

**STATE
THREATENED**

Spotted Turtle

(Clemmys guttata)



Mark McCollough

Description

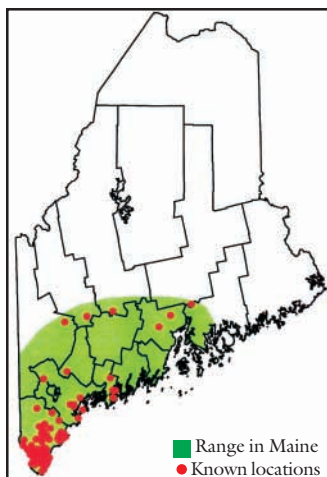
Many consider the spotted turtle to be Maine's most attractive turtle. It shares its yellow-polka-dotted motif with the spotted salamander, which shares many of the same vernal pools. The spotted turtle is the only turtle in Maine with distinct yellow spots on a smooth, low, black carapace (upper shell). The skin on the head, limbs, and tail is gray to black and is also patterned with yellow spots. The undersurface of the limbs may be orange, pink, or salmon-red. The plastron (lower shell) is yellow or yellow-orange and patterned with black blotches on each scute (shell segment). These small turtles are only 4-5½ inches long. The male has a concave plastron, tan chin, brown eyes, and long, thick tail, whereas the female has a convex or flat plastron, yellow chin, orange eyes, and shorter tail.

Range and Habitat

This species occurs in the northern tier of states from Michigan to Maine and down the eastern seaboard to Florida. Maine is at the northern edge of its range. Populations in York and Cumberland Counties are contiguous with those in New Hampshire, but separate populations occur along the coast and interior central Maine as far

north as Farmington and the Bangor area.

In Maine, spotted turtles are most frequently associated with complexes of small, acidic wetlands and vernal pools located in large, intact forested landscapes. They also use small streams, shrub swamps, wet meadows, bogs, and forested swamps. Although these turtles spend most of their time in the water, they readily travel overland



between wetlands during spring and summer. Upland habitats are critical for nesting, basking, estivating (a period of late summer dormancy), and as travel corridors for movements between isolated wetlands.

Life History and Ecology

Spotted turtle life history and movements are documented from radio-telemetry studies conducted throughout the species' range, including a study in southern Maine in the 1990s. Turtles emerge from hibernation in April and disperse to vernal pools and other wetlands used by breeding frogs and salamanders. The turtles eat amphibian eggs and larvae (tadpoles). This abundant food supply is critical to the survival of turtles because they likely consume much of their annual food needs in May and June. Most wetlands used are less than ¼ acre in size. Spotted turtles in Maine travel an average of ¾ mile annually and use up to three different wetlands. They attain sexual maturity at 7-10 years of age.

Mating occurs from March to May. During June, females leave the wetlands and travel up to ⅓ mile to a sunny site with sandy soils to lay a clutch of 3-7 eggs. Spotted turtles occasionally nest in natural forest openings, exposed bedrock areas, or sedge hummocks in swamps, but are frequently attracted to yards, pastures, gravel pits, and road edges. Nests are often concentrated in human-created habitats where nest loss may be high from predators or road grading. Incubation time depends on soil temperature, but typically lasts 88-125 days, and hatching occurs in September and October. Eggs may not hatch in cold, wet summers.

Hatchlings probably overwinter in nearby wetlands, but little is known of their habitat use and movements until they become adults. Adults bask on sphagnum mats, logs, brushpiles, hummocks, rocks, and wetland shores. As vernal pools dry and food supplies diminish, adults may estivate for 15-90 days in upland habitats in late summer. During estivation, they burrow into forest leaf litter within 260 feet of the nearest wetland.

With the coming of fall rains, spotted turtles move to wetlands for hibernation, typically using sites at vernal pools, under root hummocks in red maple swamps, or along undercut banks of small streams. They sometimes hibernate communally. Feeding begins in early spring as the ice thaws. Food items include amphibian eggs and larvae, worms, mollusks, and aquatic insects.

Threats

Turtles have evolved a strategy of long life expectancy (greater than 30 years for spotted turtles) to offset a late age at first reproduction and high nest mortality. Because of this unusual life history, spotted turtle populations occur at low densities (only about 21 turtles per square mile in Maine), and are extremely vulnerable to any source of adult mortality. Road mortality and collecting for pets reduce populations, and the loss of just a few individuals every year can lead to the long-term decline and extinction of a population. Habitat fragmentation and sprawl also threaten spotted turtles. Fragmentation isolates populations and greatly increases their risk of extinction. Roads result in mortality, separate wetlands from nesting sites, and act as barriers to movement. The sunny, gravel shoulders of roads attract nesting turtles. Roadside turtle nests are easily found by predators and graded by highway crews. Collecting spotted turtles for pets is illegal and negatively affects populations by removing valuable breeding adults. Secondary effects of human development – increased predator populations (e.g., dogs, skunks, raccoons), pollution, filling of small wetlands, and blocking upland travel corridors – also limit populations.

Conservation and Management

The spotted turtle was state-listed as threatened in 1986. Surveys of over 2500 wetlands conducted in Maine in the 1990s documented spotted turtles at about 100 new sites. It is believed that only a few thousand spotted turtles occur in the state in a highly fragmented landscape.

Recovery of this species entails identification and conservation of the largest populations and protection of large blocks of open space. Spotted and Blanding's turtles (endangered) overlap greatly in range and have similar conservation needs. They share their habitat with other rare species like the ringed boghaunter dragonfly, ribbon snake, and four-toed salamander. Rare turtle populations documented in York, South Berwick, Biddeford, Wells, Alfred, and Lyman have the greatest conservation potential, while smaller, peripheral populations isolated by physical barriers, like interstate highways and urban areas, may be in greater jeopardy of local extinction. Towns with spotted and Blanding's turtles should consult with MDIFW to develop strategies for conserving their remaining large blocks of forestland, and associated wetlands, as rural open space where further fragmentation, development, and road building should be discouraged. Spotted turtles are protected from collecting, possessing, or killing by the MESA.

Recommendations:

✓ Prior to land development or forest harvesting, consult

with a biologist from MDIFW to assist with planning.

- ✓ Conserve vernal pools, wetland complexes, and associated upland forest within ¼ mile of known occurrences of Blanding's and spotted turtles from further development and fragmentation.
- ✓ Municipalities should strive to maintain important Blanding's and spotted turtle habitats in a low-density, rural setting and identify these areas in comprehensive plans. Consider protecting wetlands and a 250-foot upland buffer as Resource Protection Districts.
- ✓ Use voluntary agreements, conservation easements, conservation tax abatements and incentives, and acquisition to protect important habitat for threatened and endangered species.
- ✓ Permit no activities that could lead to the loss or degradation of wetlands, including filling, dredging, sedimentation, or changing hydrology, unless approved by MDIFW.
- ✓ When projects are proposed within 250 feet of wetlands providing habitat for endangered or threatened species, adhere to forestry Best Management Practices (handbook available from the Maine Forest Service, SHS #22, Augusta, ME 04333) and Maine Erosion and Sediment Control Recommendations (available from the Maine Department of Environmental Protection, SHS #17, Augusta, ME 04333).
- ✓ Road kill is the major source of adult mortality for all of the state's rare turtles. Avoid new roads and road improvement projects (e.g., paving, widening) that could lead to increased traffic volume and speed within ¼ mile of known turtle wetlands. All road projects should undergo thorough environmental review to avoid, minimize, and mitigate road mortality to endangered turtles.
- ✓ Avoid intensive development that concentrates human activity and road traffic within ¼ mile of turtle wetlands. Minimize the footprint of yards, buildings, and roads within this area to minimize loss of upland habitat and sources of mortality. Employ *Best Development Practices for Conserving Pool-breeding Amphibians in Residential and Commercial Development in the Northeastern U.S.* (handbook available from Maine Audubon, P.O. Box 6009, Falmouth, ME 04105).
- ✓ Low intensity timber harvesting (single tree, group selection, small patch cuts) is compatible as long as operators avoid wetlands. Winter harvests are recommended to avoid crushing turtles and minimizing impacts to the forest floor habitat used by amphibian prey species. Employ *Forestry Habitat Management Guidelines for Vernal Pool Wildlife in Maine* for timber harvesting around vernal pools and pocket swamps (handbook available from MDIFW, SHS #41, Augusta, ME 04333). 