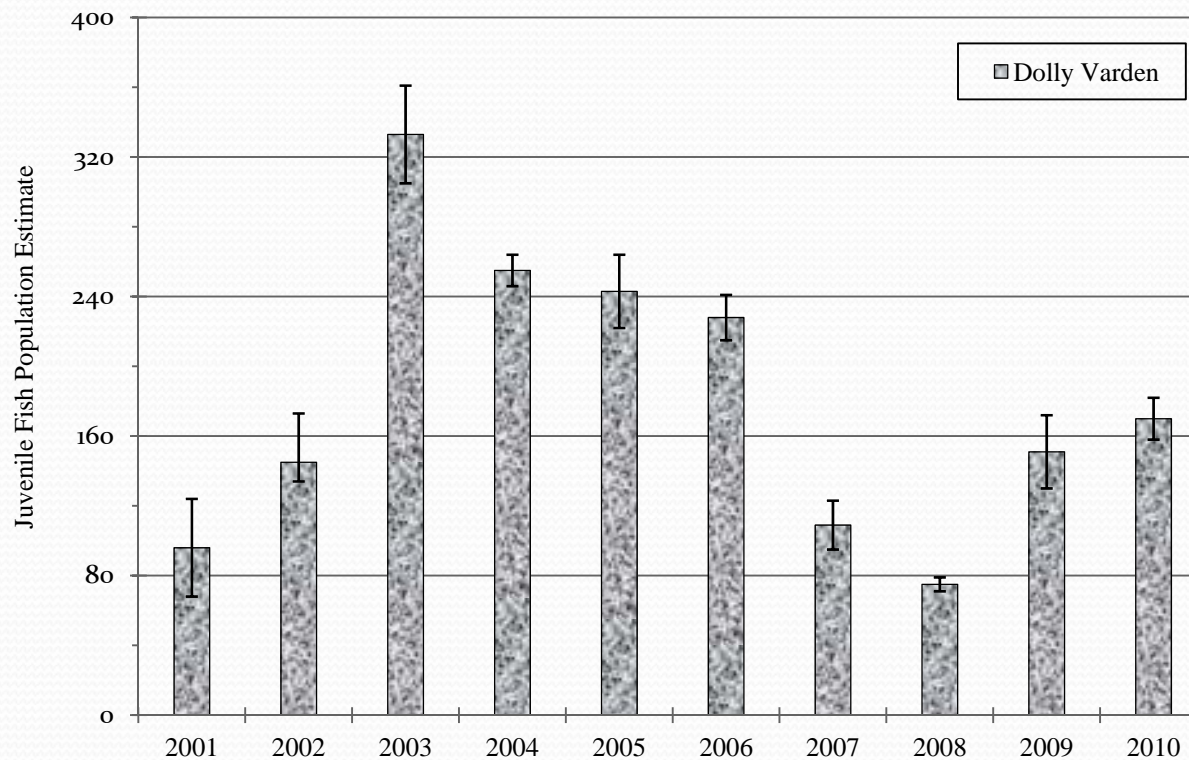
GC Site 48 – Invert Density and Richness



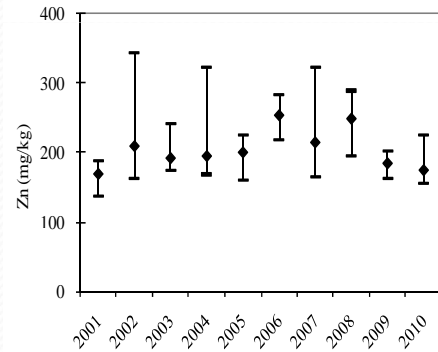
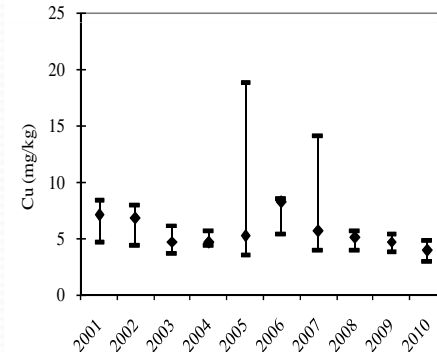
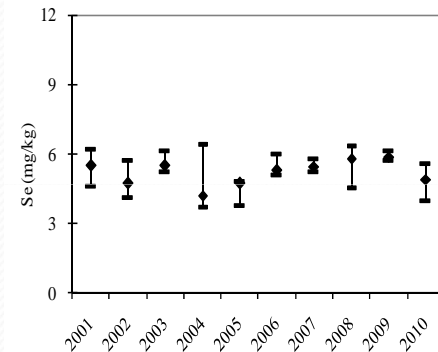
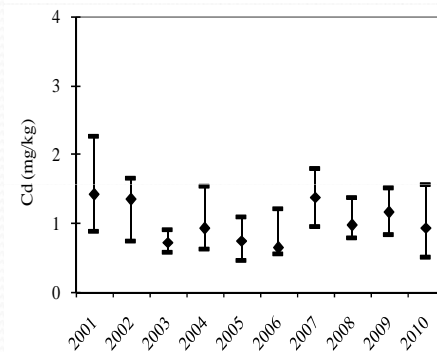
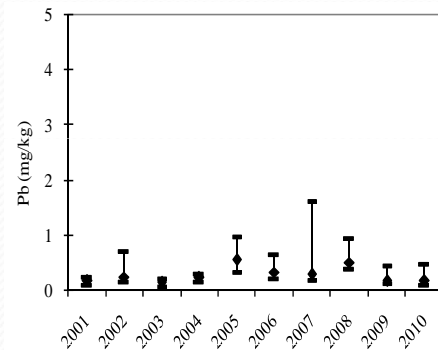
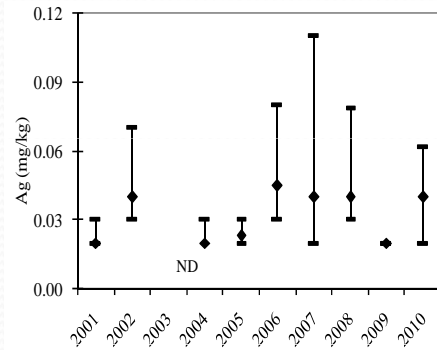
GC Site 48 – Invert community



GC Site 48 – Juvenile fish abundance



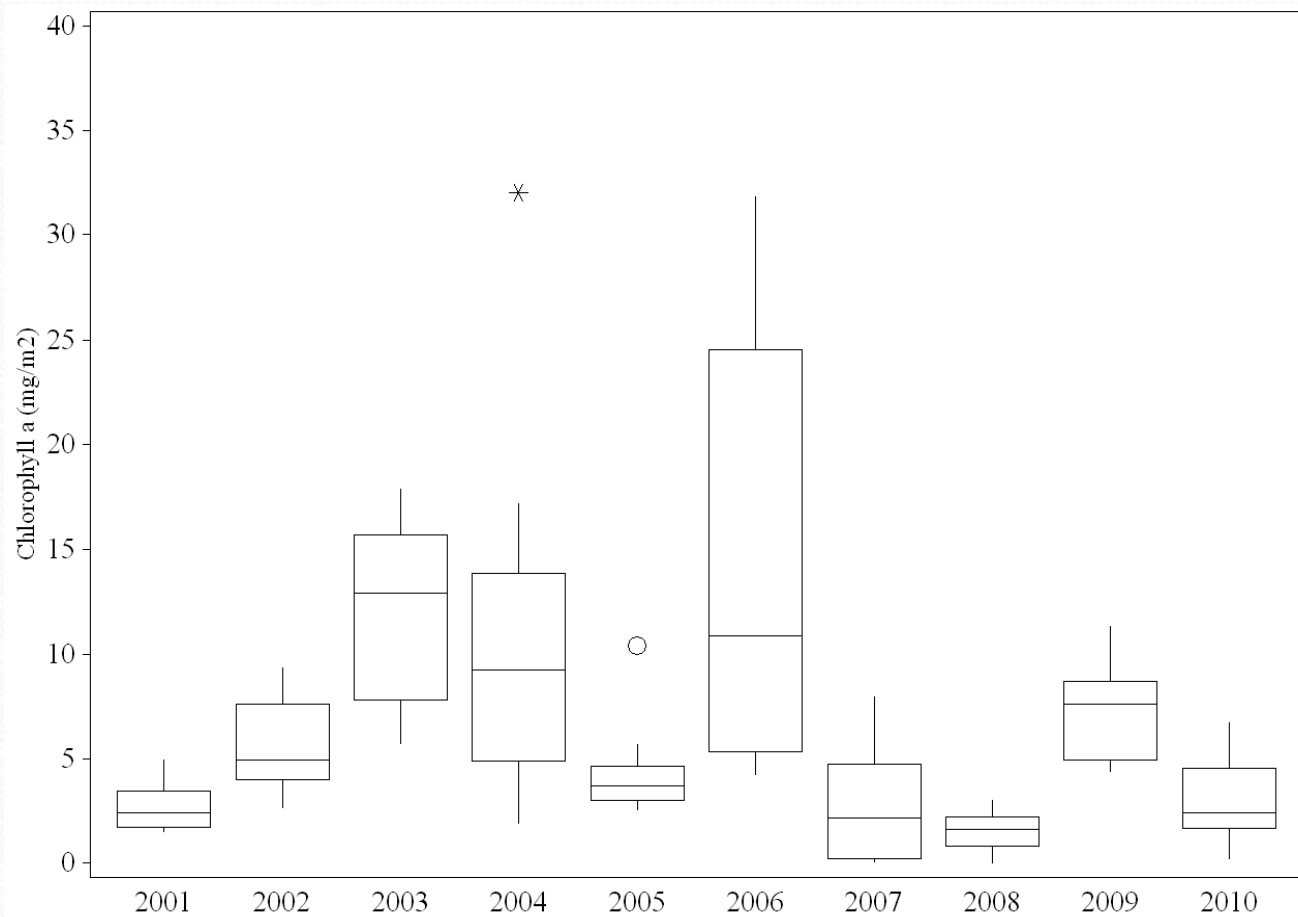
GC Site 48 – Fish metals concentrations



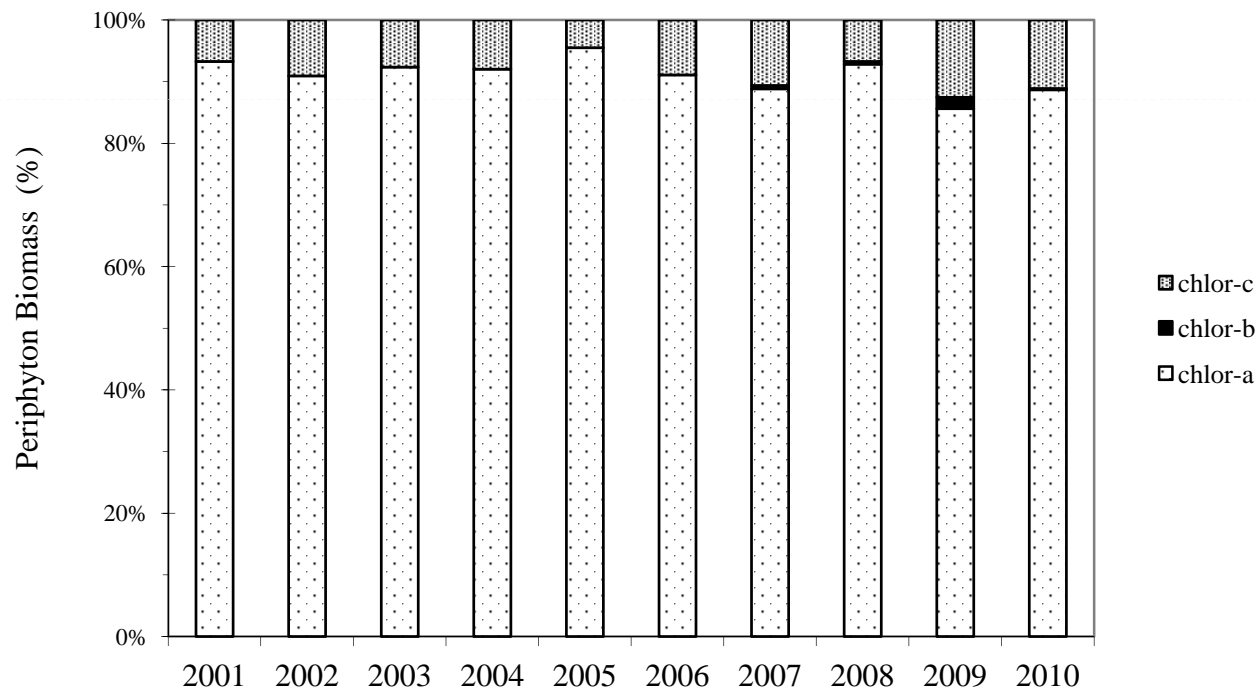
Greens Creek Site 54



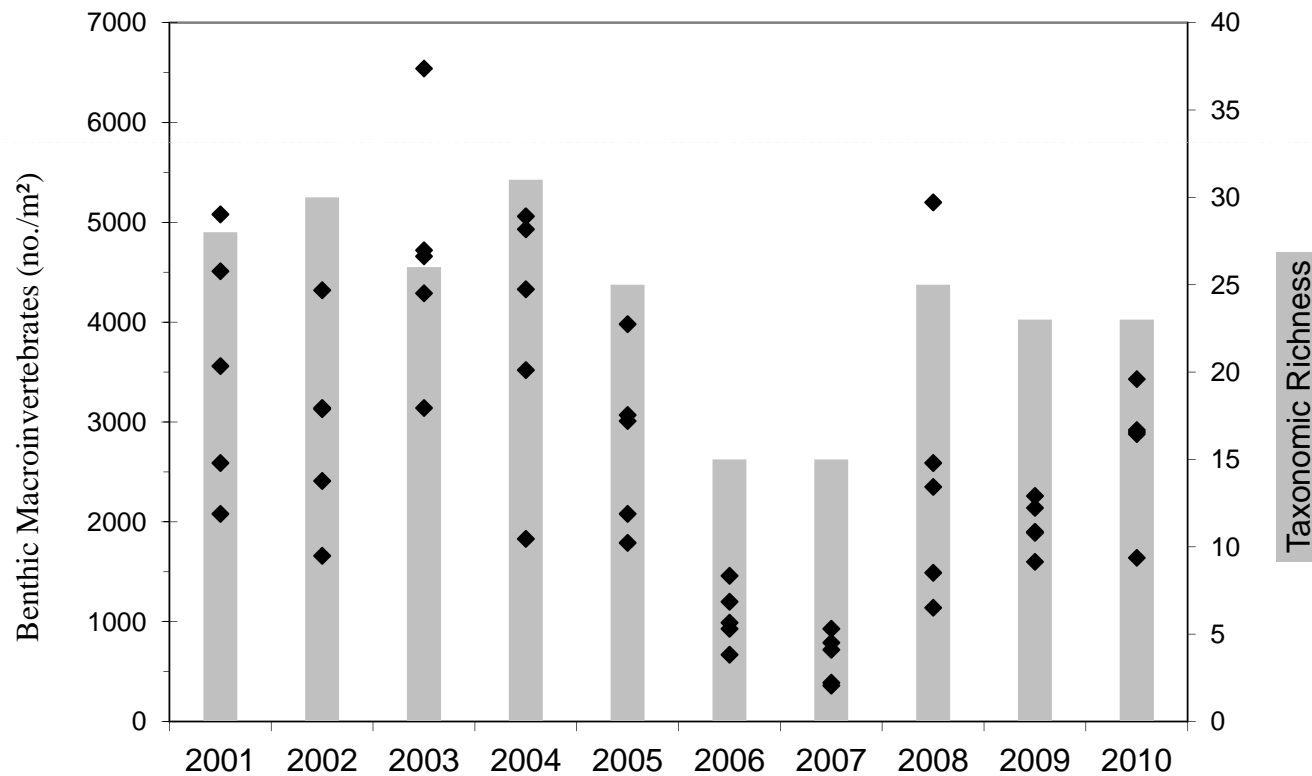
GC Site 54 – Periphyton abundance



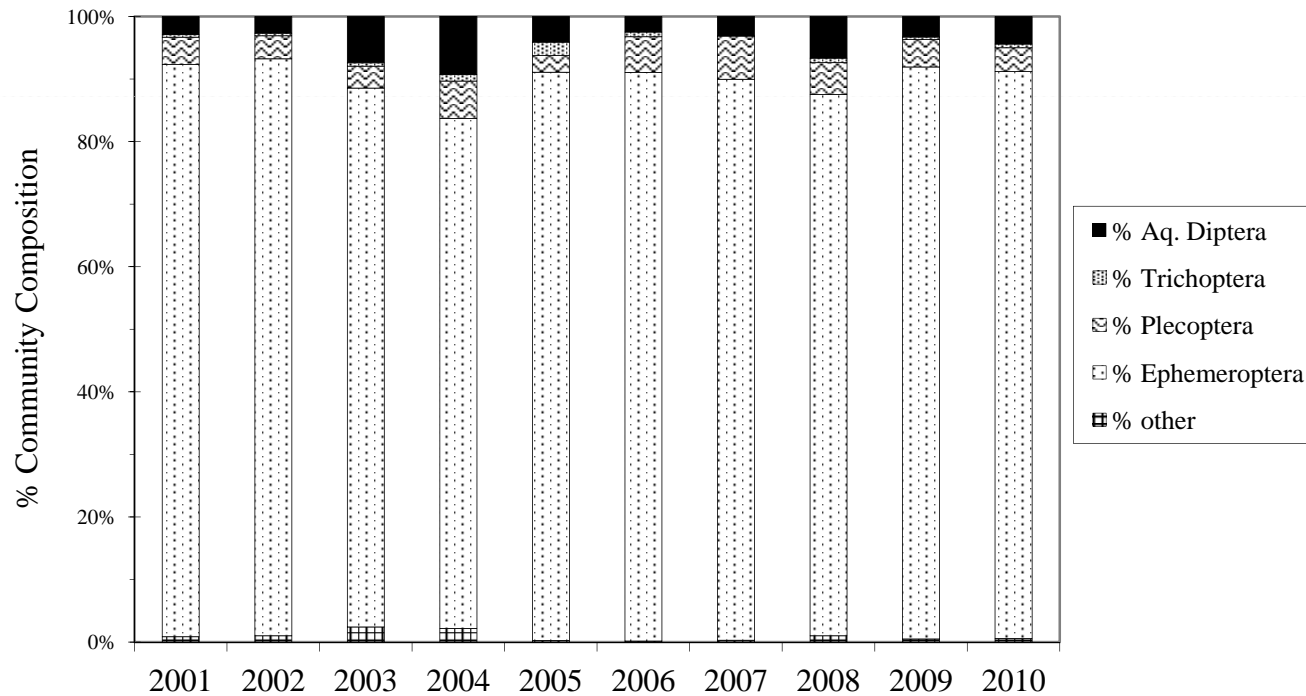
GC Site 54 – Periphyton composition



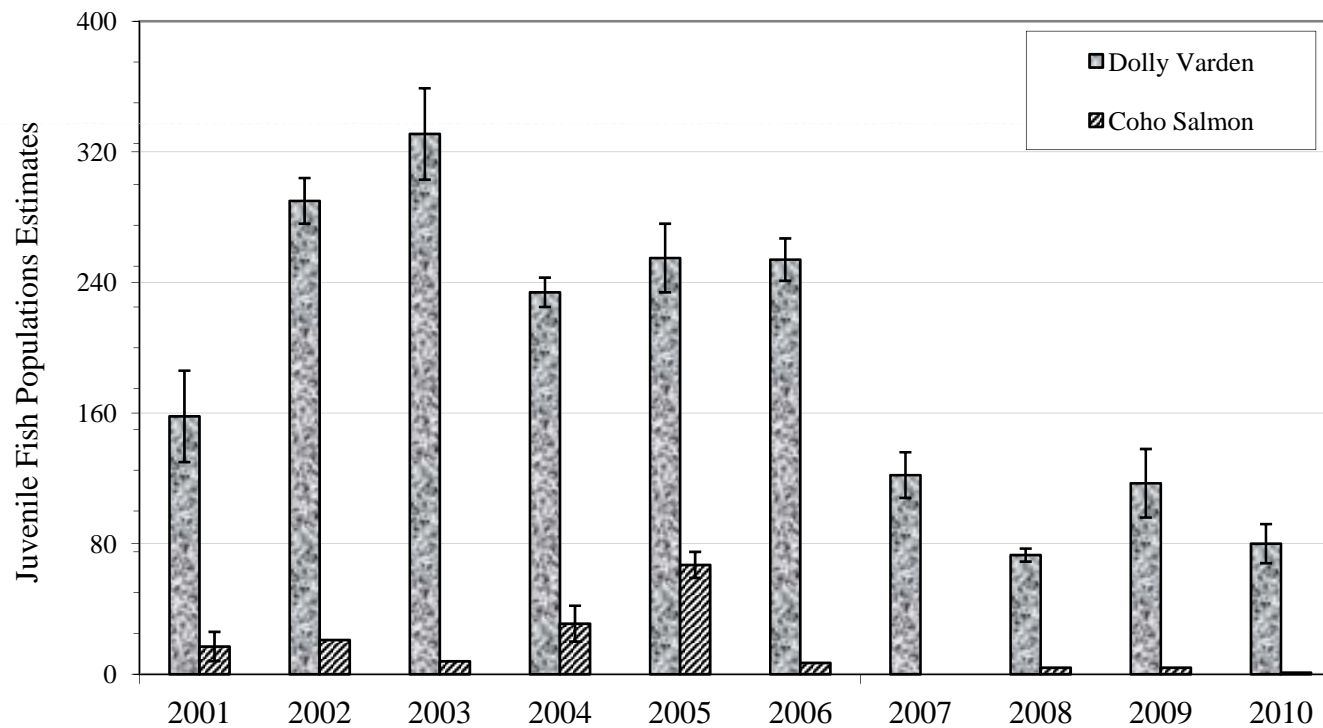
GC Site 54 – Invert Density and Richness



GC Site 54 – Invert community



GC Site 54 – Juvenile fish abundance

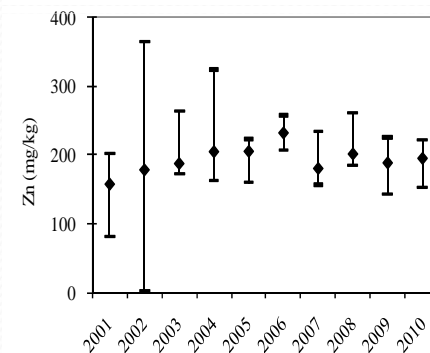
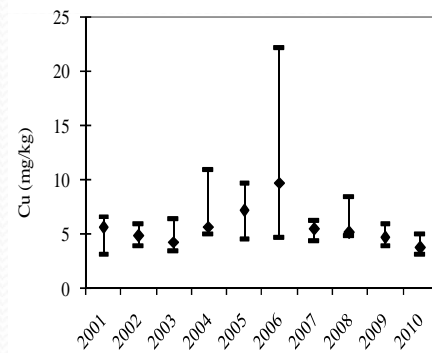
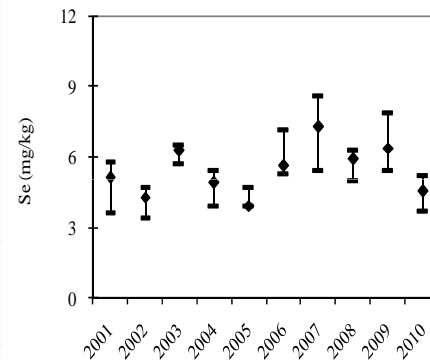
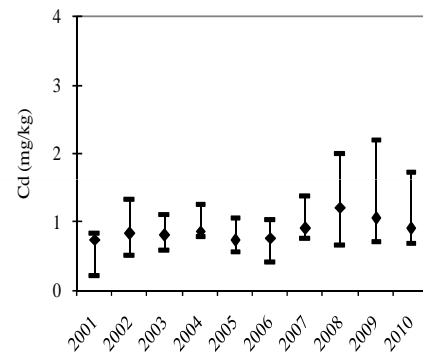
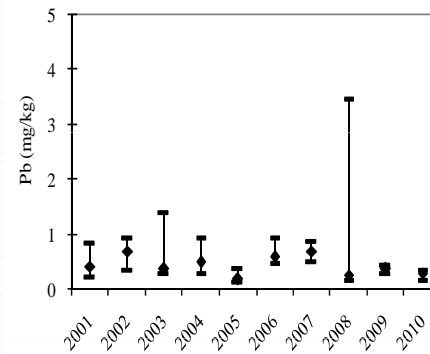
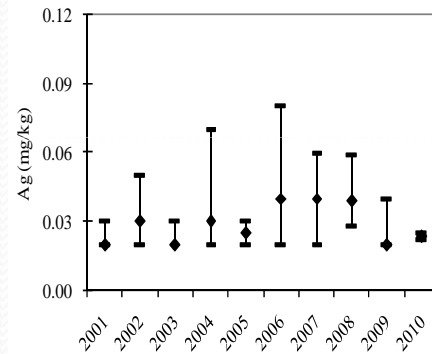


GC Site 54 – Juvenile fish abundance

2010 juvenile fish estimate may be slightly low due to a brown bear that interfered with the third minnow trap set....



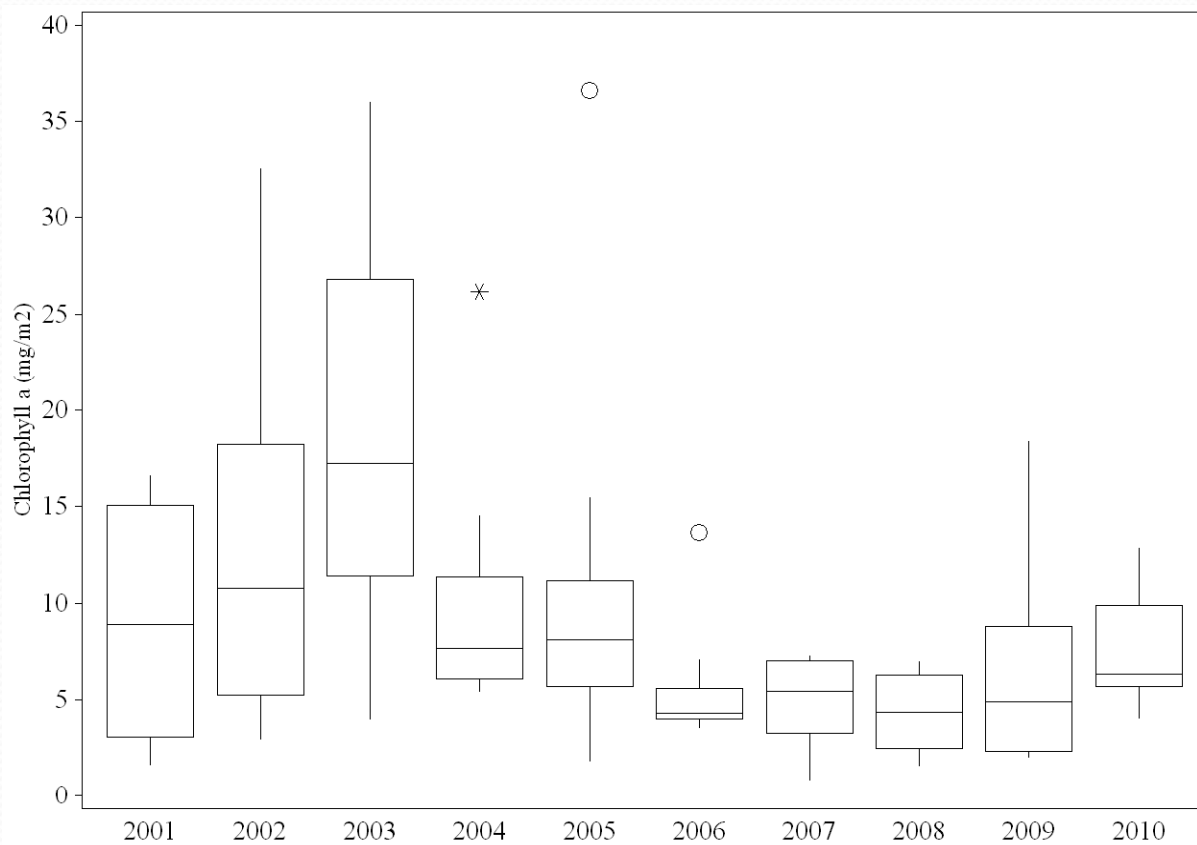
GC Site 54 – Fish metals concentrations



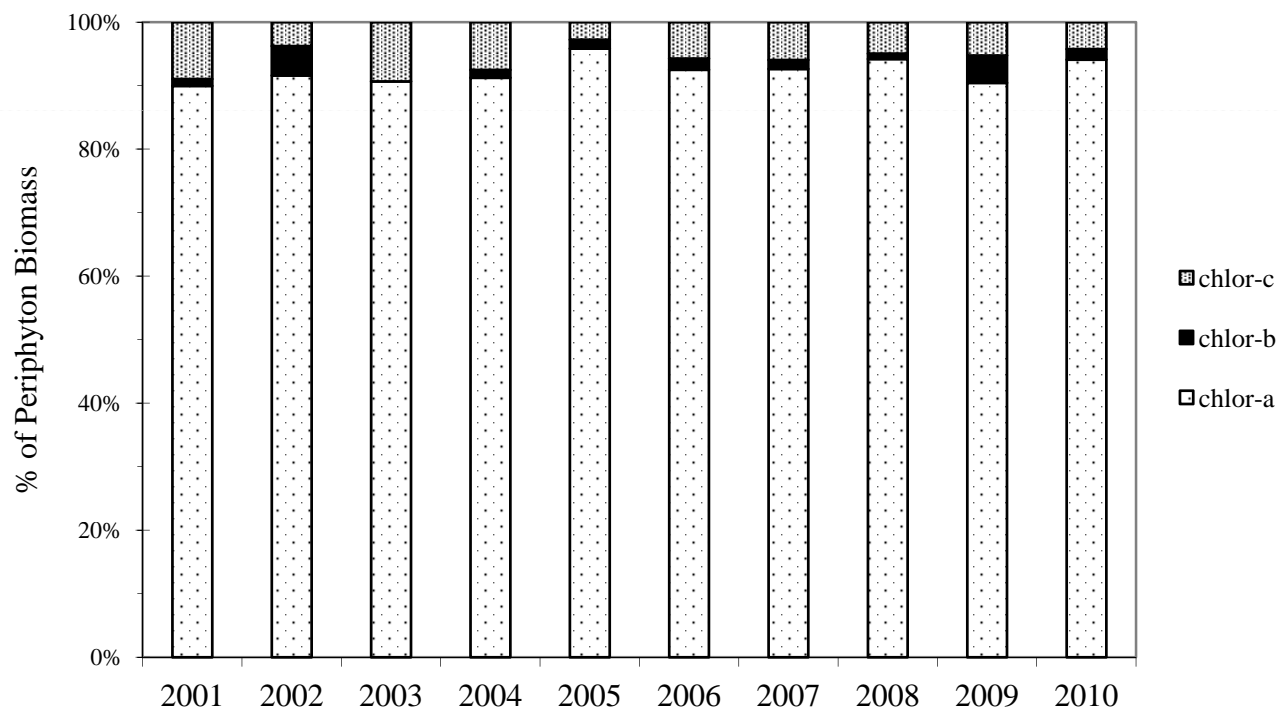
Tributary Creek Site 9



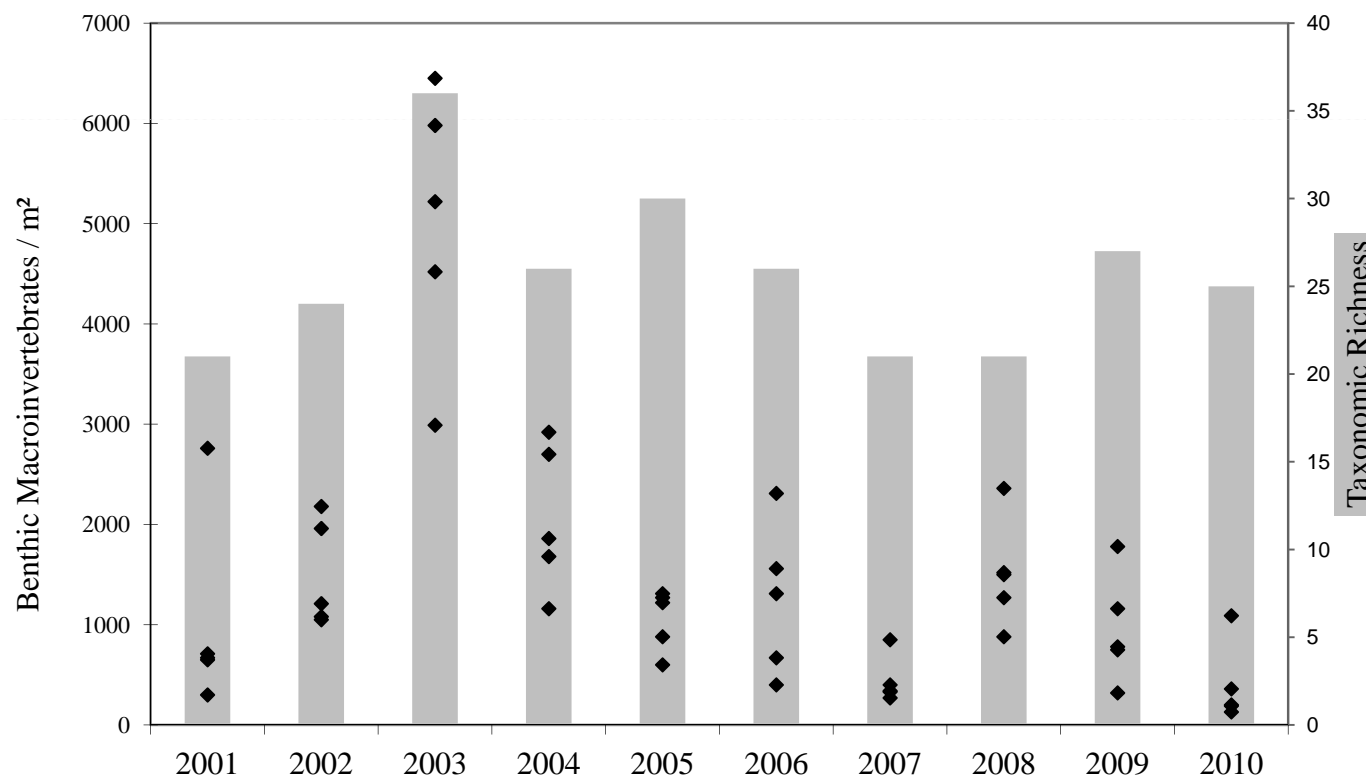
TC Site 9 – Periphyton abundance



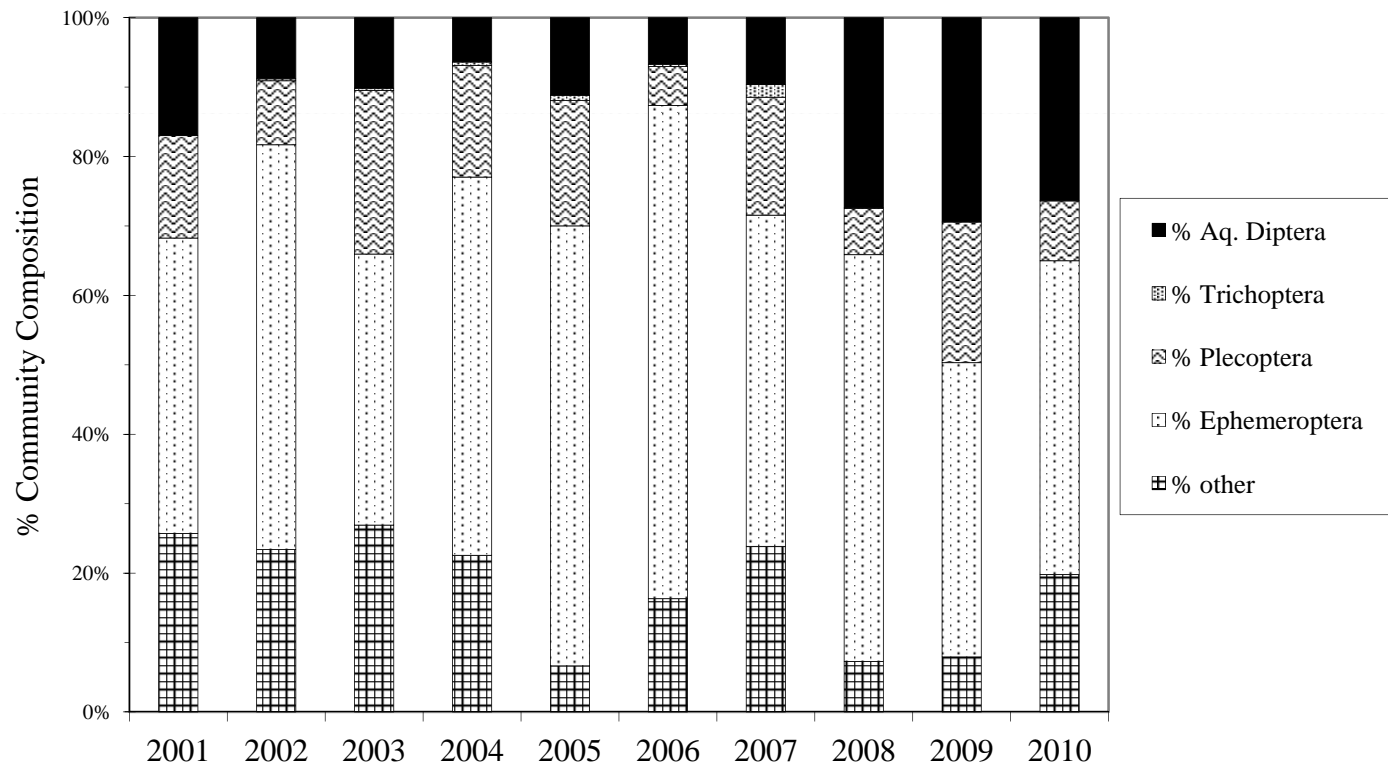
TC Site 9 – Periphyton composition



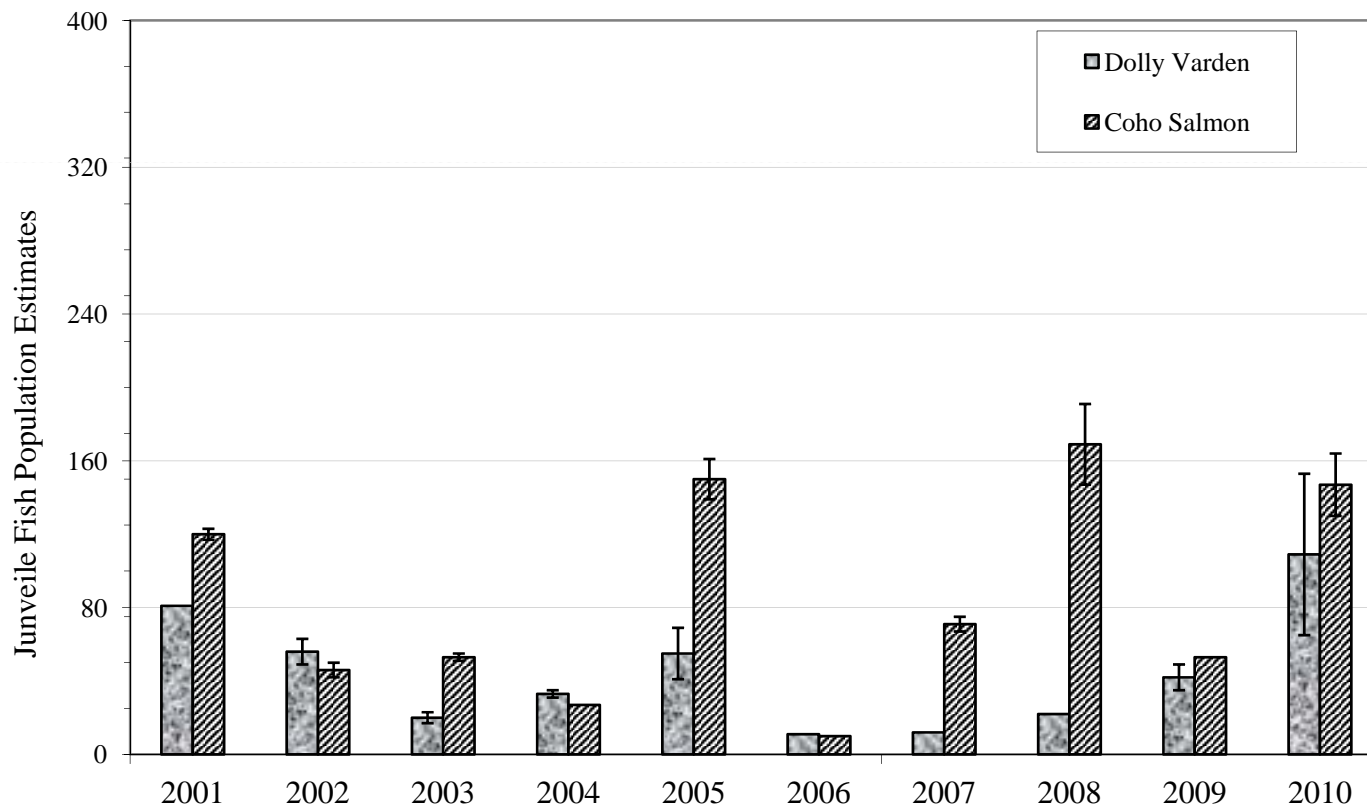
TC Site 9 – Invert Density and Richness



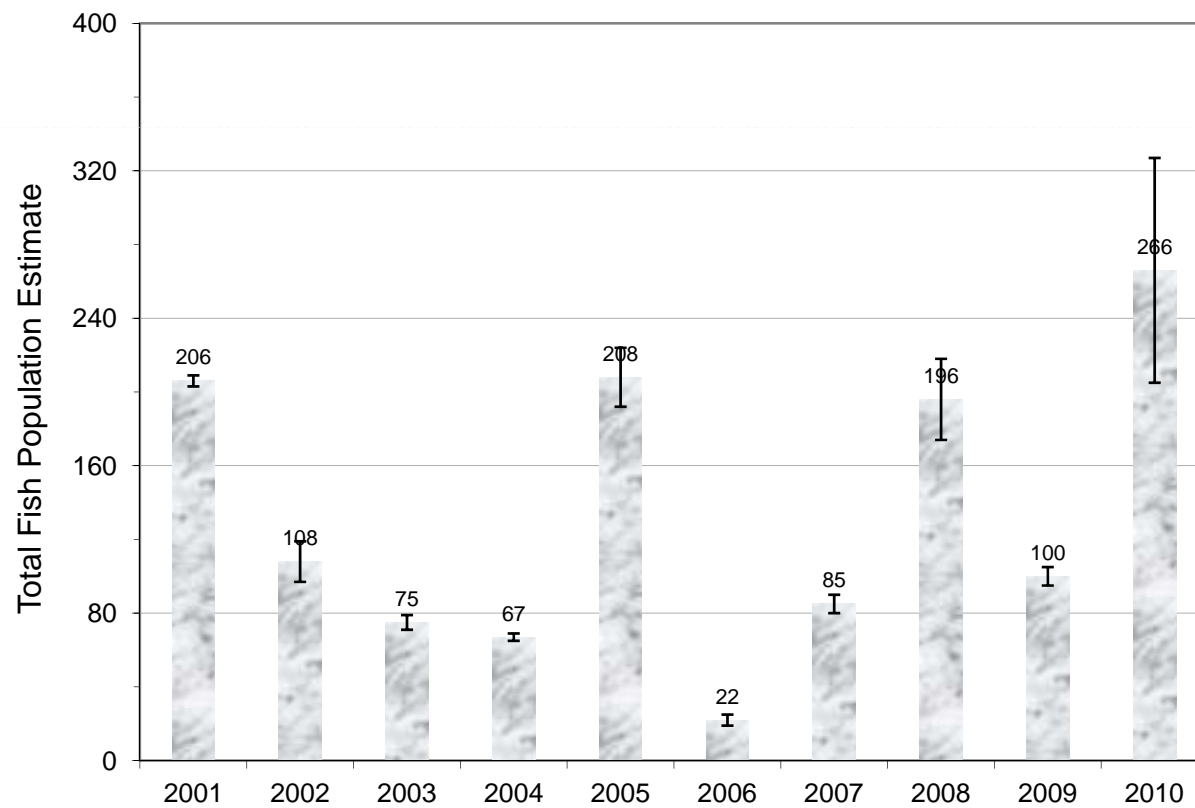
TC Site 9 – Invert community



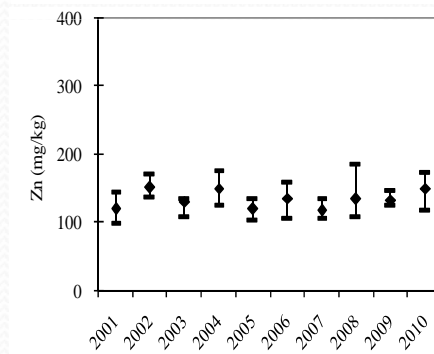
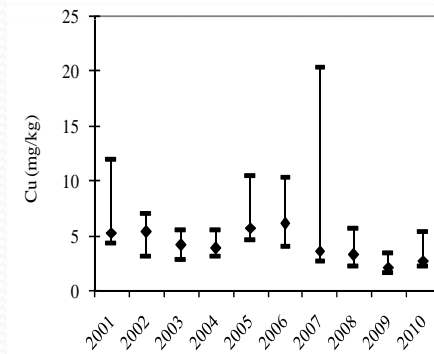
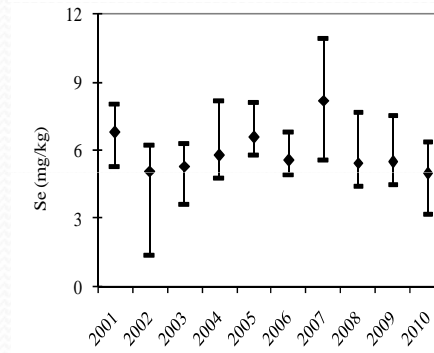
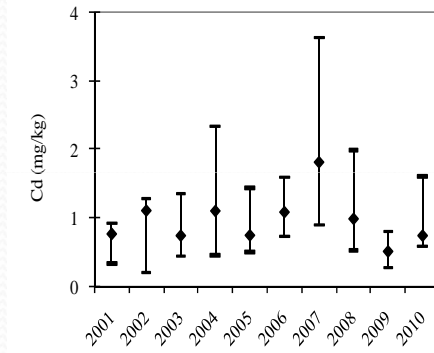
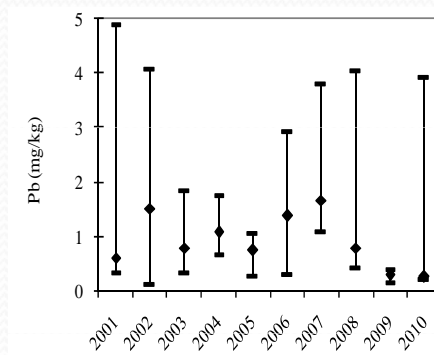
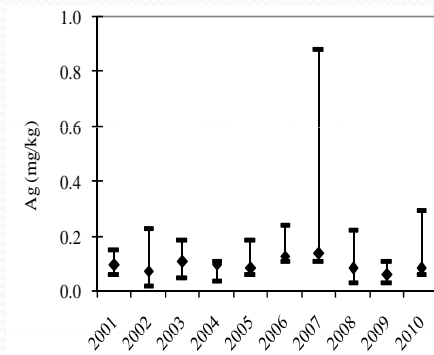
TC Site 9 – Juvenile fish abundance



TC Site 9 – Juvenile fish abundance



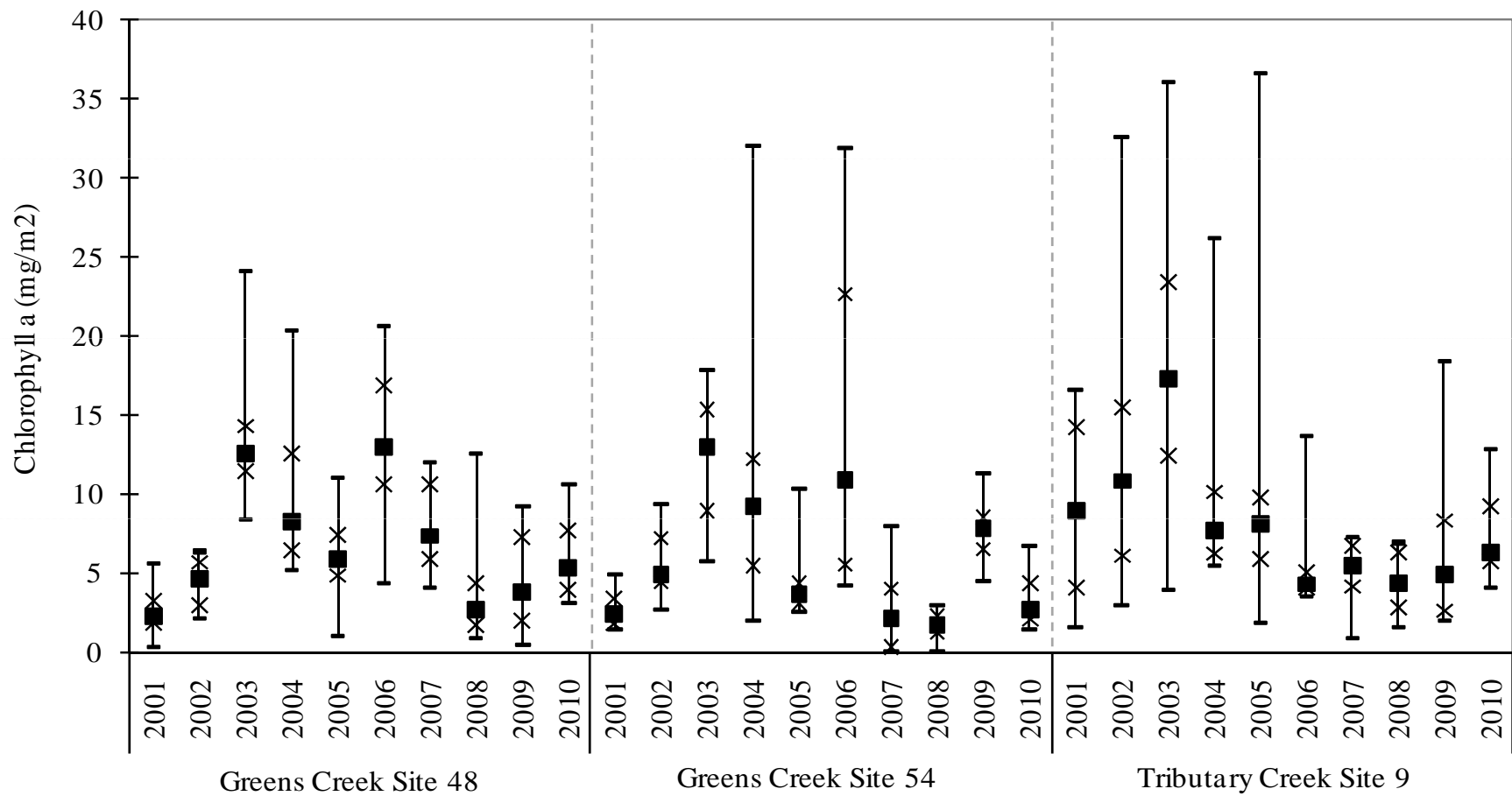
TC Site 9 – Fish metals concentrations



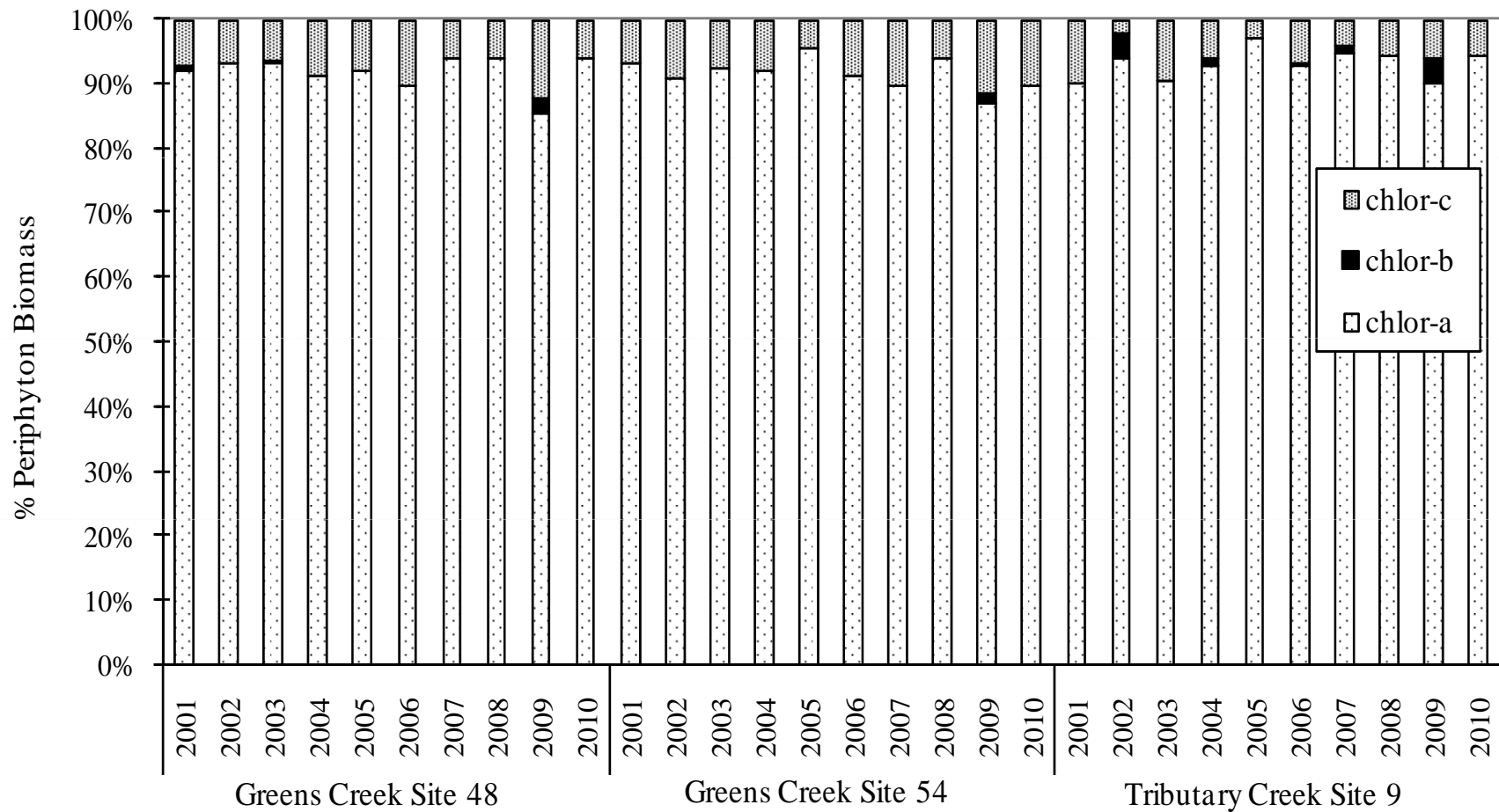
Comparisons among sites



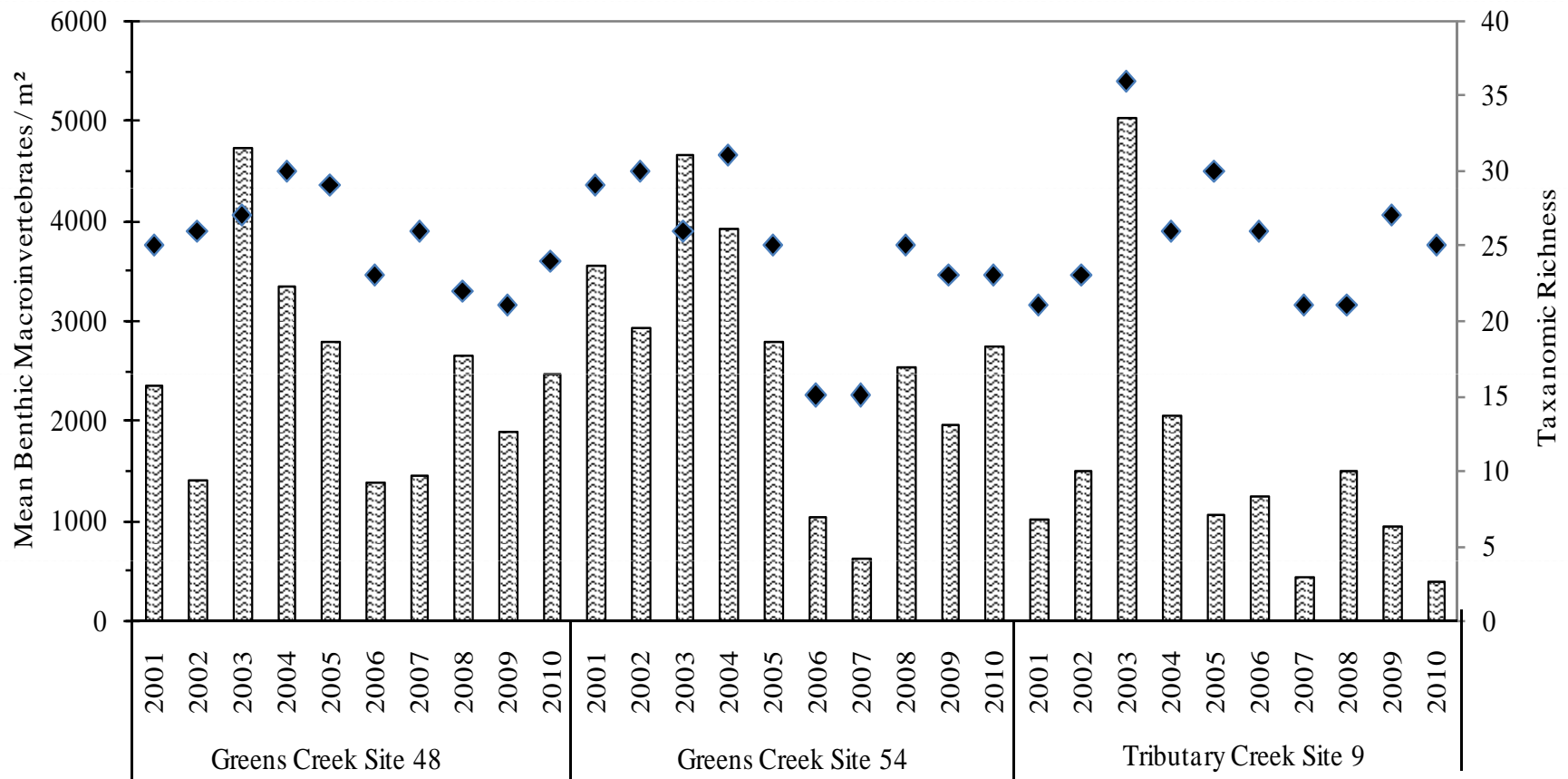
Periphyton biomass



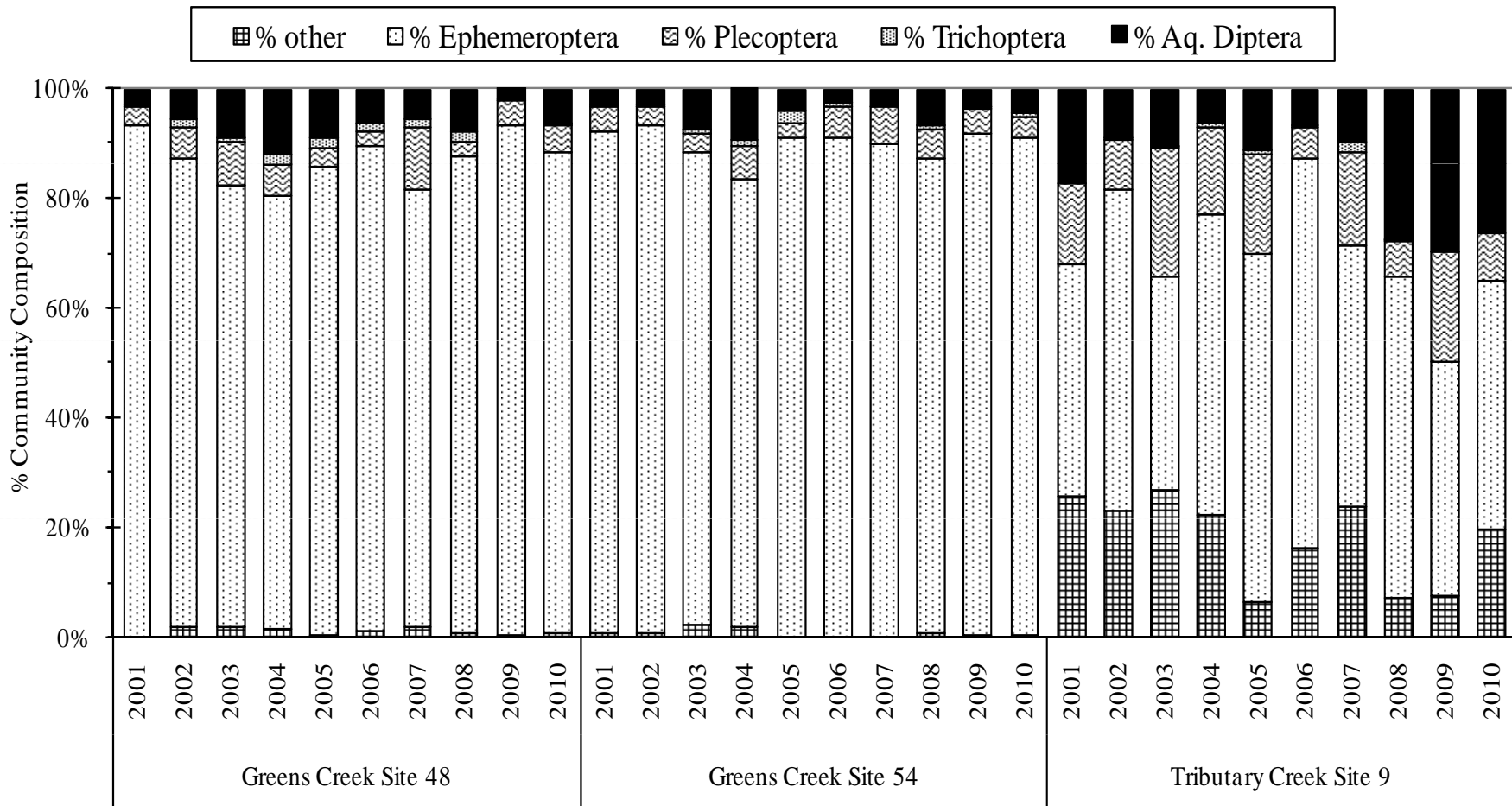
Periphyton composition



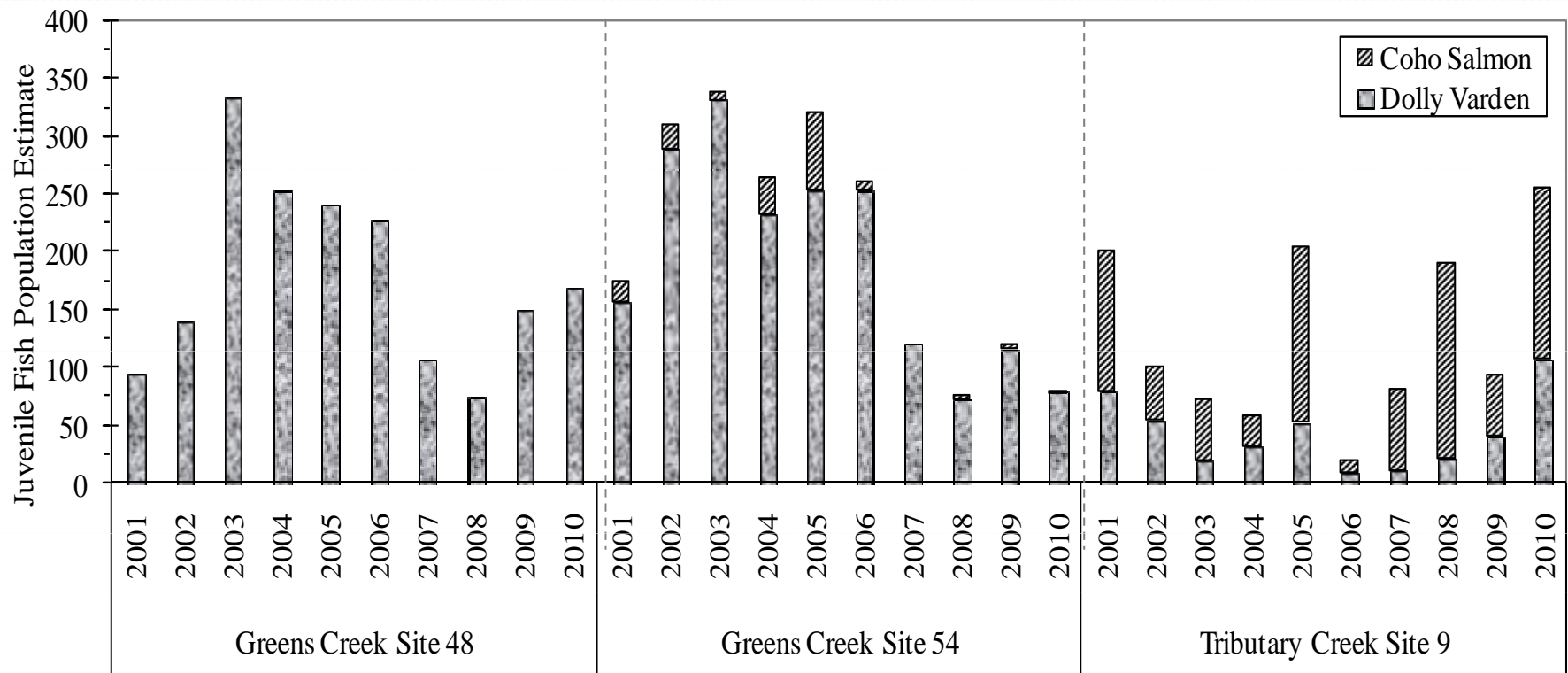
Mean invert density & richness



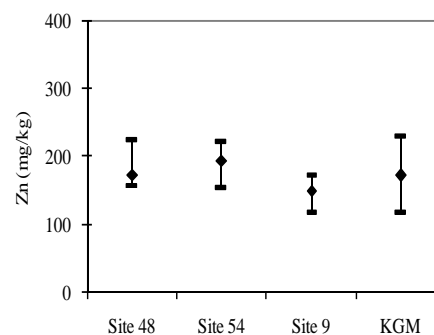
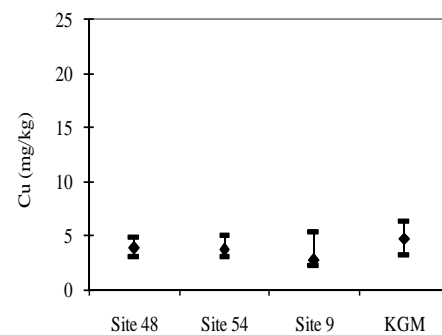
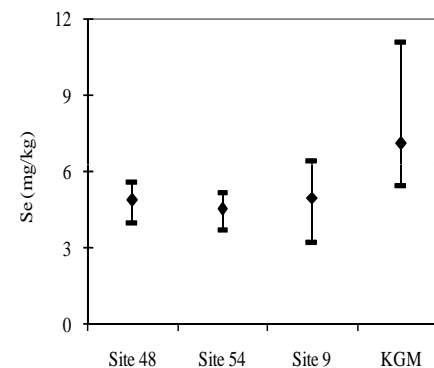
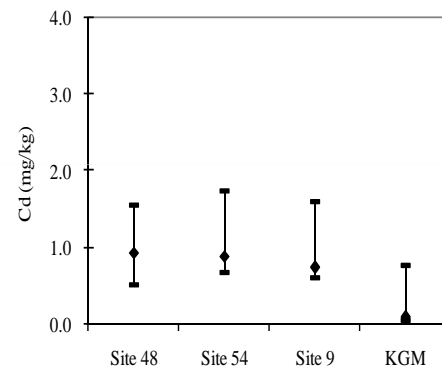
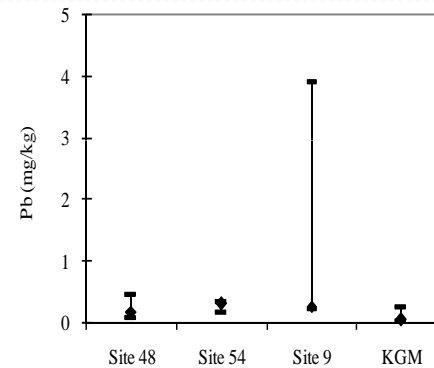
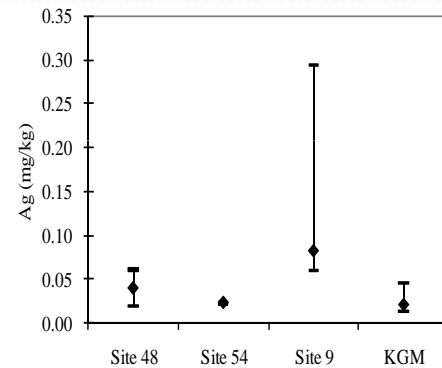
Invert community



Juvenile fish abundance



2010 Fish metals concentrations





Conclusions

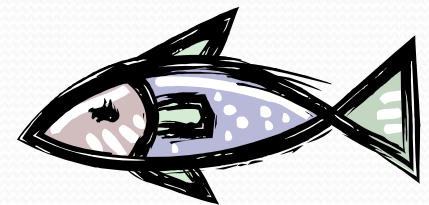
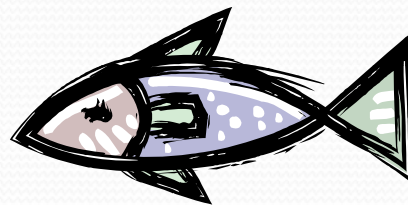
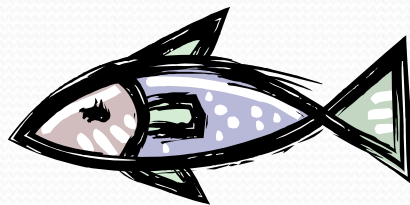
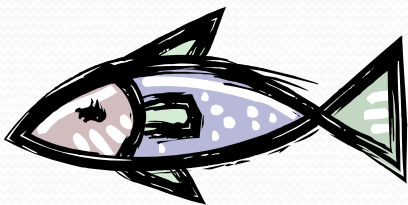
- 2010 results similar to previous years at all sites
- Recent low densities observed:
 1. Periphyton at Site 54
 2. Dolly Varden and coho at Site 54
 3. Invertebrates and EPT at Site 9
- In Greens Creek, differences between years and creeks are generally greater than between sites
- Fishpass inefficient since 2005

Thank you

Hecla Greens Creek Mining Company for funding, the opportunity to accomplish the work, and with logistical and field assistance,

USFS Fisheries Biologists for data collection, and

ADF&G Habitat Biologists for data collection, sample analyses and report reviewing.



Questions?

