

Ecology and Management of Headwater Streams



Groundwater



Steep and Narrow Channels



High flow (spring and after rain)



Base flow (early summer)

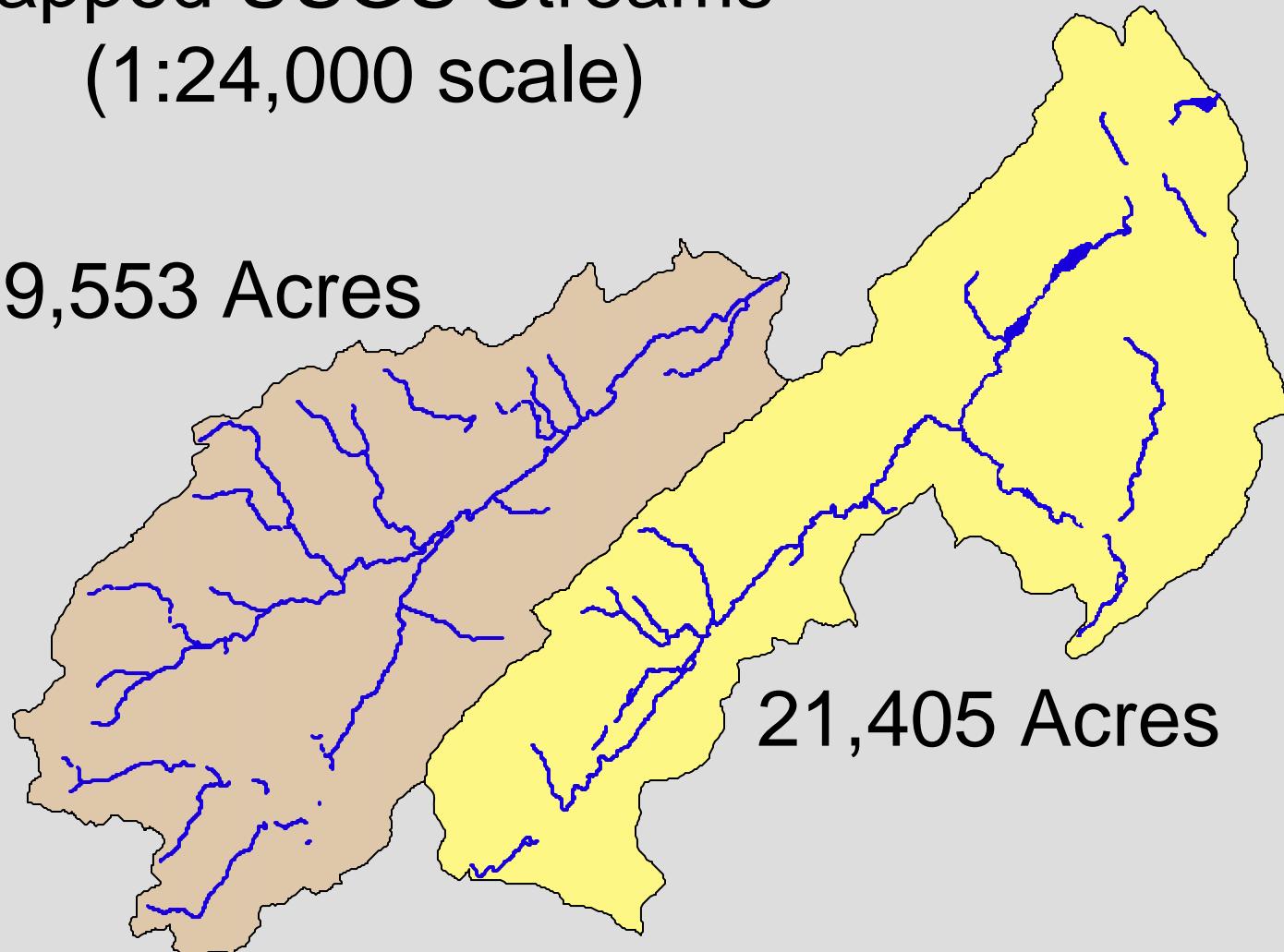


No flow (late summer/fall)



Mapped USGS Streams (1:24,000 scale)

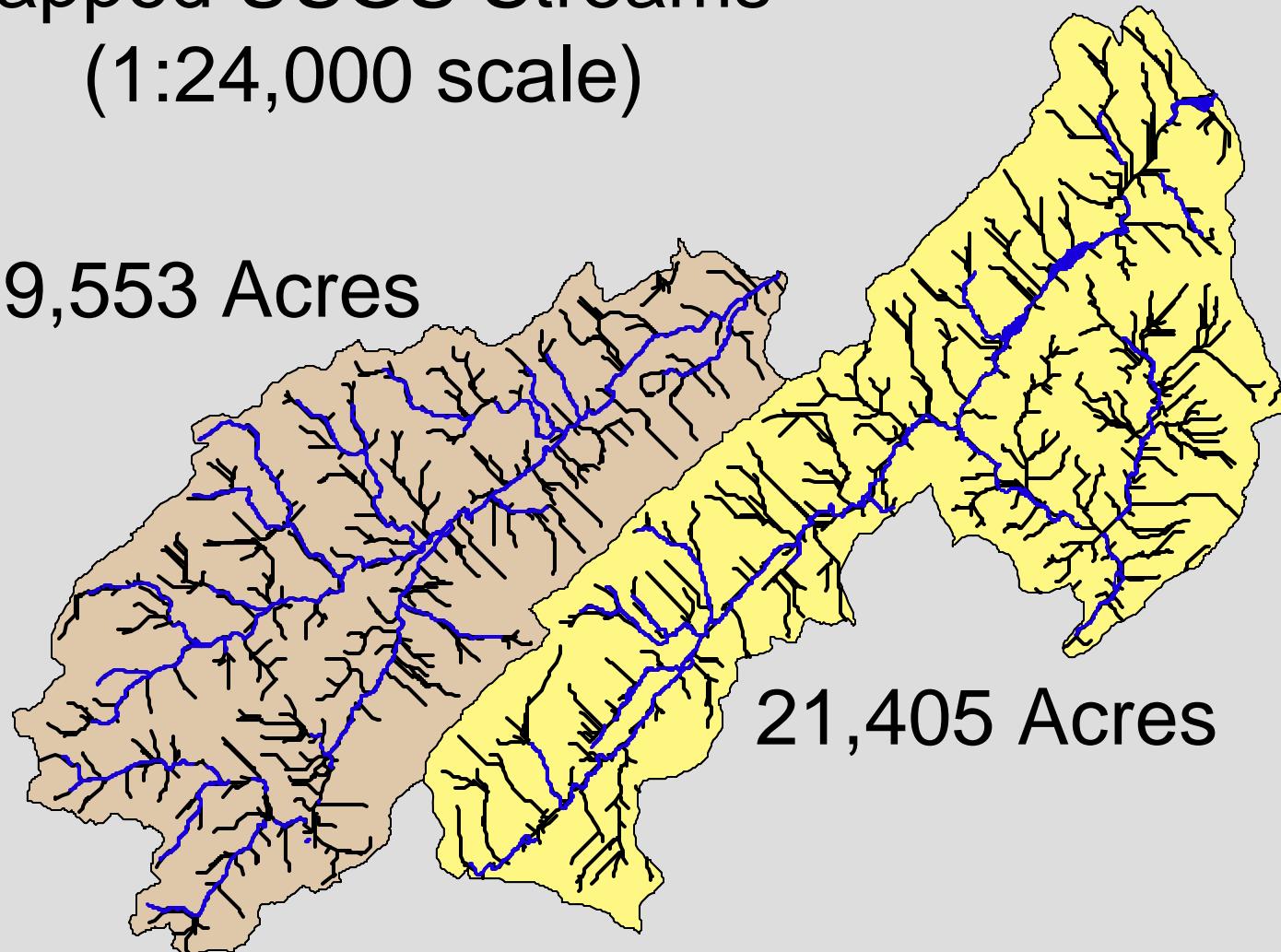
19,553 Acres



21,405 Acres

Mapped USGS Streams (1:24,000 scale)

19,553 Acres

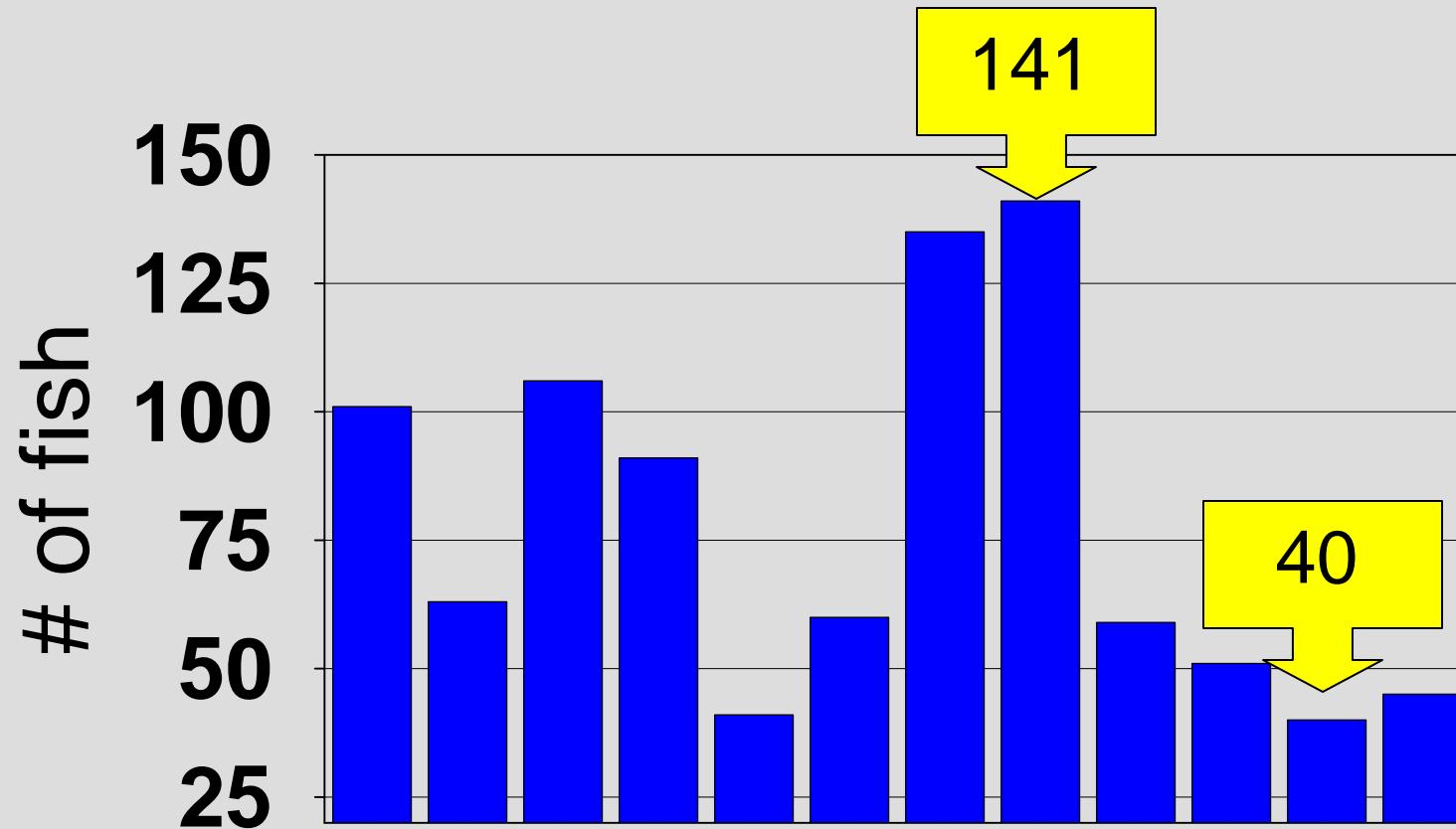


21,405 Acres

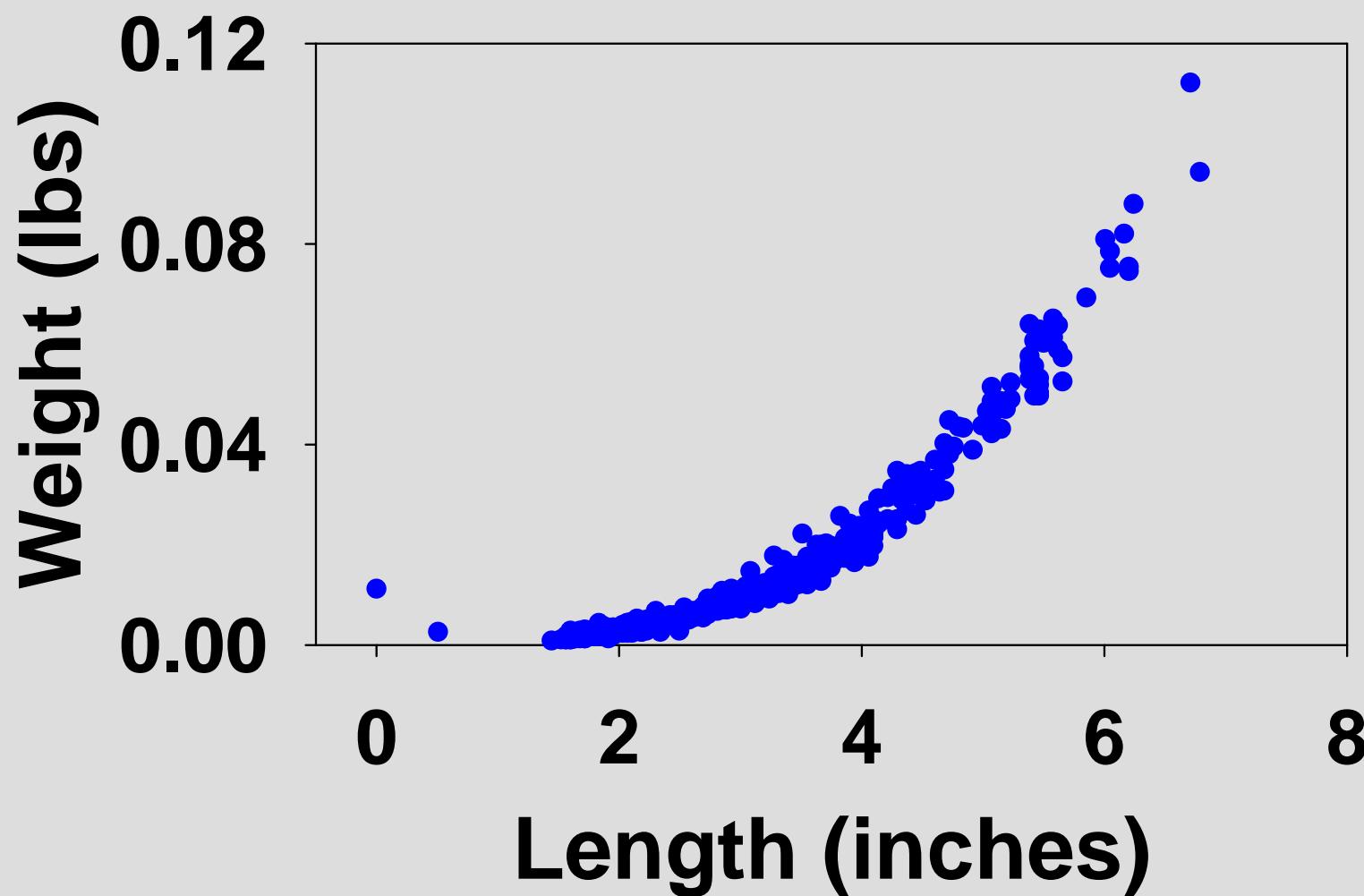
Headwater Streams- small but mighty!

- Amphibians (17 species)
 - Most common American Toad, Red-backed salamander, wood frog
- Macros (53 species)
 - Most common black flies, mosquitoes, and midges, but also stone flies, mayflies, and caddis flies

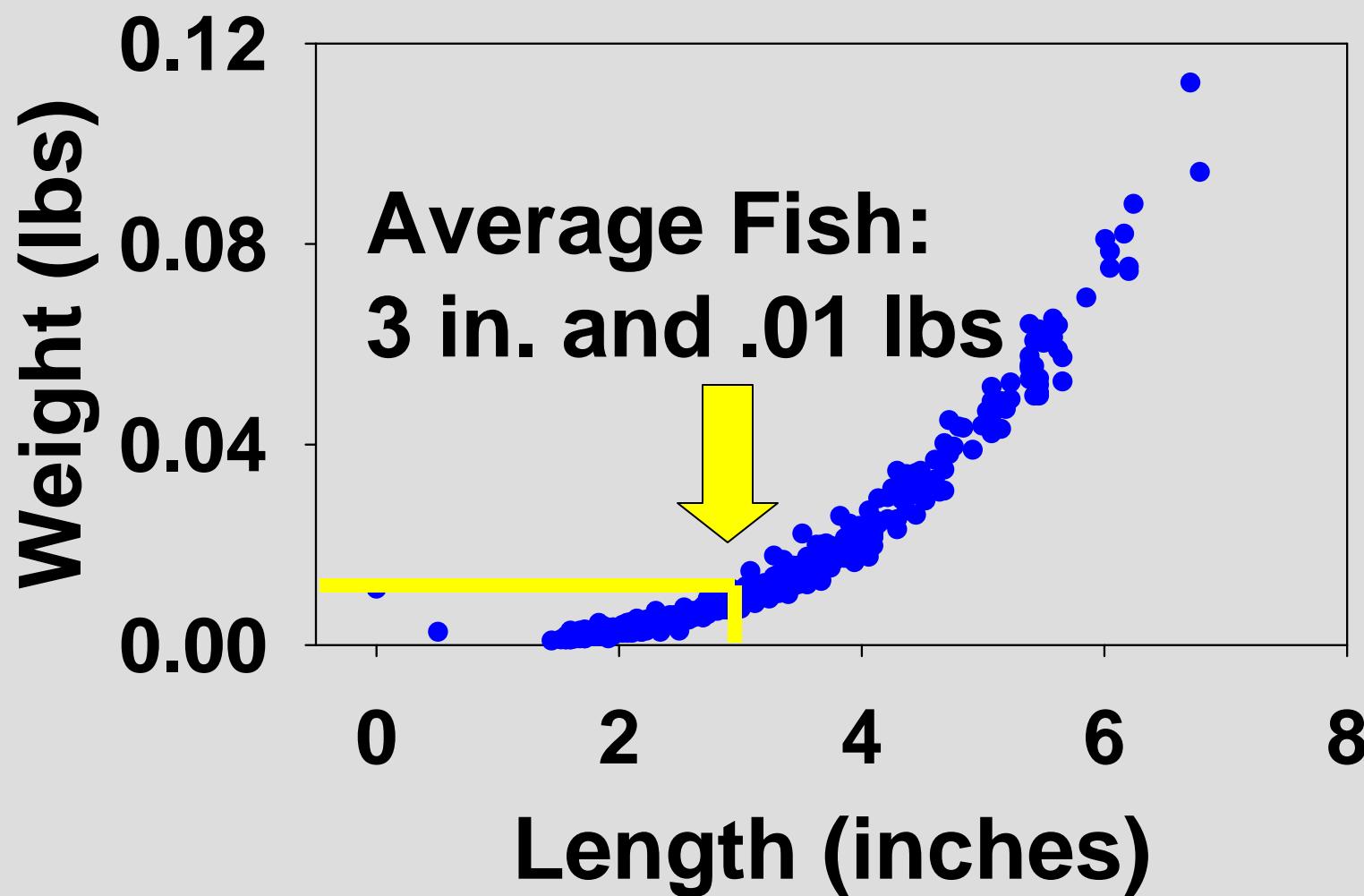
Number of Brook Trout in 330ft of stream channel



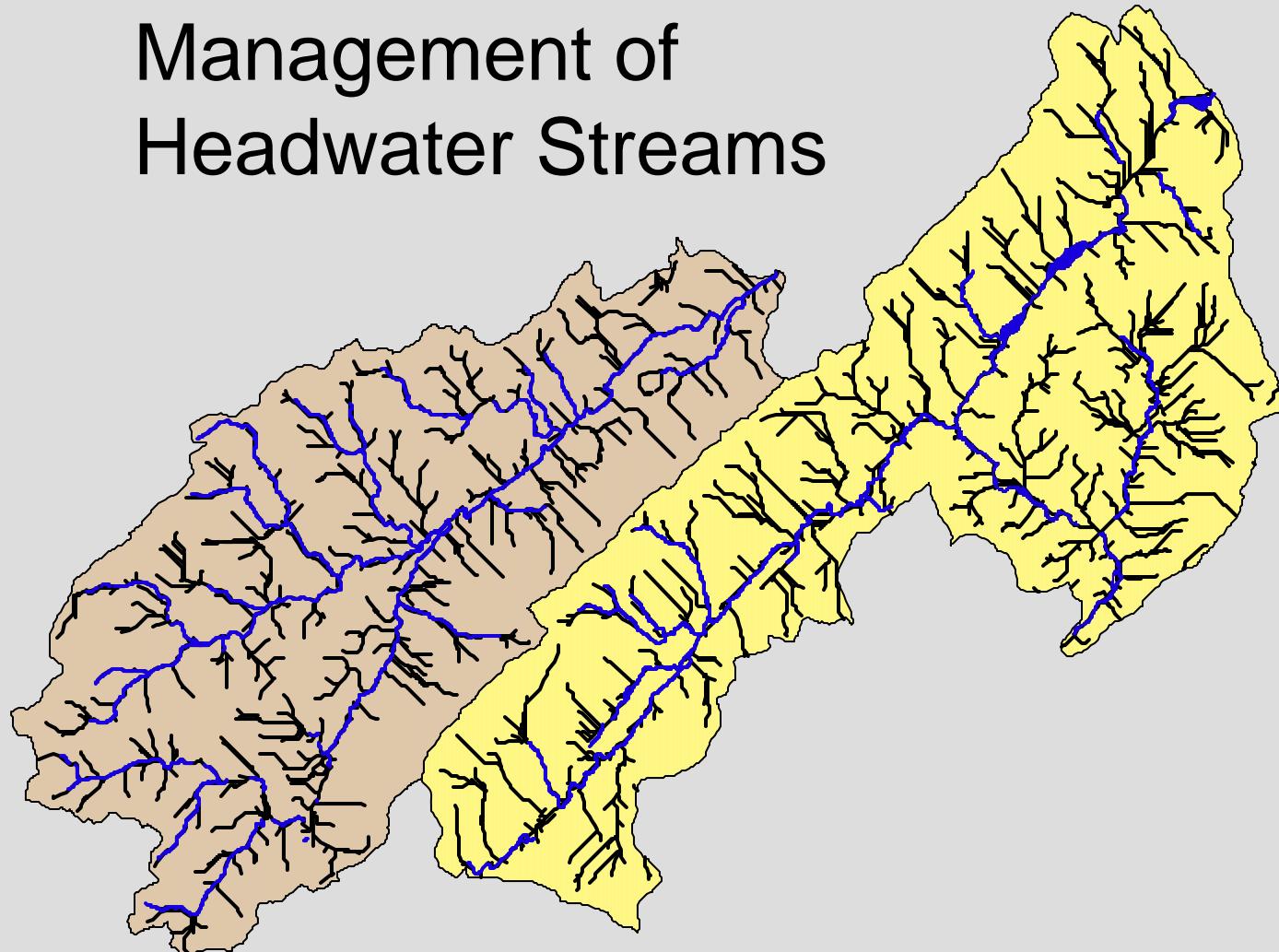
Length & Weight of Brook Trout

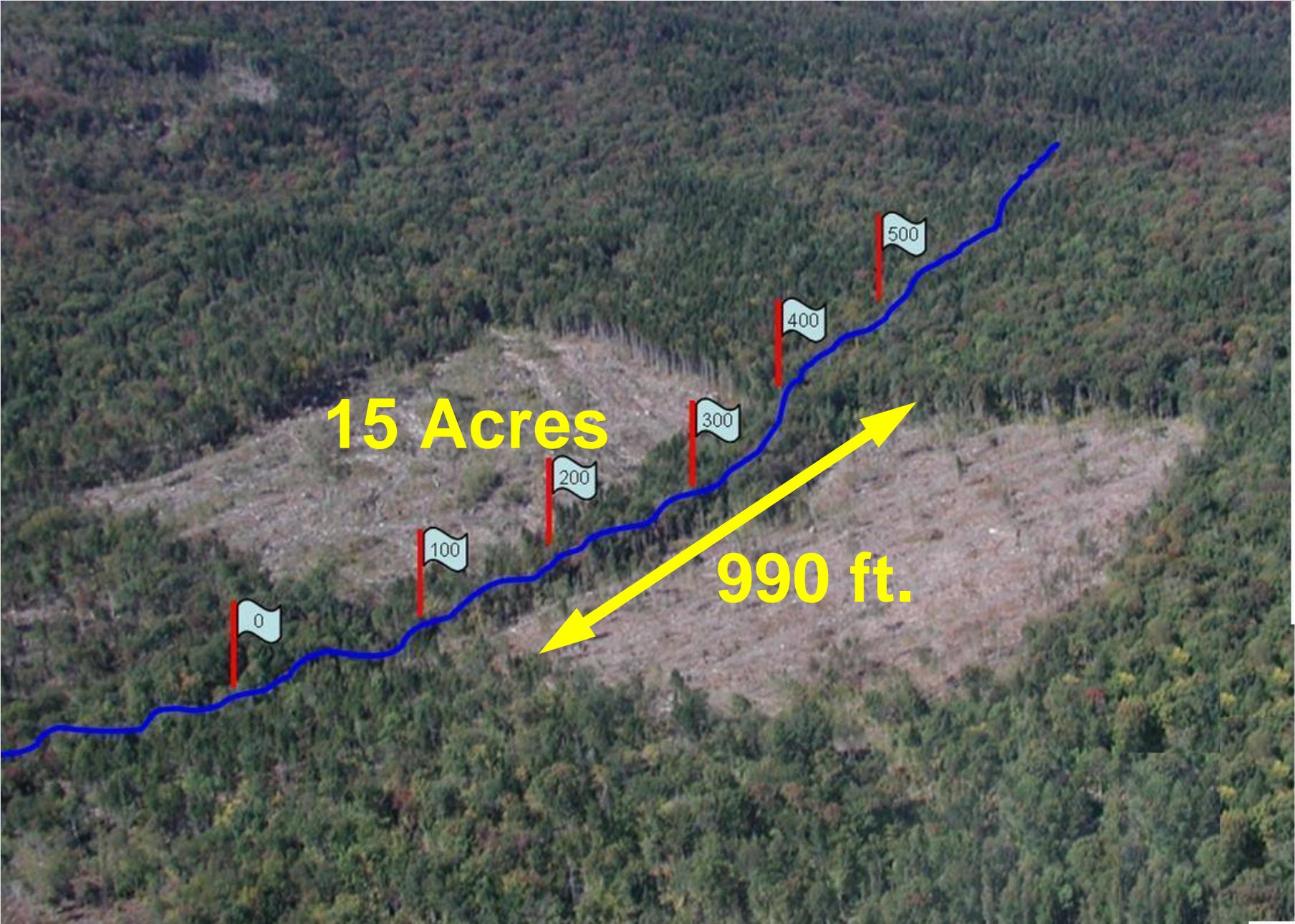


Length & Weight of Brook Trout



Management of Headwater Streams





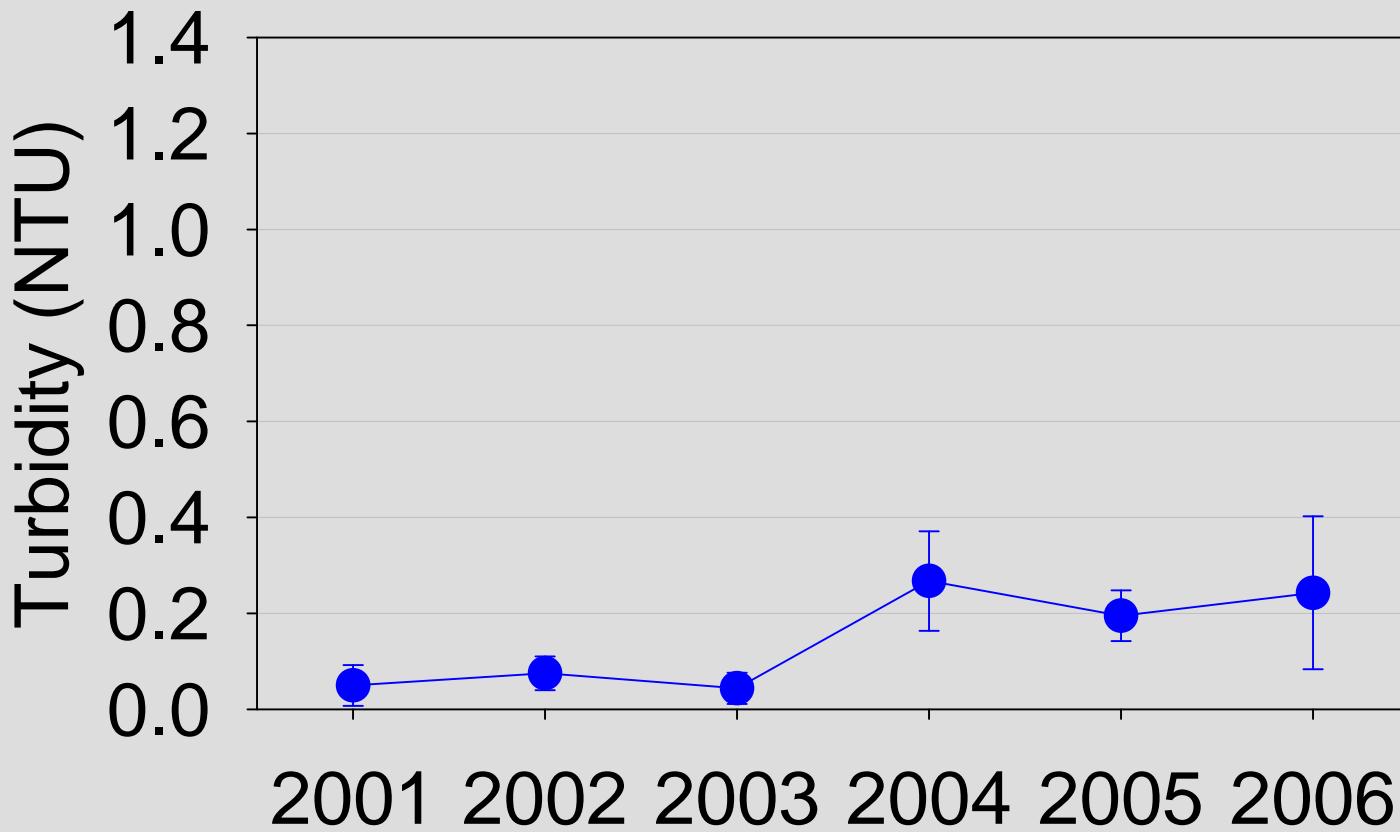
Manomet Headwater Experiment

- Treatments:
 - No Buffer (3 streams)
 - 38ft. Buffer (3 streams)
 - 75ft. Buffer (3 streams)
 - No harvest (control)
- BMPs
 - Filter strip (no scarification within 15ft of stream channel)
 - No unbridged/armored stream crossings

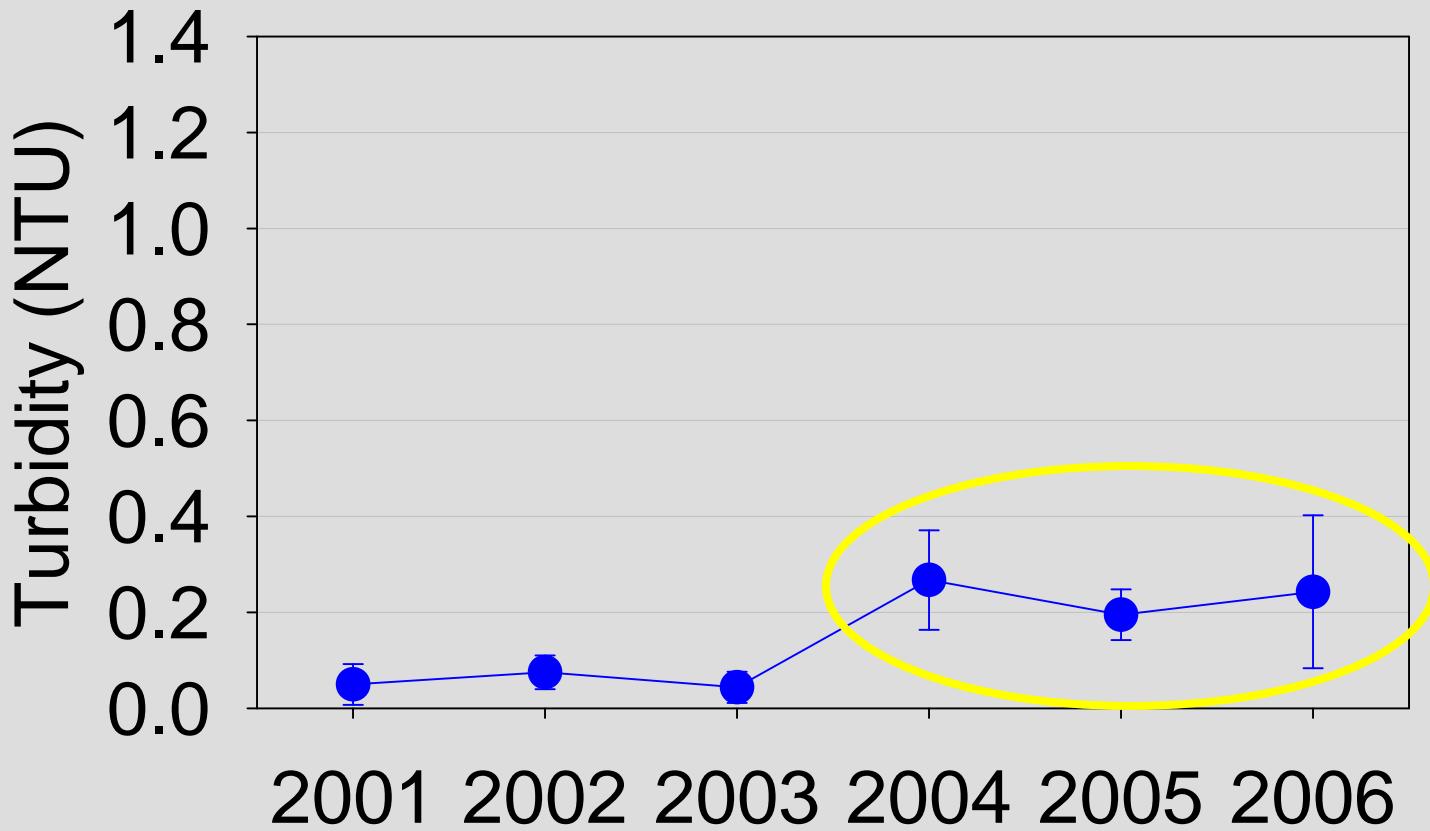
Sediment Plume



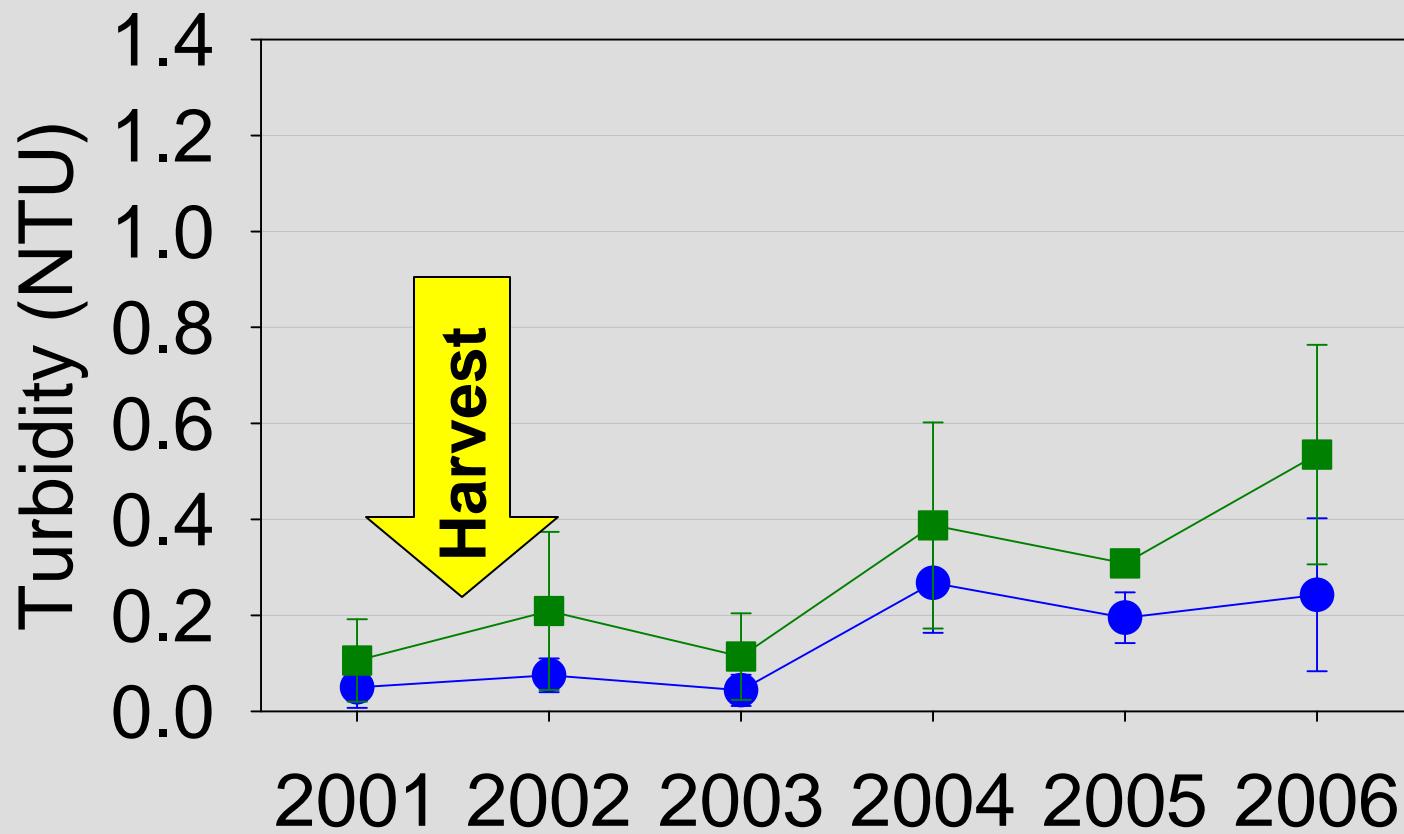
Natural Turbidity Changes



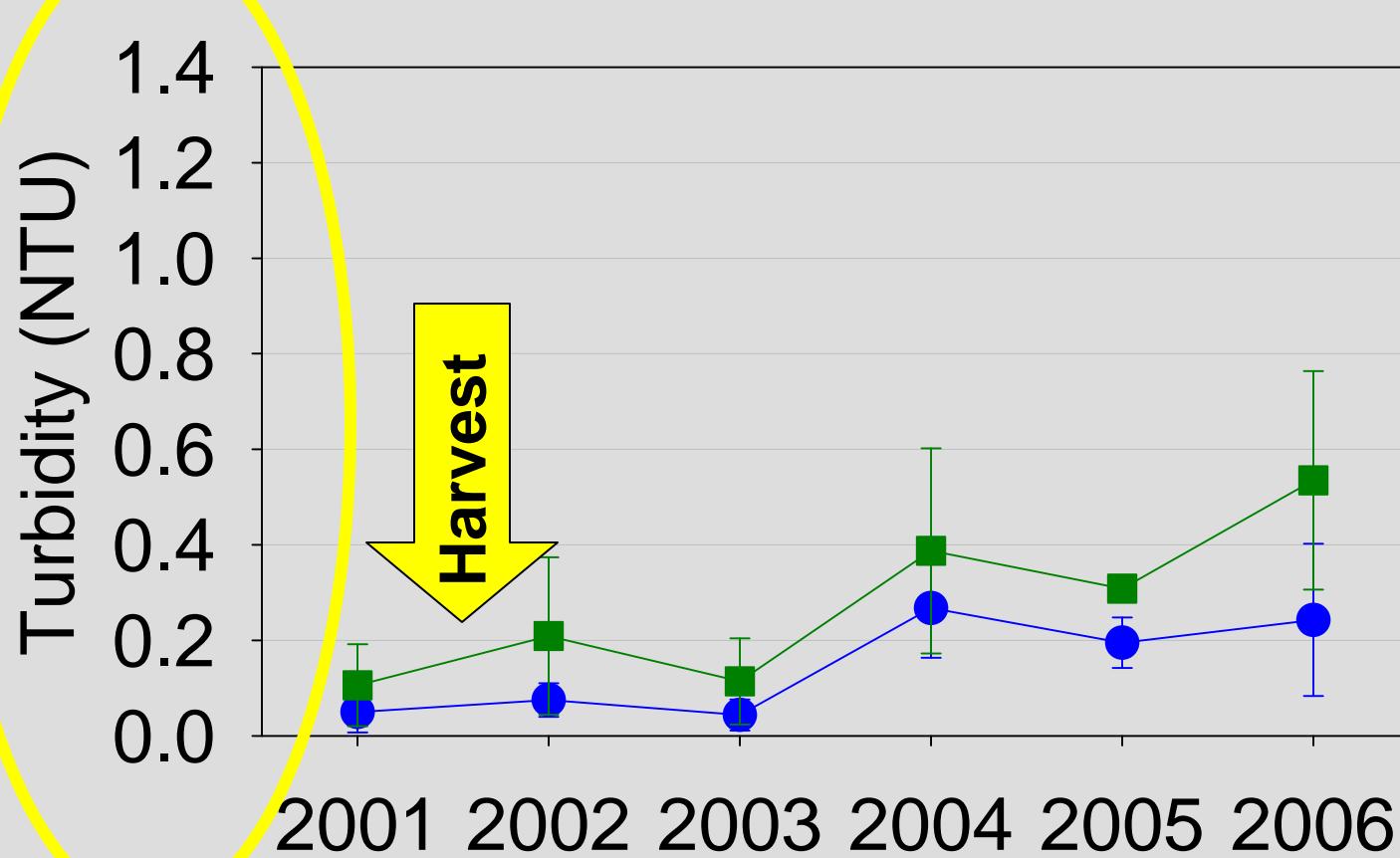
Natural Turbidity Changes



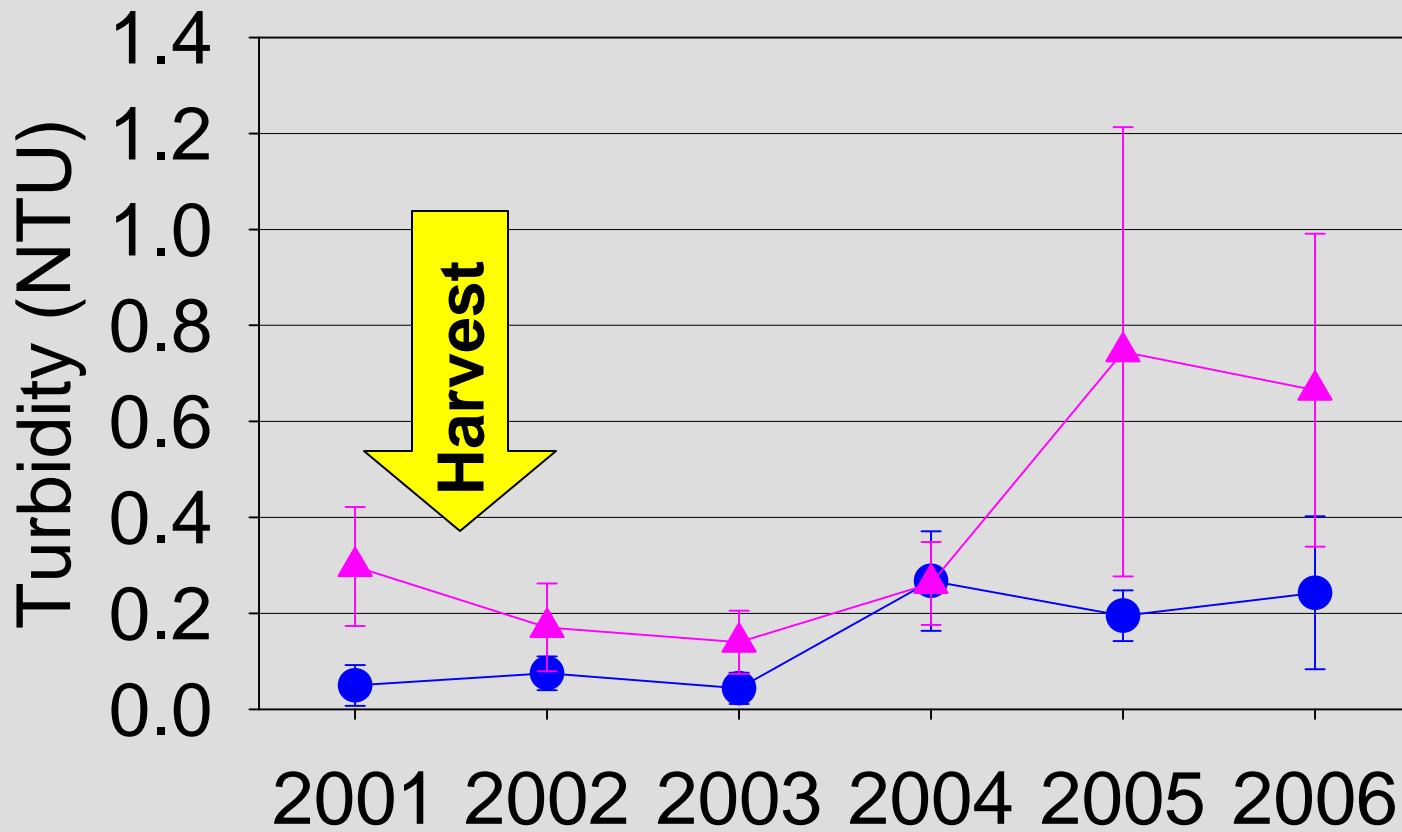
No Buffer vs. Control



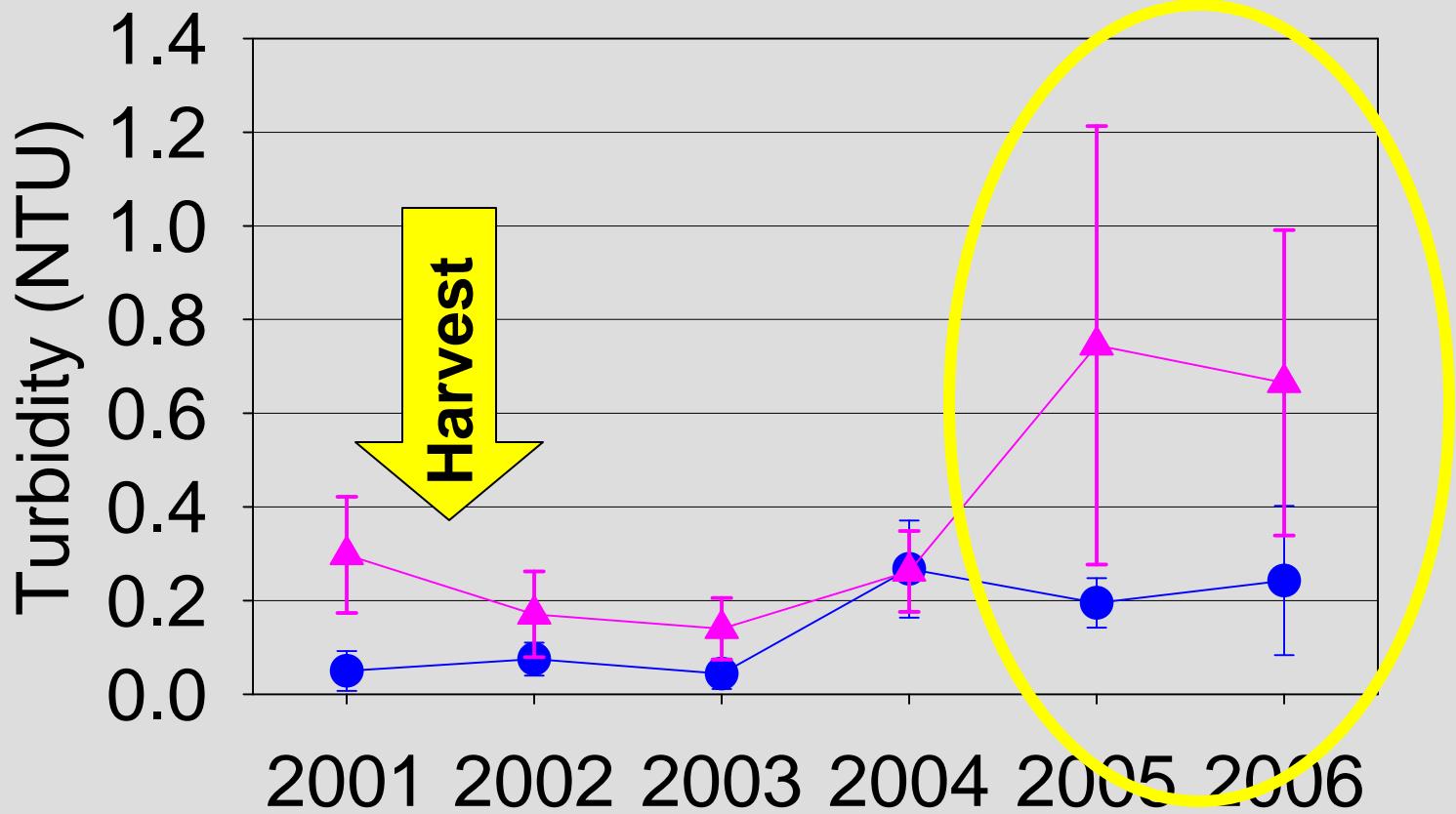
No Buffer vs. Control



75ft Buffer vs. Control



75ft Buffer vs. Control



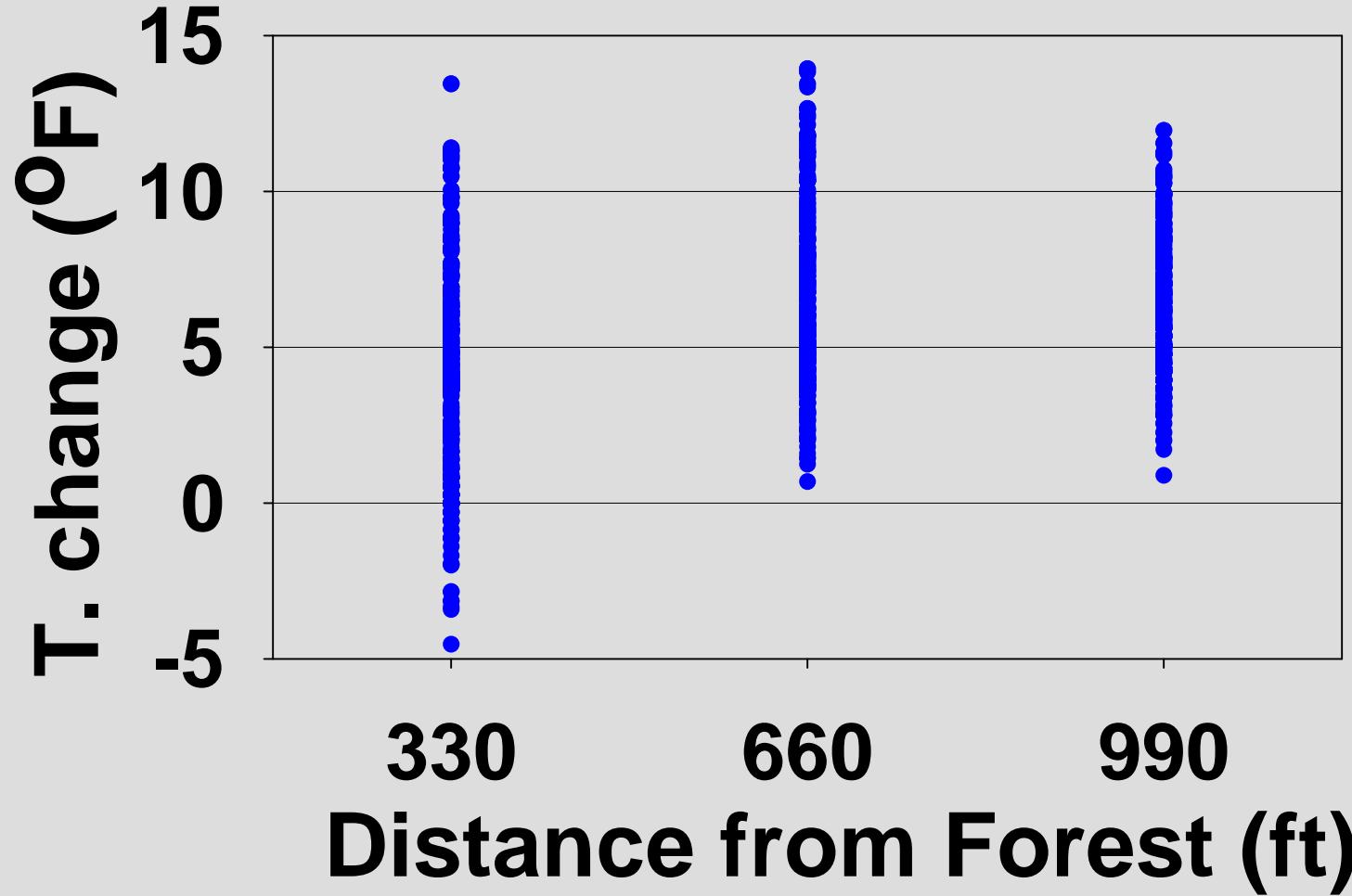




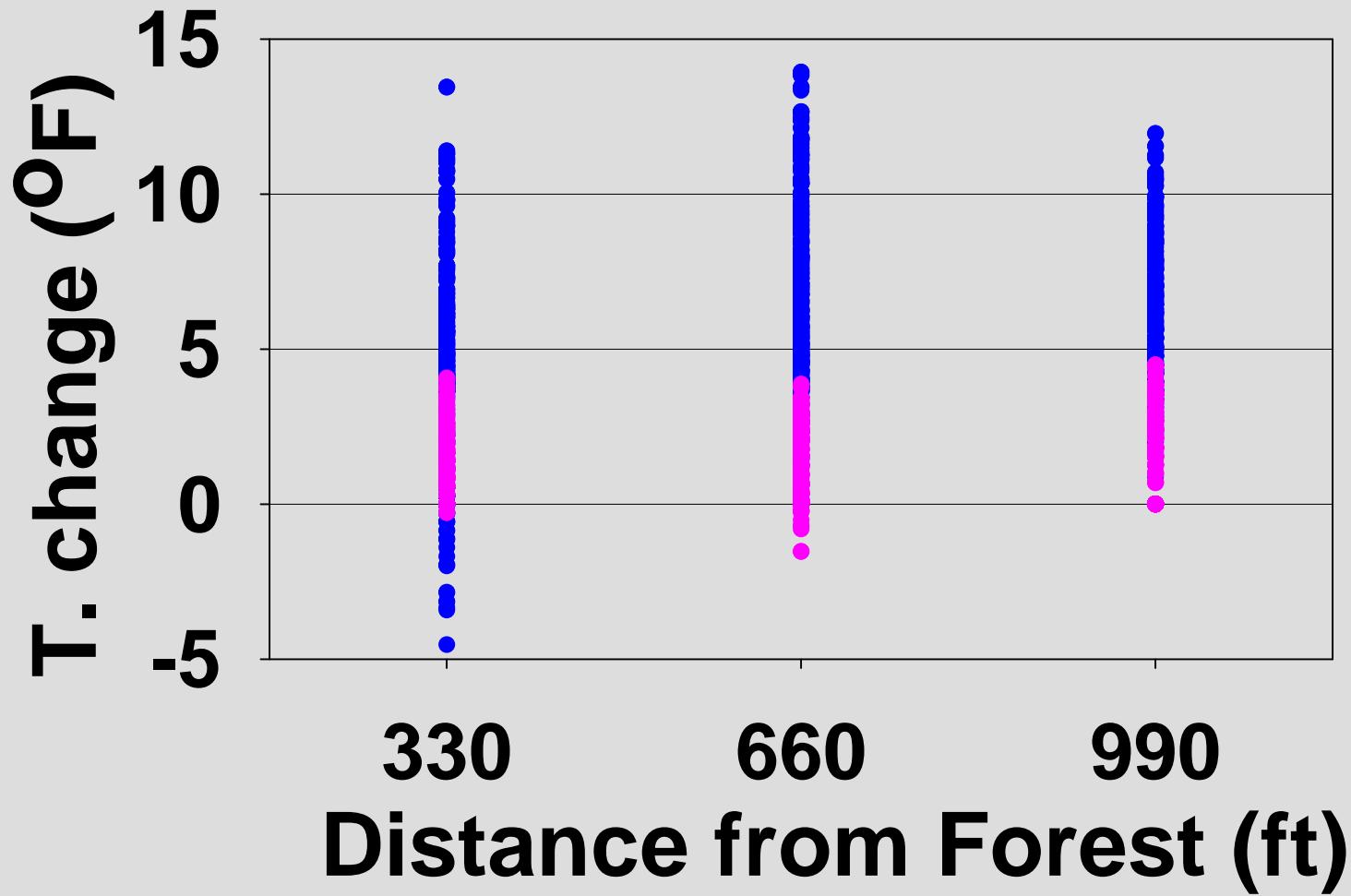
Water Temperature

Headwater Streams are Sensitive
to Increases in temperature due to
their small volume

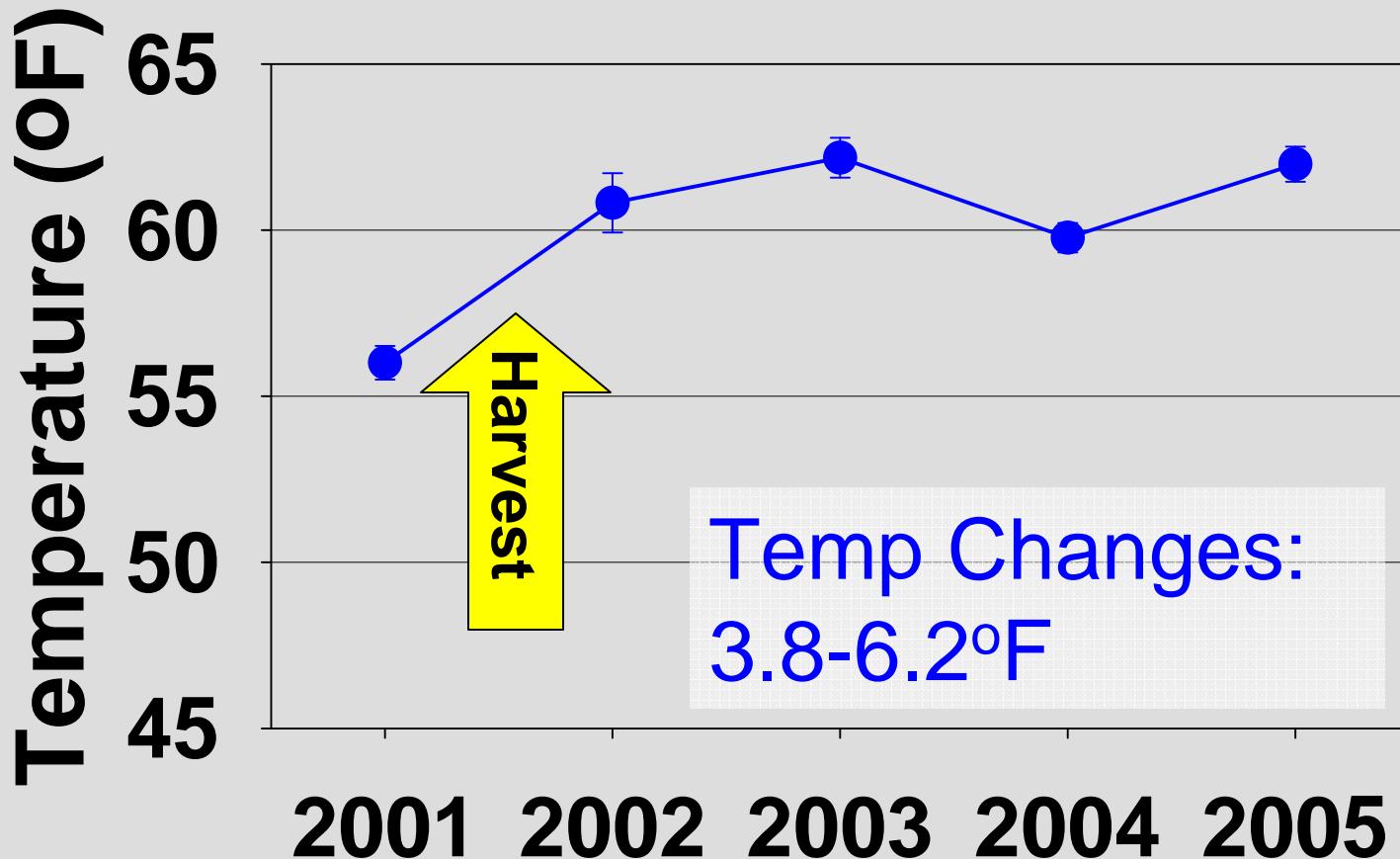
Maximum Daily Post-Harvest Temp Change - No Buffer



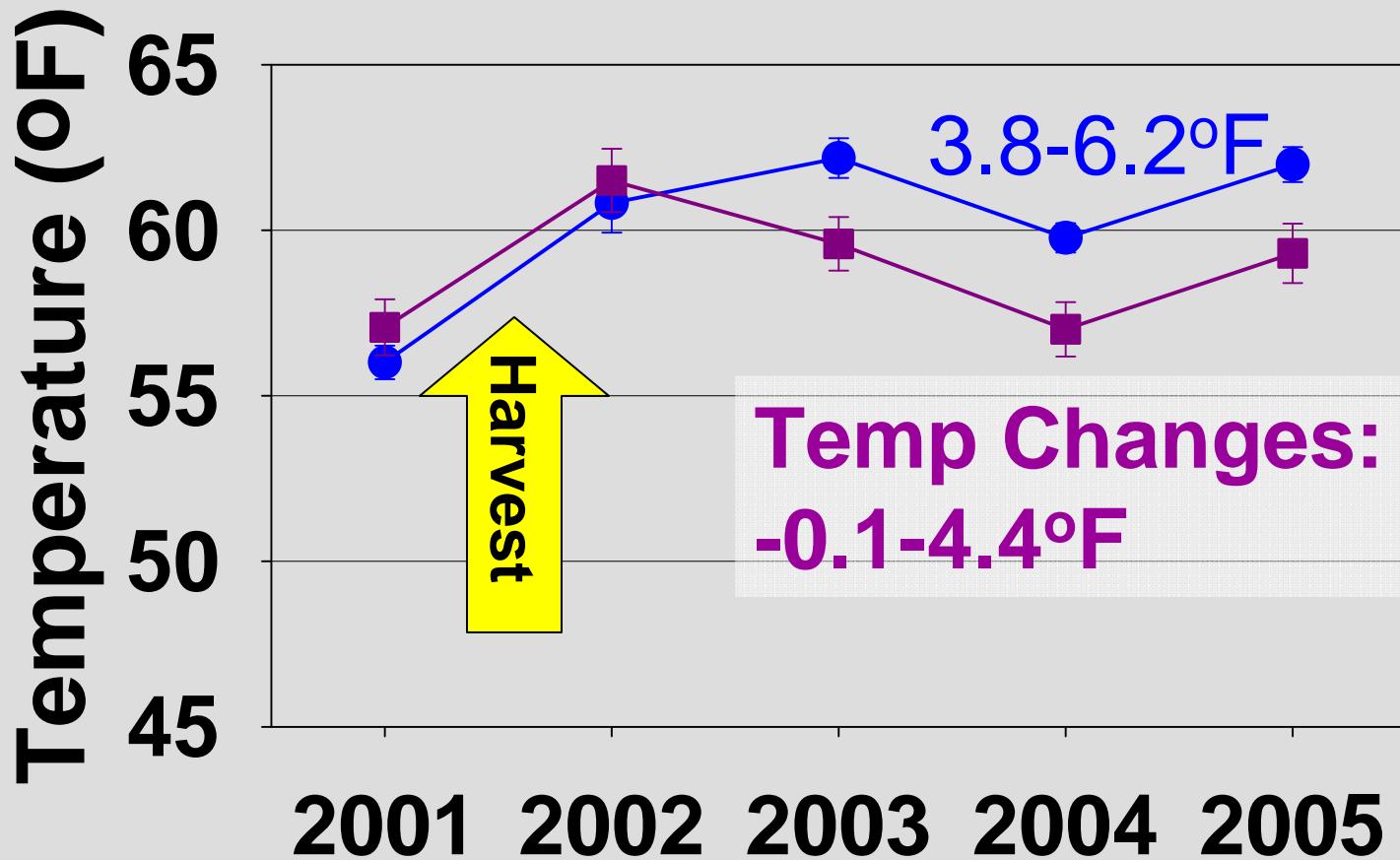
Maximum Daily Post-Harvest Temp Change- No Buffer and 38ft. Buffer



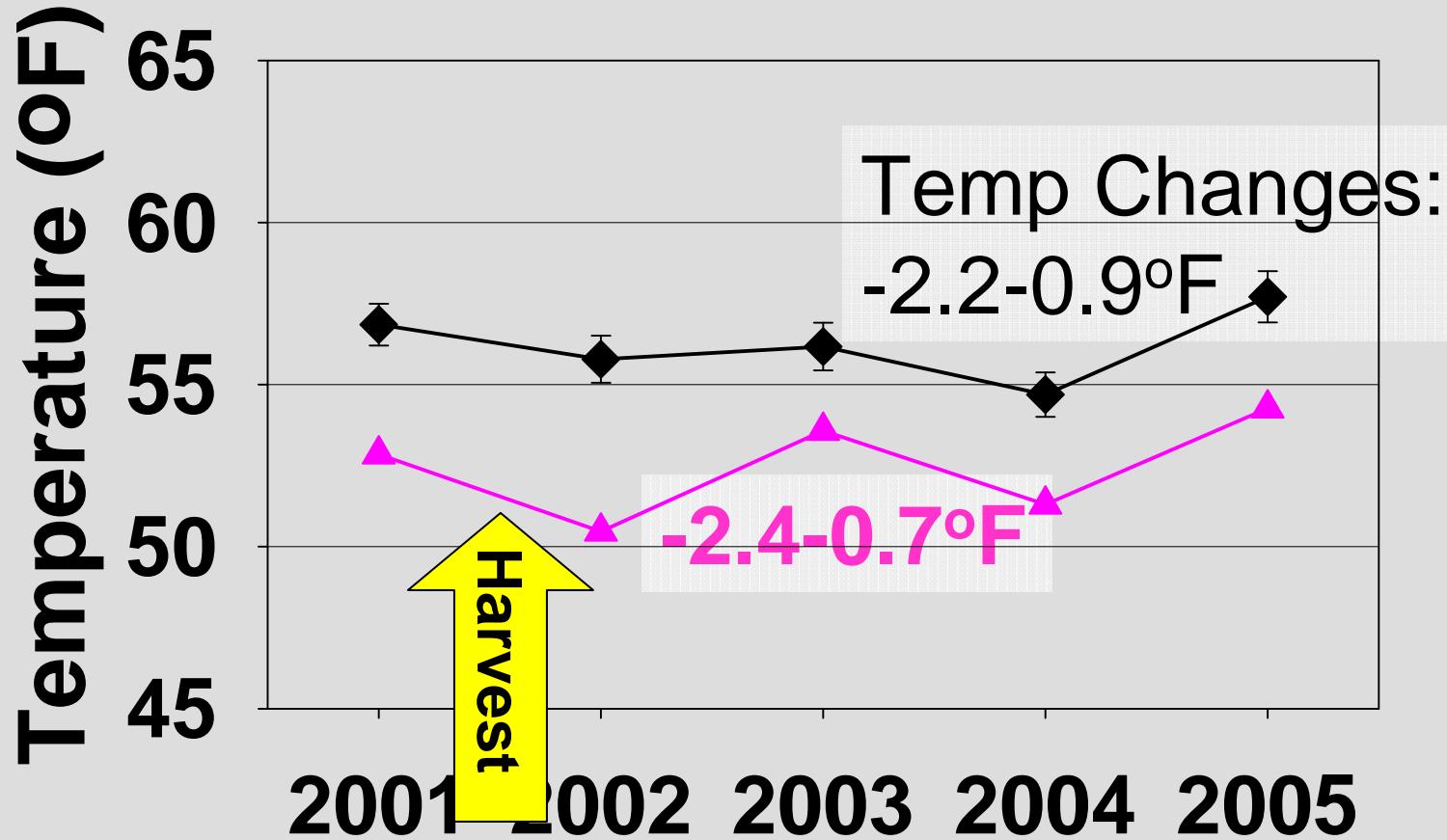
Average Temperature- No Buffer



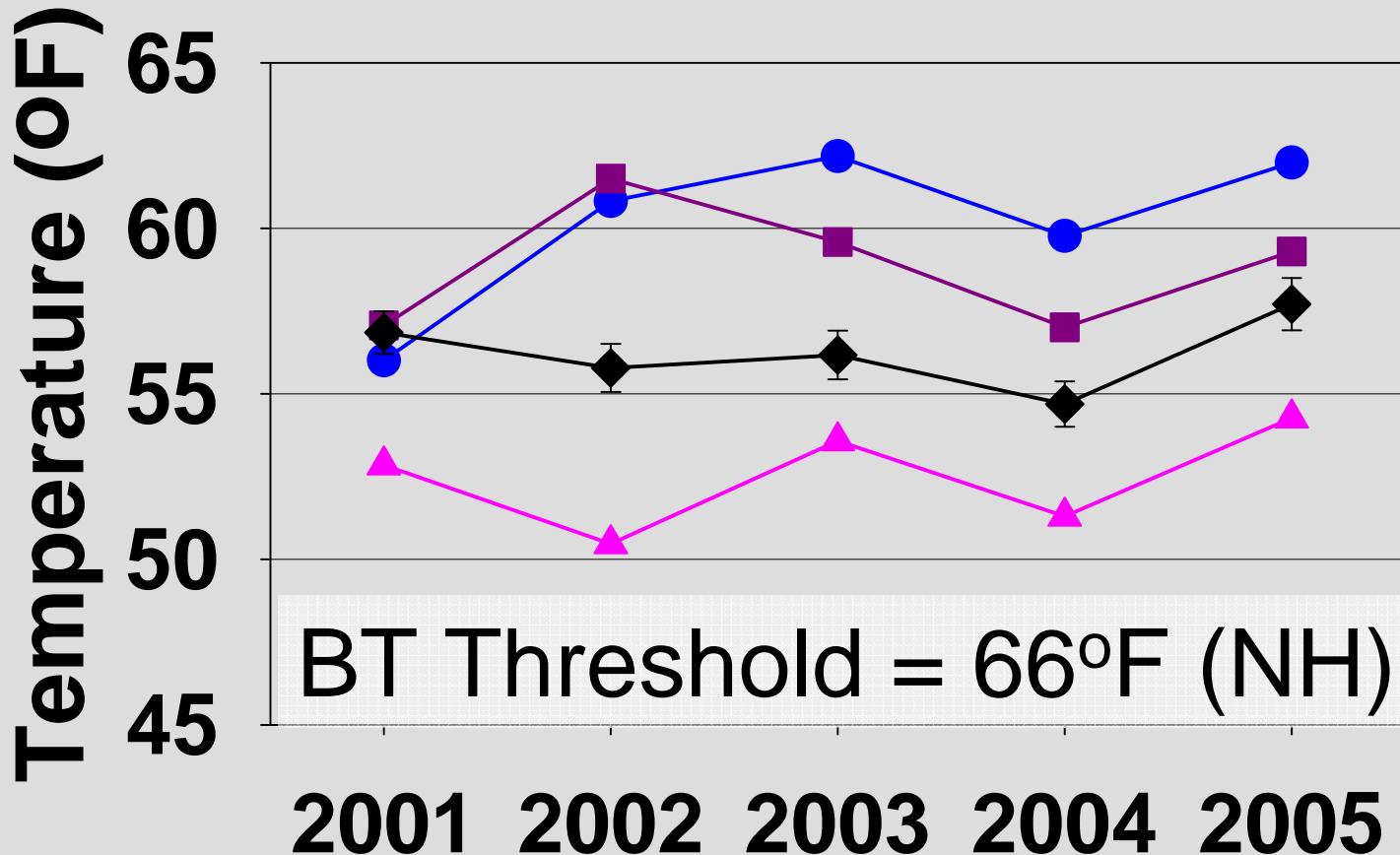
Average Temperature- No Buffer and 38ft. Buffer



Average Temperature- 75ft. Buffer & Control



Average Temperature- No Buffer, 38ft., 75ft., & Control



Management Recommendations

- Follow BMPs!!
 - Prevent disturbance of soil near stream
 - Bridge or armor all stream crossings
- Avoid long area of unbuffered streams
- Consider site specific conditions (e.g. soils, aspect, Atlantic salmon)

For more information visit:

<http://www.manometmaine.org/headstream.html>

Or contact:

ewilkerson@manomet.org