herpy

TORTOISES AND TURTLES

Common Map Turtle

Graptemys geographica

Graptemys geographica is a diurnal, very shy aquatic turtle from large rivers and lakes in north-eastern North America. The shell carries a network of yellow lines like the contours on a map. The female reaches up to 27 cm and is far larger than the male. The species needs a large, clean, well-oxygenated aquatic enclosure with a basking area and UVB, tolerates poor water quality badly and suits experienced keepers best.

Family: Emydidae Former name: *Testudo geographica; Emys geographica; Malaclemys geographica*

KEY FACTS

THE ANIMAL

Adult size	**10-27 cm** total length incl. tail
Weight	**150-2,500 g**
Lifespan	**30-35 years**
Active	**By day**
Lifestyle	**Semi-aquatic**
Habitat	**Wetland**
Difficulty	**Experienced**

CARE

Min. enclosure	**150 × 75 × 70 cm** L × W × H for 1 adult
Temperature, day	**24-28 °C**
Basking spot	**35-40 °C**
Temperature, night	**18-22 °C**
Humidity	**50-80%**
Water	**Aquaterrarium** depth 30-40 cm
Water temperature	**22-26 °C**
UVB	**Essential** Ferguson zone 3
Winter rest	**4-6 °C** 8-12 weeks
Diet	**Insects, complete diet, plants, vertebrates and worms/snails**
Kept	**Singly or in groups**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**120-168 months**
Clutch size	**6-20 eggs**
Clutches per year	**1-2**
Incubation	**50-70 days** at 26-30 °C

PROTECTION AND PAPERWORK

CITES	**Appendix III**
EU annex	**Annex C**
IUCN	**Least Concern (LC)**

About the species

Graptemys geographica is a medium-sized freshwater turtle in the family Emydidae, named after the pattern on its carapace: thin lines in yellow, light brown or orange with dark edges, resembling contour lines on a map. The rest of the carapace is olive green to grey-brown. The pattern fades with age, and in old animals it is often visible only when the shell is wet. The carapace is broad and streamlined with a low keel along the middle and a serrated rear edge. The plastron is yellowish and in young animals has a dark pattern along the seams, which fades, so many adults have no pattern at all. The head, neck, legs and tail are dark green with thin yellow stripes, and behind each eye sits an oval or triangular yellow patch.

All measurements in the text are shell length. The sexes differ greatly in size: females are 18-27 cm and weigh about 0.7-2.5 kg, males are 10-16 cm and weigh 150-400 g. The female has a markedly broader head with powerful jaws, suited to her diet of mussels and snails. The male has a narrower shell with a more distinct keel, a narrower head and a longer, thicker tail, and his vent lies beyond the rear edge of the shell. Young animals have a distinct keel and are about 25 mm at hatching.

G. geographica has no subspecies. It resembles other species in the genus, for example *Graptemys pseudogeographica*, and is often confused with them in the trade.

The species is among the shyest turtles in captivity. It slips into the water at the slightest disturbance, basks in groups and is an animal to watch, not to handle. It tolerates poor conditions worse than most other aquatic turtles, and most problems stem from water quality and stress. Lifespan in captivity is not reliably known, but close relatives live for more than 30 years.

Distribution and habitat

Graptemys geographica lives in eastern and central North America. In the north it is found in southern Quebec and Ontario and in north-western Vermont, where it belongs to the St Lawrence River drainage. The range extends west through the Great Lakes region to southern Wisconsin and eastern Minnesota and Iowa, and south through Illinois, Indiana, Ohio, Kentucky and Tennessee to northern Alabama and north-western Georgia, with populations in Missouri, eastern Kansas, north-eastern Oklahoma and Arkansas. East of the Appalachians it is found in the Susquehanna and Delaware river drainages in Pennsylvania, Maryland and New York, and there are isolated populations in New Jersey and in north-eastern Mississippi.

A small population in the Czech Republic stems from escaped or released animals and is not part of the species' natural range.

The species is not threatened globally. Locally it is threatened by destroyed habitats along riverbanks, declining water quality, road traffic, motorboats and collection for the pet trade. In Ontario it is regarded as a species of special concern.

> **Native range:** Canada and United States.

HABITAT

Graptemys geographica lives in large rivers and lakes with clear, well-oxygenated water and abundant aquatic vegetation. In the northern part of the range it is found in the large rivers and lakes, in the south and west more often in smaller, rocky rivers and streams. It is seen more often in rivers than in ponds. Important features are fallen trees, rocks and sandbanks, where the animals can bask with a clear view and drop into the water at once if something disturbs them.

The animals bask for many hours a day, often in large groups, in places stacked on top of one another, and they often stay at the surface under floating plants with only the head above water. Activity lasts from spring to autumn. From November to April the species hibernates under water on the bottom of deep, calm stretches of river or under rocks and logs, often several animals together. The animals do not breathe at the surface during hibernation but take up oxygen from the water, so the overwintering site must be oxygen-rich and ice-free at the bottom.

The food is animal: females take mostly mussels, snails and insects, males and juveniles insects, small crustaceans and smaller snails. Where introduced mussels such as *Dreissena polymorpha* and *Corbicula fluminea* are numerous, they can become the females' main food. The animals always eat in the water. The species is shy and needs a broad, undisturbed waterside.

Read more: Brumation and the seasons

Care

THE ENCLOSURE

Only limited knowledge exists about the care of *Graptemys geographica*, because the species is rare in captivity and difficult to keep. The figures are therefore based on the species' habitat and on the care of the closely related *Graptemys pseudogeographica* and of *Trachemys scripta*; this applies especially to UVB and water temperature.

The species is kept in a large aquarium, a closed tub or a closed outdoor pond, not in an ordinary terrarium. The tank must be at least five times as long as the shell and half as wide as it is long, with the land area counted as part of the floor area. A tub of 150 × 75 × 70 cm is the minimum for an adult female and gives a water area of 110 × 75 cm with 40 cm of water (about 330 litres), a land area of 40 × 75 cm and a rim 30 cm above the water. A male manages with 80 × 40 cm. The water depth is at least 30 cm for adults, and deeper is better, because the species seeks security in deep water. Juveniles can be kept in shallower water but grow quickly.

The species prefers current, so the water must be moved vigorously by a large filter. A tub with opaque sides makes the animal feel more secure and reduces swimming back and forth along the glass. Provide cover in the water in the form of roots, stones and logs, and place them so the animal can retreat.

The land area must be large enough for the animal to climb fully out of the water and dry off completely. Build it as a shelf or beach with a rough ramp. The basking spot should lie at one end, undisturbed and preferably with a clear view. A female that is going to lay eggs needs a box with moist sand or soil.

The species can be kept alone or in a small group of equally sized animals, but more animals require a tub at least 50% larger and more basking spots. The setup must be escape-proof. An outdoor pond from spring to autumn is a good summer home if it is closed with fencing that extends into the ground and netting over the top against predators.

Read more: Lighting and UVB Read more: Heat and temperature

TEMPERATURE

The surface of the basking spot should be 35-40 °C, measured with an IR thermometer a couple of hours after the lamps are switched on. Use halogen lamps or heat spots in domes with ceramic fittings, and place the heat lamp close to the UVB tube. The air in the room should be 24-28 °C by day and 18-22 °C at night. The lamps are switched off at night.

The water should be 22-26 °C for adults and 26-28 °C for juveniles. The species comes from a cool climate, so the water should not be warmer than this. Use a water heater with a plastic guard and thermostat, and measure the water with a digital thermometer.

Winter rest: in the wild the species hibernates under water from November to April, and the rest is part of its rhythm. Animals kept in a closed outdoor pond with a deep area of at least 100 cm can overwinter in the pond, provided the water is kept oxygen-rich, an air stone or a pump keeps an area ice-free, and the ice is never broken up. Indoors, a controlled winter rest is possible for healthy, well-nourished adults after a vet check. The light is shortened, the heat lowered and the food reduced gradually over a few weeks, and the gut must be empty before the temperature drops below 10 °C. The animal then overwinters in the dark in a tub with just enough water to cover the shell, with leaves as cover, at 4-6 °C for 8-12 weeks, in a frost-free room. The animal is never moved into the warmth in the middle of the process. Weigh the animal along the way. If in doubt, keep it awake and fed all winter.

HUMIDITY AND WATER

Air humidity matters little for an aquatic turtle; 50-80% in the room is suitable. What is decisive is the cleanliness of the water, because the species is sensitive to poor water: only clean, well-oxygenated water keeps it healthy, and dirty water causes shell infections.

The animal passes its droppings in the water. Use a powerful filter, and change about 30% of the water every 1-2 weeks; the filter alone is not enough. Remove food remnants with a net after feeding. Feeding in a separate tub keeps the main tub cleaner.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

The water is the animal's living space, so it must be deep, clean, well-oxygenated and moving. The water depth is 30-40 cm for adult animals, and the temperature is 22-26 °C (see Temperature). Juveniles can be kept in shallower water, 10-15 cm, but they grow quickly.

The filter must be powerful, preferably an external canister filter rated for at least 2-3 times the water volume, with both mechanical and biological filtration. Undergravel filters, internal filters and small fish filters are not suitable for an adult animal. Clean the filter regularly in water from the tub and not from the tap, so the bacteria are preserved. Use a water conditioner against chlorine. All electrical equipment near the water must be behind a residual-current device (RCD).

LIGHTING AND UVB

UVB is a necessity: the species is diurnal and basks for many hours a day, and zone 3 is suitable. Use a T5 HO tube with 5-6% UVB in a reflector that covers a large part of the basking area, with about 30 cm from the tube to the animal's back. Glass and plastic block UVB completely, and dense mesh blocks a large part of it. The tube's output falls over time, so replace it according to the manufacturer's instructions, at the latest after one year.

Supplement with a powerful daylight lamp. The light should be on for about 12 hours a day, more in summer and less in winter. Outdoors in a pond, extra light is not necessary. Never use coloured light.

FEEDING

Graptemys geographica is omnivorous but takes mostly animal food, and it eats only in the water. Females have broad jaws for crushing snails and mussels and also take crayfish; males and juveniles take mostly insects, small crustaceans and smaller snails. The species is easily overfed: too much protein causes rapid growth, obesity and a pyramided shell.

The staple can be aquatic turtle pellets, supplemented with snails in their shells, prawns, freshwater crayfish, earthworms, cockroaches, crickets and small livebearing fish such as guppies and platies. Females should have the chance to crush larger prey such as snails. Avoid fatty fish. Greens such as duckweed, Canadian waterweed, dandelion and endive are given regularly; place them in the water. Fruit is only an occasional treat.

Juveniles are fed every day. Adults are fed 2-3 times a week. Give only what the animal can eat in 4-5 minutes. Feeding in a separate tub keeps the water cleaner. Keep a cuttlebone available as a calcium source, and remove the hard back first.

Read more: Feeder animals: keeping and breeding Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

Graptemys geographica is very shy and dives at the slightest disturbance, so the tub must stand in a quiet place, with no traffic past it, and with opaque sides or a background. The species is not an animal for handling: it is easily stressed and can bite when it feels threatened. Feeding with tongs is the gentlest contact. If the animal must be lifted, take it from underneath with both hands, and keep your fingers away from the head. Wash your hands before and after, and do not let children under 5 handle the animal.

The animals like to bask together, and the species can be kept alone or in a small group of equally sized animals. Animals of very different sizes cause fights over the basking spot and the food, and a large female can bully a smaller male. An animal that swims back and forth along the glass often has too little space or no cover.

Breeding

SEXUAL MATURITY AND SEXING

The male is 10-16 cm and has a narrower head and a longer, thicker tail, and the vent sits beyond the rear edge of the shell. The female is far larger with a broader head. Females reach sexual maturity after more than 10 years, in the wild at about 14 years; in captivity it happens faster with plentiful food, but a female must be fully grown before she is used for breeding. Males mature earlier and at a smaller size; their age is not documented.

MATING

In the wild the species mates in spring and in autumn, mostly in deep water. The male begins by vibrating his front claws against the female's head. Give the female space and cover, so she can get away from a persistent male. For breeding, the animals should have a winter rest, as the species comes from an area with cold winters.

EGG-LAYING AND CLUTCHES

The female lays 6-20 eggs per clutch and one or two clutches a year. Egg laying takes place from May to July. She digs a hole with her hind legs in open, well-drained sand or soil in full sun, lays the eggs and covers them. In the last weeks before laying she spends less time in the water and searches for a place to dig. Give the female a box with moist sand or soil on the land area, even when she is kept alone.

INCUBATION

The eggs are oval and about 32 mm long, and the shell is leathery. Incubation takes 50-70 days. The sex depends on temperature: at 25 °C mostly males are produced, and at 30-35 °C mostly females; an incubation temperature of 26-30 °C gives mixed clutches. The eggs are moved carefully, without being turned, to an incubator with a moist but not wet substrate. The young hatch most often in August and September, and young from late clutches may stay in the nest over winter.

Read more: Incubating eggs

REARING THE YOUNG

The young manage on their own from hatching; the parents care for neither eggs nor young. They are about 25 mm, with a round grey-brown shell with a distinct keel and a paler pattern than adults. Juveniles need shallow water, 10-15 cm, warm water at 26-28 °C around the clock, plenty of cover, a basking spot they can climb onto easily, UVB and animal food every day together with greens. If several juveniles are kept together, they must be equally sized, and all must get food.

Health and common mistakes

The species is sensitive to poor water and stress, so most problems stem from husbandry. Weigh and measure the animal 1-2 times a month and keep a log of weight, appetite and behaviour; weight loss is often the first sign of illness.

- Fungal and bacterial infections of the shell: grey or soft patches that spread, caused by dirty water or too little UVB. They require a vet and correction of the water and light.
- Dirty, oxygen-poor water, which is the most common cause of illness.
- Calcium deficiency and diseases of bone and shell from too little UVB or calcium.
- Pyramiding and obesity from too much protein and too frequent feeding.
- Stress from disturbance, too little cover or too little space, so the animal stops eating.

All reptiles can be symptom-free carriers of *Salmonella*. Wash your hands before and after contact with the animal, water and equipment. After a bite, the wound should be rinsed under running water for about five minutes and cleaned. See a vet with reptile experience if the animal loses weight, does not eat, has an open mouth, swollen eyes or swims lopsidedly.

Read more: Quarantine and hygiene

Always ask someone who knows

This guide is a good place to start, but it cannot replace experience. Animals differ, and much of what matters most is learned from people who have kept the species for years. Talk to a breeder, an experienced keeper or a vet who knows reptiles and amphibians before you get the animal - and again if anything looks wrong.