

# **Species Status Assessment**

**Common Name:** Northern leopard frog

**Date:** March 17, 2025

**Scientific Name:** *Lithobates pipiens*

**Updated By:** Vincenzo Bonaiuto and L. Pipino

**Class:** Amphibia

**Family:** Ranidae

## **Species Synopsis:**

The northern leopard frog, *Lithobates pipiens*, is widely distributed across North America. It ranges from the northeastern United States across eastern Canada and into the midwestern states, with spotty distributions across the western U.S. and Canada (IUCN 2022, Feinberg et al. 2014). There has been some confusion regarding the taxonomy of the northern leopard frog (*Lithobates pipiens*) and the southern leopard frog (*Lithobates sphenoccephalus*) (Nicholls et al. 2017). However, recent research on leopard frogs within the New York City metropolitan area and surrounding coastal regions, discovered there to be a separate, third, species, the Atlantic coast leopard frog (*Lithobates kauffeldi*) (Feinberg et al. 2014, Schlesinger et al. 2018).

In New York, populations of Atlantic coast leopard frogs are limited to the lower Hudson Valley and Staten Island, while the northern leopard frog (*L. pipiens*) occurs throughout much of the state but is notably absent from the extreme southeastern portion, including Long Island (Gibbs et al. 2007, Schlesinger et al. 2018). Northern leopard frogs are widespread in lower elevations and populations appear to be presumably stable in New York (Gibbs et al. 2007).

Northern leopard frogs are often found in shallow, permanent, water with rooted vegetation. They also inhabit upland habitats such as grasslands and forests near marshes and ponds, and along the borders of lakes and streams (IUCN 2022, Gibbs et al. 2007). During development, they inhabit shallow standing water with emergent vegetation, such as ponds and slow-moving streams. They generally breed in early spring, but some northern populations, in Manitoba and Nova Scotia, spawn later in the spring (Gilbert et al. 1994). Egg masses are attached to vegetation just under the water surface with plenty of available sunlight (Gilbert et al. 1994).

Habitat loss and degradation is a major threat to northern leopard frog populations. Both residential and commercial development and agricultural intensification can lead to habitat loss, degradation and fragmentation between wetlands and upland habitats, disrupting life cycle processes (IUCN 2022).

## **I. Status**

### **a. Current legal protected Status**

- i. **Federal:** Not listed **Candidate:** No
- ii. **New York:** Not listed: SGCN

### **b. Natural Heritage Program**

- i. **Global:** G5
- ii. **New York:** S5 **Tracked by NYNHP?:** No

**Other Ranks:**

- IUCN Red List: Least concern
- COSEWIC: Not listed (Implied E, SC, NAR for Rocky Mountain, Western Boreal/Prairie, and Eastern Canada)
- Northeast Regional SGCN List (2023): Watchlist (Assessment Priority)
- NEPARC (2010): Species of High Concern

**Status Discussion:**

The northern leopard frog is still widespread and common in many areas, but populations have notably declined in the western U.S. (NatureServe 2024). In a 90-day petition finding, the U.S. Fish and Wildlife Service (USFWS) found listing the western U.S. population of the northern leopard frog as threatened was warranted, but the subsequent status review found that listing was not warranted at this time (USFWS 2011).

In the Northeast, Connecticut, Massachusetts, Pennsylvania, New Hampshire, Maine and Rhode Island listed the northern leopard frog as a Species of Greatest Conservation Need (SGCN) in their 2015 SWAP revisions. The Northeast Partners in Amphibian and Reptile Conservation (NEPARC) lists the species as being of 'High Concern' because more than 50% of northeast states have it listed in their Wildlife Action Plan.

**II. Abundance and Distribution Trends**

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Unknown	Declining	Through 2011		
Northeastern US	Yes	Unknown	Unknown			Yes, <i>watchlist</i>
New York	Yes	Unknown	Unknown		S5, Not listed	Yes
Connecticut	Yes	Declining	Declining	2005-2015	S2, Special Concern	Yes
Massachusetts	Yes	Unknown	Unknown	2005-2015	S3S4, Not listed	Yes
New Jersey	Yes	Stable	Stable	2005-2015	SU, Not listed	No
Pennsylvania	Yes	Unknown	Stable	2005-2015	S2S3, Not listed	Yes
Vermont	Yes	Stable	Stable	2005-2015	S4, Not listed	No
Ontario	Yes	Unknown	Unknown		S5, Not listed	No
Quebec	Yes	Unknown	Unknown		S5, Not listed	No

*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:

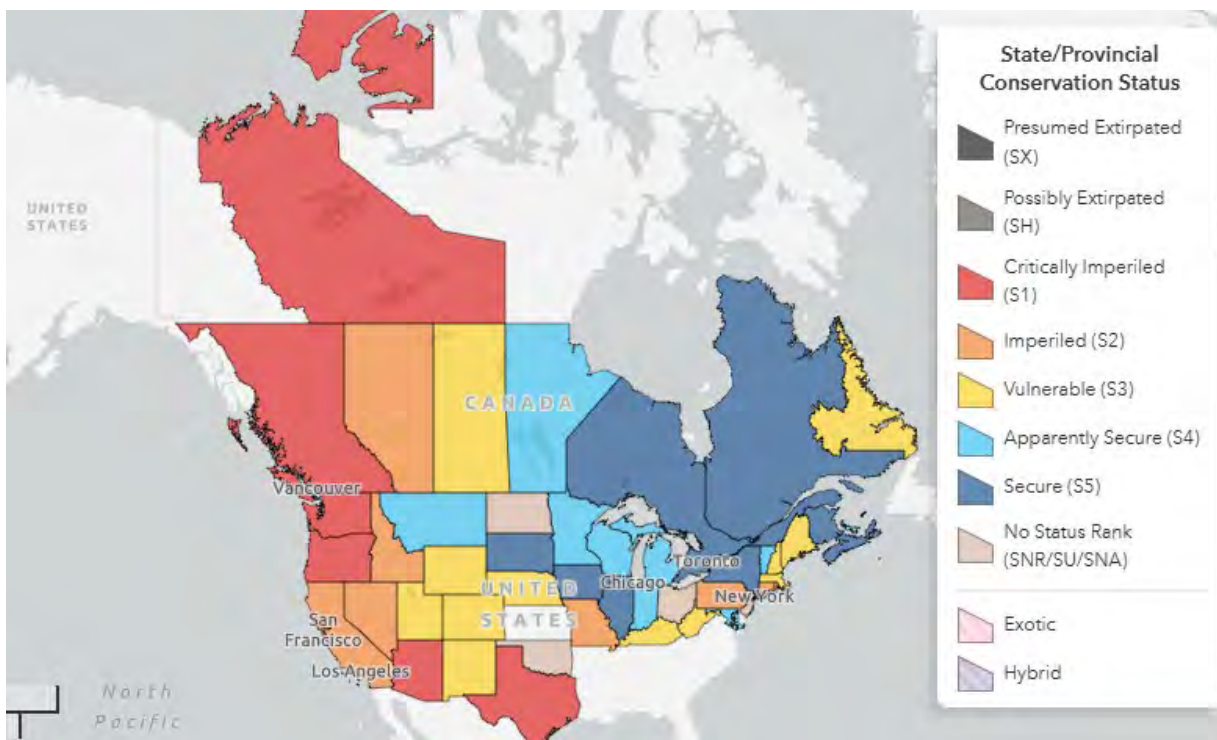
There are currently no regular monitoring activities for the northern leopard frog in New York. The New York Amphibian and Reptile Atlas Project (Herp Atlas), conducted from 1990-1999, documented the geographic distribution of all species of amphibians and reptiles in the state. The Herp Atlas database also includes pre-1990 records from various sources, such as museum records, researchers' field notes, agency reports, and published literature.

## Trends Discussion:

The northern leopard has a large range throughout much of U.S. and southern Canada. It remains common in many areas and appears to be relatively stable at range-wide scale. Still, NatureServe (2024) describes short-term trends for the northern leopard frog as “probably declining in population size, area of occupancy, and condition of occurrences”, and estimated a long-term trend of “declining by 30-50%”.

In an assessment on its status in Canada, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2009) reported that “there has been a significant and widespread decline of *Rana pipiens* throughout the western portion of its range in Canada and the United States”. However, it was found to be one of the most common frogs in southern Ontario and populations in the region appear to be widespread, though it is not as common in northern Ontario as it was historically (COSEWIC 2009).

The species has been extirpated where it historically occurred in the Rocky Mountains of Colorado, Wyoming and Montana, and from most its historical range in Washington (IUCN 2022). It has also not been reported in recent years at historical localities in Oregon (IUCN 2022). In the Midwest, extensive land conversion to agriculture has occurred, and the species is noted to be declining in Minnesota, Wisconsin and Michigan (COSEWIC 2009). Population trends in the northeast are less known, though the species is listed as imperiled (S2) in Pennsylvania, Connecticut and Rhode Island, and Vulnerable (S3) in Massachusetts, New Hampshire, and Maine (Figure 1).

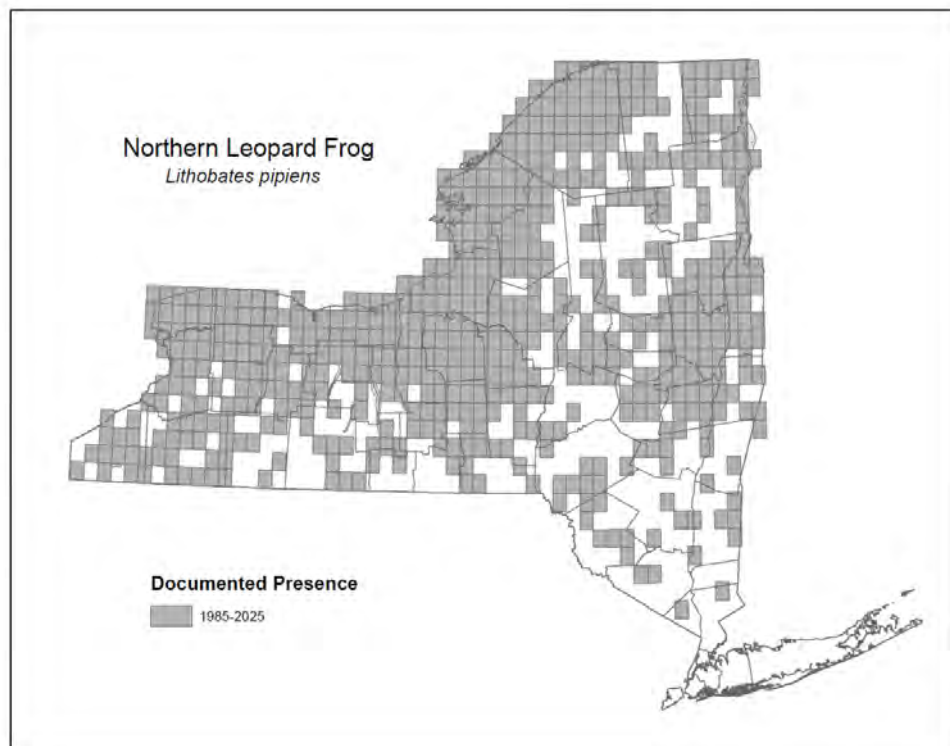


**Figure 1.** Conservation status of northern leopard frog in North America (NatureServe 2024).



**Figure 2.** Geographic range of northern leopard frog in North America (IUCN 2022)

### III. New York Rarity:



**Figure 3.** Distribution of Northern leopard frog records in New York, 1985-2025 (NY Herpetology Database, NYSDEC)

### Details of historic and current occurrence:

The New York State Amphibian and Reptile (Herp) Atlas (1990-1999) reported northern leopard frogs as occurring in 567 (58%) of 979 survey quadrangles statewide. Data collected between 1985-1989 and post-1999, add an additional two quadrangles, for a total of 569 statewide (NY Herpetology Database).

Citizen science records submitted through iNaturalist align closely with occurrence records from the Herp Atlas (iNaturalist 2025). Unobserved records from this platform further identify an additional 23 quadrangles not captured in Figure 3. Additionally, 187 of the 569 known survey quads have been reconfirmed using iNaturalist community data.

The species is widely distributed throughout New York, with a scattered distribution in the Catskill and Adirondack Mountains (Gibbs et al. 2007). It is notably absent from the extreme southeastern part of the state, including Long Island – an area occupied by the Atlantic coast leopard frog (*Lithobates kauffeldi*). Schlesinger et al. (2018) reported an apparent extirpation of *L. pipiens* from the southern portion of its known range, including southeastern NY. Additional surveys are needed to better determine the distribution of both *L. pipiens* and *L. kauffeldi*, and areas of overlap in New York State.

### 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
1-25%	Peripheral	-

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):

- a. Lacustrine: Shallow water, Lakes and Ponds
- b. Palustrine: Herbaceous wetland, bog/fen, scrub-shrub wetland, riparian, emergent marsh, wet meadow/shrub
- c. Riverine: Spring/spring brook, Rivers and Streams, Riparian floodplains
- d. Terrestrial: Grasslands/herbaceous

### Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/Community Trend	Time frame of Decline/Increase
Yes	No	Declining	

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:

Northern leopard frogs are one of the most common frogs of grassland areas in New York and use a variety of habitats throughout their life cycle (Gibbs et al. 2007). The species can be found in springs, slow streams, marshes, bogs, ponds, canals, floodplains, reservoirs, and lakes (IUCN 2022). It is usually found in permanent, shallow water with rooted aquatic vegetation, and in the summer, it commonly inhabits relatively open upland habitats such as wet meadows, fields, or scrublands near breeding pond sites (IUCN 2022). These upland habitats are often used for foraging (WDFW n.d.).

Northern leopard frogs breed in both temporary and permanent waterbodies such as ponds, marshes, lakes, and slow-moving or still water along streams and rivers (Gibbs et al. 2007). Eggs are laid and larvae typically develop in shallow, still, permanent water, generally in areas well exposed to sunlight and without predaceous fish or predators (IUCN 2022). Eggs are generally attached to vegetation just below the surface of the water. In northern Minnesota, successful reproduction in acidic bog water either does not occur or is a rare event (Karns 1992).

In addition to breeding habitats, northern leopard frogs must overwinter in well-oxygenated permanent water bodies that do not freeze to the bottom, as they are freeze intolerant. Overwintering most often occurs in springs, streams, deeper lakes and ponds, or river habitats (USFWS n.d.). Within these waterbodies, leopard frogs have been found overwintering under rocks, logs, leaf litter or vegetation, or in depressions within the substrate (Emery et al. 1972).

## V. Species Demographic, and Life History:

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/Catadromous?
Yes	-	No	-	-	-

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:

Northern leopard frogs are active in New York from about March through October. Breeding activities peak in early spring (April through May) in shallow ponds with ample submergent vegetation (Gibbs et al. 2007). Males aggregate at egg laying sites, and females choose a mate based on call quality (Merrell 1977 in Gibbs et al. 2007). Females deposit egg masses, typically containing 1000 – 5000 eggs, on vegetation just below the water's surface (Gibbs et al. 2007). The hatching time is temperature dependent and ranges from 2-17 days (WFDW n.d.). Metamorphosis occurs within 3-6 months and sexual maturity is reached at around 2-3 years for females and 1-2 years for males (USFWS n.d.). The average lifespan in the wild is 2 – 4 years (USFWS n.d.). Recently metamorphosed frogs may disperse more than 800 meters (0.5 miles) in an effort to move from breeding areas (USFWS n.d.).

## VI. Threats:

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent*	Severity*	Immediacy*	Trend	Certainty
1. Residential and Commercial	1.1 Housing & Urban Areas	(habitat loss/degradation)	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	(habitat loss/degradation)	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	(mowing fatalities)	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 (road mortality)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
5. Biological Resource Use	5.1 Hunting & Collecting Terrestrial Animals	5.1.1 Hunting	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 8.4.3 Fungal pathogens	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.1 Domestic & Urban Wastewater	9.1.2 Runoff 9.3.1 Nutrient loads 9.3.3 Herbicides & pesticides	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.3 Agricultural & Forestry Effluents	9.1.2 Runoff 9.3.1 Nutrient loads 9.3.3 Herbicides & pesticides	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.4 Changes in Precipitation & Hydrological Regimes	11.4.2 Droughts 11.4.4 Increase in fluctuations in precipitation regime	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

**Table 1.** Threats to northern leopard frog.

## Threats Discussion:

Access to both aquatic and terrestrial habitat is essential for reproductive success of the northern leopard frog. Residential and commercial development, as well as the range-wide intensification of agriculture, threatens this species through direct habitat loss, degradation, and fragmentation of habitats. As habitat is lost and becomes more fragmented, connectivity of breeding amphibian populations may diminish and could create population sinks (Hels and Nachman 2002, Carlson and Edenhamn 2000); recolonization of remaining habitat patches also becomes increasingly difficult. Disrupted connectivity between overwintering sites and breeding ponds also creates potential road mortality (Bouchard et al. 2009, Gibbs and Shriver 2005). Direct mortality of northern leopard frogs caused by vehicle traffic can be a significant threat, particularly for small populations.

Because adult leopard frogs spend a substantial amount of time in grassy fields, agricultural mowing poses a direct threat to individuals. Direct mortality from mowing or agricultural machinery is most likely to occur in areas where aquatic habitats are in close proximity to farm fields. A study utilizing radio transmitters in Wisconsin determined mowing was a leading cause of death for individuals in habitats neighboring farmlands (Knutson et al. 2018). Exposure to pesticides, herbicides, and nitrates (associated with fertilizers) in runoff can also negatively impact the species. Low levels of nitrates may cause reduced activity, feeding, reproductive ability, and are associated with increased deformities in tadpoles (Hecnar 1995). Allran and Karasov (2000) also reported that nitrate slowed the growth of leopard frog larvae.

Several pathogens pose a threat to northern leopard frogs, including *Batrachochytrium dendrobatidis* (Bd) and Ranavirus. The chytrid fungus, *Batrachochytrium dendrobatidis* (Bd), first described in 1998 (Longcore et al. 1999), has become a disease of global concern, with a recent study finding Bd-infection in 86 of 119 (72%) sampled countries and in 1062 of 1966 (54%) amphibian species tested (Monzon et al. 2020). *Bd* has caused mortality among both adult and juvenile northern leopard frogs in Canada, and was previously identified as the single-most significant threat to the Rocky Mountain population (COSEWIC 2009). Ranaviruses may also pose a threat to the species, and have been shown to cause mortality in at least 14 families and more than 70 species of amphibians (Miller 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:

New York State legislation (2006; ECL section 11-0107 sub 2) provides all native frogs, turtles, snakes, lizards and salamanders legal protection as game species, requiring a small game license for take or a Special License to conduct scientific studies. 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 local importance. Starting on January 1, 2028, the Freshwater Wetlands Act will provide protection for wetlands greater than 7.4 acres in size. The Freshwater Wetlands Act also allows the Adirondack Park Agency to protect wetlands over one acre in size or any size wetland adjacent to open water within the Adirondack Park. The U.S. Army Corps of

Engineers also protects wetlands, irrespective of size, under Section 404 of the Clean Water Act. Under Article 15 Title 5 of the New York State Environmental Conservation Law, the Protection of Waters program provides protection for the state's water resources, including rivers, streams, lakes, and ponds.

These mechanisms are not adequate to protect this species or its habitat in New York.

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

The Comprehensive Wildlife Conservation Strategy (NYS DEC 2005) includes recommendations for the following actions for freshwater wetland amphibians, which includes northern leopard frog. Actions that have been accomplished, or where progress has been made, are indicated with a check. Conservation actions following IUCN taxonomy are categorized in the table.

**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.
- ☒ Adopt provisions into New York's Environmental Conservation Law designating four-toed salamander and Fowler's toad as a protected small game species.

**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	Resource & habitat protection
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	Harvest management
B.3 Outreach	B.3.1.0.0 Outreach, communication, and distribution	Awareness & Communications
B.4 Law Enforcement and Prosecution	B.4.0.0.0 Law Enforcement and Prosecution	Compliance and Enforcement
C.6 Design and Plan Conservation	C.6.0.0.0 Design and Plan Conservation	Site/area and resource/habitat protection
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 northern leopard frog.

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