



Northern red-bellied cooter

Pseudemys rubriventris

One of the challenges an animal or plant can face is separation from others of its type. In Massachusetts, a native freshwater turtle – the northern red-bellied cooter – lives more than 250 miles from the rest of the species, which lives along the coast in southern New Jersey, Delaware, Maryland, Virginia and North Carolina. As an ecologically and geographically distinct population, the northern red-bellied cooter faces difficult odds; its small population size and limited range can hinder its long-term survival. This turtle received Endangered Species Act protection in 1980 and is considered endangered.

Northern red-bellied cooters today live in just one county in Massachusetts, but archaeological data indicate that northern red-bellied cooters likely lived farther to the north, south and west in pre-colonial times. Additionally, data from prehistoric Indian middens in New England suggest that humans used cooters for food, perhaps causing local extinctions.

In more recent times, environmental pressures have challenged turtle survival. Extensive residential and agricultural development has altered its coastal plain pond habitat. Development, roads and stream channel alteration have fragmented habitat, eliminating many of the natural movement corridors between ponds. Such habitat modifications are a large part of the northern red-bellied cooter's predicament.

Life as a cooter

With an adult size of 10 to 12 inches and weighing up to 10 pounds, the northern red-bellied cooter is larger than most freshwater turtles except the snapping turtle. Females are larger than males, and the two sexes are differently patterned and colored. Females reach sexual maturity at 15 to 20 years; that timing may be somewhat less for males.



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In late spring and early summer, females select nesting sites in sandy soil, usually within 100 yards of a pond, though some females travel even greater distances in search of suitable nesting sites. Warmth from the sun and other temperature conditions at cooter nest sites can affect the sex ratio of hatchlings; cool nests will produce more males, while warm nests produce more females.

The nest's five to 17 eggs incubate for up to 80 days. Hatchlings may emerge from nests to enter ponds in late summer, or they may overwinter in the nest chamber and emerge the following spring.

Life is uncertain for cooter eggs and small hatchlings. Skunks and raccoons eat eggs and hatchlings in the nest. Bullfrogs will eat hatchlings; herons, snapping turtles and introduced predatory fish may also eat them. Nearly 100 percent of northern red-bellied cooter hatchlings do not survive their first year.

A head start for turtle babies

Because hatchling survival is essential to building and maintaining a breeding population, biologists have established a headstarting program. When a nest is

found, it is screened to prevent disturbance by predators. When it is time for the eggs to hatch, biologists revisit the nest and take half the hatchling turtles into captivity, where they are kept warm and fed on demand for about eight months. The nest's remaining hatchlings are released directly into their birth pond. The aquarium-residing headstarted hatchlings grow rapidly to become two to six times the size of similar-aged turtles in the wild. Survival of hatchling turtles in captivity is high, as is survival of released headstarted hatchlings, which are too large for most predators to kill and eat. Young headstarted turtles are returned to new pond and river habitats to expand existing populations. The turtles remain faithful to their release pond territory. Headstarted turtles have been found alive and healthy a dozen years after returning to the wild.

It's all about the habitat

While headstarting is an important part of the recovery strategy for northern red-bellied cooter, the strategy's emphasis is on habitat protection. Changes in land use have caused loss of nesting and basking sites. In the past, fires frequently burned the pine barren habitat occupied by this turtle, leaving

openings in the mixed pine and oak forest. For 100 years, the area has been protected from fire; allowing most of the remaining undeveloped areas to grow into closed-canopy pine forest. With these closed-canopy forests surrounding most ponds, suitable nesting habitat with adequate heating from the sun for incubation is scarce.

Biologists are clearing overhanging vegetation from nesting sites to provide sunnier conditions at ponds where red-bellied cooters lay their eggs. Opening vegetation at beaches close to ponds will provide additional nesting opportunities. Trees removed to expose nesting beaches to sunlight can be anchored in shallow water to provide additional basking sites.

In some locations, cranberry growers incidentally maintain open spaces suitable as nesting habitat, and the turtles seek out these locations.

Cranberry growers have cooperated in research and recovery efforts for this endangered turtle in many ways, among them granting biologists access to private lands and alerting employees to watch for turtles and nests.

What's to be done?

With nest protection and headstarting, the number of northern red-bellied cooters is believed to have doubled since 1980. But we need to learn more. Little is known about the effect of pesticides or other agricultural chemicals on northern red-bellied cooters. The same is true for heavy metals or other contaminants. Even though this turtle has been studied for over 100 years, intensively for the past 30, we still do not fully understand what limits the northern red-bellied cooter's distribution to just a handful of coastal ponds. Most likely, a combination of factors is affecting the cooter. Some we do know – the turtle's late maturation, low reproductive rate and the loss of coastal pond habitat. Some we guess at – perhaps the number of nest and hatchling predators has increased, or an introduced aquatic species is devastating the turtle at a vulnerable life stage.

We do know that the cooperation of the private landowners, the state of Massachusetts and the U.S. Fish and Wildlife Service is crucial to continuing the northern red-bellied cooter's slow and steady climb away from extinction.

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