

# Amphibians in the Johnson Creek Watershed



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**PORTLAND  
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**Johnson Creek**  
Watershed Council

# What is an Amphibian?

- Amphibian = “Two Lives”
  - thin porous skin
  - soft jelly eggs with no “shell”



**Frogs**



**Toads**



**Salamanders**



**Newts**

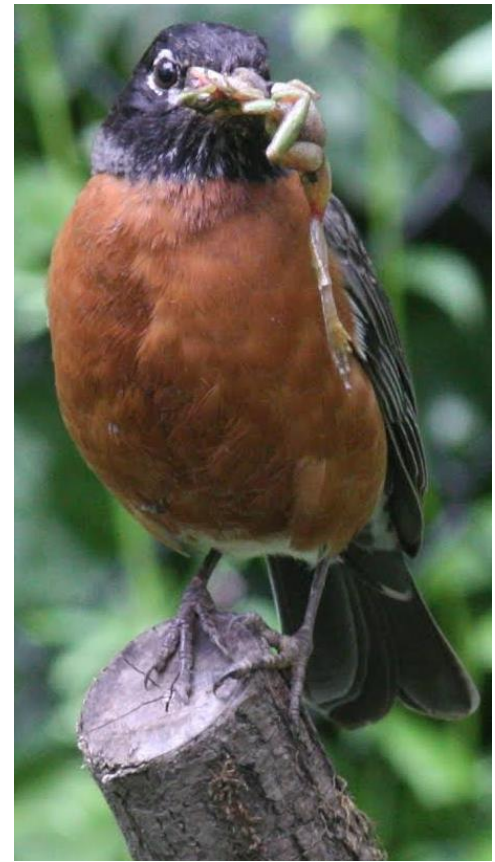


**Amphibian eggs**



# Major Role in the Ecosystem

- Many animals eat amphibians
- Nutrient transport
  - Small food to large animals
  - Aquatic to terrestrial (similar to the role of salmon)
- Can be primary vertebrate biomass
  - Studies of forests in Oregon and northern California have shown that amphibians can make up more than half of the vertebrate biomass



# Amphibians of the Willamette Valley

## Oregon Conservation Strategy species

Native



Pacific Chorus Frog



Red-legged Frog



Bullfrog



Long-toed Salamander



Northwestern Salamander



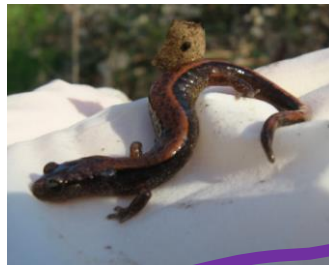
Rough-skinned Newt



Pacific Giant Salamander



Dunn's Salamander



Red-backed Salamander



Oregon Slender Salamander



Ensatina Salamander



# Initial Questions Asked

1. What species live here & in what densities?
2. What can they tell us about the health of our natural areas?
3. How can we conserve and restore natural areas to benefit amphibian populations?
4. Can we use volunteers and community science to gather this important data?



Photo credit: Jason Raschke

*Ambystoma spp.*

# Three “Life Styles” of Amphibians

- **Terrestrial Species** – NEVER have to spend time in ponded or moving water
- **Pond Species** – HAVE to lay eggs in still/slowly moving water
- **Stream Species** – lay eggs in water with a moving current



Ensatina – Terrestrial Species



Pacific treefrog – Pond Species



Pacific giant salamander – Stream Species

# Terrestrial Survey Methods

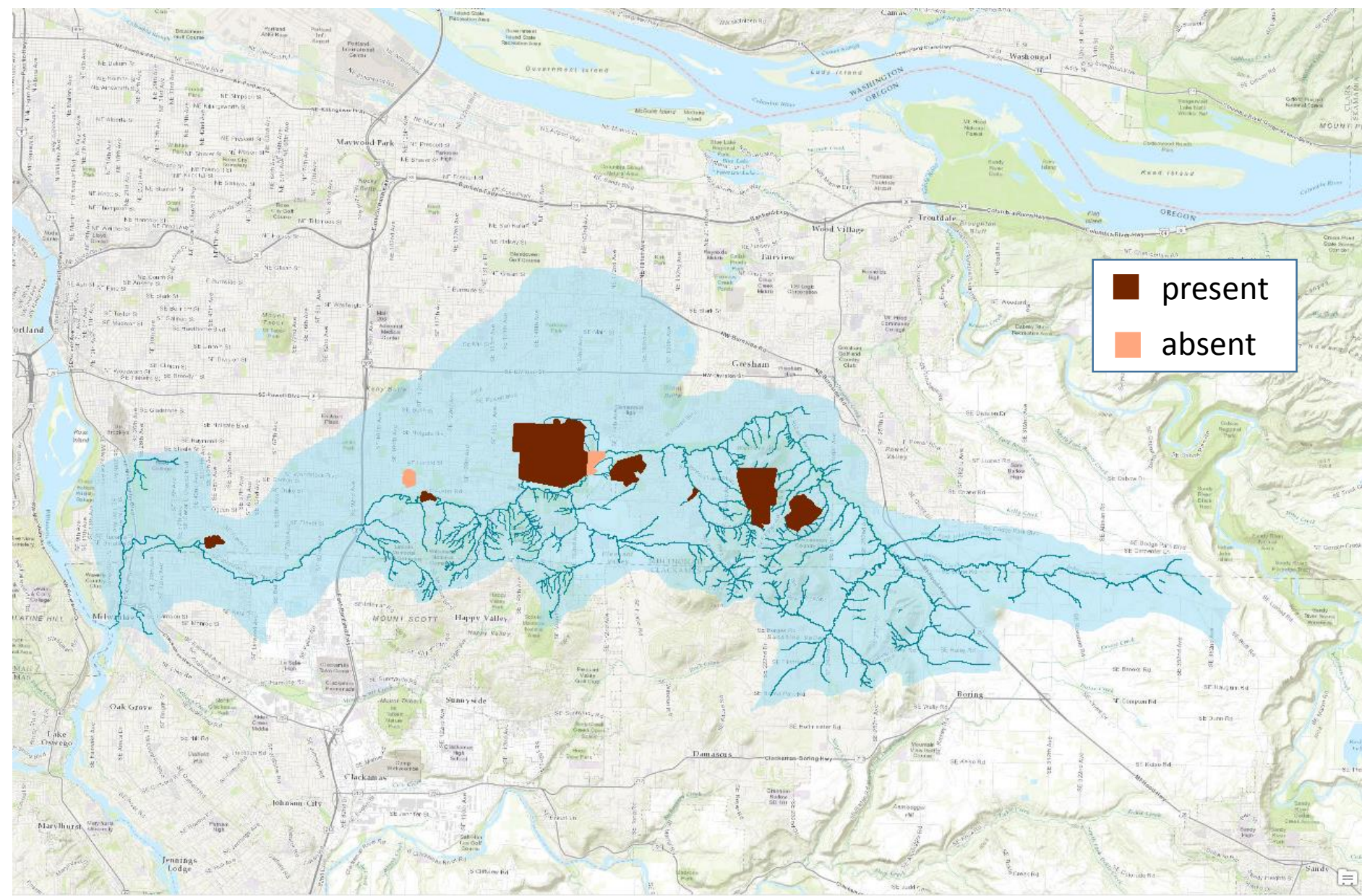
- Daytime Visual Encounter Surveys

- Systematically search under all cover objects including live vegetation, dead leaves, logs, sticks, and other debris
- Small portions of well-decayed logs and stumps were carefully pulled apart and searched
- Special care taken to not destroy habitat during searches!





# 10 sites surveyed, 8 w/ terrestrial amphibian presence





# Terrestrial Survey Results

- Hundreds of volunteers over 6 years, including two BioBlitzes
- Found 4 Native Species
  - Ensatina
  - Western Red-backed Salamander
  - Dunns Salamander – RARE to Willamette Valley
  - **Oregon Slender Salamander** (found in Gresham in 2010; found at Powell Butte EcoBlitz 2016)
- All ages/Size classes: from 10mm SVL – 60mm SVL
- Large numbers of individuals at some sites
- Almost always under some type of cover (log, bark, rock, debris)



# Terrestrial Survey Implications

- Can we provide adequate terrestrial habitat outside “ideal habitat” conditions?
  - Value of ivy???
- Not just *surviving* in urban habitats
  - Presence of many individuals
  - Presence of many juveniles as well as adults
- Lesson in conducting full surveys before restoration begins



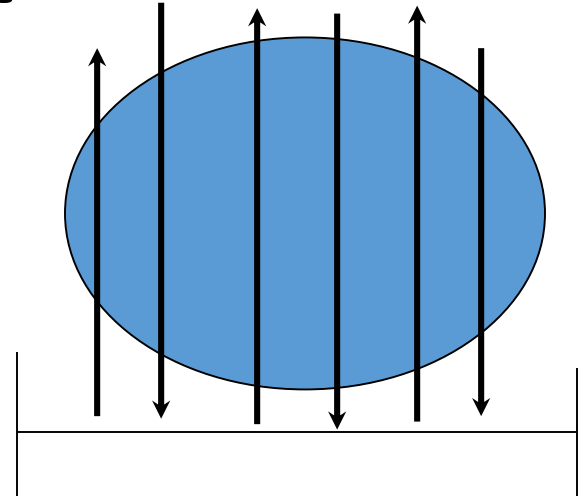


# Pond Breeding Survey Methods

Egg mass surveys – since ~2007, involving thousands of volunteer hours



Pacific Treefrog egg mass



Area-constrained egg mass surveys with transects



Northwestern Salamander egg mass

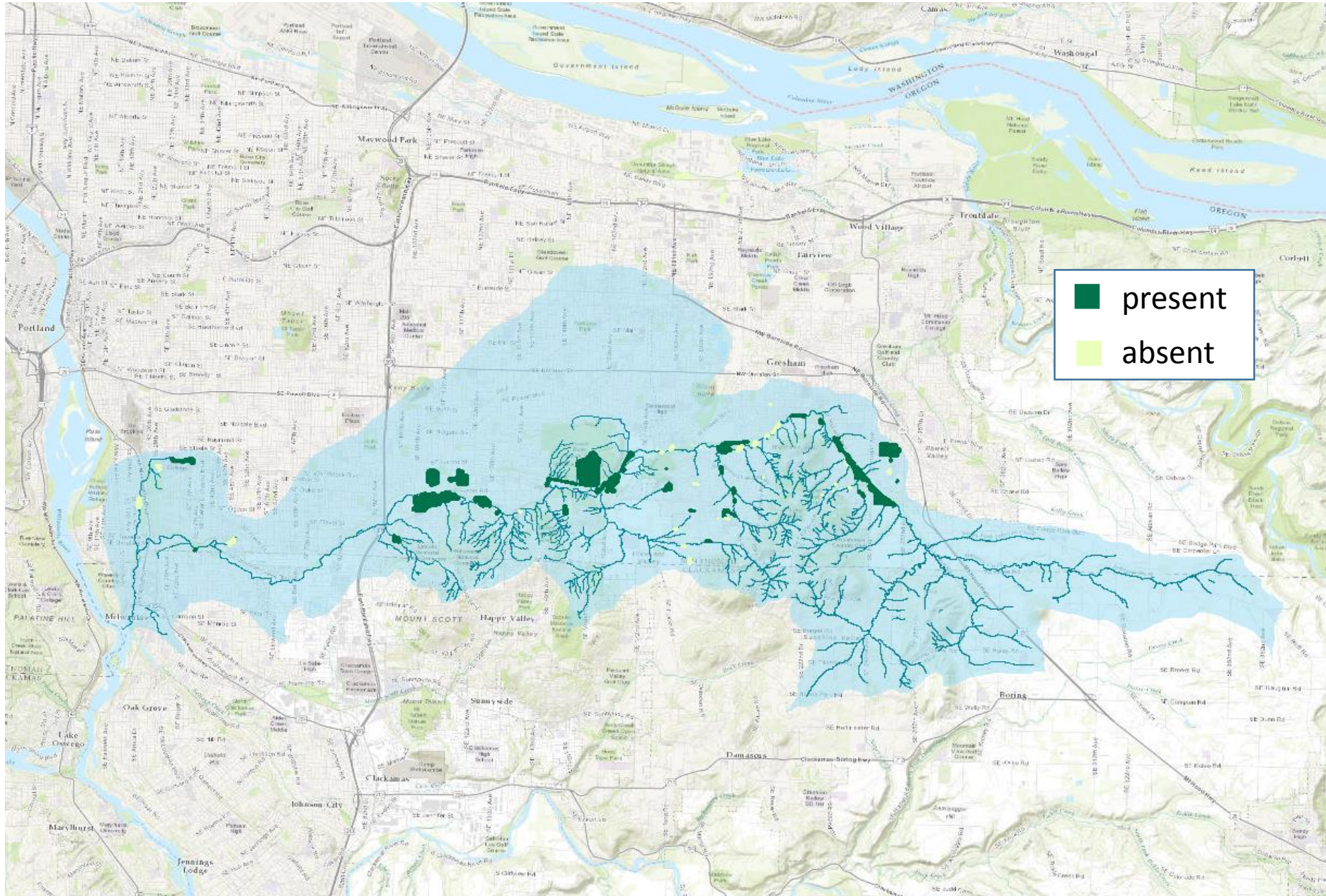
# Pond Breeding Survey Sites

- 65 sites surveyed in Johnson Creek Watershed
- Range from 4 ft<sup>2</sup> backyard ponds to 5 acre ponds
- Includes *natural wetlands*, *creek floodplain ponds*, and man-made *bioswales* and *water quality facilities*





# Pond breeding amphibian presence





# Pond Breeding Survey Results

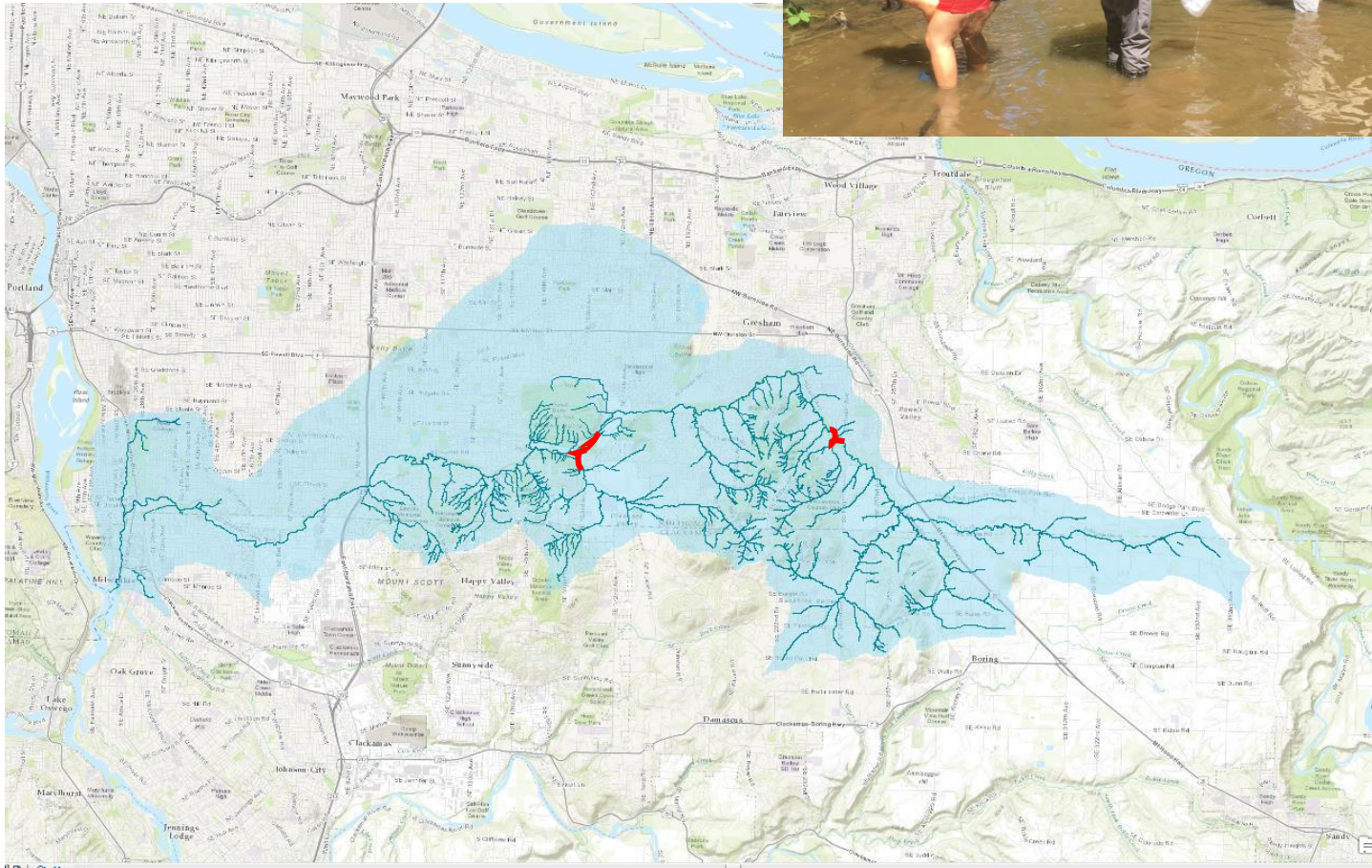
- More than half of the sites had native pond-breeding amphibians
- Found 5 Native Species
  - Pacific Chorus Frog (30 sites)
  - Red-legged Frog (29 sites)
  - Long-toed Salamander (24 sites)
  - Northwestern Salamander (12 sites)
  - Rough-skinned Newt (6 sites)
- And 1 invasive species
  - Bullfrog (10 sites)
- Seemed to be more limited by upland habitat in Portland and by pond habitat in Gresham
- Lots of activity in newly constructed ponds
- Majority of sites available to breeding amphibians in many parts of the Johnson Creek watershed are constructed, stormwater management facilities





# Stream Surveys

- First stream survey in 2017!
- 40 volunteers surveyed two high priority stretches of Johnson Creek





# Stream Survey Results

- Found several amphibians...but no “stream species” 😊
  - Pacific treefrog
  - Red-legged frogs
  - Long-toed salamanders
- Many pools filled with coho salmon and 4 lamprey
- Lots of freshwater mussels





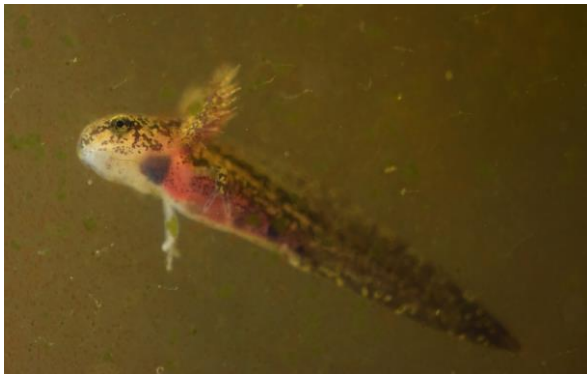
# Conclusions

- There are lots of amphibians in the Johnson Creek watershed!
  - Almost all amphibians in the watershed are native
  - The watershed contains all typical species expected in the Willamette Valley
- They need healthy habitats
  - Ponds
  - Streams
  - Forests
- Many amphibians in the watershed are doing well in heavily human-impacted habitats
- Community Science is a great way to collect valuable data



# Next Steps

- Continuing to survey ponds, streams and uplands – goal is 5 years of data to create a “baseline”
- Work with storm pond and wetland planners and design engineers to make sure that newly built sites are safe and healthy places for amphibians
- Genetic study of OSS – how “related” is our population to those in Gresham and Mt. Hood? Are the genetics diverse enough for the population to be healthy?
- Red-legged frog pit-tag study to look at amphibian movement across the landscape – how much of a barrier is a trail? 2-lane road? Railroad track? Housing development?





# Acknowledgements

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