

Species Status Assessment

Common Name: Southern pygmy clubtail **Date Updated:** January 4, 2024

Scientific Name: *Lanthus vernalis*

Updated By: Erin L. White

Class: Insecta

Family: Gomphidae

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

Lanthus is a very old genus with just two members in North America. This relatively newly described species that for a long time was confused with *L. parvalus* (Carle 1980) is a secretive inhabitant of forests adjacent to pristine, usually spring-fed brooks, seepages and small rivers. Its larva is intolerant of excessive sedimentation and therefore makes an excellent indicator of high quality waters. Its distribution appears to have recently shifted northeastward and shrank in NYS (White *et al.*, 2010).

I. Status

a. Current legal protected Status

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

ii. **New York:** Not Listed; SPCN

b. Natural Heritage Program

i. **Global:** G4

ii. **New York:** S1 **Tracked by NYNHP?:** Yes

Other Ranks:

-NYS 2025 SGCN Status: Species of Greatest Conservation Need

-IUCN Red List: Least Concern

-Northeast Regional Rank (White *et al.* 2015): R4, primary responsibility

Status Discussion:

The species was just formally recognized in 1980 (Carle, 1980). It is currently ranked an S1, though with this review of information since 2010, it would likely fall in the S2S3 category. There is enough information to rank this species, so it should not remain an SPCN. Based on rarity, trend, and threat information, it is recommended that this species become an SGCN.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Unknown	Unknown			Choose an item.

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
Northeastern US	Yes	Unknown	Declining	Pre and post 2000	Watchlist (Assessment Priority), R4	No
New York	Yes	Unknown	Stable	Pre and post 2005	S1; SGCN	No
Connecticut	Yes	Unknown	Unknown		S2S3	No
Massachusetts	Yes	Unknown	Unknown		S3	No
New Jersey	Yes	Unknown	Unknown		SNR	Yes
Pennsylvania	Yes	Unknown	Unknown		S4?	No
Vermont	Yes	Unknown	Unknown		S3	No
Ontario	No	-	-			-
Quebec	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 (*specify any monitoring activities or regular surveys that are conducted in New York*):

The New York State Dragonfly and Damselfly Survey (NYSDDS) was conducted from 2005-2009 but there are no organized, regular monitoring or survey activities directed toward this species or to sites where it has been documented.

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

White *et al.*, (2015) found marked declines in county-level distributions since 2000 throughout the entire Northeast. In NYS, this species does not appear to occupy many of the sites where it had been found historically (just two of the eight historical counties) (White *et al.*, 2010). The species was known from 8 counties prior to the NYDDS, but during intensive surveys statewide in 2005-2009 it was only found in 4 counties, most farther to the northeast in the state. Since 2010, there are additional new county records from Warren, Columbia, and Chenango counties and it has been reconfirmed in four of the historical counties. Overall, the species appears to be relatively stable in the state (Table 1); though there are no recent records from two of the historical counties, there are a number of new county records and occurrences within the historical range (Abbott 2024, Donnelly 2004, iNaturalist 2024, NYNHP 2024).

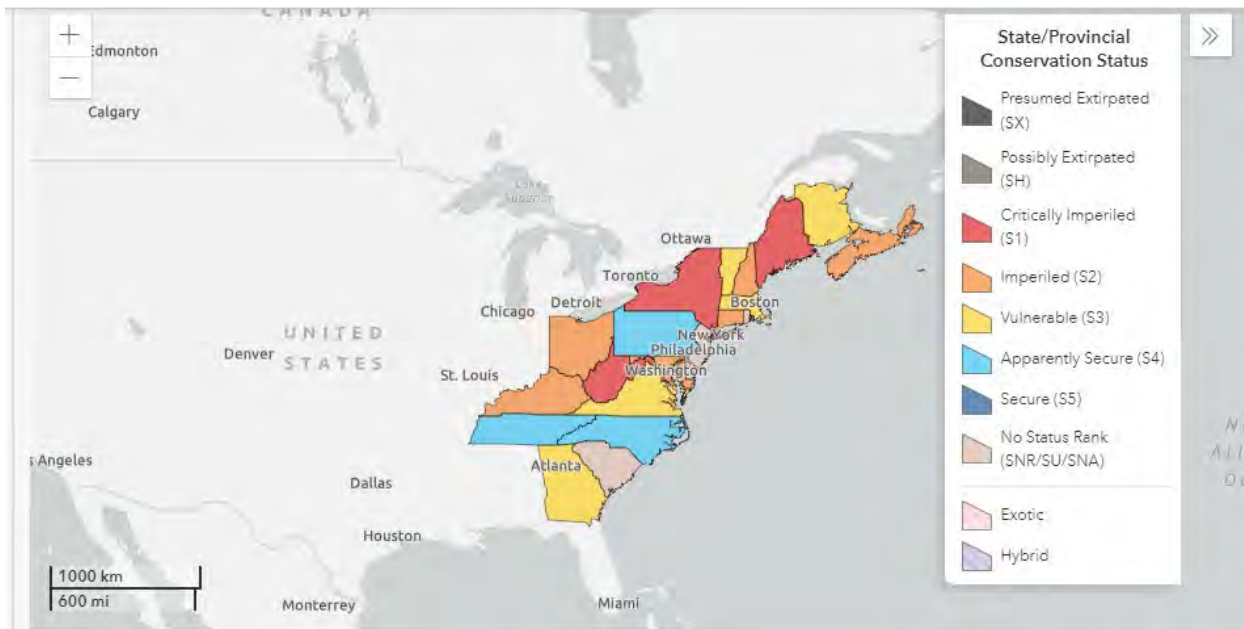


Figure 1. Conservation status of the Southern Pygmy Clubtail in North America (NatureServe 2024).

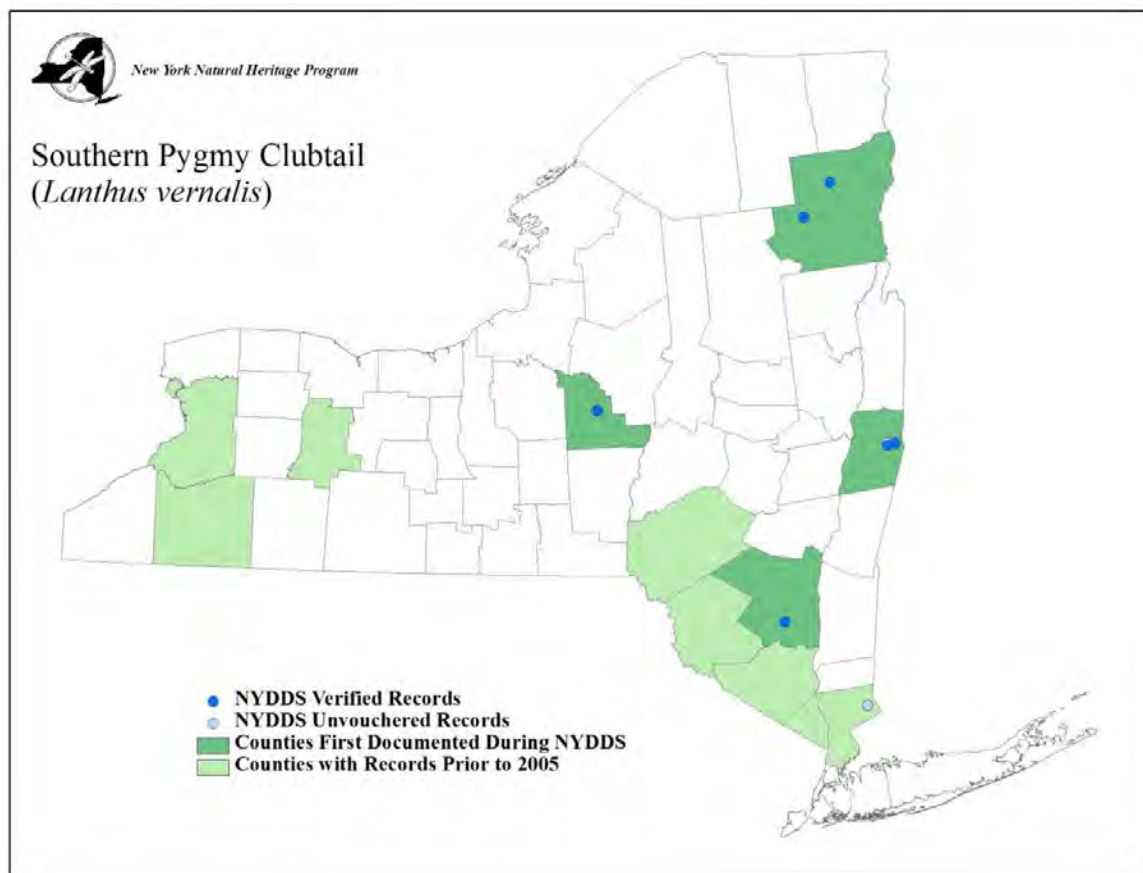


Figure 2. Occurrence record of the Southern Pygmy Clubtail in New York during the NYDDS (White *et al.* 2010).

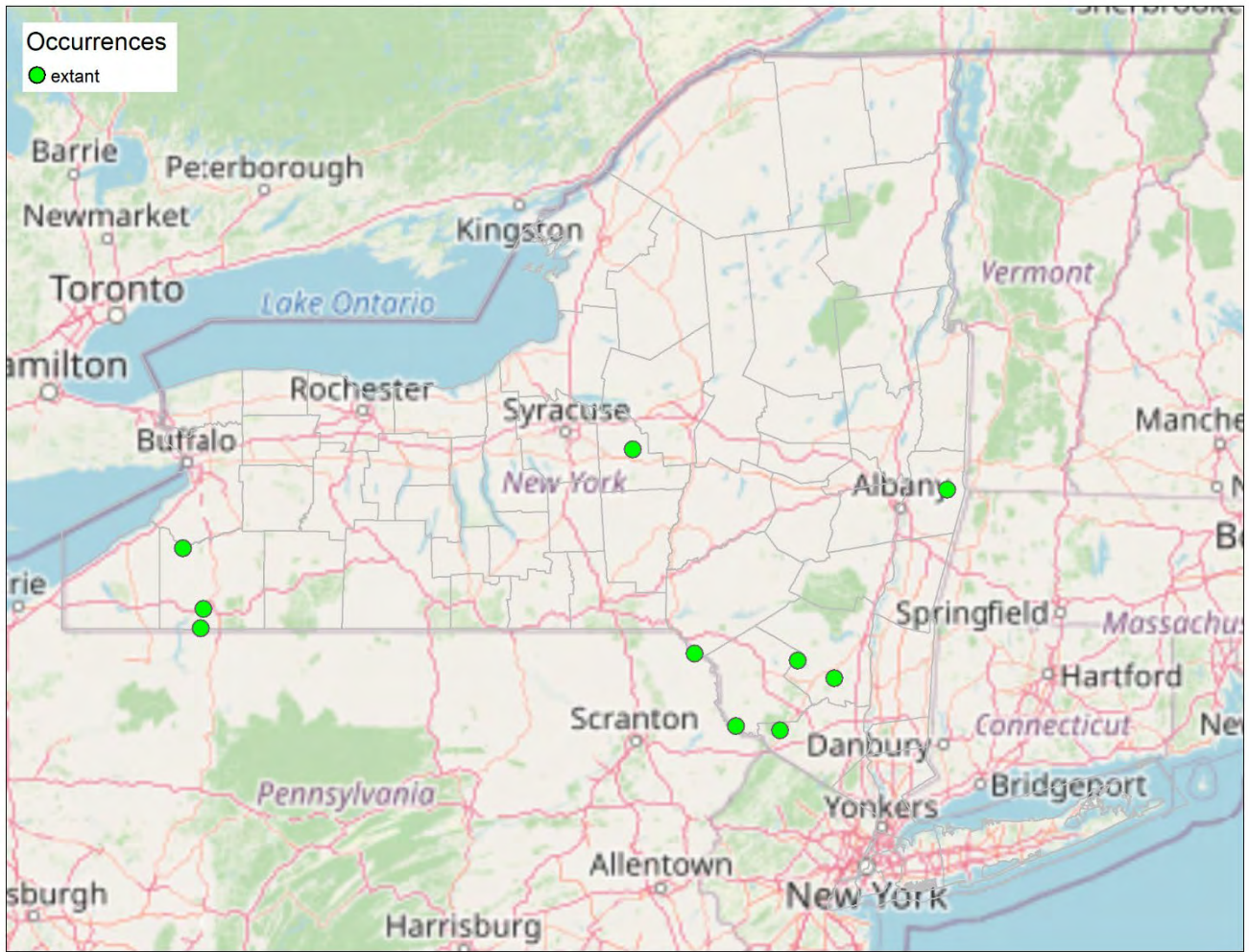


Figure 3. NYNHP element occurrence records for the Southern Pygmy Clubtail in NY (NYNHP 2024).

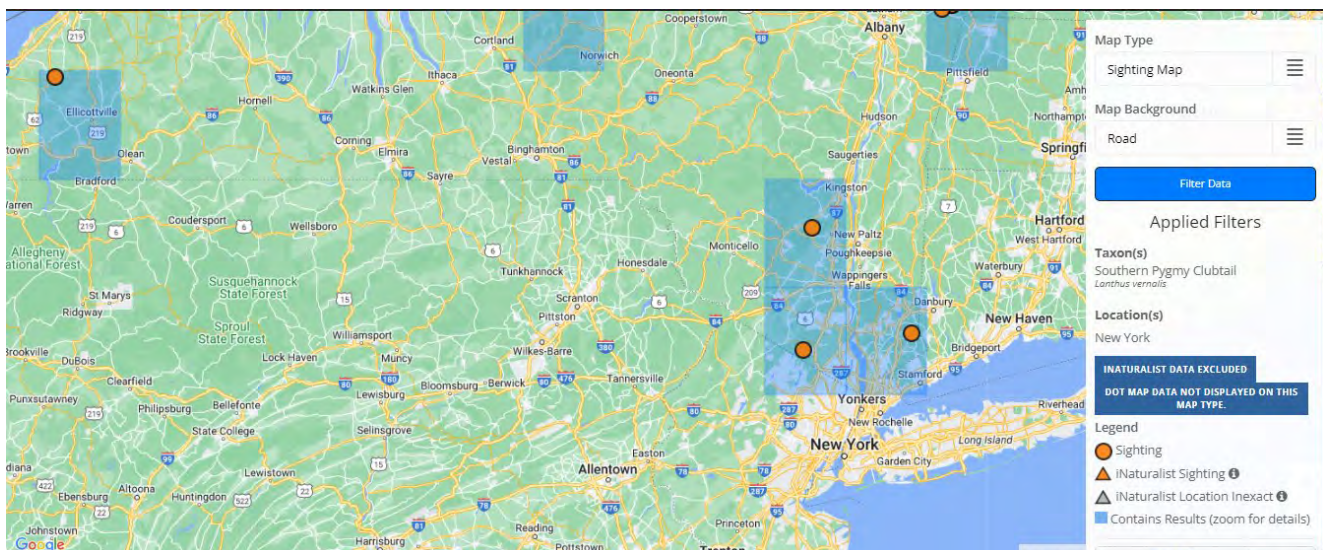
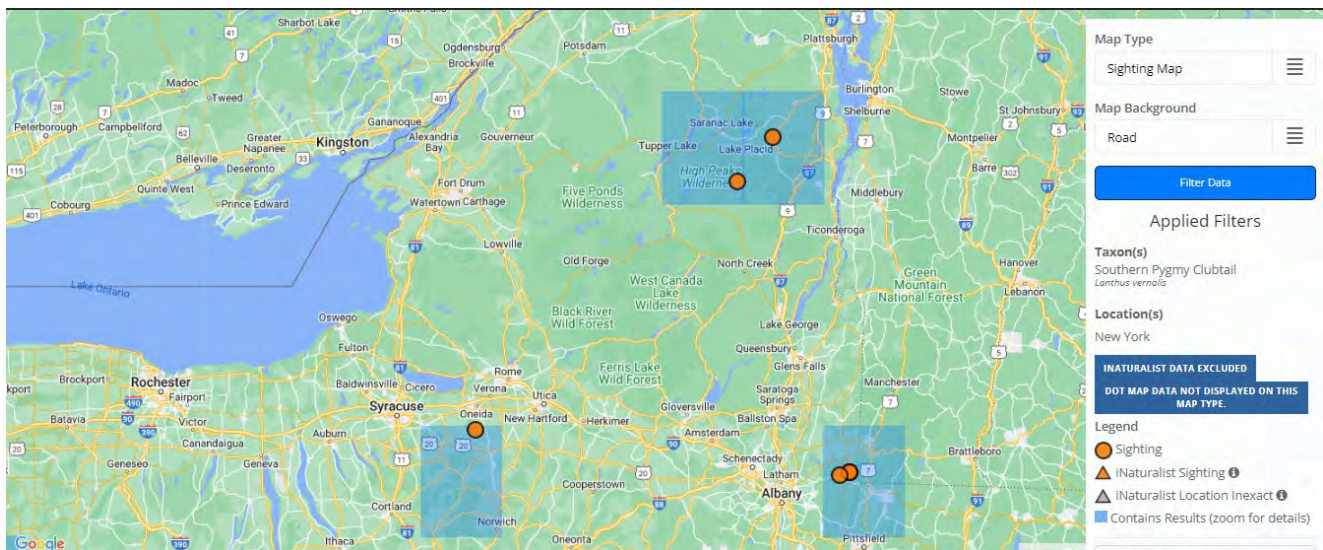


Figure 4. Distribution of the Southern Pygmy Clubtail in NY (Abbott 2024).

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

May be more common and widespread than current records indicate (at least within the current known range) and owing the cryptic behavior of adults it may be under-reported (Carle, 1980).

Years	# of Records	# of Counties	% of State
Pre-2004	at least 8	8	10-13%
2005-2009	6	4	5-7%
2010-2023	11	8	10-13%

Table 1. Records of southern pygmy clubtail in New York.

Details of historic and current occurrence:

Lanthus vernalis were known from eight counties along the southern part of the state historically. None of the southern and western counties occupied prior to NYDDS were found to be occupied in 2005-2009, though they have been reconfirmed in Cattaraugus, Delaware, Orange, and Westchester counties in recent years.

Since 2010, they have been confirmed in Chenango, Delaware, Orange, Westchester, and Warren counties and two locations in Cattaraugus, Ulster, and Columbia counties. They seem to be most reliably observed at Ward Pound Ridge in Westchester County from 2017-2023.

If it occurs in 4/62 counties, that is very roughly about 6.5% of the state, though the occupied area of those counties is rather small, so a range is estimated.

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%	Core	PA is core

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):*

There is at least one location of medium tributary with low-moderate gradient and transitional warm, but mostly sites in NY are:

- a. Size/Waterbody Type:** Headwater, Creek
- b. Geology:** Moderately Buffered, Neutral, one site is Highly Buffered, Calcareous
- c. Temperature:** Cold, Transitional Cool
- d. Gradient:** Very-High, High, Moderately-High

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/Community Trend	Time frame of Decline/Increase
Yes	Yes	Declining	Pre and post 2000, high-moderate vulnerability in White et al. 2015

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:

Larvae can be common in spring-fed rills, but the secretive adults are rarely observed. The preferred habitat is small spring brooks and seepage areas, but can occasionally occur in small rivers of high

water quality and therefore is an indicator of waters capable of sustaining native brook trout strains (Carle, 1980).

V. Species Demographic, and Life History:

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

Column options

First 5 fields: Yes; No; Unknown; (blank) or Choose an item

Anadromous/Catadromous: Anadromous; Catadromous; (blank) or Choose an item

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

Larval period is ~2-3 years. Emergence generally occurs on streambanks or on fallen streamside vegetation 30-60 cm above the water. The maiden flight occurs within a few hours to nearby low trees or shrubs and within a week males begin to establish territories near suitable oviposition sites. Perch on leaves 3-4 meters above the seep (Carle, 1980). Generalist predator larvae appear to be able to readily shift their prey base if massive perturbations (e.g., pesticides) kill off their main prey (Wallace *et al.*, 1987).

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

From NYNHP 2024b: This species is restricted to pristine spring fed seepages and streams and the larvae are intolerant of excessive sedimentation (Carle, 1980). Specific threats could include human-caused changes to natural hydrology of groundwater and/or excessive siltation of streams (i.e., dams, water withdrawals, hydrofracking, urbanization, improper logging techniques); climate change events such as extreme drought and/or increased flooding could alter the temperature and reliability of subsurface flows. Factors affecting the amount and composition of riparian forests such as development and urbanization could also impact populations (SaintOurs 2002).

Threats to NY Populations	
Threat Category	Threat
1. Natural System Modifications	Dams & Water Management/Use (change in natural hydrology)
2. Biological Resource Use	Logging & Wood Harvesting (siltation of streams)
3. Climate Change & Severe Weather	Droughts
4. Climate Change & Severe Weather	Storms & Flooding
5. Energy Production & Mining	Oil & Gas Drilling (hydraulic fracturing issues)

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:

Article 15 of Environmental Conservation Law provides protection of rivers, streams, lakes and ponds through the Protection of Waters permit program. This is not adequate to protect the habitat/species.

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

Any measures to reduce water contamination or hydrological alteration such as agricultural run-off, upland development, and damming that would affect flow of small forested streams should be considered when managing for this species. Since this is a groundwater and forest obligate, site specific as well as landscape-level management issues related to maintaining high levels of forested cover should benefit populations (New York Natural Heritage Program 2024b).

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for odonates of rivers and streams.

Habitat monitoring:

* Support and encourage habitat monitoring efforts that would complete the baseline assessment of habitat quality and threats.

Habitat research:

* Support and encourage research projects that will help define preferred habitat in order to guide future monitoring, restoration and habitat protection efforts.

New regulation:

* Recommendations for official state endangered, threatened, and special concern listing are an anticipated result of the statewide inventory. It is expected that at least a few species will be recommended for listing and officially adding these species to the list would constitute a concrete action. Four of the species are currently listed as Special Concern, but it is possible a change in their listing status may be warranted following additional surveys.

Population monitoring:

* Conduct surveys to obtain repeatable, relative abundance estimates for these species at known sites and newly discovered sites where access permission to conduct surveys is obtained. Maintain existing populations and, if needed and possible, establish or restore additional populations, to ensure the long-term persistence of these species in New York State.

Conservation Actions	
Action Category	Action

1. Land/Water Protection	Resource and habitat protection
2. Land/Water Protection	Site/area protection
3. Land/water management	Site/area management
4. Land/water management	Habitat & natural process restoration
5. Land/water management	Invasives/problematic species control
3. Education and Awareness	Awareness & Communications
3. Education and Awareness	Training
4. Law and Policy	Policies and Regulations

Table 3. Recommended conservation actions for southern pygmy clubtail

VII. References

Abbott, J.C. 2006-2024. OdonataCentral: An online resource for the distribution and identification of Odonata. Available at <https://www.odonatacentral.org/>. (Accessed: 1/4/2024).

Carle, F.L. 1980. A new *Lanthus* (Odonata: Gomphidae) from eastern North America with adult and nymphal keys to American Octogomphines. *Annals of the Entomological Society of America* 73:172-179.

Folsom, T. C., & Manuel, K. L. (1983). The life cycle of the dragonfly *Lanthus vernalis* Carle from a mountain stream in South Carolina, United States (Anisoptera: Gomphidae). *Odonatologica*, 12(3), 279-284.

Corser, J. 2013. NYSDEC SWAP 2015 Species Status Assessment for *Lanthus vernalis* Prepared on October 23, 2013. Revised by Samantha Hoff on Feb. 11, 2014.

iNaturalist. 2024. Available from <https://www.inaturalist.org>. Accessed January 4, 2024.

IUCN 2024. IUCN Red List of Threatened Species. Version 2023.1. <www.iucnredlist.org>. Accessed 4 January 2024.

NatureServe. 2024. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed January 4, 2024.

New York Natural Heritage Program. 2024a. Element Occurrence Database. State University of New York College of Environmental Science and Forestry, Albany, NY.

New York Natural Heritage Program. 2024b. Online Conservation Guide for *Lanthus vernalis*. Available from: <https://guides.nynhp.org/southern-pygmy-clubtail/>. Accessed January 4, 2024.

New York State Department of Environmental Conservation. (2006). *New York State*

Comprehensive Wildlife Conservation Strategy. Albany, NY: New York State Department of Environmental Conservation.

Northeast Fish and Wildlife Diversity. 2024. Regional Species of Greatest Conservation Need (2023). <https://northeastwildlifediversity.org/rsgcn>. Accessed January 4, 2024.

Olivero, A.P. and M.G. Anderson. 2008. Northeast Aquatic Habitat Classification. The Nature Conservancy Eastern Resource Office, Boston, MA.

Wallace, J.B, T.F. Cuffney, C.C. Lay, and D. Vogel. 1987. The influence of an ecosystem-level manipulation on prey consumption by a lotic dragonfly. *Canadian Journal of Zoology* 65:35-40.

White, Erin L., Jeffrey D. Corser, and Matthew D. Schlesinger. 2010. The New York dragonfly and damselfly survey 2005-2009: Distribution and status of the odonates of New York. New York Natural Heritage Program, Albany, New York.

White, E.L., J.D. Corser, P.D. Hunt, P. DeMaynadier, and M.D. Schlesinger. 2015. Prioritizing Odonata for conservation action in the northeastern USA. *Freshwater Science* (34): 1079-1093.

Originally prepared by	Jeffrey D. Corser
Date first prepared	October 23, 2013
First revision	February 11, 2014 (Samantha Hoff)
Latest revision	January 4, 2024 (Erin L. White)