"Movers" and "Stayers": brook trout movement in Pennsylvania streams

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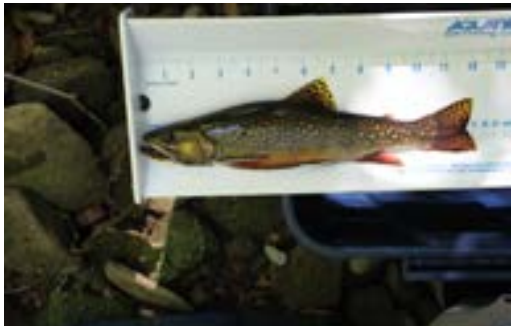
- Important for sustainable fisheries management

Three studies to date...

Obj. 1: Evaluate seasonal movement patterns: use of larger mainstem rivers

Obj. 2: Identify drivers of seasonal movement

Obj. 3: Studies often done in combination with evaluation of habitat use, genetic diversity, and understanding gene flow among study streams



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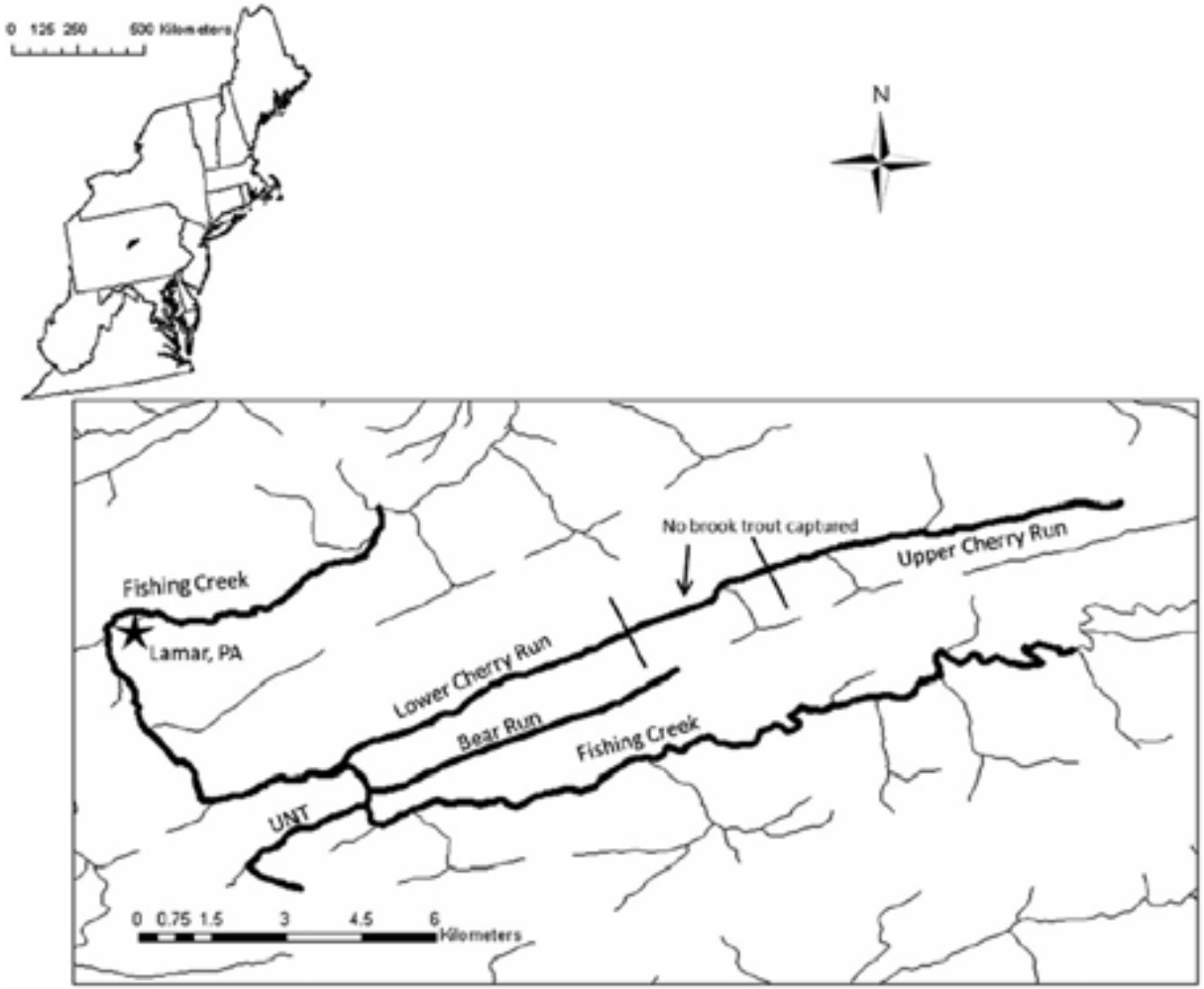
- Main stem – tributary exchange: seasonal use of larger mainstem rivers
  - Dispersal corridors (gene flow)
  - Food resources

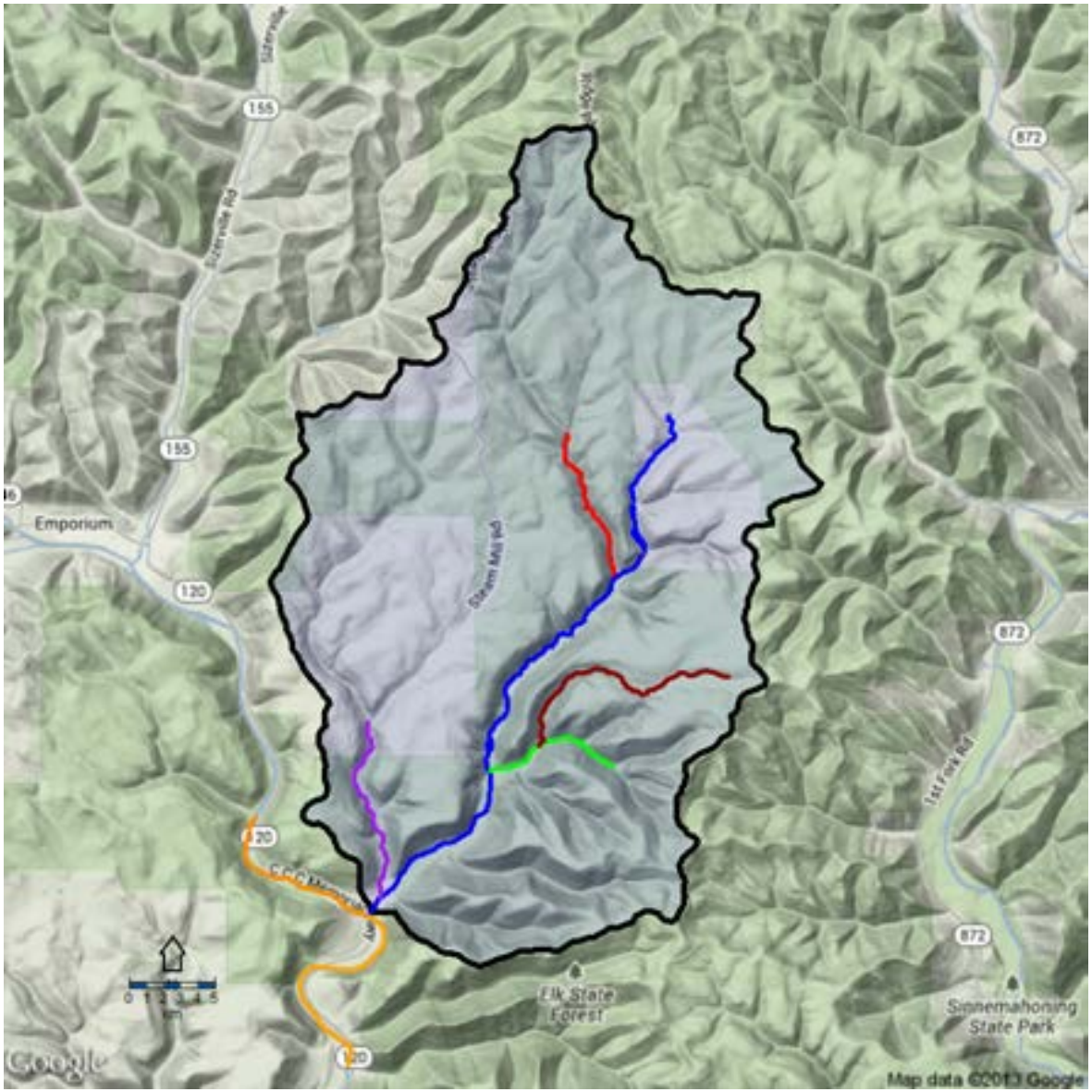
Fishing Creek / Cherry Run



Hunts Run

Cortland
Norwich
Ithaca
Oneonta
Erie
Jamestown
Corning
Endicott
Binghamton
Elmira
Sayre
Scranton
Williamsport
Wilkes-Barre
Youngstown
New Castle
Butler
Lewisburg
Pennsylvania
Pottsville
Indiana
Altoona
Penn Hills
Allentown
Edison
Pittsburgh
Lebanon
Johnstown
Harrisburg
Reading
Wheeling
Lancaster
Philadelphia
York
Morgantown
Cumberland
Hagerstown
Wilmington
Maryland
New Jersey

Hunts Run


155
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120
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872
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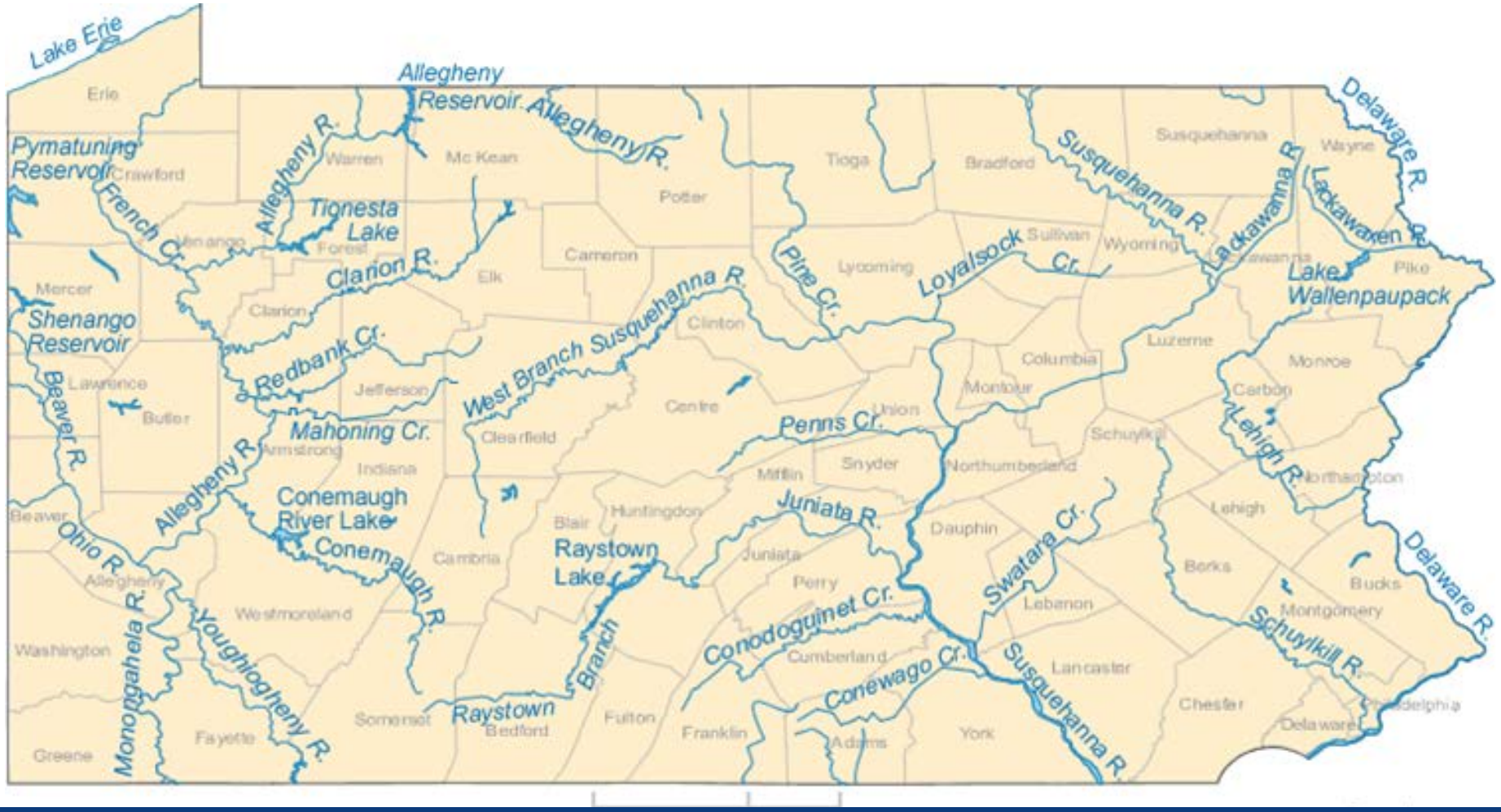
872
Emporium
Elk State Forest
Sinnemahoning State Park
Map data ©2013 Google

Loyalsock Cr. Watershed



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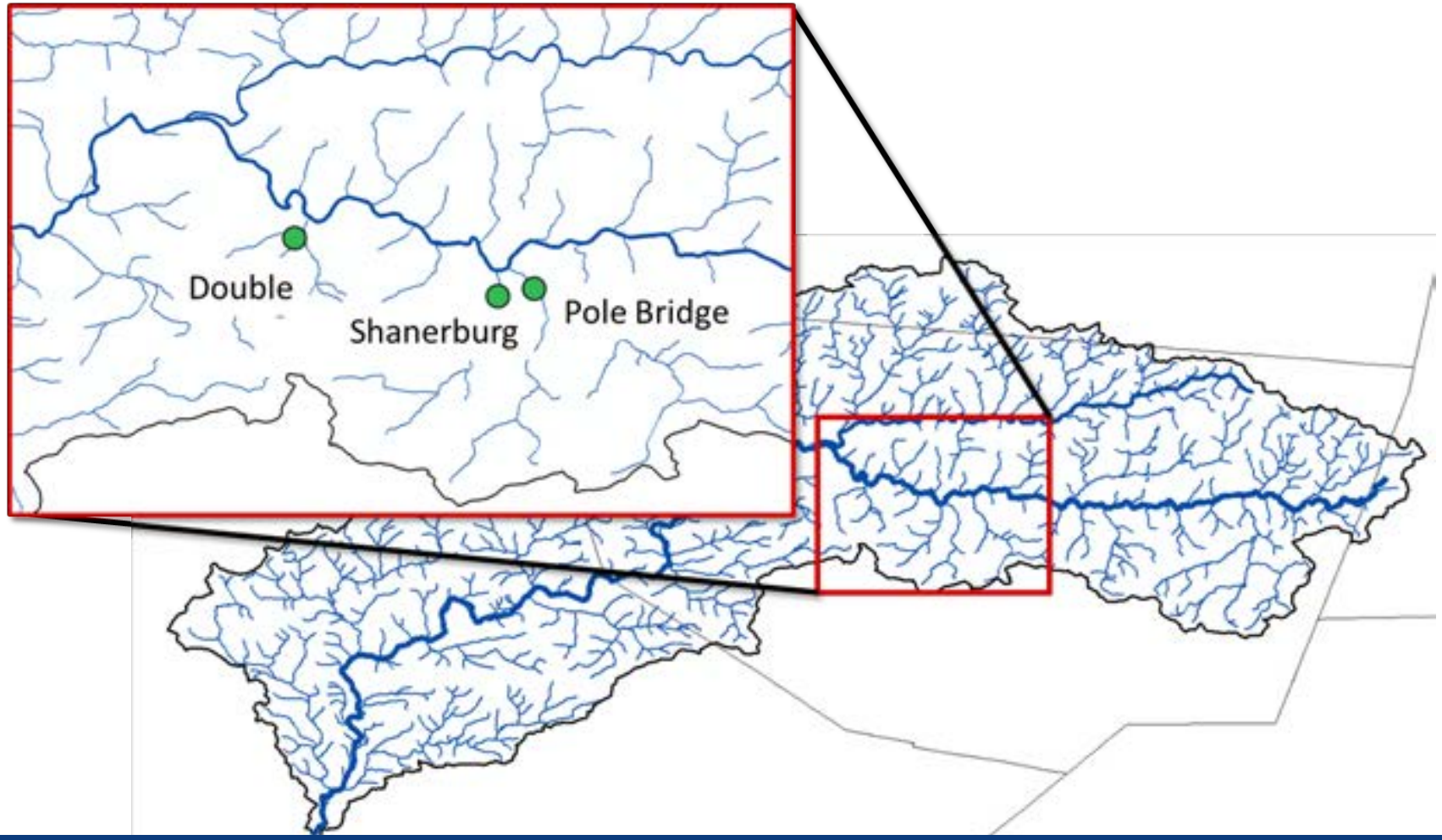
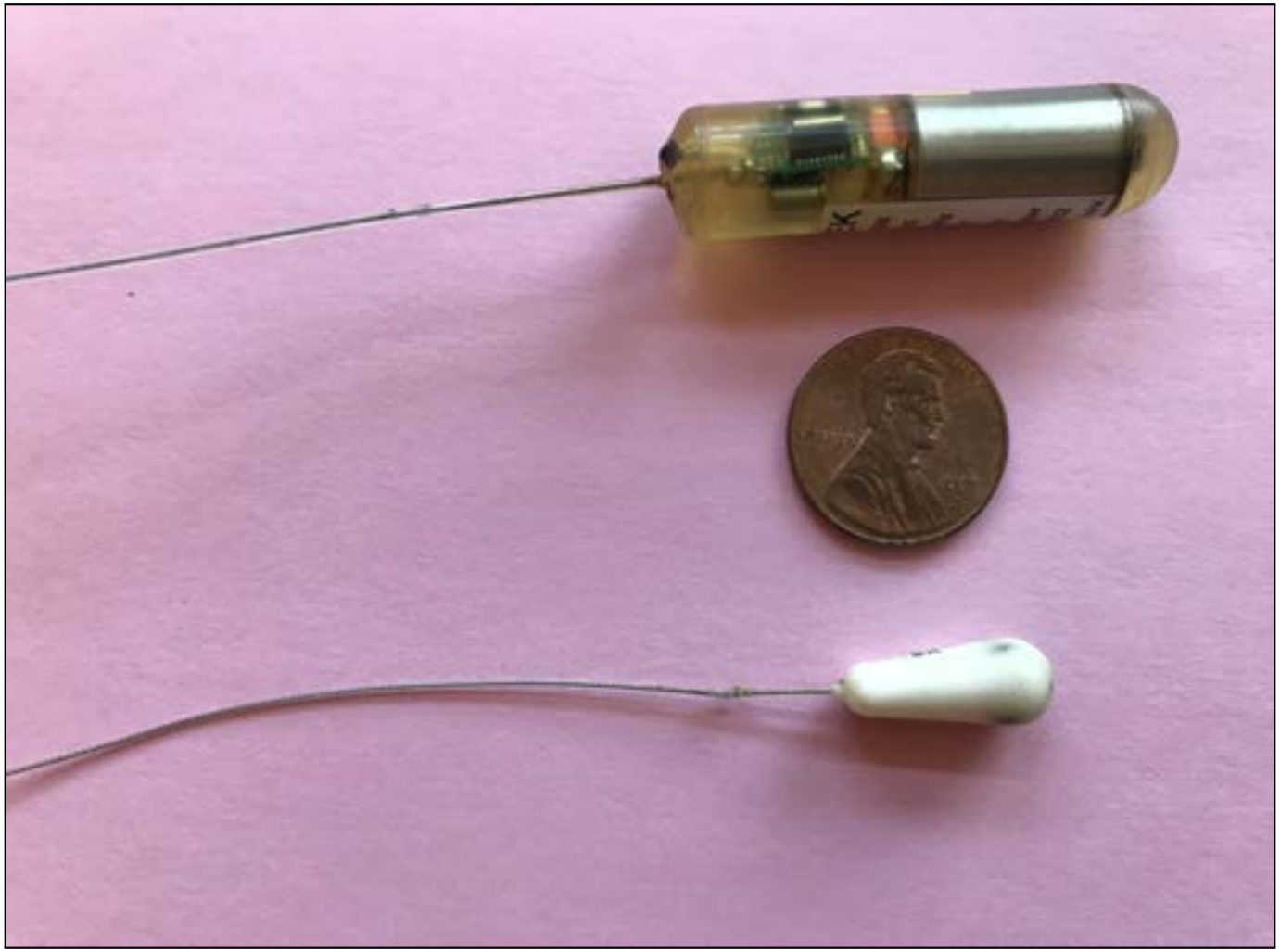


Electrofishing

Transmitters



Tagging

Recovery

Video of released fish

- Fishing Creek
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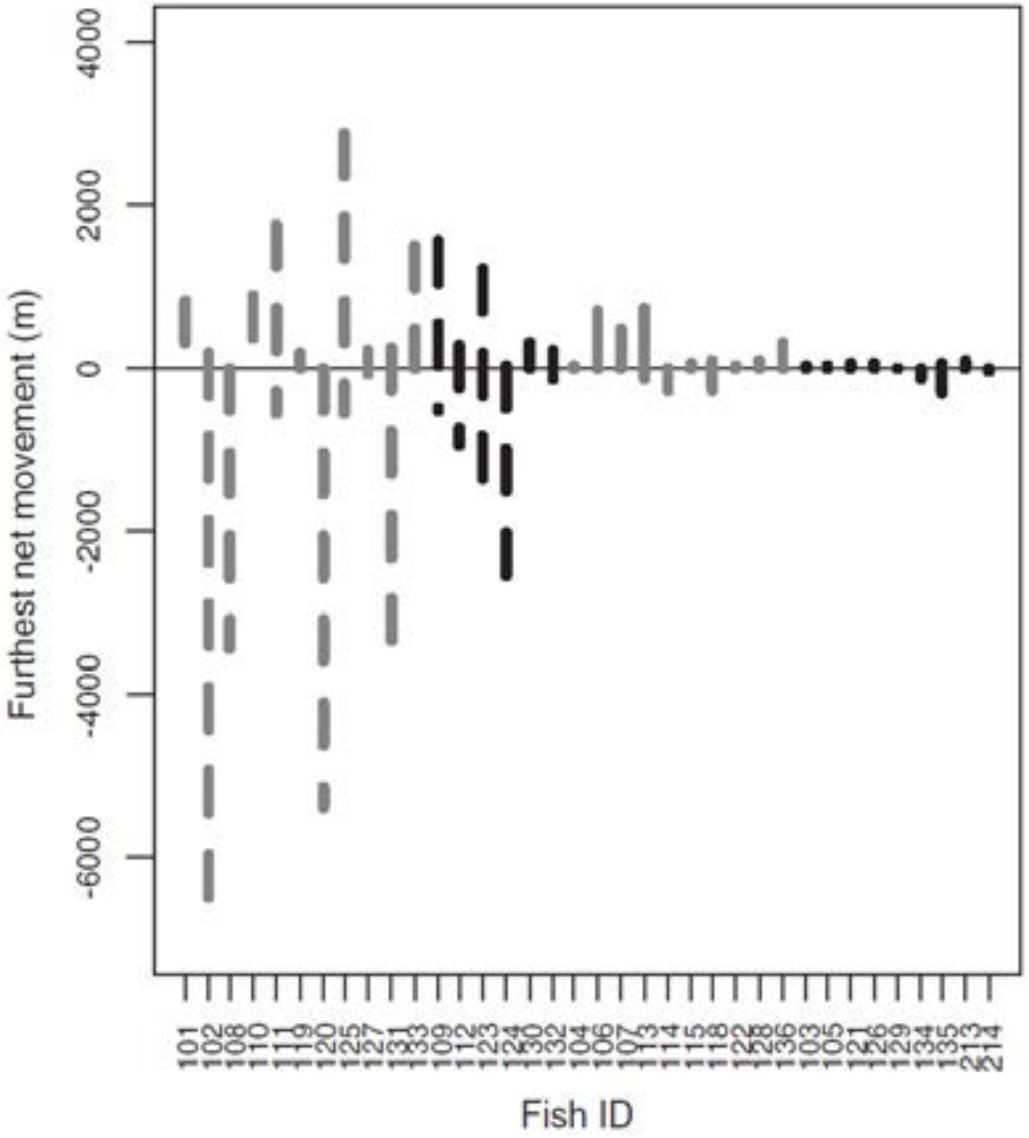
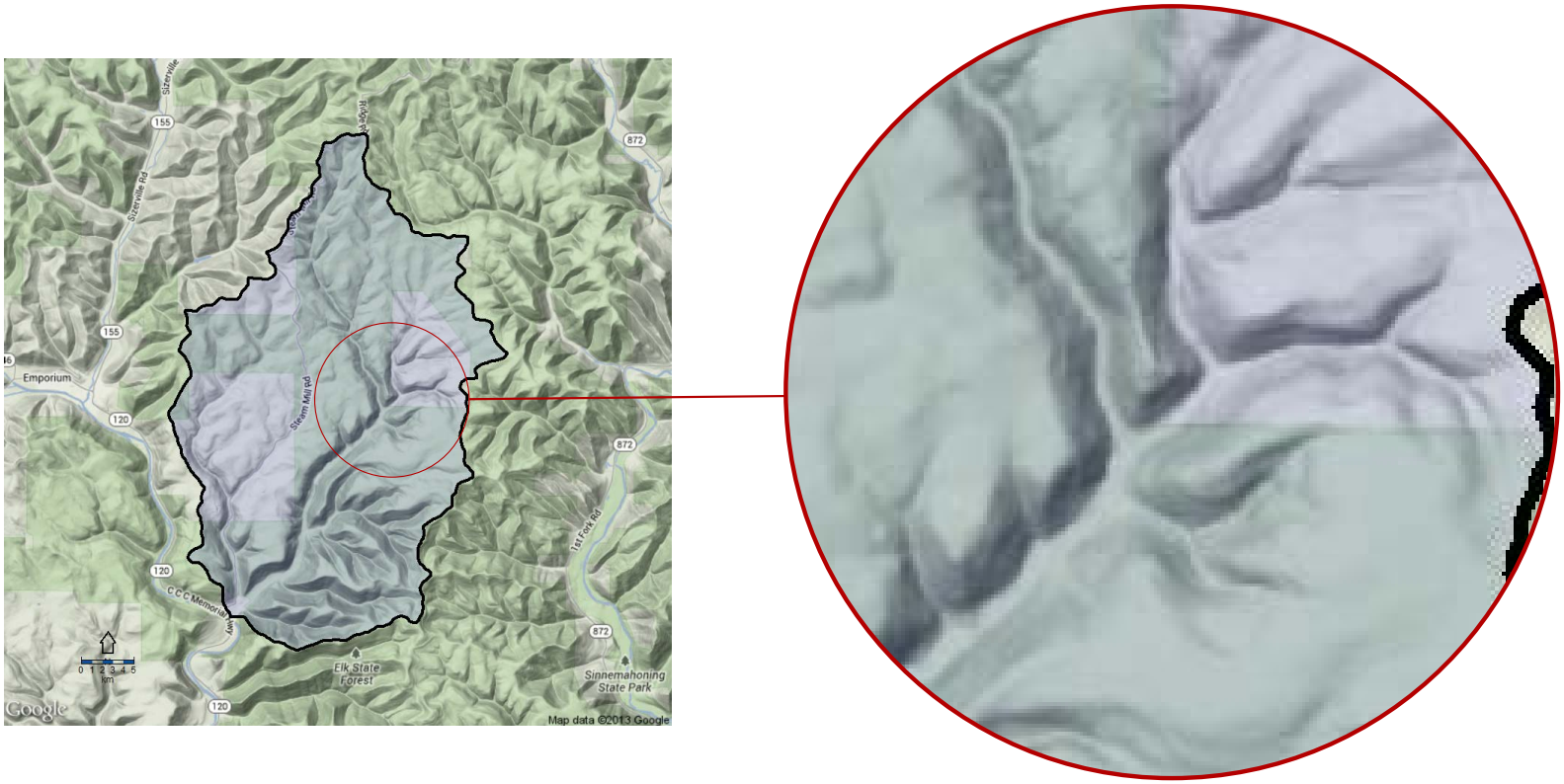
- Loyalsock Creek
  - Data still being analyzed, but similar among-fish variability as seen in Fishing Creek and Hunts Run

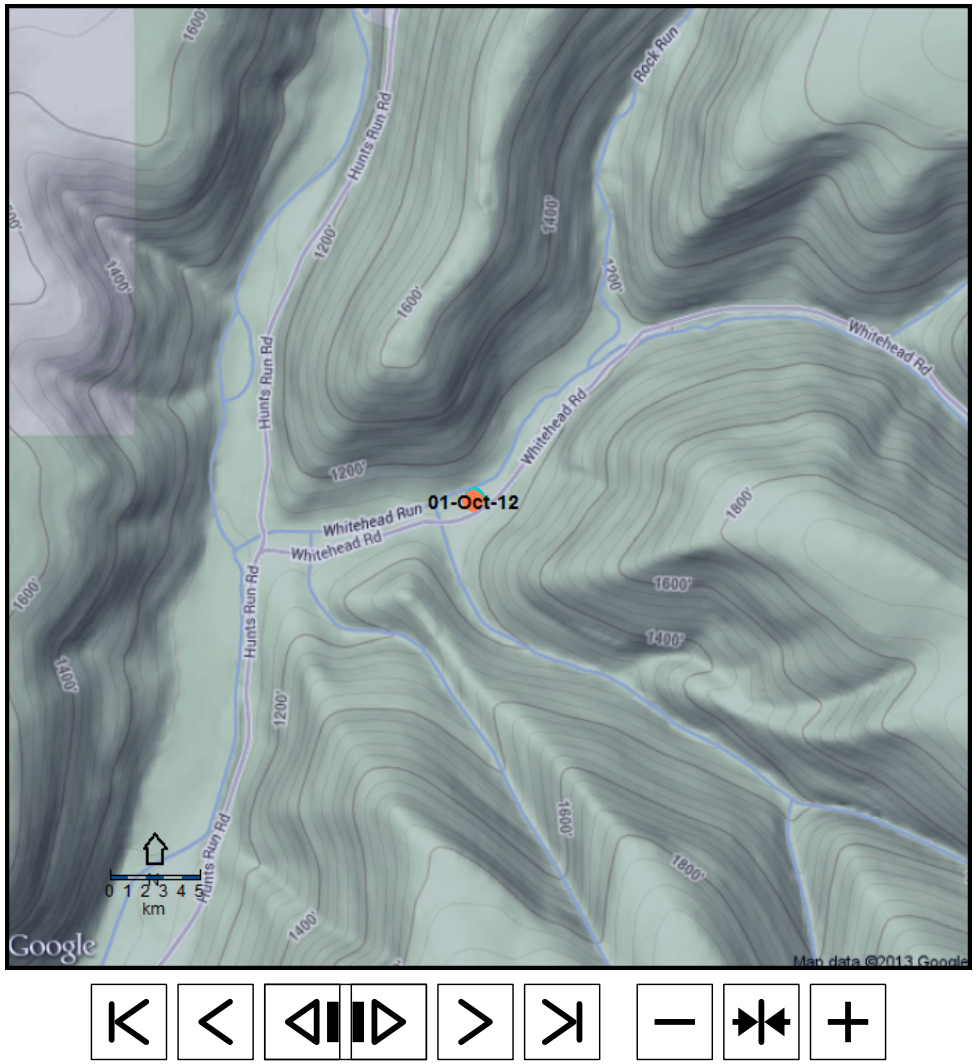
Movement: among-fish variability



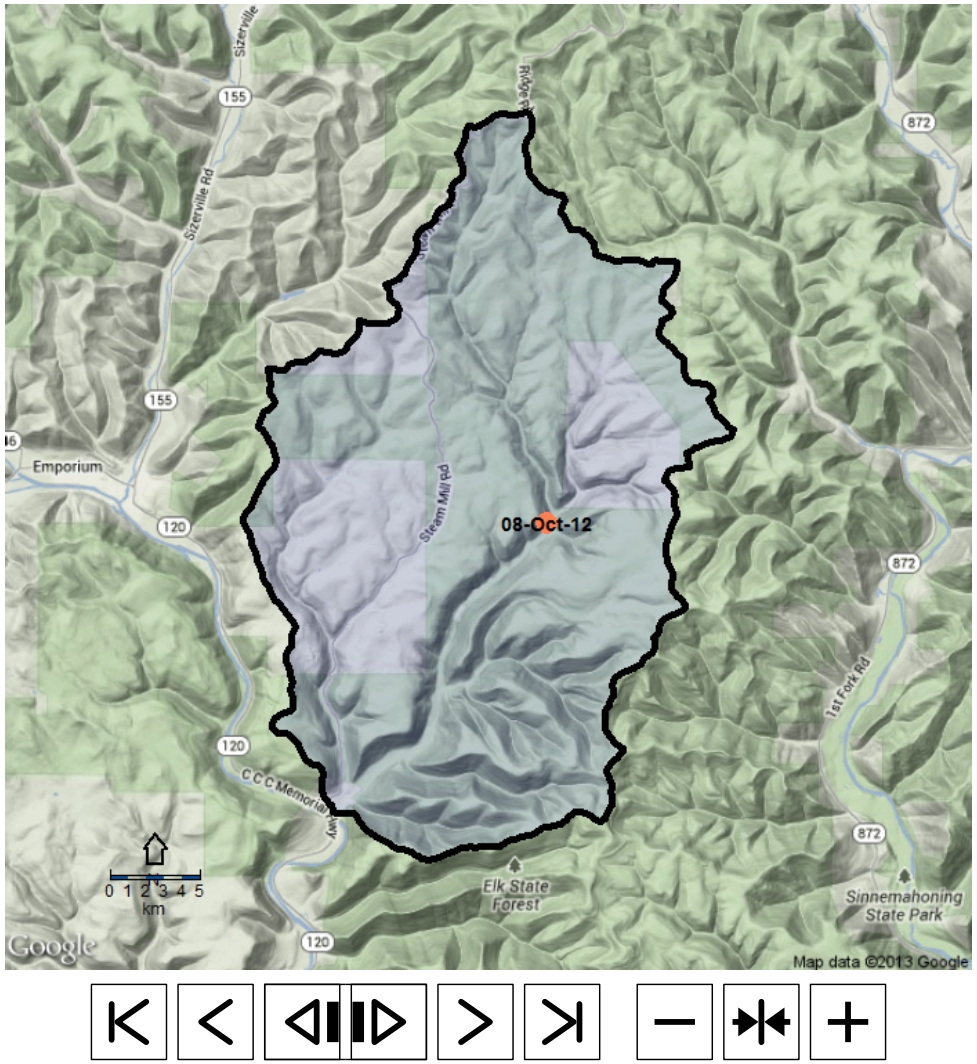
Movement


Emporium
Elk State Forest
Sinnemahoning State Park
Map data ©2013 Google

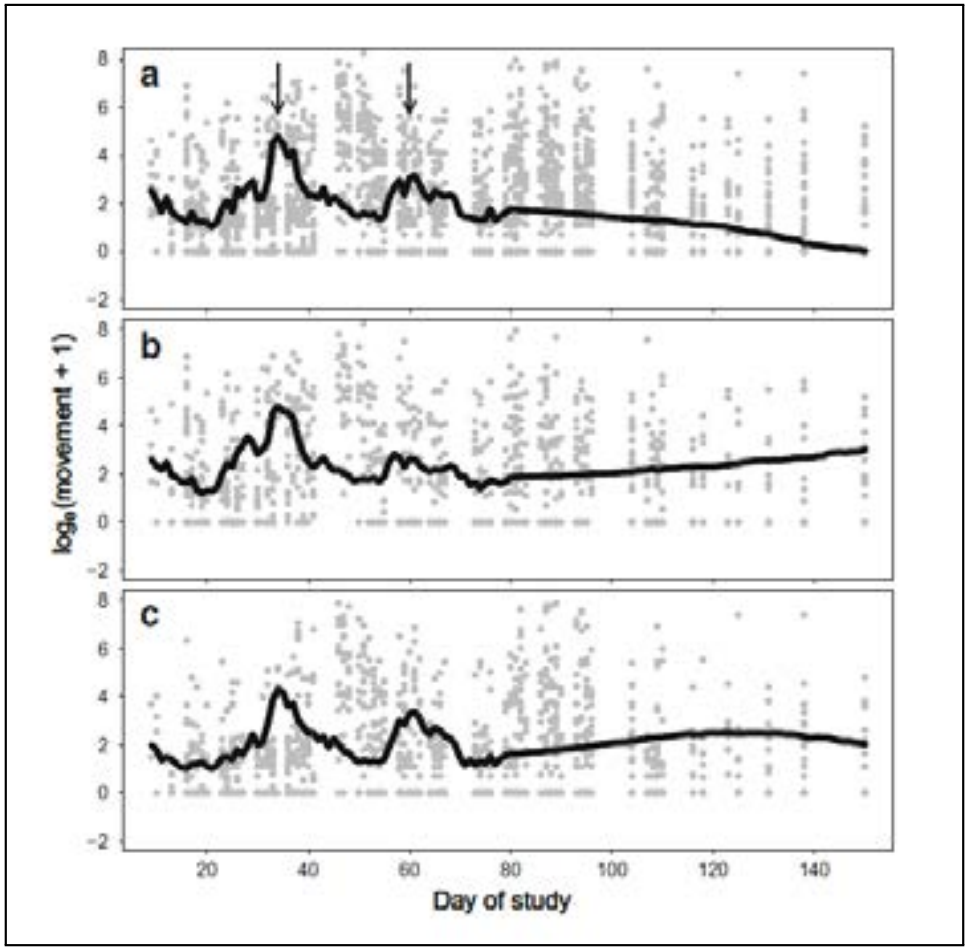
Movement: 197 mm Brook Trout



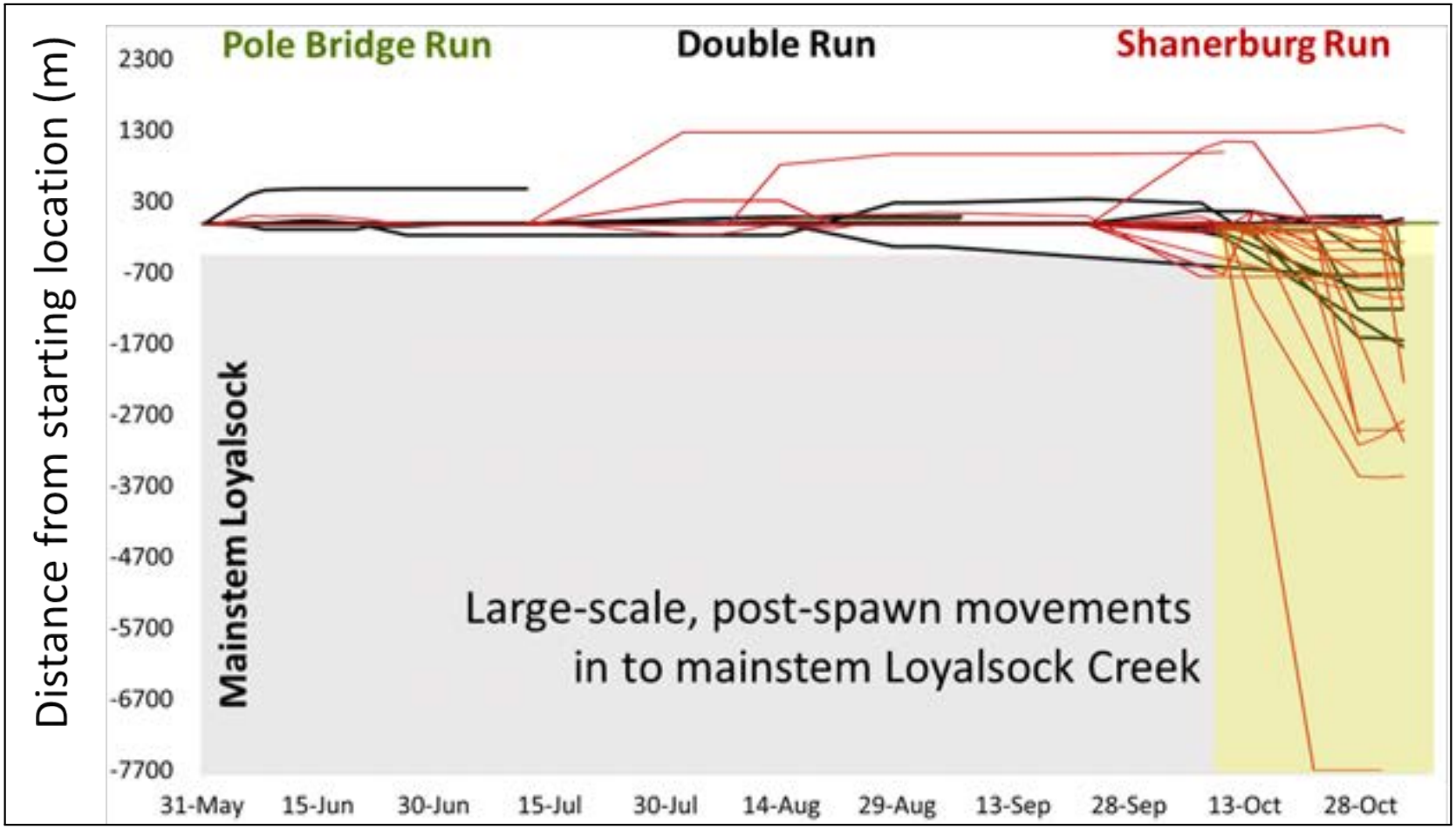
Movement: 240 mm Brook Trout



Movement: flow



Movement: temporal



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  - Do brook trout have two different life history strategies?
    - Risky movers maintain population connectivity
    - Cautious stayers assure high annual survival
    - If yes, then balance of life histories needed to maintain metapopulation dynamics

Questions?