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SNAKES

Western Terrestrial Garter Snake

Thamnophis elegans

Thamnophis elegans is a slender, diurnal garter snake from western North America, where it lives from the Pacific coast to the mountains and open plains, usually not far from water. It is hardy and can live on thawed mice, but it slips out through the smallest gap and needs a completely secure enclosure. Its care is based on the closely related *Thamnophis sirtalis*.

Family: Colubridae

KEY FACTS

THE ANIMAL

Adult size	**50-105 cm** total length incl. tail
Lifespan	**6-10 years**
Active	**By day**
Lifestyle	**Terrestrial and semi-aquatic**
Habitat	**Wetland and temperate woodland and meadow**
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	**18-22 °C**
Humidity	**35-60%**
Water	**Water dish**
UVB	**Recommended** Ferguson zone 2
Winter rest	**8-15 °C** 8-16 weeks
Diet	**Vertebrates and worms/snails**
Kept	**Singly or in groups**

BREEDING

Reproduction	**Live-bearing**
Sexually mature	**18-30 months**
Litter size	**8-12 young**
Clutches per year	**1**
Gestation	**60-90 days**

PROTECTION AND PAPERWORK

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

About the species

Thamnophis elegans is a slender garter snake with keeled scales and a pale stripe along each side of the body. The back is greyish green to brown, often with dark blotches, and the belly is yellow or pale. Completely dark animals also occur. The species name *elegans* is Latin for "elegant". Pattern and colour vary greatly between populations.

Females are larger than males. The largest animals reach about 105 cm, but most are shorter. The animal keeps growing until about a year after sexual maturity. Newborn young are about 23 cm long.

The species is divided into four subspecies: *T. e. elegans*, *T. e. terrestris* from the coast near San Francisco, *T. e. hueyi* from the mountains of northern Baja California and *T. e. vagrans* with the largest range. Several other described forms are no longer recognised. Care is the same for all of them.

The snake produces a very weak venom, which it can use only on small prey. It is harmless to humans. When in danger it releases a foul-smelling secretion from the vent, which it rubs on itself and on the threat, and it bites if it is grabbed.

Distribution and habitat

Thamnophis elegans lives in western North America: in the USA from the Pacific coast east to Montana, Nebraska and Colorado, in south-western Canada (British Columbia, Alberta and Saskatchewan) and in Mexico in northern Baja California and Chihuahua. The species has been found as high as 3,990 m.

The subspecies each have their own area: *T. e. elegans* in central California and south-western Oregon, *T. e. terrestris* in California's coastal region, *T. e. hueyi* in the Sierra San Pedro Mártir in Baja California and *T. e. vagrans* in most of the western USA and Canada.

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

HABITAT

Thamnophis elegans is found in practically every habitat type in the west: lake shores and slow-flowing streams, meadows, forest, plains, mountain areas and desert. It is diurnal, basks in the morning on rocks and other surfaces that hold heat, and then hunts. At night and in the worst summer heat it retreats into hiding.

Its diet depends on the habitat. Coastal populations take mostly land-dwelling prey such as slugs, salamanders, small mammals and lizards, while snakes further inland hunt in and near water and take tadpoles and frogs, leeches and fish. Young snakes take insects and other small animals until they are large enough for normal prey.

In winter the snakes hibernate, often many together in rock crevices, and they return to the same site year after year. Females give birth to live young after 2-3 months of gestation.

Read more: Rearing tadpoles

Care

THE ENCLOSURE

Little is known about the care of *Thamnophis elegans* in captivity. The figures in this section and the following ones are borrowed from the closely related and far better known *Thamnophis sirtalis*, which has the same size, lifestyle and requirements. Both are active, diurnal garter snakes that live by water.

An adult *Thamnophis elegans* needs an enclosure of at least 100 × 50 × 50 cm (length × width × height), and a large female needs 120 × 60 × 60 cm. The species is active and inquisitive, so the furnishings matter. Young snakes can be kept in a small secure box of about 40 × 20 × 25 cm, because an enclosure that is too large makes them feel exposed. Move them up as they grow.

The substrate must be clean and dry but absorbent. Aspen shavings, cypress, coconut fibre or paper pulp in a layer of 3-5 cm work well. Avoid sand, cat litter and cedar, pine and other aromatic woods. A layer of leaf litter on top holds moisture and provides cover.

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

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

TEMPERATURE

There must be a clear heat gradient. The basking spot should be 29-32 °C measured at the surface, the cool end 23-27 °C and the night 18-22 °C. The heat source is switched off at night. Use a halogen spot above the enclosure, and place a flat stone or board beneath it so that the snake can lie in the warmth. If the bulb is inside the enclosure, it needs a protective guard.

Air temperatures above 33 °C are dangerous. An overheated snake rushes about with its mouth open or lies in the water bowl; place it immediately in cool water. Never place the enclosure in direct sun, and never use heat rocks. Measure with a digital thermometer with the 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 itself stops eating in autumn, it can be put into hibernation (see Breeding). The species is adapted to cold winters and a short active season across much of its range.

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

HUMIDITY AND WATER

Humidity should be 35-60 %, highest at the cool end and at night. The enclosure should not be wet, because constant dampness causes blisters on the belly. Mist lightly when needed, and place damp 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 a shed, and likes to leave faeces in the water. Change the water at least once a week and immediately if it is dirty. In the wild the species hunts both on land and in water, and a water area of up to about 50 × 30 cm at the cool end gives room to swim but is not a requirement.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

The species is diurnal and thrives in strong daylight. UVB is not strictly necessary but is recommended and often makes the snake more active. Use a T5 HO tube of 5-6 % (Ferguson zone 2) that covers half of the enclosure over the warm end, and aim for a UV index of 2-3 at the basking spot. With mesh between the tube and the snake the distance to the basking spot is about 25-30 cm, without mesh about 30-35 cm; 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 elegans* eats slugs, earthworms, salamanders, frogs and tadpoles, leeches, fish, lizards and small mammals. In captivity the best diet is frozen and thawed mice: they provide full nutrition without supplements, no risk of intestinal worms and less frequent, less foul-smelling faeces, and the snake can live on mice alone. Young snakes that are too small for a whole pinky mouse can be given pieces of frozen pinkies. Rub the prey with fish or earthworm if the snake will not take it, and move it with tweezers, because the species hunts largely by sight.

Young snakes that will not take mice can be given earthworms cut into pieces so that they still move a little, small guppies or platies and pieces of fish fillet. Move them on to mice as soon as possible. Never use red compost worms (*Eisenia fetida*), which are toxic to the snake, and never earthworms from roads and golf courses, which may contain toxins. Earthworms are low in calcium.

Fish require thought. Many feeder fish contain thiaminase, an enzyme that breaks down vitamin B1, and a regular diet of them causes a dangerous B1 deficiency. Freezing does not destroy the enzyme, and B1 supplements on the fish do not help. Goldfish are unsuitable. Redfish and salmonids such as trout and salmon are free of thiaminase and can be used as fillet in a mixed diet, but not alone, because fillet lacks the nutrition from the whole fish. Live fish and frogs are the most common source of intestinal worms; frozen fish are harmless on that point once they have been frozen for at least 30 days. Frogs, toads and salamanders should not be used.

Prey must be no more than 1.5 times as wide as the snake at its widest point. Newborns are fed every other day and young animals every 3-5 days. Adults are fed once a week with mice, every 5-6 days with fish and twice a week with worms. Never feed every day, because it causes obesity. Snakes that live together are fed separately so that they do not grab the same prey.

On a diet of worms and fish, dust the prey lightly once or twice a month with calcium, vitamin B1 and vitamin D3. Use small amounts, as too much calcium and D3 is harmful. Mice need no supplement.

BEHAVIOUR AND HANDLING

Thamnophis elegans is quick and alert and usually becomes calm if handled regularly from a young age. Let new animals settle in for about two weeks, and begin handling them only once they are feeding steadily. Keep the first sessions to no more than 5 minutes, and lift the snake from below with a flat hand so that the body is supported. It does not hold on 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. Young animals are more defensive than adults, and wild-caught animals are often defensive and should be avoided.

In the wild the species is solitary in the active season and gathers only for hibernation. In captivity it does well alone. If several are kept together, they must be the same size and have a substantially larger enclosure, new animals must be quarantined for 1-2 months first, and all must be fed separately, because two snakes easily grab the same prey. Do not keep males and females together unless young are wanted.

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

Breeding

SEXUAL MATURITY AND SEXING

Females are larger and sturdier than males. Sex can be confirmed by probing, which should be done only by an experienced keeper or a vet. Both males and females are sexually mature after about 2 years. The female must 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 mating can also take place in autumn. The males stay at the hibernation den and mate with several females, and the females store sperm. A hibernation of 8-16 weeks at 8-15 °C is borrowed from *Thamnophis sirtalis* and increases fertility. Stop feeding about three weeks before the cool-down so that the gut is empty, give the snake a lukewarm bath so that it empties itself, and lower the temperature gradually. The temperature must never fall below 5 °C. The snake must always have access to water.

When hibernation is over, the temperature is raised gradually, and after a few days food is offered again. Introduce the male to the female, and remove him again after a few days.

EGG-LAYING AND CLUTCHES

Thamnophis elegans gives birth to live young and does not lay eggs. Gestation lasts 2-3 months. A litter is typically 8-12 young, but from 4 to 19 have been recorded. Large, heavy females have the largest litters. The female has at most one litter a year.

Give the gravid female plenty of food, warmth and water, and keep the enclosure quiet. After 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 alive. The gravid female needs the same heat gradient as usual and must not become too cold, so that the embryos develop evenly.

Remove foetal membranes and dead young promptly. 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, singly or in small groups of the same size. The boxes need a warm end and a cool end, kitchen roll as substrate, a hide and a shallow water bowl. The young can squeeze through very small gaps and are quite defensive when fed.

The young typically eat after the first shed. Offer pieces of frozen pinkies, preferably scented with earthworm or fish, and otherwise earthworm pieces or small guppies and platies. Feed every other day at first, and get them on to mice as quickly as possible. How fast the young grow is not documented for the species; time to sexual maturity is about 2 years.

Health and common mistakes

Thamnophis elegans is hardy, but faults in diet and climate cause typical problems:

- Intestinal worms, especially from live fish, wild-caught frogs and worms. Worms can live in the lung for years without signs. Symptoms are swelling beside the lung, a hollow, popping sound when breathing, weight loss or small lumps under the skin. Frozen food (at least 30 days) prevents them. Have a faecal sample examined by a vet when you acquire a new animal and if you suspect a problem.
- B1 deficiency in snakes living on fish with thiaminase. Signs are poor coordination and the snake being unable to right itself, later convulsions. It is fatal without treatment but easy to treat: the vet gives vitamin B1, and the diet is switched to mice or fish without thiaminase.
- Blisters on the belly (white, swollen sores) from a constantly damp substrate. Keep the substrate dry and change it when it is dirty.
- Overheating, if the enclosure stands in sun or the heat is too strong. The snake rushes about with its mouth open. Cool it immediately in cool, running water.
- Shedding problems, especially retained eye caps or tail tip. Provide a humid hide during the shed.
- Mites, which require treatment of both the snake and the enclosure.
- Obesity in snakes that are fed too often, especially with mice.

A healthy animal has clear eyes, smooth skin and eats willingly. See a vet with reptile experience if the snake loses weight, stops eating outside the hibernation period, gapes or breathes differently, or if lumps appear on the body.

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.