

Blanding's Turtle (*Emydoidea blandingii*) Species Guidance

Family: Emydidae - the pond turtles

State Status: [Special Concern](#) (2014)

State Rank: [S3S4](#)

Federal Status: [none](#)

Global Rank: [G4](#)

Wildlife Action Plan Mean Risk Score: [3.9](#)

Wildlife Action Plan Area Importance Score: [4](#)



Counties with documented locations of Blanding's turtles in Wisconsin. Source: Natural Heritage Inventory Database, September 2012.



Gregor Schuurman, Wisconsin DNR

Species Information

General Description: The Blanding's turtle is a medium to large elongated turtle with a bright yellow chin and a helmet-shaped profile. The carapace (top shell) is black or dark brown, with pale yellow speckles. The plastron (under shell) of this species is hinged and is pale yellow with brown or black blotches on the edges. Adults range from 18-26 cm (7-10 in). Mature males are larger than females and have a concave plastron to facilitate mating (Oldfield and Moriarty 1994, Harding 1997).

Similar Species: Wood turtles (*Glyptemys insculpta*) are often confused with Blanding's turtles, but they possess a carapace that is less domed, more sculptured, and lacks a hinged plastron (Harding 1997).

Associated Species: Snapping turtles (*Chelydra serpentina*) and painted turtles (*Chrysemys picta*) often co-occur with Blanding's turtles (Oldfield and Moriarty 1994).

State Distribution and Abundance: Blanding's turtles occur throughout Wisconsin, except for the far north-central portion of the state. Distribution information for this species may not reflect its full extent in Wisconsin because many areas of the state have not been thoroughly surveyed.

Global Distribution and Abundance: The Blanding's turtle's global range extends from Wisconsin west to Nebraska and Minnesota, and south into the upper parts of Illinois and Iowa. East of Wisconsin, Blanding's turtles are found throughout Michigan, northern Indiana, Ohio, and Ontario, and as far as Nova Scotia; however, populations east of Ohio and Ontario are scattered (Conant and Collins 1998).

Diet: Blanding's turtles are omnivores (Graham and Doyle 1977, Kofron and Schreiber 1985, Rowe 1992). Common food items include crayfish, insects, earthworms, minnows and seeds (Graham and Doyle 1977, Kofron and Schreiber 1985, Rowe 1992).

Reproductive Cycle: Blanding's turtles may mate from throughout the active season, but they most commonly mate during the spring (Harding 1997). Nesting occurs from May 20 - July 5 (clutches consist of 3-22 eggs) and hatchlings emerge from August 7 - October 15 (hatchlings do not typically overwinter in the nest; Vogt 1981, Harding, 1997). Hatchling sex depends on temperature; eggs incubated at 25° C (77° F) or lower will produce nearly all males and eggs incubated at 30° C (86° F) or above will yield nearly all females (Harding 1997). Sexual maturity is reached in 17 to 20 years, the slowest maturation of any Wisconsin turtle (Congdon et al. 1993, Harding 1997).

Ecology: Blanding's turtles are a long-lived, semi-terrestrial species that use a variety of wetland and upland communities. This species begins to emerge from overwintering sites as early as March, depending on annual weather conditions. Males and females



Blanding's turtle plastron (part of the shell that covers the underneath of the turtle's body).

behave differently after emerging from overwintering: males range widely to find mates, whereas females remain largely stationary in shallow wetlands before nesting (Harding 1997). Telemetry studies indicate that this species moves between wetland types to seek out warmer water in spring that provides improved foraging opportunities and where females can more effectively incubate their developing eggs (Joyal et al. 2002). Blanding’s turtles continue to move throughout the active season, presumably to optimize foraging, for up to several miles. Congdon (1983) found that some females travel up to 1115 m, and the relatively long male and female migration distances between activity centers was reported to show little statistical difference between sexes (Ross & Anderson, 1990).

Overwintering usually begins by mid-November; Blanding’s turtles remain underwater during this period, beneath the ice (if present), with limited movement (Oldfield and Moriarty 1994). The Blanding’s turtle typically has a maximum active period of March 5 – November 15 in Wisconsin.



Natural Community Associations (WDNR 2005, WDNR 2009):

Significant: [bracken grassland](#), [dry prairie](#), [emergent aquatic \(emergent marsh\)](#), [emergent aquatic \(emergent marsh\)-wild rice](#), [ephemeral pond](#), [Great Lakes barrens](#), [impoundments/reservoirs](#), [inland lakes](#), [northern sedge meadow](#), [oak barrens](#), [oak opening](#), [pine barrens](#), [sand prairie](#), [southern sedge meadow](#), [submergent aquatic \(submergent marsh\)](#), [submergent aquatic \(submergent marsh\)-oligotrophic marsh](#), [wet prairie](#)

Moderate: alder thicket, cedar glade, coastal plain marsh, coldwater streams, coolwater streams, dry-mesic prairie, floodplain forest, mesic prairie, oak woodland, shrub carr, southern dry-mesic forest, southern hardwood swamp, southern mesic forest, southern tamarack swamp, warmwater rivers, warmwater streams, wet-mesic prairie

Minimal: none

Habitat: Blanding’s turtles are most commonly encountered in shallow, slow-moving waters with abundant vegetation, such as grassy marshes, mesic prairies, slow-moving rivers, and shallow lakes and ponds (Vogt 1981, Oldfield and Moriarty 1994, Harding 1997). Vast marshes that border large rivers are ideal habitat for this species (Vogt 1981). Adults prefer shallow water during the active season and all age classes prefer deeper water, typically at least 0.9 m (3 ft) at its deepest, for overwintering (Ross and Anderson 1990). Juveniles have a higher affinity for shallow water than do adults (Bury and Germano 2003). Blanding’s turtles bask on logs, rocks, and sloping banks on sunny days, and primarily before the nesting season (Oldfield and Moriarty 1994). Nesting occurs in open areas with sandy soils, typically within 275 m (900 ft) of a wetland or water body (Ross and Anderson 1990, Oldfield and Moriarty 1994, T. Wilder pers. comm., B. Reid pers. comm., D. Thiel pers. comm.). Blanding’s turtles may occasionally be encountered in uplands but typically only when moving between wetlands, nesting sites and overwintering sites.



Examples of Blanding’s turtle habitats in Wisconsin. Left and right photos Eric Epstein, Wisconsin DNR, and center photo, Ryan O’Connor, Wisconsin DNR

Threats: Blanding’s turtles, like many species of turtles, often select disturbed sites for nesting, including areas that are routinely disturbed by humans (i.e., agricultural land, powerline right-of-ways, and roads; Petokas, 1986). This tendency increases road mortalities, nest depredation (Dinkelacker et al. 2008), and human exploitation, and it makes protection and restoration of nesting habitat vital to this species’ survival. Additionally, natural succession of nesting habitat and an increase in shrubs in Iowa has been shown to alter incubation environments and shift the sex ratio of hatchlings toward males (Nyboer, 1992). Habitat destruction (i.e., wetland fill, development projects, road construction) is also a significant threat to this species. Road mortality and habitat fragmentation are significant threats because of the long distances that Blanding’s turtles may travel for nesting, foraging or overwintering. Drawdowns can have a significant impact on Blanding’s turtles as well if conducted during the species’ overwintering period (see *Avoidance Measures*).

Climate Change Impacts: The effects of climate change on the Blanding’s turtle remain unclear. A drier climate may cause more frequent and longer migration distances but may also favor nesting grounds. An increased growing season and anticipated changes in storm frequency and intensity (WICCI 2011), peak water levels, and other waterway characteristics may threaten the natural habitat requirements of the Blanding’s turtle.

Survey Guidelines: If surveys are being conducted for regulatory purposes, survey protocols and surveyor qualifications must first be approved by the Endangered Resources Review Program (see *Contact Information*). Hoop net trapping is the most effective survey method for the Blanding’s turtle and should be conducted from May 15 - June 30. Hoop nets should be set in the best suitable habitat available but preferably in lentic waters (stagnant or slow-flowing habitats). Traps should be baited with sardines or fresh fish. A minimum of three traps must be set per wetland for eight days (Casper pers. comm.), to accumulate 24 trap nights per wetland. Hoop net traps must meet all specifications provided in NR 19.275 Admin. Code. Live trapping for the Blanding’s turtle should only be attempted by individuals experienced in trapping and handling small mammals. Please also note that a Scientific Collector’s Permit or Research License may be required for this work: <dnr.wi.gov, keyword “scientific collector’s permit”>.

Spring basking surveys can also be used in combination with hoop net traps. Basking surveys should take place in March and April after ice-off when air temperatures reach at least 50° F. Turtles will often bask earlier in rivers and streams than in ponds and lakes where ice melts more slowly. Basking surveys involve a combination of walking the shorelines of permanent water settings likely to support Blanding’s overwintering (see “Habitat” section) and looking for turtles within 6 m (20 ft) of the water. Turtles typically bask on top of dead vegetation, which insulates them from frozen/cold ground below and maximizes access to open sunlight. As you walk, stop to conduct binocular surveys of basking sites in the water or on exposed shorelines as they come into view. Surveys to determine presence/absence must include a total of 6 hours of surveys per site, conducted on a minimum of 3 different days (3 days at 2 hrs each) during suitable weather conditions (sunny with calm to moderate winds).

Summarize results, including survey dates, times, weather conditions, number of detections, detection locations, and behavioral data and submit via WDNR online report: <<http://dnr.wi.gov>, keyword “rare animal field report form”>

Management Guidelines

The following guidelines typically describe actions that will help maintain or enhance habitat for the species. These actions are not mandatory unless required by a permit, authorization or approval.

Three primary landscape elements are essential to the Blanding’s turtle’s life history (Joyal et al 2002, Kingsbury 2006). First is maintenance or restoration of hydrology to protect the variety of wetlands that the turtles may use throughout the year for breeding, foraging, aestivation (summer dormancy) and overwintering. Second is maintenance or restoration of connectivity between uplands and wetlands to the extent possible, which involves maintaining intact and un-manicured ground vegetation, whether in forested or open-canopy settings. Ideally, these habitat connections involve broad areas of upland habitat that do not restrict turtle movement (Kingsbury et al. 2006). Third is maintenance of suitable nesting habitat - management that maintains dry sandy habitat (open canopy with sparse vegetation) or open sand blows is best for this species. The best nesting sites are often considered “wastelands” because they do not support agriculture, and are neglected. These sites will often become overgrown and shaded by brush and trees that render them unsuitable for nesting if they are not managed.

Maintaining vegetative diversity is also very important for Blanding’s turtles, particularly in wetlands. This species depends on vegetative structure, rather than on particular plant species. Management to improve plant diversity and structural variability in wetlands threatened by, or already infested with, monotypic stands of exotic vegetation or simplified plant diversity can add to a site’s suitability by improving foraging and thermoregulatory opportunities. High plant stem densities, such as where reed canary grass (*Phalaris arundinacea*) dominates the site, reduce available habitat because this vegetation structure greatly hampers hatchling and juvenile mobility. Management that enhances native emergent vegetation is important because Blanding’s turtles prefer these types of wetlands. Creating openings where dense emergent vegetation already exists can be highly beneficial to Blanding’s turtles, particularly for juveniles.

Road mortality is a major threat to Blanding’s turtle populations (Oldfield and Moriarty 1994). Turtle barriers have been shown to reduce road mortality (Christoffel and Hay 1994). Barrier use, combined with underpasses (i.e., bridges and culverts), allow this species to move between suitable habitats (i.e., wetland to nesting habitat). Corridors allow safe migration between populations, which is important for maintaining life history and genetic health (Aresco 2005). Fencing barriers can be permanent or temporary, depending on the proposed project.

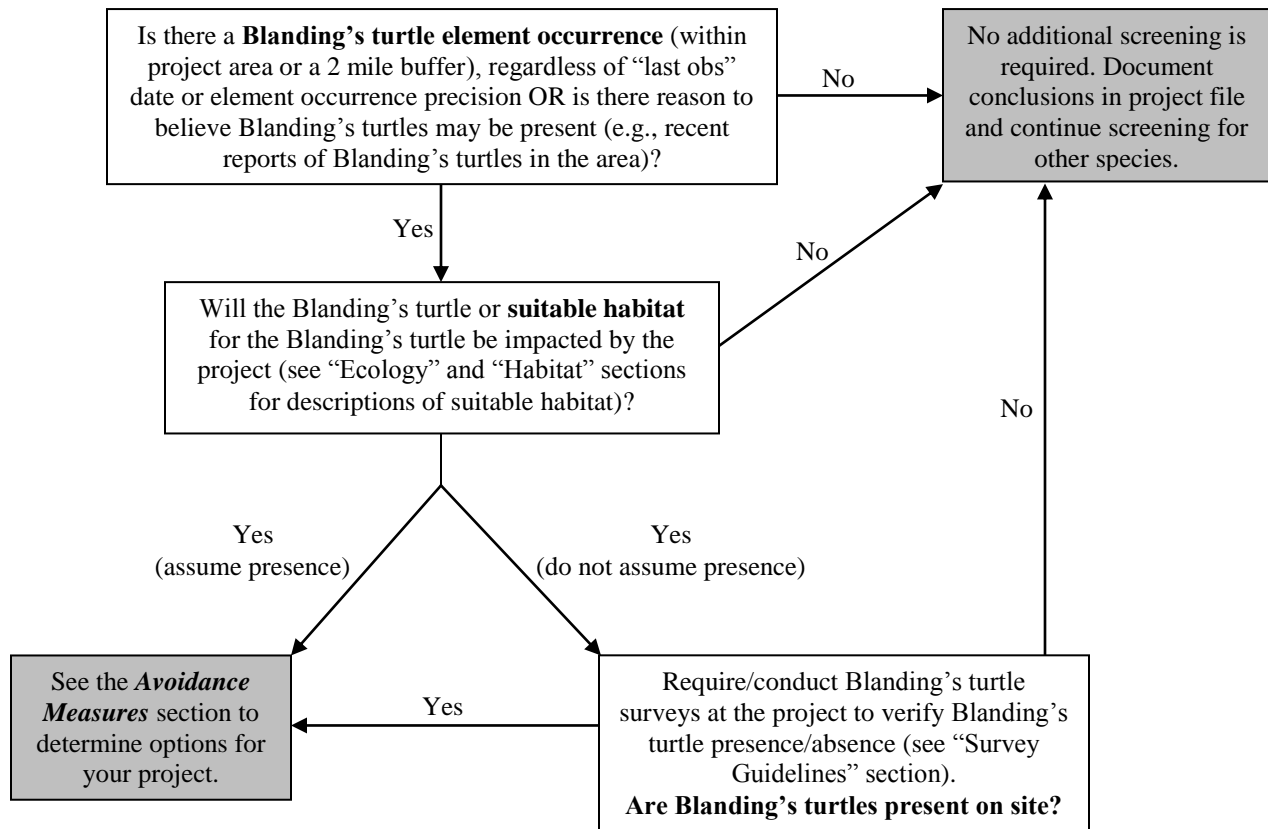
Management for recovering, maintaining or improving grassland, prairie or savanna ecosystems: Managing grassland, prairie, or savanna ecosystems may include habitat for Blanding’s turtles. Although management activities may prove beneficial to the species it is recommended to adhere to the following guidelines to reduce take.

- A. Burning
 1. When burning in the spring or fall, burn when temperatures are below 50° F, or overcast.
 2. Survey site prior to burning to locate and move (“rescue”) animals
 - a. Surveyors should walk along the perimeter of each affected wetland searching for turtles basking in the vegetation within a border extending approximately 4.6 m (15 ft) inland from the existing surface water area. On most properties, these surveys can be done with minimal time and effort. If conducting the burning will take several hours, it may be advantageous to burn a buffer area around the wetland (4.6 – 6 m; 15 – 20 ft) following surveys, to minimize take.
- B. Mowing/Haying
 1. Mow/Hay between July 6 and May 19, or during the hours of 10 am – 5 pm.
- C. Selective Brush/Tree-cutting
 1. Utilize non-mechanical brush and tree cutting (i.e., chain saw).
- D. Grazing
 1. Use light-to-moderate grazing (0 < head per acre < 1.0) during the nesting and incubation period (May 20 – October 15).
- E. Herbiciding
 1. Spot treat herbaceous vegetation, preferable with a low persistence/short half-life herbicide (i.e., Round-up ©), and apply by wick, sponge, or hand-held spray application.
 2. Avoid broadcast applications.
 3. When controlling woody vegetation, use basal bark or cut-stump-treatment methods.

Screening Procedures

The following procedures should be followed by DNR staff reviewing proposed projects for potential impacts to the species.

Follow the “Conducting Endangered Resources Reviews: A Step-by-Step Guide for Wisconsin DNR Staff” document (summarized below) to determine if Blanding’s turtles will be impacted by a project (WDNR 2012):



Avoidance Measures

The following measures are specific actions typically required by DNR to avoid take (mortality) of state endangered or threatened species per Wisconsin's Endangered Species Law (s. 29.604, Wis. Stats.). These guidelines are typically not mandatory for non-listed species (e.g., special concern species) unless required by a permit, authorization or approval.

If you have not yet read through *Screening Procedures*, please review them first to determine if avoidance measures are necessary for the project.

1. The simplest and preferred method to avoid take of Blanding's turtles is to avoid directly impacting individuals, known Blanding's turtle locations, or areas of suitable habitat (described above in the "Ecology" and "Habitat" sections and in *Screening Procedures*).
2. If suitable habitat cannot be avoided, the following time of year restrictions can be used to avoid take:
 - Conduct work in non-overwintering areas (uplands and wetlands/water bodies shallower than 0.9 m (3 ft) at the deepest point) during the turtles' inactive season (typically November 16 - March 4).
 - For work in wetlands/waterbodies that are not considered overwintering habitat (shallower than 0.9 m (3 ft) at the deepest point), install exclusion fencing according to the [Amphibian and Reptile Exclusion Fencing Protocols](#) around the work area during the turtles' inactive season (typically November 16 - March 4). Work can then be conducted within the fenced area at any time of year as long as the fencing is maintained.
 - Conduct work in nesting habitat (suitable upland habitat within 275 m (900 ft) of a wetland or water-body) during the turtle's non-nesting period (typically October 16 – May 19).
 - For work in nesting areas (suitable upland habitat within 275 m (900 ft) of a wetland or water-body), install exclusion fencing according to the [Amphibian and Reptile Exclusion Fencing Protocols](#) around the work area during the turtle's non-nesting period (typically October 16 – May 19). Work can then be conducted within the fenced area at any time of year as long as the fencing is maintained.
 - Drawdowns should typically only be completed from May 1 – September 30 to avoid impacts to overwintering Blanding's turtles. Drawdowns completed by September 30 can remain drawn down for days, months, or years from a turtle mortality perspective.
3. When take cannot be avoided, we recommend referring to the *Management Guidelines* above for practices that can minimize impacts or even enhance habitat and improve this species' ability to persist over the long-term.

Additional Information

References

- Aresco, M.J. 2005. Mitigation measures to reduce highway mortality of turtles and other herpetofauna at a north Florida lake. Department of Biological Science, Florida State University, Tallahassee, FL. *Journal of Wildlife Management* 69(2):549-560.
- Bury, R.B., and Germano, D.J. 2003. Differences in Habitat Use by Blanding's Turtles, *Emydoidea blandingii*, and Painted Turtles, *Chrysemys Picta*, in the Nebraska Sandhills. *American Midland Naturalist*, 149:1:241-244.
- Christoffel, R. and R. Hay. 1994. The effectiveness of placing turtle mortality barriers and crossing signs along highways to reduce turtle mortality. Report to Wisconsin Department of Transportation. Wisconsin Department of Natural Resources, Bureau of Endangered Resources Publ. No. 107. 9 pp.
- Conant, R., and Collins, J. 1998. A field guide to reptiles & amphibians: eastern and central North America. Houghton Mifflin. Boston, Massachusetts.
- Congdon, J.D., D.W. Tinkle, G.L. Breitenback, and R.C. van Loben Sels. 1983. Nesting ecology and hatching success in the turtle *Emydoidea blandingii*. *Herpetologica* 39: 417-429.
- Congdon, J.D., Dunham, A.E., and Van Loben Sels, R.C. 1993. Delayed Sexual Maturity and Demographics of Blanding's Turtles (*Emydoidea blandingii*): Implications for Conservation and Management of Long-Lived Organisms. *Conservation Biology*, 7:4:826-833.

- Dinkelacker, S. A., Iverson, J. B., Ruane, S. 2008. Demographic and Reproductive Traits of Blanding's Turtles, *Emydoidea blandingii*, at the Western Edge of the Species' Range. *Copeia*. Vol. 2008, no. 4, 771-779
- Graham, T.E., and Doyle, T.S. 1977. Growth and Population Characteristics of Blanding's Turtle, *Emydoidea blandingii*, in Massachusetts. *Herpetologica*, 33:410-414.
- Hall, C.D. and F.J. Cutbert. 2000. Impact of a Controlled Wetland Drawdown on Blanding's Turtles in Minnesota. *Chelonian Conservation and Biology* [Chelonian Conserv. Biol.]. Vol. 3, no. 4, pp. 643-649.
- Harding, J. H. 1997. Amphibians and reptiles of the Great Lakes Region. University of Michigan Press, Ann Arbor, Michigan.
- Joyal, L.A., M. McCollough and A Hunter Jr. 2002. Landscape Ecology Approaches to Wetland Species Conservation: a Case Study of Two Turtle Species in Southern Maine. *Conservation Biology* Vol. 15, Issue 6, pg. 1755-1762.
- Kingsbury, B. Editor. 2006. Habitat Management Guidelines for Amphibians and Reptiles of the Midwest." The Center for Reptile and Amphibian Conservation and Management. 57 pp.
- Kofron, C.P., and Schreiber, A.A. 1985. Ecology of Two endangered Aquatic Turtle in Missouri: *Kinosternon flavescens* and *Emydoidea blandingii*. *Journal of Herpetology*, 19:1:27-40.
- Nyboer, Randy 1992. Personal communication. Illinois Conservation Department, Division of National Heritage, Sterling, Illinois.
- Oldfield, B., and J. J. Moriarty. 1994. Amphibians and reptiles native to Minnesota. University of Minnesota Press, Minneapolis, Minnesota.
- Petokas, P.J. 1986. Patterns of reproduction and growth in the freshwater turtle *Emydoidea blandingii*. PhD dissertation. Graduate School of the University Center at Binghamton, New York.
- Ross, D.A., and Anderson, R.K. 1990. Habitat Use, Movements, and Nesting of *Emydoidea blandingii* in Central Wisconsin. *Journal of Herpetology*, 24:1:6-12.
- Rowe, J. W. 1992. Dietary Habits of the Blanding's Turtle (*Emydoidea blandingii*) in Northeastern Illinois. *Journal of Herpetology*, 26:1:111-114.
- Vogt, R. C. 1981. Natural history of amphibians and reptiles of Wisconsin. Milwaukee Public Museum, Milwaukee, Wisconsin.
- WDNR [Wisconsin Department of Natural Resources]. 2005. Wisconsin's Strategy for Wildlife Species of Greatest Conservation Need: A State Wildlife Action Plan. Madison, Wisconsin, USA. <<http://dnr.wi.gov>, key word "Wildlife Action Plan">
- WDNR [Wisconsin Department of Natural Resources]. 2009. Wisconsin wildlife action plan species profile: Blanding's turtle. (accessed May 27, 2012). Madison, Wisconsin, USA. <material now available on the Natural Heritage Conservation species Web page: <http://dnr.wi.gov>, key word "biodiversity">
- WDNR [Wisconsin Department of Natural Resources]. 2011. Protocol for Incidental Take Permit and Authorization: Blanding's turtle. Madison, Wisconsin.
- WDNR [Wisconsin Department of Natural Resources]. 2012. Conducting Endangered Resources Reviews: A Step-by-Step Guide for Wisconsin DNR Staff. Bureau of Endangered Resources. Wisconsin Department of Natural Resources, Madison, Wisconsin.
- WDNR [Wisconsin Department of Natural Resources]. 2013. Natural Heritage Inventory database. (accessed September 21, 2012).
- WICCI [Wisconsin Initiative on Climate Change Impacts]. Wisconsin's Changing Climate: Impacts and Adaptation. 2011. Nelson Institute for Environmental Studies, University of Wisconsin-Madison and the Wisconsin Department of Natural Resources, Madison, Wisconsin, USA. <http://www.wicci.wisc.edu/report/2011_WICCI-Report.pdf>

Linked Websites

- Endangered and Threatened Species Permit: <<http://dnr.wi.gov>, key word "endangered species permit">
- Incidental Take Permit and Authorization: <<http://dnr.wi.gov>, key word "incidental take overview">
- Natural Communities of Wisconsin: <<http://dnr.wi.gov>, key word "natural communities">
- Rare Animal Field Report Form: <<http://dnr.wi.gov>, key word "rare animal field report form">
- Wisconsin Endangered and Threatened Species: <<http://dnr.wi.gov>, key word "endangered resources">
- Wisconsin Endangered and Threatened Species Permit: <<http://dnr.wi.gov>, key word "endangered species permit">

- Wisconsin Initiative on Climate Change Impacts: <<http://www.wicci.wisc.edu/>>
- Wisconsin Natural Heritage Working List: <<http://dnr.wi.gov>, key word “Natural Heritage Working List”>
- Wisconsin’s Wildlife Action Plan: <<http://dnr.wi.gov>, key word “Wildlife Action Plan”>

Funding

- USFWS State Wildlife Grants Program <<http://wsfrprograms.fws.gov/subpages/grantprograms/swg/swg.htm>>
- Sadie Nolan Amphibian and Reptile Education and Conservation Memorial Fund
- Wisconsin Natural Heritage Conservation Fund

Contact Information (Wisconsin DNR Species Expert for Blanding’s turtle)

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