Species Status Assessment

Class: Lepidoptera
Family: Pieridae
Scientific Name: *Euchloe olympia*
Common Name: Olympia marble

Species synopsis:

The olympia marble ranges from the eastern plains of Alberta, Canada southward through eastern Montana, Wyoming and Colorado. There are isolated populations in southern Missouri, Arkansas, Texas and Ontario, Canada. In the eastern U.S., this species is found from northern Minnesota through Wisconsin and Michigan. Appalachian populations are found in West Virginia, Virginia, Pennsylvania, New York, Maryland, North Carolina, Tennessee, and Ohio (Parshall 2002). This species was first recorded in Jefferson County, New York in 1986 (NYNHP 2013).

The olympia marble inhabits open woods, barrens, very dry meadows in eastern part of range and open grasslands to the west. It is typically found in habitats that appear semi-arid with well-drained soils (Opler and Krisek 1984). Appalachian populations are restricted to shale barrens, openings, and rights-of-way on sunny wooded shale slopes and crests. Great Lakes region and southeastern Canadian populations are found in dry meadows and open sandy woodlands on old dunes and in alvars (NatureServe 2013). Short-term trend for this species has increased 10-25%. Olympia marble has recently expanded its ranged in the Great Lakes region of Ontario and western New York. Long-term trend for this species varies from an increase of 10-25% to a decline of 30% (NatureServe 2013).

I. Status

a. Current and Legal Protected Status

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

ii. New York Special Concern

b. Natural Heritage Program Rank

i. Global G4G5

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

Other Rank:

United States National Status: N4N5 (30 September 1998)
Canada National Status N4N5 (29 July 2011)
IUCN Redlist: Not assessed

Status Discussion:

The olympia marble is very local and threatened in parts of eastern range, but secure northward and westward, probably even increasing in some northern areas. If they were treated separately the Appalachian populations would be at least globally uncommon if not imperiled (NatureServe 2013).

II. Abundance and Distribution Trends

a. North America

i. Abundance

____ declining ____increasing __X__ stable ____unknown

ii. Distribution:

____ declining ____increasing __X__ stable ____unknown

Time frame considered: _____Not specified_____

b. Regional

i. Abundance

____ declining ___ increasing ____stable __X__unknown

ii. Distribution:

____ declining ___ increasing ____stable __X___unknown

Regional Unit Considered:____Northeast_____
Time Frame Considered: _____Not specified_____

c. Adjacent States and Provinces

CONNECTICUT **Not Present ___X___** **No data _____**

MASSACHUSETTS **Not Present ___X___** **No data _____**

NEW JERSEY **Not Present ___X___** **No data _____**

VERMONT **Not Present ___X___** **No data _____**

ONTARIO **Not Present _____** **No data __X___**

i. Abundance

____ declining ____increasing _____stable __X__ unknown

ii. Distribution:

____ declining ____increasing _____stable __X__ unknown

Time frame considered: Not specified
Listing Status: Not listed

PENNSYLVANIA **Not Present _____** **No data ___X___**

i. Abundance

____ declining ____increasing ____stable __X__ unknown

ii. Distribution:

____ declining ____increasing ____stable __X__ unknown

Time frame considered: Not specified
Listing Status: Not listed SGCN? No

QUEBEC **Not Present _____** **No data __X____**

i. Abundance

____ declining ____increasing _____stable __X__ unknown

ii. Distribution:

____ declining ____increasing _____stable __X__ unknown

Time frame considered: _Not specified_____
Listing Status: _____Not listed_____

d. NEW YORK **No data _____**

i. Abundance

____ declining ____ increasing ____ stable __X__ unknown

ii. Distribution:

____ declining ____ increasing ____ stable __X__ unknown

Time frame considered: _____Not specified_____

Monitoring in New York.

There are no known monitoring programs in New York.

Trends Discussion:

This species has recently expanded its range in Great Lakes regions of Ontario and western New York. Short-term trends suggest an increase of 10 to >25%. Long-term trends show an increase of 10-25% to a decline of 30% (NatureServe 2013). This species spans from the eastern Alberta, Canada southward through eastern Montana, Wyoming and Colorado. There are populations in southern Missouri, Arkansas, Texas and Ontario, Canada. In eastern U.S., this species is found from northern Minnesota through Wisconsin, Michigan, West Virginia, Virginia, Pennsylvania, New York, Maryland, North Carolina, Tennessee, and Ohio (Parshall 2002).

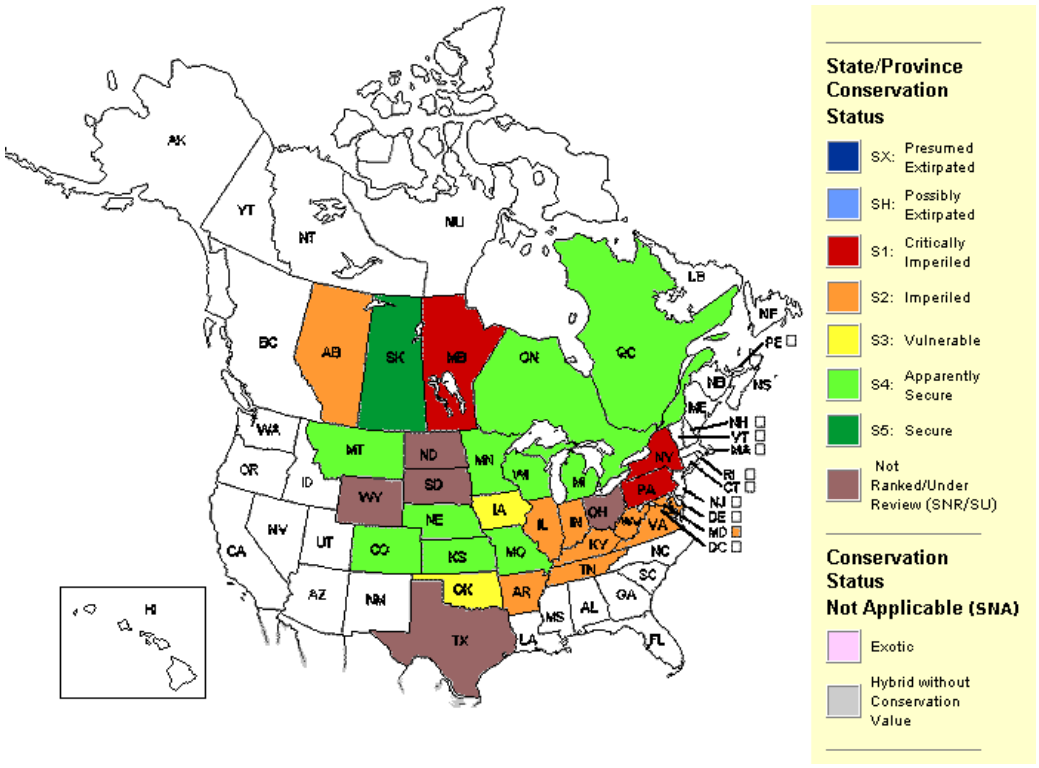

Figure 1. Conservation status of olympia marble (NatureServe 2013).

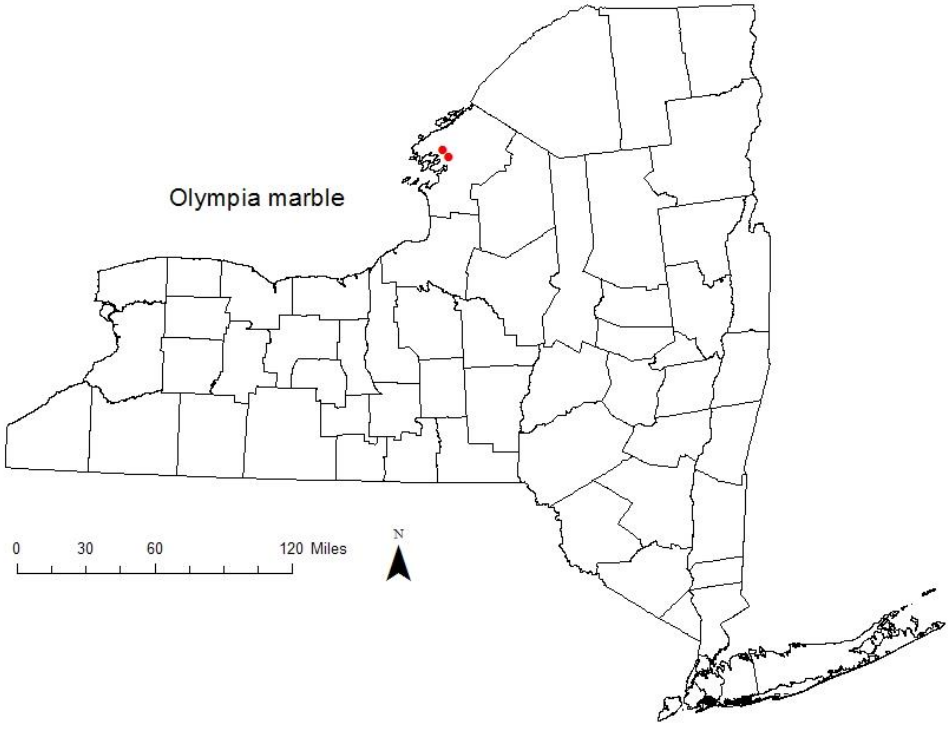

Figure 2. Occurrence location of olympia marble in New York (NYNHP 2013).

III. New York Rarity, if known:

Historic	# of Animals	# of Locations	% of State
prior to 1970	_____	_____	_____
prior to 1980	_____	_____	_____
prior to 1990	_____	**1 county**	_____

Details of historic occurrence:

In 1986, this species was collected in Limerick Cedars Preserve, Jefferson County. In 1987, this species was collected in Chaumont Barrens Preserve, Jefferson County (NYNHP 2013).

Current	# of Animals	# of Locations	% of State
	_____	**1 county**	_____

Details of current occurrence:

This species was observed in 1996 in Chaumont Barrens Preserve. This species was observed in both Limerick Cedars Preserve and Chaumont Barrens Preserve in 2002-2005. In 2006 a survey of both Chaumont Barrens and Limerick Cedars Preserves was unable to observe this species (NYNHP 2013).

New York's Contribution to Species North American Range:

Distribution (percent of NY where species occurs)

_X__ 0-5%

____ 6-10%

____ 11-25%

____ 26-50%

____ >50%

Abundance (within NY distribution)

___ abundant

___ common

___ fairly common

__ uncommon

_X_ rare

NY's Contribution to North American range

_X__ 0-5%

____ 6-10%

____ 11-25%

_____ 26-50%

_____ >50%

Classification of New York Range

____ Core

__X__ Peripheral

____ Disjunct

Distance to core population:

_____

IV. Primary Habitat or Community Type:

1. Old field managed grasslands

2. Great Lakes dune and swale

Habitat or Community Type Trend in New York:

__X__ Declining **____Stable** **____ Increasing** **____Unknown**

Time frame of decline/increase: ____Not specified_____

Habitat Specialist? **__X___ Yes** **_____ No**

Indicator Species? **_____ Yes** **__X___ No**

Habitat Discussion:

The olympia marble is mainly a species of dryland areas. On the prairies, it is usually found on grassy knolls or around badlands near its foodplants. In Ontario and Quebec, it is a species of dry meadows and open woodlands, most often found on alvars and old dunes (Layberry et al. 1998).

V. New York Species Demographics and Life History

__X__ Breeder in New York

__X__ Summer Resident

__X__ Winter Resident

_____ Anadromous

_____ Non-breeder in New York

_____ Summer Resident

_____ Winter Resident

_____ Catadromous

_____ Migratory only

_____Unknown

Species Demographics and Life History Discussion:

The olympia marble is univoline, with adults seen from mid-April to mid-June. In eastern U.S. adults seen later from May into June. Eggs are laid singly on flower buds and leaves of the foodplant. Eggs hatch in seven days (Riddlebarger 1984, Parshall 2002). The larva feeds on the flowers and buds of a variety of rock cresses (*Arabis* spp.) and hedge mustard (*Sisymbrium officinale*) (Clench and Opler 1983, Layberry et al. 1998). Adults freely take nectar from a variety of plants including wood vetch (*Vicia caroliniana*), garlic mustard (*Alliaria petiolata*), dwarf cinquefoil (*Potentilla caadensis*), and wild strawberry (*Fragaria virginiana*) (Allen 1997).

VI. Threats:

This species is not threatened overall, but it has been substantially impacted in Appalachia by gypsy moth spraying, a threat that may continue and could eradicate the species from some areas. This threat could expand into other regions. Available data suggest butterflies as a whole are highly sensitive to *Btk*, and most Lepidoptera definitely are in first and second instars (Peacock *et al.,* 1998). Exposure of these instars would be high, up to the entire larval cohort for the year, during

typical gypsy moth suppression applications. Diflubenzuron would, if anything, be more lethal to larvae and might also have some impact on other stages (NatureServe 2013).

The olympia marble was classified as HV (highly vulnerable) to predicted climate change in an assessment of vulnerability conducted by the New York Natural Heritage Program. Its abundance and/or range extent within geographical area assessed likely to decrease by 2050 (Schlesinger et al. 2011).

General threats known to affect butterfly species include habitat loss and degradations caused by land development and fire. Competition with deer populations for food plants can affect butterfly populations (NYSDEC 2005).

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

__X___ No ____ Unknown

_____ Yes

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

Better information on the potential threat posed by *Btk* spraying is needed, to a lesser extent better information regarding Diflubenzuron impacts is needed. Also it would be very useful to know if some pupae overwinter more than once before hatching, which would greatly reduce the chance that a single incident of gypsy moth spraying would eradicate a population (NatureServe 2013).

Conservation actions following IUCN taxonomy are categorized in the table.

Conservation Actions	
Action Category	**Action**
Law and Policy	Policies and Regulations
Education and Awareness	Training
Education and Awareness	Awareness & Communications
Land/Water Protection	Site/Area Protection
Land/Water Protection	Resource/Habitat Protection
Land/Water Management	Site/Area Management
Land/Water Management	Invasive/Problematic Species Control
Land/Water Protection	Site/Area Protection

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for other butterflies, and for the Olympia marble 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

Allen, T.J. 1997. The Butterflies of West Virginia and Their Caterpillars, University of Pittsburgh Press, Pittsburgh, PA. 399pp.

Clench, H. K and P. A. Opler. 1983. Studies on neararctic Euchloe. Part 8. Distribution, ecology, and variations of Euchloe olympia (Pieridae) populations. Annals of the Carnegie Museum 52:41-54.

Layberry, R. A., P. W. Hall, and J.D. Lafontaine. *The Butterflies of Canada*. 1998. University of Toronto Press.

NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <http://www.natureserve.org/explorer>. Accessed 30 January2013.

New York Natural Heritage Program (NYNHP). 2013. Biodiversity database. Albany, New York. Accessed May 6 2013.

New York State Department of Environmental Conservation. 2005. New York State Comprehensive Wildlife Conservation Strategy. http://www.dec.ny.gov/index.html.

Opler, P.A. and G.O. Krizek. 1984. Butterflies East of the Great Plains, an illustrated natural history. Johns Hopkins University Press. Baltimore.

Parshall, D.K. 2002. Conservation assessment for olympia marble butterfly (*Euchloe olympia*). USDA Forest Service, Eastern Region. <www.fs.fed.us/.../insect_euchloe_olympia-OlympiaMarbleButterfly.pdf>.

Riddlebarger, J. E. 1984. Euchloe olympia: A butterfly new to Ohio. Ohio Journal of Science 84: 267.

Schlesinger, M.D., J.D. Corser, K.A. Perkins, and E.L. White. 2011. Vulnerability of at-risk species to predict climate change in New York. New York Natural Heritage Program, Albany, NY.

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