Species Status Assessment

Common Name: Checkered white **Date Updated:** March 2025

Scientific Name: *Pontia protodice* **Minor Edits By:** NYSDEC Wildlife Section

Class: Insecta

Family: Pieridae

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

There is a spring (short-day) and summer (long-day) form of the checkered white (*Pontia protodice*), also called the southern cabbage butterfly. The spring form has strongly reduced black marks above and there is heavy green veining ventrally (Opler and Krizek 1984). Shapiro (1968) showed that the color variation is the result of larvae subjected to long nights of more than 14 hours in the spring (New York Natural Heritage Program 2012).

Checkered whites can be found from southern Canada south to northern Mexico. They are absent from the Pacific Northwest. In recent times, this species is also absent from New England where there is some question if it ever was a resident in the area. Occurrences are becoming more erratic east of the Appalachians (NatureServe 2012). Populations have been documented in Queens (New York Natural Heritage Program 2012). Populations do expand northward and then drop back seasonally when winter comes (expert meeting).

The species hadn't been reported since 1990 and populations appear to be declining. It is believed that the decline could be, at least in part, due to the introduction of the parasitoid wasp (*Cotesia glomerata*) to control cabbage white populations (New York Natural Heritage Program 2012).

The population expands northward and drops back seasonally when winter comes (NYSDEC SGCN Experts Meeting).

DEC is not aware of any additional data or new information on population trends or threats to this species since the last SWAP revision in 2015 to indicate a need for change in SGCN status.

I. Status

a. Current legal protected Status

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

ii. **New York:** Special Concern

b. Natural Heritage Program

i. **Global:** G4

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

Other Ranks:

-NYS 2025 SGCN Status: SGCN

-IUCN Red List: N/A

-Northeast Regional SGCN: Watchlist

Status Discussion:
The checkered white is has experienced drastic decline in the Middle Atlantic region and apparently as far south as the Carolinas and Georgia. The species no longer appears widely most years northeast of the Carolinas except for one persistent colony in northern New Jersey and around New York City. Decline seems sufficient to make a rank of "demonstrably secure" no longer accurate since it is not now predictable whether the decline will spread westward or not. For now, the species is apparently secure in the western United States (NatureServe 2012).

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Stable	Stable			-
Northeastern US	Yes	Declining	Declining			-
New York	Yes	Declining	Declining		SC	Yes
Connecticut	No data	-	-			Yes
Massachusetts	No	-	-			-
New Jersey	No data	-	-		T	Yes
Pennsylvania	No	-	-			-
Vermont	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):*
None

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

Trend information is unknown

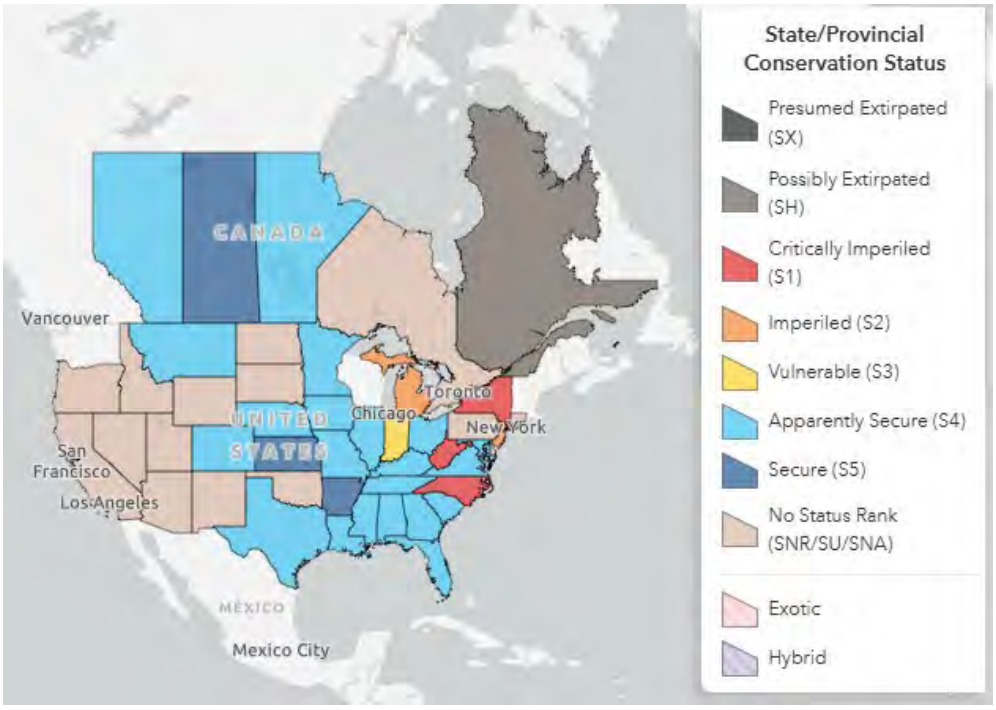

Figure 1. Conservation status of *Pontia protodice* in North America (NatureServe 2024).

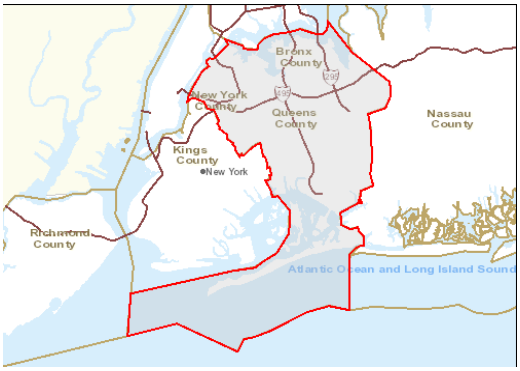

Figure 2. Distribution of the checkered white in North America (New York Nature Explorer 2012).

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

Details of historic and current occurrence:

Queens-1990

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	~1,000 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):*

a. Cultivated crops

b. Old field managed grasslands

c. Non-native shrublands

d. Powerlines

e. Urban and recreational grasslands

Habitat or Community Type Trend in New York

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

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

Habitat Discussion:

In general, the checkered white can be found in a variety of disturbed habitats lacking heavy shade, such as vacant lots, railroad beds, roads, airports, fields, pastures, and grasslands that also contain their mustard and caper food plants (NatureServe 2012; Butterflies and Moths of North America 2012). In New York, the species has been found in sandy or gravelly disturbed areas with sparse vegetation (New York Natural Heritage Program 2012).

V. Species Demographic, and Life History:

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/ Catadromous?
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):*

Adult checkered whites take nectar from a variety of flowers. Tooker et al. (2002) cited a study by C. Robertson in Illinois in which adult checkered whites were observed to feed on nectar from flowers of over 50 species of plants.

Although adults are sexually dimorphic in terms of dark pigmentation of the wings, both sexes recognize the opposite sex by differential UV reflectivity rather than by differences in the dark pigmentation (Rutowski 1981). When adult populations are dense, a female is typically mated during its first day of adult life and may mate more than once during its lifetime. Dense populations where there are numerous male/female interactions act as a signal for females to migrate to less densely populated areas (Shapiro 1970).

During mating, a male passes a spermatophore that represents about 7 to 8% of his body weight and requires about 24 hours to regenerate his potency while a female requires about five to seven days to deplete the contents of the spermatophore (Rutowski 1984). Males, because of their large investment, tend to select younger and larger females for mating (Rutowski 1982).

Females assess the egg load of host plants prior to oviposition. Eggs are often laid on the fruits of host plants but may also be laid on stems. Larvae prefer flowers or fruits but will also eat leaves of the host plants (Minno et al. 2005).

The hosts of checkered white larvae are herbs in the Mustard family (Brassicaceae). Preferred hosts are Virginia pepperweed (*Lepidium virginicum* L.) in the Southeast and prairie pepperweed (*Lepidium densiflorum* Schrad.) in the North, but they also eat the exotic shepherd's purse (*Capsella bursa-pastoris*) (Miller and Miller 1970).

White checkerspots have three flights, with a partial 4th in the South, from March-November. A short-day form appears in spring and fall. Chrysalids hibernate (Butterflies and Months of North America 2012).

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

Checkered white populations may have declined because of the introduction of a parasitoid wasp, *Cotesia glomerata* that was released to control cabbage white populations. The wasp also attacks other pierine butterflies (Schweitzer et al. 2011). Development and railroad and road maintenance are also threats as this species has been found in areas with such pressure in New York (New York Natural Heritage Program 2012).

General threats known to affect Lepidoptera include habitat loss and degradation caused by development, habitat fragmentation, alteration of natural fire regimes, natural succession of habitat, land clearing, erosion, and sea level rise. Past use of chemical biocides to control gypsy moth and other pest insects continues to kill native Lepidoptera. Introduced parasitoid flies have been known to negatively affect native Lepidoptera. Other threats may include invasive species, light pollution affecting reproductive success, over grazing of host plants by wild deer populations, and off-road vehicle use (NYSDEC 2005).

The species has not been assessed at this time, but is has been identified by The New York Natural Heritage Program, the NYS Department of Environmental Conservation, and the Nature Conservancy as a second-priority species recommended for assessment of vulnerability to predicted climate change (Schlesinger *et al.* 2011).

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
4. Transportation & Service Corridors	4.1 Roads & Railroads	(construction and maintenance of roadways)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.1 Terrestrial animals (parasitoid flies and wasps)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.2 Terrestrial plants (garlic mustary, poison to larvae in this family)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.2 Problematic Native Plants & Animals	(over-grazing by deer)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to Pontia protodice.

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

Yes:_____ No:_X__ Unknown:_____

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

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

Since the white checkerspot often occurs along roadsides and railroads, maintenance in these areas should be done to reduce the impact to the species. Broadcast use of herbicides should be avoided and it has been recommended that herbicides be applied to specific target species (Schweitzer et al. 2011).

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.0.0.0 Direct habitat management	Site/Area management
A.1 Direct Habitat Management	A.1.1.0.0 Manage plants, animals, fungi, or bacteria	Invasive/Problematic species control
B.3 Outreach	B.3.1.4.0 Public outreach and information	Awareness & Communications
C.6 Design and Plan Conservation	C.6.5.0.0 Conservation planning	Site/Area Protection
C.6 Design and Plan Conservation	C.6.5.0.0 Conservation planning	Resource/Habitat Protection
C.7 Legislative and Regulatory Framework or Tools	C.7.1.3.0 Create, amend, or influence regulation	
C.7 Legislative and Regulatory Framework or Tools	C.7.2.1.0 Create or amend policies	
C.9 Education and Training	C.9.2.0.0 Training and individual skill development	Training

Table 2. Recommended conservation actions for *Pontia protodice* (add more lines as needed).

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for other butterflies, and for the checkered white in particular.

Fact sheet:

____ Develop fact sheets and other outreach material to educate the public about species at risk Lepidoptera.

Habitat management:

____ Determine best management regimes for species in each locality.

Habitat research:

____ Determine precise habitat needs of all life stages.
____ Ascertain food plants.
____ Determine the relationship between food availability and species numbers.

Invasive species control:

____ Identify species which impact negatively on butterfly populations.
____ Determine the best control method for those exotic species with minimal repercussions for butterfly populations.

Life history research:

____ Investigate the metapopulation dynamics of those species which appear to have distinct populations.
____ Establish the duration of all life stages.
____ Taxonomic research for related species.

Other action:

____ Determine the actual sensitivity of species to chemical formulations, particularly diflubenzuron and other commonly used agricultural pesticides.
____ Determine the effect of Bacillus thuringiensis kurstaki (BTK) used in Gypsy moth sprayings on various species.

Population monitoring:

____ Inventory of species within historical range.

Statewide baseline survey:

____ Survey all species to more adequately define the list of species that need to be addressed.

VII. References

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