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SNAKES

California Kingsnake

Lampropeltis californiae

Lampropeltis californiae is a smooth, glossy kingsnake from western North America, black or dark brown with white to pale yellow cross-bands or a single white dorsal stripe. It reaches 75-120 cm, eats rodents and other snakes, and is robust and tolerates handling well. It lives for more than 20 years and is kept in a floor enclosure with a basking spot and moderate humidity.

Family: Colubridae Former name: *Lampropeltis getula californiae*

KEY FACTS

THE ANIMAL

Adult size	**75-120 cm** total length incl. tail
Lifespan	**15-25 years**
Active	**By day, at dusk and at night**
Lifestyle	**Terrestrial**
Habitat	**Semi-desert and temperate woodland and meadow**
Difficulty	**Beginner**

CARE

Min. enclosure	**120 × 60 × 60 cm** L × W × H for 1 adult
Temperature, day	**21-28 °C**
Basking spot	**29-32 °C**
Temperature, night	**18-22 °C**
Humidity	**40-60%**
Water	**Water dish**
UVB	**Recommended** Ferguson zone 2
Diet	**Vertebrates**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**5-15 eggs**
Incubation	**60-70 days** at 26-29 °C

PROTECTION AND PAPERWORK

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

About the species

Lampropeltis californiae is a medium-sized, strongly muscular snake with completely smooth, glossy scales. Over most of the range, the ground colour is black or dark brown with 21-44 broad cross-bands in white or pale yellow, which typically widen down the sides. Along the Pacific coast from Los Angeles to San Diego, there are animals with a dark ground colour and a single thin white stripe from the nape to the tail. In Sonora and Sinaloa in Mexico, some animals become almost entirely black with age, with no visible pattern.

Adults are normally 75-120 cm and reach no more than about 200 cm. Newly hatched young are about 20-33 cm. The species resembles close relatives in *Lampropeltis*, and the pattern is the best distinguishing feature. It was long regarded as a subspecies of *Lampropeltis getula*, but has been a separate species since 2009. The species name refers to the type locality in California.

The species is one of the most commonly kept snakes and has been bred in captivity for generations. There are many colour and pattern varieties (morphs), for example albino, banana and lavender. This guide deals with the species itself, not with genetics.

The animal is hardy and curious and usually becomes accustomed to handling. Newly acquired and young animals can shake their tails, strike at a hand and release a foul-smelling secretion and faeces when picked up. This is a natural defence that fades as the animal gets used to being handled. The species eats other snakes, including venomous ones, and this shapes how it is kept: the animals must be kept separately.

Distribution and habitat

Lampropeltis californiae lives in the western USA and north-western Mexico, west of the Continental Divide. To the north it reaches southern Oregon, and from there the range runs through most of California, western and southern Nevada, southern Utah and Arizona to the extreme south-west of Colorado. In Mexico it is found in Baja California, Baja California Sur and Sonora. The type locality is restricted to Fresno in California.

The populations in Sonora are of uncertain placement: they resemble and partly interbreed with closely related kingsnakes and are included in the species on the basis of geography. The species has been introduced to Gran Canaria, where it has formed a large, feral population.

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

HABITAT

L. californiae has one of the broadest ranges among the kingsnakes and is found in most habitats west of the Continental Divide, from sea level up to about 2,100 m: forest and scrub, grassland, desert and semi-desert, rocky terrain, marshes, cultivated areas and suburbs. It lives on the ground, under vegetation and in rodent burrows, but also climbs and swims well.

It is active both day and night, depending on season and temperature, and regulates its body temperature by moving between sun and shade. In winter it brumates in shelter under rocks and vegetation, where it neither eats nor passes faeces, but occasionally comes out to drink. The diet consists of almost anything it can overpower and swallow: snakes, including rattlesnakes, whose venom it tolerates, rodents, lizards, birds, reptile eggs and amphibians.

Care

THE ENCLOSURE

An adult needs an enclosure of at least 120 × 60 × 60 cm (length × width × height). Larger is better, because the species is active and explores the whole enclosure. Juveniles can live in a smaller enclosure for a time, but grow fast and must be moved when they cannot stretch out and move around along the edge. The enclosure should be at least 45 cm high so that lamps and heat can be positioned safely.

The lid must be lockable. The snake finds every weakness and escapes, and a front-opening enclosure with a lock or a lid with clips is the safe choice. Do not use tape.

The substrate should be soil that resembles the habitat and maintains moderate humidity. A mixture of 40 % pure topsoil, 40 % coconut fibre or ready-made terrarium soil and 20 % play sand in a layer of about 10 cm works well, and a layer of dry leaves on top provides cover and retains moisture. Aspen shavings can be used, but break down in moisture. Avoid cat litter, chemically treated substrate, pine and cedar. Feed in a separate box if desired, so that the animal does not swallow substrate.

Furnish with at least two hides, one at the warm end and one at the cool end, so small that the snake lies snugly in them when coiled. Branches, cork and rocks provide exercise and climbing opportunities. The more hides, the more readily the animal ventures into the open. Remove faeces daily, and replace the substrate completely every 3-4 months.

Read more: Humidity, misting and ventilation

TEMPERATURE

The animal regulates its temperature by moving between warm and cool places, so the enclosure must have a clear gradient. The surface under the heat lamp should be 29-32 °C, measured with an infrared thermometer, and the cool end 21-26 °C. Use two halogen lamps side by side so that the whole coiled animal is heated evenly, and place a pale, flat rock or a piece of wood under the lamps as a basking spot. Place a black hide under or beside the heat as a warm hide.

Switch the heat off at night. The temperature follows the room and should not fall below 18 °C. The night temperature is not documented for the species; 18-22 °C suits its climate.

Never use heat rocks. The heat is too concentrated and causes burns. Heat mats and heating cables can be used as a supplement, but only with a thermostat. Place the enclosure away from windows where the sun can overheat it.

If the animal eats poorly or lies on the basking spot all day, the temperature is probably wrong. A snake that lies on the basking spot for long periods needs more heat. One that never uses it needs less.

Read more: Heat and temperature

HUMIDITY AND WATER

The humidity should be 40-60 %, measured with a digital hygrometer in the middle of the enclosure. It is higher at the cool end and at night and lower at the warm end, and that is normal. Sustained values outside the range make the animal ill. Humidity is raised with a spray bottle, with moist sphagnum in the hide at the cool end and with a layer of leaves on the substrate. Provide a humid hide when the animal is about to shed.

Always provide a large bowl of fresh water. It should be large enough for the animal to lie in, but not so full that the water runs over and makes the enclosure wet. If the air in the enclosure becomes humid and clammy, the bowl should be removed and given only a few days a week. Scrub the bowl every week with an animal-safe disinfectant.

Read more: Quarantine and hygiene

LIGHTING AND UVB

The species belongs to Ferguson zone 2: it basks occasionally and receives some sunlight in the wild. It can manage without UVB, but UVB is recommended for the best welfare. Use a T5 HO tube of 5-6 % UVB covering about half the length of the enclosure and sitting over the warm side. The aim is a UV index of 2-3 at the basking spot. Over mesh the distance between tube and animal at the basking spot is 25-30 cm, without mesh 35-45 cm, and it should be checked with a UV meter. The tubes are replaced every 12 months.

Supplement with a powerful 6,500 K LED bulb covering most of the length of the enclosure for lively behaviour by day. The light is on for about 12 hours, and the day length is adjusted to the season. There must be no light at night.

Read more: Lighting and UVB

FEEDING

L. californiae is a carnivore and needs whole prey. The most important food source in captivity is mice, and as the animal grows, young rats are used. Variety is important: quail, quail eggs, chicks, hamsters, gerbils and small snakes can be used, and a varied diet makes the animal healthier and less fussy. Feed thawed, frozen prey. It is safer for the snake, because live rodents can bite and injure the animal. Use soft feeding tongs.

The thickness of the prey must be no more than 1.5 times the snake's widest point, or about 10 % of its weight. After the meal there should be a clear, but not large, bulge.

Feeding frequency: - Hatchlings: every 5-7 days. - Juveniles: every 7-10 days. - Adults: every 10-14 days.

If the animal becomes too fat, feed less often or use smaller prey. Do not handle the animal until the bulge has gone. The snake can manage without supplements, but a light dusting of the prey with calcium and multivitamin in equal parts now and then prevents deficiencies. Do not give fruit and vegetables: the snake cannot digest plant material.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

L. californiae is robust and tolerant, and that is one of the reasons it is among the most commonly kept snakes. Give a new animal about 2 weeks in peace, and start handling only when it eats regularly. Begin with short sessions of no more than 5 minutes, and do not put the animal back until it is calm. Handle at least once a week and no more than once a day. Lift the animal from below, support the body, and let it crawl onto the hand instead of grabbing it.

A nervous animal coils up, hisses, shakes its tail, strikes and releases foul-smelling secretion and faeces. This is a natural defence. Bites are harmless, but the snake can hold on. Do not handle the animal when the eyes are bluish and milky before shedding, or just after feeding. Wash your hands before and after, because reptiles can carry salmonella.

Keep the animals separately. The species eats other snakes, including conspecifics, and young animals can eat each other. There is no benefit to the animal in keeping two together. For breeding, the male is put in with the female under supervision, and the animals are separated again afterwards.

Breeding

SEXUAL MATURITY AND SEXING

The males have a longer, broader tail base with room for the hemipenes. Sex is most reliably determined with a probe, which only an experienced person should use. The age at sexual maturity is not documented; size and condition matter more than age, and the animals must be fully grown and in good condition before they are bred. Females often lay fertile eggs until they are 12-13 years old.

MATING

Mating follows the winter rest. The animals brumate from about October to March, during which they neither eat nor pass faeces, but drink. The temperature during the rest is not documented for the species. The animals must be in good condition before they are cooled down, and are not fed during the rest.

Mating begins when the females have shed for the first time after the rest, normally in March-April. The males follow the female's scent trail, and a male can stop eating for a couple of weeks in the season. Always put the male in with the female, not the other way round, and leave her shed skin in the enclosure so that he can smell it. Repeat the introduction every other day until the female has ovulated. The males fight over the females by lying on top of each other and biting, so do not keep two males together. Feed only when the animals are separated.

EGG-LAYING AND CLUTCHES

The female lays the eggs about six weeks after ovulation, most in late June, in July and into August. Most females shed before laying. A clutch is typically 5-15 eggs with an average of about 9, and clutches of more than 20 eggs occur. The female usually lays one clutch a year; two clutches in a season are possible, but give her little time to recover before the next winter rest. Provide a laying box with moist vermiculite or sphagnum, and give her plenty of food after laying so that she can rebuild her strength. She often lies by the eggs until she has recovered, but does not tend them.

INCUBATION

Remove the eggs carefully, and do not turn them. If they are stuck together and newly laid, they can be separated carefully, otherwise they are left together. Place them on moist vermiculite in a closed container with two small air holes in the lid, and do not bury them. The vermiculite should be moist, but not so wet that water can be squeezed out. A little condensation should be visible on the inside of the lid. The temperature is 26-29 °C, and it may fluctuate from about 29 °C by day to 26 °C at night. The eggs hatch after 60-70 days. The hatchlings stay in the egg for a day or two while they absorb the yolk sac. Do not assist with hatching.

REARING THE YOUNG

Newly hatched young are 20-33 cm and stay in the nest for about a week, until the first shed. Put each hatchling in a small enclosure or ventilated box on its own, with a hide, water and a heat source. Young eat each other and must never be kept together. After the first shed, offer a newborn mouse every week, and thawed, frozen prey is safest. Animals that will not eat can be helped by scenting the mouse with a lizard. As they grow, increase the size of the prey and the frequency gradually. If they refuse to eat, check the temperatures, and try again after a week.

Health and common mistakes

Most problems are caused by errors in the set-up. The typical ones are:

- Obesity from meals that are too large or too frequent.
- Shedding problems with air that is too dry: provide a humid hide when the eyes turn bluish.
- Burns from heat rocks and unguarded heat bulbs.
- Constipation or intestinal blockage with a temperature that is too low, too little water or ingestion of substrate.
- Mites and internal parasites, especially in wild-caught animals. Use captive-bred animals, and quarantine new animals.
- Respiratory infection with air that is too cold or humid: the animal breathes with its mouth open or has nasal discharge.
- Bites from live prey. Use thawed animals.

A healthy animal has clear eyes and a full body and eats regularly. Weigh the animal every week, because sudden weight loss is often the first sign of illness. Reptiles hide illness, so see a vet with reptile experience if the animal does not eat, loses weight, breathes with its mouth open or seems lethargic.

Read more: Common diseases and signs of illness Read more: Buying animals: captive-bred, wild-caught and transport

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.