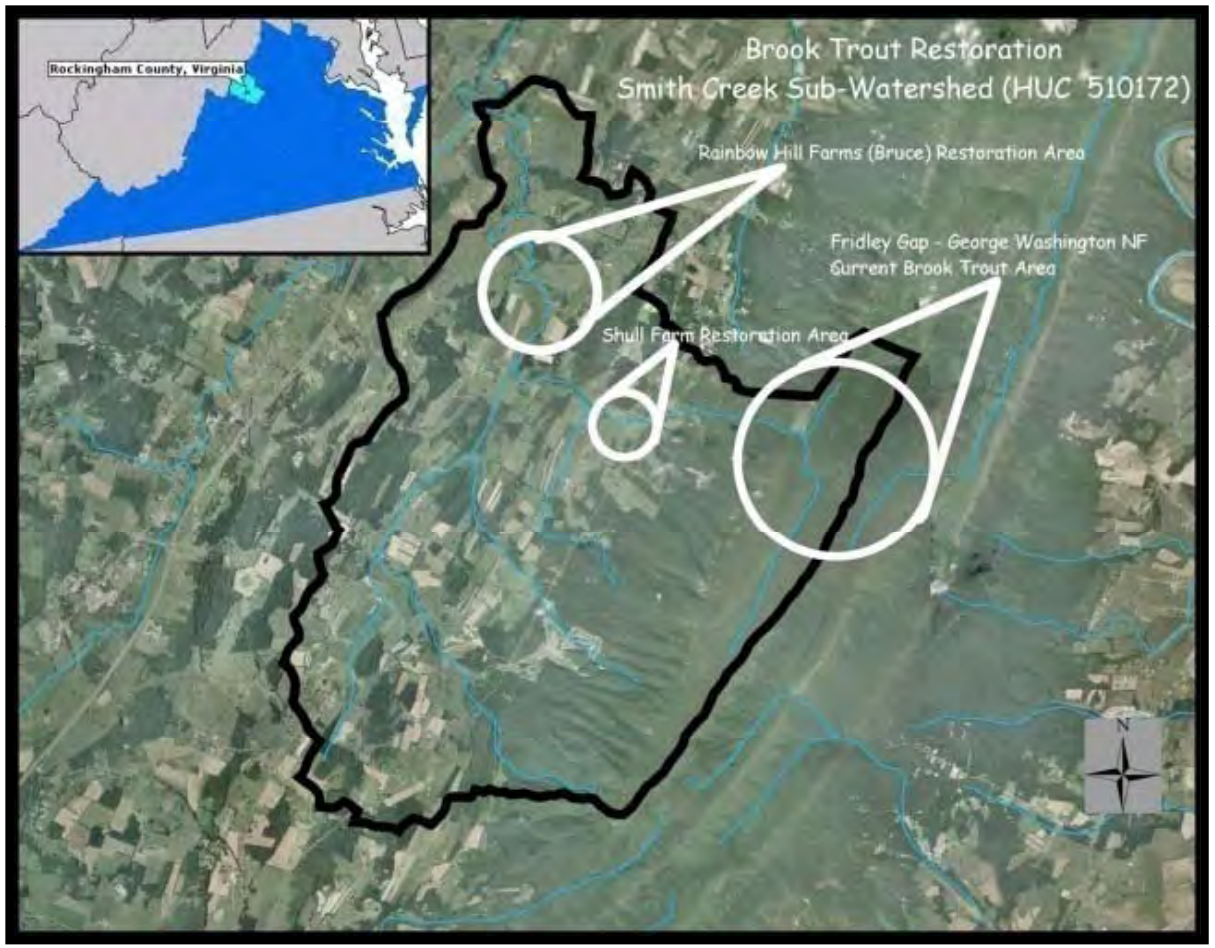
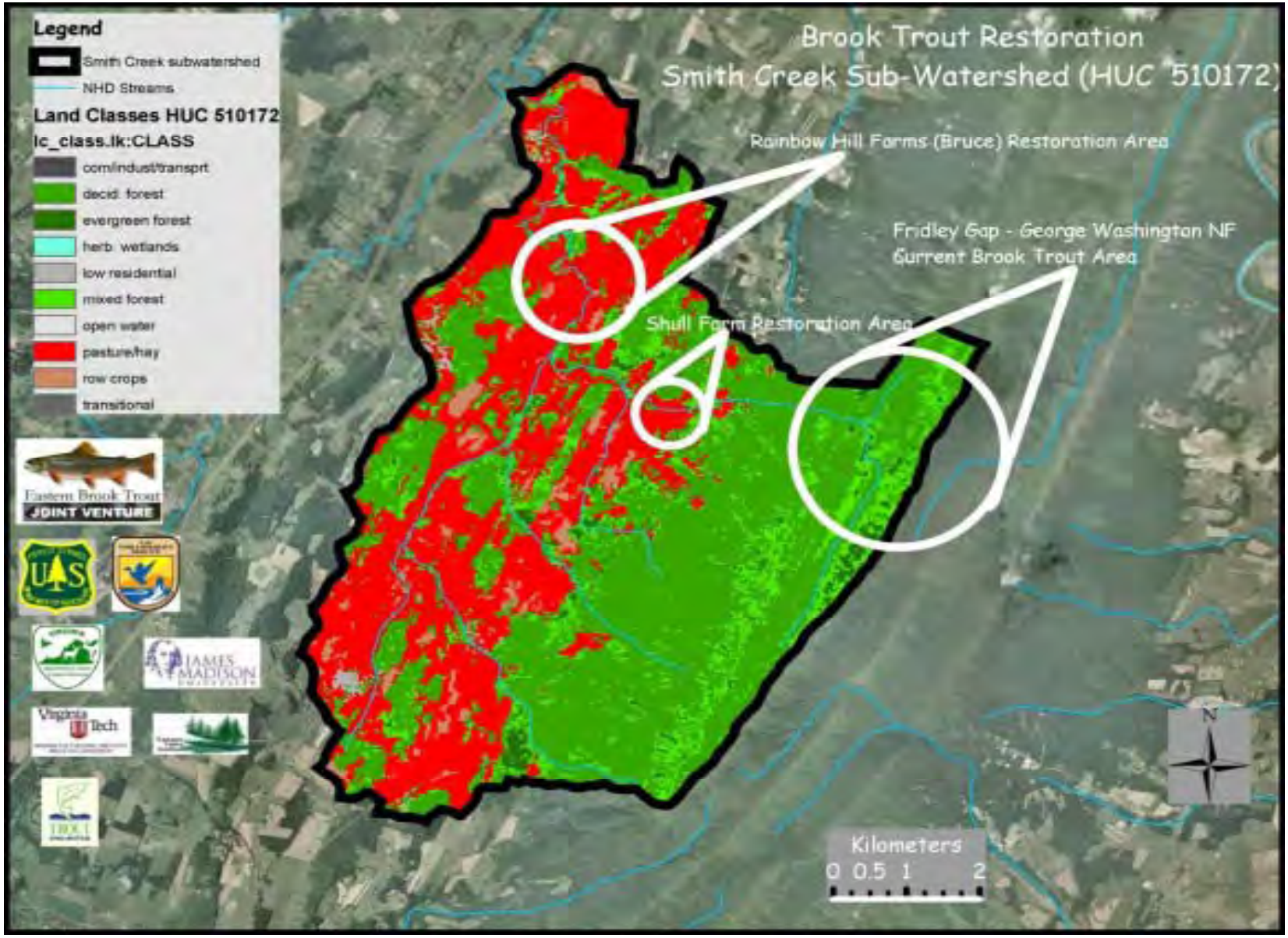
The Smith Creek Restoration Project: Summary Report 2009

Eastern Brook Trout
JOINT VENTURE

Case History: Smith Creek

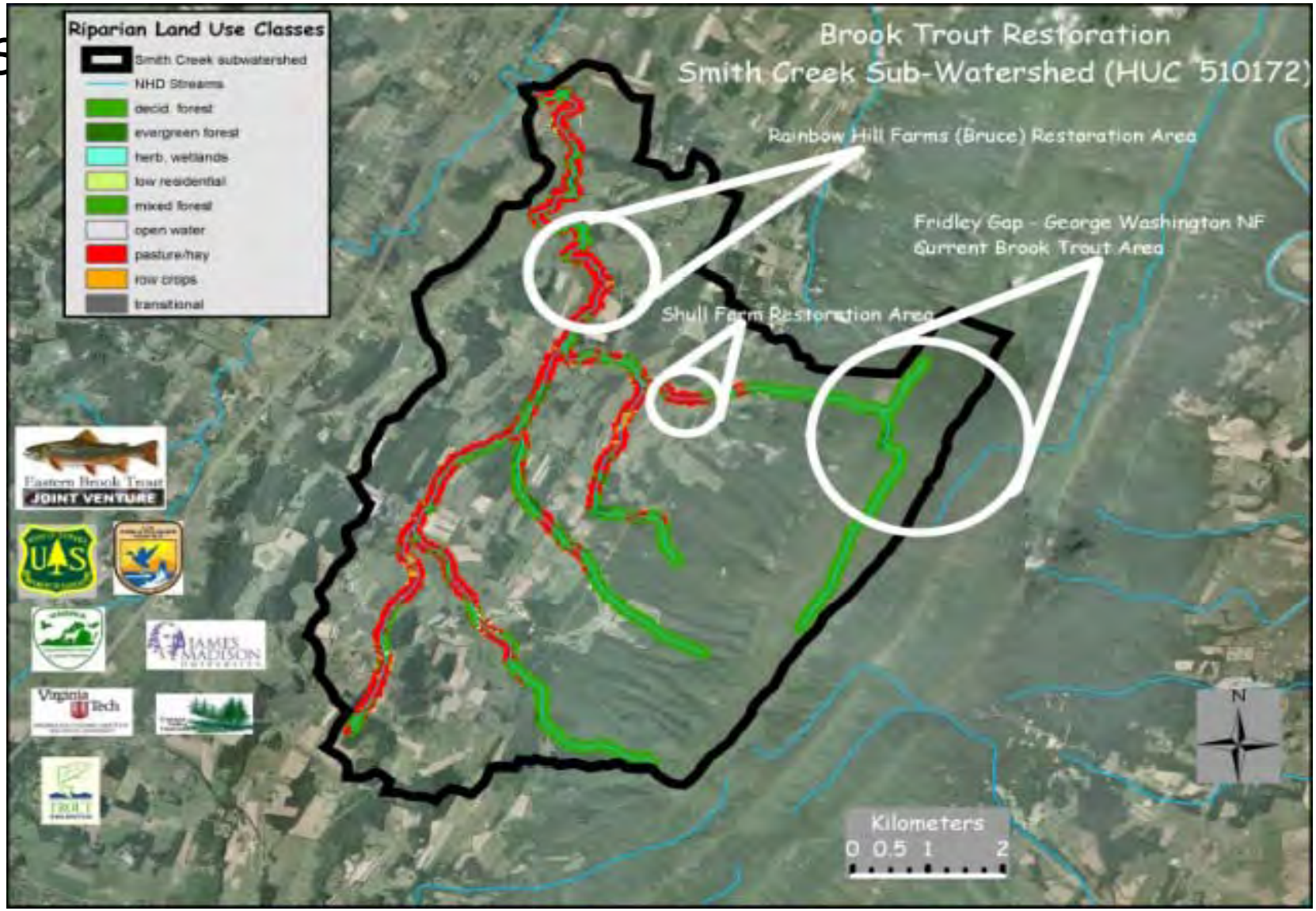


Eastern Brook Trout
JOINT VENTURE



Eastern Brook Trout
JOINT VENTURE

S

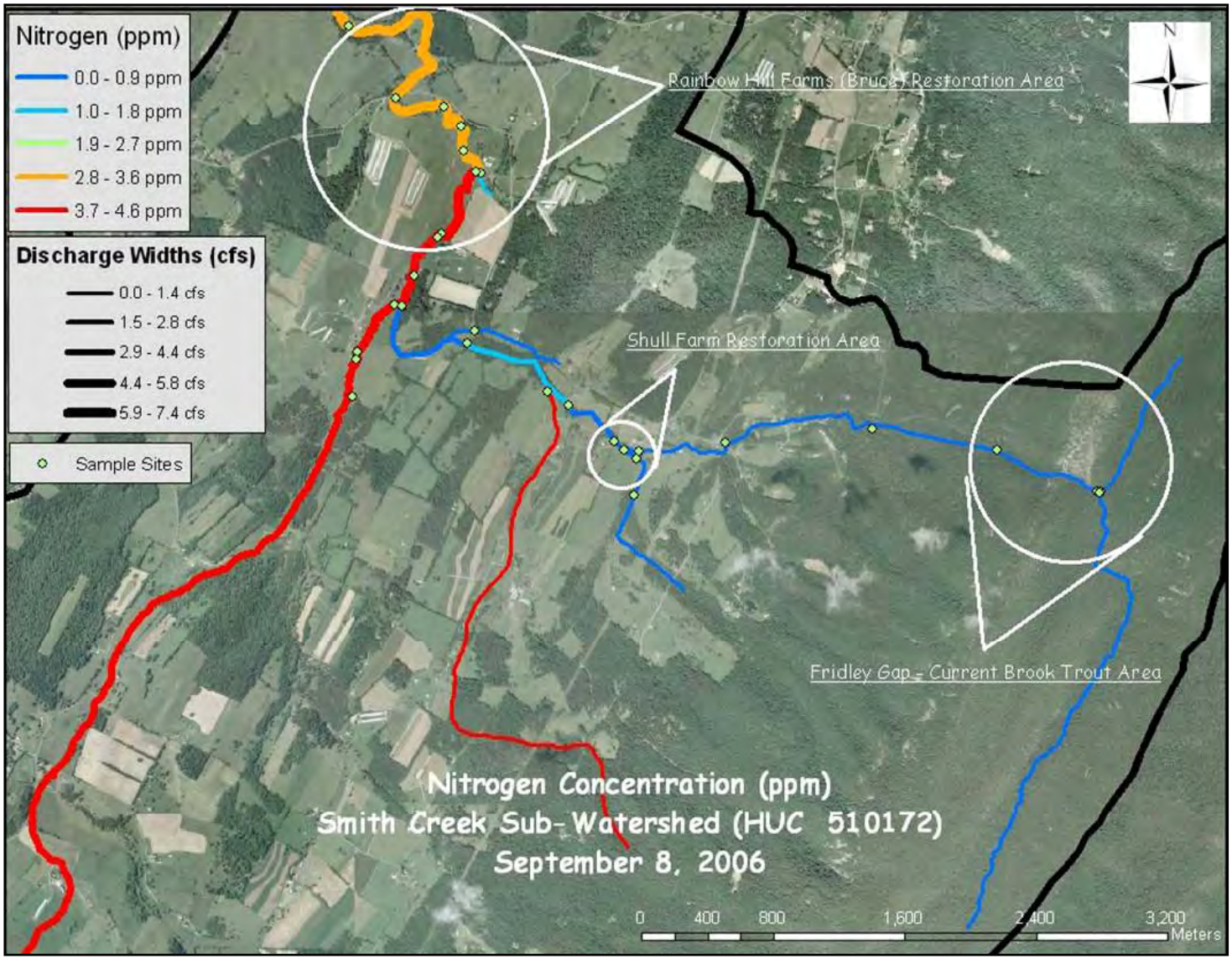


Eastern Brook Trout
JOINT VENTURE

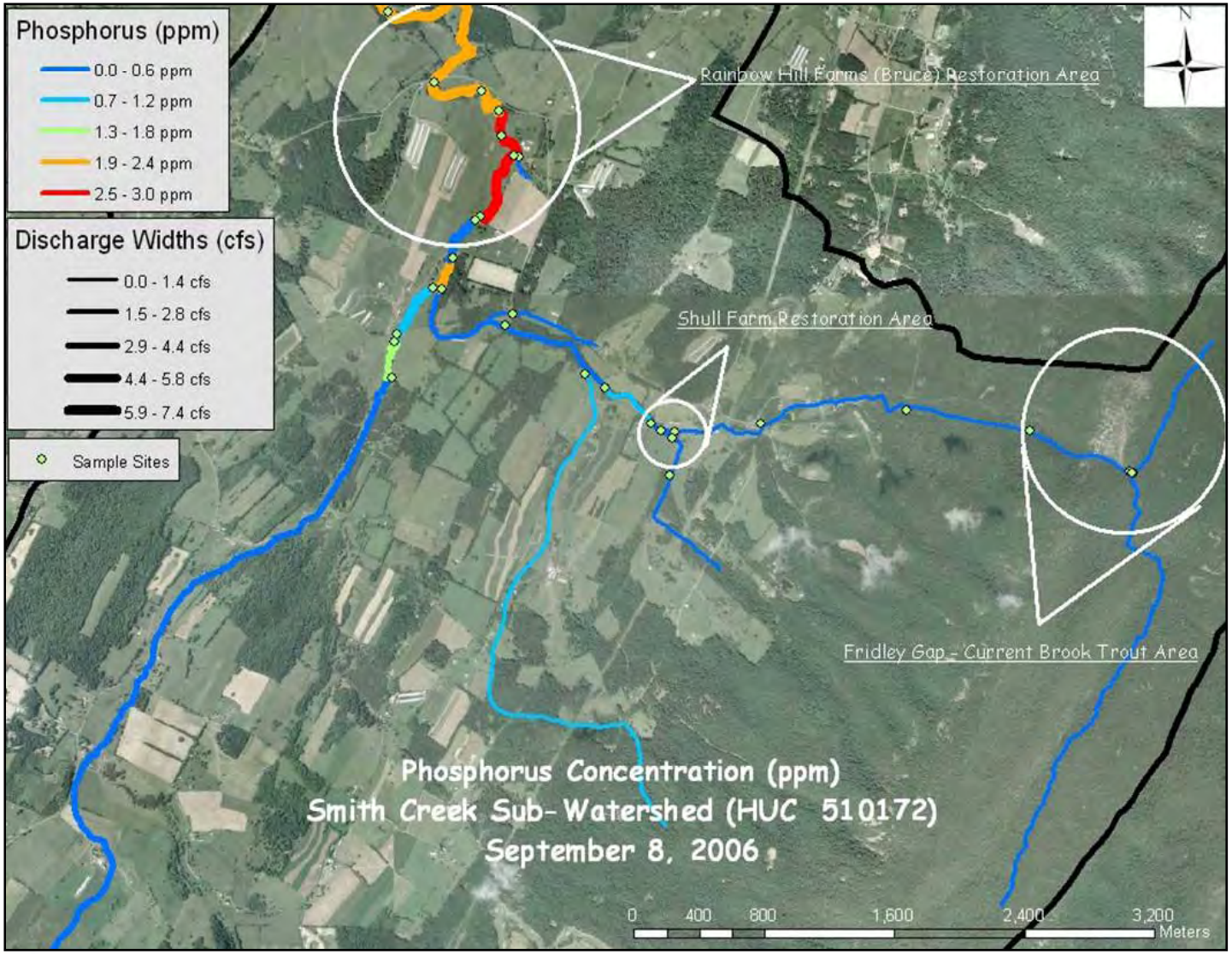
2005-2009 Results: What's the appropriate scale and time for each question?

- Water temperature
- In-stream habitat
- Fish
- Sediment
- Macroinvertebrates
- E. Coli
- Non-point pollution
- Hydrology (cross sections)
- Habitat (photo monitoring)
- Tree survival
- Spring Restoration
- Connectivity


Non-point
source
pollution



Eastern Brook Trout JOINT VENTURE



Eastern Brook Trout
JOINT VENTURE


Habitat:
Photomonitoring

2005- 300+ pre-project sites
2008- follow up photos

Eastern Brook Trout
JOINT VENTURE

Eastern Brook Trout
JOINT VENTURE

Eastern Brook Trout
JOINT VENTURE

USDA Forest Service Fish and Aquatic Ecology Unit

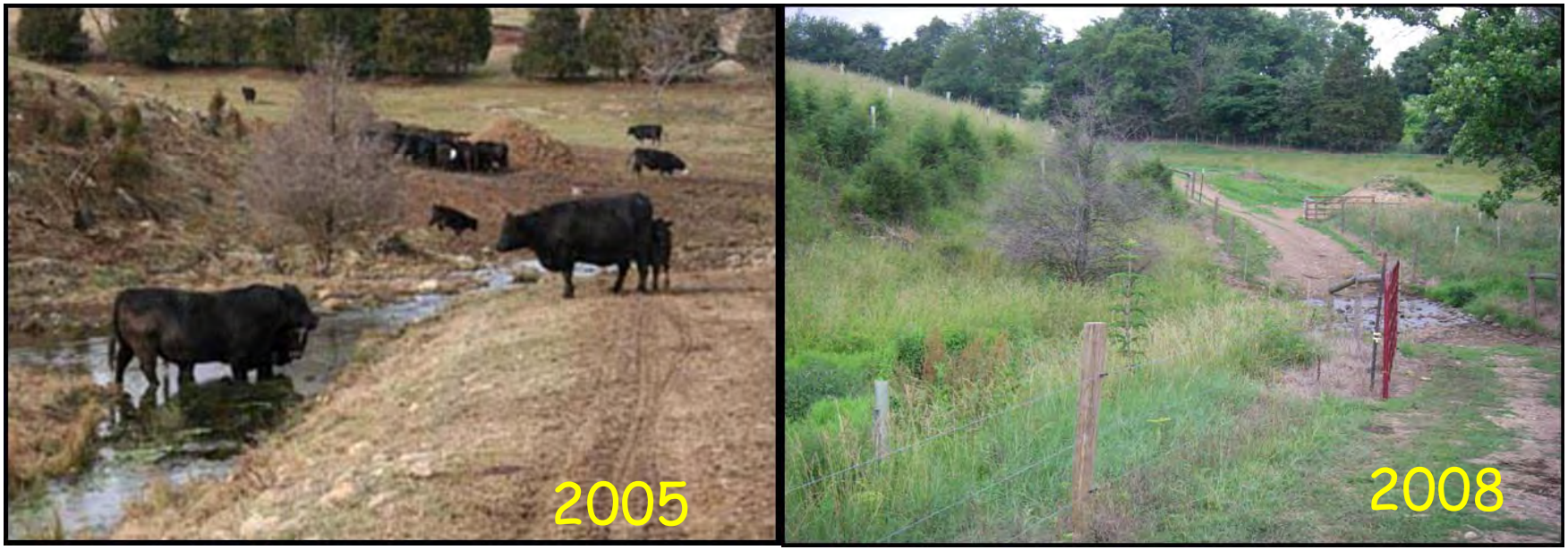
Eastern Brook Trout
JOINT VENTURE

USDA Forest Service Fish and Aquatic Ecology Unit

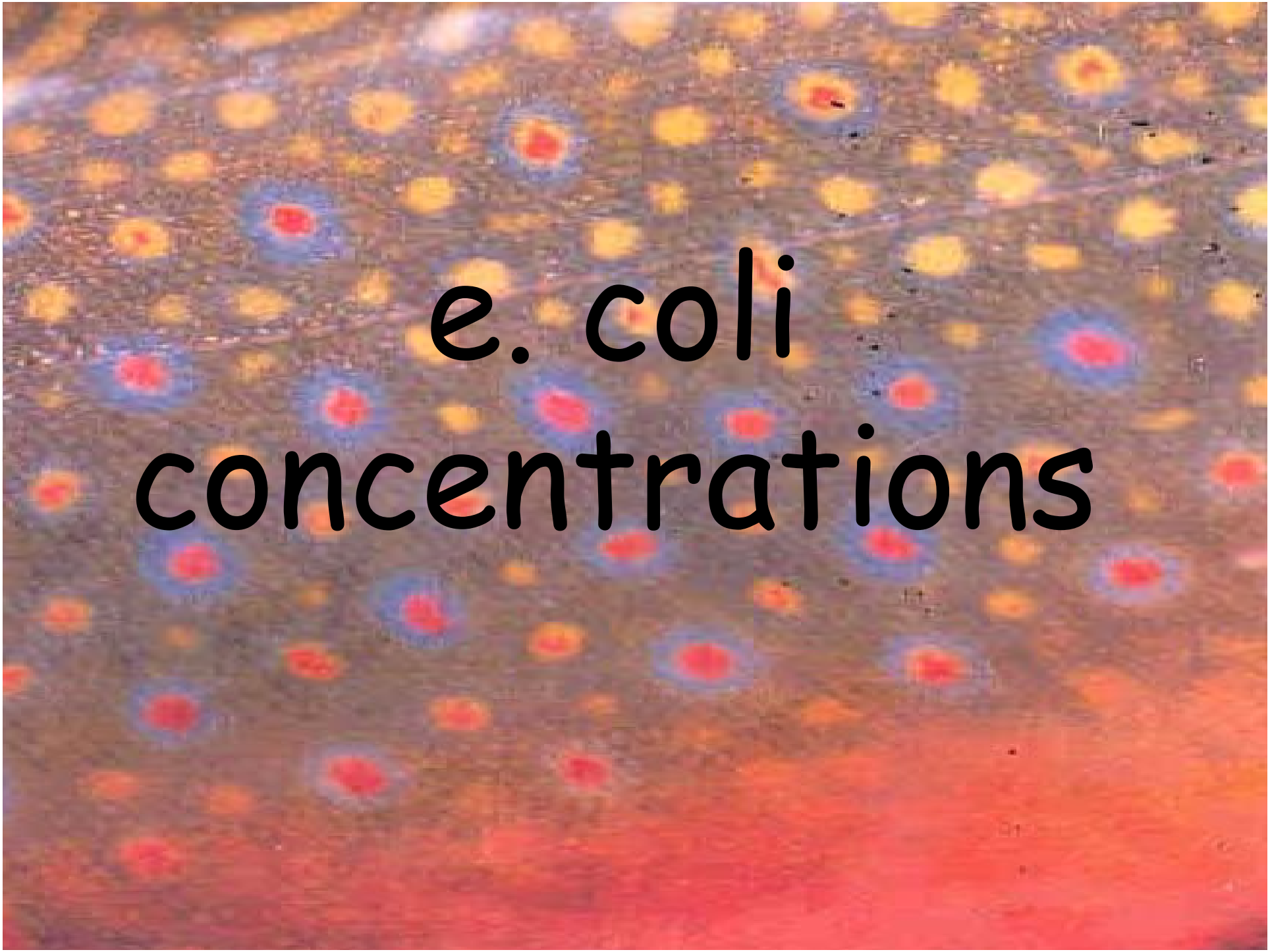
Eastern Brook Trout
JOINT VENTURE

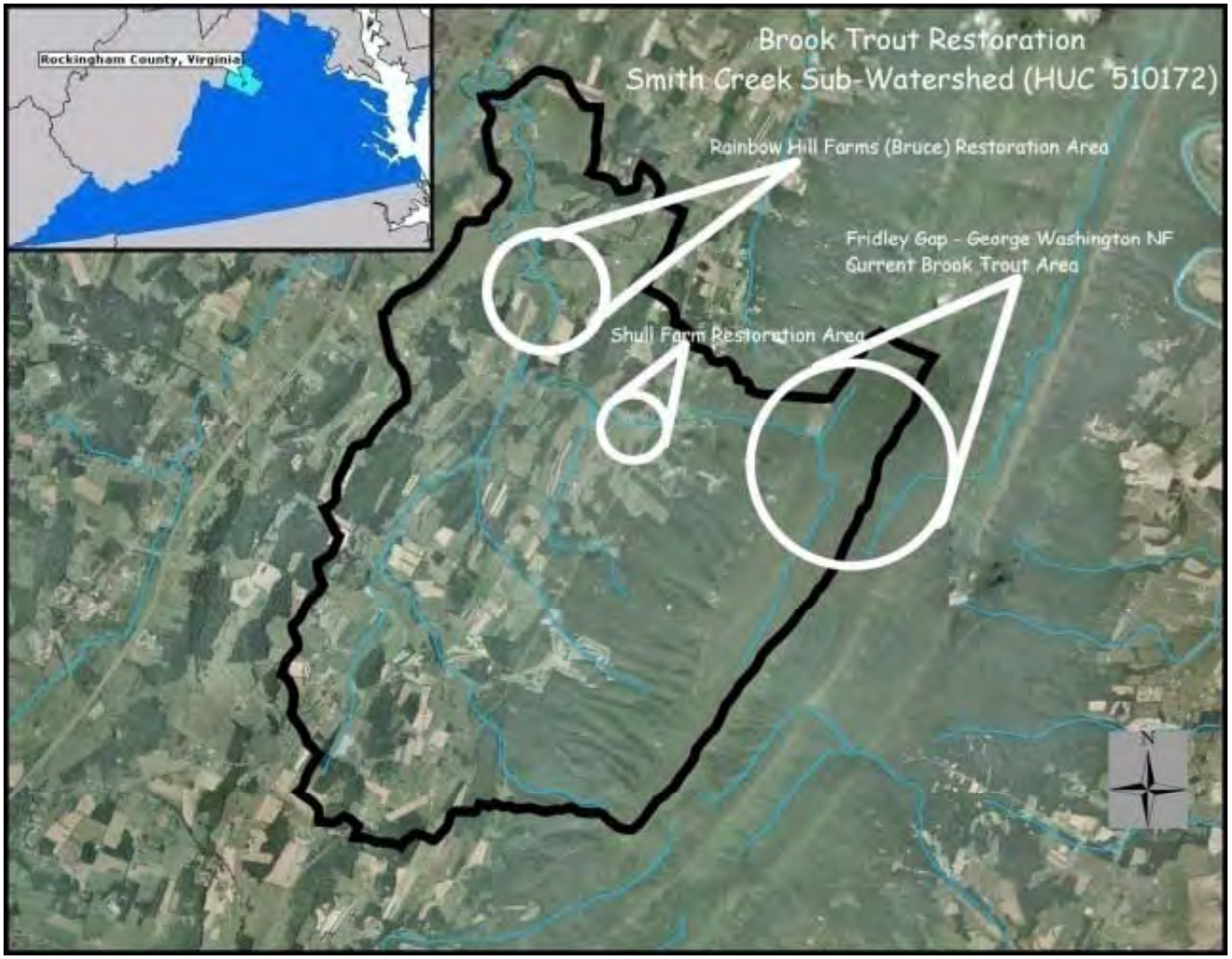
USDA Forest Service Fish and Aquatic Ecology Unit

Eastern Brook Trout
JOINT VENTURE



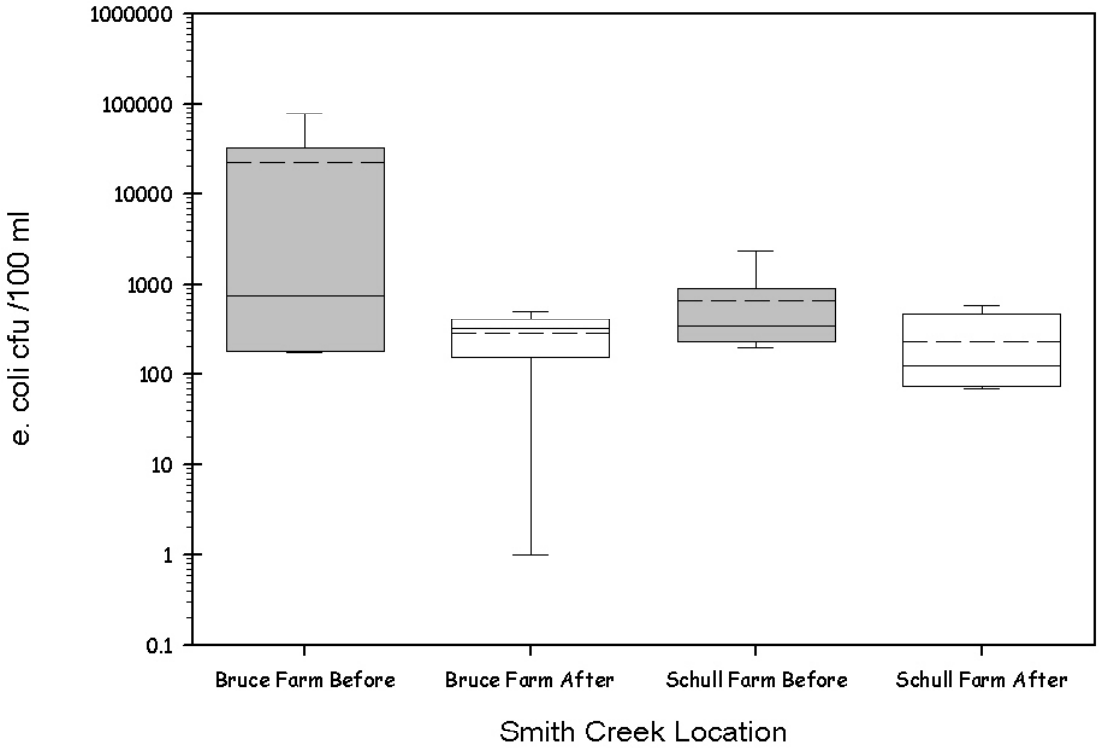
Eastern Brook Trout
JOINT VENTURE


e. coli
concentrations



Eastern Brook Trout
JOINT VENTURE

Restoration Effects on e.coli Concentrations

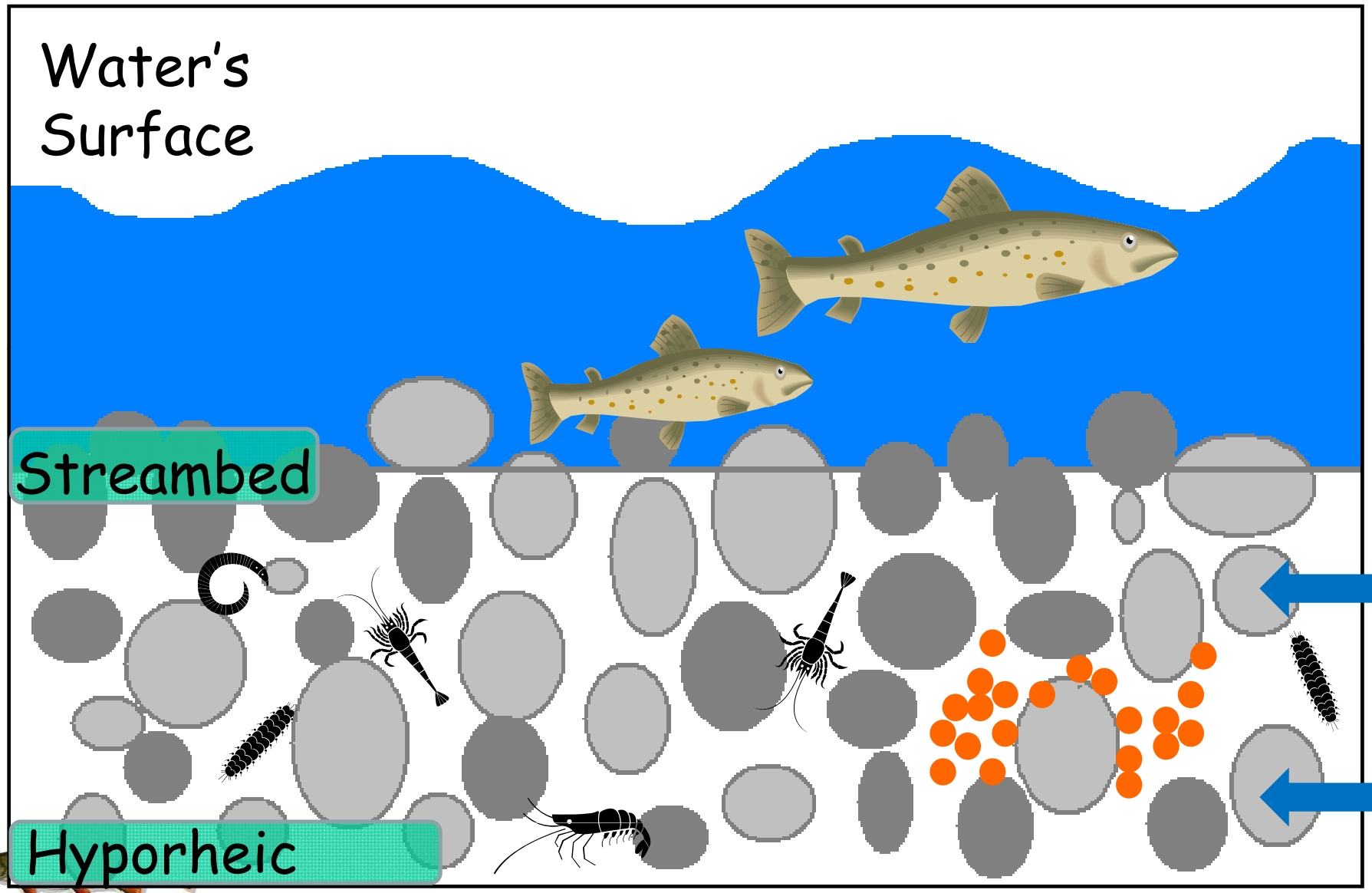


Eastern Brook Trout JOINT VENTURE

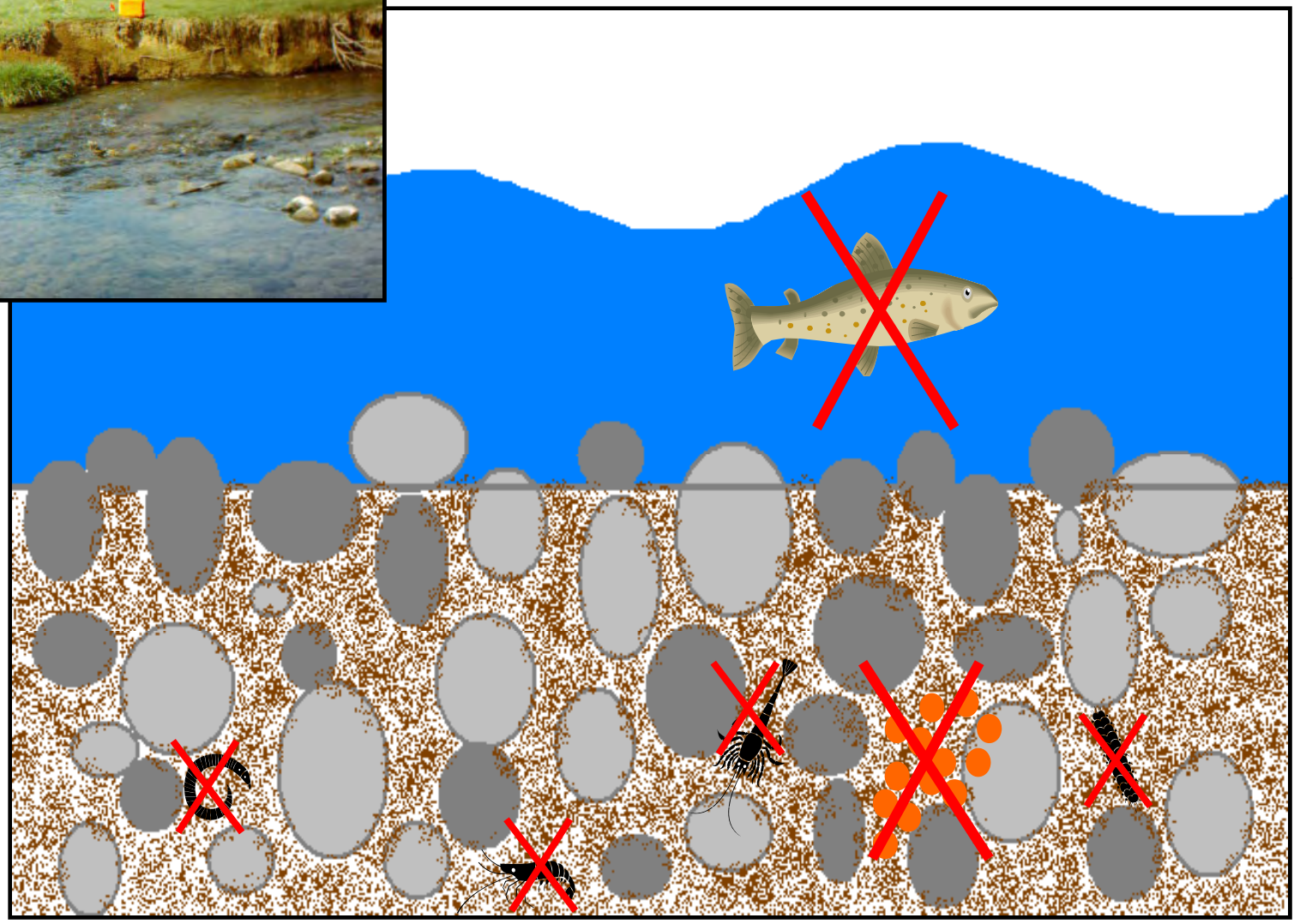
USDA Forest Service Fish and Aquatic Ecology Unit


Sediment

Riffle

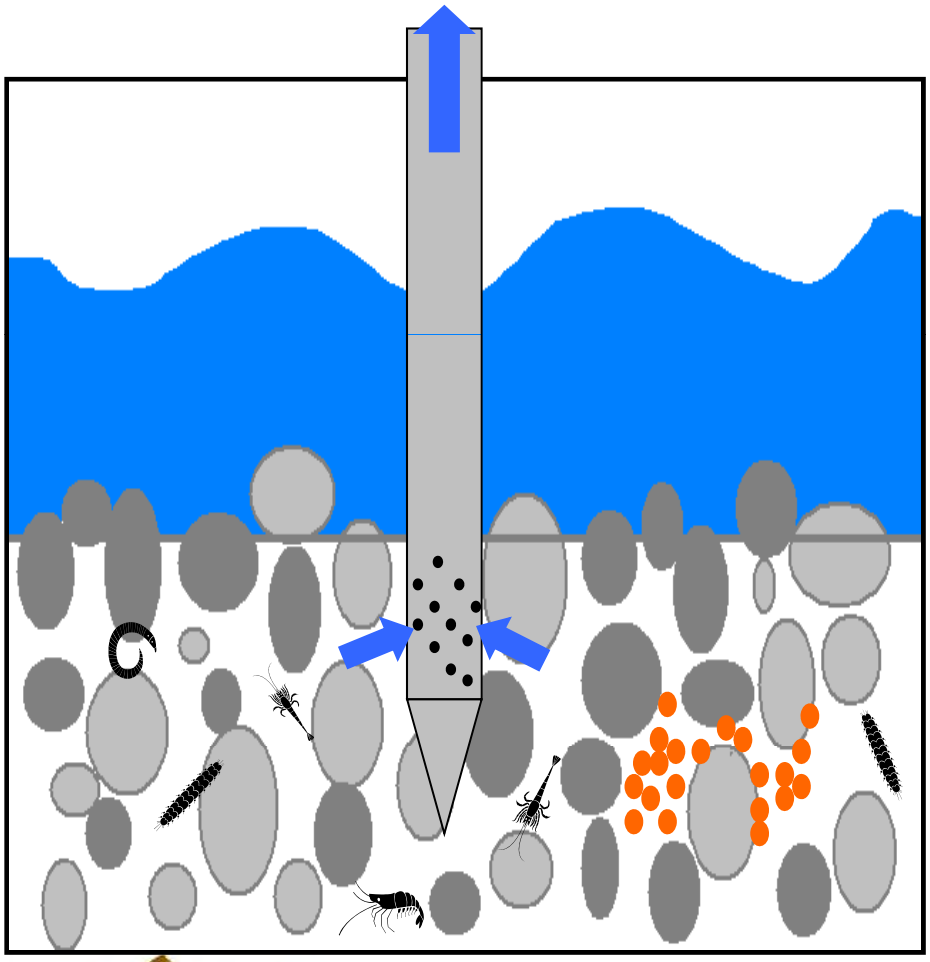


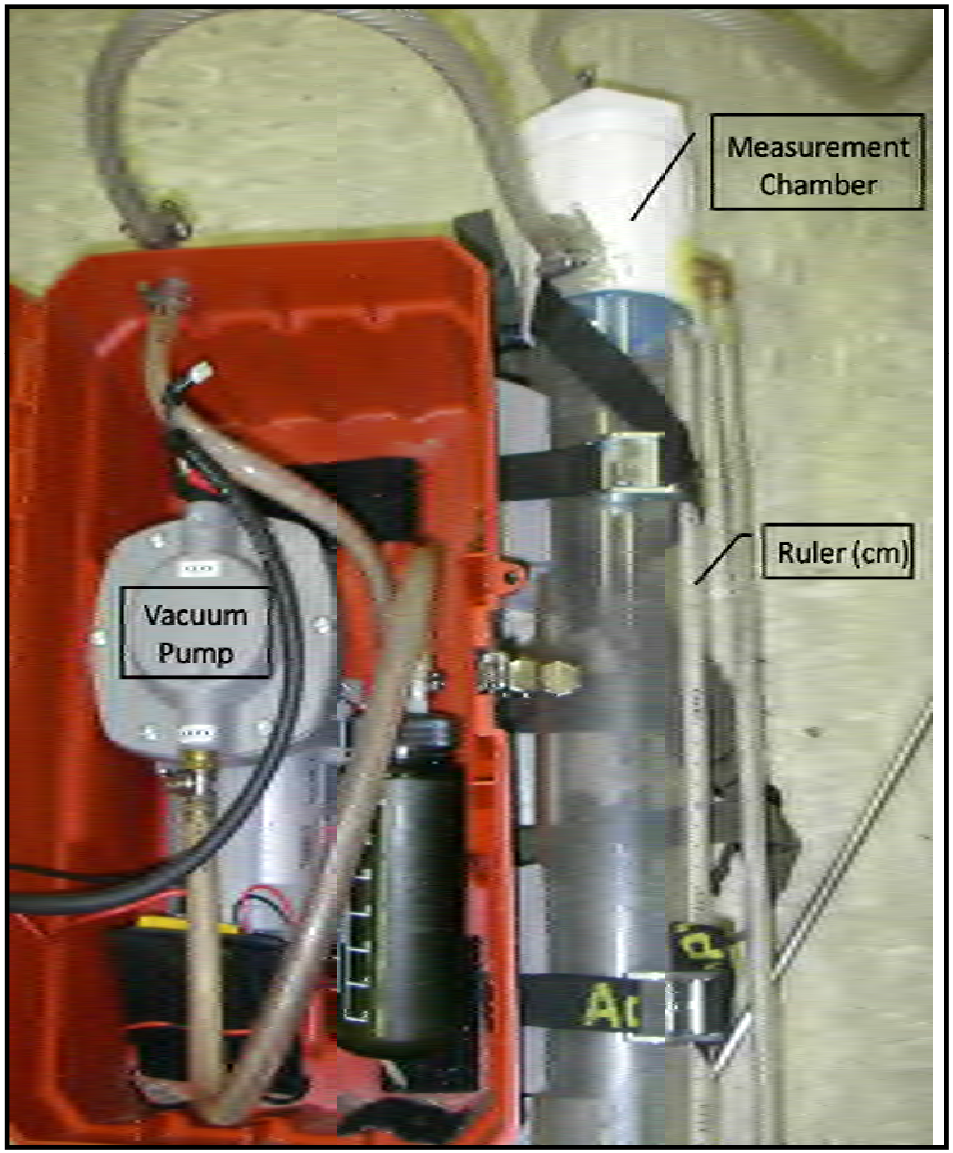
Eastern Brook Trout JOINT VENTURE



Eastern Brook Trout
JOINT VENTURE

Methods

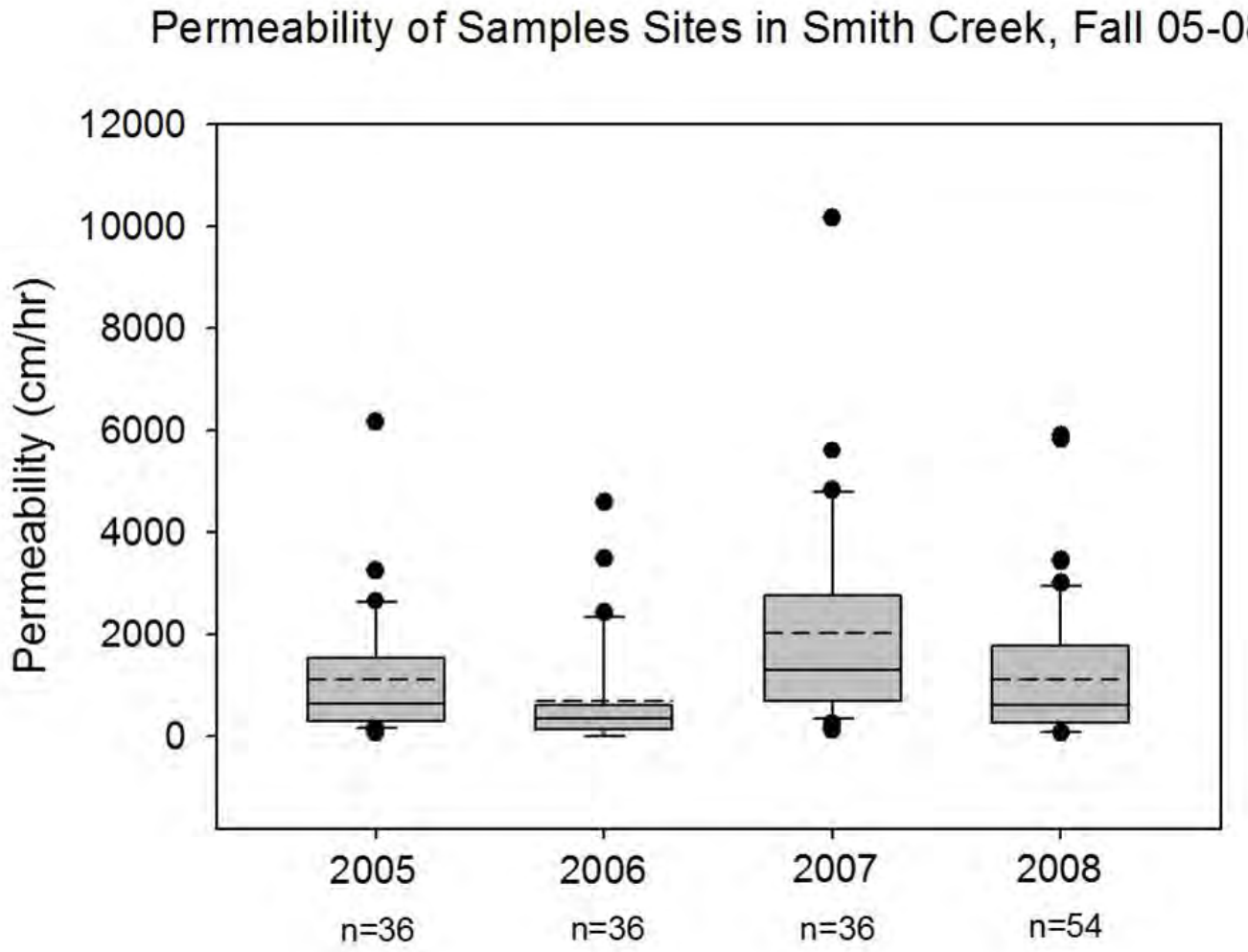




Eastern Brook Trout
JOINT VENTURE

Gravel Permeability

Eastern Brook Trout JOINT VENTURE



Eastern Brook Trout JOINT VENTURE


Tree
Survival

In 2005 : 65 acres of the floodplain were planted with a total of 12,561 saplings (Seven different species: white ash, northern red oak white oak, hackberry, red maple, smooth alder American sycamore).

Sapling **survival through 2008 has been estimated at 70% but varied by species.**

Eastern Brook Trout
JOINT VENTURE

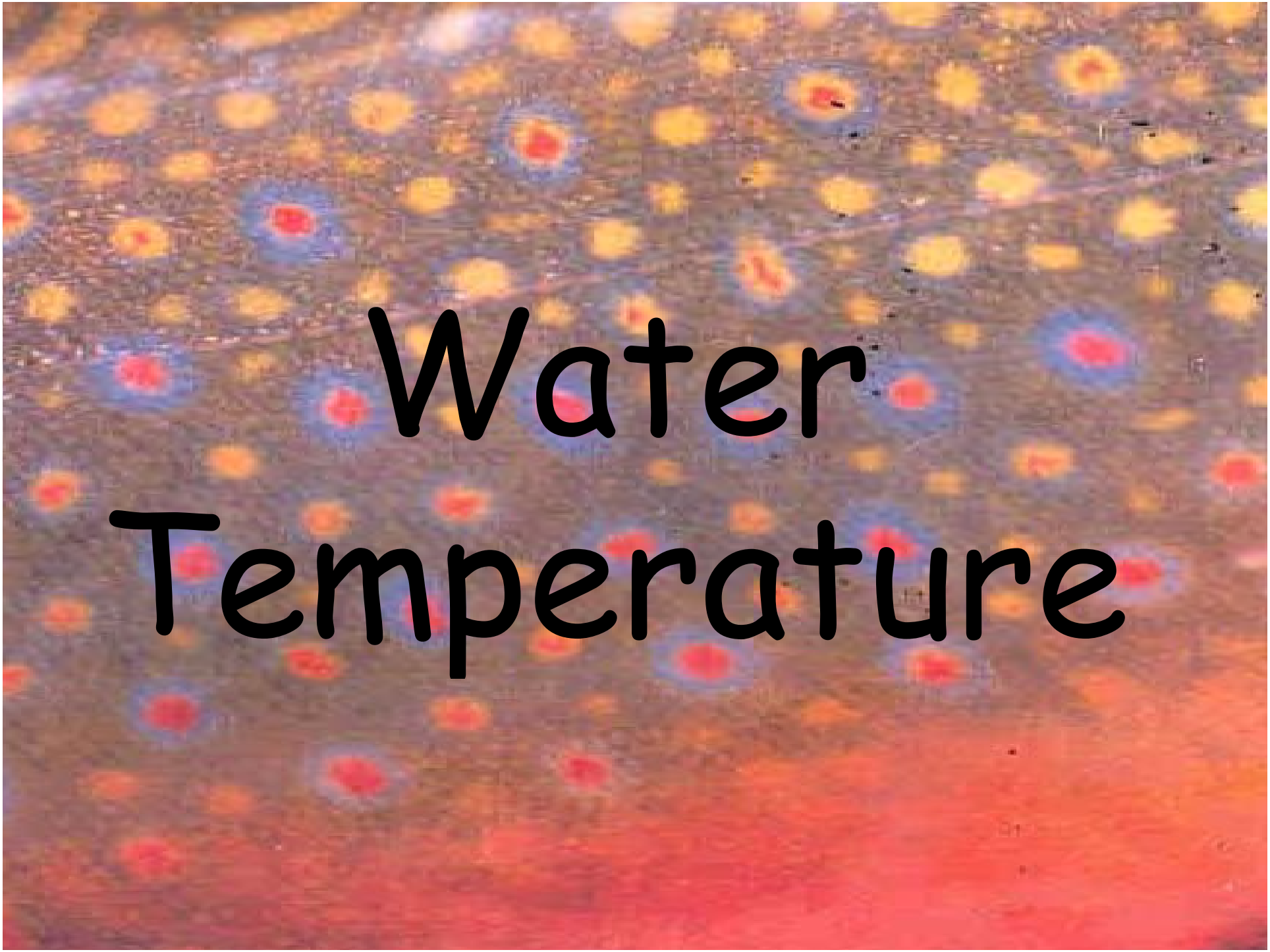
USDA Forest Service Fish and Aquatic Ecology Unit

Eastern Brook Trout
JOINT VENTURE

USDA Forest Service Fish and Aquatic Ecology Unit

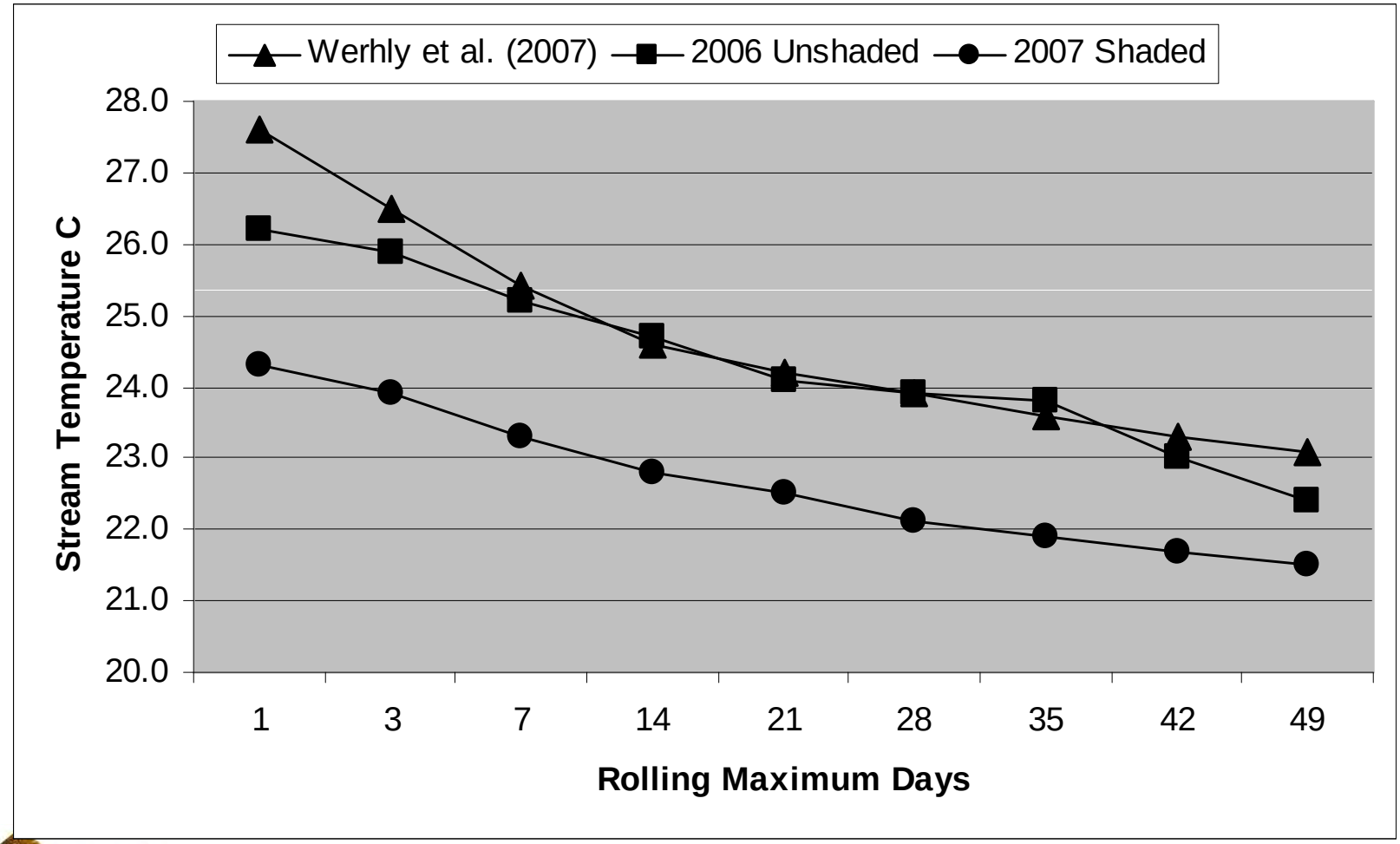
Eastern Brook Trout
JOINT VENTURE

USDA Forest Service Fish and Aquatic Ecology Unit

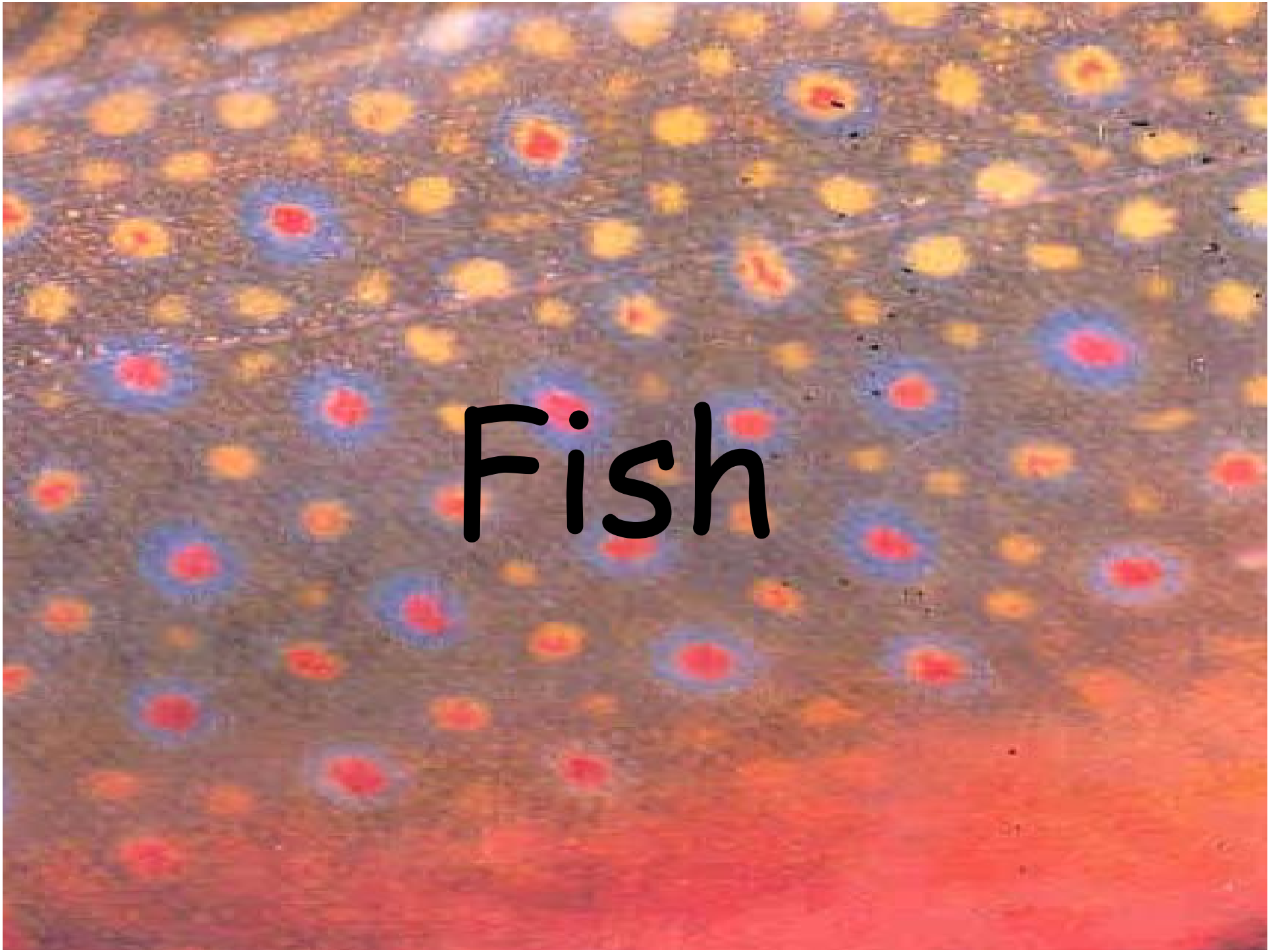

Water
Temperature

Shade it and they will come !

Eastern Brook Trout JOINT VENTURE



Eastern Brook Trout JOINT VENTURE


Fish

Methods

- 18 study sections sampled each July (2005-2009)

Eastern Brook Trout JOINT VENTURE

Potomac sculpin

Cottus girardi

Eastern Brook Trout

JOINT VENTURE

Fantail darter

Etheostoma flabellare

Eastern Brook Trout

JOINT VENTURE

Blacknose dace

Rhinichthys atratulus

Eastern Brook Trout

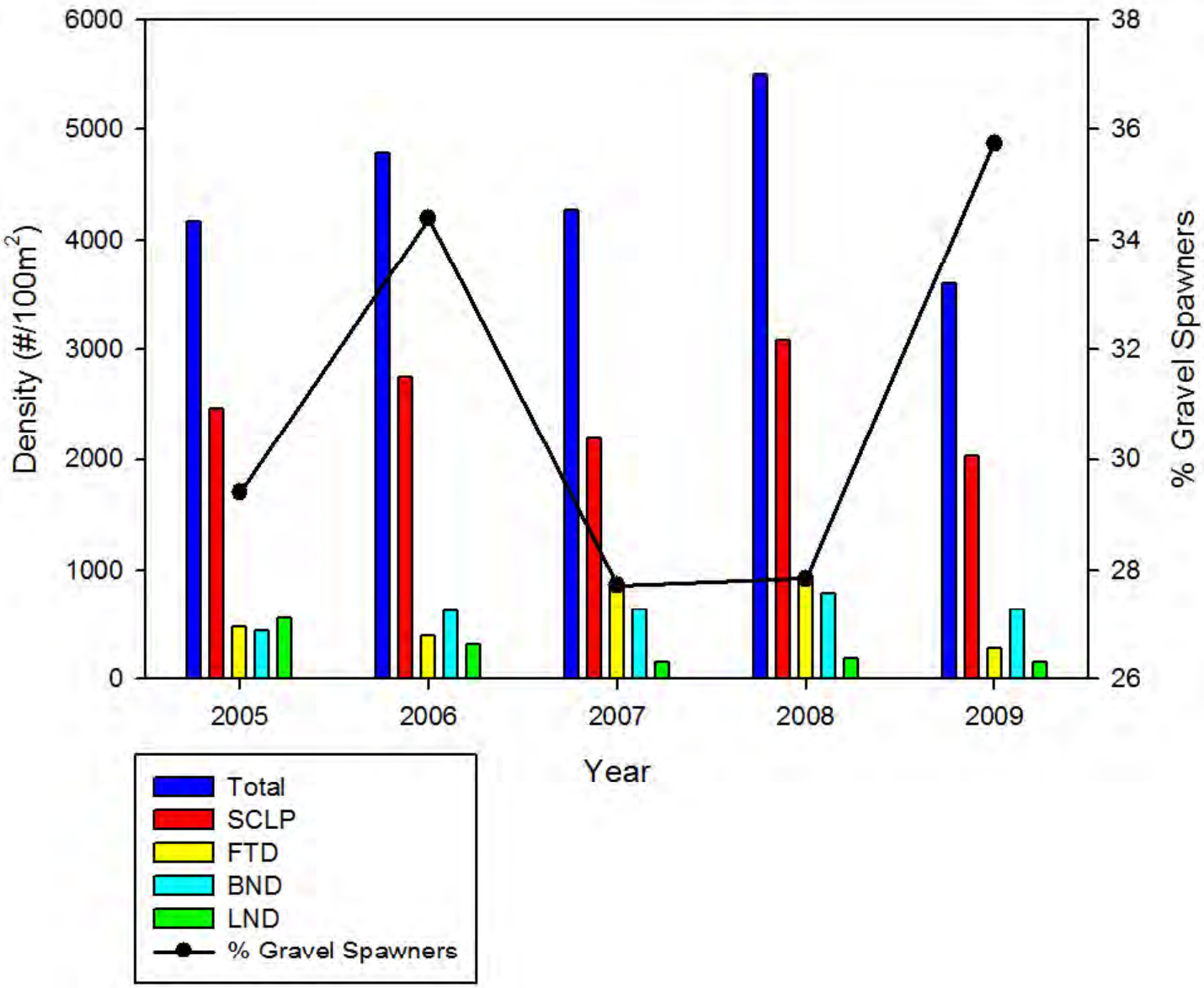
JOINT VENTURE

Longnose dace

Rhinichthys cataractae

Eastern Brook Trout

JOINT VENTURE



Eastern Brook Trout
JOINT VENTURE

Spring Restoration

- 180 m spring creek restored in 2006
- Added logs and boulders
  - Plunge pools and overhead cover
- Narrowed stream channel
- Stocked with adult brook trout
  - Successful reproduction documented yearly
  - Spring creek now holds brook trout year round

Eastern Brook Trout JOINT VENTURE

Eastern Brook Trout
JOINT VENTURE

USDA Forest Service Fish and Aquatic Ecology Unit

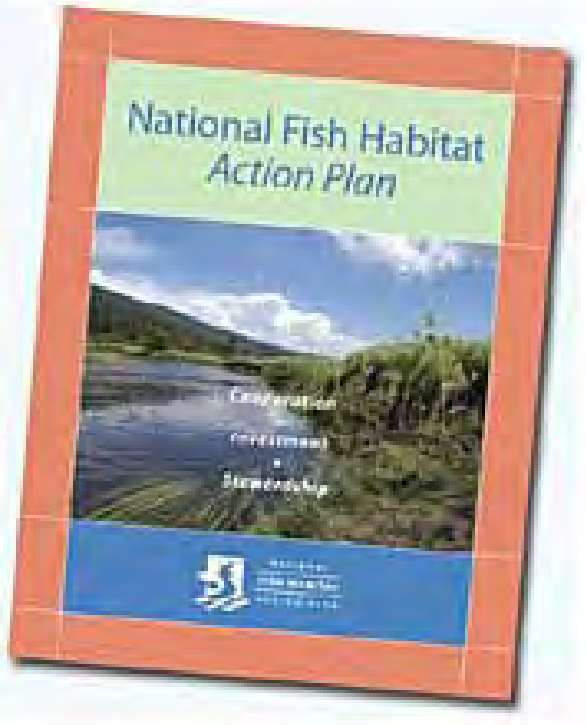

Summary

Declare victory ?

- Water temperature YES
- Fish NO
- Sediment NO
- Instream habitat NO
- Macroinvertebrates ??
- E. Coli YES
- Non-point pollution NO
- Hydrology (cross sections) YES
- Habitat (photo monitoring) YES
- Tree survival NO
- Spring Restoration YES
- Connectivity YES

Eastern Brook Trout JOINT VENTURE

Thanks to the EBTJV Partners!



Partners and Sponsors

We would like to extend many thanks to our generous group of partners and sponsors without which none of this critical work could have been accomplished.

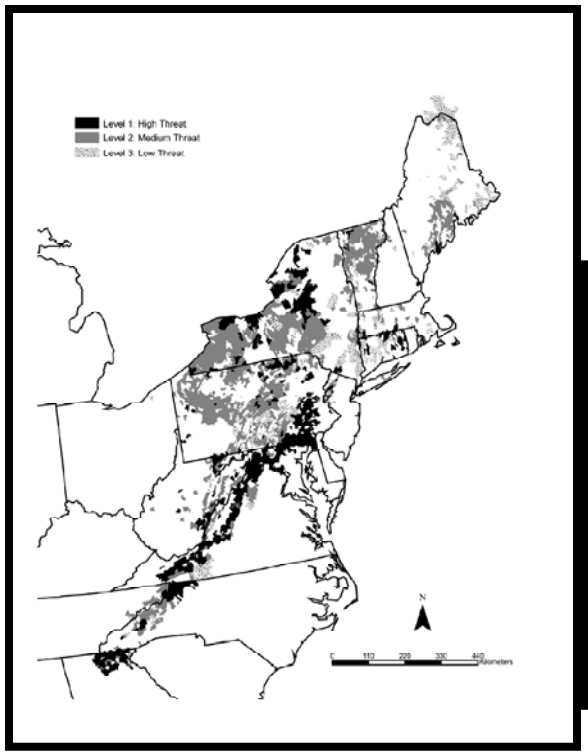
- U.S. Forest Service
- U.S. Forest Service Fish and Aquatic Ecology Unit
- Fish America Foundation
- Virginia Department of Game and Inland Fisheries
- James Madison University
- U.S. Fish and Wildlife Service
- Virginia Polytechnic Institute
- Canaan Valley Institute
- Massanuten Chapter of Trout Unlimited
- National Fish and Wildlife Foundation
- Virginia Department of Environmental Quality
- Eastern Brook Trout Joint Venture
- George Washington National Forest
- NRCS
- Rainbow Hill Farms, Inc.
- Schull Farm
- Depoy Farm

Accomplishments

- Approximately 4 mi. stream restored
- 65 ac. riparian forest restored (12,651 trees)
- 251 head of cattle fenced out of 3mi. of stream
- Brook trout found using stream year-round
- Natural reproduction of brook trout identified the first year
- Tagged fish identified to have moved 2.5 miles upstream connecting Smith Creek to Mountain Run

Eastern Brook Trout
JOINT VENTURE

Agriculture : Number one threat, widespread (EBTJV assessment)



Eastern Brook Trout
JOINT VENTURE