

Species Status Assessment

Common Name: Comet darner

Date Updated: January 9, 2024

Scientific Name: *Anax longipes*

Updated By: Erin L. White

Class: Insecta

Family: Aeshnidae

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

From White et al. 2010: “[The comet darner] (*Anax longipes*) is considered a tropical species (Hine 1913) and the center of its North American distribution lies in southern Kentucky in the Central Hardwood Forest eco-region. It ranges north to New Brunswick, south to Cuba and west to Texas and Wisconsin (Donnelly 2004). However, it has traditionally been thought of as a Coastal Plain species and since it wanders over long distances, many outlying records (especially in the north) could be vagrants and not indicative of established breeding populations (Donnelly 1999). As a coastal plain species, it is not surprising that the New York stronghold is on Long Island. *A. longipes* has been known from around New York City since the late 1800s, and there are numerous coastal plain ponds on Long Island where the species currently is found.

It ranges through the Hudson Valley northward to Albany County, where a persistent breeding colony has occupied a farm pond since the mid-1990s (Donnelly 1999).” [A second persistent breeding location is found in Schuyler County in the southern Finger Lakes where, like the Albany County location, the breeding pond is manmade (Gregoire and Gregoire 2007).]

In other locations in New York and elsewhere, this species inhabits a wide variety of small lakes, and especially ponds, including coastal plain ponds, vernal pools, natural rocky ponds, and farm ponds. The common habitat feature seems to be that the water body is well-vegetated with both floating and submerged aquatic macrophytes (Massachusetts NHESP 2003), and possibly fishless (Dunkle 2000).”

This species is an excellent colonist and may be relatively robust in the face of anthropogenic change (P. Hunt, personal communication).

I. Status

a. Current legal protected Status

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

ii. **New York:** Not Listed

b. Natural Heritage Program

i. **Global:** G5

ii. **New York:** S2S3 **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): R4R5 Vulnerability, Significant Responsibility

Status Discussion:

White *et al.* (2010) recommend a draft revised status of S2S3 from its previous status of S2. It would likely remain an S2S3 based on current information. Based on rarity, trend, and threat information, this species should remain an SGCN.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Stable	Stable	Last assessment 1985		-
Northeastern US	Yes	Unknown	Stable	Pre and post 2000	R4R5;	No
New York	Yes	Unknown	Stable	Pre and post 2005	S2S3; SGCN	Yes
Connecticut	Yes	Unknown	Unknown		S1S2; SGCN	Yes
Massachusetts	Yes	Unknown	Unknown		SC; S2S3; SGCN	Yes
New Jersey	No data	Unknown	Unknown		SNR	-
Pennsylvania	Yes	Unknown	Unknown		S2S3; SGCN	Yes
Vermont	No data	Unknown	Unknown		SNR; SGCN	Yes
Ontario	No	-	-			-
Quebec	No data	Unknown	Unknown		SNR	-

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 (NYDDS) 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, other than the Schuyler County location which is monitored annually by the owners of the pond (Paul Novak, pers. comm.).

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

Donnelly (1992) noted that this species wanders far from the coast, but also noted established colonies in the Appalachians had existed for decades. The Albany and Schuyler County locations in New York—both manmade ponds—are evidence of the species’ ability to colonize newly created wetlands, and the

number and wide distribution of new locations obtained in recent years suggest that this species may now be more often or more readily establishing new breeding locations following post emergence wanderings to the north. Recent survey efforts have expanded the known range of this species slightly and the suggested trend is stable to increasing in NY. The number of records since 2005 could be indicative of increased survey efforts and increased use of iNaturalist (iNaturalist 2024, White *et al.* 2010). This is a large, showy dragonfly that would peak interest from the public and is easily identified by photograph, making iNaturalist a useful tool for confirming sightings. What is more difficult to discern is whether any new observations from iNaturalist would represent breeding locations.



Figure 1. Conservation status of the Comet Darner in North America (NatureServe 2024).

Comet Darner (*Anax longipes*)

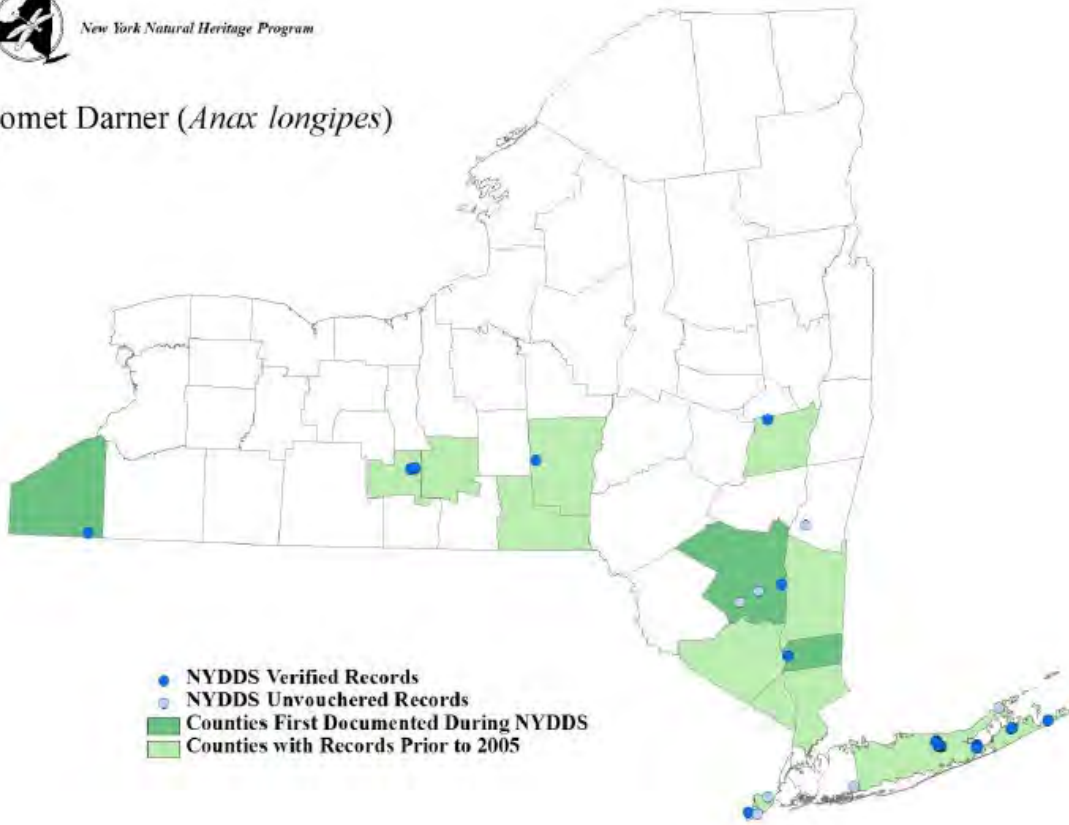


Figure 2. Occurrence record of the Comet Darner in New York during the NYDDS (White *et al.* 2010).

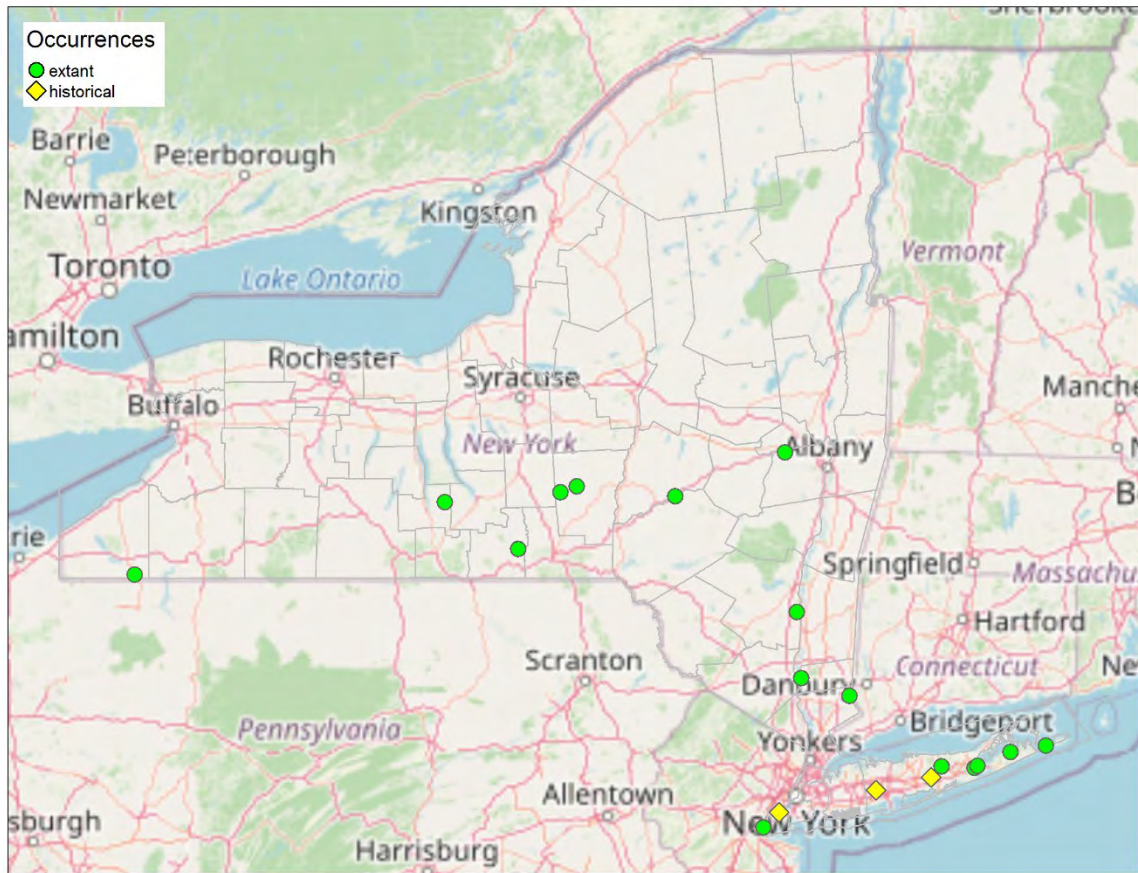


Figure 3. NYNHP element occurrence records for the Comet Darner in NY (NYNHP 2024).

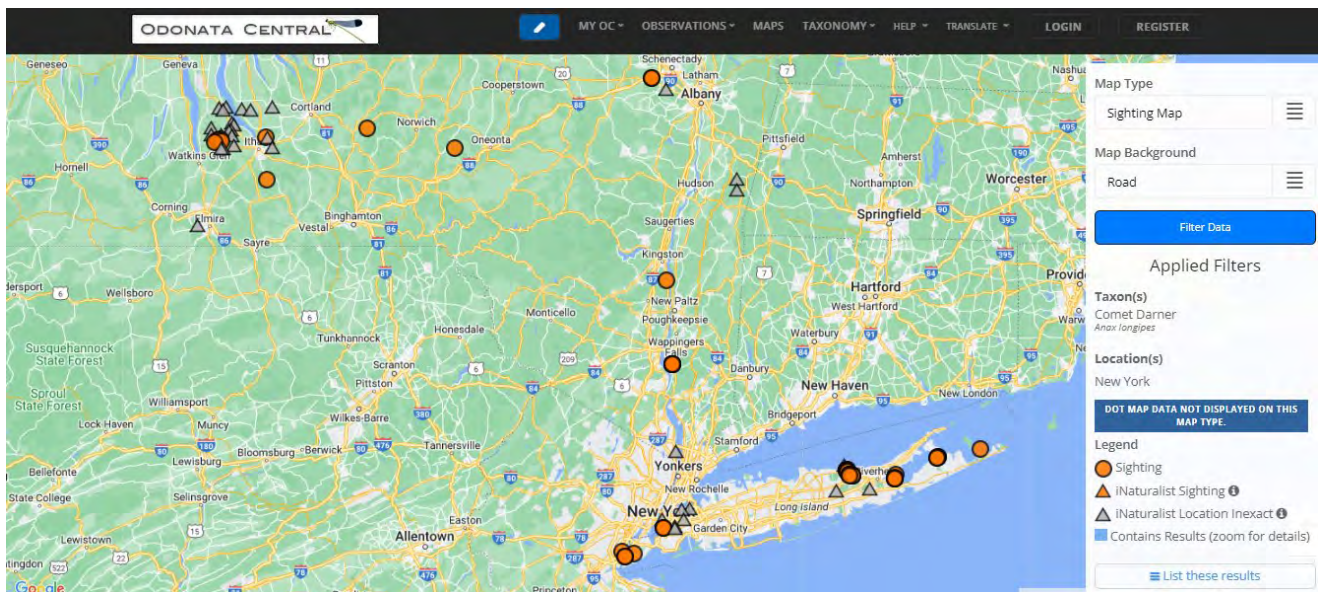


Figure 4. Distribution of the Comet Darner in New York (Abbott 2024).

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

This species is confined to the southern half of the state and some of the known occurrences are at imperiled (S2) coastal plain ponds on Long Island. Farther upstate, it has been found breeding at a few widely scattered locations in many different types of pond habitats. The comet darner has been known from the New York City area since the late 1800s, and its general range in the state seems to be relatively stable (White *et al.* 2010). Although discovered in fewer counties during the NYDDS, the range in New York seems to have expanded somewhat since pre-2000 (White *et al.* 2010). The first known population in western New York was discovered in 2006 near Jamestown, and newly-discovered populations in the Finger Lakes region are reported to be quite abundant (Gregoire and Gregoire 2007). Comet darners have also been observed farther north in the Hudson Valley (Rensselaer and Saratoga counties), but it is unclear whether these represent established breeding populations or wandering individuals (White *et al.* 2010).

Years	# of Records	# of Counties	% of State
Pre-2004	at least 11	11	~18%
2005-2009	at least 10	8	~13%
2010-2023	at least 19	19	~31%

Table 1. Records of comet darner in New York.

Details of historic and current occurrence:

Pre-2004, Comet Darners were known from 11 counties in central and eastern NY (Donnelly 2004). During the NYDDS, records were confirmed in eight counties statewide (Abbott 2024, iNaturalist 2024, White *et al.* 2010). Since 2010, there are confirmed observations from 19 counties in NY, (Abbott 2024, iNaturalist 2024). As there were 61 records on iNaturalist, and the adults are easily identified by photos, I assumed these were valid records if they were labeled research grade or for those needing ID, if I knew either the observer or identifier. As many exact locations are obscured to me on iNaturalist, I was unable to determine if multiple records will be the same EO (or if these are breeding locations), but can assume at least 19 EOs currently (Abbott 2024, iNaturalist 2024). And, even with NYDDS records, it should be noted that not all of the recent locations have been documented as sites where the species is definitively breeding and overwintering (as evidenced by or site emergence or collection of exuviae).

If it occurs in 19/62 counties, that is very roughly about 31% of the state, though the occupied area of those counties would be smaller.

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	~900 miles

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. Coastal Plain Pond
2. Lacustrine, warm water shallow, mud bottom
3. Lacustrine, warm water shallow, sand/gravel bottom
4. And ponds and small lakes 10-99acres.

From Olivero-Sheldon and Anderson 2016:

Warm to cool, eutrophic, acidic

Warm to cool, eutrophic, circumneutral

Warm to Cool, Oligo-Mesotrophic, Acidic

Warm to Cool, Oligo-Mesotrophic, Circumneutral

Habitat or Community Type Trend in New York

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

Coastal plain ponds have declined historically and are still either declining or deteriorating, upstate lake and pond shorelines have moderate vulnerability in our region (White et al. 2015), but farm ponds are probably stable to increasing.

Habitat Discussion:

From White et al. 2010: "In New York and elsewhere *A. longipes* inhabits a wide variety of small lakes, and especially ponds, including coastal plain ponds, vernal pools, natural rocky ponds, and even farm ponds. The common habitat feature seems to be that the water body is well vegetated with both floating and submerged aquatic macrophytes (Massachusetts NHESP 2003), and possibly fishless (Dunkle 2000). Gregoire and Gregoire (2006) described the colonization of an 18' deep constructed fish pond in the Finger Lakes region which is well-covered with submerged aquatic vegetation (*Chara*) and fringed by cattail and sedges. One year, over 85 individuals emerged from this single pond and adults were presumably found at farm ponds up to a mile away (Gregoire & Gregoire 2007). *A. longipes* often co-occurs with a large suite of other common pond odonate species (Shiffer & White 1995, Roble 1999), and is often observed flying above open water, but sometimes far from natal sites (Massachusetts NHESP 2003)."

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

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):

From White et al. 2010: “*A. longipes* has an extended flight season in New York, from 5 June to 17 September, with the majority of records during July. At a constructed pond in Schuyler County, Gregoire and Gregoire (2007) reported emergence dates of 16 June to 26 August with a peak in late June.”

Female *A. longipes* appear at the breeding sites when ready to breed. This generally results in a large number of males competing fiercely to mate with the female. If the female is receptive, the pair flies off high into the nearby woodland to mate. Male dragonflies will mate with as many females as possible; the females may also mate with more than one male. The females lay eggs in emergent or aquatic vegetation. The eggs probably hatch within a month, but the nymph may take as long as 3-4 years to reach maturity. Once they hatch, the immature dragonflies may spend a week or more feeding and maturing in upland areas away from the water, often some distance from the breeding site (Massachusetts NHESP 2008).

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

From NYNHP 2024b: “This species’ coastal plain pond habitat on Long Island is threatened by the introduction of grass carp, alterations to hydrology and water quality, as well as herbicides used to clear aquatic weeds from ponds. The most significant threat to their hydrology comes from commercial and residential development causing increases in the demand for fresh water. This results in drawdowns of the water table, altering the hydroperiod and generally diminishing the pond extent (NYNHP 2011). Upstate, the threats to this species’ eutrophic pond habitat appear to be slight, especially because it seems to occupy a variety of different types of ponds”.

Threat Category	Threat
1. Natural System Modifications	Dams & Water Management/Use (alteration of natural hydrology)
2. Residential & Commercial Development	Housing & Urban Areas (habitat loss)
3. Pollution	Agricultural & Forestry Effluents (runoff, pesticides)
4. Pollution	Household Sewage & Urban Waste Water (lawn care)
5. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (grass carp)

6. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (stocking fish)
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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:

The Freshwater Wetlands Act provides protection for wetlands greater than 12.4 acres in size under Article 24 of the NYS Conservation Law. Possibly take out – not in brackish waters and I don't think any occurrences fall into tidal areas. This only covers a portion of habitat used by this species and does not protect the habitat, nor the species, enough.

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

From NYNHP 2024b: "The most important management concern for coastal plain pond habitats is the maintenance of a natural hydrologic regime and good water quality. Water supplies for new development and ditching, draining or impoundment activities should be weighed carefully. Storm water run-off, herbicide and pesticide use should also be minimized or eliminated in the vicinity of ponds. Where practical, wide (> 100') vegetated buffers should be managed to reduce storm-water, pollution, sediment and nutrient run-off and provide shading and roosting sites. Habitat alteration within the wetland and surrounding landscape should be minimized (NYNHP 2011).

[Further research is needed.] A clearer understanding of habitat requirements is desirable, especially the degree to which larvae can co-exist with predatory fish populations. The collection of exuviae from shoreline vegetation surrounding breeding ponds suggests that this species is much more abundant in localized areas than is indicated by the observation of adults only (Gregoire and Gregoire 2007). Thus, further research is needed to determine if significant numbers of adults disperse from their natal sites, possibly establishing new breeding populations (NYNHP 2011)."

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for odonates of lakes and ponds, and for comet darter in particular.

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.

Life history research:

In some locations, the comet darter is thought to be either episodic or migratory with many of the sight records being from locations that do not support actual populations where the larvae over winter. However, it is clearly resident in at least one location in Albany County where over-wintering larvae have been documented. Surveys for this species need to take this situation into account and incorporate larval sampling. This will add to our knowledge of the life history of this species.

New regulation:

Recommendations for official state endangered, threatened, and special concern listing are an anticipated result of the statewide inventory. It is expected that one or more of these species

may be recommended for listing and officially adding these species to the list would constitute a specific action.

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.

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 comet darter

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