

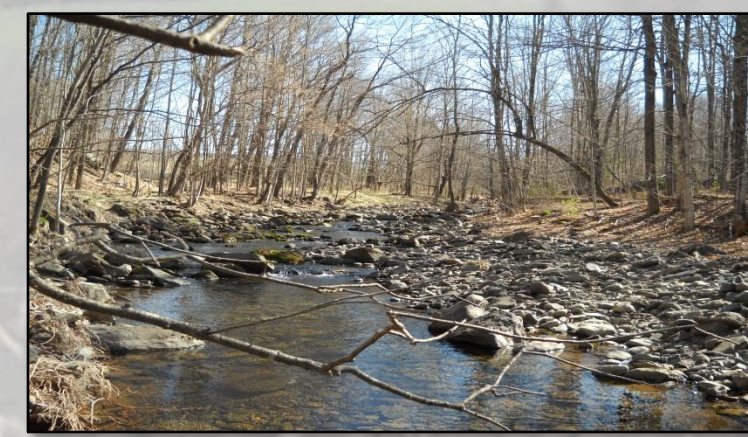
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INTRODUCTION

- Hurricane Irene and Tropical Storm Lee delivered a historic 500 year flood event to the Schoharie Creek Watershed on 28 August and 06 September 2011
- Floods alter fish assemblage, structure and abundance in streams (Ross et al. 1985)
- Remaining species after a storm strongly depend on the species resistance and resilience (Pearsons & Lamberti 1992)
- Streams with deep pools that have permanent structures and broad, unconstrained reaches may serve as a better refuge during or after floods (Handson & Waters 1974)
- Benthic species such as sculpins are vulnerable to crushing by bed load during high flushing flows (Faush et al. 2001)
- The study objective was to assess flood impacts to the fish and their habitat



METHODS

- Six months post flooding a rapid biological assessment was conducted at each stream
- Fish populations were sampled using a Halltech backpack electrofisher for 500 seconds
- All fish were measured and released back to the stream
- Water quality parameters were measured using a Hydrolab Quanta & HACH test kits
- Gradient, discharge, turbidity and other physical habitat measurements were recorded
- Impacts of flooding including; channelization, berming, decreased sinuosity, down cutting and/or aggradation were assessed from aerial images and site visits
- Sampling dates: 2005-2011 (Pre-flood) & 2012 (Post-flood)

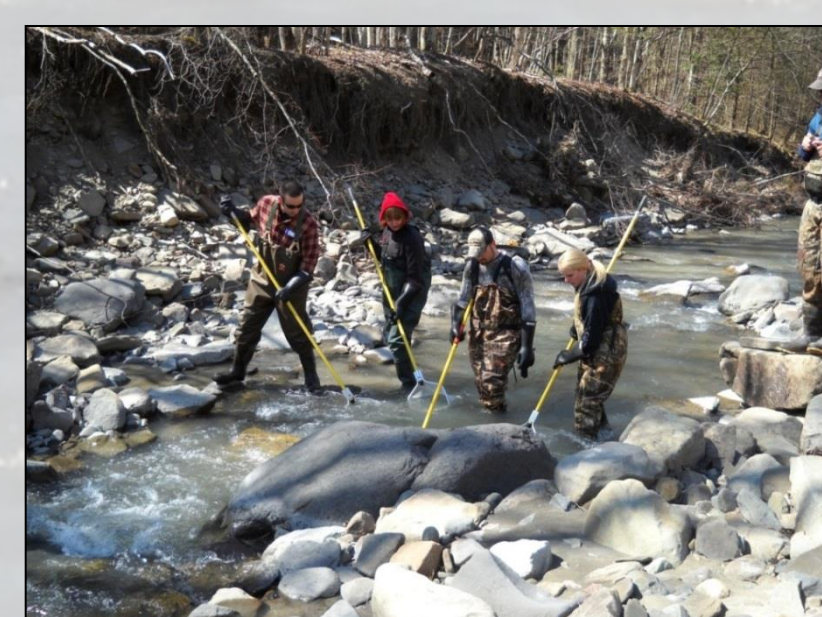
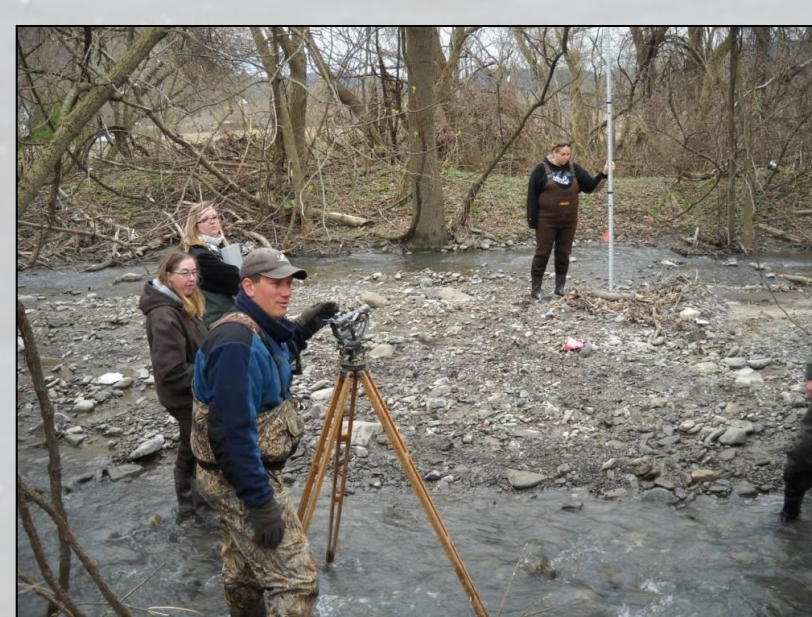
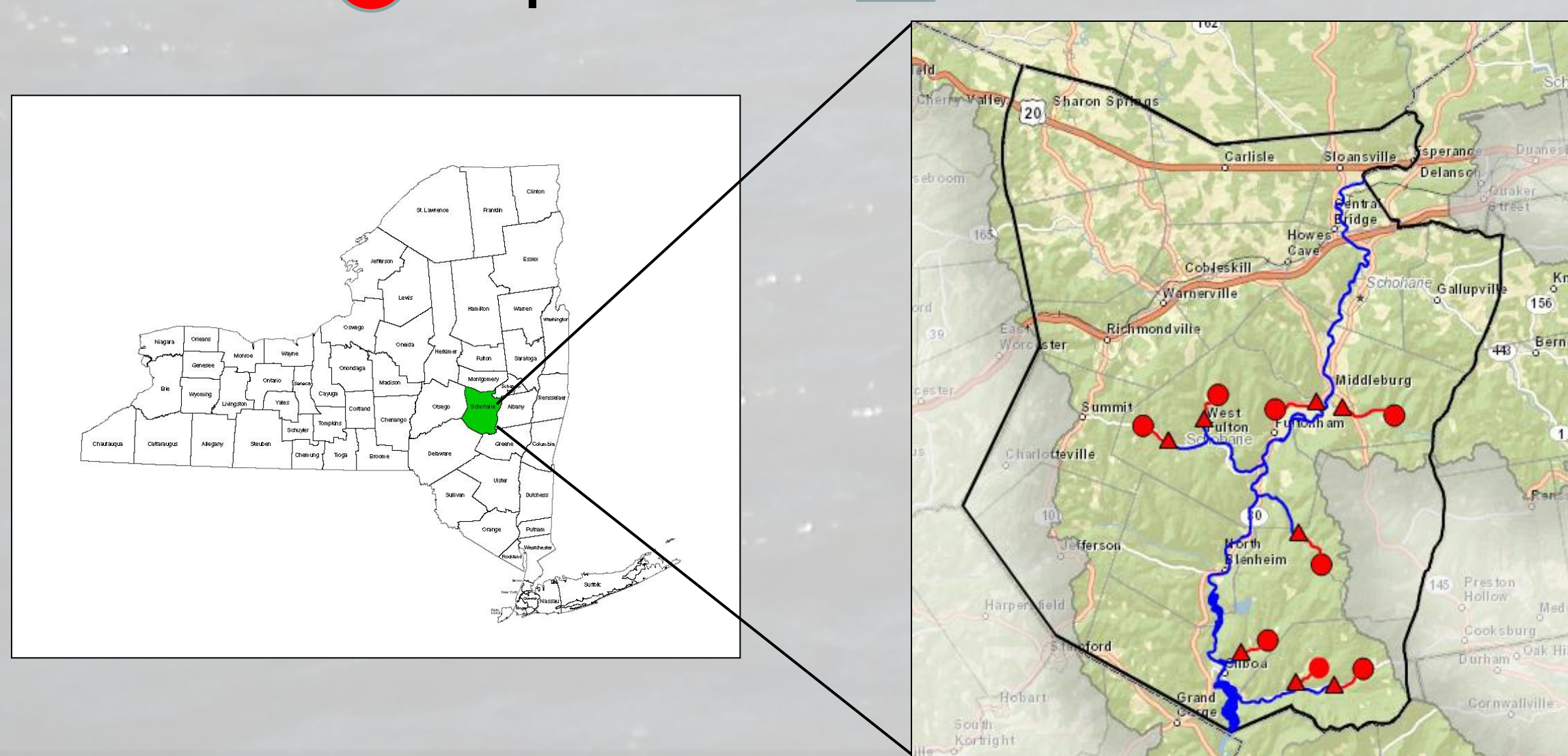


Figure 1. Schoharie watershed, Schoharie County, NY
● = Upstream ▲ = Downstream



RESULTS

Figure 2. Post flood change in turbidity in selected creeks

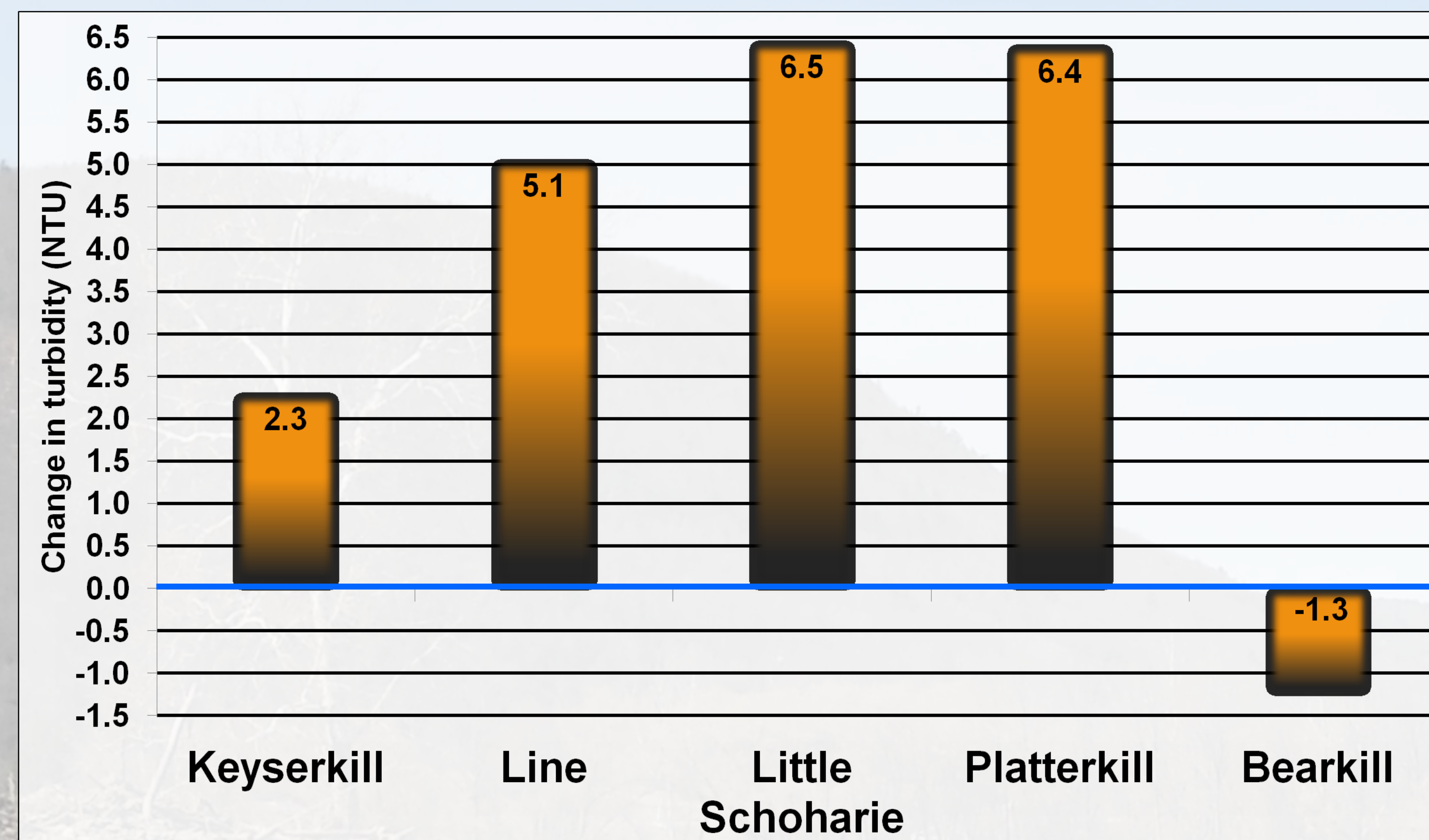
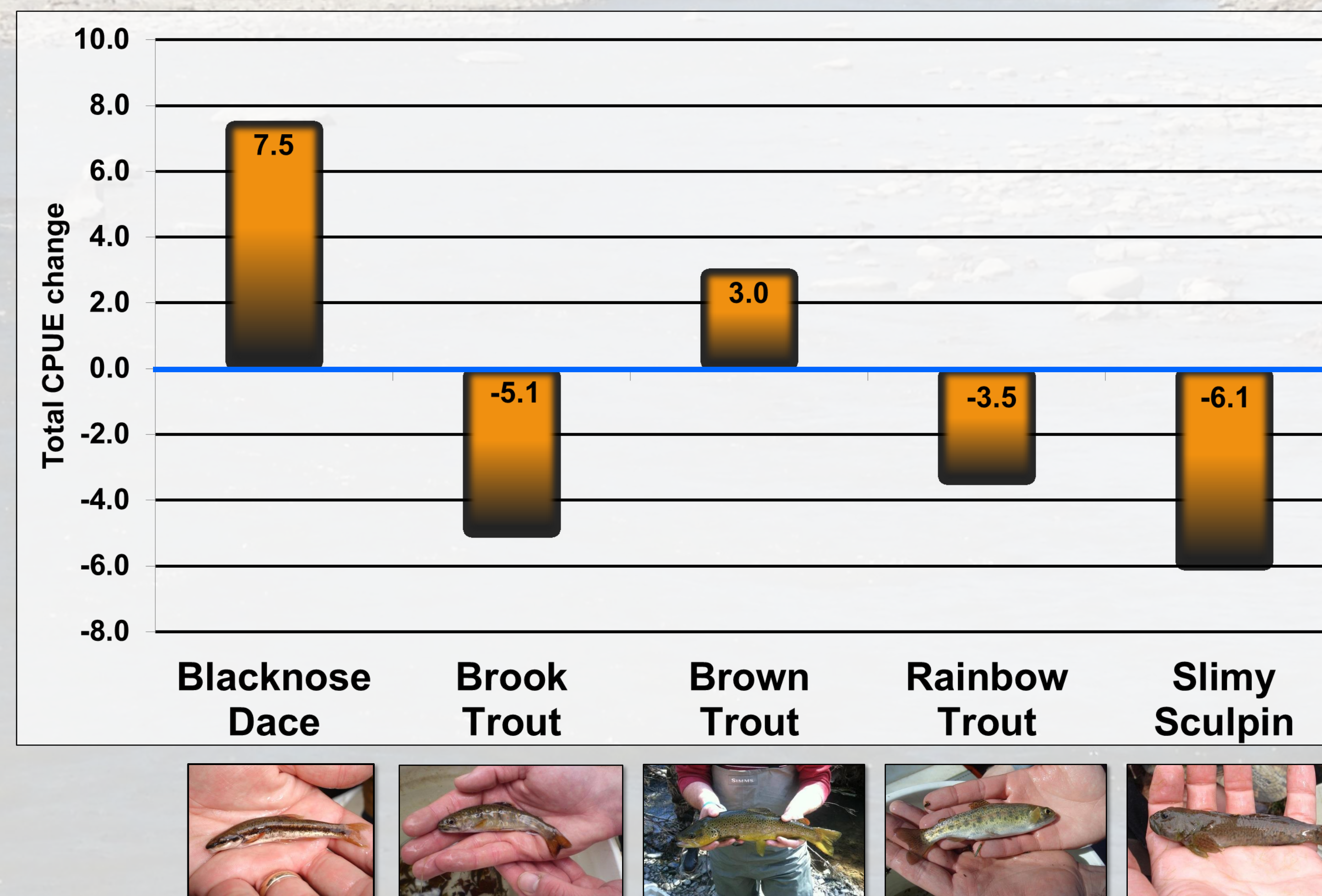


Figure 3. Change in CPUE (fish/hr) among all study sites



View from the top of Vroman's Nose, Town of Middleburgh, Schoharie County (Sep. 2011) Photo courtesy of Amy Colyer Fogerty

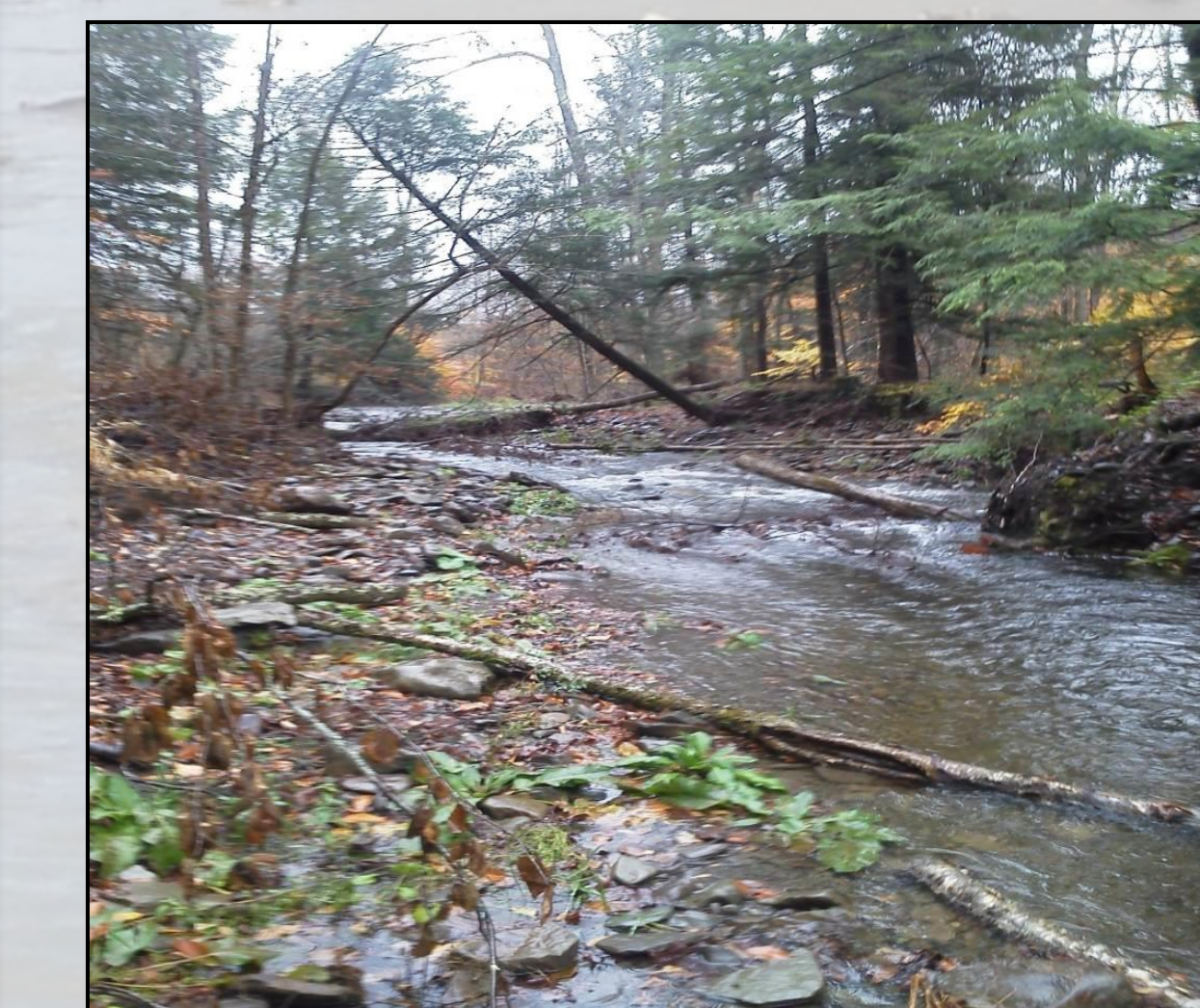


Little Schoharie (Fall 2011)

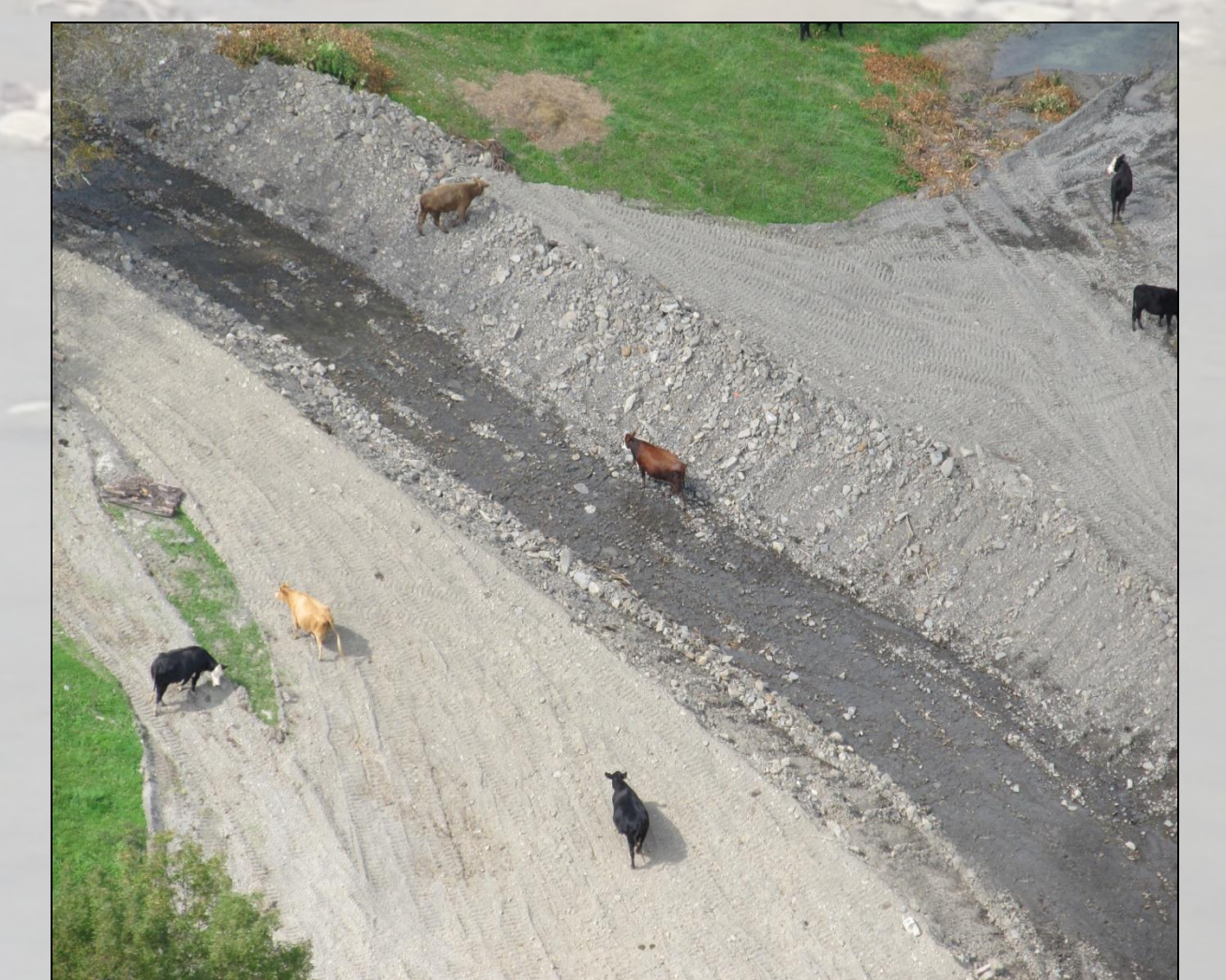
CONCLUSIONS

- Only one unmitigated creek was sampled (Bearkill) that contained suitable habitat; pools, riparian vegetation, woody debris & canopy
- The CPUE on the unaltered Bearkill increased for Brook trout (*Salvelinus fontinalis*) (+14.1 fish/hr) and for Brown trout (*Salmo trutta*) (+35.4 fish/hr)
- Flood damage and post flood mitigation efforts heavily impacted downstream reaches causing CPUE of Slimy Sculpin (*Cottus cognatus*) (-6.1 fish/hr) and Brook Trout (-5.1 fish/hr) CPUE to decline
- Mitigated streams (Keyserkill, Line, Little Schoharie, Platterkill) were bermed, channelized, eroded and stripped of riparian vegetation
- Brown Trout (+3.0 fish/hr) and Blacknose Dace (*Rhinichthys atratulus*) (+7.5 fish/hr) had the greatest increase in CPUE at both upstream and downstream sites.
- Increased CPUE possibly due to lack of optimal habitat used as refuge
- Little Schoharie Creek underwent the most disturbance to the fish community, large drops in Rainbow Trout (*Oncorhynchus mykiss*) (-31.0 fish/hr) and Slimy Sculpin (-124.1 fish/hr) CPUE were recorded
- Physical /Chemical parameters at time of sampling showed wide differences from the pre-flood habitat.
- Turbidity increased among mitigated creeks (+5.1 NTU) compared to unmitigated creeks (-1.3 NTU)
- All streams will be revisited in Spring 2013

Bearkill:
Unmitigated



House Creek:
Bermed & Channelized



LITERATURE CITED

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