A Field Guide to the Turtles of the Lake George Watershed
A Field Guide to the Turtles of the Lake George Watershed was produced by the Lake George Association (LGA) in cooperation with the New York State Department of Environmental Conservation (NYS DEC) with generous funding support from the Helen V. Froelich Foundation.

The Lake George Turtle Monitoring Project is a volunteer monitoring program. Trained volunteers monitor for six different species of turtles found in the Lake George watershed to determine presence, density, range, and habitat use of the turtles. The ultimate goal of the project is to increase current scientific knowledge of the resident turtle species in the Lake George watershed, so that effective conservation measures can be implemented to ensure continued biodiversity.

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Quick Reference to the Turtles of the Lake George Watershed

Common Snapping  
Common Musk  
Spotted  
Wood  
Eastern Painted  
Northern Map

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Lake George is located in northern New York, in the southeastern part of the Adirondack Park. The border of the 6 million acre park is commonly called the “blue line”.

Lake George is an oligotrophic lake formed by glaciers and earthquakes. It is classified as AA special, suitable for potable supply, and it is used as drinking water by many people around the lake.

Lake George is 51.5 km long (32 mi.) and has 110 square km (42.45 square mi.) of surface area.

The maximum depth of the lake is 60 m (196 ft) with an average depth of 21.25 m (69.7 ft).

The widest part of the lake is 3.3 km across (2.05 mi.) while the average width is 2.15 km (1.33 mi.).

The Lake has 172 islands and flows from the south to the north, dropping 69 m (226 ft.) into Lake Champlain through the LaChute River.
The Lake George Watershed

- A watershed is the area of land around a body of water that drains into that water body. All water in the Lake George watershed, whether precipitation or stormwater runoff, eventually ends up in the lake.

- Elevation at the lake is 320 feet above sea level. The maximum elevation in the watershed is the peak of Black Mountain at 2,646 feet.

- The Lake George watershed is 618 square km (238.4 square mi.) in area, which is about 5 times the area of the lake.

- Within the watershed, about 141 streams run into Lake George, which supply the lake with 55% of its water. Water in Lake George has a detention time of 8-9 years.

- Secchi depth readings in Lake George range from 6-12 m (20-40 ft.), with the North Basin having a higher average secchi depth than the South Basin. Having a small watershed has historically helped keep sediment and nutrients out of the streams, which makes the water of Lake George clean and clear.

- Development and other human activities have increased the amount of sediment, nutrients, and other pollutants entering streams and the lake and are contributing to the degradation of the water quality of Lake George.
Identification Key to the Turtles of the Lake George Watershed

This identification key is intended to be used in the field. A dichotomous key is used by beginning at characteristic 1. Follow the key to discriminating characteristics 2 or 3 depending on the type of plastron observed. Continue through the key in this manner until the species of the turtle being keyed is determined.

•1.a. Plastron with fleshy areas showing..................................2
•1.b. Plastron covers to all four limbs........................................3

•2.a. Long tail with large ventral scales; plastron cross shaped..........................Chelydra serpentina serpentina - Common snapping turtle
•2.b. Short tail; with possible odor when handled..............................................Sternotherus odoratus (Kinosternon oderatum) - Common musk turtle

1.a...................Go to 2 1.b..............Go to 3

2.a. Common snapping turtle 2.b. Common musk turtle
3.a. Thin red or yellow stripes on head, neck or leg..................4
3.b. No stripes on head, neck or legs........................................6

9.a. Red markings on edge of carapace and bridge........................................5
9.b. No red on carapace...........(Graptemys geographica) – Northern Map turtle

3.a. Go to 4
3.b. Go to 6
9.a. Go to 5
9.b. Northern Map turtle
• 5.a. Ventral scute seams align with lateral scute seams.................. *Chrysemys picta picta* - **Eastern painted turtle**

• 5.b. Ventral scute seams do not align with lateral scute seams.....*Chrysemys picta marginata* - **Midland painted turtle**

• 6.a. Smooth black carapace with round yellow dots.................... *Clemmys guttata* - **Spotted turtle**

• 6.b. Brownish gray carapace with deep scutal growth rings........... *Glyptemys insculpta (Clemmys insculpta)* - **Wood turtle**

**NOTES:**

1. Taxonomists are continuing to gather more information, with more understanding they are making new or different connections between species, hence scientific names may change over time.
2. The Red-eared slider (*Trachemys scripta elagans*) is considered exotic, or not native to the watershed. While it is not known to breed in the wild this far north, it may be encountered as a released pet. It is distinguished from a Painted turtle by its lack of red on the shell and a single red spot on its head.
3. There are historical records for Bog turtles (*Glyptemys muhlenbergii*) in the region. While the carapace of young Bog turtles maybe quite rough, they are distinguished from Wood turtles by the large bright blotch on each side of the head.
TAXONOMIC CLASSIFICATION - Where do the turtles of Lake George fit in?

Kingdom – Animal
  Phylum – Chordata: central nerve
    Sub-Phylum – Vertebrata: vertebrate structure (backbone)
      Class – Reptilia: amniotic eggs, horns or scaly skin, metanephric kidneys
        Subclass – Anapsida: solid skulls lacking fenestrations (turtles, tortoises and extinct relatives)
      Order – Testudines (Chelonians): teeth absent, boney or epidermal horny plates enclosing body
        Suborder – Cryptodira: neck retracts front to back
          Families – Chelydridae: hard shell, plastron reduced, long tail, seams separate carapace scutes
            Chelydra serpentina – Snapping turtle
          - Emydidae: hind limbs not elephantine, toes usually somewhat webbed
            Clemmys guttata – Spotted turtle
            Glyptemys insculpta – Wood turtle
            Chrysemys picta – Painted turtle
            Graptemys geographica – Northern map turtle
            - Kinosternidae: less than 12 plastron scutes, plastron hinge present
              Kinosternon orrorata – Common musk turtle

Note: It is thought that Chelonians first occurred 280-270 Myr BPE. The first Cryptodira emerged during the Jurassic Period 190 Myr BPE. Dinosaurs are believed to been living 250-70 Myr BPE.
snapping turtles often keep their snouts up out of the water

plastron with fleshy areas showing

a long tail, serrated rear part of the shell, and overall large size help distinguish a snapping turtle from a distance
Snapping turtle  (*Chelydra serpentina*)

- **DISTINGUISHING CHARACTERISTICS:** Large, serrated rear carapace with tail that may be longer than the carapace; tail has three ventral rows of scales; fleshy plastron. Males are larger with vent posterior to rear edge of carapace.
- **DISTRIBUTION:** Nova Scotia west to southeastern Alberta; south along the eastern Rocky Mountains to Florida.
- **SIZE AND LIFESPAN:** Average size 20-26 cm (8-14 in.); average weight 5-16 kg (10-35 lbs.); may grow to 34 kg (75 lbs); known to live 35 years.
- **HABITAT FOUND:** Prefers slow moving, shallow water with emergent vegetation; tolerates brackish water when able to access fresh drinking water.
- **FEEDING HABITS:** Underwater ram feeders that will feed on “Anything it can fit within it’s jaws” (Ernst et al 1994); carrion, insects, fish, vegetation.
- **REPRODUCTION:** Mating occurs May-November; light rain appears to trigger nesting in late May to early July in dry gravel often adjacent to roads; have been known to nest in an arribada due to habitat loss; eggs hatch in late summer.
- **BEHAVIOR:** Not strong swimmers; they are often found (snouts only out of water) thermal conforming in areas of brush, downed trees or emergent vegetation. Snapping behavior is an active defense mechanism to protect fleshy underside from predators. Rarely bask. Indicator species for accumulative ecotoxins.
- **PROTECTION:** New York State Comprehensive Wildlife Conservation Strategy - species of greatest conservation need.
musk turtles have 2 light stripes on their head

musk turtles are often mistaken as young snapping turtles - Remember to look for the long tail with serrations that a snapping turtle has when trying to differentiate the two

the plastron hinge of a musk can be very hard to see
Common musk turtle or Stinkpot (Sternotherus odoratus)

- **DISTINGUISHING CHARACTERISTICS**: Small turtle with two light strips on side of head; barbels on chin and throat; hard to see single plastron hinge.
- **DISTRIBUTION**: New England west to Wisconsin and south to Florida and Texas.
- **SIZE AND LIFESPAN**: Domed carapace up to 8 cm in length; males have longer, thicker tails with a blunt tip with small patches of tilted scales on the inner skin of the hind limbs. Live 25-30 years in the wild; one captive specimen lived 54 years.
- **HABITAT FOUND**: Shallow water or littoral zone, usually less than 60 cm deep, with significant vegetative cover.
- **FEEDING HABITS**: Bottom feeders that usually walk along the bottom until encountering filamentous algae, plants, crustaceans, insects or carrion.
- **REPRODUCTION**: Courting involves, the males smelling, rubbing and biting the female; nesting takes place early morning or night; eggs hatch August-November depending on latitude.
- **BEHAVIOR**: Very nocturnal in their habits; bury themselves in the mud during the day; rarely leave the water. When handled by humans or predators the Stinkpot releases a strong musky odor.
- **PROTECTION**: New York State Comprehensive Wildlife Conservation Strategy - species of greatest conservation need.
characteristic yellow spots found on scutes

spotted turtles are found in shallow wetlands including vernal pools
Spotted turtle (*Clemmys guttata*)

- **DISTINGUISHING CHARACTERISTICS:** Small smooth carapace with round yellow dots on scutes. Males have tan chins, brown eyes, long thick tails. Females have yellow chins, orange eyes, short tails with vent under the posterior edge of the carapace.
- **DISTRIBUTION:** Maine to southwest Ontario south along the Atlantic to northern Florida west to Ohio, Michigan to northeastern Illinois.
- **SIZE AND LIFESPAN:** 9-11.5 cm (3.5-4.5 in.); live to over 30 years.
- **HABITAT FOUND:** Shallow wetlands including swamps, cranberry bogs, wet pastures, vernal pools and small woodland streams.
- **FEEDING HABITS:** Omnivorous scavengers that feed during the day predominately filamentous algae, insects, insect larvae, and wood frog and spotted salamander larvae.
- **REPRODUCTION:** Courtship and mating begins at ice out. Females travel upland to well drained sunny nesting sites; the eggs are laid at night; elliptical eggs hatch in September to early October.
- **BEHAVIOR:** Spotted turtles mate and feed in the wetlands in the spring, as summer gets warmer males and females may travel upland to estivate in the cool forest floor.
- **PROTECTION:** New York State Species of Special Concern; population declining due to habitat loss and degradation.
The most terrestrial of the Lake George turtles, wood turtles are found upland, away from water, during the summer. Orange limbs are key identification characteristic. Wood turtles are found in the water during the spring. Heavily keeled carapace.
Wood turtle  (*Glyptemys insculpta* - previously *Clemmys insculpta*)

- **DISTINGUISHING CHARACTERISTICS:** Carapace heavily keeled with raised irregular pyramidal scutes. Males have longer thick tails with vent posterior to edge of carapace, concave plastron and scale on larger scales on the front of the forelimbs. Orange on legs and neck.
- **DISTRIBUTION:** Nova Scotia west to southern Ontario and Michigan and south to Virginia.
- **SIZE AND LIFESPAN:** 14-20 cm (5.5-8 in.); live to be 20 years or more.
- **HABITAT FOUND:** Associated with water with moderate current during spring such as beaver ponds, often moving upland for the summer.
- **FEEDING HABITS:** Feed in early morning or late afternoon, on slugs, worms, fungi, invertebrates.
- **REPRODUCTION:** Males court females in April by chasing and head bobbing; mating can take place in water or on land; sex is not temperature dependent like many other turtles; eggs hatch in fall.
- **BEHAVIOR:** Wood turtles stomp for worms by raising and thumping their plastron against the ground. The turtle does this alternating forelimbs for 2-19 thumps lasting up to 15 minutes.
- **PROTECTION:** New York State Species of Special Concern
lateral and ventral scutes align on the Eastern Painted

shell often covered with red or green algae

red painting on shell and yellow neck stripes
Painted turtles (*Chrysemys picta*)
Eastern Painted (*C. picta picta*) and Midland Painted (*C. picta marginata*)

- **DISTINGUISHING CHARACTERISTICS:** Smooth oval shell with red markings (painted) on margins of the shell and over the yellow striped neck. Males have longer fore claws and a longer, thicker tail.
- **DISTRIBUTION:** North American continent; New Brunswick to British Colombia, south to Utah, Arizona and Mexico
- **SIZE AND LIFESPAN:** 11-15 cm (4.5-6 in.); known to live to 35 years in wild.
- **HABITAT FOUND:** Soft bottomed, slow moving ponds, lakes or marshes with aquatic vegetation and sunny basking sites.
- **FEEDING HABITS:** Feed when water temperatures reach 16-17° C, predominately on algae, vascular plants, insects and other invertebrates.
- **REPRODUCTION:** Females nest in June depending on photoperiod and temperature; have been known to clutch more than once during the nesting season; eggs are elliptical, somewhat off-white and hatch late summer.
- **BEHAVIOR:** Often seen basking in large congregations, apparently segregated or sorted by size. Often seen gulping at the air. Males court females by swimming backwards while stroking the female’s head with his fore claws.
- **PROTECTION:** Considered common in New York State.
Baby map turtles have a more noticeable dorsal keel than adults.

Yellow stripes on head and neck and topographic pattern on shell are key characteristics of the northern map turtle.

Males have longer, thicker tails than females.
Northern Map turtle  (*Graptemys geographica*)

- **DISTINGUISHING CHARACTERISTICS:** Oval carapace with a network of lines resembling the contour lines of a topographical map. Head and neck have yellow strips. Males have a smaller carapace with a longer, thicker tail.

- **DISTRIBUTION:** Watershed specific; Lake George, Lake Champlain to the St. Lawrence west to the Great Lakes, West of the Appalachians south to Oklahoma and Alabama. An isolated population exists in the Lower Hudson River.

- **SIZE AND LIFESPAN:** Females 18-29 cm (7-11 in.); males 9-18 cm (3.5-7 in.); live to at least 20 years.

- **HABITAT FOUND:** Aquatic; large lakes or rivers; males rarely basking more than a few body lengths from the water; females may travel up to 600 m to suitable nesting sites.

- **FEEDING HABITS:** Feed underwater mornings and evenings, primarily snails, thin walled mussels, crayfish, and insects; will feed on algae and vegetation.

- **REPRODUCTION:** Courting happens predominately underwater in the fall with the male bobbing his head at the female and making snout to snout contact. Nesting in June, eggs hatch early fall.

- **BEHAVIOR:** Very strong swimmers, reaching speeds up to 56.8 cm/sec or 1.25 mph.

- **PROTECTION:** New York State Comprehensive Wildlife Conservation Strategy - species of greatest conservation need; listed in CITES - Appendix III.
**TURTLE TERMINOLOGY**

**GLOSSARY:**

*Arribada* – a mass nesting in one location at one time by a single species

*Bog* – soggy, moist, spongy wetland

*CITES* – Convention on International Trade in Endangered Species

*Cloaca* – chamber-like organ into which intestinal, urinary, and reproductive tracts open.

*Ecotoxins* – poisons that are found within an ecosystem

*Estivate (Aestivate)* – a state of stagnation or tupor because of heat

*Indicator species* – specie populations that indicate the quality of the environment, “canaries in the mine”

*Oligotrophic* - a measure of trophic state meaning low in nutrients

*Secchi disk* - a tool used to measure water clarity

*TSD* – temperature sex determination, sex of an individual turtle will determined by incubation temperature.

*Vernal pool* - a wetland that dries up for a part of the year; a fishless pond.

**ANATOMY:**

**CONSERVATION ISSUES:**

Roadways create unpassable barriers or kill zones and development fills in critical wetland areas and fragments habitat. Environmental changes caused by acid rain and invasive species as well as collection for food and the pet trade also decimates populations and reduces biodiversity.

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REFERENCES:

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