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SNAKES

Checkered Garter Snake

Thamnophis marcianus

Thamnophis marcianus is a medium-sized, mainly diurnal garter snake with a black checkerboard pattern on a green to olive-brown back. It lives in the south-western United States, Mexico and Central America, almost always near water, and grows to 45-105 cm. It is hardy and can be kept on thawed mice, but it is a selective feeder, may eat other snakes of its own species and escapes through the smallest gaps.

Family: Colubridae

KEY FACTS

THE ANIMAL

Adult size	**45-105 cm** total length incl. tail
Weight	**30-120 g**
Lifespan	**7-10 years**
Active	**By day and at night**
Lifestyle	**Terrestrial and semi-aquatic**
Habitat	**Semi-desert, savanna and wetland**
Difficulty	**Beginner**

CARE

Min. enclosure	**100 × 50 × 50 cm** L × W × H for 1 adult
Temperature, day	**23-27 °C**
Basking spot	**29-32 °C**
Temperature, night	**18-24 °C**
Humidity	**35-60%**
Water	**Water dish**
UVB	**Recommended** Ferguson zone 2
Winter rest	**12-15 °C** 8-16 weeks
Diet	**Vertebrates and worms/snails**
Kept	**Singly**

BREEDING

Reproduction	**Live-bearing**
Sexually mature	**18-24 months**
Litter size	**6-35 young**
Clutches per year	**1-2**
Gestation	**80-105 days**

PROTECTION AND PAPERWORK

CITES	**Not listed**
EU annex	**Not listed**
IUCN	**Least Concern (LC)**

About the species

Thamnophis marcianus is a slender garter snake with keeled scales in 21 rows. The back is greenish, grey, brown or olive with a black, checkerboard pattern, and a pale yellow stripe runs along the spine and along each side. The head is olive-green with a black bar at the neck and a pale yellow crescent just behind the mouth. The belly is cream. The tongue is red with a black tip. The species name honours the American officer Randolph Barnes Marcy, who took part in a survey of the Red River in 1852, when the first animals were collected.

Females are larger and heavier than males. Males are typically about 50 cm, while females average about 80 cm, and the largest animals reach 105 cm. Newborn young are 12-15 cm long and weigh about 13 g. Adults typically weigh 30-120 g. The snake grows throughout its life, but slowly after reaching maturity. Both sexes have the same markings, and the young look like small adults.

The species gives birth to live young. There is evidence that females can produce young without having mated (virgin birth). The species has a very mild venom, which it can only use on small prey. It is harmless to humans. When threatened, the snake releases a foul-smelling secretion from the cloaca and bites if it is grabbed. There are two subspecies, which are kept in the same way; albinos and other colour forms are also sold, but the wild form is described here. Unlike most garter snakes, *T. marcianus* is partly nocturnal.

Distribution and habitat

Thamnophis marcianus lives in the southern United States from California, Arizona and New Mexico to Texas, Oklahoma and southern Kansas, and in large parts of Mexico. From there the range extends through Central America to Nicaragua and northern Costa Rica, with scattered populations. The species occurs from sea level to about 2,200 m. The type locality is on the Red River in southern Oklahoma.

> **Native range:** United States, Mexico, Belize, Honduras, Nicaragua and Costa Rica.

HABITAT

Thamnophis marcianus is found in desert, scrub, grassland, dry forest and humid tropical forest, but almost always by water: rivers, ponds, springs, irrigation ditches and lakes. On grassland the snake burrows in under stones, logs and dense vegetation. It also lives in gardens and along irrigation canals and has spread westwards along them.

The snake is most active by day, but in the hot southern areas also at night. Its food is frogs, toads and tadpoles, small fish and earthworms. In the cooler parts of its range many animals hibernate from October to March, often together in groups, and they sometimes come out to bask on mild winter days.

Read more: Rearing tadpoles

Care

THE ENCLOSURE

Little species-specific knowledge exists on the care of *Thamnophis marcianus*. The figures in this section and the following ones are based on garter snakes in general, especially *Thamnophis sirtalis* and *Thamnophis elegans*, which have the same size, lifestyle and requirements.

An adult *Thamnophis marcianus* needs an enclosure of at least 100 × 50 × 50 cm (length × width × height), and a large female needs more. The species is active and inquisitive, so the layout matters. Young snakes can live in a small, secure box, because an enclosure that is too large makes them feel exposed; move them up as they grow. Keep the snakes singly. Many garter snakes can live in groups, but *T. marcianus* is more prone than most to eating others of its own kind.

The substrate should be clean and relatively dry, but able to hold a little moisture. Moistened coconut fibre or fertiliser-free soil in a layer of at least 5 cm works, as does aspen shavings if the humidity is kept moderate. A layer of leaf litter on top holds the moisture and provides cover. Avoid sand, cat litter and cedar, pine and other aromatic woods.

Use at least two hides, one at the warm end and one at the cool end, so small that the snake lies tightly coiled in them. Branches, cork bark, flat stones and sturdy plants provide structure and climbing opportunities.

The species escapes through even small openings: if it can get its head through, the rest follows. The lid must fit tightly and be locked, all gaps and cable holes must be sealed, and the mesh must be fine enough that a young snake cannot squeeze through. Enclosures with front doors and tight joints are the safest. Remove droppings daily, and replace the substrate completely every three to four months.

Read more: Humidity, misting and ventilation

TEMPERATURE

There must be a clear temperature gradient. The basking spot should be 29-32 °C measured on the surface, the cool end 23-27 °C and the night 18-24 °C. Use a halogen spotlight above the enclosure, and place a flat stone or plank under it so the snake can lie in the warmth. If the bulb is inside the enclosure, it must have a protective cage. The heat source is switched off at night.

Air temperatures above 33 °C are dangerous. An overheated snake dashes about with its mouth open or lies in the water bowl; put it in cool water at once. Never place the enclosure in direct sunlight. Measure with digital thermometers, with a probe at the basking spot and at the cool end.

In winter the daytime temperature can be lowered to 16-20 °C. For breeding, or if the snake stops eating by itself in autumn, it can go into hibernation (see Breeding).

Read more: Heat and temperature Read more: Brumation and the seasons

HUMIDITY AND WATER

The humidity should be 35-60 %, highest at the cool end and at night. The enclosure should not be wet, because constant damp causes blisters on the belly and fungal infections. Mist lightly as needed, and place moist sphagnum in the cool hide as a humid chamber for shedding.

The snake needs a water bowl large enough for its whole body to lie in. It bathes often, especially before shedding, and often leaves droppings in the water. Change the water at least once a week and immediately if it is dirty.

LIGHTING AND UVB

Thamnophis marcianus is diurnal and thrives in strong daylight. UVB is not strictly necessary, but it is recommended and often makes the snake more active. Use a T5 HO tube of 5-6 % (Ferguson zone 2), covering half of the enclosure over the warm end, and aim for a UV index of 2-3 at the basking spot. The distance from the tube to the basking spot depends on whether there is mesh in between; preferably measure with a UV meter. A 6500 K LED bar gives ordinary daylight and helps live plants.

The light is on for 14 hours in summer and 10 hours in winter, with gradual transitions. Without UVB, the food should occasionally be dusted with a supplement containing vitamin D3.

Read more: Lighting and UVB Read more: Calcium, vitamins and supplements

FEEDING

In the wild *Thamnophis marcianus* eats frogs, toads, tadpoles, small fish and earthworms. In the enclosure, frozen and thawed mice are the simplest diet: they provide complete nutrition without supplements and less foul-smelling droppings. The snake is selective, however, and can stop taking mice without warning, even after taking them for a long time. In that case rub the prey with fish or earthworm, move it with tweezers and give the snake time, because it hunts by sight and often needs longer to find its food than other garter snakes.

Young snakes can have pieces of frozen pinkie mice, earthworms cut into pieces, and small guppies and platies. Move them on to mice as soon as possible. Never use red compost worms (*Eisenia fetida*), which are toxic to the snake. Many feeder fish contain thiaminase, which breaks down vitamin B1; a regular diet of them causes B1 deficiency. Red fish and salmonids such as trout and salmon are free of thiaminase and can be used as fillet in a mixed diet. Frogs, toads and salamanders should not be used.

The prey should be no more than 1.5 times as wide as the snake at its widest point. Newborns are fed every other day, young animals every 3-5 days and adults every 4-7 days, least often when they are given mice. Never feed daily, because it causes obesity. Mice need no supplement; on a diet of worms and fish, the prey is lightly dusted now and then with calcium and a multivitamin with D3.

BEHAVIOUR AND HANDLING

Thamnophis marcianus is quick and alert and usually becomes calm if it is handled regularly from a young age. Let new animals settle in for about two weeks, and only begin handling them when they are feeding reliably. Keep the first sessions to 5 minutes at most, and lift the snake from below with a flat hand so its body is supported. It does not grip like a constrictor and slips easily between the fingers. Wash your hands after handling.

When startled, the snake releases a foul-smelling secretion and may bite. The bite is harmless but can cause small scratches. Wild-caught animals are often defensive and should be avoided.

In the wild the species lives alone outside hibernation, and in the enclosure it does best alone. It eats others of its own kind, in captivity too, and is therefore unsuitable for group housing, unlike many other garter snakes. The male is put with the female only during the breeding season, and two snakes must never be fed in the same enclosure.

Read more: Buying animals: captive-bred, wild-caught and transport

Breeding

SEXUAL MATURITY AND SEXING

Females are larger and heavier than males. The sex can be confirmed by probing, which should only be done by an experienced keeper or a vet. Males are sexually mature at about one and a half years and females at about two years. The female should be in good condition before she is put to breeding.

MATING

In the wild the snakes mate in spring, when they come out of hibernation, and females can store sperm. The females stop eating when they are ready, and the males follow their scent trails. A hibernation of 8-16 weeks increases fertility; the length is borrowed from garter snakes in general. The species comes from warmer regions than most garter snakes, and temperatures below 10 °C can harm it, so hibernation is kept at 12-15 °C. Stop feeding about three weeks before the cooling, so the gut is empty, give the snake a lukewarm bath so it empties itself, and lower the temperature gradually. The snake must always have access to water.

When hibernation is over, raise the temperature gradually, and offer food again after a few days. Put the male with the female, and remove him again after a few days.

EGG-LAYING AND CLUTCHES

Thamnophis marcianus gives birth to live young and does not lay eggs. Gestation lasts 80-105 days. A litter is 6-35 young, and large females have the largest litters. The female normally has one litter a year, possibly two. In the wild the young are born from July to September.

Give the pregnant female plenty of food, warmth and water, and keep the enclosure quiet. After giving birth she is thin and needs extra food during the first month.

INCUBATION

There is no incubation, because the young develop inside the female's body and are born live. The pregnant female needs the same temperature gradient as usual and must not become too cold, so that the embryos develop evenly.

Remove birth membranes and dead young quickly. The young are independent from the first day and look like small versions of the adults. The female does not care for them.

Read more: Incubating eggs

REARING THE YOUNG

Move the young to small, completely secure boxes, one per box, so they do not eat each other. The boxes need a warm and a cool end, kitchen paper as substrate, a hide and a shallow water bowl. The young can squeeze through very small gaps and are defensive when fed.

The young typically begin eating after their first shed. Offer pieces of frozen pinkie mice, preferably scented with earthworm or fish, and otherwise earthworm pieces or small guppies and platies. Feed every other day at first, and move them on to mice as soon as possible. The young are 12-15 cm at birth and grow about 10-15 cm a year in the first few years.

Health and common mistakes

Thamnophis marcianus is hardy, but errors in feeding and climate cause typical problems:

- Internal worms, especially from live fish, wild-caught frogs and worms. Symptoms are weight loss, swellings and a popping sound when breathing. Frozen food (at least 30 days) prevents them. Have a faecal sample examined by a vet on purchase and when in doubt.
- B1 deficiency in snakes that live on fish containing thiaminase. Signs are poor coordination and the snake being unable to right itself, later convulsions. It requires rapid treatment by a vet.
- Blisters and skin infection on the belly from a substrate that is too damp or dirty.
- Shedding problems in air that is too dry: old skin remains on the eyes and tail. A humid hide helps.
- Burns from heat lamps without a cage.
- Mouth rot and pneumonia at temperatures that are too low, especially during hibernation.
- Obesity from feeding too often.

- Snakes that suddenly refuse mice. This is common in the species and is most often due to scent, temperature or season rather than illness.

A healthy snake has clear eyes, a plump body and smooth skin, and eats regularly. Reptiles hide illness for a long time, so contact a vet with reptile experience if the snake loses weight, refuses to eat for a long time, has sores or swellings or breathes with its mouth open.

Read more: Common diseases and signs of illness

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.