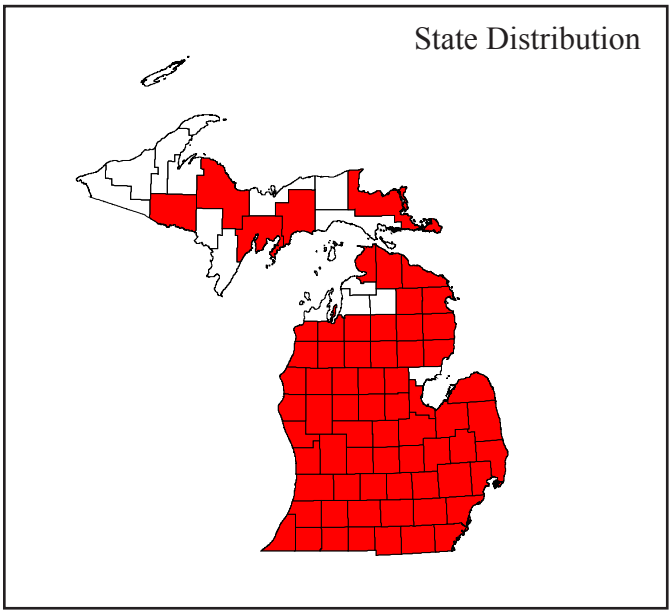
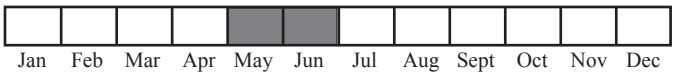
Emydoidea blandingii Holbrook — Blanding's turtle



Best Survey Period



Status: State special concern

Global and state rank: G4/S3

Family: Emydidae (pond and box turtles)

Range: Blanding's turtles occur from southwestern Quebec and southern Ontario south through the Great Lakes region to central Illinois and west to central Nebraska, including parts of Missouri, Iowa, South Dakota, and Minnesota (Ernst et al. 1994). Disjunct populations occur in Maine, New Hampshire, Massachusetts, New York, and Nova Scotia. Within the Great Lakes region, Blanding's turtles are found throughout southern Ontario, Michigan and Wisconsin, and in northern Ohio, northern Indiana and northern Illinois (Harding 1997).

State distribution: Michigan Natural Features Inventory (1999) has compiled documentation of Blanding's turtles from 36 counties in Michigan's Lower Peninsula. However, a statewide systematic survey for this species has never been conducted, and this species has been reported, at least historically, from almost every county in the Lower Peninsula and four counties in the central Upper Peninsula (i.e., Marquette, Dickinson, Delta, and Schoolcraft) (Harding and Holman 1990, Harding pers. comm.). It also has been reported anecdotally from Alger and Menominee counties in the Upper Peninsula (Harding pers. comm). Blanding's turtles are fairly common in parts of the Lower Peninsula, but are generally rare and have a fairly localized distribution in the Upper Peninsula (Harding and Holman 1990).

Recognition: The Blanding's turtle is a medium to large turtle with adult carapace (upper part of shell) length ranging from 6 to 11 inches, a **bright yellow chin and throat**, and a **very long neck** (Harding 1997). The elongated, dome-like, and smooth carapace is neither keeled nor serrated (i.e., not having raised ridges or pointed projections). The **carapace** is usually **black with yellowish spots and streaks**. The head also is dark with brown or yellow spots, and is relatively flat with a short, rounded snout and a **notched upper jaw, giving the appearance of a permanent "smile,"** according to Harding (1997). The **plastron** (underside of shell) typically is **yellow with a dark blotch at the outer corner of each scute, or scale**. Most adults have a **flexible hinge in the plastron**. Males have a slightly concave plastron, and the vent or anal opening is located beyond the end of the carapace when the tail is fully extended. Females have a flat plastron, and the vent is located under the end of the carapace (Ernst et al. 1994, Harding 1997). Hatchlings have a gray, brown, or black carapace, 1.2 to 1.4 inches long, with a low keel, and a plastron with a large, black central blotch and yellow or cream color along the edge (Harding 1997).

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Best survey time: Although Blanding's turtles are active and can be seen from early April to late October or early November, the best time to survey for this species is in May and June during the mating and nesting seasons when the turtles are most active (Harding 1997, Harding pers. comm.). During this time period, the easiest way to survey for this species is to conduct visual surveys for basking turtles, particularly on cool, sunny days. Also, this species is primarily diurnal and most active in the morning, although this may vary with temperature (Ernst et al. 1994). In addition to visual surveys, Blanding's turtles can be trapped throughout the active season using baited aquatic traps (e.g., hoop and net traps) and terrestrial drift fences (Congdon et al. 1983, Kofron and Schreiber 1985, Congdon and van Loben Sels 1991).

Habitat: Blanding's turtles inhabit productive, clean, shallow waters with abundant aquatic vegetation and soft muddy bottoms over firm substrates (Ernst et al. 1994). This species is found in ponds, marshes, swamps, bogs, wet prairies, river backwaters, embayments, sloughs, slow-moving rivers, protected coves, and lake shallows and inlets (Harding and Holman 1990, Van Dam 1993, Harding 1997). Blanding's turtles also occupy terrestrial habitats in the spring and summer, during the mating and nesting seasons, and in the fall, to a lesser extent. They prefer to nest in open, sunny areas with moist but well-drained sandy or loamy soil. They also will use lawns, gardens, plowed fields or even gravel road edges if suitable natural nesting habitat is not available (Harding 1997).

Biology: Blanding's turtles are active as early as April in Michigan. During the active season, they are often seen basking on muskrat lodges, stumps, logs, sedge or cattail clumps, or steep banks of dikes and ditches (Ernst et al. 1994). Blanding's turtles also are often seen along roads. At night, these turtles are found in or under aquatic vegetation. During the summer and fall, when shallow water habitats start to dry, some Blanding's turtles migrate overland to new bodies of water, while others aestivate on land, burrowing under roots, mud, or plant debris (Van Dam 1993, Harding 1997). Blanding's turtles generally are active during the day, however, in the summer, they may limit their activities to early morning and evening, or even become nocturnal (Harding 1997). Blanding's turtles typically enter overwintering sites in late October to early November. They usually hibernate underwater in deeper waterbodies, often buried in organic substrate.

Mating can occur anytime during the active season but occurs most frequently in the spring (Harding 1997). Mating occurs in shallow to deep water in wetland habitats. Males may travel considerable distances overland during the mating season to locate females. Nesting occurs from late May to early or mid-June with most nesting occurring in June. On average, only about half of the sexually mature females in a population reproduce in a given year (Congdon et al. 1983). Females leave the wetlands to excavate nests in upland, open sandy areas adjacent to marshes. Females may travel up to 1,200 m to find suitable nesting sites, and typically exhibit nest site fidelity (Congdon et al. 1983). Nesting usually occurs at night. Clutch size ranges from 6 to 21 eggs (Harding 1997). Eggs hatch in 50 to 75 days, with most hatchlings emerging in August or early September (Harding 1997). Blanding's turtles in Michigan reach sexual maturity in 14 to 20 years (Congdon and van Loben Sels 1993).

Blanding's turtles are omnivorous. They feed predominantly on crayfish and aquatic insects, but also consume mollusks, small fish, earthworms, tadpoles, and aquatic plants (Kofron and Schreiber 1985, Harding 1997). They feed primarily under water, and generally forage along the substrate (Harding 1997).

Raccoons, foxes, and skunks are the primary predators of Blanding's turtle eggs, hatchlings and juveniles (Congdon et al. 1983, Harding 1997). Fish, frogs, snakes, wading birds, crows and other animals also will consume hatchling and juvenile Blanding's turtles. Nest predation rates can be high, ranging from 42 to 93 percent in Michigan (Congdon et al. 1983). However, adult turtles have few natural predators (Harding 1997). Annual survival rates of adult Blanding's turtles have exceeded 93% in the past, and are among the highest reported for freshwater turtles (Congdon et al. 1993).

Conservation/management: Blanding's turtles are characterized by delayed sexual maturity, small clutch size, low reproductive success, high adult survival rates, and long adult lives. Given these life history traits, this species requires high annual survivorship of adults and juveniles to maintain stable populations (Congdon et al. 1993). For example, Congdon et al. (1993) found that a Blanding's turtle population in southern Michigan had to have annual adult and juvenile survivorship of at least 93% and 72%, respectively, to maintain population stability.

The primary threat to Blanding's turtles is habitat loss and degradation (Van Dam 1993, Harding 1997). Blanding's turtles require clean, shallow water with abundant aquatic vegetation, and appear to be sensitive to habitat alteration (Kofron and Schreiber 1985). Sources of habitat loss and alteration include drainage or inundation of wetlands, river channelization, water impoundments, agricultural activities along edges of sloughs and ponds, herbicide and pesticide use, and development of upland nesting areas (Kofron and Schreiber 1985). Habitat fragmentation can pose a significant threat since nest predation, primarily by raccoons, skunks, and opossums, was found to increase near habitat edges (Temple 1987). Road mortality also is a substantial threat to Blanding's turtles because of their tendencies to migrate long distances over land (Harding pers. comm.). This species' docile nature makes it highly vulnerable to collection for the pet trade; however, this issue has not been a major concern because there currently is little demand for this species (Harding 1997).

The most critical conservation need for this species is protection and management of suitable wetland and nesting habitat. Maintaining large and small wetland systems connected to suitable upland habitat is crucial for this species (Harding 1997). In addition, maintaining good water quality, restricting herbicide and pesticide use in or near wetlands, implementing minimum development set-back distances, leaving buffer zones during timber harvest, grazing and agricultural operations, and minimizing the construction of roads in or near suitable wetlands would be beneficial to this species. Management of woody vegetation (e.g., through timber harvesting) may benefit this species by maintaining open nesting areas. Timber harvesting during the winter (i.e., late November through March) would minimize the potential for harming this species during logging operations. In some cases, active management in terms of on-site protection of nest sites and predator control may be necessary (Van Dam 1993). Stream channelization and water impoundments should be avoided in areas with suitable habitat.

The general public should be informed that this species is protected, and should not be collected or harmed. In Michigan, the Director's Order No. DFI-166.98, Regulations on the Take of Reptiles and Amphibians, states that it is unlawful to take a Blanding's turtle from the wild except as authorized under a permit from the Director (legislated by Act 165 of the Public Acts of 1929, as amended, Sec.302.1c (1) and 302.1c (2) of the Michigan Compiled Laws). This regulation is implemented by the Michigan Department of Natural Resources' Bureau of Fisheries. Any suspected illegal collection or trade of Blanding's turtles should be reported to local authorities, conservation officers or wildlife biologists.

Research needs: Nesting and wintering sites and healthy populations in the state need to be identified (Harding pers. comm.). Long-term studies are needed to monitor population sizes and trends in representative habitats throughout the species' range in Michigan. Information on the amount of habitat required to sustain a population needs to be obtained (Van Dam 1993). Terrestrial habitat use and daily and seasonal movements need to be better defined. Information on nest site fidelity, overland migrations, and population recruitment, especially of juvenile turtles, also needs to be gathered. Impacts of land uses and management practices, such as drawdowns, on Blanding's turtle populations and habitat should be further investigated. Effective methods to educate the public about the turtle's status and conservation also need to researched (Harding pers. comm.).

Related abstracts: Eastern box turtle, wood turtle, prairie fen, wooded dune and swale,

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