herpy

FROGS

Cane Toad

Rhinella marina

Rhinella marina is one of the largest toads in the world: a sturdy, warty and nocturnal toad from northern South America that grows to 10-24 cm and eats almost anything it can get down. It can live 10-15 years and is hardy, but the glands behind the eyes contain a powerful poison that is dangerous to pets. The species is also notorious as an invasive, so an animal must never be released.

Family: Bufonidae Former name: *Bufo marinus; Chaunus marinus* **Strong skin toxins**

KEY FACTS

THE ANIMAL

Adult size	**10-24 cm** snout-vent length
Lifespan	**10-15 years**
Active	**At night**
Lifestyle	**Terrestrial**
Habitat	**Savanna and rainforest**
Skin toxins	**Strong** Avoid skin contact and wash your hands thoroughly after working in the enclosure
Difficulty	**Intermediate**

CARE

Min. enclosure	**120 × 60 × 60 cm** L × W × H for 1 adult
Temperature, day	**23-28 °C**
Temperature, night	**20-22 °C**
Humidity	**60-70%**
Water	**Water dish**
UVB	**Optional** Ferguson zone 1
Diet	**Insects, vertebrates and worms/snails**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Development	**Tadpoles in water**
Egg-laying site	**In water**
Eggs per clutch	**8,000-35,000**
Hatching	**1-7 days**
Larval period	**12-60 days** from hatching to metamorphosis
Larval diet	**Algae/plants and other tadpoles**
Parental care	**None**

PROTECTION AND PAPERWORK

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

About the species

Rhinella marina is a large, broad toad with dry, warty skin. The colour varies from grey and yellowish to reddish brown and olive brown with varying markings, and the belly is cream-coloured with black or brown spots. The pupils are horizontal and the iris golden. Distinct bony ridges run from the eyes down along the snout, and behind each eye sits a large parotoid gland. The fingers have no webbing, while the toes have a little webbing at the base. Juveniles are smooth and dark, some with a reddish tinge, and do not yet have the large glands.

The species is regarded as the largest in the toad family. Most adults measure 10-15 cm from snout to vent, and the largest animal measured was 24 cm. Females grow distinctly larger than males, and animals from dense populations become smaller than animals from areas with few individuals. *R. marina* was described by Linnaeus in 1758 as *Rana marina* and for many

years was called *Bufo marinus*. Since 2007 it has belonged to the genus *Rhinella*. The species name marina means "belonging to the sea" and rests on a misunderstanding: Linnaeus took as his starting point an older illustration, whose author believed that the toad lived both on land and in the sea.

Since 2016 the populations in Central America, Mexico and north-western South America have often been regarded as a separate species, *Rhinella horribilis*. The name *R. marina* then applies only to the animals east of the Andes. Older literature and many animals in the trade do not distinguish between the two, and the care is the same.

The poison is the most important thing to know about the species. The parotoid glands and other glands on the back produce bufotoxins, and when the animal feels threatened, a milky white, viscous fluid is squeezed out. The substances act especially on the heart. Dogs are easily poisoned when they lick or bite the toad, and the poisoning can be fatal. People have died after eating toads, while skin contact during ordinary handling mostly causes irritation, especially if the poison gets into the eyes or mouth. The species produces the poison itself, unlike poison frogs, which get it through the diet, so captive-bred animals are just as toxic as wild ones. The skin toxicity is therefore set to strong. A calm toad rarely secretes poison, but the glands are full all the time. Keep dogs and cats away, do not touch the animal with bare hands, never touch your eyes, mouth or nose after contact, and always wash your hands afterwards. The eggs and tadpoles are also toxic.

R. marina is the most widespread introduced amphibian in the world. It was released to control pests in sugar cane and is today a serious plague in many places, including Australia, the Pacific islands and the Caribbean. It eats and outcompetes native amphibians, and predators that do not know the poison die from it. Never release an animal, not even by accident.

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

Distribution and habitat

With the narrow delimitation, *Rhinella marina* lives east of the Andes in South America: in Colombia and Venezuela east of the Andes, on Trinidad, in Guyana, Suriname and French Guiana and further south through the Amazon in Ecuador, Peru and Brazil to Bolivia and central Brazil. The populations from southern Texas through Mexico and Central America to north-western South America are now often regarded as *Rhinella horribilis* and are not included on the map. With the old, broad delimitation the species covers the whole area from the Rio Grande valley in Texas to the central Amazon and south-eastern Peru.

Outside the native range the species has been introduced in many places: the Caribbean, Florida, Hawaii and other Pacific islands, the Philippines, Japan, New Guinea and especially northern and eastern Australia. Which of the two species the individual introduced populations come from has not been fully clarified. The introduced populations are not included on the map. In Australia the density is far higher than in the native range: in South America it has been measured at 1-2 % of the Australian.

> **Native range:** Colombia, Venezuela, Trinidad & Tobago, Guyana, Suriname, French Guiana, Brazil, Ecuador, Peru and Bolivia.

HABITAT

The species is found in both humid and semi-arid regions: forest with water nearby, forest edges, open grassland and scrub. It also thrives in landscapes shaped by people, such as gardens, fields and ditches. It is first and foremost terrestrial and goes to the water only to breed.

The toad is nocturnal and hides by day in holes, under stones and in leaf litter. At night it hunts on the forest floor and along roads, where insects gather around the light. It tolerates losing a lot of water, some animals more than half of their body water, and in cold or dry periods it lies inactive in shallow burrows under cover. The critical upper temperature limit is estimated at 40-42 °C and the lower at about 10-15 °C, but the limits shift with the local climate. In the tropics the species breeds almost all year round, in subtropical regions only in the warm rainy season.

Care

THE ENCLOSURE

An adult needs an enclosure of at least 120 × 60 × 60 cm (length × width × height). A small male can manage with less, but females grow largest. Floor area matters more than height. Glass is better than wood, because glass lets heat escape, while a wooden enclosure easily becomes too warm. A large plastic tub with mesh in the lid can also be used.

The substrate is coconut fibre, peat or unfertilised soil mixed with damp moss and pieces of bark, in a layer of 5-10 cm so the animal can bury itself. Damp kitchen paper can be used as a temporary substrate but must be changed often. Provide good hides such as half flowerpots, bark, cork and plants. The toad eats a lot and makes a lot of mess, so faeces are removed every day and the whole substrate is changed every two to four weeks. The lid must fit firmly: *R. marina* is strong and must under no circumstances escape.

TEMPERATURE

During the day the enclosure should be about 23-26 °C and never above 28 °C, and at night it can drop to 20-22 °C. A thermostat-controlled heat mat on the side of the enclosure is the safest solution and gives a small difference between the warm and cool sides. Bulbs are generally unnecessary and make it too warm easily. If the temperature stays above 28 °C for long, the animal becomes stressed and dries out.

A sudden drop in temperature can make the toad dig itself in and form a cocoon of old skin to retain moisture. Do not disturb it, and do not feed it, but make sure there is dechlorinated water nearby, and raise temperature and humidity gradually over a few days.

Read more: Heat and temperature Read more: Humidity, misting and ventilation

HUMIDITY AND MISTING

Humidity should be about 60-70 %. The substrate is kept moist, but not wet, and the enclosure is misted with dechlorinated water a couple of times a day, so the toad can absorb water through the skin of the belly. Measure with a hygrometer, and provide ventilation, so the air does not stand still. If it becomes too dry, the animal digs itself in and goes dormant.

WATER AND WATER QUALITY

The toad must always have a large, stable water dish that it can sit in, and where the water reaches no higher than the mouth, so it does not drown. The dish is used for drinking, bathing and relieving itself, so the water quickly becomes dirty and must be changed every day. Use tap water treated against chlorine and chloramine, and clean the dish without soap and strong agents, because amphibians absorb substances through the skin.

LIGHTING AND UVB

The species is nocturnal and avoids direct sun, so it does not need strong lighting. UVB is optional: in the wild the animal gets a little UVB in partial shade, but food with calcium and D3 covers the need. If you choose UVB, use a weak tube (Ferguson zone 1) over part of the enclosure so the toad can seek shade. If you leave it out, calcium and D3 in the food are all the more important. Keep 12 hours of light and 12 hours of darkness with a light source that gives off as little heat as possible.

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

FEEDING

R. marina is a predator and eats almost anything that can fit in its mouth, both live and dead. In the enclosure, crickets and grasshoppers are a good staple, and earthworms, mealworms, superworms, waxworms, silkworms and hornworms provide variety. A small mouse can be given at most once a week, and dog and cat food only as an occasional treat, because fatty food makes the animal overweight. The feeder insects are gut-loaded before they are given, and must be smaller than the toad's head.

Dust the food with calcium and D3 at least once a week for adults and two to three times a week for young animals, and give a multivitamin at intervals. How often and how much to feed is not documented precisely: young animals are fed more often than adults, and body condition is the best guide. Use long tweezers, so fingers do not look like food.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

The toad is calm and lies hidden most of the day. At night it becomes active and moves in short, quick hops. If it feels threatened, it puffs itself up, raises its body and can secrete poison from the glands behind the eyes. The species lives alone and is best kept singly, also because it eats smaller conspecifics.

The toad tolerates being handled, but it is neither necessary nor desirable. Use nitrile gloves or a box when it has to be moved during cleaning, keep your hands away from your face, and wash your hands afterwards. The gloves also protect the animal's skin from grease and residues of soap and cream on the hands. Keep the enclosure out of reach of children and pets. The male

calls with a long, trilling sound in the breeding season. The toad sheds its skin regularly and usually eats the old skin afterwards.

Breeding

SEXUAL MATURITY AND SEXING

Females grow distinctly larger than males, and only the males call. In the wild females can lay eggs from their second year, and the size at sexual maturity varies from place to place: females in New Guinea are mature at 7-8 cm, females in Panama at 9-10 cm. When the animals become sexually mature in captivity is not documented.

MATING

In the wild the males gather at still or slow-flowing water and call, and both a male and a female can mate with several partners in the same season. A healthy pair kept together under good conditions can breed without special treatment. Therefore think carefully before the animals are put together: a single clutch is thousands of eggs, it is hard to find new owners for the young, and releasing them is never an option.

EGGS AND TADPOLES

The female lays her eggs in long strings of jelly, which can reach 20 m in length, in still water, where they are wound around stones, branches and water plants. A clutch is 8,000-35,000 eggs. The eggs are black and 1.7-2.0 mm in diameter. There is no parental care. Both eggs and tadpoles are poisonous. The tadpoles are small and uniformly black, grow to 10-25 mm in length and gather in large shoals near the bottom. They eat algae and plant food and also eat each other. Rearing tadpoles in captivity is not documented.

METAMORPHOSIS

How quickly the eggs hatch depends on the temperature: most often within two days, but it can take from 14 hours to a week. The tadpoles metamorphose after 12-60 days, typically after about four weeks. When the front legs appear, the water must be shallow, and there must be easy access to moist land. The newly metamorphosed juveniles are only 10-11 mm long. Neither tadpoles nor juveniles must get out into the wild.

REARING THE YOUNG

The newly metamorphosed juveniles grow quickly, at first a little over half a millimetre a day. They need very small feeder insects dusted with calcium and D3 and a moist enclosure without deep water, where they can drown. The juveniles lose the poison they had as eggs and tadpoles, but have not yet developed the parotoid glands, so they are less toxic for a short period. Cannibalism is common, so the juveniles must be sorted by size.

Health and common mistakes

Rhinella marina is hardy, but there are some typical problems:

- Obesity, when fed too generously or with food that is too fatty, such as mice and dog or cat food.
- Bone disease from too little calcium and D3. Dust the food, and consider UVB.
- Bacterial infections from a dirty substrate and water. Keep the enclosure clean.
- Skin damage from cleaning products, soap and cream. Amphibians are very sensitive to chemicals.
- Unwanted dormancy with a cocoon, when the temperature drops or the air becomes too dry.

The poison is a risk to people and other animals. If a dog or cat has licked or bitten the toad, it shows as heavy drooling, very red gums, head shaking, loss of coordination and convulsions, and the animal must then go to a vet immediately. If the poison gets into the eyes, rinse immediately with plenty of water and contact a doctor. Seek a vet with amphibian experience if the toad loses weight, swells up, develops sores or stops eating without being dormant.

Read more: Brumation and the seasons

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.