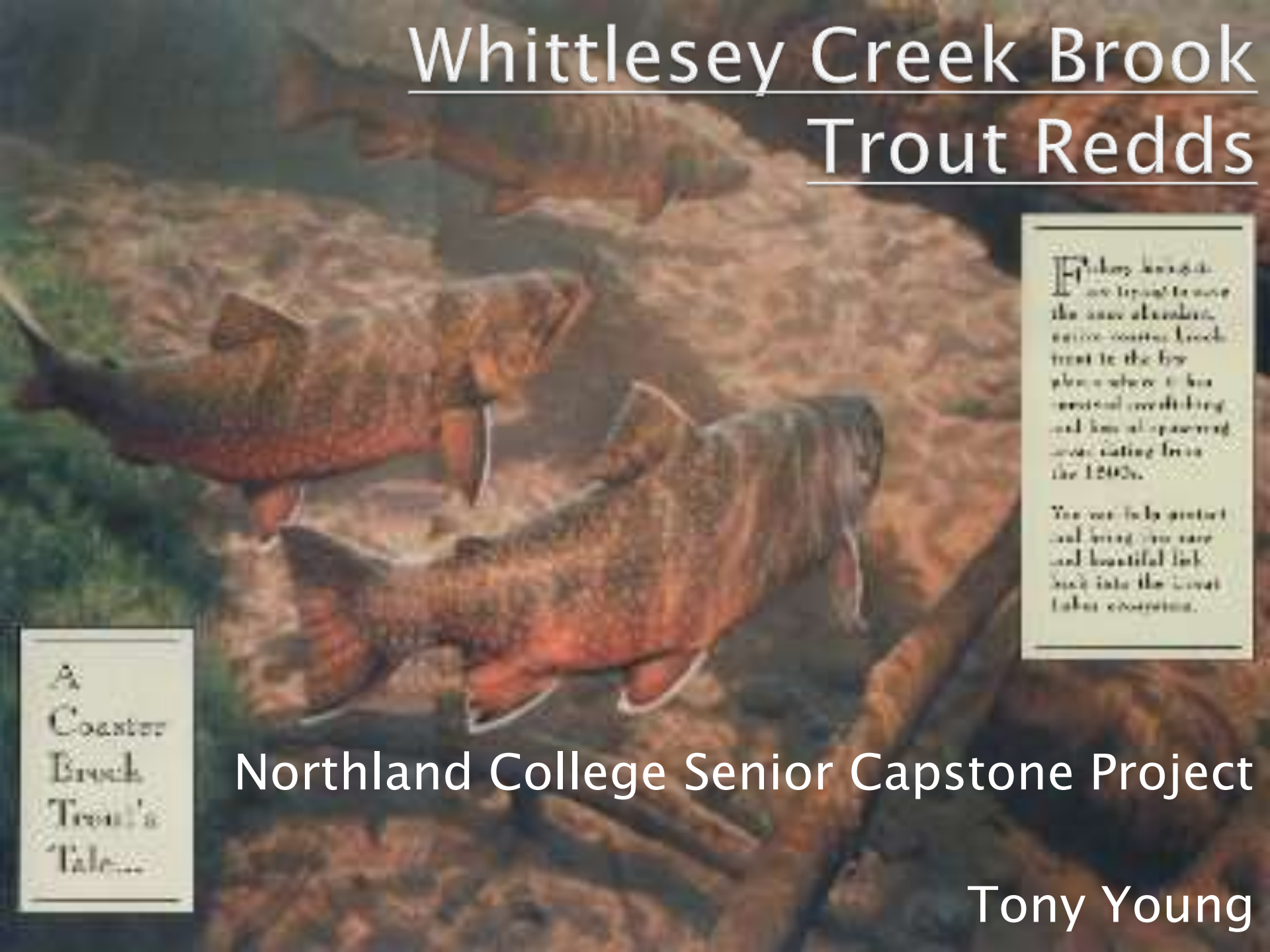
Whittlesey Creek Brook Trout Redds

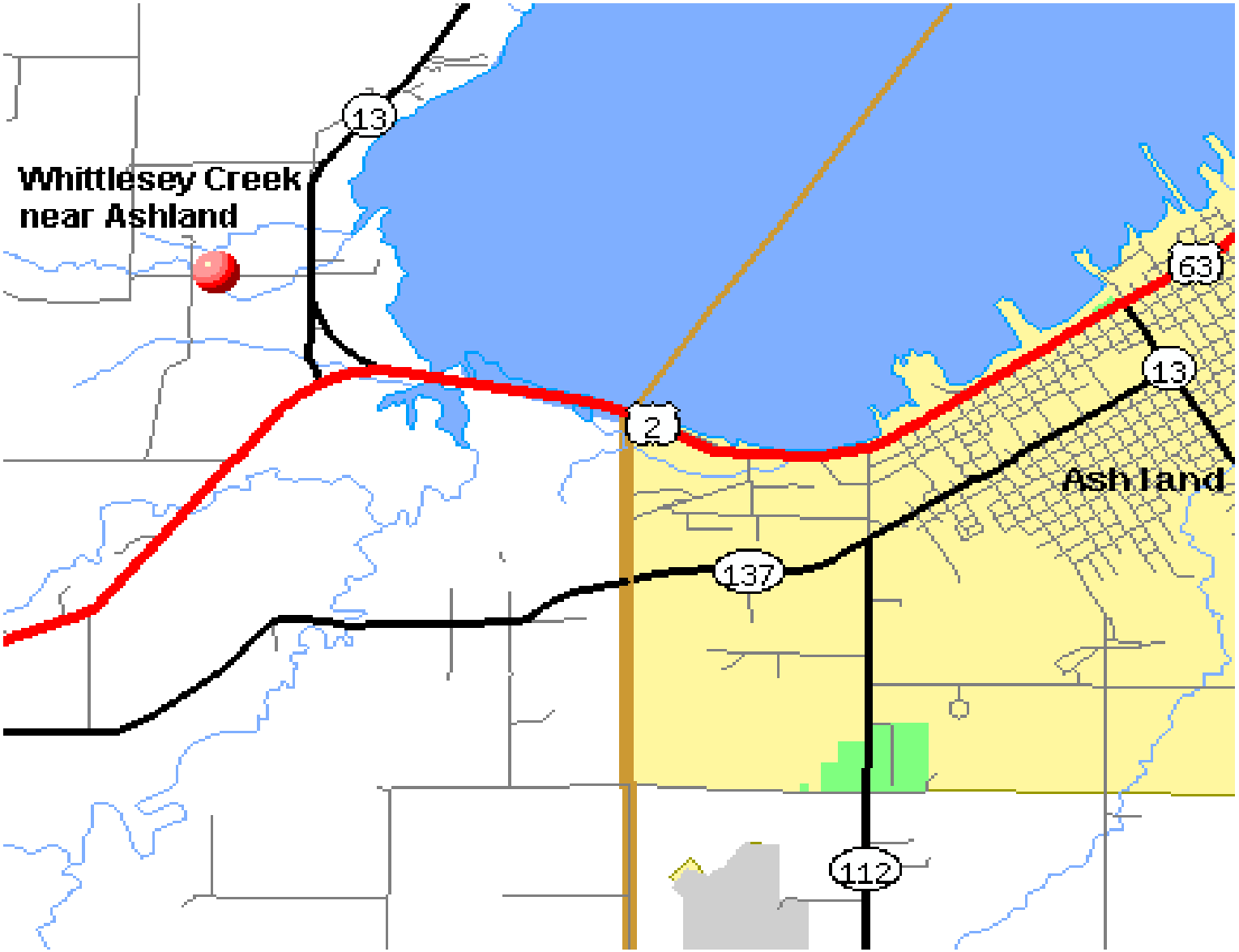


Northland College Senior Capstone Project

Tony Young

Whittlesey Creek National Wildlife Refuge

- Established by USFWS
- Protect and restore the lower portion of Whittlesey Creek and coastal wetlands along the lakeshore of Chequamegon Bay in Lake Superior


Whittlesey Creek
near Ashland
13
2
63
13
Ashland
137
112

Brook Trout

- May 2005, the WDNR and the USFWS created a plan to reestablish coaster brook trout

- “To protect and improve self-sustaining brook trout populations and their habitat in Wisconsin’s Lake Superior Basin and attempt to establish several populations that exhibit life history diversity (both stream resident and migratory ‘coaster’ life history types)”

Topic Areas

- 1. Stream habitat and watershed health
- 2. Harvest
- 3. Rehabilitation stocking
- 4. Genetic management
- 5. Life history and management
- 6. Species interactions
- 7. Outreach

Concerns

- Over-exploitation and habitat loss
- Remaining populations typically only able to sustain themselves in headwater reaches and seldom utilize the lakeshore habitat

My Involvement

- When/where redds appear in the creek
- What species is responsible for the redd?
- Superimposition?
- How long do the redds remain observable?

What triggers the fall spawning?

- Genetic composition
- Length of day
- Water flow (precipitation)
- Water temperature

Suitable Redd Habitat

- Coarse to fine gravels (pea to walnut size) with good depth to the gravel
- Steady supply of oxygenated water (springs)
- Alternative → Best available
  - Preexisting redds are often used

What Redds Look Like

- An area in the stream where the substrate looks unusually cleaned off
- In the cleaned off area, there is a depression in the substrate with a hump of substrate at the downstream end of it

Good Example of a Redd

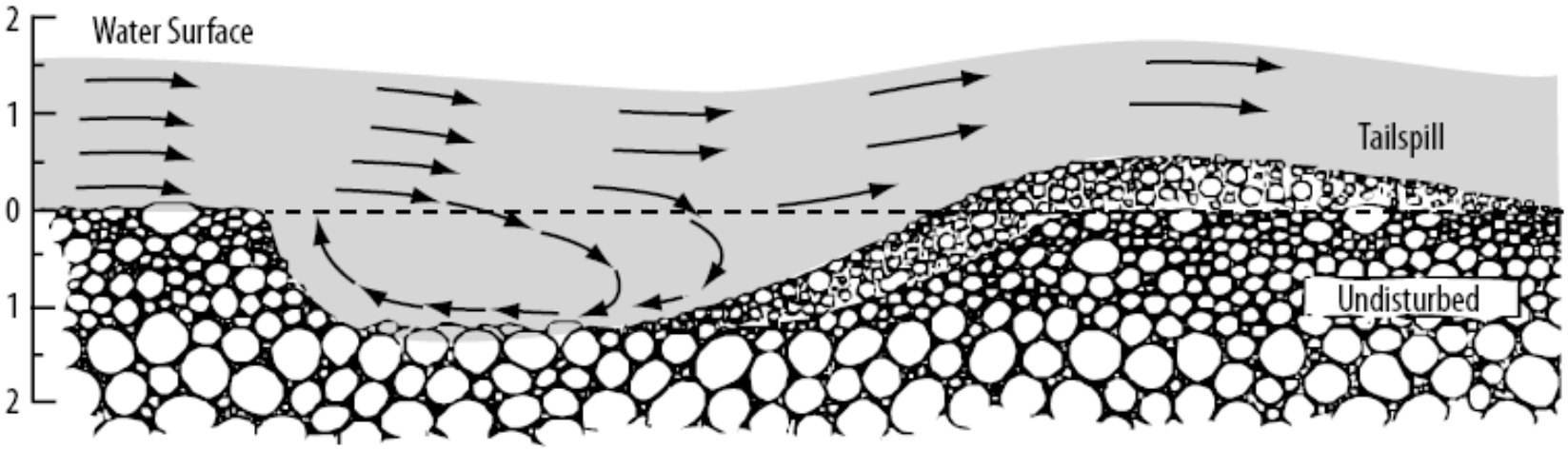
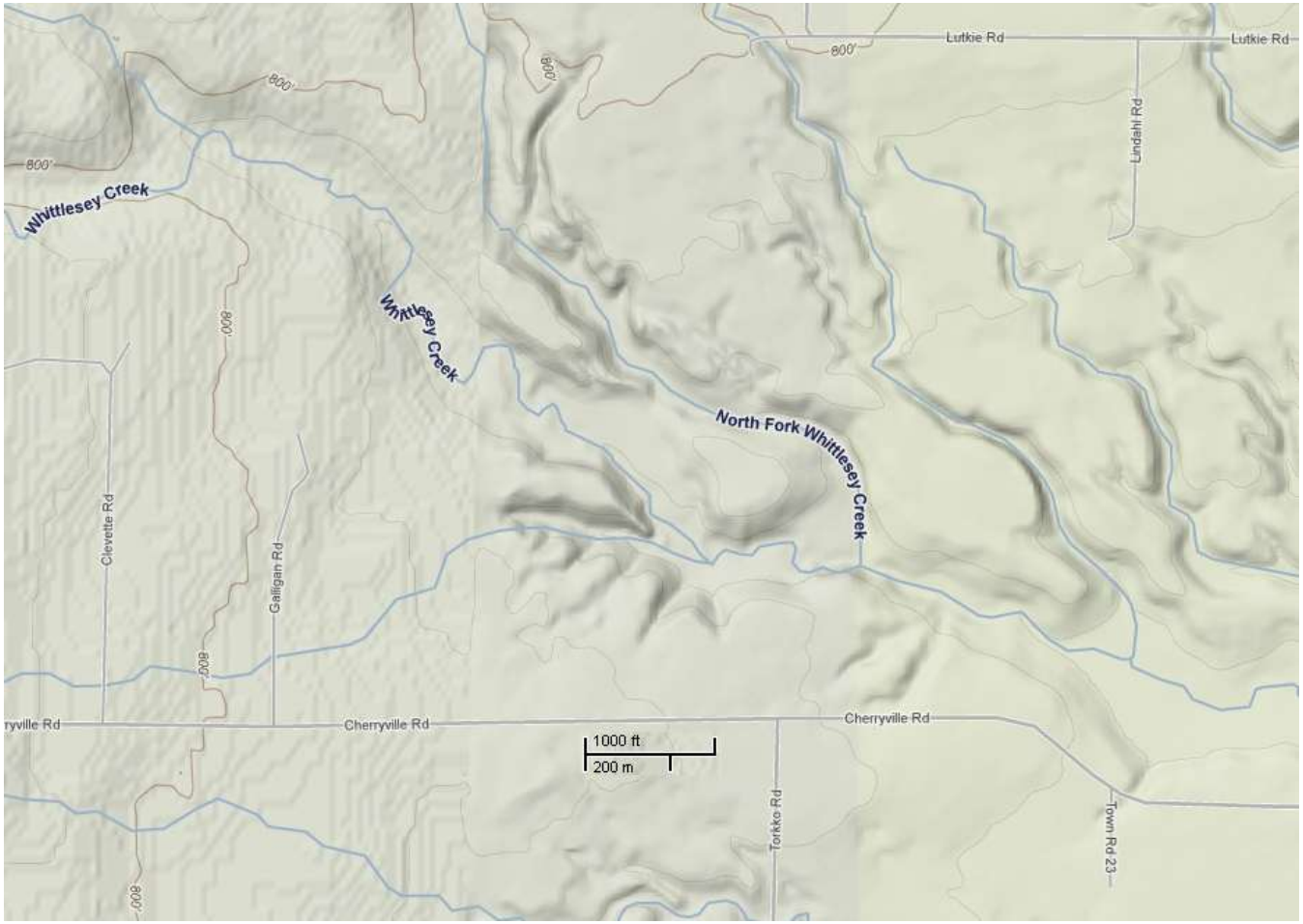


FIGURE 1. — Typical currents in a salmonid redd (Illustration: Andrew Fuller, from Burner 1951, 98)

Study Area


Lutkie Rd
Lutkie Rd
800'
800'
800'
800'
Whittlesey Creek
Whittlesey Creek
North Fork Whittlesey Creek
Lindahl Rd
Clevette Rd
Galligan Rd
800'
800'
Cherryville Rd
Cherryville Rd
1000 ft
200 m
Torkko Rd
Town Rd 23

Methods

- Walked the stream looking for redds and recorded redd information
- 2-3 times a week
- Each fork was covered 2-3 times every 2 weeks

Methods (cont.)

- Daily field sheet
- Brick placed near redd in stream
- Marked the shoreline with a flag
- Redd field sheet

Redd Field Sheets

Redd ID: _____ Observation #_____ Confidence: _____%

Fish Observed: Yes / No Species: BKT / BRT / Coho / _____ Paired: Yes / No
Size: _____ in Location (relative to Redd): _____

GPS location: _____ N _____ W
Time: ____:_____ Weather: _____
Picture (number): ____ Filenames: _____ _____ _____

Water Clarity: Clear / Slightly Turbid / Very Turbid / Stained Water Temp: _____° C / F
Conductivity: _____ mS Flow: _____ cfs pH: _____ Upwelling: Yes / No
Substrate: _____
Cover: Instream _____
Overhead _____

Redd Size: Length _____ in Width _____ in Depth _____ in
Distance from Nearest Shore: _____ in Distance from Closest Redd: NA / _____ in

Qualitative Redd Cleanliness: 1 (barely clean) 2 3 4 5 (very clean)

Comments:

Results

- Observations made between 18-Sep and 18-Nov
  - 12 observations on the main stem
  - 9 observations on North Fork
- Observed a total of 9 potential redds
  - only 2 from North Fork

Redd #85

- 1st obs: 15-Oct; 6th obs: 16-Nov
- Low confidence initially
- A tagged 12-15 inch brook trout in front of the redd at the 3rd observation
- No fish on next 3 observations
  - Gravel progressively more buried with sand

85- 2nd observation

19-Oct

85- 5th observation

11-Nov

Redd #71

- 1st Obs: 26-Oct; 3rd Obs: 16-Nov
- Observed cohos spawning here more than once (footage)
- Never a distinct looking redd, but the substrate size was good for cohos
- 10-12" brook trout swimming in the area
  - Possible superimposition?

71 – 1st Observation

- Video

71- 2nd observation

31-Oct

71- 3rd Observation

16-Nov

71 – 3rd Observation (upstream)

Redd #59

- Undercut bank just upstream of the redd
  - Always cohos under that bank
- Redd site had promising substrate for coho spawning but no distinct redd initially
- A very distinct redd present at 3rd observation

59- 2nd Observation

59- 3rd Observation

1st Obs: 26-Oct
3rd Obs: 16-Nov

Redd #21

- 1st obs: 6-Nov; 3rd obs: 16-Nov
- Very obvious redd and remained obvious
- Cohos were always under the bank next to the redd

21- 1st Observation

6-Nov

21- 3rd Observation

16-Nov

Other Potential Redds

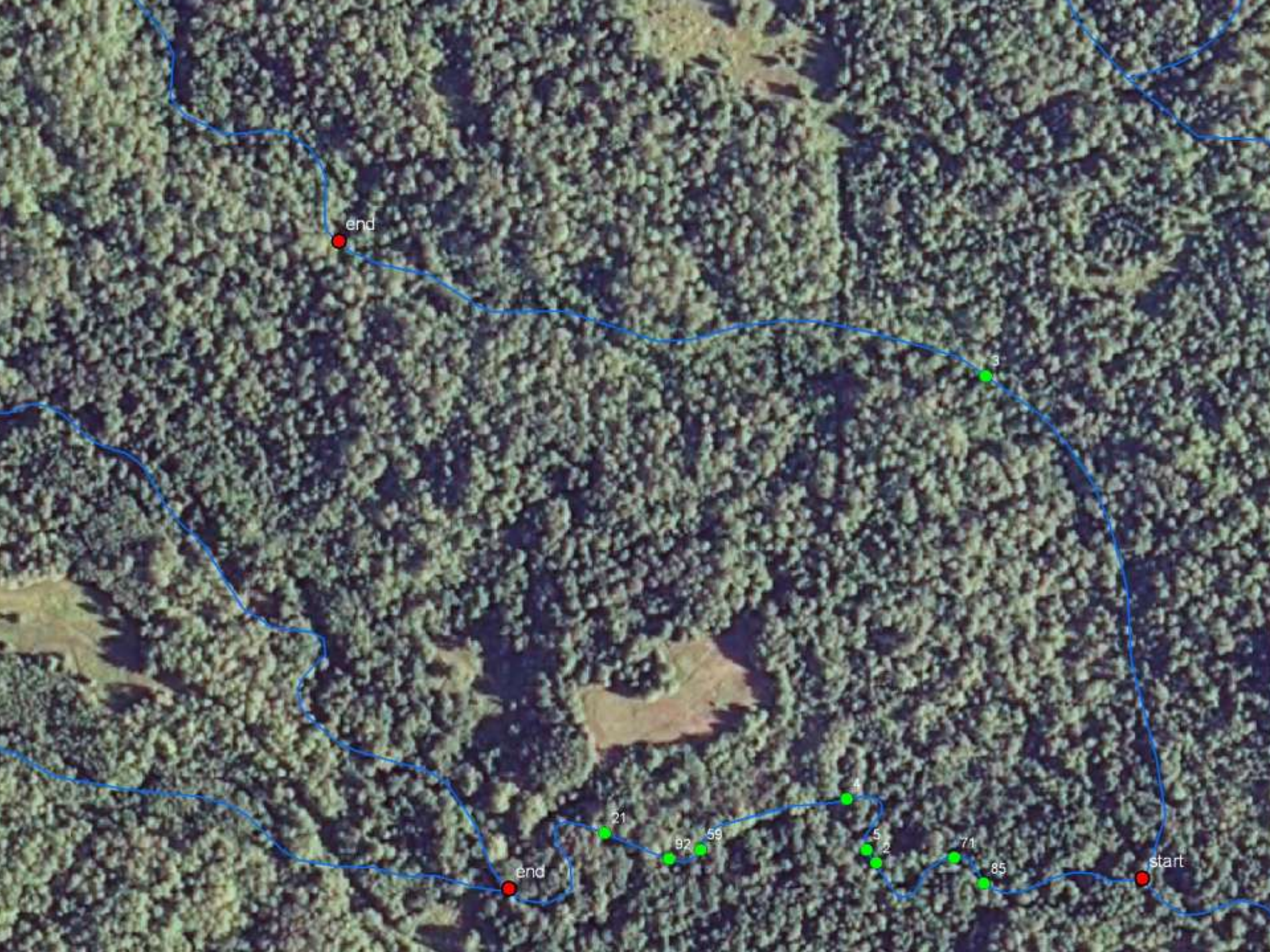
- Site #3
  - Possible brook trout redd on North Fork
  - Observed a pair of 8-10” brook trout
- Sites #4 and 5
  - Possible brook trout redds on the main stem
- Sites #2 and 92
  - Coho redds, with cohos under nearby bank
  - Neither redd was very distinct but the substrate was good for cohos

5

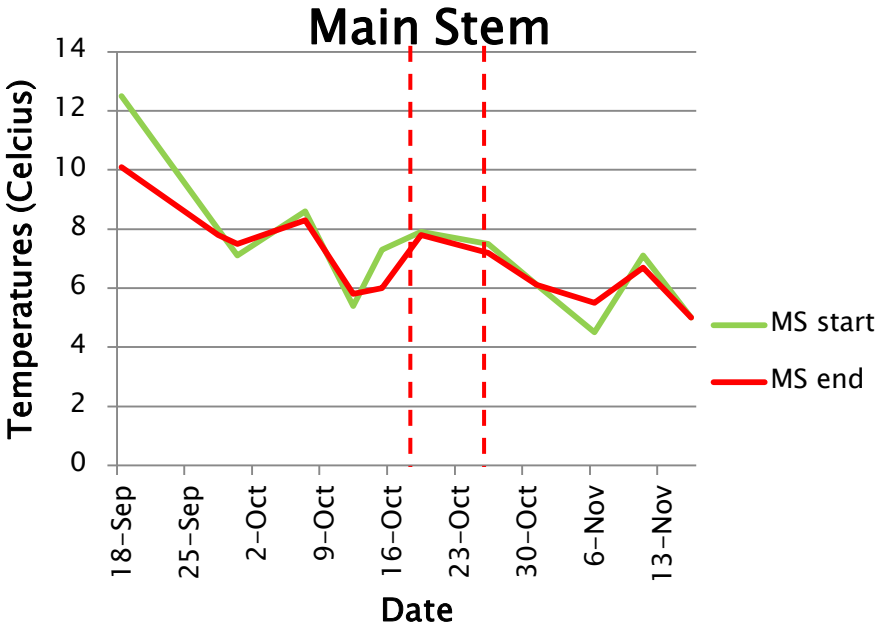
16-Nov

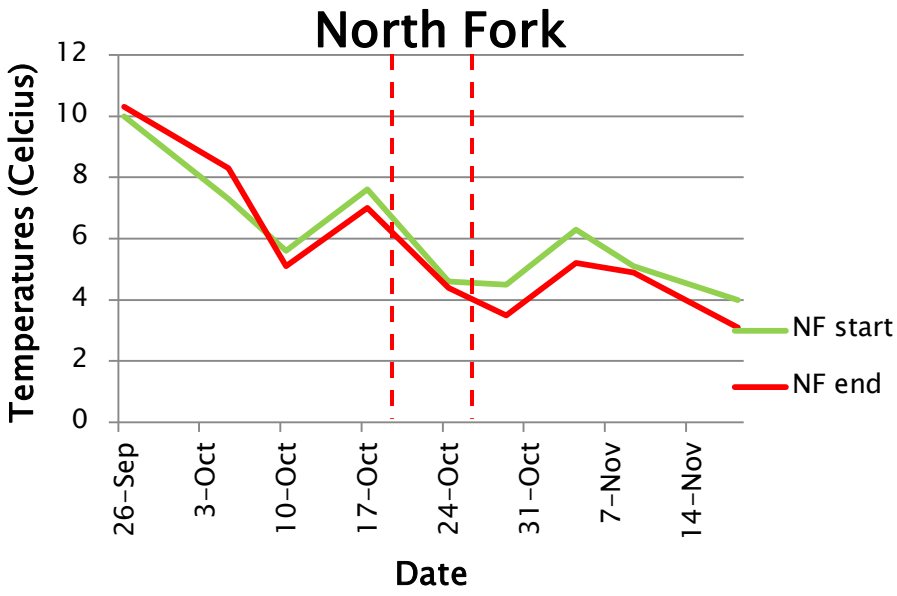
2

16-Nov

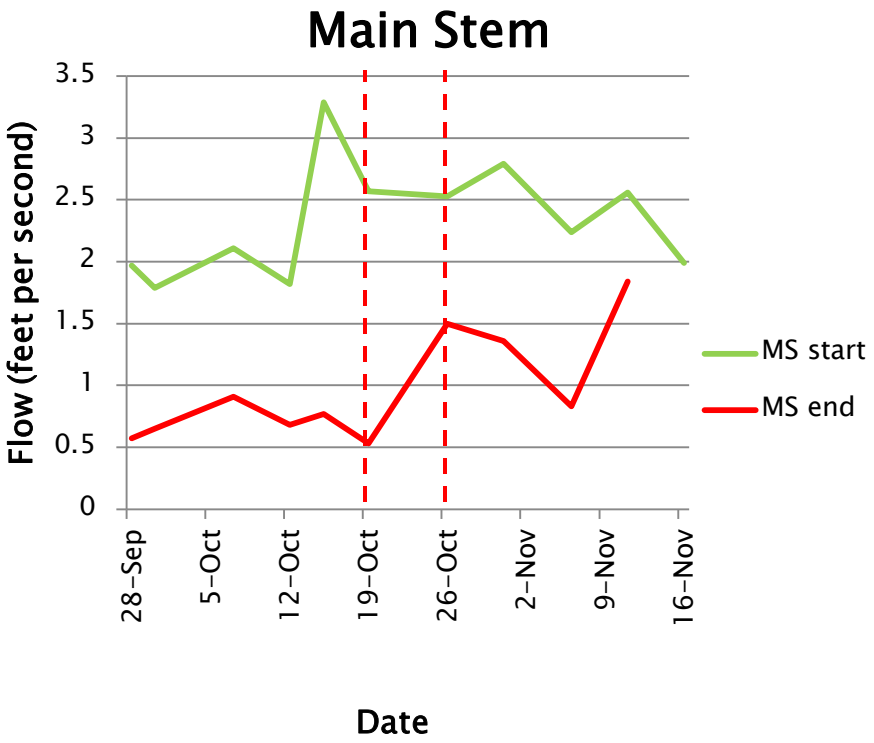

end
3
4
21
92
59
5
2
71
85
start
end

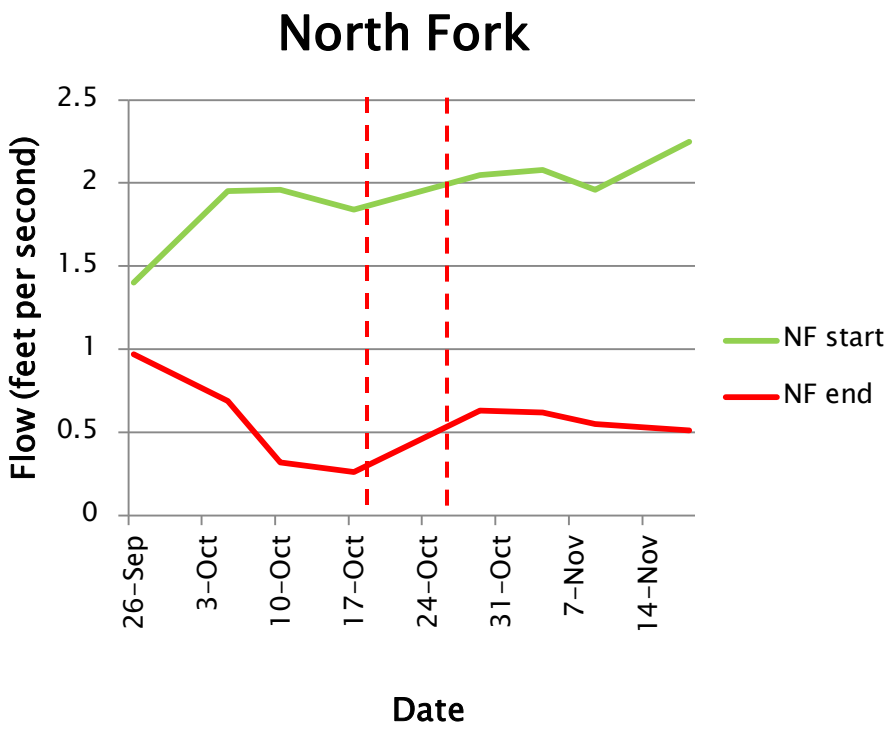
Water Temperature Results





Average Stream Flow Results





Conclusions

- Spawning activity appeared to begin between 19-Oct and 26-Oct
- Activity continued past my last observation (18-Nov) in the field
- North Fork appeared to have better substrate for brook trout than the main stem
- Possibly using suitable substrate and not necessarily creating an obvious redd every time
- Many washouts may had been used as redds (like #85)
- Many cohos

Possible Improvements

- Brook trout were still active so more time was needed
- Multiple people to cover more days
- Technical difficulties (camera, conductivity meter, bricks)


Questions?