Common Name: Atlantic Coast leopard frog ***SGCN – High Priority***
Scientific Name: *Lithobates* [*Rana*] *kauffeldi*
Taxon: Amphibians

Federal Status: Not Listed
New York Status: Special Concern

Natural Heritage Program Rank:
Global: G5
New York: S1S2
Tracked: Yes

Synopsis:
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 (*Rana* [= *Lithobates*] sp. nov.) 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 (*R. pipiens* [= *L. pipiens*]) and southern (*R. sphenocephala* [=*L. sphenocephalus*]) leopard frogs.

Rana kauffeldi is morphologically similar to *R. sphenocephala* and *R. pipiens*, but distinguishable by advertisement call, genetics, habitat, geographic distribution, and a combination of morphological characters (Feinberg et al. 2014).

Bioacoustic evidence of the frog's occurrence in southern New Jersey, Maryland, Delaware, and as far south as the Virginia/North Carolina border is available, thereby raising uncertainty about which species of leopard frog occur(s) presently and historically throughout the region. Some evidence suggests that Long Island might at one time have had two species: the southern leopard frog in the pine barrens and the Atlantic Coast leopard frog in coastal wetlands and the Hudson Valley. For simplicity's sake, in this assessment we retain the name "Atlantic Coast leopard frog" even though much of the information available may also refer to the southern leopard frog or a combination of species (Feinberg et al. 2014).

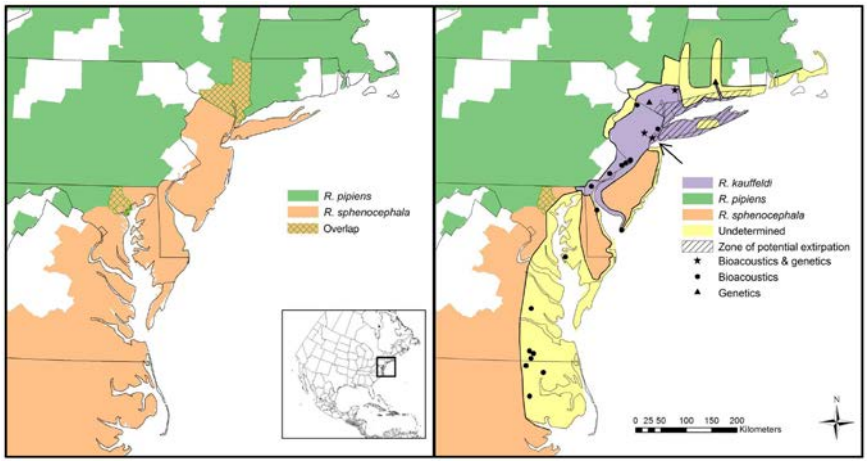
In diagnosing, describing, and defining the Atlantic Coast leopard frog, a new and potentially at-risk cryptic vertebrate species has been added to the northeastern and mid-Atlantic U.S. fauna. This species can be characterized as 1) potentially vulnerable with highly specialized and restrictive habitat needs; 2) locally abundant where present, but often only occurring in isolated and scattered locales; 3) having a restricted distribution across heavily populated, urbanized regions; and 4) having suffered extirpations from certain areas. Concerns over habitat loss and degradation continue today, along with a suite of other threats (e.g., disease, contaminants) that may pose additional future challenges (Feinberg et al. 2014).

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Severe Decline	Severe Decline
6% to 10%		Common	X		
11% to 25%		Fairly common			
26% to 50%		Uncommon			
> 50%		Rare			

Habitat Discussion:
Rana kauffeldi inhabits a restricted range of mesic lowland habitats that primarily includes coastal freshwater wetlands, tidally influenced backwaters, and interior riparian valley floodplains. This species is typically associated with large wetland complexes composed of open-canopied marshes, wet meadows, and slow-flowing systems with ample open upland and early-successional habitats. Aquatic conditions are usually clear, shallow, and sometimes ephemeral, with emergent shrubs or stands such as cattail, *Typha* spp., or the invasive common reed, and *Phragmites australis* (Feinberg et al. 2014).

Primary Habitat Type
Ditch/Artificial Intermittent Stream
Freshwater Marsh
Lake; Pond; Eutrophic
Wet Meadow/Shrub Marsh

Distribution:
Rana kauffeldi is known from three states (Connecticut, New York, New Jersey) based on genetic samples [3] and seven states (New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina) based on bioacoustic sampling reported here. The estimated range from these samples is approximately 780 km, north-to-south, from central CT to northeastern NC (Fig. 1). The range is narrow, however, east-to-west, occurs almost entirely within the densely populated I-95 corridor, and is smaller than most if not all other ranid frogs along the eastern North American seaboard. Within the presented range, a core sampling area (see map below, purple shading) was depicted where gaps in genetic and bioacoustic information were filled by other lines of evidence (e.g., specimens, photographs, geology, or historical literature). *Rana kauffeldi* appears to occur parapatrically in this core area.



Leopard frog distributions in the Northeast and mid-Atlantic US. Left: currently recognized IUCN (2012) range maps for *R. pipiens* (green) and *R. sphenocephala* (orange) with areas of potential overlap (hatched). Right: newly interpreted distributions for all three leopard frog species including *R. kauffeldi*. Symbols indicate known *R. kauffeldi* populations and purple shading depicts areas where our field work has confirmed the occurrence of *R. kauffeldi*. Yellow shading indicates areas of less intensive examination and sampling; *R. kauffeldi* may occur in these areas based on habitat and proximity to known populations. Potential sympatry is also possible in the yellow shaded areas, with *R. sphenocephala* (from Long Island southward), or *R. pipiens* (north and west of Long Island). The type locality for *R. kauffeldi* is indicated by an arrow (Feinberg et al. 2014).

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Residential & Commercial Development	Housing & Urban Areas (loss/degradation of habitat)	P	M	H
2. Agriculture & Aquaculture	Annual & Perennial Non-Timber Crops (loss/degradation of habitat to agriculture)	W	L	M
3. Transportation & Service Corridors	Roads & Railroads (road mortality)	P	L	H
4. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (chytrid pathogen; ranavirus)	P	L	V
5. Climate Change & Severe Weather	Temperature Extremes	P	L	V
6. Climate Change & Severe Weather	Storms & Flooding	R	M	V

References Cited:

Feinberg, J. A., C. A. Newman, G. J. Watkins-Colwell, M. D. Schlesinger, B. Zarate, B. R. Curry, H. B. Shaffer, and J. Burger. 2014. A new cryptic North American leopard frog species (Amphibia: Ranidae: Rana) from the northeast and mid-Atlantic United States with a summary of regional taxonomy. Plos One 9:10.

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.

Common Name: Blue-spotted salamander ***SGCN – High Priority***
Scientific Name: *Ambystoma laterale*
Taxon: Amphibians

Federal Status: Not Listed
New York Status: Special Concern

Natural Heritage Program Rank:
Global: G5
New York: S4
Tracked: No

Synopsis:
The blue-spotted salamander has the northernmost distribution of any *Ambystoma* species, occurring in east-central North America as far north as Labrador, with its distribution dipping southward into the northeastern United States only as far as northern New Jersey. In New York, this salamander occurs in a patchy distribution outside of high elevation areas; its occurrence on Long Island is only in the farthest eastern reaches. Blue-spotted salamander habitat is the moist forest floor of deciduous or mixed woodlands near ephemeral bodies of water. Reliable population trends are not available for this salamander.

Hybridization occurs between blue-spotted salamander and Jefferson salamander (*A. jeffersonianum*). Broadly referred to as the Jefferson complex, the variety of hybrids includes up to five different chromosomal combinations. Some of the hybrids have been called Tremblay's salamander or silvery salamander, but most references are to "Jefferson complex." This unusual situation has led to difficulty in defining the distribution of blue-spotted salamander and Jefferson salamander, the hybrids of which are very difficult to distinguish, typically, without genetic testing in conjunction with their appearance. In Connecticut, the blue-spotted diploid and the blue-spotted complex have been listed individually, as Threatened and Special Concern respectively but no other state or province has made this distinction in listing status.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Unknown	Unknown
6% to 10%	X	Common			
11% to 25%		Fairly common	X		
26% to 50%		Uncommon			
> 50%		Rare			

Habitat Discussion:
The blue-spotted salamander is not a strong burrower, and can usually be found under logs, leaf litter and other ground cover. It occurs in damp deciduous or deciduous-coniferous forests, as well as open areas including pastures and grassy fields that support permanent or ephemeral pools or ponds. It is occasionally found in areas of sandy soils, but is also associated with bogs, marshes and other poorly drained sites. Blue-spotted salamanders in New Jersey occupied a lowland mix of true swamp woodland and cattail marsh and adjacent highland hardwood forests (Nyman et al. 1988, Klemens 1993).

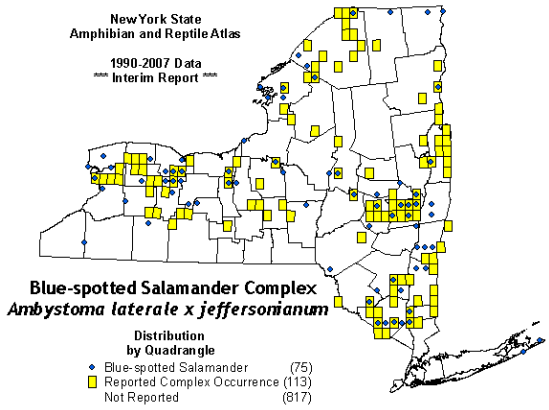
The breeding habitat of the blue-spotted salamander is a vernal or permanent pool/pond (formed by ground water seepage, surface runoff and/or precipitation), 20-40 yards long and approximately 3' in

depth. The ponds usually have mud bottoms and thick vegetation above and below the water's surface. The blue-spotted salamander is considered a vernal pool indicator species (Calhoun and Klemens 2002).

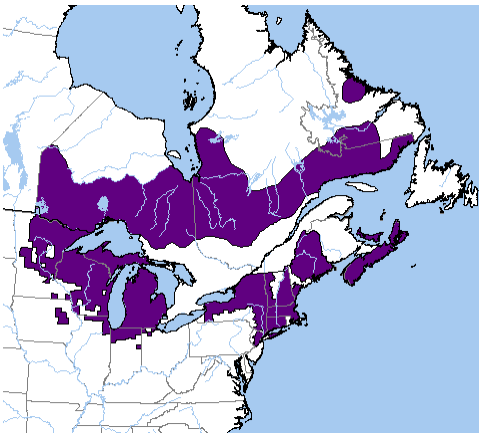
Primary Habitat Type
Hardwood Swamp
Mixed Hardwood Swamp
Mixed Northern Hardwoods
Vernal Pool
Wet Meadow/Shrub Marsh

Distribution:

Several factors have contributed to problems in delineating the historic range of the blue-spotted salamander including past misidentification and confusion with the Jefferson salamander and the hybridizations that occur between these two species in areas of range overlap. Prior to about 1964, almost all Jefferson or blue-spotted salamanders, and their associated hybrids, were referred to as *A. jeffersonianum*, so historic records are questionable without further analysis. Generally, the northern part of western New York; northern New York and eastern part of southeast New York. The NYS Amphibian and Reptile Atlas (1990–1999) documented blue-spotted salamander in 75 survey quads (8%). Since 2000, records were added to the NY Herpetology database in 7 additional quads, including one on Long Island west of known areas.



NYSDEC (2013)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Residential & Commercial Development	Housing & Urban Areas (loss/degradation of habitat to development)	W	L	H
2. Agriculture & Aquaculture	Annual & Perennial Non-Timber Crops (loss/degradation of habitat to agriculture)	R	L	M
3. Transportation & Service Corridors	Roads & Railroads (roadkill)	P	M	H
4. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (disease: ranavirus, chytrid fungus)	P	L	V
5. Biological Resource Use	Hunting & Collecting Terrestrial Animals (illegal collecting)	P	L	L
6. Biological Resource Use	Logging & Wood Harvesting (effects of logging: roads, disrupting migratory movements, reducing water quality)	W	L	M
7. Pollution	Air-Borne Pollutants (acid rain; though studies are contradictory; mercury)	W	L	H
8. Pollution	Agricultural & Forestry Effluents (pesticides; larvacide & aerial spraying for West Nile)	R	L	H
9. Climate Change & Severe Weather	Drought	N	L	M
10. Climate Change & Severe Weather	Habitat Shifting & Alteration (altered snowfall)	W	L	V

References Cited:

Calhoun, A. J. K. and M. W. Klemens. 2002. Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

Nyman, S., M. J. Ryan, and J. D. Anderson. 1988. The distribution of the AMBYSTOMA JEFFERSONIANUM complex in New Jersey. Journal of Herpetology 22:224-228.

Klemens, M. W. 1993. Amphibians and reptiles of Connecticut and adjacent regions. State Geological and Natural History Survey of Connecticut, Bulletin 112. xii + 318 pp.

Common Name: Eastern cricket frog
Scientific Name: *Acris crepitans*
Taxon: Amphibians

SGCN – High Priority

Federal Status: Not Listed
New York Status: Endangered

Natural Heritage Program Rank:
Global: G5
New York: S1
Tracked: Yes

Synopsis:
The eastern cricket frog (*A. crepitans*) occurs in most of the eastern half of the United States and may be declining in as many as 17 states. Three subspecies are recognized: Blanchard's cricket frog (*A. c. blanchardi*) in the west and midwest (including extirpated populations in southern Ontario), eastern cricket frog (*A. c. crepitans*) in the east (including NY), and coastal cricket frog (*A. c. paludicola*) along the Gulf Coast. Cricket frogs are considered common where they occur, but severe declines have been noted in the northern fringes of the distribution, including New York. Despite numerous reports of declines, and ample scientific literature on the biology of eastern cricket frogs, there is no clear-cut indication of the cause(s) of the declining trend, although a number of anthropogenic factors and environmental conditions have been suggested. Populations in the central regions of the distribution are stable.

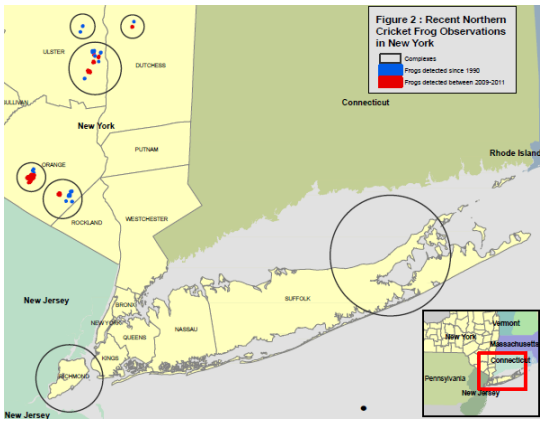
Cricket frogs are found along the vegetated shorelines of lakes, bogs, ponds, vernal pools, and extensive marshes. They use upland forests during the fall and for hibernation. Where it occurs in the lower Hudson Valley of New York, this tiny frog is at the northern extent of the range in the East; it has been extirpated from Long Island and Staten Island. Only seven sites within four metapopulations remain in the lower Hudson Valley, representing a decline of about 30% in the last twenty years. Severe declines have been documented in Pennsylvania during this period as well; both states list cricket frog as endangered.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Rapid Recent Decline	Rapid Recent Decline
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

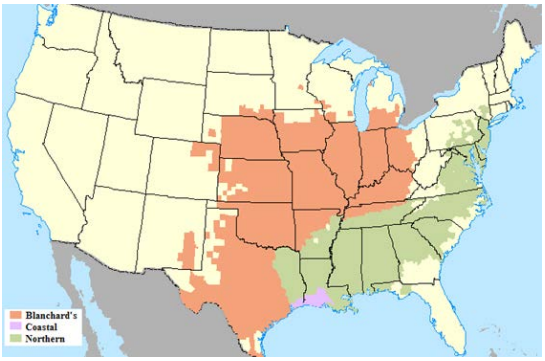
Habitat Discussion:
From Kenney and Stearns (2012): Breeding occurs in almost any permanent freshwater body including lakes, ponds, rivers, and streams, though large water bodies and those that are polluted are generally avoided. Breeding areas typically have shallow water, floating mats of aquatic vegetation, sloping banks that are muddy or sandy, limited canopy cover, and at least some surrounding forest. In New York, calling males have been documented in man-made irrigation ponds in apple orchards. Adult cricket frogs frequently move between water bodies. Movements between ponds up to 1.3km apart have been documented. After rain events, cricket frogs may move away from water bodies. In New York, studies marking individual frogs have documented movements from 300m to 515m from breeding ponds (G. Kenney, personal communication).

Primary Habitat Type
Floodplain Forest
Freshwater Marsh
Hardwood Swamp
Lake; Pond; Eutrophic
Lake; Reservoir
Open Acidic Peatlands

Distribution:
During the 1990s, eastern cricket frogs were documented from 26 distinct sites in New York, which likely represented frogs from 5 remaining metapopulations. The majority of these sites (22 sites) were resurveyed during the breeding seasons in 2009-2011 and cricket frogs were only detected at 7 of those sites. These seven sites—in Dutchess, Orange, and Ulster counties—likely represent frogs from only four remaining metapopulations in New York.



Eastern cricket frog distribution in New York (Kenney and Stearns 2012).



Cricket frog distribution. This map was constructed based on range maps from Conant and Collins (1998), and the websites of state wildlife agencies, the National Amphibian Atlas (2009), the North American Amphibian Monitoring Program (2009), and the Center for Reptile and Amphibian Conservation and Management (2010). Source: Kenny and Stearns (2012).

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Residential & Commercial Development	Housing & Urban Areas (habitat loss/degradation)	W	M	H
2. Biological Resource Use	Logging & Wood Harvesting (effects of logging)	N	L	M
3. Transportation & Service Corridors	Roads & Railroads (road mortality)	W	L	H
4. Human Intrusions & Disturbance	Recreational Activities (ATV use)	N	L	L
5. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (ranavirus)	N	L	H
6. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (aquatic vegetation control via grass carp, chemical)	W	M	M
7. Pollution	Agricultural & Forestry Effluents (chemical pollutants)	N	L	M
8. Climate Change & Severe Weather	Droughts	R	L	V
9. Climate Change & Severe Weather	Temperature Extremes (rapid fluctuations)	P	L	V
10. Pollution	Household Sewage & Urban Waste Water (road salting)	N	L	M
11. Pollution	Household Sewage & Urban Waste Water (household/lawn care)	N	L	M

References Cited:

Kenney, G. and C. Stearns. 2012. DRAFT Recovery plan for New York State populations of the northern cricket frog (*Acris crepitans*). NYSDEC, Albany, NY.

Common Name: Eastern hellbender ***SGCN – High Priority***
Scientific Name: *Cryptobranchus alleganiensis alleganiensis*
Taxon: Amphibians

Federal Status: Not Listed
New York Status: Special Concern

Natural Heritage Program Rank:
Global: G3G4
New York: S2
Tracked: Yes

Synopsis:
There are two subspecies of hellbender in North America: the eastern hellbender, *Cryptobranchus a. alleganiensis* occurs in the eastern United States from southern New York southward to Alabama and Mississippi and westward to Missouri and Arkansas; and the Ozark hellbender, *Cryptobranchus a. bishopi*, occurs in the Ozark Mountains of northern Arkansas and southern Missouri (Petranka 1998). The Ozark hellbender is federally endangered.

The eastern hellbender reaches its northern limit in New York, where it occurs solely in the Allegheny and Susquehanna river basins. Strictly aquatic, adults are found in streams and rivers with shallow, swift moving currents and large, flat rocks (Smith 1907, Bishop 1941, Hillis and Bellis 1971, Nickerson and Mays 1973). Populations rangewide and in New York are known to be declining, likely due to habitat degradation and loss, but possibly due to a suite of other human induced stressors such as non-native fish and introduced disease. Without intervention, it is likely that hellbenders will continue to decline in New York. The U.S. Fish & Wildlife Service is conducting a status assessment to determine whether Eastern hellbender should be considered for federal listing.

As early as 1957 it was noted that the hellbender's range was rapidly shrinking as a result of human modification of stream habitats (Smith and Minton 1957). Eastern hellbender populations have shown significant declines rangewide in the last 20 years (Wheeler et al. 2003, Humphries and Pauley 2005). Declines have also been documented in New York hellbender populations where they occur in the Susquehanna and Allegheny River basins (Wheeler et. al. 2003, Foster 2006, Quinn 2009).
Recent surveys in New York recorded fewer individuals per site and a noticeable lack of reproductive activity (Gibbs et al. 2007). Many sites only produced single-digit totals or no individuals where populations were once healthy and thriving (Foster 2006, Foster et al. 2008). Foster (2006) documented a 44% decline at sites first surveyed by Gottlieb (1991); however, Foster's study did document larval/juvenile individuals in the Allegheny drainage, indicating that some reproduction is still taking place. In the Allegheny River system, Foster (2006) documented that one hellbender population that had existed in the mid-1980s had become extirpated, and several other populations seemed to be less abundant than they were in the 1980s. Population declines seem to be even greater in the Susquehanna River system. In 2002 and 2003, researchers found no hellbenders at the site in the Susquehanna River system that previously supported the largest known hellbender population in the system in New York (Breisch and Bothner 2003).

Researchers speculate the lack of recruitment observed could be due to high mortality rates of larval/juvenile hellbenders, conspecific predation, and/or the ability to maintain healthy genetic variation within a population (Mayasich et al. 2003, Wheeler et al. 2003, Foster 2006). Work is needed to determine the genetic diversity of NY populations.

Population size and distribution are difficult to determine due to inefficient survey methods and low population numbers. Approximately 37 hellbender sites are known throughout the Allegheny and Susquehanna watersheds. There are 14 locations in the Allegheny Watershed that currently or historically

have had hellbender populations. The exact number of extant locations in the Susquehanna Watershed is currently unknown, but 23 sites were recently or historically occupied. Due to the cryptic nature of the species, the number of individuals found in the state is not considered as important as the number of established locations.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Severe Decline	Severe Decline
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon			
> 50%		Rare	X		

Habitat Discussion:
Strictly aquatic, adult habitat requirements are well documented in the literature. Hellbenders breathe primarily (approximately 90%) through the skin and are therefore dependent on cool, well-oxygenated, flowing water. Hellbenders usually avoid water that is warmer than 20 degrees C. Most researchers cite streams and rivers with shallow, swift moving currents and with large (> 30 cm), flat rocks as primary habitat choice (Smith 1907, Bishop 1941, Hillis and Bellis 1971, Nickerson and Mays 1973). Individuals rest and nest beneath large flat rocks with a downstream-facing opening. They may use an existing cavity or may excavate one to accommodate its body size (Gibbs et al. 2007).

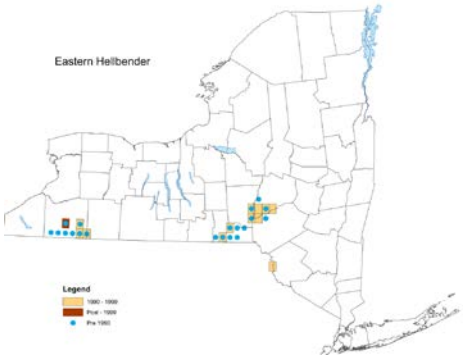
From NY Draft Management Plan: Research in New York suggests the riparian zone along a stream's margins is necessary as a buffer (Trimble 1999, Madden et al. 2007). Forested areas lining the margins of a stream have numerous effects on the water quality flowing through the system. Forested riparian areas filter runoff that contains silt and other organic and inorganic molecules that can negatively affect water quality and hellbender nesting sites. Trees provide shade for streams, suppressing water temperatures and increasing dissolved oxygen levels (Sweeney 1992, Madden et al. 2007).

Blais (1996) conducted a radio telemetry study of wintering hellbenders in the Susquehanna watershed. He identified three major areas used for overwintering: pools greater than two meters deep, fast-moving riffles that remained fluid throughout the winter, and deeper pockets within riffles less than two meters deep. Overwintering hellbenders typically utilize the same large, flat rocks that are used throughout the year. They appear to select overwintering sites that have less chance of freezing (Blais 1996). The physical act of hibernation has not been recorded and Blais (1996) found little to no movement during winter months.

Primary Habitat Type
Headwater/Creek; Low Gradient; Moderately Buffered, Neutral; Cold
Large/Great River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Tran
Medium River; Low Gradient; Assume Moderately Buffered (Size 3+ rivers); Cold
Small River; Low Gradient; Moderately Buffered, Neutral; Cold

Distribution:
The eastern hellbender is known within two watersheds in New York: the Allegheny River watershed and the Susquehanna River watershed. There was a 1990 capture in the Delaware River in Sullivan County; this was believed to be a released animal (Gibbs et al. 2007).

Since 1990, the New York Heritage Program reports hellbenders have only been confirmed from 6 sites within the Susquehanna drainage down from a total of 10 historic locations, with only 3 locations known to have hellbenders present since 2005. The New York Herp Atlas database recorded 12 locations in the Susquehanna drainage with hellbenders present since 1990, a decline from 21 historic locations. For the Allegheny drainage, a total of 5 locations have been recorded as occupied by the New York Natural Heritage Program since 1990, including 4 of the 9 historical sites known to be occupied prior to 1990. Within the Allegheny drainage, the New York Herp Atlas database has only 5 occupied locations confirmed since 1990, down from 12 historic locations. The information in these databases is presumed incomplete since the historic sites have not all been revisited. Furthermore each of the 11 established monitoring sites have extant populations and at least five other extant sites are known to contain hellbenders.



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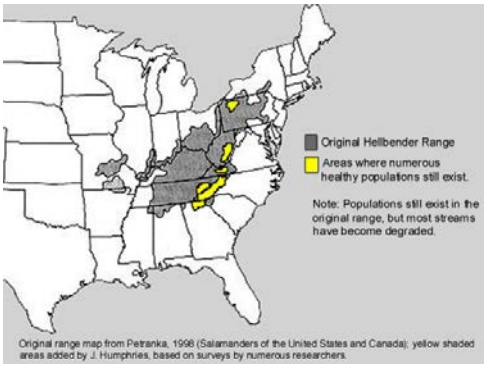

Distribution of eastern hellbender in the United States. Original range map from Petranka (1998), yellow shaded areas by J. Humphries. Used by permission.

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Residential & Commercial Development	Housing & Urban Areas (habitat loss)	N	L	H
2. Natural System Modifications	Dams & Water Management/Use (dams, channelization)	R	L	H

3. Agriculture & Aquaculture	Annual & Perennial Non-Timber Crops (siltation from farming)	W	M	H
4. Biological Resource Use	Hunting & Collecting Terrestrial Animals (collection or persecution by anglers, pet trade)	P	L	M
5. Pollution	Industrial & Military Effluents (contamination from mines)	N	L	M
6. Pollution	Household Sewage & Urban Waste Water (leaking septic, wastewater treatment plants)	W	L	M
7. Pollution	Agricultural & Forestry Effluents (pesticides)	W	L	M
8. Pollution	Agricultural & Forestry Effluents (manure & whey; O2 not nutrient loading issue)	R	M	M
9. Transportation & Service Corridors	Roads & Railroads (siltation during construction & maintenance)	R	L	M
10. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (rusty crayfish, non-native game fish, carp)	P	M	H
11. Climate Change & Severe Weather	Storms & Flooding	W	M	V
12. Climate Change & Severe Weather	Temperature Extremes (high temperatures)	W	M	V
13. Human Intrusions & Disturbance	Recreational Activities (disturbance due to recreational herping and bait collection)	R	L	M
14. Human Intrusions & Disturbance	Work & Other Activities (disturbance from research)	P	L	L
15. Climate Change & Severe Weather	Drought	W	L	V
16. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (disease: chytrid, ranavirus)	P	L	V

References Cited:

Bishop, S. 1941. The salamanders of New York. New York State Museum Bulletin No. 324. The University of the State of New York. Albany, NY.

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Common Name: Eastern long-tailed salamander ***SGCN – High Priority***
Scientific Name: *Eurycea longicauda longicauda*
Taxon: Amphibians

Federal Status: Not Listed
New York Status: Special Concern

Natural Heritage Program Rank:
Global: G5
New York: S2S3
Tracked: Yes

Synopsis:
Eastern long-tailed salamanders occur in the eastern United States, primarily in the Ozark Highlands, Appalachian Highlands, and the Ohio River Valley (Conant and Collins 1991). A second subspecies, *E. l. melanopleura*, occurs in Arkansas, Illinois, Missouri, and Oklahoma. The three-lined salamander, *E. guttolineata*, which occurs in the southeastern United States, was formerly considered a subspecies of long-tailed salamander.

E. l. longicauda is at the northern extent of its range in New York. It is associated with wet or moist terrestrial habitats, inhabiting slow moving streams, fens, and swamps, but may also be found in abandoned mines or caves that are permeated by calcareous ground water. Populations have declined rangewide due to habitat loss and degradation but remain locally abundant. In New York long-tailed salamanders were known historically as far north as Albany County but are now apparently present only in the Southern Tier and southern counties west of the Hudson River. Peterson and Peterson (2005) stated that long-tailed salamander is probably secure in New York although it is restricted to specific and uncommon habitats within a limited geographic range.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Stable	Unknown
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon			
> 50%		Rare	X		

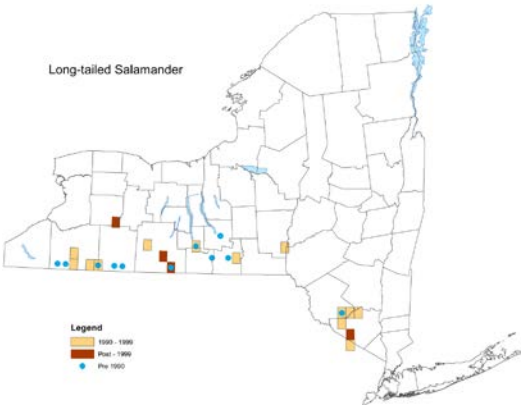
Habitat Discussion:
Long-tailed salamanders hide in rock crevices and under rocks, logs, and other debris along stream sides, in spring runs, cave mouths, and abandoned mines; in northern New Jersey they are also found in ponds (Conant and Collins 1991). All occupied sites where Petersen and Petersen (2005) observed long-tailed salamanders were visibly calcareous habitats at the base elevation of major valleys. They reported two distinct habitats: rocky calcareous tributary waterfall plunge pools at the base of major valleys, and silty calcareous floodplain forest on valley bottoms.

Adults may disperse into wooded terrestrial habitats during wet weather. Eggs are laid in underground crevices associated with springs, temporary pools, and streams; under rocks in streams; in woodland ponds; or are attached to objects in or above water in caves (NatureServe 2012).

Primary Habitat Type
Floodplain Forest
Freshwater Marsh
Headwater/Creek; Low Gradient; Highly Buffered, Calcareous; Transitional Cool
Mixed Northern Hardwoods
Wet Meadow/Shrub Marsh

Distribution:
The NY Amphibian and Reptile Atlas database (1990 to 1999) includes 13 survey quads with long-tailed salamander records on the Appalachian Plateau (Cattaraugus County eastward to Broome County) in the southern tier, and in the Hudson Valley in Orange and Sullivan counties. Since 2000, four additional quads have been confirmed to have long-tailed salamander records, including one in Livingston County where the species had not been previously reported.

The ten locations noted by Bishop (1941) have not been confirmed recently. New locations are the result of increased searches; the state population is not likely to be increasing.



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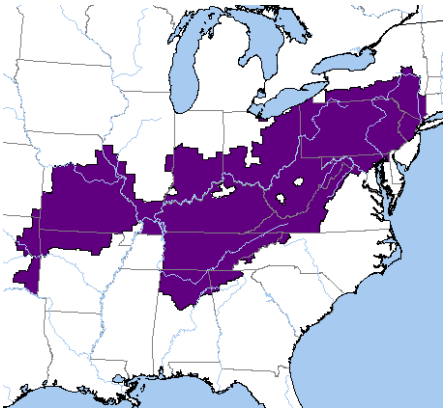
NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Residential & Commercial Development	Housing & Urban Areas (loss/degradation of habitat to development)	R	L	M
2. Agriculture & Aquaculture	Annual & Perennial Non-Timber Crops (degradation of habitat to agriculture)	R	L	M
3. Transportation & Service Corridors	Roads & Railroads (roadkill)	R	L	H
4. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (Chytrid fungus; ranavirus)	W	L	V
5. Natural System Modifications	Other Ecosystem Modifications (road Maintenance)	R	M	M

References Cited:

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Conant, R. and J. T. Collins. 1991. A field guide to the amphibians and reptiles of eastern and central North America. Houghton Mifflin Co., Boston, MA.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: December 7, 2012).

Common Name: Eastern tiger salamander ***SGCN – High Priority***
Scientific Name: *Ambystoma tigrinum tigrinum*
Taxon: Amphibians

Federal Status: Not Listed
New York Status: Endangered

Natural Heritage Program Rank:
Global: G5
New York: S1S2
Tracked: Yes

Synopsis:
As many as eight subspecies of tiger salamander are recognized by some scientists (Petranka 1998). The eastern tiger salamander (*A. t. tigrinum*), is a coastal plain lineage that occurs in the Atlantic Coast states and reaches its northern extent in New York, where it is listed as Endangered. New York's population is restricted to Long Island, where it is found in upland forest areas with sandy soils and ponds for breeding. The population is isolated, with the closest population occurring in northern New Jersey.

Among the 124 historically documented breeding locations on Long Island, surveyors have failed to find tiger salamanders during recent surveys at more than a third, with another third have viability rankings of fair or poor; just 13% are considered to support populations with excellent or good viability. The statewide population has been steadily declining since 1980; a variety of management actions have been unsuccessful (NYNHP 2011). Populations are also declining rangewide (Lannoo 2005).

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Severe Decline	Severe Decline
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon			
> 50%		Rare	X		

Habitat Discussion:
Tiger salamanders require both upland and wetland habitats with fish-free ponds for breeding. Loamy sand and sandy loam soil types allow the salamanders to burrow underground where they spend most of the time. In New York, tiger salamanders occur in pine barrens habitats with seasonal or permanent ponds; kettle holes ponds are frequently used. Deciduous (red maple and oak spp.) and mixed pine-deciduous (pitch pine-oak spp.) forests with a blueberry understory are preferred, as are ponds that have at least some surrounding forest but that are open to sunlight (Gibbs et al. 2007, Madison and Titus 2009). Individuals will use cover-boards for hiding (Kling 2001).

Primary Habitat Type
Coastal Plain Pond
Oak-Pine Forest
Pine Barrens
Vernal Pool

Distribution:
Tiger salamanders occur only on Long Island, primarily in Suffolk County. The stronghold is currently in the central sections of the Pine Barrens, which stretch from Lake Ronkonkoma to Riverhead in the town of Brookhaven (Cryan 1984, Kling 2001) with a small group of populations in the town of Southampton on the South Fork (NYNHP 2011). Surveys have not been conducted regularly in the past several years. In 2011, biologists from the NY Natural Heritage Program surveyed 15 locations in Suffolk County and 1 in Nassau County. Tiger salamanders were found at three locations. Surveys are being conducted during the 2013 field season.

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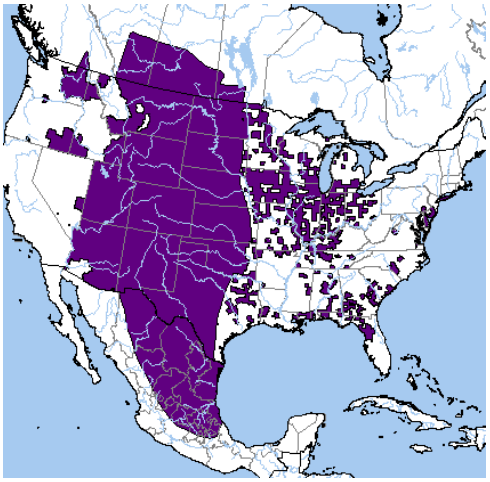
NatureServe (2013)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Residential & Commercial Development	Housing & Urban Areas (loss/degradation of habitat to development)	W	L	H
2. Human Intrusions & Disturbance	Recreational Activities (ATV use)	W	L	M
3. Transportation & Service Corridors	Roads & Railroads (roadkill)	W	L	H
4. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (disease: ranavirus, chytrid fungus)	P	L	V
5. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (invasive plants, i.e., phragmites)	W	L	H
6. Biological Resource Use	Hunting & Collecting Terrestrial Animals (illegal collecting; pet trade and larvae for bait)	P	L	M
7. Pollution	Household Sewage & Urban Waste Water (nitrogen loading in LI)	N	L	H
8. Pollution	Household Sewage & Urban Waste Water (road salting)	R	L	M
9. Climate Change & Severe Weather	Habitat Shifting & Alteration (altered hydroperiod)	P	L	V
10. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (introduced fish including shiners, fathead minnows)	W	L	M

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Common Name: Four-toed salamander ***SGCN – High Priority***
Scientific Name: *Hemidactylium scutatum*
Taxon: Amphibians

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S5
Tracked: No

Synopsis:
Four-toed salamanders occur patchily in most of the eastern United States and northward into southern Canada (Conant and Collins 1991). They are found in moist forests with adjacent wetlands that contain sphagnum hummocks over open water, a vital component for nesting. Such areas include bogs, swamps, fens, wet meadows, vernal pools, and the edges of lakes and ponds. Though four-toed salamanders can be difficult to find, 18 new county records across the range were added during the period 1995–2000 (NatureServe 2012) and populations rangewide appear to be stable. In 2006, four-toed salamander was removed from the list of Special Concern species in Massachusetts because it was found to be more abundant than previously thought. In New York four-toed salamanders occur patchily across the state. They are difficult to find in many areas and locally abundant in only a few (Gibbs et al. 2007), but Klemens (1993) noted the discovery of ten new populations in New York as a result of species-specific surveys.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Unknown	Unknown
6% to 10%	X	Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

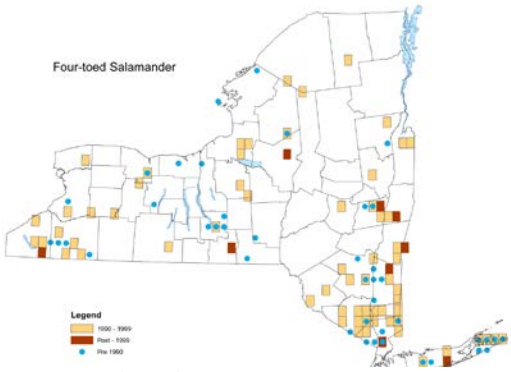
Habitat Discussion:
Four-toed salamanders occur in moist forest habitats of a wide variety as long as they include small ponds, seeps, bogs, or swamps. Eggs are laid in mossy areas that just overhang water, a microhabitat that may be limited even in relatively large wetlands. Vegetative moisture level appears to be more critical than the species of moss that are present.

Chalmers (2004) observed that four-toed salamanders in Maine were typically found nesting in marshes with a history of beaver activity or in wetlands with a forested canopy and some input from groundwater (e.g., seeps or slow-moving, seasonal streams). Other wetlands with nesting four-toed salamanders included large, beaver-dammed ponds with fish; natural and human-constructed, isolated vernal pools; and fens.

Primary Habitat Type
Floodplain Forest
Hardwood Swamp
Mixed Hardwood Swamp

Mixed Northern Hardwoods
Open Acidic Peatlands
Riparian
Vernal Pool

Distribution:
The NYS Amphibian and Reptile Atlas (1990–99) documented four-toed salamanders in 64 out of 979 survey quadrangles statewide. Since 2000, records were added to the NY Herpetology database in an additional 9 survey quads.



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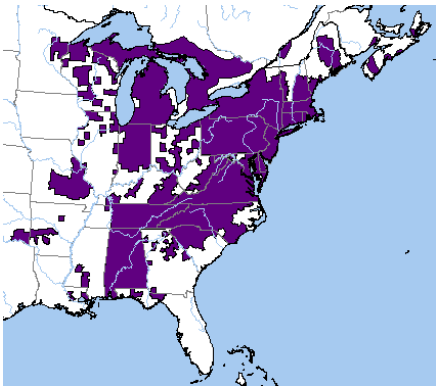
NatureServe (2013)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Residential & Commercial Development	Housing & Urban Areas (loss/degradation of habitat to development)	W	L	H
2. Transportation & Service Corridors	Roads & Railroads (roadkill)	W	L	H
3. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (Chytrid, ranavirus)	W	L	V
4. Climate Change & Severe Weather	Drought (altered hydrology cycles)	R	L	V
5. Pollution	Air-Borne Pollutants (mercury)	R	L	H

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