

## Species Status Assessment

**Class:** Reptilia  
**Family:** Emydidae  
**Scientific Name:** *Emydoidea blandingii*  
**Common Name:** Blanding's Turtle

### Species synopsis:

This large, semi-aquatic turtle inhabits wetland and upland habitats primarily in the Great Lakes region of the United States and Canada. This species is rare throughout its range, about 80% of which occurs in the United States. Isolated populations occur in coastal areas of New England and extreme southwestern Ontario and Quebec, as well as in a small area of Nova Scotia. Four disjunct populations occur in New York: (1) Niagara and Erie counties, (2) Jefferson, St. Lawrence, Lewis and western Franklin, (3) Saratoga County, and (4) Dutchess County. New York's northern and western populations can be regarded as contiguous with the Great Lakes population.

Blanding's turtles are long-lived, have low annual reproductive output, and young have high mortality rates (Congdon et al. 1993). In New York populations are threatened primarily by road mortality, loss and fragmentation of habitat, and high rates of nest predation (Ross and Johnson 2013). While the population trend is difficult to assess, a downward trend can be inferred given the combination of known threats and life history characteristics (Compton 2007).

### I. Status

#### a. Current and Legal Protected Status

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

ii. **New York** Threatened, SGCN

#### b. Natural Heritage Program Rank

i. **Global** G4

ii. **New York** S2S3 **Tracked by NYNHP?** Yes

### Other Rank:

IUCN Red List – Endangered  
Species of Severe Concern (NEPARC 2010)

COSEWIC – Endangered in Nova Scotia, Threatened in Ontario and Quebec  
Species of Northeast Regional Conservation Concern (Therres 1999)  
CITES, Appendix II

**Status Discussion:**

The Blanding’s turtle is listed as a SGCN in each of the five northeastern states where it occurs. Populations in the Northeast are fragmented and this long-lived species is highly affected by loss of adults from populations. It has been designated as a species of Regional Conservation Concern in the Northeast due to its unknown population status and taxonomic uncertainty (Therres 1999), was listed as Endangered on the IUCN Red List in 2011, and was added to Appendix II of the Convention on International Trade in Endangered Species (CITES) in 2013 (van Dijk and Rhodin 2011). NEPARC (2010) lists Blanding’s turtle as a Species of Severe Concern because more than 75% of northeastern states list it as SGCN.

**II. Abundance and Distribution Trends**

**a. North America**

**i. Abundance**

declining     increasing     stable     unknown

**ii. Distribution:**

declining     increasing     stable     unknown

**Time frame considered:** \_\_\_\_\_

**b. Regional**

**i. Abundance**

declining     increasing     stable     unknown

**ii. Distribution:**

declining     increasing     stable     unknown

**Regional Unit Considered:** \_\_\_\_\_

**Time Frame Considered:** \_\_\_\_\_

c. Adjacent States and Provinces

CONNECTICUT                      Not Present   X                        No data \_\_\_\_\_  
VERMONT                              Not Present   X                        No data \_\_\_\_\_  
NEW JERSEY                      Not Present \_\_\_\_\_                      No data \_\_\_\_\_

i. Abundance

\_\_\_\_ declining    \_\_\_\_ increasing    \_\_\_\_ stable      X   unknown

ii. Distribution:

\_\_\_\_ declining    \_\_\_\_ increasing    \_\_\_\_ stable      X   unknown

Time frame considered:   Individual was found in 2013  

Listing Status:   Not listed                        SGCN?   No  

MASSACHUSETTS                      Not Present \_\_\_\_\_                      No data \_\_\_\_\_

iii. Abundance

\_\_\_\_ declining    \_\_\_\_ increasing      X   stable    \_\_\_\_ unknown

iv. Distribution:

\_\_\_\_ declining    \_\_\_\_ increasing      X   stable    \_\_\_\_ unknown

Time frame considered:   70 occurrences as of 2004  

Listing Status:   Threatened                        SGCN?   Yes  

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

i. Abundance

  X   declining    \_\_\_\_ increasing    \_\_\_\_ stable    \_\_\_\_ unknown

ii. Distribution:

  X   declining    \_\_\_\_ increasing    \_\_\_\_ stable    \_\_\_\_ unknown

Time frame considered:   1994 to present  

Listing Status:   Threatened

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

**i. Abundance**

\_\_\_ declining    \_\_\_ increasing                      \_\_\_ stable                       X  unknown

**ii. Distribution:**

\_\_\_ declining    \_\_\_ increasing                      \_\_\_ stable                       X  unknown

Time frame considered: \_\_\_\_\_

Listing Status:  Not Listed, Likely Extirpated                       SGCN?  Yes

**QUEBEC**                                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

X  declining    \_\_\_ increasing                      \_\_\_ stable                      \_\_\_ unknown

**ii. Distribution:**

X  declining    \_\_\_ increasing                      \_\_\_ stable                      \_\_\_ unknown

Time frame considered:  Not Specified

Listing Status:  Threatened

**d. NEW YORK**

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

**i. Abundance**

  X   declining    \_\_\_ increasing    \_\_\_ stable    \_\_\_ unknown

**ii. Distribution:**

  X   declining    \_\_\_ increasing    \_\_\_ stable    \_\_\_ unknown

Time frame considered:   1990-2013  

**Monitoring in New York.**

Beginning in 1998, Glenn Johnson and students from SUNY Potsdam began a mark-recapture program at Lisbon Swamp in St. Lawrence County.

A multi-year regional effort began in 2012 to develop a monitoring framework to quantify the status and trends of Blanding's turtles New York, Pennsylvania, New Hampshire, Massachusetts, and Maine; this effort is funded by a State Wildlife Grant that was awarded to New Hampshire.

Trapping and telemetry studies have been conducted at various locations in New York including the Seneca Nation in Erie County, the Arlington Baird complex and the Overlook wetland in Dutchess County, and at the Wilton Wildlife Preserve in Saratoga County.

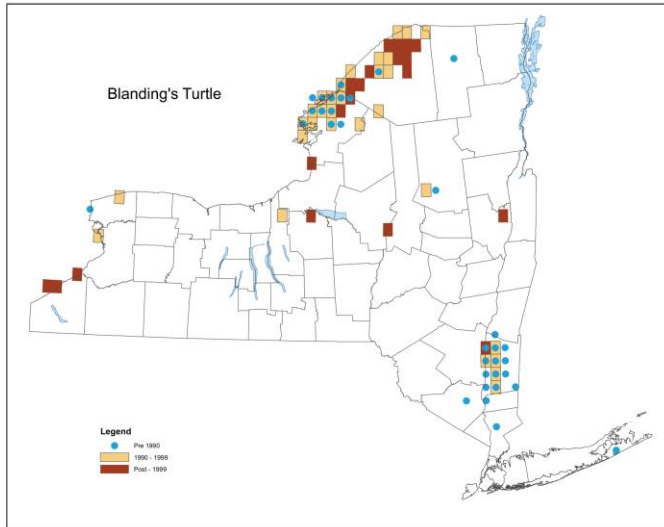
**Trends Discussion:**

The New York Herpetology database contains records from the Atlas period (1990-99), as well as historical records (pre-1990) and records collected since 2000. The distribution map generated from this database suggests the loss of historical locations from several survey quads in the state (the record in Orange County represents released individuals and does not indicate a loss; J. Jaycox, personal communication). These historical locations, from museum records and researchers' notebooks, are on the edges of the lower Hudson Valley populations, and also suggest that Blanding's turtles have been extirpated from Long Island. Six survey quads have new records since 1999, interestingly in areas in the central part of the state.

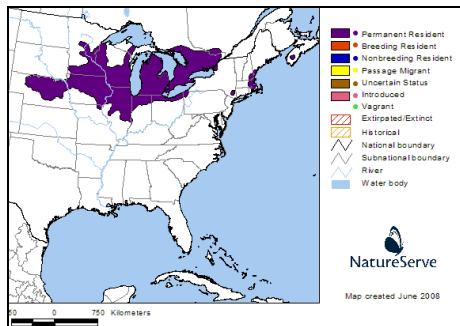
A population viability assessment was conducted for three Blanding's turtle populations in New York: Northern NY, Dutchess, and Saratoga (Ross and Johnson 2013). The probability of extinction over 300 year for each population was 43.8%, 80.8%, and 99.6% respectively. The sensitivity analysis indicated that mortality of individuals had the greatest influence on the stochastic population growth rate (mortality of <14-year-olds having a greater effect than adult mortality), followed by road mortality, number of females breeding, and the effects of inbreeding. The

Northern New York population is the most extensive and may have the greatest viability of the four populations in the state (Ross and Johnson 2013).

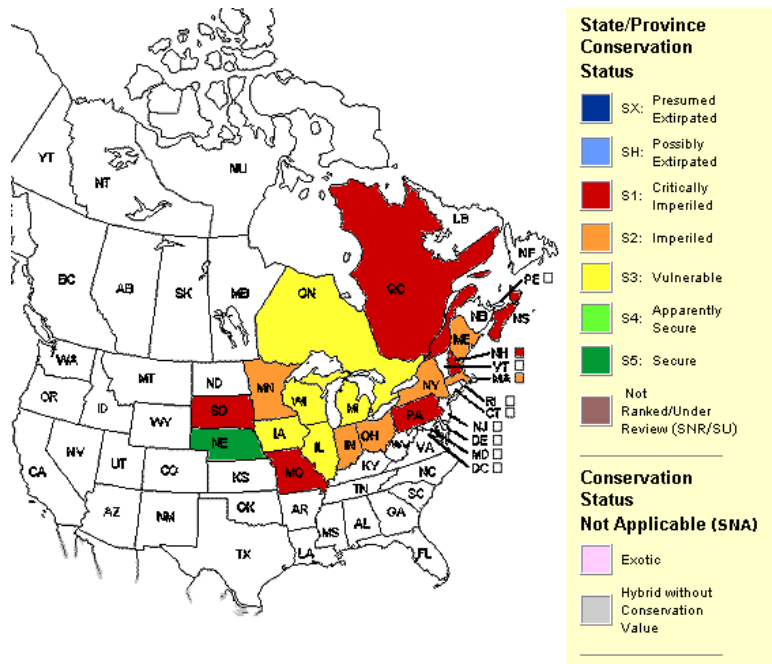
The Midwest U.S. Turtle Red Listing Workshop estimated that 30 to 50% of suitable habitat and populations within those areas have been lost, and many remaining populations have been reduced in size (van Dijk and Rhodin 2011).



**Figure 1:** Current and historic distribution of Blanding's turtle (NY Herpetology Database, NYSDEC).



**Figure 2:** North American distribution of Blanding's turtle (NatureServe 2013). Not shown is a disjunct population in Saratoga County, NY.



**Figure 3:** Conservation status of Blanding's turtle in North America (NatureServe 2013)

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

<b>Historic</b>	<b><u># of Animals</u></b>	<b><u># of Locations</u></b>	<b><u>% of State</u></b>
<b>prior to 1970</b>	_____	_____	_____
<b>prior to 1980</b>	_____	_____	_____
<b>prior to 1990</b>	_____	_____	_____

**Details of historic occurrence:**

The NY Amphibian and Reptile Atlas database includes 33 survey quads with historical records (pre-1990) for Blanding’s turtles representing a distribution similar to the current distribution. Ross and Johnson (2003) provide extensive details of historical occurrence of Blanding’s turtles.

<b>Current</b>	<b><u># of Animals</u></b>	<b><u># of Locations</u></b>	<b><u>% of State</u></b>
	_____	_____	<u>4%</u>

**Details of current occurrence:**

The NY Amphibian and Reptile Atlas documented Blanding’s turtles in a total of 29 survey quads during the survey period 1990-99. Records were added in six additional survey quads since 1999, most significantly at the Wilton Wildlife Preserve in Saratoga County in 2003, and in the Town of Clay, Onondaga County, areas where the species had not been previously documented.

Blanding’s turtles in the state are recognized in four populations: (1) Niagara and Erie counties, (2) Jefferson, St. Lawrence, Lewis and western Franklin counties, (3) Saratoga County, and (4) Dutchess County. New York’s northern and western populations can be regarded as contiguous with the Great Lakes population (Ross and Johnson 2013).



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

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

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

1. Freshwater Marsh
2. Great Lakes Freshwater Estuary Marsh
3. Wet Meadow/Shrub Swamp
4. Open Acidic Peatlands
5. Vernal Pool

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

Declining     Stable     Increasing     Unknown

Time frame of decline/increase: Since 1970s

Habitat Specialist?     Yes     No

**Indicator Species?**

X\* Yes    \_\_\_ No

\* Indicator of scrub shrub wetlands.

**Habitat Discussion:**

Blanding's turtles require large tracts of land with a variety of permanent and temporary wetlands and upland habitats including ponds, rivers, marshes, fens, swamps, vernal pools, meadows, forests, and shrublands. New York populations are found in shallow emergent marsh and scrub/shrub wetlands with abundant aquatic vegetation dominated by buttonbush (*Cephalanthus occidentalis*) in southern populations and by willow (*Salix* spp.) in northern populations (Ross and Johnson 2013).

Nesting occurs in exposed areas such as plowed fields, pastures, dirt road edges, sand and gravel pits, and bedrock outcrops (Joyal et al. 2001). Johnson (unpublished data *in* Ross and Johnson 2013) observed nesting in piles of topsoil and along dirt roads. Johnson and Crockett (2009) suggested that the Blanding's turtle's frequent use of agricultural fields for nesting may be an ecological trap because the growing vegetation shades the nest and results in cooler soil temperatures, thus reducing nest success.

Brumation occurs under the ice in a variety of permanent wetland types, typically in which the water depth is less than 1.5 to 2 meters and have relatively deep organic substrate (Ross and Johnson 2013). Most individuals overwinter in the wetland where they spent the summer.

**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**

**Species Demographics and Life History Discussion:**

Female Blanding's turtles reach sexual maturity in 14 to 20 years and thereafter reproduction occurs throughout the life span of up to 80 years (Congdon et al. 1993). Males are thought to reach sexual maturity by 12 years of age. Females produce one clutch in a breeding year, but may breed only once every two or three years. Congdon et al. (1993) determined the mean time between generations to be approximately 37 years.

Nesting in New York occurs between 28 May and 9 July (Ross and Johnson 2013). Hatchlings emerge in mid-September to early October (Johnson and Crockett 2009, G. Johnson *in* Ross and Johnson 2013).

Blanding's turtles are highly mobile and females travel extensively between wetlands and nesting areas. Gravid females in a Dutchess County population crossed an open field and roads to nest on the driveways and lawns of a housing development 1,000m from the pond, a situation that Jones and Sievert (2012) referred to as a population sink. After several years, the population began using forest cuts created to provide alternative nesting areas (Gibbs et al. 2007). Nest fidelity has been estimated at more than 73% (Standing et al. 1999).

Population densities are summarized in Ross and Johnson (2013), ranging from 0.47/ha in Minnesota to 55/ha in Missouri. In New York, population estimates ranged from 0.43 to 0.78/ha in the Northern NY recovery unit (Johnson and Crockett 2009) and were estimated at 0.07/ha in the

Saratoga County population (Chaloux 2011). Ross (1989) found average home ranges of females and males to be 12.4 ha and 7.5 ha respectively.

In a study of 72 hatchlings in residential landscapes in Massachusetts, Jones and Sievert (2012) reported that most mortality resulted from eastern chipmunk (*Tamias striatus*), followed by cats, birds, and domestic horses.

## **VI. Threats:**

Ross and Johnson (2013) state that road mortality, particularly of older adult females, is perhaps the gravest, most immediate threat to Blanding's turtle populations in New York.

A population viability assessment conducted on three Blanding's turtle populations in New York indicated that mortality of 0-1-year old turtles, followed by mortality of >1-14-year olds, and finally the mortality of >14-year olds, had the greatest influence on stochastic population growth rate. Other noteworthy factors in the model were road mortality, the number of females breeding, and the effects of inbreeding.

Blanding's turtles are sensitive to habitat alteration. Three categories of threat recognized as affecting the decline of this species are loss and degradation of wetland and upland habitats, road mortality, and collection. Hartwig (2004) reported that Blanding's turtle habitat across its range is often intersected by roads and rural human habitations.

Jones and Sievert (2012) found increased hatchling mortality in residential landscapes compared to nonresidential landscapes. They suggested that residential developments may result in sink dynamics for freshwater turtles by providing anthropogenic nesting habitats in which hatchlings sustain high mortality rates.

Commercial collection for the pet trade is a serious problem (Levell 2000). Blanding's turtles are highly prized in the pet trade, commanding \$100 to \$125 for an adult (Reed and Gibbons 2002). Blanding's turtle exports seem to peak and rebound about every five years. Overall, there appears to be an increasing trend in trade. Exports of Blanding's turtles increased from 50 in 1999 to about 200 in 2004, and peaked at 350 in 2011 (LEMIS 2011). Reed and Gibbons (2002) estimated that 30% of Blanding's turtles in the pet trade were wild-caught.

Blanding's turtle was classified as "moderately vulnerable" to predicted climate change in an assessment of vulnerability conducted by the New York Natural Heritage Program (Schlesinger et al. 2011). Ross and Johnson (2013) note the potential for several effects from predicted climate change including fewer wetlands and lower carrying capacities of Blanding's turtle populations in the state; susceptibility to newly emerging diseases; changes in sex ratio due related to temperature-dependent sex determination during incubation; and habitat loss resulting from increased residential development.

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

No       Unknown

Yes

The Blanding's turtle is listed as a threatened species in New York and is protected by Environmental Conservation Law (ECL) section 11-0535 and the New York Code of Rules and Regulations (6 NYCRR Part 182). A permit is required for any proposed project that may result in a take of a species listed as Threatened or Endangered, including, but not limited to, actions that may kill or harm individual animals or result in the adverse modification, degradation or destruction of habitat occupied by the listed species.

The Freshwater Wetlands Act provides protection for wetlands greater than 12.4 acres in size under Article 24 of the NYS Conservation Law. Since 1992, Blanding's turtles are included in Appendix I of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES).

In 2006, the State of New York adopted legislation (ECL section 11-0107 sub 2) that gave all native frogs, turtles, snakes, lizards and salamanders legal protection as game species, with very few open to harvest. The legislation also outlaws the sale of any native species of herpetofauna regardless of its origin.

Ross and Johnson (2013) report that Blanding's turtles occupy a total of almost 5,000 ha at the four populations in the state and that 66% of the occupied area is unprotected (Table 1).

Table 1: Blanding’s turtle sites in New York

Site	Total Area (ha)	Unprotected Area (ha)	Percent Unprotected
Northern NY	2,371	1,331	56%
Dutchess County	2,359	1,825	77%
Saratoga	186	76	41%
Western NY	8	2	25%
TOTAL	4,924	3,234	66%

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

Management actions are presented in the Blanding’s Turtle Recovery Plan for New York based on a population viability analysis (PVA) (Ross and Johnson 2013). Management actions were recommended for the Northern NY and Dutchess County recovery units, and for the Saratoga County recovery unit. The PVA for the Western NY recovery unit indicated that the population is viable with 95% confidence over next 300 years.

Management actions include (1) reducing road mortality rates, (2) protecting a site-specific number of nests until hatching, and (3) headstarting a site-specific number of young turtles into the population every 10 years. See Ross and Johnson (2013) for more details.

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for uncommon turtles of wetlands, which includes Blanding’s turtle. Conservation actions following IUCN taxonomy are categorized in the table.

**Easement acquisition:**

- \_\_\_ Secure habitats critical to species survival by acquisition of conservation easements for wetlands and adjacent uplands.

**Habitat management:**

- \_\_\_ Develop and implement mitigation strategies to manage adverse effects of habitat fragmentation.

- \_\_\_ Conduct a variety of habitat management activities where needed, including management of vegetation succession, management of invasive species, maintenance of hydrological regimes, curtailment of contaminant inputs, and management of human access, in order to preserve wetland suitability for these uncommon turtles of wetlands.

**Habitat research:**

- \_\_\_ Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

**Modify regulation:**

- \_\_\_ Modify Freshwater Wetlands Act, in order to protect wetlands smaller than 12.4 acres where they support species of conservation concern, and in order to expand the protected upland buffer beyond the 100-foot limit where necessary.
- \_\_\_ Adopt into New York's Environmental Conservation Law provisions which designate stinkpot, eastern mud turtle, Blanding's turtle, and spotted turtle as protected small game species.

**Other action:**

- \_\_\_ Develop and implement mitigation measures to manage turtle population losses to egg predators and to vehicular roadkill.
- \_\_\_ Enhance law enforcement and public education in order to curtail collection/translocation of turtle specimens.
- \_\_\_ Determine significance of specific threats to populations of species in this group, and formulate management options to control significant threats.

**Population enhancement:**

- \_\_\_ Employ restoration techniques for bog turtle, Blanding's turtle and mud turtle at selected sites as needed, including captive breeding, headstarting, nest protection, and repatriation/relocation strategies.

**Population monitoring:**

- \_\_\_ Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

**Statewide baseline survey:**

- \_\_\_ Develop standardized population survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the extent of occupied habitat.

<b>Conservation Actions</b>	
<b>Action Category</b>	<b>Action</b>
Land/Water Protection	Site/Area Protection
Land/Water Protection	Resource/Habitat Protection
Land/Water Management	Site/Area Management
Land/Water Management	Habitat and Natural Process Restoration
Land/Water Management	Invasive/Problematic Species Control
Species Management	Species Recovery
Education & Awareness	Awareness & Communications
Law/Policy	Legislation
Law/Policy	Compliance & Enforcement

## **VII. References**



- Chaloux, A.M. 2011. Blanding's turtle (*Emydoidea blandingii*) in Saratoga County, New York: Survey methods, spatial ecology and conservation. M.S. Thesis. University at Albany, Albany, NY. 167 pp.
- CITES. 2013. Consideration of proposals for amendments to Appendices I and II: *Emydoidea blandingii*. Available at <http://www.fws.gov/international/cites/cop16/index.html> (Accessed May 3, 2013).
- Compton, B.W. 2007. Status Assessment for the Blanding's Turtle (*Emydoidea blandingii*) in the Northeast. Unpublished U.S. Fish & Wildlife Service Report.
- Congdon, J.D., A.E. Dunham, and R.C. van Loben Sels. 1993. Delayed sexual maturity and demographics of Blanding's Turtle (*Emydoidea blandingii*): implications for conservation and management of long-lived organisms. *Cons. Biol.* 7: 826-833.
- Gibbs, J. P., A. R. Breisch, P. K. Ducey, G. Johnson, J. L. Behler, and R. C. Bothner. 2007. The amphibians and reptiles of New York State. Oxford University Press, New York. xv + 422 pp.
- Hartwig, T. S. 2004. Habitat selection of Blanding's turtle (*Emydoidea blandingii*): a range-wide review and microhabitat study. Thesis, Bard College: New York.
- Johnson, G. and T. Crockett. 2009. Distribution, population structure and habitat relationships of Blanding's turtle populations in northern New York. Final Report AMO5122, Grant T-2- 1. New York State Department of Environmental Conservation 144 pp.
- Jones, M. T. and P. R. Sievert. 2012. Elevated mortality of hatchling Blanding's turtles (*Emydoidea blandingii*) in residential landscapes. *Herpetological Conservation and Biology* 7(1):89-94.
- Joyal, L. A., M. McCollough, and M. L. Hunter, Jr. 2001. Landscape ecology approaches to wetland species conservation: A case study of two turtle species in southern Maine. *Conservation Biology* 15(6):1755-1762.
- LEMIS (Law Enforcement Management Information System). 2011. Exports of *Malaclemys terrapin* from 1999-2010. U.S. Fish and Wildlife-Office of Law Enforcement, Arlington (unpublished).
- Levell, J.P. 2000. Commercial exploitation of Blanding's Turtle, *Emydoidea blandingii*, and the Wood Turtle, *Clemmys insculpta*, for the live animal trade. *Chelonian Conservation and Biology* 3:665-668.
- NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: February 25, 2013).
- NEPARC. 2010. Northeast Amphibian and Reptile Species of Regional Responsibility and Conservation Concern. Northeast Partners in Amphibian and Reptile Conservation (NEPARC). Publication 2010-1.

Parks Canada. 2012. Recovery Strategy for the Blanding's turtle (*Emydoidea blandingii*), Nova Scotia population, in Canada [Draft]. *Species at Risk Act* Recovery Strategy Series. Parks Canada, Ottawa. 35 pp.

Reed, R.N., and J.W. Gibbons. 2002. Conservation status of live U.S. nonmarine turtles in domestic and international trade. A report to: U.S. Department of the Interior, U.S. Fish and Wildlife Service. Savannah River Ecology Laboratory, Drawer E, Aiken. 92 pp.

Ross, A.M., and G. Johnson. 2013. Recovery Plan for New York State Populations of the Blanding's turtle (*Emydoidea blandingii*). New York State Department of Environmental Conservation, Albany, New York. 86 pp.

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

Standing, K.L., T.B. Herman, and I.P. Morrison. 1999. Nesting ecology of Blanding's turtle (*Emydoidea blandingii*) in Nova Scotia, the northeastern limit of the species' range. *Canadian Journal of Zoology* 77:1609-1614.

Therres, G.D. 1999. Wildlife species of regional conservation concern in the Northeastern United States. *Northeast Wildlife* 54:93-100.

van Dijk, P.P. and A. G. J. Rhodin. 2011. *Emydoidea blandingii*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 03 May 2013.

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