



## Amphibians

## Resource Brief

### Importance

Amphibians are an important part of aquatic and land ecosystems in the National Capital Region (NCR) and are a food source for many fish, reptile, bird, and mammal species. In turn, amphibians eat a wide variety of vertebrate and invertebrate species

Amphibians (frogs, toads, and salamanders) also serve as indicators of environmental change due to their sensitivity to factors such as pollution, drought, habitat loss, and disease. These factors may cause changes in amphibian distribution, abundance, species richness, and increases in both diseases and malformations.

### Inventory & Monitoring

The National Capital Region Network (NCRN) completed baseline inventories of amphibians (and reptiles) for most NCR parks in 2004 and since 2005, has monitored both wetland and stream amphibians in collaboration with a team from the U.S. Geological Survey's Northeast Amphibian Research and Monitoring Initiative. The purpose of current monitoring is to determine long-term changes in regional amphibian species diversity.

Stream and wetland habitats at C&O Canal National Historical Park (CHOH) and Rock Creek Park (ROCR) have been monitored continuously from 2005 to 2010. Streams in Prince William Forest Park (PRWI) were monitored in 2006, 2008, and 2009, and Manassas National Battlefield Park wetlands have been monitored continuously from 2007 to 2010.

Wetlands are visited four times a year—twice in spring to do visual surveys for egg masses and adult amphibians and twice in summer to dip-net for larval amphibians. Streams are visited twice each year—leaf litter is searched and cover objects are turned to find adult salamanders. Any amphibian malformations are recorded.

Habitat quality is also evaluated to determine its effect on amphibian distributions. This includes water temperature, water conductivity, percent canopy cover, aquatic vegetation, and water depth. Wetlands are also measured to determine their size and how long they hold water (hydroperiod) and stream sites

are evaluated for proximity to the stream origin.

### Results

Amphibian populations in the region are currently stable. Monitoring in wetlands in the National Capital Region has documented twelve species of frogs, toads, and salamanders. (See chart.) In general results show that the more permanent the wetland, the more species are found.

Four species of stream salamanders have been observed in stream sampling. Results show that the proximity of the stream origin to the park boundary or a road did not result in lower population numbers. In 2005, monitoring discovered the presence of *Batrachochytrium dendrobatidis* (Bd chytrid fungus) in CHOH amphibians. Bd chytrid fungus is a disease of growing interest in amphibian decline research that can cause amphibian malformations and mortalities. Monitoring in CHOH from 2005 to present however shows steady amphibian population levels.



An adult green frog in a wetland at C&O Canal National Historical Park.

### Amphibians Monitored

Common Name (Scientific name)	Present in Wetlands			Present in Streams		
	C&O Canal	Manassas	Rock Creek	C&O Canal	Prince William	Rock Creek
American bullfrog ( <i>Lithobates catesbeianus</i> )	x					
American toad ( <i>Anaxyrus americanus</i> )	x	x				
dusky salamander ( <i>Desmognathus fuscus</i> )				x	x	x
eastern newt ( <i>Notophthalmus viridescens</i> )	x					
four-toed salamander ( <i>Hemidactylium scutatum</i> )	x					
gray treefrog ( <i>Hyla versicolor/ chrysoscelis</i> )	x					
green frog ( <i>Rana clamitans</i> )	x	x				
long-tailed salamander ( <i>Eurycea longicauda</i> )				x	x	x
marbled salamander ( <i>Ambystoma opacum</i> )	x	x	x			
northern two-lined salamander ( <i>Eurycea bislineata</i> )				x	x	x
pickerel frog ( <i>Rana palustris</i> )	x					
red salamander ( <i>Pseudotriton ruber</i> )				x		
southern leopard frog ( <i>Rana sphenoccephala</i> )	x					
spring peeper ( <i>Pseudacris crucifer</i> )	x					
spotted salamander ( <i>Ambystoma maculatum</i> )	x	x	x			
wood frog ( <i>Lithobates sylvatica</i> )	x	x	x			