

## Species Status Assessment

**Class:** Insecta

**Family:** Coccinellidae

**Scientific Name:** *Adalia bipunctata*

**Common Name:** Twospotted lady beetle

### Species synopsis:

*Adalia bipunctata* is 4-5 mm long and ovoid-shaped. The head and thorax is black with yellow markings. Elytra are orange-red, typically with 1 black spot on each (Street 2001). However, there are variations that include: four to six spots, transverse markings, or a black background (Marshall 2000). Undersides are black to reddish-brown. Larvae are soft-bodied, black with yellow and white spots, and elongate (Street 2001).

This lady beetle can be found in a variety of habitats as long as aphids or other small, soft-bodied insects are present (Street 2001). The Lost Ladybug Project (Cornell University 2013) reported *A. bipunctata* in gardens, yards/backyards, and woods/trees (non-orchard) in New York.

*A. bipunctata* is the only *Adalia* species in North America and was once considered the second most common lady beetle. It is also found in Europe and remains common there. Surveys since the 1980s indicate a population decline for this species, as with several other native lady beetles (Harmon et al 2007 and The Lost Lady Bug Project 2013). Stephens and Losey (2003) stated that this species has rarely been collected in recent years.

**I. Status**

**a. Current and Legal Protected Status**

- i. Federal unlisted Candidate? no
- ii. New York unlisted

**b. Natural Heritage Program Rank**

- i. Global Not ranked
- ii. New York not ranked Tracked by NYNHP? N (but planning on it)

**Status Discussion:**

New York Natural Heritage is planning on evaluating the status of this species which may lead to tracking.

**II. Abundance and Distribution Trends**

**a. North America**

**i. Abundance**

x declining \_\_\_ increasing \_\_\_ stable \_\_\_ unknown

**ii. Distribution:**

x declining \_\_\_ increasing \_\_\_ stable \_\_\_ unknown

**Time frame considered:** 1980s-2013

**b. Regional**

**i. Abundance**

declining     increasing     stable     unknown

**ii. Distribution:**

declining     increasing     stable     unknown

Regional Unit Considered: USFWS Region 5

Time Frame Considered: 1980s-2013

**c. Adjacent States and Provinces**

**CONNECTICUT**

Not Present

No data

**i. Abundance**

declining     increasing     stable     unknown

**ii. Distribution:**

declining     increasing     stable     unknown

Time frame considered: 1980s-2013

Listing Status: not listed    SGCN? No

Declines first noted during the 1980s. The Lost Ladybug Project (Cornell University 2013): 0 of 119 were *A. bipunctata*.

**MASSACHUSETTS**

Not Present

No data

**i. Abundance**

declining     increasing     stable     unknown

**ii. Distribution:**

declining     increasing     stable     unknown

Time frame considered: 1980s-2013

Listing Status: not listed    SGCN? No

Declines first noted during the 1980s. The Lost Ladybug Project (2013): 9 of 471 (7 sites) were *A. bipunctata*.

**NEW JERSEY**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

**declining**     **increasing**     **stable**                       **unknown**

**ii. Distribution:**

**declining**     **increasing**     **stable**                       **unknown**

Time frame considered: 1980s-2013

Listing Status: not listed                      SGCN? No

Declines first noted during the 1980s. The Lost Ladybug Project (Cornell University 2013): 2 of 133 (1 site) were *A. bipunctata*.

**ONTARIO**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

**declining**     **increasing**     **stable**                       **unknown**

**ii. Distribution:**

**declining**     **increasing**     **stable**                       **unknown**

Time frame considered: 1980s-2013

Listing Status: not listed

Declines first noted during the 1980s. The Lost Ladybug Project (2013): 8 of 90 (6 sites) were *A. bipunctata*.

**PENNSYLVANIA**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

**declining**     **increasing**     **stable**                       **unknown**

**ii. Distribution:**

**declining**     **increasing**     **stable**                       **unknown**

Time frame considered: 1980s-2013

Listing Status: not listed                      SGCN? no



**d. NEW YORK**

No data \_\_\_\_\_

**i. Abundance**

declining     increasing     stable     unknown

**ii. Distribution:**

declining     increasing     stable     unknown

Time frame considered: 1980s-2013

Declines first noted during the 1980s. The Lost Ladybug Project (2013): 25 of 1639 (6 sites) were *A. bipunctata*.

**Monitoring in New York.**

This species, as well as other lady beetles, are the target of a citizen science project known as The Lost Ladybug Project. Participants search for, photograph, and submit images and locations of ladybugs. I'm not aware of any regular surveys.

**Trends Discussion:**

*A. bipunctata* was once found throughout a large portion of North America. Declines were noted during the 1980s. Harmon et al (2007) stated that the population is likely at or near the detection threshold. Decreases were noted after the arrival of *Coccinella septempunctata* and *Harmonia axyridis*.

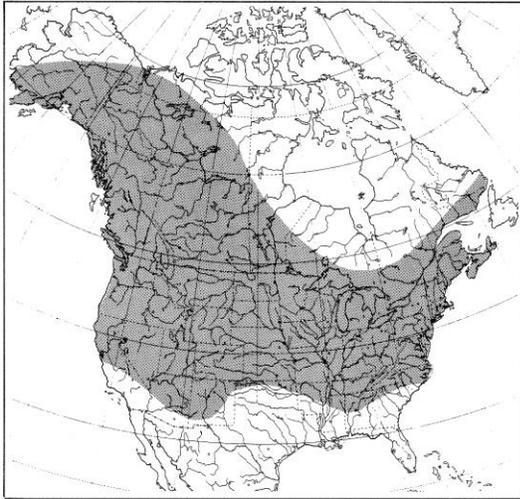


Fig. 638. Distribution. *Adalia bipunctata*.

*A. bipunctata* range map (Gordon 1985) prior to decline.



*A. bipunctata* range map 2000-2013 (Cornell University 2013)

This was once a common species in New York. Currently, there are six know locations in the following counties: Erie, Monroe, and Kings.



**New York State Range Map for *Adalia bipunctata*  
(twospotted lady beetle) 2000-2013 (The Lost Ladybug  
Project 2013)**

**III. New York Rarity, if known:**

Historic (select one)	<u># of Animals</u>	<u># of Locations</u>	<u>% of State</u>
prior to 1970	_____	_____	_____
prior to 1980	_____	_____	_____
prior to 1990	_____	_____	_____

**Details of historic occurrence:**

Current	<u># of Animals</u>	<u># of Locations</u>	<u>% of State</u>
	_25_____	_6_____	_<1%_____

**Details of current occurrence:**

There are six known locations where approximately 25 individuals have been documented in Erie, Monroe, and Kings counties (Cornell University 2013).

**New York's Contribution to Species North American Range:**

% of NA Range in New York	Classification of New York Range
___ 100 (endemic)	_x_ Core
___ 76-99	___ Peripheral
___ 51-75	___ Disjunct
___ 26-50	<b>Distance to core population:</b>
_x_ 1-25	_____

**Rarity Discussion:**

Once a common species, *A. bipunctata* is now considered rare throughout the North American range. In New York, it is currently known from three counties. Despite a citizen science project that began in 2000 (Cornell University 2013), this species has only been found in two neighboring states and one Canadian province, all in low numbers.

**IV. Primary Habitat or Community Type:**

1. Urban/Suburban built
2. Agricultural
- 3.

**Habitat or Community Type Trend in New York:**

Declining       Stable       Increasing       Unknown

Time frame of decline/increase: late 1800s-present

Habitat Specialist?       Yes       No

Indicator Species?       Yes       No

(Stephens and Losey (2003) suggested lady beetles are a good indicator of ecological health because of their sensitivity to natural enemies and anthropogenic influences.)

**Habitat Discussion:**

*A. bipunctata* can be found in a variety of habitats as long as there are soft-bodied insects present, especially aphids. In New York, *A. bipunctata* have been found in gardens, yards/backyards, and woods/trees (non-orchard) in New York between 2000 and 2013 (Cornell University 2013). Agricultural land has been declining in New York since the 1880s. Between 1940 and 1997, there was a 57% decline in farmed land in New York (Harmon et al. 2007). This species is also known to use wooded habitats. "Stable" was selected above because one habitat type is decreasing (farmland) while the other is increasing (wooded areas).

**V. New York Species Demographics and Life History**

- Breeder in New York**
  - Summer Resident**
  - Winter Resident**
  - Anadromous**
- Non-breeder in New York**
  - Summer Resident**
  - Winter Resident**
  - Catadromous**
- Migratory only**
- Unknown**

A. bipunctata is a year-round resident.

**Species Demographics and Life History Discussion:**

A. bipunctata emerges in early to mid spring. It takes less than one month to mature and they live for one to two years (Martinez 2006).

Interspecies depredation and cannibalism have been documented. *Perilitus coccinellae*, a braconid wasp, parasitizes lady beetles (Martinez 2006). Microsporidia, a pathogen, has been documented and its impacts are under investigation (Martinez 2006, Cornell University 2013). Insecticides and transgenic crops are also a source of mortality (Martinez 2006).

**VI. Threats:**

1. While it is difficult to prove, it appears this species has been displaced by the nonnative lady beetles species.
2. A decline in farming (farm/open habitat loss) has decreased some of the available suitable habitat.
3. Pesticide use is a likely cause of mortality for this beneficial insect.

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

No     Unknown

Yes

The preservation of farm land via conservation easements would help preserve/conservate some suitable habitat.

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

<b>Conservation Actions</b>	
<b>Action Category</b>	<b>Action</b>
1 Species Management	Species Re-introduction
2 Species Management	Ex-Situ Conservation (laboratory rearing)
3 Livelihood, Economic & Other Incentives	Conservation Payment (farmland conservation)
4 <i>Add more lines if needed</i>	

Additional research is needed to determine specific habitat needs. Additional survey work is needed to determine the full range and population size in New York. Consider incentives that encourage sustainable farming or reduced pesticide use.

## VII. References

Committee on the Status of Endangered Wildlife in Canada. 2013. "Candidate Wildlife Species." Government of Canada. [http://www.cosewic.gc.ca/eng/sct3/index\\_e.cfm](http://www.cosewic.gc.ca/eng/sct3/index_e.cfm). (Date accessed December 29, 2013).

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**Date last revised:** \_\_\_\_\_ January 22, 2014 \_\_\_\_\_