



P E N N S Y L V A N I A
W I L D L I F E A C T I O N P L A N

2015–2025

Species of Greatest Conservation Need Species Accounts

Appendix 1.4C-Amphibians

- *Amphibian Species of Greatest Conservation Need*
- *Maps: Physiographic Provinces and HUC Watersheds*
- *Species Accounts (Click species name below or bookmark to navigate to species account)*

AMPHIBIANS

Eastern Hellbender

Mudpuppy

Jefferson Salamander

Blue-spotted Salamander

Marbled Salamander

Green Salamander

Northern Ravine Salamander

Eastern Mud Salamander

Eastern Spadefoot

Fowler's Toad

Northern Cricket Frog

Cope's Gray Treefrog

Mountain Chorus Frog

Upland Chorus Frog

New Jersey Chorus Frog

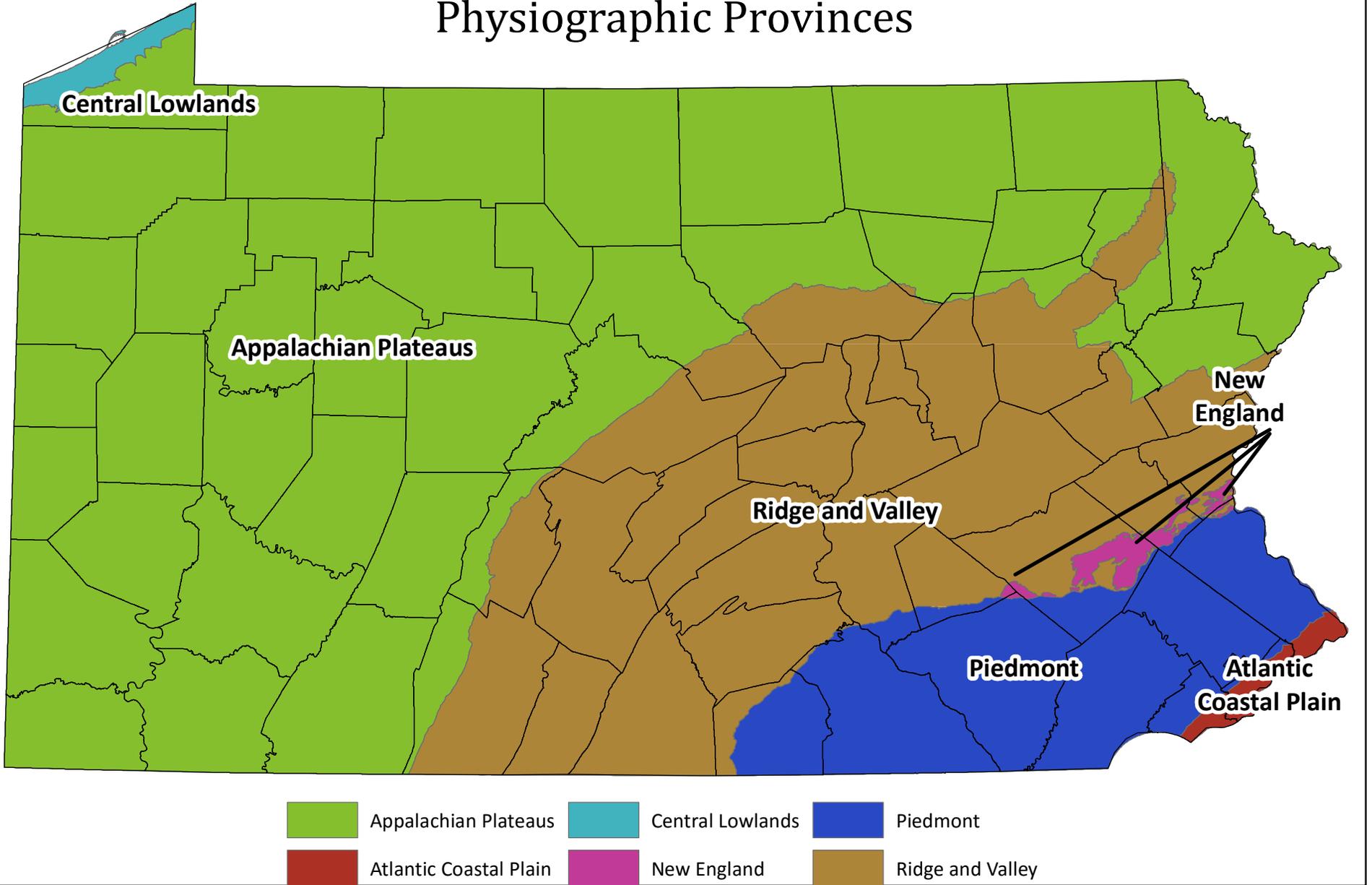
Western Chorus Frog

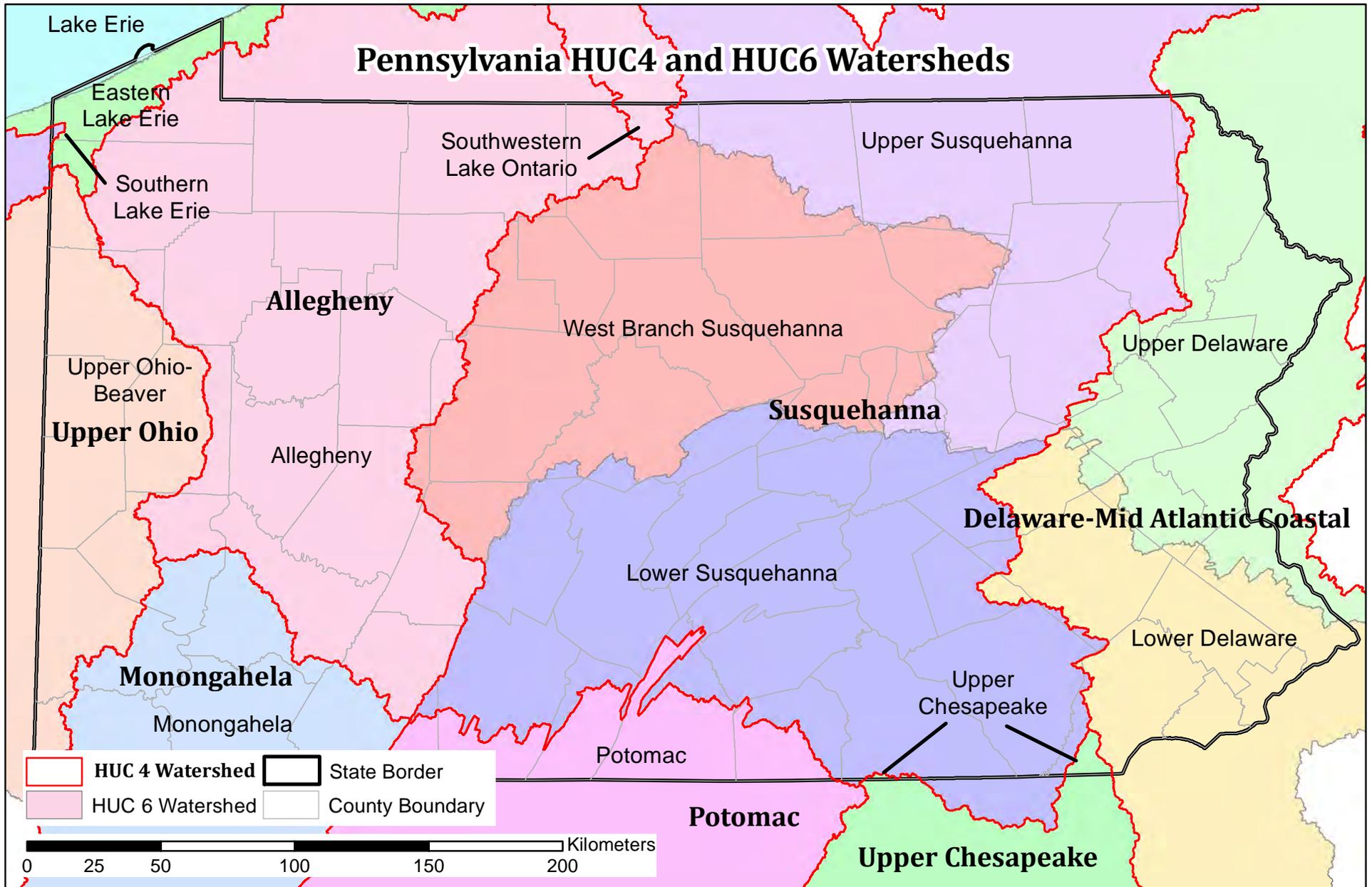
Northern Leopard Frog

Southern Leopard Frog

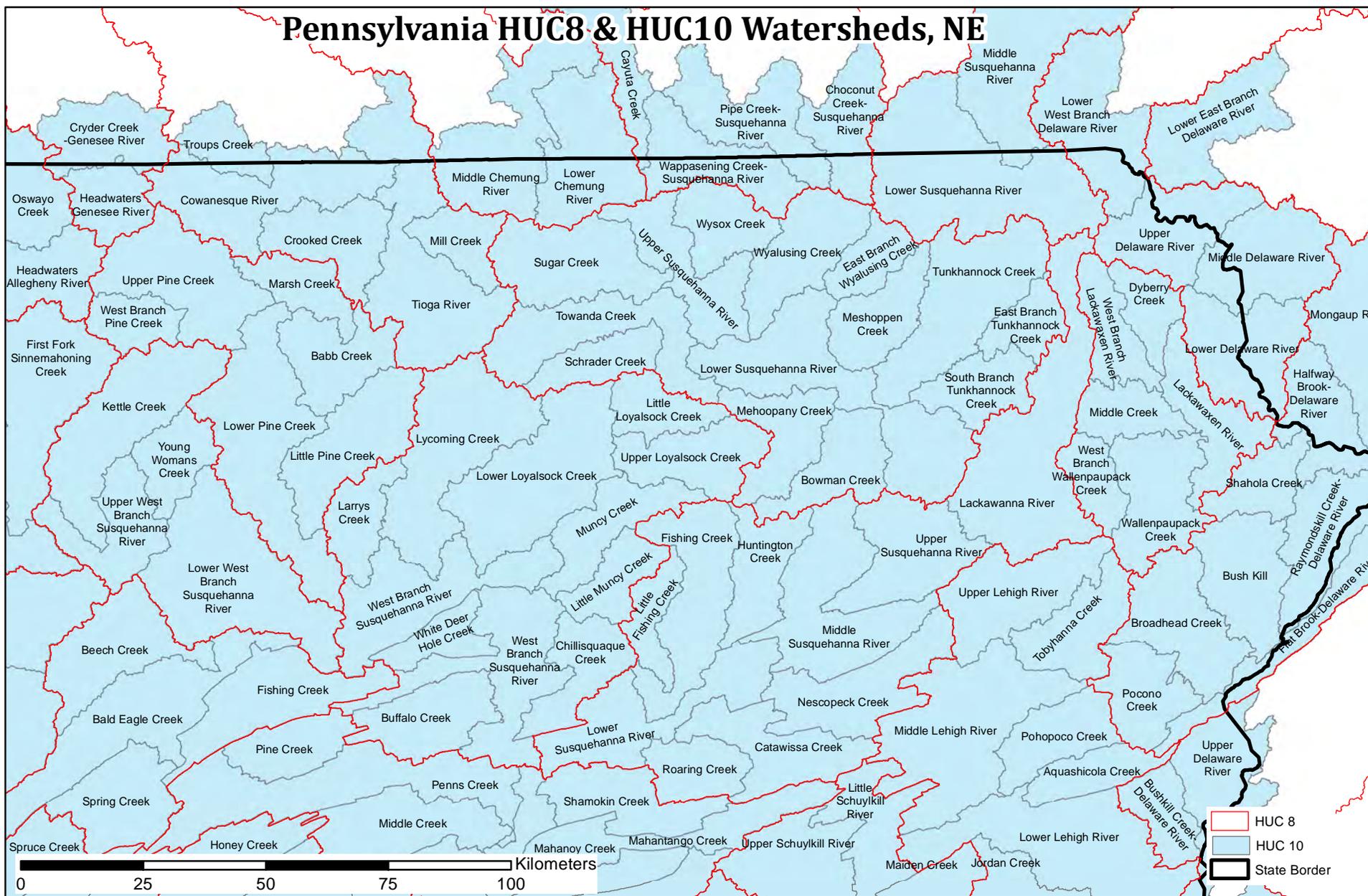
The following Physiographic Province and HUC Watershed maps are presented here for reference with conservation actions identified in the species accounts. Species account authors identified appropriate Physiographic Provinces or HUC Watershed (Level 4, 6, 8, 10, or statewide) for specific conservation actions to address identified threats. HUC watersheds used in this document were developed from the Watershed Boundary Dataset, a joint project of the U.S. Dept. of Agriculture-Natural Resources Conservation Service, the U.S. Geological Survey, and the Environmental Protection Agency.

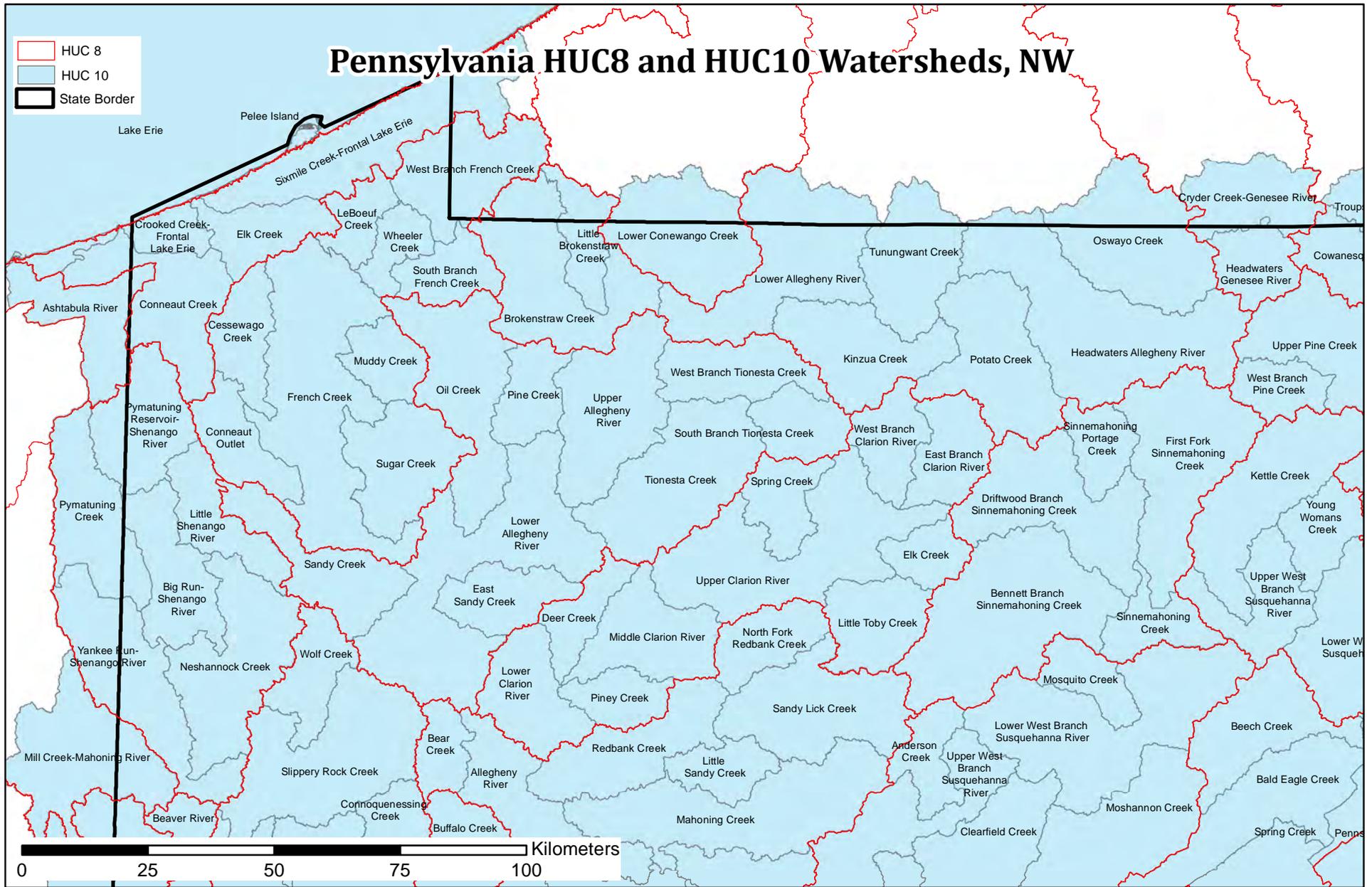
Physiographic Provinces



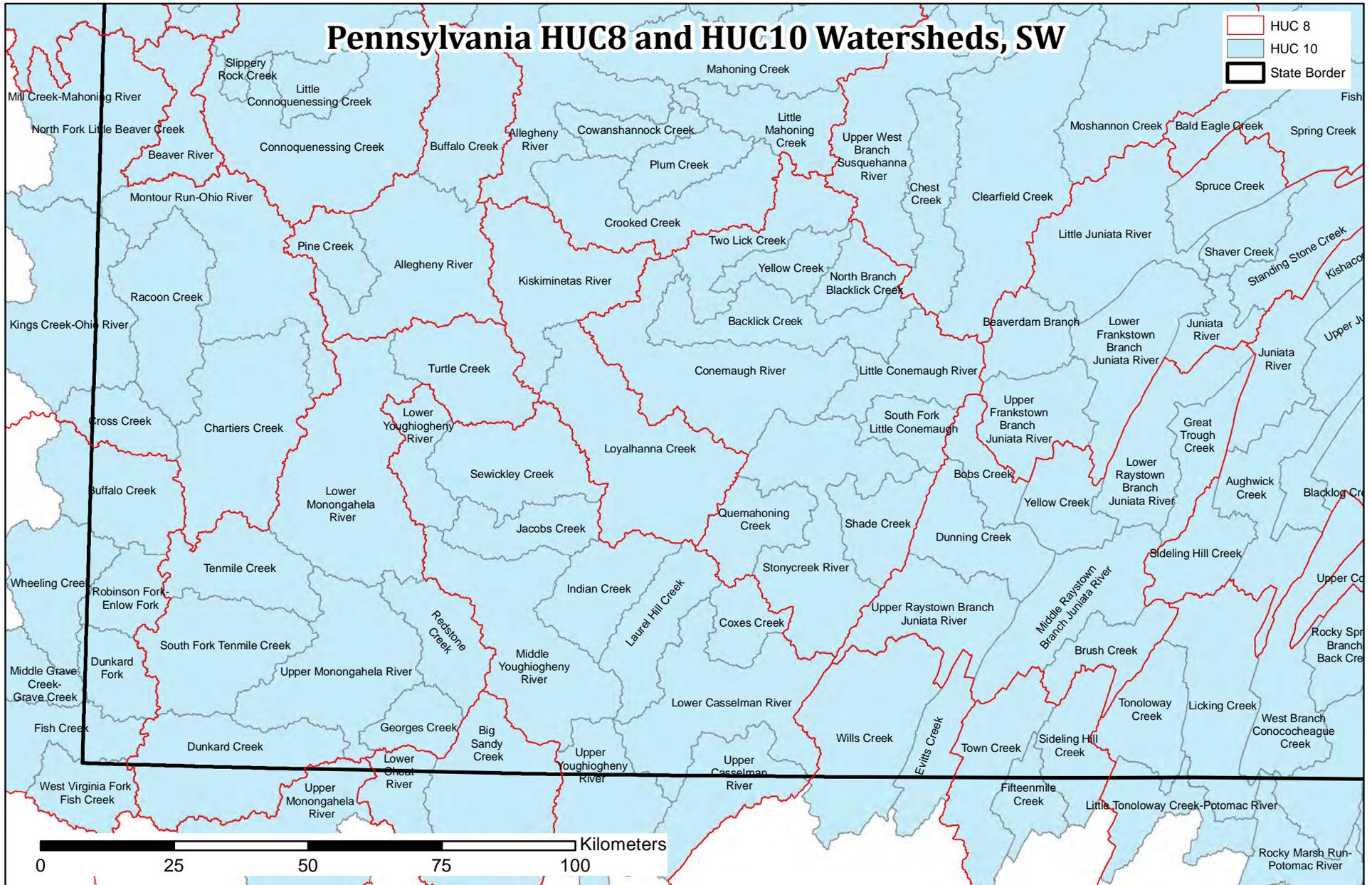


Pennsylvania HUC8 & HUC10 Watersheds, NE





Pennsylvania HUC8 and HUC10 Watersheds, SW



Eastern Hellbender

Cryptobranchus alleganiensis alleganiensis

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez

CONSERVATION PROFILE

Global Rank	G3 Vulnerable	State Rank	S2S3
IUCN Red List	NT Near Threatened	PA Legal Status	Not Listed
Northeast Region	Very High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Unknown

Conservation Goal:

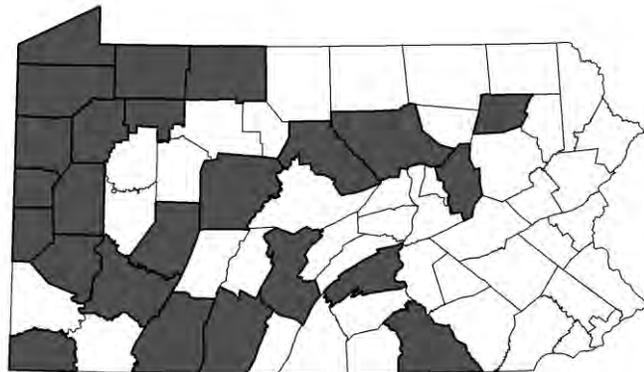
Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Medium Rivers	
Habitat	Cool, Medium River	

Specific Habitat Requirements:

Good quality, cool to cold, moderate to large streams and rivers with abundant rock cover (shale) and abundant crayfish populations.



■ Documented Presence

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Sedimentation and increased runoff degrade water quality and habitat.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and compile survey data from available sources.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	2
Action Location: HUC4 Watershed: Allegheny, Susquehanna, U. Ohio, Monongahela				

IUCN Threat: 2.0 Agriculture and Aquaculture

Specific Threat: Sedimentation and chemical runoff degrade water quality and habitat.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and compile survey data from available sources.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	2
Action Location: HUC4 Watershed: Allegheny, Susquehanna, U. Ohio, Monongahela				

IUCN Threat: 3.0 Energy Production and Mining

Specific Threat: Water extraction from new and existing development can introduce pathogens, impinge eggs and juveniles, and reduce water levels.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and compile survey data from available sources.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	2
Action Location: HUC4 Watershed: Allegheny, Susquehanna, U. Ohio, Monongahela				

THREATS AND ACTIONS

IUCN Threat: 4.0 Transportation and Service Corridors

Specific Threat: Sedimentation and increased runoff degrade water quality and habitat.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and compile survey data from available sources.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	2
Action Location: HUC4 Watershed: Allegheny, Susquehanna, U. Ohio, Monongahela				

IUCN Threat: 5.0 Biological Resource Use

Specific Threat: Accidental bycatch from fisherman can lead to mortality.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 8.0 Outreach Publish eastern hellbender and mudpuppy educational materials in the PA Angler & Boater and for distribution.	Develop educational materials for anglers.	Number of articles.	Creel surveys.	2
Action Location: HUC4 Watershed: Allegheny, Susquehanna, U. Ohio, Monongahela				
Associated Species: Mudpuppy.				

IUCN Threat: 7.0 Natural System Modifications

Specific Threat: Impoundments destroy natural habitats and create dispersal barriers.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and compile survey data from available sources.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	2
Action Location: HUC4 Watershed: Allegheny, Susquehanna, U. Ohio, Monongahela				

THREATS AND ACTIONS

IUCN Threat: 8.0 Invasive and Other Problematic Species and Genes

Specific Threat: Disease potentially causes mortality or inhibits reproduction.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and compile survey data from available sources.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3
Action Location: HUC4 Watershed: Allegheny, Susquehanna, U. Ohio, Monongahela				

IUCN Threat: 9.0 Pollution

Specific Threat: Sedimentation and increased runoff degrade water quality and habitat.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and compile survey data from available sources.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3
Action Location: HUC4 Watershed: Allegheny, Susquehanna, U. Ohio, Monongahela				

IUCN Threat: 11.0 Climate Change and Severe Weather

Specific Threat: Increased flooding can degrade habitat quality and wipe out colonies.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and compile survey data from available sources.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3
Action Location: HUC4 Watershed: Allegheny, Susquehanna, U. Ohio, Monongahela				

RESEARCH NEEDS

1. Conduct landscape level analysis of occupied-and-declining, and unoccupied streams.
2. Develop a monitoring protocol.
3. Evaluate response to surveyor-induced habitat disturbances (e.g. rock flipping).

SURVEY NEEDS

2. Continue species occurrence surveys to confirm sites and search for additional records in order to complete status assessment (assess historic sites, gap areas).
1. Collect e-DNA samples across range in PA.
3. Compilation of current and historic data into a single database.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Mudpuppy

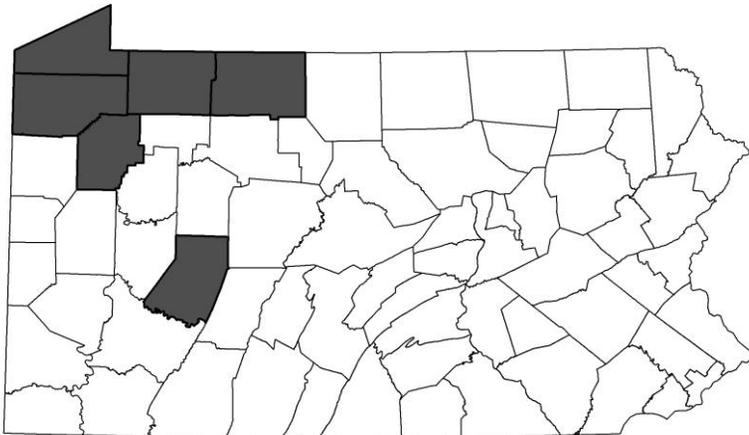
Necturus maculosus

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S3
IUCN Red List	LC Least Concern	PA Legal Status	Not Listed
Northeast Region	High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Unknown

Conservation Goal:

Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Medium Rivers	Headwaters and Creeks
Habitat	Warm, Medium River	High Gradient, Cold, Headwaters and Creeks

Specific Habitat Requirements:

Lotic and lentic habitats.

THREATS AND ACTIONS

IUCN Threat: 5.0 Biological Resource Use

Specific Threat: Accidental bycatch from anglers can lead to mortality.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 8.0 Outreach Publish eastern hellbender and mudpuppy educational materials in the PA Angler & Boater and for distribution.	Develop educational materials for anglers.	Number of articles.	Creel surveys.	2
Action Location: HUC6 Watershed: Allegheny, U. Ohio-Beaver, E. Lake Erie, Monongahela				
Associated Species: Eastern hellbender				

IUCN Threat: 3.0 Energy Production and Mining

Specific Threat: Water extraction from new and existing development can introduce pathogens, impinge eggs and juveniles, and reduce water levels.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and compile survey data from available sources.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3
Action Location: HUC6 Watershed: Allegheny, U. Ohio-Beaver, E. Lake Erie, Monongahela				

THREATS AND ACTIONS

IUCN Threat: 11.0 Climate Change and Severe Weather

Specific Threat: Increased flooding can degrade habitat quality and wipe out colonies.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and compile survey data from available sources.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: HUC6 Watershed: Allegheny, U. Ohio-Beaver, E. Lake Erie, Monongahela

RESEARCH NEEDS

- 1. None

SURVEY NEEDS

- 1. Conduct targeted surveys across their range.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Jefferson Salamander

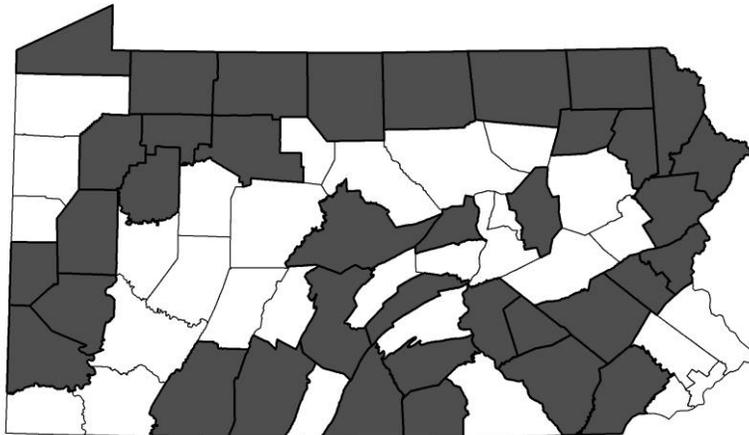
Ambystoma jeffersonianum

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S3
IUCN Red List	LC Least Concern	PA Legal Status	Not Listed
Northeast Region	Very High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Relatively Stable (<=10% change)

Conservation Goal:

Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Northern Hardwood & Conifer	
Habitat	Appalachian (Hemlock)-Northern Hardwood Forest	

Specific Habitat Requirements:

Vernal pools in mixed deciduous forests; primarily upland sites.

THREATS AND ACTIONS

IUCN Threat: 5.0 Biological Resource Use

Specific Threat: Poaching.

Action	Objective	Measure	Monitoring	Priority
<p>TRACS Action 7.0 Law enforcement</p> <p>Instruct all new officers (new officer classes) and update experienced officers in anti-poaching (once every 5 years).</p> <p>Action Location: Physiographic Province: Statewide</p>	<p>Train and support law enforcement in anti-poaching efforts.</p>	<p>Number of trainings.</p>	<p>Determine officer readiness through tests at the end of training.</p>	<p>1</p>

Associated Species: All native amphibian and reptile species, especially those deemed vulnerable to the black market trade.

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Habitat loss and fragmentation from residential and commercial development.

Action	Objective	Measure	Monitoring	Priority
<p>TRACS Action 9.0 Planning</p> <p>Conduct targeted surveys across their range and promote vernal pool conservation strategies.</p> <p>Action Location: Physiographic Province: Statewide</p>	<p>Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines. Encourage implementation of existing vernal pool BMPs on private lands.</p>	<p>Number of blocks surveyed (PARS).</p>	<p>PARS annual report of activities.</p>	<p>3</p>

Associated Species: Vernal pool amphibians.

THREATS AND ACTIONS

IUCN Threat: 3.0 Energy Production and Mining

Specific Threat: Habitat loss and fragmentation from industrial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and promote vernal pool conservation strategies.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines. Encourage implementation of existing vernal pool BMPs on private lands.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Statewide

Associated Species: Vernal pool amphibians.

IUCN Threat: 4.0 Transportation and Service Corridors

Specific Threat: Roads fragment habitats, create corridors for invasive species spread, disrupt movement corridors, and alter site microclimate.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and promote vernal pool conservation strategies.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines. Encourage implementation of existing vernal pool BMPs on private lands.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Statewide

Associated Species: Vernal pool amphibians.

THREATS AND ACTIONS

IUCN Threat: 5.0 Biological Resource Use

Specific Threat: Habitat loss and fragmentation from forest management practices.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and promote vernal pool conservation strategies.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines. Encourage implementation of existing vernal pool BMPs on public and private lands.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Statewide

Associated Species: Vernal pool amphibians.

RESEARCH NEEDS

- 1. None

SURVEY NEEDS

- 1. Conduct targeted surveys across their range.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Blue-spotted Salamander

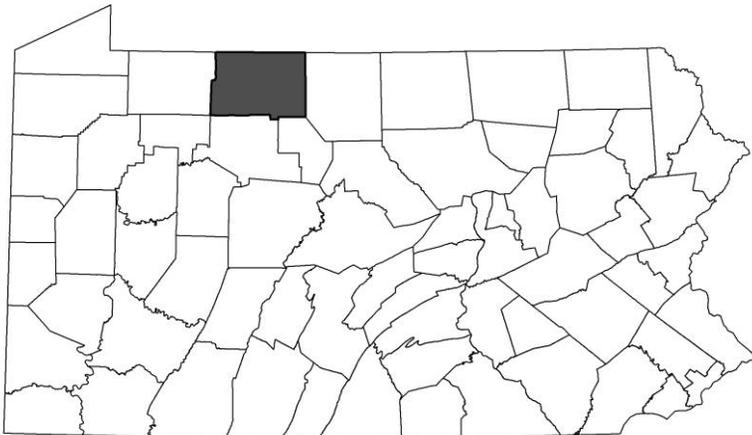
Ambystoma laterale

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Andy Shiels



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S1
IUCN Red List	LC Least Concern	PA Legal Status	Endangered
Northeast Region	Very High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Unknown

Conservation Goal:

Protect and maintain known blue-spotted salamander populations.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Northern Swamp	
Habitat	North-Central Appalachian Acidic Swamp	

Specific Habitat Requirements:

Forested floodplain wetlands and red maple swamps.

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Residential and commercial development destroys, fragments, and simplifies habitats.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.	To prevent development related impacts to blue-spotted salamander populations.	Numbers of consultations that protect blue-spotted salamander habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1

Action Location: Physiographic Province: Appalachian Plateaus, Ridge and Valley

Associated Species: Marbled salamander, northern leopard frog, spotted turtle, ribbonsnake, rare mussels, eastern hellbender, mudpuppy

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Residential and commercial development destroys, fragments, and simplifies habitats.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.	To prevent development related impacts to blue-spotted salamander populations.	Numbers of consultations that protect blue-spotted salamander habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1

Action Location: Physiographic Province: Appalachian Plateaus, Ridge and Valley

Associated Species: Marbled salamander, northern leopard frog, spotted turtle, ribbonsnake, rare mussels, eastern hellbender, mudpuppy

THREATS AND ACTIONS

IUCN Threat: 3.0 Energy Production and Mining

Specific Threat: Habitat destruction, fragmentation, and/or simplification resulting from natural resource extraction and exploration, including infrastructure development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans.	To prevent energy extraction/development related impacts to blue-spotted salamander populations.	Numbers of consultations that protect blue-spotted salamander habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1

Action Location: Physiographic Province: Appalachian Plateaus, Ridge and Valley

Associated Species: Marbled salamander, northern leopard frog, spotted turtle, ribbonsnake, rare mussels, eastern hellbender, mudpuppy

IUCN Threat: 4.0 Transportation and Service Corridors

Specific Threat: Roads contribute to direct mortality and fragment habitat.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Request BMPs such as amphibian tunnels when roads are reconstructed. Additionally, conduct environmental review screening to review and regulate and new roads.	To prevent road mortality and fragmentation via reactive planning.	Numbers of consultations that protect blue-spotted salamander habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1

Action Location: Physiographic Province: Appalachian Plateaus, Ridge and Valley

Associated Species: Marbled salamander, northern leopard frog, spotted turtle, ribbonsnake, rare mussels, eastern hellbender, mudpuppy

THREATS AND ACTIONS

IUCN Threat: 5.0 Biological Resource Use

Specific Threat: Logging may destroy required upland forested habitat.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 1.0 Coordination and Administration Coordinate BMPs with the PGC that include no logging within 300-ft. of breeding habitats, and selective logging that leaves a more intact canopy from 300-1,000 ft.	Plans and coordination executed for 100% of PGC holdings with blue-spotted salamanders.	Management plan created for the PGC and adopted by that agency.	Annual field visit two public lands for monitoring.	1

Action Location: Physiographic Province: Appalachian Plateaus

Associated Species: The action will benefit other seasonal pool breeding amphibians that specifically inhabit forested seasonal pool landscapes.

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Recreational use may degrade habitat and provide access to facilitate poaching at sites in McKean and Warren Counties.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 1.0 Coordination and Administration Coordinate with public landowners (PGC) for species-specific management practices and increased awareness of Wildlife Conservation Officers for poaching threats.	To avoid oversue of habitats and instruct PGC and PFBC WCOs.	Annual site monitoring, contact with PFBC & PGC WCOs and deputies in region.	Annual field visit two public lands for monitoring.	2

Action Location: Physiographic Province: Appalachian Plateaus

Associated Species: The entire community should benefit from this monitoring, though no additional SGCN are in the area.

THREATS AND ACTIONS

IUCN Threat: 2.0 Agriculture and Aquaculture

Specific Threat: Conversion of upland habitats results in erosion, sedimentation, and herbicide and nutrient loads due to runoff.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Engage adjacent landowners and attempt to get agreement for even modest vegetated buffers between crop fields and habitats.	Reverse sedimentation, create vegetative buffer to absorb runoff waters.	Contact the ±15 landowners with agricultural lands abutting blue-spotted salamander habitats.	All landowners contacted.	2

Action Location: Physiographic Province: Appalachian Plateaus, Ridge and Valley

Associated Species: Marbled salamander, northern leopard frog, spotted turtle, ribbonsnake, rare mussels, eastern hellbender, mudpuppy

IUCN Threat: 6.0 Human Intrusions and Disturbance

Specific Threat: Recreational use may degrade habitat and provide access to facilitate poaching at sites in McKean and Warren Counties.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 1.0 Coordination and Administration Coordinate with public landowners (PGC) for species-specific management practices and increased awareness of WCOs for poaching threats.	To avoid overuse of habitats and instruct PGC and PFBC WCOs.	Annual site monitoring, contact with PFBC & PGC WCOs and deputies in region.	Annual field visit two public lands for monitoring.	2

Action Location: Physiographic Province: Appalachian Plateaus

Associated Species: The entire community should benefit from this monitoring, though no additional SGCN are in the area.

RESEARCH NEEDS

1. None

SURVEY NEEDS

1. Continue species occurrence surveys to confirm sites and search for additional records.
2. Develop a long-term monitoring program to include assessments of each subpopulations as well as important parameters of suitable habitat.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
Informal annual spot-checking monitoring	Pennsylvania Fish and Boat Commission		

Marbled Salamander

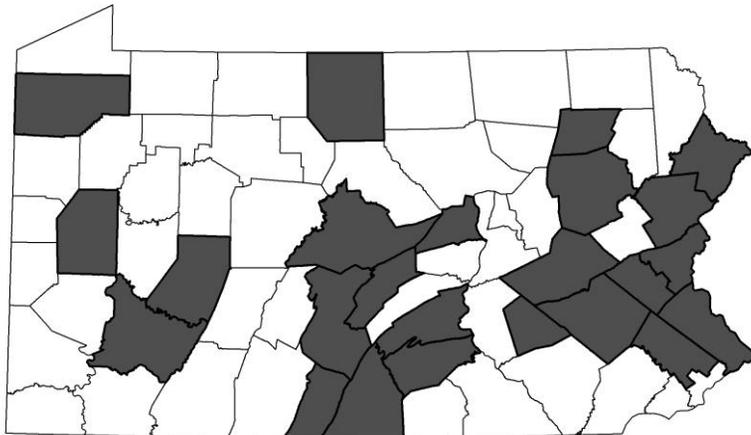
Ambystoma opacum

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S3
IUCN Red List	LC Least Concern	PA Legal Status	Not Listed
Northeast Region	High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Relatively Stable (<=10% change)

Conservation Goal:

Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Central Oak-Pine	
Habitat	Northeastern Interior Dry-Mesic Oak Forest	

Specific Habitat Requirements:

Vernal pools in mixed deciduous forests; both upland and floodplain sites.

THREATS AND ACTIONS

IUCN Threat: 5.0 Biological Resource Use

Specific Threat: Removal of individuals from the population.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 7.0 Law enforcement Instruct all new officers (new officer classes) and update experienced officers in anti-poaching (once every 5 years).	Train and support law enforcement in anti-poaching efforts.	Number of trainings.	Determine officer readiness through tests at the end of training.	1
Action Location: Physiographic Province: Appalachian Plateaus, Piedmont, Ridge and Valley				
Associated Species: All native amphibian and reptile species, especially those deemed vulnerable to the black market trade.				

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Habitat loss and fragmentation from residential and commercial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and promote vernal pool conservation strategies.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines. Encourage implementation of existing vernal pool BMPs on public and private lands.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3
Action Location: Physiographic Province: Appalachian Plateaus, Piedmont, Ridge and Valley				
Associated Species: Vernal pool amphibians				

THREATS AND ACTIONS

IUCN Threat: 3.0 Energy Production and Mining

Specific Threat: Habitat loss and fragmentation through residential and commercial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and promote vernal pool conservation strategies.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines. Encourage implementation of existing vernal pool BMPs on public and private lands.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus, Piedmont, Ridge and Valley

Associated Species: Vernal pool amphibians

IUCN Threat: 4.0 Transportation and Service Corridors

Specific Threat: Roads fragment habitats, create corridors for invasive species spread, disrupt movement corridors, and alter site microclimate.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and promote vernal pool conservation strategies.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines. Encourage implementation of existing vernal pool BMPs on public and private lands.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus, Piedmont, Ridge and Valley

Associated Species: Vernal pool amphibians

THREATS AND ACTIONS

IUCN Threat: 5.0 Biological Resource Use

Specific Threat: Habitat loss and fragmentation through residential and commercial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range and promote vernal pool conservation strategies.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines. Encourage implementation of existing vernal pool BMPs on public and private lands.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus, Piedmont, Ridge and Valley

Associated Species: Vernal pool amphibians

RESEARCH NEEDS

- 1. None

SURVEY NEEDS

- 1. Conduct targeted surveys across their range.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Green Salamander

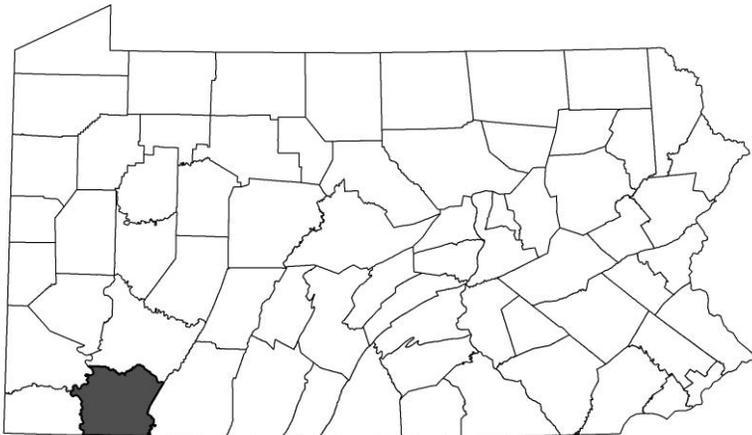
Aneides aeneus

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G3 Vulnerable	State Rank	S2
IUCN Red List	NT Near Threatened	PA Legal Status	Threatened
Northeast Region	Very High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Decline of 11 - 40%

Conservation Goal:

Protect and maintain known green salamander populations and manage habitat connectivity corridors.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Northern Hardwood & Conifer	Central Oak-Pine
Habitat	Appalachian (Hemlock)-Northern Hardwood Forest	Central Appalachian Pine-Oak Rocky Woodland

Specific Habitat Requirements:

Moist crevices in sandstone outcrops and ledges as well as surrounding forest floor and trees.

THREATS AND ACTIONS

IUCN Threat: 9.0 Pollution

Specific Threat: Environmental pollutants such as acid deposition are suspected to negatively alter habitats for the green salamander.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 0.0 No Action Specified	N/A	N/A	N/A	
No Action Specified				
Action Location: Physiographic Province: Appalachian Plateaus				

IUCN Threat: 11.0 Climate Change and Severe Weather

Specific Threat: Climate change may alter crevice and outcrop microclimates, exceeding the suitable parameters for green salamanders.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 0.0 No Action Specified	N/A	N/A	N/A	
No Action Specified				
Action Location: Physiographic Province: Appalachian Plateaus				

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Development can destroy colonies and alter the microclimate of surrounding habitats.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance	To prevent development related impacts to green salamander populations.	Numbers of consultations that protect green salamander habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1
Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.				
Action Location: Physiographic Province: Appalachian Plateaus				
Associated Species: Allegheny Woodrat, Timber Rattlesnake.				

THREATS AND ACTIONS

IUCN Threat: 2.0 Agriculture and Aquaculture

Specific Threat: Reduction of forest buffer zones around outcrops can alter the microclimate of crevices or make colonies more susceptible to times of drought.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 1.0 Coordination and Administration Coordinate with state partners to properly manage habitat around known green salamander colonies.	Develop management plans at all state-owned green salamander colonies in the next 10 years.	Number of management plans finalized, acres of land under targeted management.	State agencies report annually on habitat managed.	1
Action Location: Physiographic Province: Appalachian Plateaus				
Associated Species: Allegheny woodrat, timber rattlesnake.				

IUCN Threat: 3.0 Energy Production and Mining

Specific Threat: Development can destroy colonies and alter the microclimate of surrounding habitats.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.	To prevent development related impacts to green salamander populations.	Numbers of consultations that protect green salamander habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1
Action Location: Physiographic Province: Appalachian Plateaus				
Associated Species: Allegheny woodrat, timber rattlesnake.				

THREATS AND ACTIONS

IUCN Threat: 4.0 Transportation and Service Corridors

Specific Threat: Roads fragment habitats, create corridors for invasive species spread, and alter site microclimate.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.	To prevent development related impacts to green salamander populations.	Numbers of consultations that protect green salamander habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1

Action Location: Physiographic Province: Appalachian Plateaus

Associated Species: Allegheny woodrat, timber rattlesnake.

IUCN Threat: 5.0 Biological Resource Use

Specific Threat: Reduction of forest buffer zones around outcrops can alter the microclimate of crevices or make colonies more susceptible to times of drought.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 1.0 Coordination and Administration Coordinate with state partners to properly manage habitat around known green salamander colonies.	Develop management plans at all state-owned green salamander colonies in the next 10 years.	Number of management plans finalized, acres of land under targeted management.	State agencies report annually on habitat managed.	2

Action Location: Physiographic Province: Appalachian Plateaus

Associated Species: Allegheny woodrat, timber rattlesnake.

THREATS AND ACTIONS

IUCN Threat: 5.0 Biological Resource Use

Specific Threat: Removal of individuals from the population.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 7.0 Law enforcement Instruct all new officers (new officer classes) and update experienced officers in anti-poaching (once every 5 years).	Train and support law enforcement in anti-poaching efforts.	Number of trainings	Determine officer readiness through tests at the end of training.	2
Action Location: Physiographic Province: Appalachian Plateaus				
Associated Species: All native amphibian and reptile species, especially those deemed vulnerable to the black market trade.				

IUCN Threat: 7.0 Natural System Modifications

Specific Threat: Alteration of surrounding forest habitats alters the microclimate of crevices.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 1.0 Coordination and Administration Coordinate with state partners to properly manage habitat around known green salamander colonies.	Develop management plans at all state-owned green salamander colonies in the next 10 years.	Number of management plans finalized, acres of land under targeted management.	State agencies report annually on habitat managed.	3
Action Location: Physiographic Province: Appalachian Plateaus				
Associated Species: Allegheny woodrat, timber rattlesnake.				

IUCN Threat: 8.0 Invasive and Other Problematic Species and Genes

Specific Threat: Invasive plants such as bittersweet can overwhelm crevices and alter microclimate.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 1.0 Coordination and Administration Coordinate with state partners to properly manage habitat around known green salamander colonies.	Develop management plans at all state-owned green salamander colonies in the next 10 years.	Number of management plans finalized, acres of land under targeted management.	State agencies report annually on habitat managed.	3
Action Location: Physiographic Province: Appalachian Plateaus				
Associated Species: Allegheny woodrat, timber rattlesnake.				

RESEARCH NEEDS

2. Evaluate vulnerability of green salamanders to loss of genetic variability and vigor, including minimum viable population size.
1. Determine use of forest habitats that surround occupied outcrops in Pennsylvania, including aspects of forest structure and condition.

SURVEY NEEDS

1. Continue species occurrence surveys to confirm sites and search for additional records.
2. Develop a long-term monitoring program to include assessments of each subpopulations as well as important parameters of suitable habitat.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Northern Ravine Salamander

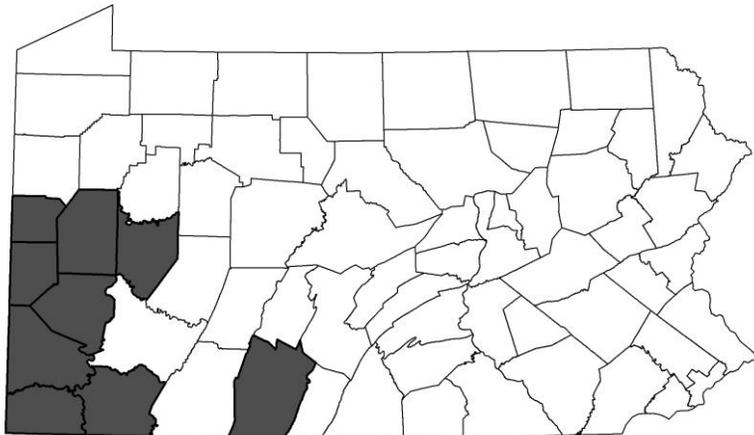
Plethodon electromorphus

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S2S3
IUCN Red List	LC Least Concern	PA Legal Status	Not Listed
Northeast Region	Not NE Regional SGCN	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Relatively Stable (<=10% change)

Conservation Goal:

Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Northern Hardwood & Conifer	
Habitat	Appalachian (Hemlock)-Northern Hardwood Forest	

Specific Habitat Requirements:

Forested uplands.

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Habitat loss and fragmentation through residential and commercial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus

IUCN Threat: 3.0 Energy Production and Mining

Specific Threat: Habitat loss and fragmentation through residential and commercial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus

IUCN Threat: 5.0 Biological Resource Use

Specific Threat: Habitat loss and fragmentation from logging activities.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus

RESEARCH NEEDS

SURVEY NEEDS

1. Conduct targeted surveys across their range.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Eastern Mud Salamander

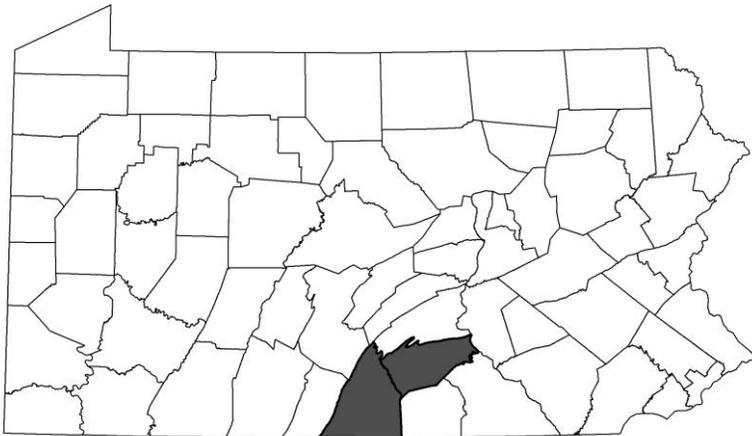
Pseudotriton montanus montanus

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5T5	State Rank	S1
IUCN Red List	LC Least Concern	PA Legal Status	Endangered
Northeast Region	Very High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Relatively Stable (<=10% change)

Conservation Goal:

Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Northern Hardwood & Conifer	
Habitat	Appalachian (Hemlock)-Northern Hardwood Forest	

Specific Habitat Requirements:

Bottomland swamp systems.

THREATS AND ACTIONS

IUCN Threat: 4.0 Transportation and Service Corridors

Specific Threat: Roads fragment habitats, create corridors for invasive species spread, disrupt movement corridors, and alter site microclimate.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.	To prevent development related impacts to mud salamander populations.	Numbers of consultations that protect mud salamander habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1
Action Location: Physiographic Province: Ridge and Valley				

IUCN Threat: 6.0 Human Intrusions and Disturbance

Specific Threat: Recreational use may degrade habitat and provide access to facilitate poaching at sites in McKean and Warren Counties.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 1.0 Coordination and Administration Coordinate with public landowners (PADCNr) for species-specific management practices and increased awareness of WCOs for poaching threats.	To avoid overuse of habitats and instruct PADCNr staff, Waterway Conservation Officers (WCO's).	Annual site monitoring, contact with PFBC & PGC WCOs and deputies in region.	Through annual field visits, monitor two public lands.	1
Action Location: Physiographic Province: Ridge and Valley				
Associated Species: The entire community should benefit from this monitoring, though no additional SGcN are in the area.				

RESEARCH NEEDS

- 1. None

SURVEY NEEDS

- 1. Conduct targeted surveys across their range.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Eastern Spadefoot

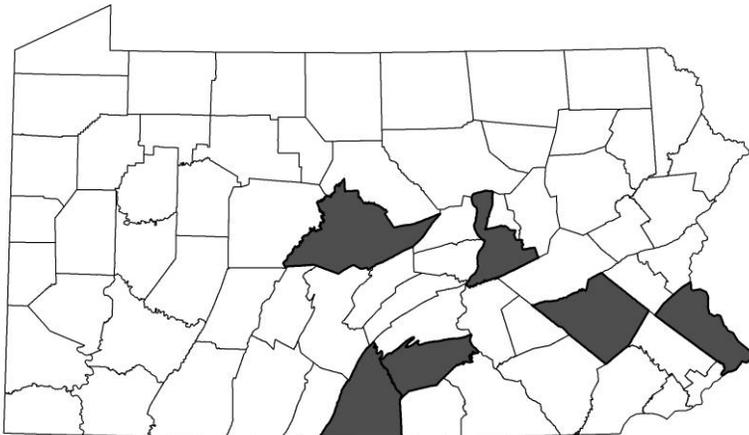
Scaphiopus holbrookii

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S2S3
IUCN Red List	LC Least Concern	PA Legal Status	Threatened
Northeast Region	Very High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Relatively Stable (<=10% change)

Conservation Goal:

Protect and maintain known eastern spadefoot populations.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Agricultural	
Habitat	Agriculture (NLCD 81-82)	

Specific Habitat Requirements:

Temporary, ephemeral pools in depression areas in agricultural or wooded settings, upland habitat friable-loamy to sandy soils.

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Sites on public land are degrading.

Action	Objective	Measure	Monitoring	Priority
<p>TRACS Action 8.0 Outreach</p> <p>Coordinate with state partners to properly manage habitat, inform the public about eastern spadefoot conservation, reduce public access to sensitive areas, and increase law enforcement oversight.</p> <p>Action Location: Physiographic Province: Atlantic Coastal Plains, Piedmont, Ridge and Valley</p> <p>Associated Species: Other vernal pool SGCN species, i.e., Jefferson salamander, marbled salamander.</p>	<p>Finalize management plans at all state-owned eastern spadefoot properties in the next 5 years.</p>	<p>Number of management plans finalized, acres of land under targeted management.</p>	<p>State agencies report annually on habitat managed, protected, outreach events, and visitor incidents.</p>	<p>1</p>

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Most of the eastern spadefoot populations are on private land that are subject to development.

Action	Objective	Measure	Monitoring	Priority
<p>TRACS Action 11.0 Technical Assistance</p> <p>Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.</p> <p>Action Location: Physiographic Province: Atlantic Coastal Plains, Piedmont, Ridge and Valley</p> <p>Associated Species: Other vernal pool SGCN species, i.e., Jefferson salamander, marbled salamander.</p>	<p>To prevent development related impacts to eastern spadefoot populations.</p>	<p>Number of consultations that protect eastern spadefoot habitat.</p>	<p>Spot-check 25% of projects to confirm adherence to recommended mitigation actions.</p>	<p>1</p>

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Most of the eastern spadefoot populations are on private land that are subject to development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.	To prevent development related impacts to eastern spadefoot populations.	Number of consultations that protect eastern spadefoot habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1
Action Location: Physiographic Province: Atlantic Coastal Plains, Piedmont, Ridge and Valley				
Associated Species: Other vernal pool SGCN species, i.e., Jefferson salamander, marbled salamander.				

IUCN Threat: 4.0 Transportation and Service Corridors

Specific Threat: High adult mortality on roads during breeding and foraging nights.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Design and implement wildlife crossings for travel corridors.	To reduce roadkills by installing 5 wildlife crossings (e.g., drift fence/culvert) in 10 years.	Number of crossings installed, number of roadkills.	Annual inspections of structure; use trailcams to monitor use of structures during active season; count annual roadkills.	1
Action Location: Physiographic Province: Atlantic Coastal Plains, Piedmont, Ridge and Valley				
Associated Species: Other vernal pool SGCN species, i.e., Jefferson salamander, marbled salamander.				

RESEARCH NEEDS

1. Determine population size structure of key spadefoot populations.
2. Determine habitat use and travel distance to breeding pools from burrows.
3. Assess population genetics at isolated sites.

SURVEY NEEDS

1. Continue to survey for undocumented populations of eastern spadefoot within their historically-occupied range.
2. Estimate population size through focused studies on newly documented populations.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
Golden Meadows Preserve Management Plan	Berks County Conservancy		An eight-acre preserve in Berks County that has historically occupied breeding pools. The site is managed for Spadefoot, a management plan exists, with annual reporting to the PFBC.

Fowler's Toad

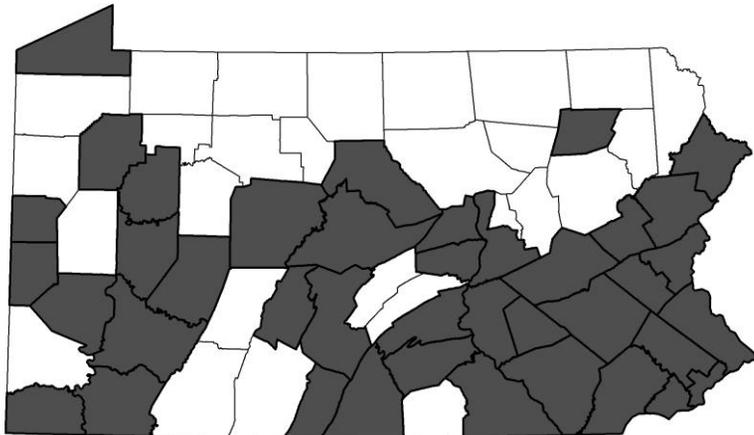
Anaxyrus fowleri

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S3S4
IUCN Red List	LC Least Concern	PA Legal Status	Not Listed
Northeast Region	High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Relatively Stable (<=10% change)

Conservation Goal:

Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Tidal Swamp	Coastal Plain Swamp
Habitat	North Atlantic Coastal Plain Tidal Swamp	North Atlantic Coastal Plain Basin Swamp and Wet Hardwood Forest

Specific Habitat Requirements:

River bottoms, lake edges, sandy places, urban gardens with alluvium deposits of dry gravelly and sandy substrate.

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Habitat loss and fragmentation through residential and commercial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3
Action Location: Physiographic Province: Statewide				

IUCN Threat: 8.0 Invasive and Other Problematic Species and Genes

Specific Threat: Changing habitats seem to favor *A. americanus*, a competitor species.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3
Action Location: Physiographic Province: Statewide				

RESEARCH NEEDS

1. None

SURVEY NEEDS

1. Conduct targeted surveys across their range.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Northern Cricket Frog

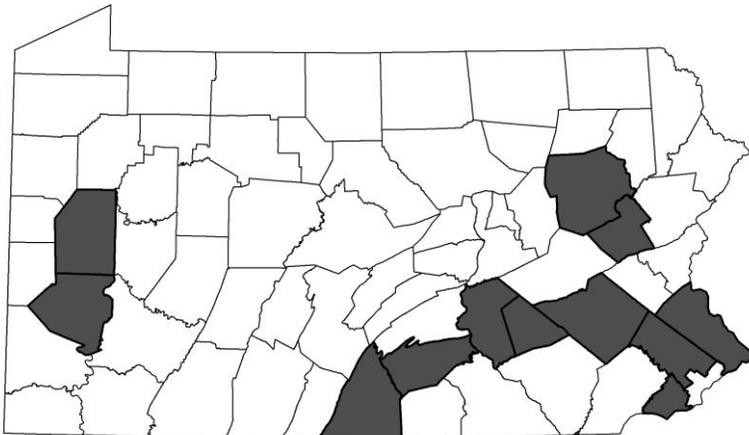
Acris crepitans

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S1
IUCN Red List	LC Least Concern	PA Legal Status	Endangered
Northeast Region	High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Relatively Stable (<=10% change)

Conservation Goal:

Protect and maintain known northern cricket frog populations; plan for reintroduction at suitable sites within their historically-occupied range.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Central Oak-Pine	
Habitat	North Atlantic Coastal Plain Hardwood Forest	

Specific Habitat Requirements:

Lakes, bogs, ponds, vernal pools and large open water marsh with vegetated shores and edges.

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Development can alter wetland hydrology, water quality, and fragment habitats, thus isolating populations.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.	To prevent development related impacts to northern cricket frog populations.	Number of consultations that protect northern cricket frog habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1
Action Location: Physiographic Province: Atlantic Coastal Plains, Ridge and Valley				
Associated Species: Eastern spadefoot, southern leopard frog, northern red-bellied cooter, wetland wildlife.				

IUCN Threat: 3.0 Energy Production and Mining

Specific Threat: Development can alter wetland hydrology, water quality, and fragment habitats, thus isolating populations.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.	To prevent development related impacts to northern cricket frog populations.	Number of consultations that protect northern cricket frog habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1
Action Location: Physiographic Province: Atlantic Coastal Plains, Ridge and Valley				
Associated Species: Eastern spadefoot, southern leopard frog, northern red-bellied cooter, wetland wildlife.				

THREATS AND ACTIONS

IUCN Threat: 6.0 Human Intrusions and Disturbance

Specific Threat: Human use of key habitats may degrade habitat and interfere with breeding.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 1.0 Coordination and Administration Coordinate with state and local partners to properly manage habitat, inform the public about anuran conservation, and reduce public access to sensitive areas.	Propose management plans at all publicly owned northern cricket frog properties in the next 10 years.	Number of management plans finalized, acres of land under targeted management.	Prepare report annually on habitat managed, protected, and outreach events.	2

Action Location: Physiographic Province: Ridge and Valley

RESEARCH NEEDS

1. Develop a reintroduction and augmentation protocol for the northern cricket frog.
2. Evaluate effectiveness of reintroduction and augmentation initiatives.

SURVEY NEEDS

1. Continue species occurrence surveys to confirm sites and search for additional records.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Cope's Gray Treefrog

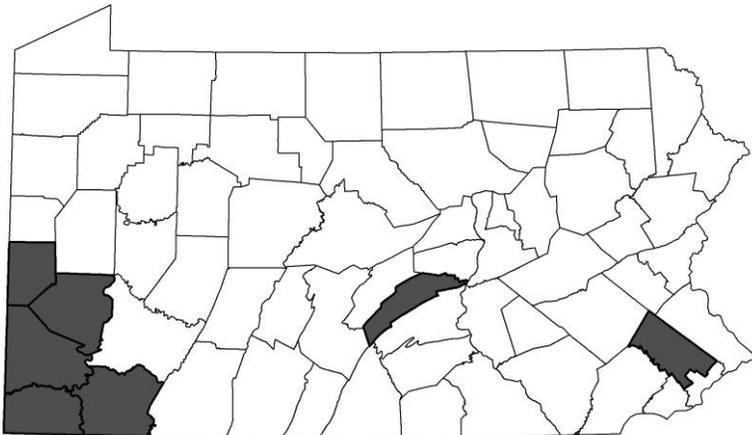
Hyla chrysoscelis

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S1
IUCN Red List	LC Least Concern	PA Legal Status	Not Listed
Northeast Region	Not NE Regional SGCN	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Unknown

Conservation Goal:

Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Northern Hardwood & Conifer	
Habitat	South-Central Interior Mesophytic Forest	

Specific Habitat Requirements:

Waynesburg Hills and Pittsburgh Low Plateau wetlands and ponds.

THREATS AND ACTIONS

IUCN Threat: 0.0 Unknown/undetermined

Specific Threat: Unknown/undetermined.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning	Conduct targeted surveys across their range.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3
Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.				

Action Location: Physiographic Province: Appalachian Plateaus

RESEARCH NEEDS

1. Conduct a backup (to calling surveys) analysis of erythrocyte review or karyotyping to further confirm identification throughout range.

SURVEY NEEDS

1. Conduct targeted surveys across their range.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Mountain Chorus Frog

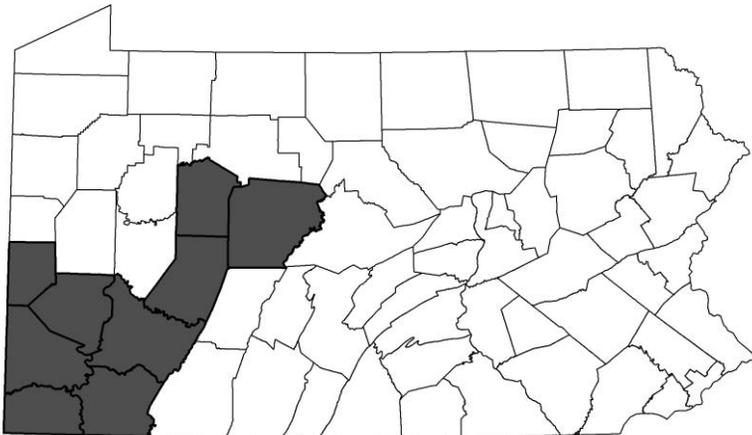
Pseudacris brachyphona

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S2
IUCN Red List	LC Least Concern	PA Legal Status	Not Listed
Northeast Region	Very High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Decline of 41 - 60%

Conservation Goal:

Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Central Oak-Pine	Central Oak-Pine
Habitat	Northeastern Interior Dry-Mesic Oak Forest	Allegheny-Cumberland Dry Oak Forest and Woodland

Specific Habitat Requirements:

Vernal pools and spring seeps within wooded slopes of deciduous forests. Slow-moving streams and ditches with abundant vegetation along edges.

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Habitat loss and fragmentation through residential and commercial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning	Conduct targeted surveys across their range.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3
Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.				
Action Location: Physiographic Province: Appalachian Plateaus				

IUCN Threat: 3.0 Energy Production and Mining

Specific Threat: Habitat loss and fragmentation from industrial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning	Conduct targeted surveys across their range.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3
Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.				
Action Location: Physiographic Province: Appalachian Plateaus				

IUCN Threat: 4.0 Transportation and Service Corridors

Specific Threat: Maintenance activities disrupt breeding sites.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3
Conduct targeted surveys across their range.				
Action Location: Physiographic Province: Appalachian Plateaus				

THREATS AND ACTIONS

IUCN Threat: 4.0 Transportation and Service Corridors

Specific Threat: Roads fragment habitats, create corridors for invasive species spread, disrupt movement corridors, and alter site microclimate. Additionally, dirt roads are used for breeding, causing direct mortality from use or improvement.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus

RESEARCH NEEDS

1. None

SURVEY NEEDS

1. Conduct targeted surveys across their range.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Upland Chorus Frog

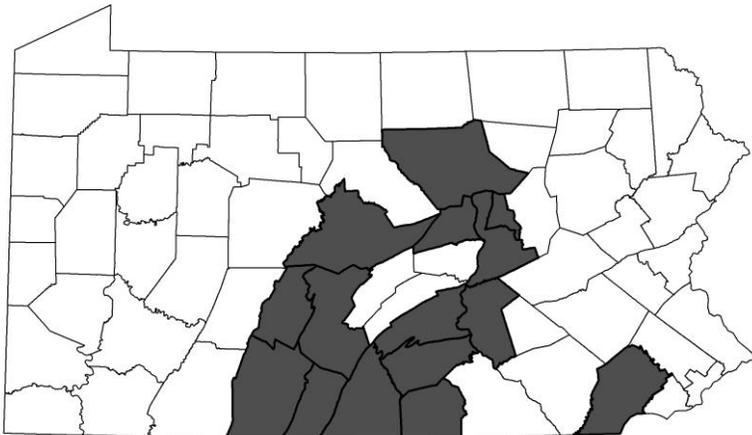
Pseudacris feriarum

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S1
IUCN Red List	LC Least Concern	PA Legal Status	Not Listed
Northeast Region	Not NE Regional SGCN	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Unknown

Conservation Goal:

Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Central Oak-Pine	
Habitat	Central Appalachian Pine-Oak Rocky Woodland	

Specific Habitat Requirements:

Open palustrine emergent wetlands (PEM) mixed with small, shallow areas of temporary (vernal) standing water in forested areas.

THREATS AND ACTIONS

IUCN Threat: 0.0 Unknown/undetermined

Specific Threat: Unknown/undetermined.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Ridge and Valley

RESEARCH NEEDS

1. None

SURVEY NEEDS

1. Conduct targeted surveys across their range.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

New Jersey Chorus Frog

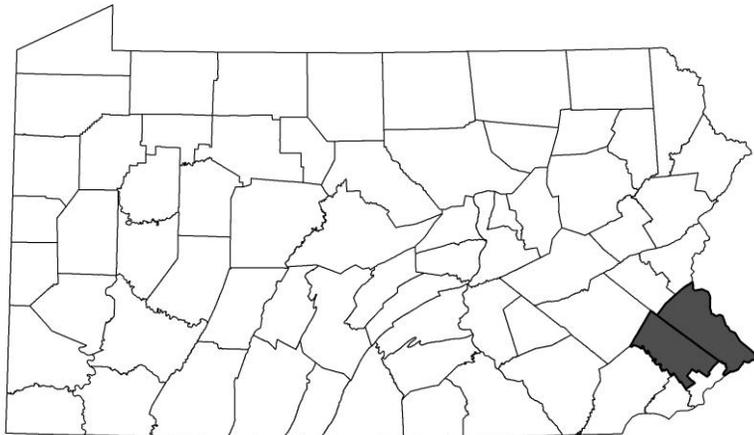
Pseudacris kalmi

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Brandon Ruhe



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G4 Apparently secure	State Rank	S1
IUCN Red List	LC Least Concern	PA Legal Status	Endangered
Northeast Region	High Concern / High Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Unknown

Conservation Goal:

Protect and maintain known populations; plan for the reintroduction at suitable sites within their historically occupied range.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Central Oak-Pine	
Habitat	North Atlantic Coastal Plain Hardwood Forest	

Specific Habitat Requirements:

Permanent and temporarily inundated habitats including forested swamp, marshes, wet meadows, floodplains, riparian corridors, ditches, and canals.

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Development can alter wetland hydrology, water quality, and fragment habitats, thus isolating populations.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.	To prevent development related impacts to New Jersey chorus frog populations.	Number of consultations that protect New Jersey chorus frog habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1
Action Location: Physiographic Province: Atlantic Coastal Plains, Piedmont				
Associated Species: Northern Cricket Frog, Eastern Spadefoot, Southern leopard Frog, Eastern Mud Turtle.				

RESEARCH NEEDS

1. Develop a reintroduction and augmentation protocol for the New Jersey chorus frog.
2. Evaluate the effectiveness of reintroduction and augmentation initiatives.

SURVEY NEEDS

1. Continue species occurrence surveys to confirm sites and search for additional records.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Western Chorus Frog

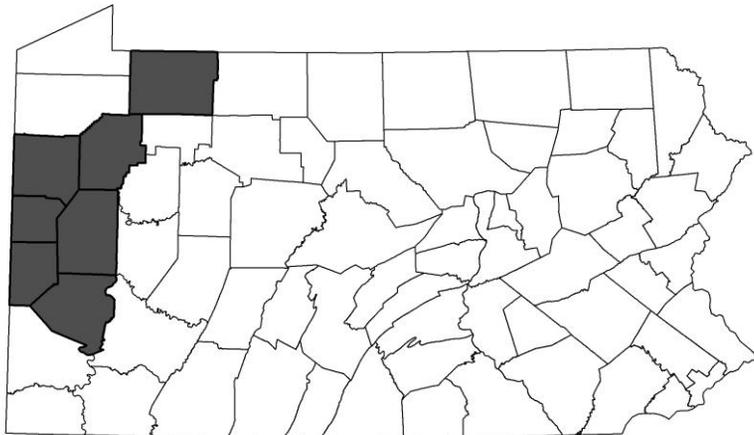
Pseudacris triseriata

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S1
IUCN Red List	LC Least Concern	PA Legal Status	Not Listed
Northeast Region	Not NE Regional SGCN	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Relatively Stable (<=10% change)

Conservation Goal:

Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Wet Meadow / Shrub Marsh	
Habitat	Laurentian-Acadian Wet Meadow-Shrub Swamp	

Specific Habitat Requirements:

Open palustrine emergent wetlands (PEM) mixed with small, shallow areas of temporary (vernal) standing water in forested areas.

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Habitat loss and fragmentation through residential and commercial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus

RESEARCH NEEDS

- 1. None

SURVEY NEEDS

- 1. Conduct targeted surveys across their range.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Northern Leopard Frog

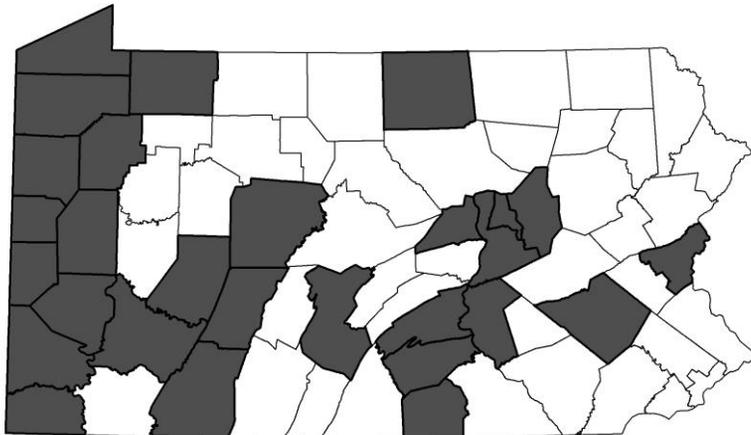
Lithobates pipiens

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: Tom Diez



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5 Secure	State Rank	S2S3
IUCN Red List	LC Least Concern	PA Legal Status	Not Listed
Northeast Region	High Concern / Low Responsibility	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Relatively Stable (<=10% change)

Conservation Goal:

Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Northern Swamp	Northern Peatland & Fens
Habitat	North-Central Appalachian Acidic Swamp	North-Central Interior and Appalachian Acidic Peatland

Specific Habitat Requirements:

Temporary pools and wet meadows for breeding, with adjacent grass/old field foraging areas.

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Habitat loss and fragmentation through residential and commercial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus, Central Lowland, New England, Piedmont, Ridge and Valley

IUCN Threat: 3.0 Energy Production and Mining

Specific Threat: Habitat loss and fragmentation from industrial development.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus, Central Lowland, New England, Piedmont, Ridge and Valley

IUCN Threat: 4.0 Transportation and Service Corridors

Specific Threat: Roads fragment habitats, create corridors for invasive species spread, disrupt movement corridors, and alter site microclimate.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus, Central Lowland, New England, Piedmont, Ridge and Valley

THREATS AND ACTIONS

IUCN Threat: 8.0 Invasive and Other Problematic Species and Genes

Specific Threat: Environmental pollutants and diseases cause mortality and disrupt reproductive cycle.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Conduct targeted surveys across their range.	Improve knowledge of distribution and population parameters in order to establish conservation and management actions that will prevent further declines.	Number of blocks surveyed (PARS).	PARS annual report of activities.	3

Action Location: Physiographic Province: Appalachian Plateaus, Central Lowland, New England, Piedmont, Ridge and Valley

RESEARCH NEEDS

1. None

SURVEY NEEDS

1. Conduct targeted surveys across their range.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

Southern Leopard Frog

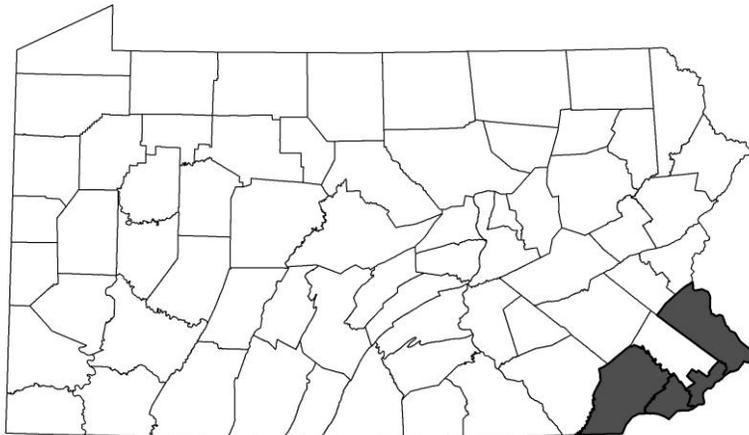
Lithobates sphenoccephalus utricularius

Chris Urban, Kathy Gipe, Brandon Ruhe

PA Fish & Boat Commission, Western Pennsylvania Conservancy,
The Mid-Atlantic Center for Herpetology and Conservation.



Photo: USGS



■ Documented Presence

CONSERVATION PROFILE

Global Rank	G5TNR	State Rank	S1
IUCN Red List	LC Least Concern	PA Legal Status	Endangered
Northeast Region	Not NE Regional SGCN	PA Abundance	Unknown
Federal Status	Not Listed	PA Short-Term Trend (10 year)	Decline of 11 - 40%

Conservation Goal:

Protect and maintain known southern and/or Atlantic coast leopard frog populations.

HABITAT ASSOCIATIONS

	Primary	Secondary
Macrogroup	Coastal Plain Swamp	Central Oak-Pine
Habitat	North Atlantic Coastal Plain Basin Swamp and Wet Hardwood Forest	North Atlantic Coastal Plain Hardwood Forest

Specific Habitat Requirements:

Marshes, ponds, wet meadows, and the edges of slow-moving rivers and streams; brackish waters near coastal areas.

THREATS AND ACTIONS

IUCN Threat: 1.0 Residential and Commercial Development

Specific Threat: Development can alter wetland hydrology, water quality, and fragment habitats, thus isolating populations.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.	To prevent development-related impacts to southern leopard frog populations.	Number of consultations that protect southern leopard frog habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1

Action Location: Physiographic Province: Atlantic Coastal Plains, Piedmont

Associated Species: Redbelly turtle, northern cricket frog, eastern spadefoot, New Jersey chorus frog, wetland wildlife.

IUCN Threat: 3.0 Energy Production and Mining

Specific Threat: Development can alter wetland hydrology, water quality, and fragment habitats, thus isolating populations.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 11.0 Technical Assistance Continue consultations with developers to protect species habitats and incorporate habitat management into plans. Proactive land protection would also be beneficial.	To prevent development-related impacts to southern leopard frog populations.	Number of consultations that protect southern leopard frog habitat.	Spot-check 25% of projects to confirm adherence to recommended mitigation actions.	1

Action Location: Physiographic Province: Atlantic Coastal Plains, Piedmont

Associated Species: Redbelly turtle, northern cricket frog, eastern spadefoot, New Jersey chorus frog, wetland wildlife.

THREATS AND ACTIONS

IUCN Threat: 4.0 Transportation and Service Corridors

Specific Threat: Roads fragment habitats, create corridors for invasive species spread, disrupt movement corridors, and alter site microclimate.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Design and implement wildlife crossings for travel corridors.	To reduce roadkills by installing 2 wildlife crossings (e.g., drift fence/culvert) in 10 years.	Number of crossings installed, number of roadkills.	Annual inspections of structure; use trailcams to monitor use of structures during active season; count annual roadkills.	2

Action Location: Physiographic Province: Atlantic Coastal Plains, Piedmont

Associated Species: Redbelly turtle, northern cricket frog, eastern spadefoot, New Jersey chorus frog, wetland wildlife.

IUCN Threat: 6.0 Human Intrusions and Disturbance

Specific Threat: Human use of key habitats may degrade habitat and interfere with breeding.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 1.0 Coordination and Administration Coordinate with state and local partners to properly manage habitat, Inform the public about anuran conservation, and reduce public access to sensitive areas.	Propose management plans at all publicly owned Southern Leopard Frog properties in the next 10 years.	Number of management plans finalized, acres of land under targeted management.	Prepare report annually on habitat managed, protected, and outreach events.	2

Action Location: Physiographic Province: Atlantic Coastal Plains, Piedmont

Associated Species: Redbelly turtle, northern cricket frog, eastern spadefoot, New Jersey chorus frog, wetland wildlife.

THREATS AND ACTIONS

IUCN Threat: 9.0 Pollution

Specific Threat: Pollution events can destroy habitats and kill inhabitants.

Action	Objective	Measure	Monitoring	Priority
TRACS Action 9.0 Planning Improve population and habitat data at occupied sites in order to respond to pollution events with damage assessments.	To be able to produce a damage assessment for any affected sites.	Database completeness.	Database completeness	3
Action Location: Physiographic Province: Atlantic Coastal Plains, Piedmont				
Associated Species: Redbelly turtle, northern cricket frog, eastern spadefoot, New Jersey chorus frog, wetland wildlife.				

RESEARCH NEEDS

1. Sample museum specimens of this species from Pennsylvania to complete assessment of the presence of southern leopard frogs versus Atlantic Coast leopard frogs.

SURVEY NEEDS

1. Continue species occurrence surveys to confirm sites and search for additional records.

MONITORING PROGRAMS

Program Name	Lead Agency	Hyperlink	Description
No Current Monitoring Programs			

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