



I'm not robot



Continue

How old does a turtle have to mate

The Eastern box turtle (*Terrapene carolina*) is a species of hinge-shelled turtle that lives on forested land in Indiana. Box turtles are long-lived, slow to mature and have few offspring per year. This, coupled with the high mortality rate of box turtles being hit on roads, has resulted in Eastern box turtles being a species of special concern in Indiana. Ongoing research by Wildlife Science Staff, funded through the Indiana Nongame Wildlife Fund, is helping box turtles in Indiana. Donations to the Nongame Wildlife Fund are vital to continue this research.GENERAL CHARACTERISTICSEastern Box Turtle Identification:Small- to medium-sized turtle with a domed shell ranging from 4.5 to 6 inches long.The top of the shell (carapace) is variable in color and pattern but is typically marked with yellow to orange streaks and blotches on a black/brown/gray background.The bottom of the shell (plastron) can be yellow, brown or black, or a combination. The plastron has a hinge that allows the turtle to “box” itself in for protection against predators.The rest of the turtle’s body also may have colorful markings.Males have red eyes; females usually have brown eyes.Box turtles have a sharp, horned beak.The shell is permanently attached through the turtle’s ribcage.Box turtles have short-stubby legs and feet that are webbed at the base.Eastern box turtles have been documented to exceed 60 years of age. Very old specimens may reach ages of more than 100.DISTRIBUTION AND ABUNDANCEThe Eastern box turtle’s range, covers much of the eastern and central United States. Box turtles are found throughout Indiana, but are more common in the state’s southern half. Populations are declining throughout their range. Habitat loss, road mortality and collection by humans are some of the leading factors in box turtle declines. Box turtles are protected in Indiana and may not be collected from the wild. Forests are the preferred habitat of the Eastern box turtle, although they may be found in grasslands and wetlands. Predators of the box turtle include raccoons, skunks, coyotes, dogs, ants, crows, snakes and hogs. Eggs are especially vulnerable to predation, along with young turtles whose unhardened shells offer little protection. The Eastern box turtle is terrestrial, spending most its life on land. Box turtles are most active in morning and evening. However, they also may be observed during cooler temperatures after a rain. During hot and dry weather, turtles will occasionally seek out shallow water. When threatened or startled, box turtles withdraw their head, limbs and tail into their shell and “box up,” pulling the bottom of their shell up against the top. Coldest temperatures in October and November cause box turtles to seek shelter in shallow burrows, where they will spend the coming months in winter dormancy. Spring emergence typically occurs during March and April.REPRODUCTIONIn Indiana, mating has been observed in late April and May, but may take place throughout the summer and into the fall. Female turtles normally deposit one to seven eggs in an excavated nest before covering them with dirt. The eggs hatch three to four months later. Hatchlings usually measure about 1 inch long.Unlike other animal species, visual cues are critical for finding mates. A male must see and recognize a potential mate before approaching her. Therefore, high adult population density is critical for reproduction. Female box turtles may retain viable sperm for years, but the proportion of infertile eggs increases as access to male turtles declines. Even if a female does lay eggs, the eggs and hatchlings rarely survive. Box turtles do not reach sexual maturity until they are 8 to 10 years old.FOOD HABITSThe diet of Eastern box turtles includes fruits, berries, worms, slugs, insects, mushrooms and deceased animals.MANAGEMENT AND STATUSRecent initiatives have led to the protection of the Eastern box turtle in Indiana. Since 2004, the collection of Eastern box turtles from the wild is prohibited. A permit is required to care for captive specimens in the state. Conservation initiatives and habitat preservation will help protect this turtle from further declines. Nationwide research reveals that Eastern box turtle populations are in trouble. Indiana and other states are taking measures to protect box turtles before they become threatened or endangered. Although Indiana does have a healthy population, they are scattered. New developments, environmental changes, chemical pollution, captive breeding and possession all negatively impact the long-term survival of box turtles in Indiana.Other reasons why box turtles are regulated:DisseasDisplaced box turtles, either escaped or released, have a hard time surviving. Those that survive pose a threat to wild populations. Diseases occurring in captivity can spread rapidly in wild populations. When foreign turtles interbred with wild turtles, genes are introduced that are less suitable for local conditions and weaken the box turtle population.LongevityThe long life expectancy of turtles makes having one as a pet a long-term responsibility. The keeper must care for it long after interest wanes. Unfortunately, most individuals do not consider the long-term care required for owning a turtle and turn them loose when they are no longer wanted.Collection as a Pet or for ProfitContinued collection of wild box turtles greatly reduces another box turtle’s chance of reproduction and removes one more viable turtle from the breeding population. To ensure long-term survival, Eastern box turtle populations in Indiana cannot sustain additional losses.Box Turtle FAQsMay I collect a box turtle from the wild? No. Regulations that became law in 2004 do not allow the collection of box turtles from the wild in Indiana. If you wish to collect one in another state, you must follow all rules and regulations of that state.Can I possess a box turtle as a pet? Only if you acquired it legally, such as from another state.What should I do if I already have a box turtle? If the box turtle is wild-caught from Indiana, please contact the Indiana Division of Fish & Wildlife at DFW@dnr.IN.gov. Do not release the turtle into the wild. Its chances of survival are low, and it could transmit diseases to a wild box turtle.Can I possess a box turtle egg, shell, or other parts of a turtle? The eggs of all native reptiles, including box turtles, are protected by law and cannot be taken from the wild in Indiana. The shell or any other part of a box turtle is included in the protection of box turtles in Indiana.What should I do if I find an injured or sick box turtle? Sick or slightly injured box turtles should be left in the wild. Box turtles are surprisingly resilient to damage and disease. If left alone, they will, more than likely, heal on their own. If a box turtle appears severely injured, it can be given to a licensed rehabilitator or licensed veterinarian. You cannot possess an injured turtle for more than 24 hours to transport it to a licensed rehabilitator. You can obtain the name(s) of licensed rehabilitators in your area by contacting one of the following: Call a wild animal rehabilitator permitted by the DNR. A list is at wildlife.IN.gov/5492.htm.Call DNR law enforcement at (812) 837-9536.Call the DNR Division of Fish & Wildlife in Indianapolis at (317) 232-4080.Call a licensed veterinarian.What do I do if I find a nesting turtle, nest or eggs? Leave them alone. Box turtles can easily be scared away from nesting sites. A mesh fence may be placed around a nest to protect eggs from predators. This enclosure should be checked daily to ensure that newly emerging turtles are not caught. Do not try to excavate a turtle nest on your own. Disturbing the position of turtle eggs may kill the turtle embryo. If you see a nest that is about to be destroyed because of new development, you may contact a local rehabilitator for assistance. A licensed rehabilitator can raise the young and release them back into the wild. Do not try to rescue the eggs or nest yourself. Unfortunately, it may not be possible to save every nest.How can I help box turtles in the wild? Leave leaf litter and fallen woody debris on the forest floor. Protect and/or promote the protection of turtle habitat. Ovary speed limits to allow appropriate stopping time if a turtle is on the road. If you see a box turtle trying to cross a busy road, you can pick it up and move it to the other side of the road in the direction it was facing. The turtle cannot be kept or moved to any other location. Do not burn large areas during peak activity times for turtles. Check yards before mowing or burning brush piles. Report any collection or sale of box turtles to the Division of Fish & Wildlife at (317) 232-4080 or to the Division of Law Enforcement at (812) 837-9536. This can be done anonymously. Species of reptile Box turtleTemporal range: 5–0 Ma Pre- O S D C P T J K Pg N 1 Middle Pleistocene – Recent Conservation status Critically Endangered (IUCN 3.1)[1] Scientific classification Kingdom: Animalia Phylum: Chordata Class: Reptilia Order: Testudines Suborder: Cryptodira Superfamily: Testudinoidea Family: Emydidae Genus: Glyptemys Species: G. muhlenbergii Binomial name Glyptemys muhlenbergii(Schoeffl, 1801) Distribution. The range does not extend beyond the Canada–US border. Synonyms[2] Testudo muhlenbergii Schoeffl, 1801 Emys muhlenbergii – Schweigger, 1812 Chersine muhlenbergii – Merrem, 1820 Emys biguttata Say, 1824 Terrapene muhlenbergii – Bonaparte, 1831 Emys bipunctata Gray, 1831 Emys (Cistuda) caroliniae var. fusca Gray, 1831 Clemmys (Clemmys) muhlenbergii – Fitzinger, 1835 Geoclemys muhlenbergii – Gray, 1856 Calemys muhlenbergii[sic] Agassiz, 1857 (ex errore) Emys muhlenbergii – Agassiz, 1857 Calemys muhlenbergii – Ennis, 1861 Geoclemmys muhlenbergii – Gray, 1869 Geoclemmys muhlenbergii[sic] Gray, 1870 (ex errore) Calemys muhlenbergii – Gray, 1870 Chelopuz muhlenbergii – Cope, 1875 Calemys muhlenbergii – Boulenger, 1889 Clemmys muhlenbergii[sic] Fowler, 1906 (ex errore) Clemmys nuchalis Dunn, 1917 Melanemys muhlenbergii – Shufeldti, 1919 Clemmys muhlenbergii[sic] Brimley, 1943 (ex errore) Glyptemys muhlenbergii – Holman & Fritz, 2001 The bog turtle (Glyptemys muhlenbergii) is a critically endangered species of semi-aquatic turtle in the family Emydidae. The species is endemic to the eastern United States. It was first scientifically described in 1801 after an 18th-century survey of Pennsylvania. The smallest North American turtle, its carapace measures about 10 centimeters (4 in) long when fully grown. Although the bog turtle is similar in appearance to the painted or spotted turtles, its closest relative is actually the somewhat larger wood turtle. The bog turtle can be found from Vermont in the north, south to Georgia, and west to Ohio. Diurnal and secretive, it spends most of its time hibernating in mud – and during the winter months – in hibernation. The bog turtle is omnivorous, feeding mainly on small invertebrates. The bog turtle is the state reptile of New Jersey. An adult bog turtle weighs 110 grams (3.9 oz) on average. Its skin and shell are typically dark brown, with a distinctive orange spot on each side of the neck. Considered threatened at the federal level, the bog turtle is protected under the United States' Endangered Species Act. Invasive plants and urban development have eradicated much of the bog turtle's habitat, substantially reducing its numbers. Demand for the bog turtle is high in the black market pet trade, partly because of its small size and unique characteristics. Various private projects have been undertaken in an attempt to reverse the decline in the turtle's population. The bog turtle has a low reproduction rate; females lay one clutch per year, with an average of three eggs each. The young tend to grow rapidly, reaching sexual maturity between the ages of 4 and 10 years. Bog turtles live for an average of 20 to 30 years in the wild. Since 1973, the Bronx Zoo has successfully bred the bog turtle in captivity. Taxonomy The bog turtle was noted in the 18th century by Gotthilf Heinrich Ernst Muhlenberg, a self-taught botanist and clergyman. Muhlenberg, who named more than 150 North American plant species, was conducting a survey of the flora of Lancaster County, Pennsylvania, when he discovered the small turtle. In 1801, Johann David Schoepff named Muhlenberg's discovery as Testudo muhlenbergii in Muhlenberg's honor.[3][4] [5] In 1829, Richard Harlan renamed the turtle Emys muhlenbergii. The species was subsequently renamed to Calemys muhlenbergii by Louis Agassiz in 1857, and to Clemmys muhlenbergii by Henry Watson Fowler in 1906.[6] Synonyms include Emys biguttata, named in 1824 by Thomas Say on the basis of a turtle from the vicinity of Philadelphia, and Clemmys nuchalis, described by Dunn in 1917 from near Linville, North Carolina.[7] Today, there are various names for the bog turtle, including mud turtle, marsh turtle, yellowhead, and snapper.[8] The genus name was changed to Glyptemys in 2001. The bog turtle and the wood turtle, Glyptemys insculpta, had until then been included in the genus Clemmys, which also included spotted turtles (C. guttata) and western pond turtles (C. marginata).[9] Nucleotide sequencin and ribosomal DNA analyses suggested that bog turtles and wood turtles are closely related, but neither is directly related to spotted turtles, hence the separation of the genus Glyptemys.[10] Description An adult specimen The bog turtle is the smallest species of turtle in North America.[11][12] The adults weigh approximately 110 grams (3.9 oz) when fully grown.[13] It does not have a prominent snout.[4] Its head is dark brown to black[4] however, it has a bright yellow, orange, or red spot on each side of its neck.[8] The spot is often forked, facing posteriorly.[4] The bog turtle has a dark skin color with an orange-red wash on the inside of the legs of some individuals. The carapace is domed and rectangular in shape, and it tends to be narrower toward the head and wider toward the tail.[4] The carapace often has easily identifiable rings on the rough scales or scutes.[14] The scutes may also have a radiating arrangement of lines.[4] In some older individuals, and those that burrow frequently in coarse substrates, the shell may be smooth.[15] Although generally black, a chestnut sunburst pattern in each scute is sometimes present on the carapace.[8] The belly of the shell, the plastron, is also a dark brown to black color with light marks present. The spotted turtle and painted turtle are similar in appearance to the bog turtle.[16] The bog turtle is distinguishable from any other species of turtle by the distinctively colored blotch on its neck. A major difference between it and the spotted turtle is that the bog turtle has no coloration on the upper shell, unlike the latter species.[17] Mature male bog turtles have an average length of 9.4 centimeters (3.7 in) while the average female length is 8.9 centimeters (3.5 in) (straight carapace measurement).[15] The males have a larger average body size than females.[18] likely to facilitate males during male–male interactions during mate selection.[19] The female has a wider and higher shell than the male, but the male's head is squared and larger than a female's of the same age. The plastron of the male looks slightly concave while the female's is flat. The male's tail is longer and thicker than the female's.[20] The cloaca is further towards the end of the tail of the male bog turtle, while the female's cloaca is positioned inside the tail. The bog turtle is primarily nocturnal and is active during the day and sleeping at night. It wakes in the early morning, basks until fully warm, then begins its search for food.[32] It is a sociative species, making it challenging to observe in its natural habitat.[12] During cold days, the bog turtle will spend much of its time in dense underbrush, underwater, or buried in mud.[11] Such behavior is indicative of the bog turtle's ability to survive without oxygen.[35] On warmer days, the bog turtle's activities include scavenging, mating (during early spring), and basking in sunlight, the last of which it spends a great deal of the day doing.[22] However, the bog turtle usually takes shelter from the sun during the hottest part of the day.[32] Occasionally, during times of extreme heat, the turtle will either estivate,[36] or become subterranean, sometimes occupying networks of tunnels filled with water.[36] At night, the bog turtle buries itself in soft tunnels.[37] Late September to March or April[36] is usually spent in hibernation, either alone or in small groups in spring seeps.[25] These groups can contain up to 12 individuals, and sometimes can include other species of turtles.[31] Bog turtles try to find an area of dense soil, such as a strong root system, for protection during the dormant period.[16] However, they may hibernate in other places such as the bottom of a tree, animal burrows, or empty spaces in mud.[31] The bog turtle emerges from hibernation when the air temperature is between 16 and 31 °C (61 and 88 °F).[35] The male bog turtle is territorial and will attack other males if they venture within 15 centimeters (5.9 in) of his position. An aggressive male will crawl toward an intruder with his neck extended. As he approaches his foe, he tilts his carapace by withdrawing his head and raising his hind limbs. If the other male does not retreat, a fight of pushing and biting can follow. The bouts typically last just a few minutes.[35] with the larger and older male usually winning.[18] The female is also aggressive when threatened. She will defend the area around her nest, usually up to a radius of 1.1 meters (3.9 ft), from encroaching females, but when a juvenile approaches, she ignores it, and when a male appears she surrenders her area (except during mating season).[35] Striped skunks prey on the bog turtle. Diet Bog turtles are omnivorous and eat aquatic plants (such as duckweed), seeds, berries, earthworms, snails, slugs, insects, other invertebrates, frogs, and other small vertebrates.[23][38] They also occasionally eat carrion.[29] Invertebrates such as insects are generally the most important food item.[38] In captivity, a bog turtle can be fed a variety of fruits and vegetables, as well as meat such as liver, chicken hearts, and tinned dog food.[23] Bog turtles feed only during the day, but rarely during the hottest hours, consuming their food on land or in the water.[11][13] Predators, parasites, and diseases A host of different animals, including snapping turtles, snake species such as Nerodia sipedon and Thamnophis sirtalis, muskrats, striped skunks, foxes, dogs, and raccoons prey upon the bog turtle.[13][38] In addition, leeches (Placobdella multilinea and P. parasitica) and parasitic flies (Cistudinomyia cistudinis) plague some individuals, causing blood loss and weakness. Their shells offer little protection from predators. The bog turtle's main defense when threatened by an animal is to bury itself in soft mud. It rarely defends its territory or bites when approached.[38] Bog turtles may suffer from bacterial infections. Aeromonas and Pseudomonas are two genera of bacteria that cause pneumonia in individuals.[39] Bacterial aggregates (sometimes known as biofilms) have also been found in the lungs of two deceased specimens discovered in 1982 and 1995 from colonies in the southern population.[40] Movement A young individual Day-to-day, the bog turtle moves very little, typically basking in the sun and waiting for prey. Though it is not especially lively on sunny days, the bog turtle is usually active after rainfall.[32] Various studies have found different rates of daily movement in bog turtles, varying from 2.1 to 23 meters (6.9 to 75.5 ft) in males and 1.1 to 18 meters (3.6 to 59.1 ft) in females.[41] Both sexes are capable of homing when released at distances up to 0.8 kilometers (0.50 mi) from their site of capture.[35] The bog turtle will travel long distances to find a new habitat if its home becomes unsuitable. The species is most active during the spring, and males generally exhibit greater migration distance and seasonal activity than females as they defend their territory. Home-range migration distances have been recorded at 87 meters (285 ft) for males and 260 meters (850 ft) for females.[42] Home-range sizes in Maryland vary from 0.0030 hectares (0.0074 acres) to 3.1 hectares (7.7 acres) with considerable amounts of variation between sites and years.[43] The northern population is the larger of the two. These individuals make their home in states as far north as Connecticut and Massachusetts, and as far south as Maryland. These turtles occupy bog turtle colonies. The vast majority of bog turtle movements are less than 21 meters (69 ft), and only 2 percent are of distances over 100 meters (330 ft); large, expansive trips (i.e., between neighboring wetlands), are rare.[44] The movement of bog turtles between colonies facilitates genetic diversity. If this movement were to be prevented, or limited in any significant way, the species would have a higher likelihood of becoming extinct because genetic diversity would fall. Some aspects of a bog turtle's movement that remain unresolved include: phenomena that motivate bog turtles to move outside their natural habitat; the distances an individual can be expected to travel each day, week, and year; and how separation of small groups affects the genetics of the species.[45] Life cycle A baby bog turtle held in a palm When abraded by mud, the shell becomes smooth, as shown in this turtle. Bog turtles are sexually mature when they reach between 8 and 11 years of age (both sexes).[26] They mate in the spring after emerging from hibernation, in a copulation session that usually lasts for 5–20 minutes, typically during the afternoon, and may occur on land or in the water. It begins with the male recognizing the female's sex. During the courtship ritual, the male gently bites and nudges the female's head. Younger males tend to be more aggressive during copulation, and females sometimes try to avoid an over-aggressive male. However, as the female ages, she is more likely to accept the aggressiveness of a male, and may even take the role of initiator. If the female yields, she may withdraw her front limbs and head. After the entire process is over, which usually takes about 35 minutes,[46] male and female go separate ways.[8] In a single season, females may mate once, twice, or not at all, and males try to mate as many times as possible.[46] It has been suggested that it is possible for the bog turtle to hybridize with Clemmys guttata during the mating season.[46] However, it has not been genetically verified in wild populations. Nesting takes place between April and July.[8] The female digs a cavity in a dry, sunny area of a bog.[13] and lays her eggs in a grass tussock or on sphagnum moss.[47] The nest is typically 3.8 to 5.1 centimeters (1.5 to 2.0 in) deep and 5 centimeters (2.0 in) around.[46] Like most species of turtle, the bog turtle constructs its nest using its hind feet and claws. Most bog turtle eggs are laid in June. Pregnant females lay one to six eggs per clutch (mean of 3), and produce one clutch per year. A healthy female bog turtle can lay between 30 and 45 eggs in her lifetime, but many of the offspring do not survive to reach sexual maturity.[48] Typically, older females lay more eggs than younger ones.[46] The eggs are white, elliptical, and on average 3.4 centimeters (1.3 in) long and 1.5 centimeters (0.59 in) wide.[49] After the eggs are laid, they are left to undergo an incubation period that lasts for 42 to 80 days.[49] In colder climates, the eggs are incubated through the winter and hatch in the spring.[30] The eggs are vulnerable during the incubation period, and often fall prey to mammals and birds.[13] In addition, eggs may be jeopardized by flooding, frost, or various developmental problems. It is unknown how gender is determined in bog turtles.[49] Baby bog turtles are about 2.5 centimeters (0.98 in) long when they emerge from their eggs,[15] usually in late August or September.[49] Females are slightly smaller at birth, and tend to grow more slowly than males.[49] Both genders grow rapidly until they reach maturity.[50] Juveniles almost double in size in their first four years, but do not become fully grown until five or six years old.[8] The bog turtle spends its life almost exclusively in the wetland where it hatched. In its natural environment, it has a maximum lifespan of perhaps 50 years or more,[48] and the average lifespan is 20–30 years.[17] The Bronx Zoo houses several turtles 35 years old or more, the oldest known bog turtles. The zoo's collection has successfully sustained itself for more than 35 years.[51] The age of a bog turtle is determined by counting the number of rings in a scute, minus the first one (250 µl) gap over much of Virginia, which lacks bog turtle colonies.[12][30] In both areas, the bog turtle colonies tend to occupy widely scattered ranges.[24] The northern population is the larger of the two. These individuals make their home in states as far north as Connecticut and Massachusetts, and as far south as Maryland. These turtles occupy bog turtle colonies. The vast majority of bog turtle movements are less than 21 meters (69 ft), and only 2 percent are of distances over 100 meters (330 ft); large, expansive trips (i.e., between neighboring wetlands), are rare.[44] The movement of bog turtles between colonies facilitates genetic diversity. If this movement were to be prevented, or limited in any significant way, the species would have a higher likelihood of becoming extinct because genetic diversity would fall. Some aspects of a bog turtle's movement that remain unresolved include: phenomena that motivate bog turtles to move outside their natural habitat; the distances an individual can be expected to travel each day, week, and year; and how separation of small groups affects the genetics of the species.[45] Life cycle A baby bog turtle held in a palm When abraded by mud, the shell becomes smooth, as shown in this turtle. Bog turtles are sexually mature when they reach between 8 and 11 years of age (both sexes).[26] They mate in the spring after emerging from hibernation, in a copulation session that usually lasts for 5–20 minutes, typically during the afternoon, and may occur on land or in the water. It begins with the male recognizing the female's sex. During the courtship ritual, the male gently bites and nudges the female's head. Younger males tend to be more aggressive during copulation, and females sometimes try to avoid an over-aggressive male. However, as the female ages, she is more likely to accept the aggressiveness of a male, and may even take the role of initiator. If the female yields, she may withdraw her front limbs and head. After the entire process is over, which usually takes about 35 minutes,[46] male and female go separate ways.[8] In a single season, females may mate once, twice, or not at all, and males try to mate as many times as possible.[46] It has been suggested that it is possible for the bog turtle to hybridize with Clemmys guttata during the mating season.[46] However, it has not been genetically verified in wild populations. Nesting takes place between April and July.[8] The female digs a cavity in a dry, sunny area of a bog.[13] and lays her eggs in a grass tussock or on sphagnum moss.[47] The nest is typically 3.8 to 5.1 centimeters (1.5 to 2.0 in) deep and 5 centimeters (2.0 in) around.[46] Like most species of turtle, the bog turtle constructs its nest using its hind feet and claws. Most bog turtle eggs are laid in June. Pregnant females lay one to six eggs per clutch (mean of 3), and produce one clutch per year. A healthy female bog turtle can lay between 30 and 45 eggs in her lifetime, but many of the offspring do not survive to reach sexual maturity.[48] Typically, older females lay more eggs than younger ones.[46] The eggs are white, elliptical, and on average 3.4 centimeters (1.3 in) long and 1.5 centimeters (0.59 in) wide.[49] After the eggs are laid, they are left to undergo an incubation period that lasts for 42 to 80 days.[49] In colder climates, the eggs are incubated through the winter and hatch in the spring.[30] The eggs are vulnerable during the incubation period, and often fall prey to mammals and birds.[13] In addition, eggs may be jeopardized by flooding, frost, or various developmental problems. It is unknown how gender is determined in bog turtles.[49] Baby bog turtles are about 2.5 centimeters (0.98 in) long when they emerge from their eggs,[15] usually in late August or September.[49] Females are slightly smaller at birth, and tend to grow more slowly than males.[49] Both genders grow rapidly until they reach maturity.[50] Juveniles almost double in size in their first four years, but do not become fully grown until five or six years old.[8] The bog turtle spends its life almost exclusively in the wetland where it hatched. In its natural environment, it has a maximum lifespan of perhaps 50 years or more,[48] and the average lifespan is 20–30 years.[17] The Bronx Zoo houses several turtles 35 years old or more, the oldest known bog turtles. The zoo's collection has successfully sustained itself for more than 35 years.[51] The age of a bog turtle is determined by counting the number of rings in a scute, minus the first one (250 µl) gap over much of Virginia, which lacks bog turtle colonies.[12][30] In both areas, the bog turtle colonies tend to occupy widely scattered ranges.[24] The northern population is the larger of the two. These individuals make their home in states as far north as Connecticut and Massachusetts, and as far south as Maryland. These turtles occupy bog turtle colonies. The vast majority of bog turtle movements are less than 21 meters (69 ft), and only 2 percent are of distances over 100 meters (330 ft); large, expansive trips (i.e., between neighboring wetlands), are rare.[44] The movement of bog turtles between colonies facilitates genetic diversity. If this movement were to be prevented, or limited in any significant way, the species would have a higher likelihood of becoming extinct because genetic diversity would fall. Some aspects of a bog turtle's movement that remain unresolved include: phenomena that motivate bog turtles to move outside their natural habitat; the distances an individual can be expected to travel each day, week, and year; and how separation of small groups affects the genetics of the species.[45] Life cycle A baby bog turtle held in a palm When abraded by mud, the shell becomes smooth, as shown in this turtle. Bog turtles are sexually mature when they reach between 8 and 11 years of age (both sexes).[26] They mate in the spring after emerging from hibernation, in a copulation session that usually lasts for 5–20 minutes, typically during the afternoon, and may occur on land or in the water. It begins with the male recognizing the female's sex. During the courtship ritual, the male gently bites and nudges the female's head. Younger males tend to be more aggressive during copulation, and females sometimes try to avoid an over-aggressive male. However, as the female ages, she is more likely to accept the aggressiveness of a male, and may even take the role of initiator. If the female yields, she may withdraw her front limbs and head. After the entire process is over, which usually takes about 35 minutes,[46] male and female go separate ways.[8] In a single season, females may mate once, twice, or not at all, and males try to mate as many times as possible.[46] It has been suggested that it is possible for the bog turtle to hybridize with Clemmys guttata during the mating season.[46] However, it has not been genetically verified in wild populations. Nesting takes place between April and July.[8] The female digs a cavity in a dry, sunny area of a bog.[13] and lays her eggs in a grass tussock or on sphagnum moss.[47] The nest is typically 3.8 to 5.1 centimeters (1.5 to 2.0 in) deep and 5 centimeters (2.0 in) around.[46] Like most species of turtle, the bog turtle constructs its nest using its hind feet and claws. Most bog turtle eggs are laid in June. Pregnant females lay one to six eggs per clutch (mean of 3), and produce one clutch per year. A healthy female bog turtle can lay between 30 and 45 eggs in her lifetime, but many of the offspring do not survive to reach sexual maturity.[48] Typically, older females lay more eggs than younger ones.[46] The eggs are white, elliptical, and on average 3.4 centimeters (1.3 in) long and 1.5 centimeters (0.59 in) wide.[49] After the eggs are laid, they are left to undergo an incubation period that lasts for 42 to 80 days.[49] In colder climates, the eggs are incubated through the winter and hatch in the spring.[30] The eggs are vulnerable during the incubation period, and often fall prey to mammals and birds.[13] In addition, eggs may be jeopardized by flooding, frost, or various developmental problems. It is unknown how gender is determined in bog turtles.[49] Baby bog turtles are about 2.5 centimeters (0.98 in) long when they emerge from their eggs,[15] usually in late August or September.[49] Females are slightly smaller at birth, and tend to grow more slowly than males.[49] Both genders grow rapidly until they reach maturity.[50] Juveniles almost double in size in their first four years, but do not become fully grown until five or six years old.[8] The bog turtle spends its life almost exclusively in the wetland where it hatched. In its natural environment, it has a maximum lifespan of perhaps 50 years or more,[48] and the average lifespan is 20–30 years.[17] The Bronx Zoo houses several turtles 35 years old or more, the oldest known bog turtles. The zoo's collection has successfully sustained itself for more than 35 years.[51] The age of a bog turtle is determined by counting the number of rings in a scute, minus the first one (250 µl) gap over much of Virginia, which lacks bog turtle colonies.[12][30] In both areas, the bog turtle colonies tend to occupy widely scattered ranges.[24] The northern population is the larger of the two. These individuals make their home in states as far north as Connecticut and Massachusetts, and as far south as Maryland. These turtles occupy bog turtle colonies. The vast majority of bog turtle movements are less than 21 meters (69 ft), and only 2 percent are of distances over 100 meters (330 ft); large, expansive trips (i.e., between neighboring wetlands), are rare.[44] The movement of bog turtles between colonies facilitates genetic diversity. If this movement were to be prevented, or limited in any significant way, the species would have a higher likelihood of becoming extinct because genetic diversity would fall. Some aspects of a bog turtle's movement that remain unresolved include: phenomena that motivate bog turtles to move outside their natural habitat; the distances an individual can be expected to travel each day, week, and year; and how separation of small groups affects the genetics of the species.[45] Life cycle A baby bog turtle held in a palm When abraded by mud, the shell becomes smooth, as shown in this turtle. Bog turtles are sexually mature when they reach between 8 and 11 years of age (both sexes).[26] They mate in the spring after emerging from hibernation, in a copulation session that usually lasts for 5–20 minutes, typically during the afternoon, and may occur on land or in the water. It begins with the male recognizing the female's sex. During the courtship ritual, the male gently bites and nudges the female's head. Younger males tend to be more aggressive during copulation, and females sometimes try to avoid an over-aggressive male. However, as the female ages, she is more likely to accept the aggressiveness of a male, and may even take the role of initiator. If the female yields, she may withdraw her front limbs and head. After the entire process is over, which usually takes about 35 minutes,[46] male and female go separate ways.[8] In a single season, females may mate once, twice, or not at all, and males try to mate as many times as possible.[46] It has been suggested that it is possible for the bog turtle to hybridize with Clemmys guttata during the mating season.[46] However, it has not been genetically verified in wild populations. Nesting takes place between April and July.[8] The female digs a cavity in a dry, sunny area of a bog.[13] and lays her eggs in a grass tussock or on sphagnum moss.[47] The nest is typically 3.8 to 5.1 centimeters (1.5 to 2.0 in) deep and 5 centimeters (2.0 in) around.[46] Like most species of turtle, the bog turtle constructs its nest using its hind feet and claws. Most bog turtle eggs are laid in June. Pregnant females lay one to six eggs per clutch (mean of 3), and produce one clutch per year. A healthy female bog turtle can lay between 30 and 45 eggs in her lifetime, but many of the offspring do not survive to reach sexual maturity.[48] Typically, older females lay more eggs than younger ones.[46] The eggs are white, elliptical, and on average 3.4 centimeters (1.3 in) long and 1.5 centimeters (0.59 in) wide.[49] After the eggs are laid, they are left to undergo an incubation period that lasts for 42 to 80 days.[49] In colder climates, the eggs are incubated through the winter and hatch in the spring.[30] The eggs are vulnerable during the incubation period, and often fall prey to mammals and birds.[13] In addition, eggs may be jeopardized by flooding, frost, or various developmental problems. It is unknown how gender is determined in bog turtles.[49] Baby bog turtles are about 2.5 centimeters (0.98 in) long when they emerge from their eggs,[15] usually in late August or September.[49] Females are slightly smaller at birth, and tend to grow more slowly than males.[49] Both genders grow rapidly until they reach maturity.[50] Juveniles almost double in size in their first four years, but do not become fully grown until five or six years old.[8] The bog turtle spends its life almost exclusively in the wetland where it hatched. In its natural environment, it has a maximum lifespan of perhaps 50 years or more,[48] and the average lifespan is 20–30 years.[17] The Bronx Zoo houses several turtles 35 years old or more, the oldest known bog turtles. The zoo's collection has successfully sustained itself for more than 35 years.[51] The age of a bog turtle is determined by counting the number of rings in a scute, minus the first one (250 µl) gap over much of Virginia, which lacks bog turtle colonies.[12][30] In both areas, the bog turtle colonies tend to occupy widely scattered ranges.[24] The northern population is the larger of the two. These individuals make their home in states as far north as Connecticut and Massachusetts, and as far south as Maryland. These turtles occupy bog turtle colonies. The vast majority of bog turtle movements are less than 21 meters (69 ft), and only 2 percent are of distances over 100 meters (330 ft); large, expansive trips (i.e., between neighboring wetlands), are rare.[44] The movement of bog turtles between colonies facilitates genetic diversity. If this movement were to be prevented, or limited in any significant way, the species would have a higher likelihood of becoming extinct because genetic diversity would fall. Some aspects of a bog turtle's movement that remain unresolved include: phenomena that motivate bog turtles to move outside their natural habitat; the distances an individual can be expected to travel each day, week, and year; and how separation of small groups affects the genetics of the species.[45] Life cycle A baby bog turtle held in a palm When abraded by mud, the shell becomes smooth, as shown in this turtle. Bog turtles are sexually mature when they reach between 8 and 11 years of age (both sexes).[26] They mate in the spring after emerging from hibernation, in a copulation session that usually lasts for 5–20 minutes, typically during the afternoon, and may occur on land or in the water. It begins with the male recognizing the female's sex. During the courtship ritual, the male gently bites and nudges the female's head. Younger males tend to be more aggressive during copulation, and females sometimes try to avoid an over-aggressive male. However, as the female ages, she is more likely to accept the aggressiveness of a male, and may even take the role of initiator. If the female yields, she may withdraw her front limbs and head. After the entire process is over, which usually takes about 35 minutes,[46] male and female go separate ways.[8] In a single season, females may mate once, twice, or not at all, and males try to mate as many times as possible.[46] It has been suggested that it is possible for the bog turtle to hybridize with Clemmys guttata during the mating season.[46] However, it has not been genetically verified in wild populations. Nesting takes place between April and July.[8] The female digs a cavity in a dry, sunny area of a bog.[13] and lays her eggs in a grass tussock or on sphagnum moss.[47] The nest is typically 3.8 to 5.1 centimeters (1.5 to 2.0 in) deep and 5 centimeters (2.0 in) around.[46] Like most species of turtle, the bog turtle constructs its nest using its hind feet and claws. Most bog turtle eggs are laid in June. Pregnant females lay one to six eggs per clutch (mean of 3), and produce one clutch per year. A healthy female bog turtle can lay between 30 and 45 eggs in her lifetime, but many of the offspring do not survive to reach sexual maturity.[48] Typically, older females lay more eggs than younger ones.[46] The eggs are white, elliptical, and on average 3.4 centimeters (1.3 in) long and 1.5 centimeters (0.59 in) wide.[49] After the eggs are laid, they are left to undergo an incubation period that lasts for 42 to 80 days.[49] In colder climates, the eggs are incubated through the winter and hatch in the spring.[30] The eggs are vulnerable during the incubation period, and often fall prey to mammals and birds.[13] In addition, eggs may be jeopardized by flooding, frost, or various developmental problems. It is unknown how gender is determined in bog turtles.[49] Baby bog turtles are about 2.5 centimeters (0.98 in) long when they emerge from their eggs,[15] usually in late August or September.[49] Females are slightly smaller at birth, and tend to grow more slowly than males.[49] Both genders grow rapidly until they reach maturity.[50] Juveniles almost double in size in their first four years, but do not become fully grown until five or six years old.[8] The bog turtle spends its life almost exclusively in the wetland where it hatched. In its natural environment, it has a maximum lifespan of perhaps 50 years or more,[48] and the average lifespan is 20–30 years.[17] The Bronx Zoo houses several turtles 35 years old or more, the oldest known bog turtles. The zoo's collection has successfully sustained itself for more than 35 years.[51] The age of a bog turtle is determined by counting the number of rings in a scute, minus the first one (250 µl) gap over much of Virginia, which lacks bog turtle colonies.[12][30] In both areas, the bog turtle colonies tend to occupy widely scattered ranges.[24] The northern population is the larger of the two. These individuals make their home in states as far north as Connecticut and Massachusetts, and as far south as Maryland. These turtles occupy bog turtle colonies. The vast majority of bog turtle movements are less than 21 meters (69 ft), and only 2 percent are of distances over 100 meters (330 ft); large, expansive trips (i.e., between neighboring wetlands), are rare.[44] The movement of bog turtles between colonies facilitates genetic diversity. If this movement were to be prevented, or limited in any significant way, the species would have a higher likelihood of becoming extinct because genetic diversity would fall. Some aspects of a bog turtle's movement that remain unresolved include: phenomena that motivate bog turtles to move outside their natural habitat; the distances an individual can be expected to travel each day, week, and year; and how separation of small groups affects the genetics of the species.[45] Life cycle A baby bog turtle held in a palm When abraded by mud, the shell becomes smooth, as shown in this turtle. Bog turtles are sexually mature when they reach between 8 and 11 years of age (both sexes).[26] They mate in the spring after emerging from hibernation, in a copulation session that usually lasts for 5–20 minutes, typically during the afternoon, and may occur on land or in the water. It begins with the male recognizing the female's sex. During the courtship ritual, the male gently bites and nudges the female's head. Younger males tend to be more aggressive during copulation, and females sometimes try to avoid an over-aggressive male. However, as the female ages, she is more likely to accept the aggressiveness of a male, and may even take the role of initiator. If the female yields, she may withdraw her front limbs and head. After the entire process is over, which usually takes about 35 minutes,[46] male and female go separate ways.[8] In a single season, females may mate once, twice, or not at all, and males try to mate as many times as possible.[46] It has been suggested that it is possible for the bog turtle to hybridize with Clemmys guttata during the mating season.[46] However, it has not been genetically verified in wild populations. Nesting takes place between April and July.[8] The female digs a cavity in a dry, sunny area of a bog.[13] and lays her eggs in a grass tussock or on sphagnum moss.[47] The nest is typically 3.8 to 5.1 centimeters (1.5 to 2.0 in) deep and 5 centimeters (2.0 in) around.[46] Like most species of turtle, the bog turtle constructs its nest using its hind feet and claws. Most bog turtle eggs are laid in June. Pregnant females lay one to six eggs per clutch (mean of 3), and produce one clutch per year. A healthy female bog turtle can lay between 30 and 45 eggs in her lifetime, but many of the offspring do not survive to reach sexual maturity.[48] Typically, older females lay more eggs than younger ones.[46] The eggs are white, elliptical, and on average 3.4 centimeters (1.3 in) long and 1.5 centimeters (0.59 in) wide.[49] After the eggs are laid, they are left to undergo an incubation period that lasts for 42 to 80 days.[49] In colder climates, the eggs are incubated through the winter and hatch in the spring.[30] The eggs are vulnerable during the incubation period, and often fall prey to mammals and birds.[13] In addition, eggs may be jeopardized by flooding, frost, or various developmental problems. It is unknown how gender is determined in bog turtles.[49] Baby bog turtles are about 2.5 centimeters (0.98 in) long when they emerge from their eggs,[15] usually in late August or September.[49] Females are slightly smaller at birth, and tend to grow more slowly than males.[49] Both genders grow rapidly until they reach maturity.[50] Juveniles almost double in size in their first four years, but do not become fully grown until five or six years old.[8] The bog turtle spends its life almost exclusively in the wetland where it hatched. In its natural environment, it has a maximum lifespan of perhaps 50 years or more,[48] and the average lifespan is 20–30 years.[17] The Bronx Zoo houses several turtles 35 years old or more, the oldest known bog turtles. The zoo's collection has successfully sustained itself for more than 35 years.[51] The age of a bog turtle is determined by counting the number of rings in a scute, minus the first one (250 µl) gap over much of Virginia, which lacks bog turtle colonies.[12][30] In both areas, the bog turtle colonies tend to occupy widely scattered ranges.[24] The northern population is the larger of the two. These individuals make their home in states as far north as Connecticut and Massachusetts, and as far south as Maryland. These turtles occupy bog turtle colonies. The vast majority of bog turtle movements are less than 21 meters (69 ft), and only 2 percent are of distances over 100 meters (330 ft); large, expansive trips (i.e., between neighboring wetlands), are rare.[44] The movement of bog turtles between colonies facilitates genetic diversity. If this movement were to be prevented, or limited in any significant way, the species would have a higher likelihood of becoming extinct because genetic diversity would fall. Some aspects of a bog turtle's movement that remain unresolved include: phenomena that motivate bog turtles to move outside their natural habitat; the distances an individual can be expected to travel each day, week, and year; and how separation of small groups affects the genetics of the species.[45] Life cycle A baby bog turtle held in a palm When abraded by mud, the shell