
Designating the Eastern Red-backed Salamander Washington, DC's Official Amphibian

****This is a planning document - feedback, corrections, suggestions welcome****

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This project aims to:

- Work with students to advocate for the DC Council to designate the Eastern Red-backed Salamander (*Plethodon cinereus*) DC's Official Amphibian;
- Celebrate the resilience of these remarkable lungless parental-brooding polymorphs and recognize the risks they face;
- Promote awareness of DC's forest ecosystems and engage students in the stewardship of DC's natural resources;
- Learn about campaigns and petitions, Washington, DC government, the DC Council, how DC laws are made, and DC statehood;
- Explore, learn, and have fun.

This planning document is organized in sections. Here is a table of contents.

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A few DC Red-backed Salamanders - "red-backs" and "lead-backs"

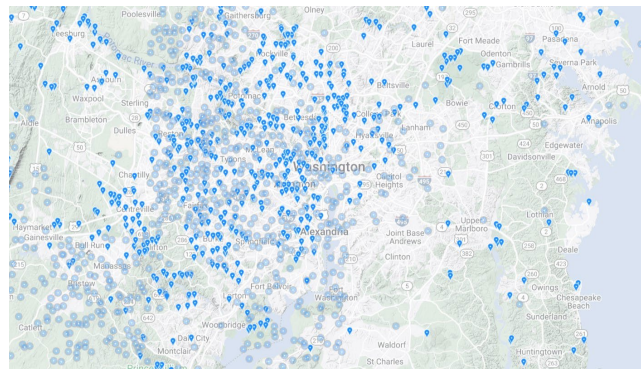


Background

- Most states have designated an official amphibian. DC has not. No other state has designated the Eastern Red-backed Salamander as its official amphibian.

Habitat: DC's Forests

- Eastern red-backed salamanders live across many parts of DC. Based on observations uploaded to iNaturalist, redbacks have been observed in Rock Creek Park, Fort Mahan Park, Fort Bunker Hill Park, Riggs Park, Glover Park, and Van Ness. Here is a map of iNaturalist (<https://www.inaturalist.org/home>) observations of *Plethodon cinereus* in the Washington DC area.



- Redbacks live in the approximately 10% of DC land occupied by forest habitat.¹

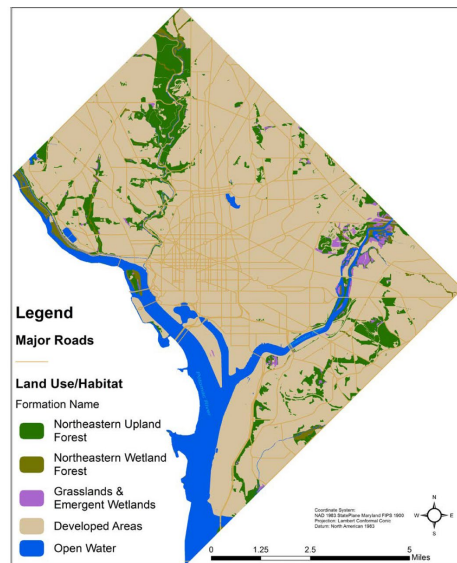
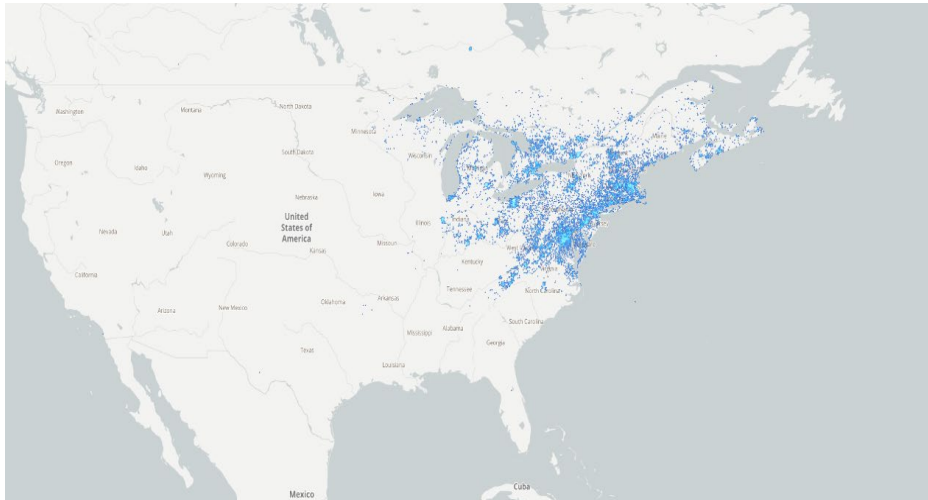


Figure 2 District of Columbia habitat formation map.

¹ DDOE 2015; <https://www.inaturalist.org/>.

(DDOE 2015: 40-1)

- Redbacks live in deciduous forests over a range extending from Minnesota and Ohio to North Carolina and across the northeastern United States to Canada.²
- Washington, DC's location is central to the redbacks' geographic range.



Plethodon cinereus range (<https://www.gbif.org/species/2431491>)

Abundance

- Red backs are incredibly abundant within their range.³ Below is an excerpt from the [AmphibiaWeb entry for *Plethodon cinereus*](#):

Abundance of *P. cinereus* has been estimated as high as 2.8 individuals/m² at Mountain Lake Biological Station in Virginia, where it probably reaches its highest density. This makes it the most abundant vertebrate species at the site, and more abundant than all birds and mammals combined (Hairston 1996; Jaeger et al. 2002a). At the Hubbard Brook Experimental Forest in New Hampshire, the estimate for the population density of *P. cinereus* is 2,583 individuals/hectare, which corresponds to a biomass of 1658 grams wet wt./hectare. This biomass is approximately 2.4 times that for all birds and approximately equal to that

² [USGS 2018; Smithsonian National Zoo and Conservation Biology Institute.](#)

³ Briggs, 2017; Burton, 1975.

for mice and shrews (Burton and Likens 1975). Throughout its range *P. cinereus* is an extremely abundant species.

- People don't know redbacks are around because they hide for a living. That is their business model. These mostly fossorial critters are adapted to living underground, emerging at night to hunt for bugs and worms on the forest floor.
- Because they make a habit of being hard to find, it is difficult to know how many there actually are. Recent research suggests density and biomass are even higher than previous estimates. Biologist Ray Semlitsch remarks:

When you use a robust estimate of abundance, you find that density and biomass estimates are higher...From that, we extended the information to biomass and nutrients. You can make an argument from these data that if they're producing more biomass and more nutrients than we thought, they may be more important, in terms of ecosystem function and energy flow, than previously thought.⁴

Plethodon cinereus are interesting!

- Eastern red-backed salamanders (scientific name *Plethodon cinereus*) are interesting! They are **terrestrial amphibians**. They are adapted to live on the forest floor. Red-backed salamanders do not have an aquatic larval phase. Young hatch from eggs as small adult salamanders. Biologists call this **direct development**. About one third of all amphibian species are characterized by direct development.
- Redbacks are **lungless**. They breathe oxygen through their skin. Redbacks belong to a family of lungless salamanders - Plethodon - believed to have evolved in the Appalachian Mountains between 60 million and 70 million years ago.⁵ Redbacks are symbols of the unique legacy of salamanders as the “jewels of the Appalachian mountains” - and of DC’s geography along the fall-line between Appalachian piedmont and coastal plain.
- Redbacks are **polymorphs**. They come in many different colors. The two most common varieties are so-called “red-backs” and “lead-backs.”

⁴ Biohabitats, 2015; Semlitsch et al 2014.

⁵ Clark, 2018.

- Redbacks are highly territorial and engage in many fascinating behaviors, such as **parental brooding**. Female salamanders protect the eggs and hatchlings.⁶ Parental brooding is actually pretty common among amphibian species. Many amphibian species are surprisingly good parents.

Conservation

- According to the Department of Energy & Environment (DOEE) District of Columbia Wildlife Action Plan (2015), *Plethodon cinereus* is a Tier 1 priority species, meaning they are considered likely to benefit from local habitat conservation.⁷
- Redback salamanders face a number of conservation threats, including: loss of healthy forest habitats, acid rain caused by air pollution, invasive species, deadly pathogens, and human ignorance.
- **Healthy Forests** - Redbacks are threatened by habitat loss.⁸ Healthy red back populations depend on healthy forest ecosystems.⁹ Casey Trees has pointed to risks to DCs mature tree canopy.¹⁰
- **Acid Rain** - Redbacks are sensitive to soil acidification caused by air pollution.
- **Invasive Species** - Redbacks are threatened by invasive species, such as invasive earthworms, which accelerate leaf litter decomposition and degrade the habitat for small arthropods that serve as red backs' prey.¹¹ People are increasingly aware that an invasion of so-called "jumping" worms threatens the balance of forest ecosystems across the US. Many are surprised to learn that half of earthworm species common in the US are themselves invasive species that altered forests in prior generations.¹²
- **Pathogens** - Redbacks and other salamander species may also be at risk of a deadly pathogen.¹³ If a pandemic wiped out salamander populations in the US, their absence would threaten the balance of forest ecosystems. What would happen if the terrestrial salamanders disappeared?

⁶ Briggs, 2017; Clark, 2018; [Amphibiaweb "P. cinereus"](#)

⁷ [DDOE 2015](#).

⁸ Clark 2018; [AmphibiaWeb "P. cinereus"](#)

⁹ Homyack 2009; Homyack and Kroll 2014; Welsh and Droege 2001.

¹⁰ Casey Trees 2022.

¹¹ Ziemba et al 2016.

¹² Fox 2022.

¹³ Mongabay Explores Podcast 2020.

- Globally amphibians are profoundly threatened. The work of Smithsonian [National Zoo Appalachian Salamander Lab and Jewels of the Appalachians exhibit](#), we learned about the research of conservation biologists like Brian Gratwicke. Here is a recent video:

Wild Hope - Episode 19: The Frog Ark

<https://www.wildhope.tv/episode/the-frog-ark/>

- Redbacks are under-appreciated in part because they are quietly resilient. They are still common even in urban forests compromised by pollution and invasives.
- Because they are so abundant, redbacks play vital roles in forest ecosystems, controlling invertebrate populations, contributing to leaf litter decomposition, and balancing soil fungi.¹⁴
- Biologist Richard Wyman writes:

More recent research has shown that the salamanders eat invertebrates that would eat the higher quality portion (lower carbon:nitrogen ratio) of the leaf litter first. By reducing the abundance of these invertebrates, leaves remaining in the presence of salamanders also hold more nitrogen. Thus salamander predation appears to influence carbon and nitrogen cycling....¹⁵

Why A Campaign

Our campaign to designate the redback salamander DC's official amphibian promotes public awareness of these elusive amphibians and the roles they play in healthy forest ecosystems. Prior citizen-led campaigns - like the campaign organized by local Girl Scouts to designate the brown bat DC's official mammal - help to illustrate the potential.

Martin Austermuhle. 2020. "The Brown Bat Is One Step Closer To Becoming D.C.'s Official Mammal" DCist. <https://dcist.com/story/20/01/28/should-the-brown-bat-become-d-c-s-official-mammal/>

¹⁴ Fisher-Reid 2021; Hickerson, Anthony and Walton 2017; Siddig, Ochs, and Ellison 2019.

¹⁵ Wyman 2003.

Alison Kaufman, parent of one Girl Scout involved in the brown bat campaign, described the potential benefits a campaign to designate red backs DC's official amphibian this way:

Learning about the salamanders, their environment, and their challenges; developing messages that kids want to convey and teach others about the critters and issues; working with local organizations and government to learn more and make them aware of your efforts--those all build the foundation for the kids internalizing this knowledge. And if you seek state amphibian designation, they will also learn about government processes and DC statehood issues AND feel like they have done something permanent. So there's a heap of good learning to be done here.

The campaign for the little brown bat took 2+ years. With an eye toward project planning, the next section outlines three campaign phases.

Phase 1: Educating and Organizing

Phase 2: Communicating, Connecting, Campaigning

Phase 3: Advocating

Campaign Phases

Phase 1: Educating and Organizing

→ Learn and help educate each other about red backs, terrestrial amphibians, forest ecosystems, and habitat conservation. Help organize field trips and outdoor learning experiences, introducing students to red backs and the important roles they play in DC's healthy forests.

◆ Powell Padres PTO Outdoor Club - Aventuras al Aire Libre

In Fall 2022, a group of Powell Elementary School parents began organizing an “outdoor activities committee” dedicated to promoting equitable outdoor learning. During spring 2023 and 2024 we organized a picnic at a Powell Padres Piney Branch picnic and a nature walk, both of which were unfortunately canceled due to weather conditions. These events drew significant interest from the Powell community, including spanish-first families. In spring 2024, for example, we developed a spanish/english Whatsapp group to organize activities.

◆ Piney Branch Field Trip - February 2023

Working with Powell's 2nd grade teachers, we organized a field trip to the Piney Branch - building on the 2nd grade science curriculum on maps and landforms. Here is a [short memo](#) and [pre-lesson](#) about the field trip.



Photos of Powell 2nd Grade Field Trip - February 2023 - by Jo Resnick Rosen

◆ **Indigenous Peoples' Day Piney Branch Pick-up - October 9, 2023**

In cooperation with Petworth resident James Salt, Rock Creek Songbirds Project director Steve Dryden, and the Rock Creek Conservancy, we organized a cleanup event for the areas of Rock Creek Park adjacent to 16th Street, Quincy Street/Alley, and Arkansas. This mature redback salamander was found under some soggy newspapers.



October 9, 2023 - Piney Branch section of Rock Creek Park

◆ **Aquatic Resources Education Center Field Trip - December 7-8, 2023**

Powell science teacher Ms. Moessner and others worked with Teresa Rodriguez, Chief of our Wildlife Management Branch, to organize a field trip for Powell Elementary School 3rd Graders visiting DC's [Aquatic Resources Education Center](#) to learn about salamanders and other amphibians that call the District of Columbia home. This field trip is aligned with the 3rd Grade science curriculum.



◆ **Outdoor Learning**

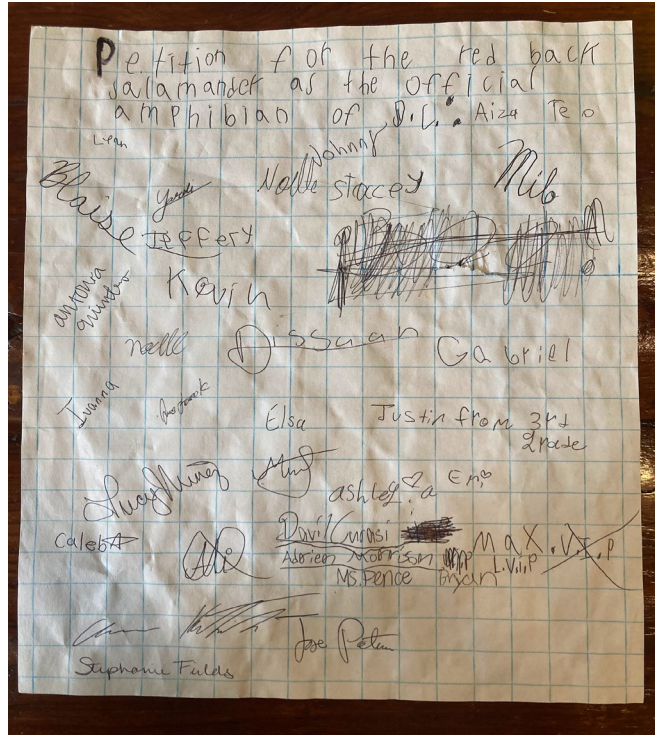
Organizing these activities made clear the many gaps in our practical knowledge when it comes to planning outdoor learning experiences. In October 2023, a group of Powell parents met by Zoom with Elana Mintz, of the Urban Adventure Squad (<https://www.urbanadventuresquad.org/>), a nonprofit organization that promotes outdoor learning. and has worked with a number of DCPS schools. We explored opportunities to help organize outdoor learning experiences, including after school enrichment.

Phase 2: Communicating, Connecting, Campaigning

- Engage, learn from, and elicit support from organizations and individuals. Invite local experts and partner organizations to talk at events and participate in nature walks.

- During 2023 and 2024, we have worked on developing creative ways to communicate about the campaign. Our model was the Girl Scouts:
 - ◆ During their campaign for the brown bat, the Girl Scouts made posters and signs with a variety of messages and put them up at school. They developed factsheets and handed them out at their cookie booth. Parent Alison Kaufman remembers, “They especially got into making handouts about “bat myths” that they could then bust with THE FACTS. (Kids love telling adults when they’re wrong!)”

- After learning about petitions during the 3rd grade units on democracy, students circulated and signed this, “Petition for the red back salamander as the Official DC amphibian.”



Petition signed by Powell students and teachers, January 2024.

- A college student volunteer suggested a t-shirt design like this, which is brilliant though the colors should be more brown/maroon/leaf-litter to gray/gray/black.



- Max's uncle Ross drew this red-backed salamander. We printed and handed out over a thousand stickers with this print.



→ During the May 2024 Amphibian Week kick-off at the National Zoo, Brian Gratwicke printed special DC redback salamander t-shirts. This was an unbelievably memorable experience. Brian told us he learned to screen print because it creates memorable experiences for kids.



→ Brian Gratwicke also made the images he created for the t-shirt design available with public domain licenses.

<https://flic.kr/p/2pHNU9C> <https://flic.kr/p/2pHGci4>

→ Inspired by Brian's generosity, we have learned basic silk screen printing.



→ Borrowing an idea from the DC Bike Party, we are planning to organize t-shirt printing parties to distribute DC Red-backed salamander t-shirts.

→ We are working to expand the list of partners and organizations who might be willing to give testimony before the City Council in support of the designation.

Spreading the Word

→ In order to spread the word and broaden interest in the red-backed salamander, we have worked with DCPS communications and others to identify journalists and news organizations interested in telling the story.

→ WTOP Radio breaks the story!

Dick Uliano, "DC Council considers naming city's official amphibian." WTOP. May 29, 2024

<https://wtop.com/dc/2024/05/dc-council-considers-naming-official-amphibian/>

→ Jessica Ruf, “Meet the Kids Behind the Movement to Designate an Official DC Amphibian” *Washingtonian*. June 4, 2024.

<https://www.washingtonian.com/tag/dc-official-amphibian/>

Phase 3: Advocating, Working with DC Council

Ceremonial Resolution

→ Beginning in March 2024, working with Ward 4 Councilmember Janeese Lewis George, Powell Elementary School 3rd grade teachers and students dedicated part of units on DC government to developing "whereas" statements for inclusion in a **ceremonial resolution** recognizing DC's redbacks.



→ Responding to student interest, Powell teacher Ms. Erica Pence integrated work on the ceremonial resolution with 3rd Grade units on DC government. Emily Tatro Cassometus, Senior Counsel to Councilmember Lewis George, visited with students and described how the DC Council passes ceremonial resolutions. A number of parents have supported the effort - working particularly through the Powell Padres Aventuras al Aire Libre Committee.

- Working in partnership with 3rd graders at Powell Elementary School, DC Councilmember Janeese Lewis George introduced a ceremonial resolution that was unanimously adopted by the DC Council on May 7, 2024, "To recognize, honor, and celebrate the Red-backed Salamander, *Plethodon cinereus*, and other 24 amphibians that call the District of Columbia home, and declare May 5 to May 11, 2024 25 'Amphibian Week' in the District of Columbia"

<https://lims.dccouncil.gov/Legislation/CER25-0218>

Legislation Introduced!

- Councilmember Janeese Lewis George also introduced legislation, "The Red-backed Salamander Official State Amphibian Designation Act of 2024," designating the red-backed salamander, *Plethodon cinereus*, DC's Official State Amphibian.

<https://lims.dccouncil.gov/Legislation/B25-0811>

Councilmember Lewis George and Chair Phil Mendelson visit Powell!

- On June 13, Ward 4 Councilmember Janeese Lewis George and DC Council Chairman Phil Mendelson visited Powell Elementary to celebrate the work of 3rd Graders on the ceremonial resolution adopted by the DC Council on May 7, 2024, recognizing DC's Red-backed Salamander and declaring May 5 to May 11, 2024 "Amphibian Week" in DC.
- Councilmember Lewis George commended student research and advocacy, and she asked students to help pass legislation she introduced, "The Red-backed Salamander Official State Amphibian Designation Act of 2024," designating the red-backed salamander, *Plethodon cinereus*, DC's Official State Amphibian.
- Chairman Mendelson told students he would schedule a fall hearing on the bill and encouraged them to testify, cautioning that there are other amphibians in DC and that he personally has an affinity for toads.



A Condensed Pitch

Seven Reasons To Recognize DCs Redbacks

Draft Slide Presentation

1. Most states have designated an official amphibian. DC has not.
2. No other states have recognized the eastern red-backed salamander as official amphibian.
3. Redbacks are incredibly abundant across DC and over a wide range of North America.
4. Redbacks are important and under-appreciated.
5. Redbacks are remarkable.
6. Redback conservation is a critical priority.
7. We can help conserve DC's redback habitat.

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