New Zealand Mudsnail (NZM) - Invasion of the East Coast

Pennsylvania Fish & Boat Commission

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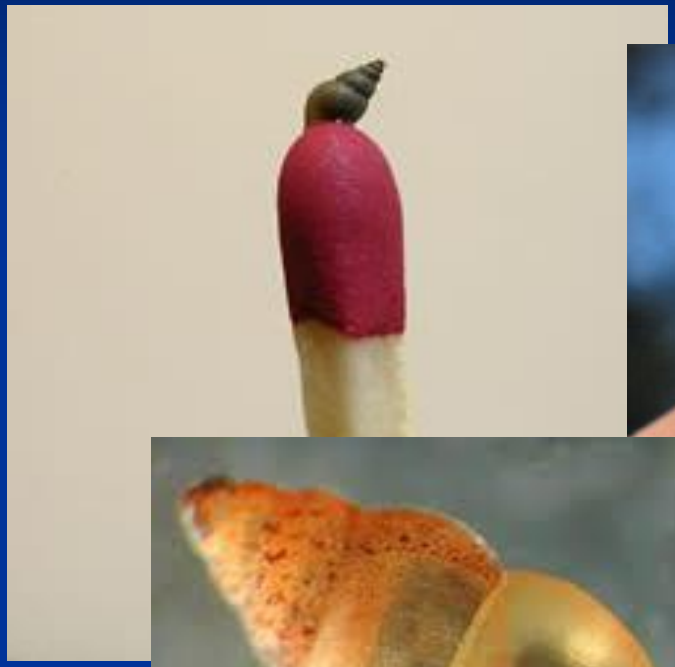
PA Fish and Boat Commission

NZM Biology and Ecology 101

(The Really Short Version)

A Tiny Critter That Can Cause BIG Problems



What they lack in size they can make up for in numbers

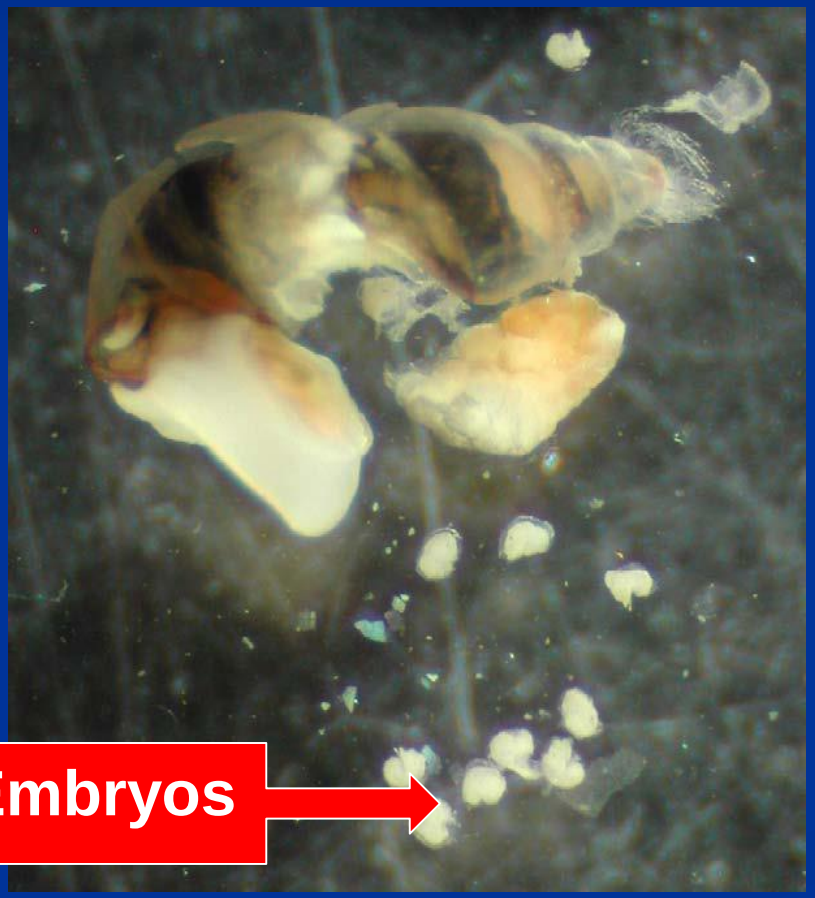
- In high densities, NZM consume much of a stream's primary producer (plant) biomass
- Can destroy the base of the stream's food web upon which higher organisms, such as fish, depend

Other NZM Problem Characteristics

Foot

Operculum

If that wasn't bad enough, NZM in the U.S. are almost all parthenogenetic female clones!



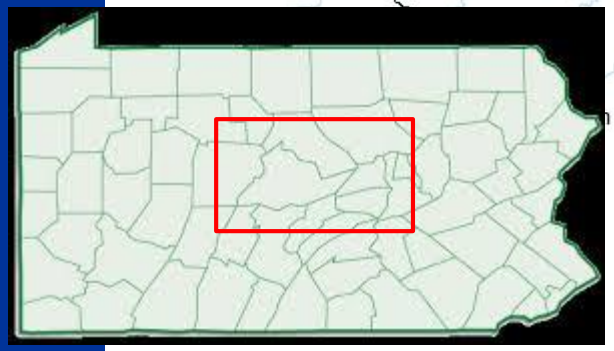
- There are 3 different NZM clones known in the U.S., each found in a different region

- US1 (Western US), US2 (Great Lakes) , US3 (Snake River, ID)

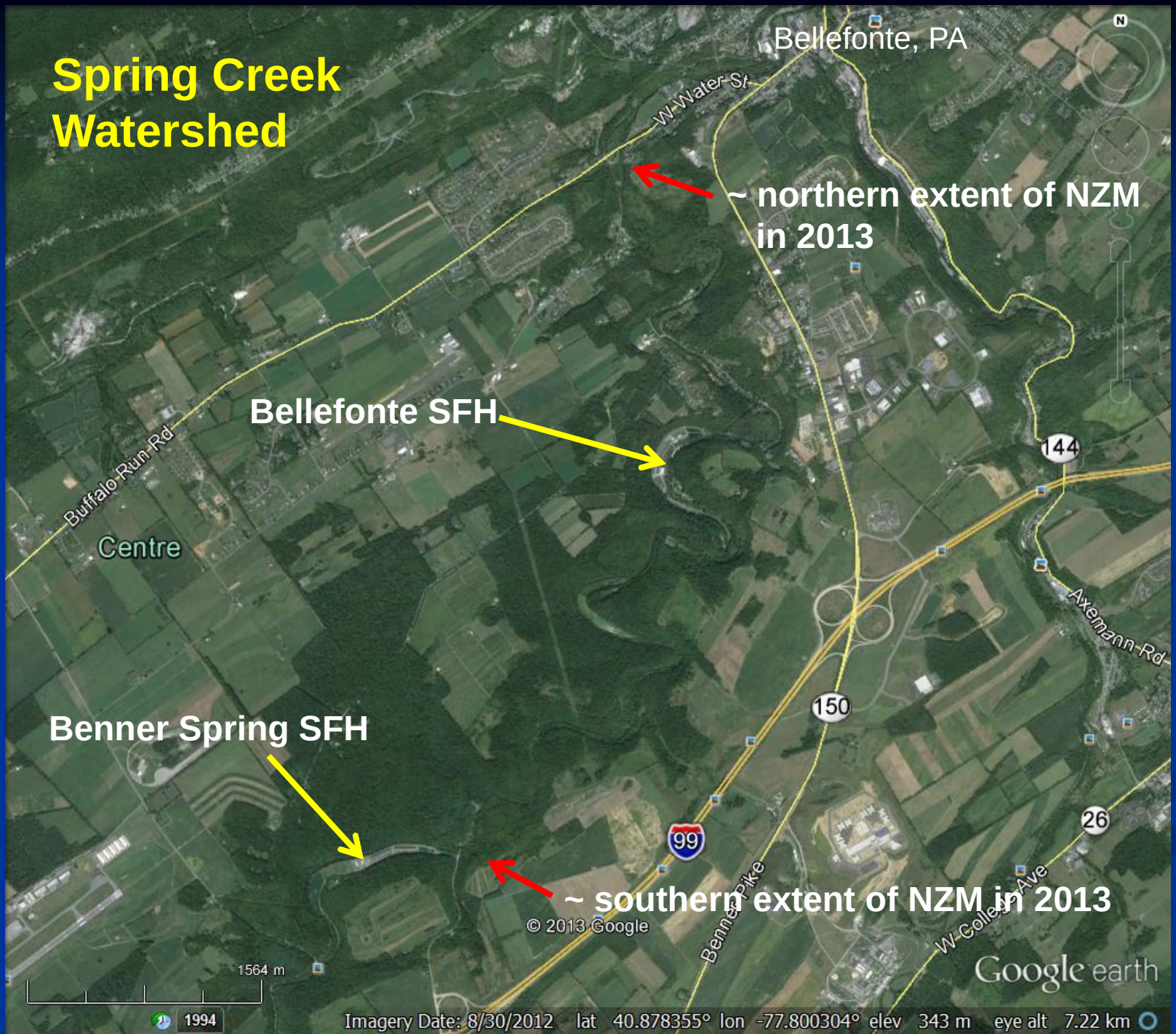
Brief chronology of the discovery of NZM in Spring Creek

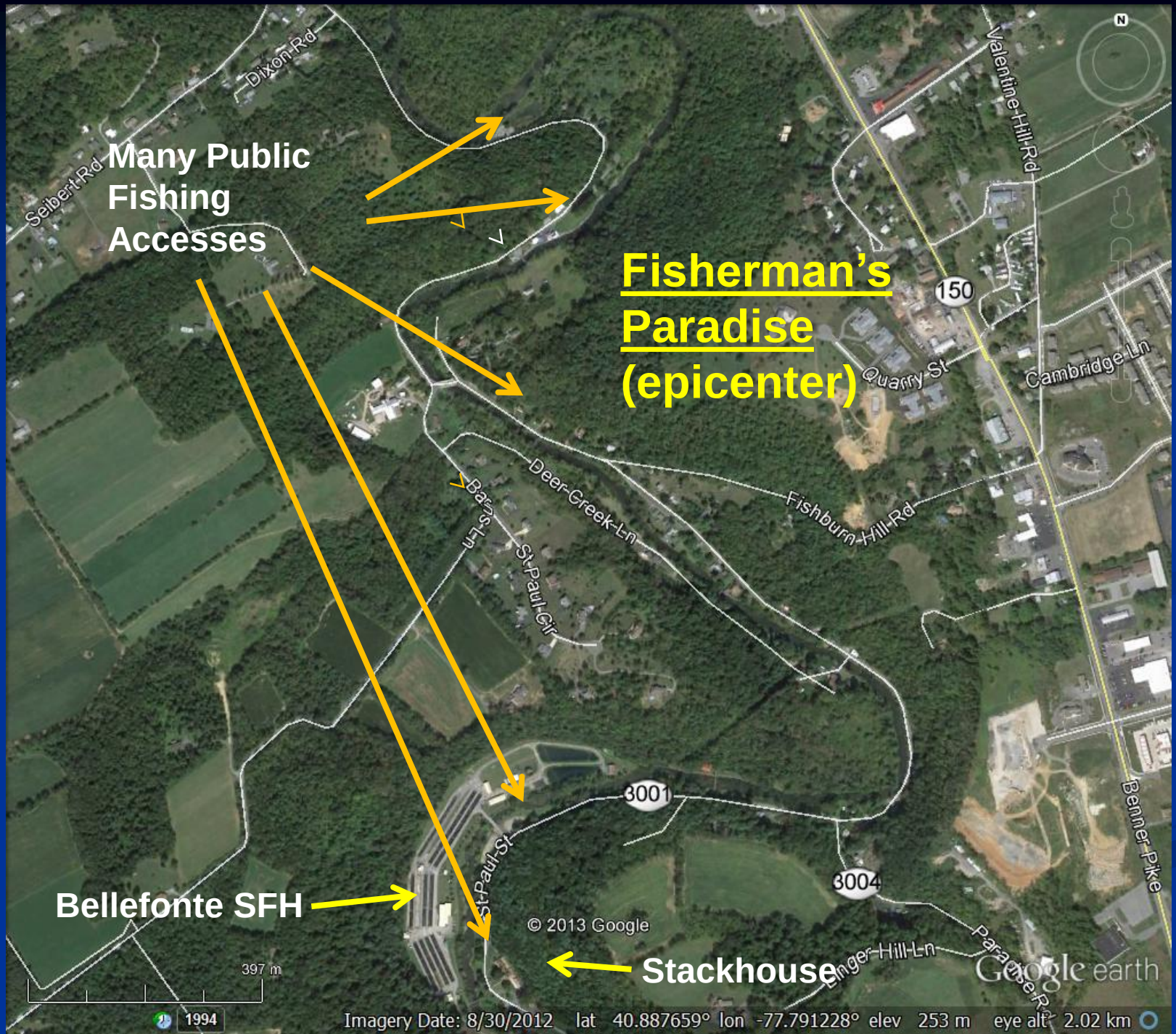
- New Zealand Mudsnails (*Potamopyrgus antipodarum*) (NZM) were discovered on the U.S. Atlantic Slope for the first time in Spring Creek – **US1 clone**
- PFBC was first made aware of the situation when PA DEP received confirmation from an expert in early October 2013 of NZM in Spring Creek
- Upon confirmation, a press release went out and warning posters were installed along Spring Creek
- Preliminary surveys were conducted in other streams in the region to attempt to assess if NZM had spread out of the Spring Creek watershed

Location



Cameron
Clinton
West Branch Susquehanna River
Lycoming
S
Centre
Montour
Union
Bald Eagle Creek
Spring Creek
Northumberland
Snyder
Susquehanna River
Mifflin
Juniata
Dauphin
Bald Eagle Creek
Foster Joseph Sayers Dam
Spring Creek
Major Rivers
Minor Rivers

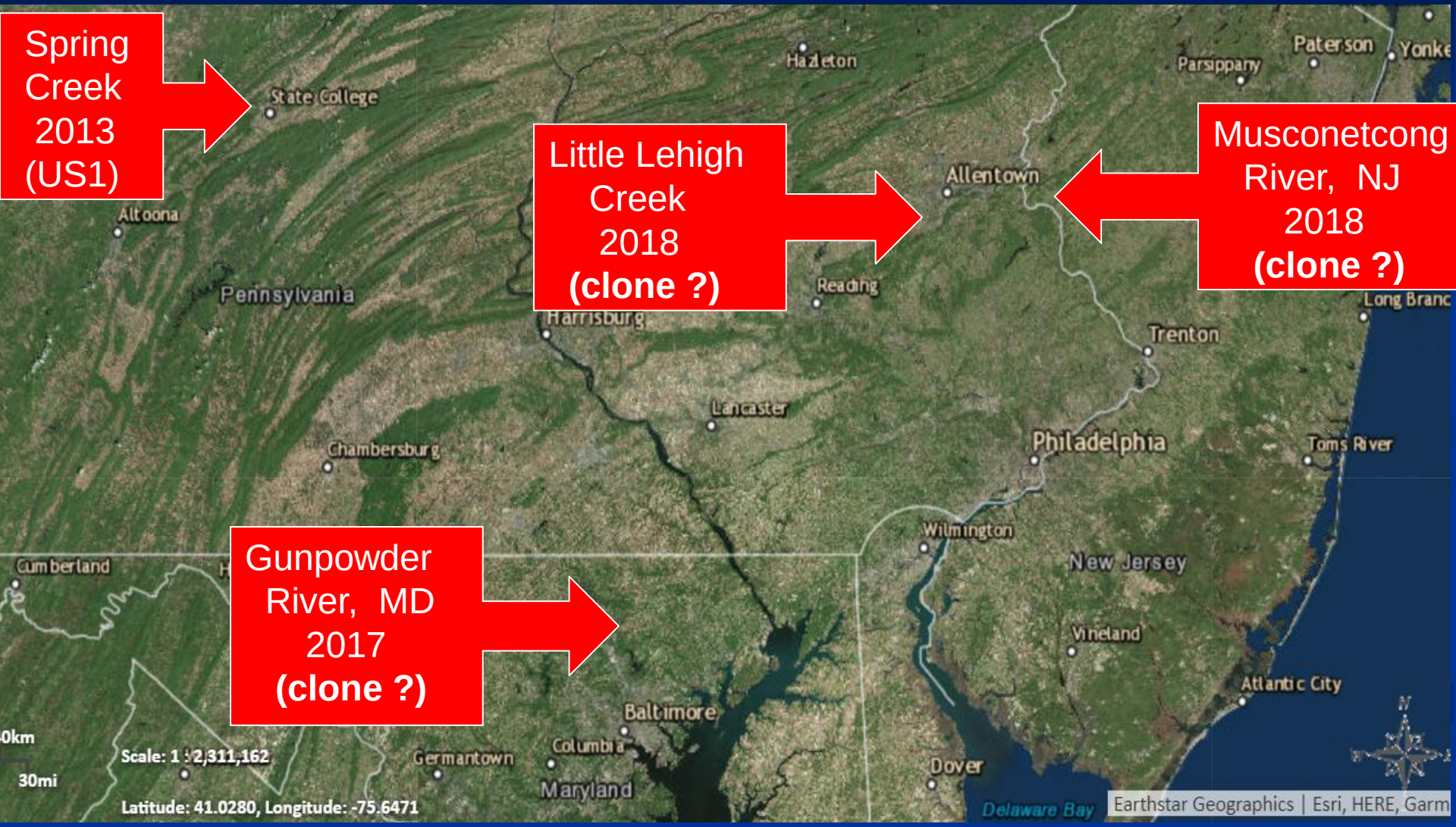

Spring Creek Watershed
Bellefonte, PA
W Water St
~ northern extent of NZM in 2013
Bellefonte SFH
Buffalo Run Rd
Centre
144
Axemann Rd
150
Benner Spring SFH
99
26
~ southern extent of NZM in 2013
© 2013 Google
Benner Pike
W College Ave
Google earth
1564 m
1994
Imagery Date: 8/30/2012 lat 40.878355° lon -77.800304° elev 343 m eye alt 7.22 km


Many Public Fishing Accesses
Fisherman's Paradise (epicenter)
Bellefonte SFH
Stackhouse
Selbert Rd
Dixon Rd
Valentine Hill Rd
150
Quarry St
Cambridge Ln
Deer Creek Ln
Fishburn Hill Rd
Bar-S Ln
St Paul Cir
St Paul St
3001
3004
Benner Pike
Linger Hill Ln
Paradise Rd
© 2013 Google
397 m
1994
Imagery Date: 8/30/2012 lat 40.887659° lon -77.791228° elev 253 m eye alt 2.02 km
Google earth

Typical 2013 NZM density in Spring Creek at Fishermans Paradise ~ 1,000/m^2

2016 - estimated densities of ~ 24,000/m^2

Atlantic Slope NZM Invasions



Biosecurity – Slowing the NZM Invasion

NZM are very hard to detect on gear

Photos: Ashley Wilmont, Pennsylvania Council of Trout Unlimited

Aquatic Invasive Species Alert

New Zealand Mu

New Zealand mudsnail (NZM) is in this waterway. The snails a
less than ¼ inch, with a dark, narrow, coiled shell with deep g
Invasive Species (AIS), they disrupt ecosystems by rapidly m
with native species for space and food. NZM have the potenti
supply for fish in this stream. The snails are found on rocks a
attach to fishing gear, boats and other equipment where they
Anglers, boaters, swimmers and tubers can unkn

Help Stop the Spread

Clean Your G

Check these areas

New Zealand mudsnail
disinfection measures:

- Visually inspect gear and
clinging matter in the tra
matter or NZM from this
- To kill NZM, three metho
✓Freeze gear for a mini
✓Soak gear in hot water
This method is not rec
✓Soak gear for 5 minute
Formula 409® Cleaner
and water. After soakin
with plain water. **Simpl**
disinfectant or the m
Also, general cleaners
have not been shown t

STOP AQUATIC HITCHHIKERS!™

For more information about New Zealand mudsnail, visit "Resources" on the PA Sea Grant website at **www.paseagrant.org/fact_sheet_group/invasive-species/** and scroll down to Fact Sheets – Invertebrates and the mudsnail photo/link.

Sea Grant Pennsylvania

New Zealand mudsnail requires specialized disinfection measures:

- Visually inspect gear and remove and dispose of any clinging matter in the trash. Do not move mud, organic matter or NZM from this area!
- To kill NZM, three methods are effective:
  - ✓Freeze gear for a minimum of 6 hours
  - ✓Soak gear in hot water (120°F to 140°F) for 5 minutes. This method is not recommended for GOR-TEX®
  - ✓Soak gear for 5 minutes in a 1 to 1 solution of *Formula 409® Cleaner Degreaser Disinfectant* and water. After soaking, thoroughly rinse the gear with plain water. **Simply spraying gear with the disinfectant or the mixture does not work.** Also, general cleaners (including other 409 products) have not been shown to be effective against NZM.

Questions?


Benner Spring SFH
Public Fishing Access
Farthest southern extent of NZM
Warm water rearing ponds
Spring Creek water intake for rearing ponds
Shiloh Rd
Bricker Rd
© 2013 Google
Google earth
1994
Imagery Date: 8/30/2012 lat 40.855629° lon -77.815282° elev 331 m eye alt 1.47 km

Upper Spring Creek Rearing Ponds

Creek water intake for rearing ponds

Spring Creek Rd 3001

© 2013 Google

Google earth

1994

Imagery Date: 8/30/2012 lat 40.871119° lon -77.796918° elev 262 m eye alt 889 m

Summary

- NZM were not found at the Benner Spring or Bellefonte hatcheries
- NZM were not found in Spruce Creek, the Little Juniata River, Fishing Creek (Clinton County), or in Bald Eagle Creek near the confluence with Spring Creek
- NZM were found in the Upper Spring Creek Rearing Ponds infrastructure
- The apparent heaviest infestations of NZM are in the Fisherman's Paradise reach of Spring Creek
- Only recourse at this time is to try to limit the spread of NZM primarily through public education and outreach