Species Status Assessment

Common Name: Southern leopard frog **Date Updated:** January 8, 2025

Scientific Name: *Lithobates sphenocephalus utricularius*

Updated By: J. Butler, M. Schlesinger, L. Pipino

Class: Amphibia

Family: Ranidae

Species Synopsis *(a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York):*

More than a century of taxonomic confusion regarding the leopard frogs of the East Coast was resolved in 2012 with the publication of a genetic analysis (Newman et al. 2012) confirming that a third, cryptic species of leopard frog, Atlantic Coast leopard frog (*Lithobates kauffeldi),* occurs in southern New York, northern New Jersey, and western Connecticut. The molecular evidence strongly supported the distinction of this new species from the previously known northern (*L. pipiens*) and southern (*L. sphenocephalus*) leopard frogs. Bioacoustic evidence of the frog's occurrence in southern New Jersey, Maryland, Delaware, and as far south as the Virginia/North Carolina border, raises uncertainty about which species of leopard frog occur(s) presently and historically throughout the region (Feinberg et al. 2014). Some evidence suggests that Long Island might at one time have had two species: the southern leopard frog in the pine barrens and *L. kauffeldi* in coastal wetlands and the Hudson Valley.

I. Status

a. Current legal protected Status

i. **Federal:** Not listed **Candidate:** No

ii. **New York:** Special Concern (Proposed Not Listed), SGCN

b. Natural Heritage Program

i. **Global:** G5

ii. **New York:** SU **Tracked by NYNHP?:** No

Other Ranks:
-IUCN Red List: Least Concern
-Northeast Regional SGCN List: Not listed
-NEPARC Regional List (2010): Species of Moderate Concern

Status Discussion:

L. sphenocephalus populations have not been confirmed in New York since the genetic work was published, but it cannot yet be ruled out that the species does not exist in the state due to historical evidence of a population of leopard frogs from Long Island that may have been *L. sphenocephalus*. NEPARC (2010) lists southern leopard frog as a Species of Moderate Concern because more than 25% of northeastern states list it as SGCN.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Stable	Stable	Last 20 years	G5, Not listed	Choose an item.
Northeastern US	Yes	Declining	Declining	Last 20 years		No
New York	Unknown	Unknown	Unknown		Special Concern	No
Connecticut	No	N/A	N/A			
Massachusetts	No	N/A	N/A			
New Jersey	Yes	Stable	Stable	Not specified	S5, Not Listed	No
Pennsylvania	Yes	Unknown	Declining	Since 1980s	S1, Endangered	Yes
Vermont	No	N/A	N/A			
Ontario	No	N/A	N/A			
Quebec	No	N/A	N/A			

Column options
Present?: Yes; No; Unknown; No data; (blank) or Choose an Item
Abundance and Distribution: Declining; Increasing; Stable; Unknown; Extirpated; N/A; (blank) or Choose an item
SGCN?: Yes; No; Unknown; (blank) or Choose an item

Monitoring in New York *(specify any monitoring activities or regular surveys that are conducted in New York):*

There are currently no regular monitoring efforts for *L. sphenocephalus* in New York. The New York Amphibian and Reptile Atlas Project (Herp Atlas), conducted from 1990-1999, documented the geographic distribution of all species of amphibians and reptiles in the state. The Herp Atlas database also includes pre-1990 records from various sources, such as museum records, researchers' field notes, agency reports, and published literature. Several of the "southern leopard frog" records form the Herp Atlas have since been confirmed as Atlantic Coast leopard frog.

Trends Discussion *(insert map of North American/regional distribution and status):*

In New Jersey, populations are restricted to sandy pineland habitats. Where appropriate habitat remains, southern leopard frog populations appear to be stable, but wetland losses have undoubtedly caused a long-term decline (Gibbs et al. 2007).

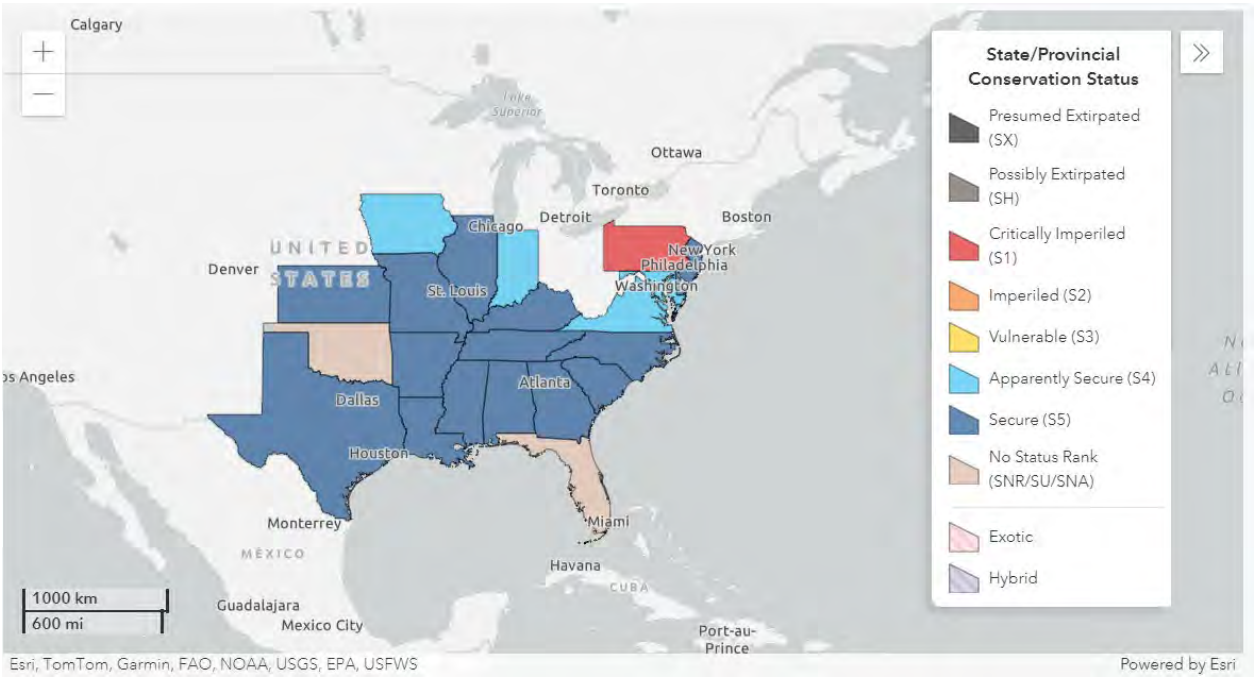

Figure 1: Conservation status of southern leopard frog in North America (NatureServe 2024).

Figure 2. Geographic distribution of the Southern Leopard frog (IUCN Red List 2021)

III. New York Rarity *(provide map, numbers, and percent of state occupied)*

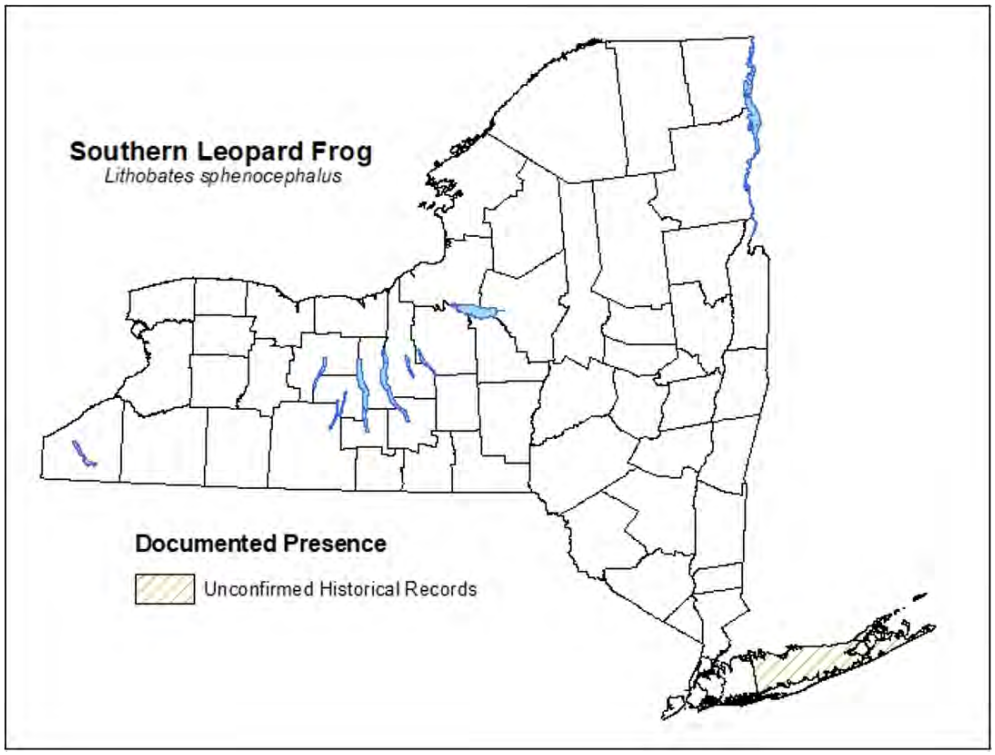

Figure 3: Possible distribution of southern leopard frog in New York

Details of historic and current occurrence:

Southern leopard frogs were possibly known from Long Island but have not been confirmed. Historical museum specimens from Long Island suggest a population of southern leopard frogs may have existed within the Pine Barrens region. Genetic testing has not yet confirmed or refuted this suggestion.

New York's Contribution to Species North American Range:

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
0%		

Column options
Percent of North American Range in NY: 100% (endemic); 76-99%; 51-75%; 26-50%; 1-25%; 0%; Choose an item
Classification of NY Range: Core; Peripheral; Disjunct; (blank) or Choose an item

IV. Primary Habitat or Community Type *(from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):*

1. Freshwater Marsh
2. Wet Meadow/Shrub Swamp
3. Eutrophic Pond
4. Ditch/Artificial Intermittent Stream

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/ Community Trend	Time frame of Decline/Increase
No	No	Declining	Since 1950s

Column options
Habitat Specialist and Indicator Species: Yes; No; Unknown; (blank) or Choose an item
Habitat/Community Trend: Declining; Stable; Increasing; Unknown; (blank) or Choose an item

Habitat Discussion:

Southern leopard frogs breed during the spring in open permanent or temporary wetlands and brackish marshes. During the summer, they prefer moist meadows of grass, rush, and sedge. Adults may travel a distance from wetland habitats, residing in upland areas where vegetation provides shade, and small pools or puddles provide moisture. Hibernation occurs in the soft mud at the bottom of wetlands (Gibbs et al. 2007).

V. Species Demographic, and Life History:

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/ Catadromous?
Unknown	-	-	Unknown	Unknown	-

Column options
First 5 fields: Yes; No; Unknown; (blank) or Choose an item
Anadromous/Catadromous: Anadromous; Catadromous; (blank) or Choose an item

Species Demographics and Life History Discussion *(include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):*

Summarized from Gibbs et al. (2007): southern leopard frogs breed in shallow water during March through June. The presence of dense vegetation at the bottom of these wetlands is important to tadpole survival in terms of desiccation and avoidance of predators. Females attach egg masses to submerged vegetation, frequently communally with other eggs masses where they benefit from a “temperature effect” that quickens development of the embryos (Caldwell 1986). Hatching occurs in 7-12 days and tadpoles transform to froglets in 2-3 months. If predators are present, metamorphosis will take place earlier than when predation pressure is low (Saenz et al. 2003). Some individuals from late-hatching clutches may overwinter. Massive mortality of tadpoles can occur when shallow breeding pools dry before metamorphosis takes place.

VI. Threats *(from NY 2015 SWAP or newly **described**):*

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent*	Severity*	Immediacy*	Trend	Certainty
1. Residential and Commercial	1.1 Housing & Urban Areas	Choose an item. (loss/degradation of habitat)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
2. Agriculture & Aquaculture	2.1 Annual & Perennial Non-Timber Crops	Choose an item. (loss/degradation of habitat)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
4. Transportation & Service Corridors	4.1 Roads & Railroads	4.1.1 Roads (roadkill)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.4 Pathogens	8.4.2 Viral pathogens (ranavirus)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.4 Pathogens	8.4.3 Fungal pathogens (chytrid)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.3 Changes in Temperature Regimes	Choose an item. (temperature extremes)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.5 Storms & Severe Weather	11.5.1 Storms & severe weather	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to southern leopard frog.

Southern leopard frogs possibly occur in the most densely developed areas of New York and have undoubtedly declined due to loss of wetlands. Where wetlands remain, however, this species can thrive even when surrounded by suburbia. However, where it becomes necessary to cross roads between upland areas and breeding areas, amphibians suffer high road mortality.

The chytrid fungus, *Batrachochytrium dendrobatidis* (Bd), first described in 1998 (Longcore et al. 1999), is a fungal pathogen that has affected more than 200 amphibian species in 6 countries (Skerratt et al. 2007). Southern leopard frogs are known to be susceptible to Bd (Daszak et al. 2005).

Southern leopard frog was classified as “moderately vulnerable” to predicted climate change in an assessment of vulnerability conducted by the New York Natural Heritage Program (Schlesinger et al. 2011).

Are there regulatory mechanisms that protect the species or its habitat in New York?

Yes: ✓ **No:** _____ **Unknown:** _____

If yes, describe mechanism and whether adequate to protect species/habitat:

In 2006, the State of New York adopted legislation (ECL section 11-0107 sub 2) that gave all native frogs, turtles, snakes, lizards and salamanders legal protection as game species, and no salamander species are open to harvest. The legislation also outlaws the sale of any native species of herpetofauna regardless of its origin.

Under Article 24 of the New York State Environmental Conservation Law, the Freshwater Wetlands Act provides protection for wetlands greater than 12.4 acres in size, as well as smaller wetlands of ‘Unusual Importance’. Beginning in 2028, the default size threshold of regulated wetlands will decrease from 12.4 acres to 7.4 acres.

The U.S. Army Corps of Engineers also protects wetlands, irrespective of size, under Section 404 of the Clean Water Act.

The Protection of Waters Program provides protection for rivers, streams, lakes, and ponds under Article 15 of the NYS Environmental Conservation Law.

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

One of the key actions needed for the conservation of the southern leopard frog in NY, is additional genetic analysis to better determine whether the species was ever present on Long Island, or elsewhere in the state. This genetic work would help clarify historical distributional patterns and contribute to a more accurate assessment of the species’ range and conservation status.

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for freshwater wetland amphibians, which includes southern leopard frog. Actions that have been accomplished, or where progress has been made, are indicated with a check.

Easement acquisition:

____ Secure habitats critical to species survival by acquisition of conservation easements, or by other land protection mechanisms.

Habitat management:

____ Manage the variety of factors which might be limiting wetland habitat suitability for resident amphibian species, including management of exotic plant and animal species, management of adverse hydrological alterations, and management of anthropogenic inputs of sediments and toxicants.

Habitat research:

____ Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Life history research:

____ Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and wetland/upland habitat requirements.

Modify regulation:

✓____ Modify Freshwater Wetlands Act, in order to protect wetlands smaller than 12.4 acres where they support species of conservation concern, and in order to expand the protected upland buffer beyond the 100-foot limit where necessary.

Other action:

_✓___ Periodically evaluate status of the subject species to determine whether appropriate E/T/SC status listings are in effect.

Population monitoring:

____ Conduct periodic surveys of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

____ Develop standardized population survey protocols, and implement protocols at all known and potentially suitable sites to document the extent of occupied habitat

Complete Conservation Actions table using IUCN conservation actions taxonomy at link below. Use headings 1-6 for Action Category (e.g., Land/Water Protection) and associated subcategories for Action (e.g., Site/Area Protection) -
https://www.iucnredlist.org/resources/conservation-actions-classification-scheme

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.0.0.0 Direct Habitat Management	Site/Area management
A.2 Direct Species Management	A.2.0.0.0 Direct Species Management	Invasive/problematic species control
C.6 Design and Plan Conservation	C.6.0.0.0 Design and plan conservation	Site/Area protection
C.6 Design and Plan Conservation	C.6.0.0.0 Design and plan conservation	Resource/Habitat protection

Action Category	Action	Description
C.6 Design and Plan Conservation	C.6.5.1.3 Develop a conservation, management, or restoration plan for protected private lands	Habitat and natural process restoration
C.7 Legislative and Regulatory Framework or Tools	C.7.1.2.0 Create, amend, or influence legislation	Legislation

Table 2. Recommended conservation actions for southern leopard frog.

VII. References

Caldwell, J.P. 1986. Selection of egg deposition sites: A seasonal shift in the southern leopard frog, *Rana sphenocephala*. Copeia 1986:249-53.

Corwin, K. 2013. NYSDEC SWAP 2015 Species Status Assessment for southern leopard frog. Prepared on January 10, 2013. Revised December 2014.

COSEWIC. 2023. Canadian Wildlife Species at Risk. Committee on the Status of Endangered Wildlife in Canada. Web site:https://species-registry.canada.ca/index-en.html#/documents/26RBeAHh9ZftjQJ4CW3J9 [accessed 8 January 2025].

Daszak, P., D. E. Scott, A. M. Kilpatrick, C. Faggioni, J. W. Gibbons, and D. Porter. 2005. Amphibian population declines at Savannah River Site are linked to climate, not chytridiomycosis. Ecology 86: 3232–3237.

Feinberg J. A., Newman CE, Watkins-Colwell GJ, Schlesinger MD, Zarate B, Curry BR, et al. 2014. Cryptic Diversity in Metropolis: Confirmation of a New Leopard Frog Species (Anura: Ranidae) from New York City and Surrounding Atlantic Coast Regions. PLoS ONE 9(10): e108213. https://doi.org/10.1371/journal.pone.0108213

Gibbs, J. P., A. R. Breisch, P. K. Ducey, G. Johnson, J. L. Behler, R. Bothner. 2007. Amphibians and reptiles of New York State: Identification, natural history, and conservation. Oxford University Press. 504 pages.

IUCN SSC Amphibian Specialist Group. 2021. Lithobates sphenocephalus. The IUCN Red List of Threatened Species 2021: e.T58723A177496797. https://dx.doi.org/10.2305/IUCN.UK.2021-3.RLTS.T58723A177496797.en. Accessed on 16 January 2024.

Longcore, J. E., .A. P. Pessier A. P., and D. K. Nichols. 1999. *Bd* gen. et sp. nov., a chytrid pathogenic to amphibians. Mycologia 91:219–227.

NatureServe. 2024. NatureServe Explorer. Page last published (January 5, 2024). https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.104396/Lithobates_sphenocephalus. Accessed (January 16, 2024).

NEPARC. 2010. Northeast Amphibian and Reptile Species of Regional Responsibility and Conservation Concern. Northeast Partners in Amphibian and Reptile Conservation (NEPARC). Publication 2010-1.

Newman, C. E., J. A. Feinberg, L. J. Rissler, J. Burger, and H. Bradley Shaffer. 2012. A new species of leopard frog (Anura: Ranidae) from the urban northeastern US. Molecular Phylogenetics and Evolution 63:445–455.

New York State Department of Environmental Conservation (NYSDEC). 2005. New York State Comprehensive Wildlife Conservation Strategy. Albany, NY. extapps.dec.ny.gov/docs/wildlife_pdf/cwcs2005.pdf

Saenz, D., J.B. Johnson, C.K. Adams, and G.H. Dayton. 2003. Accelerated hatching of southern leopard frog (*Rana sphenocephala*) eggs in response to the presence of crayfish (*Procambarus nigrocinctus*) predator. Copeia 2003:646-49.

Schlesinger, M.D., J.D. Corser, K.A. Perkins, and E.L. White. 2011. Vulnerability of at-risk species to climate change in New York. New York Natural Heritage Program, Albany, NY.

Skerratt, L. F., R. Speare, S. Cashins, K. R. Mcdonald, A. D. Phillott, H. B. Hynes, and N. Kenyon. 2007. Spread of Chytridiomycosis has caused the rapid global decline and extinction of frogs. EcoHealth 4:125–134.

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