herpy

TORTOISES AND TURTLES

Florida Red-bellied Cooter

Pseudemys nelsoni

Pseudemys nelsoni is a large, diurnal freshwater turtle from quiet lakes, ponds and marshes with dense plant growth in Florida and the extreme south-east of Georgia. The carapace is high and dark with red stripes, and the plastron is yellow-orange to reddish. Females can reach 38 cm carapace length, and adults are herbivores. An adult needs a very large, filtered tank, a warm basking spot and strong UVB.

Family: Emydidae

KEY FACTS

THE ANIMAL

Adult size	**20-38 cm** total length incl. tail
Lifespan	**20-33 years**
Active	**By day**
Lifestyle	**Semi-aquatic**
Habitat	**Wetland**
Difficulty	**Experienced**

CARE

Min. enclosure	**200 × 100 × 70 cm** L × W × H for 1 adult
Temperature, day	**21-31 °C**
Basking spot	**30-40 °C**
Temperature, night	**20-24 °C**
Humidity	**50-80%**
Water	**Aquaterrarium** depth 30-45 cm
Water temperature	**21-31 °C**
UVB	**Essential** Ferguson zone 3
Diet	**Insects, complete diet, plants and worms/snails**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**36-96 months**
Clutch size	**7-26 eggs**
Clutches per year	**3-6**
Incubation	**45-80 days** at 25-30 °C

PROTECTION AND PAPERWORK

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

About the species

Pseudemys nelsoni is a large freshwater turtle that spends most of the day in the water and comes ashore to bask and lay eggs. All measurements in the text are carapace length. The shell is highly domed and dark, usually black, with a broad, vertical red stripe, sometimes Y-shaped, on each of the first three pleural scutes. The plastron is yellow-orange to reddish and usually unmarked; the red is strongest in young animals and becomes less distinct with age. The head, neck, legs and tail are black with yellow stripes, and the head and neck usually have only seven yellow stripes. The upper jaw has a deep notch in the middle with a tooth-like cusp on each side. Old animals, especially males, can become almost entirely dark.

The female grows largest: up to 38 cm and on average about 31 cm and 4 kg, while the male reaches up to 30 cm and weighs about 1.7 kg. Adults measure 20-38 cm. The male has long claws on the forelegs and a long, thick tail, while the female has a higher shell. Newly hatched young have a greenish, rounded shell with a keel down the middle and bolder markings than the adults; they measure 29-35 mm and weigh 6-10 g. Growth is rapid in the first years and slows sharply once the animal reaches sexual maturity.

The species was formerly treated as a subspecies of *Pseudemys rubriventris*, its closest relative, and is now a separate species. It often lives in the same waters as *Pseudemys floridana* and basks on the same logs. Turtles of the genus *Pseudemys* are exported in large numbers from the USA and are often identified only to genus, so the species is easily confused with closely related ones.

The greatest known age in captivity is about 33 years, and lifespan in the wild is not known. The species suits someone who can provide a very large tank and is prepared to keep the animal for many years.

Distribution and habitat

Pseudemys nelsoni is native to the south-eastern USA. It occurs throughout the Florida peninsula, from Cape Sable and Florida Bay in the south to the Okefenokee Swamp and Cumberland Island in the extreme south-east of Georgia, and a separate population lives in the Apalachicola area of western Florida. It does not occur in the Florida Keys. The species has been introduced to the San Marcos River in Texas and to Tortola in the British Virgin Islands, and introduced animals have also been found in Germany. The map shows only the native range.

> **Native range:** United States.

HABITAT

Pseudemys nelsoni lives in fresh water: marshes, ponds, lakes, slow rivers and spring runs. It does best in still water with dense growth of aquatic plants both above and below the surface. In flowing water and in lakes with a lot of open water it is usually less numerous, but it can be common in some spring runs. In nutrient-poor lakes with a sandy bottom and sparse vegetation it is rare or absent altogether. It also enters brackish water and tolerates salt better than pure freshwater turtles, but not as well as the turtles of the genus *Malaclemys*.

It is diurnal and basks a great deal, alone or in groups, on logs, stumps and mats of aquatic plants, often together with *P. floridana* and other turtles. At night it sleeps in the water. The animals stay within overlapping areas around the basking spots. The climate is humid and warm, with winter temperatures down to about 18 °C and summer temperatures around 32 °C, so the species is active all year and does not undergo true brumation. Females lay eggs in well-drained soil near the water and also use nest mounds built by alligators. Apart from the very small young, the species is a pure herbivore and feeds on aquatic plants and algae.

Read more: Brumation and the seasons

Care

THE ENCLOSURE

Keep the animal in a large aquarium, a tank or an enclosed indoor pond, not in an ordinary terrarium. Temperatures, lighting and the feeding plan are borrowed from *Trachemys scripta*, the best-described turtle of the same type; *Pseudemys nelsoni* has the same way of life in the same regions.

The tank must be at least five times as long as the carapace and half as wide as it is long, with the land area counted as part of the floor area. The water must be at least twice as deep as the carapace is wide. A female of 30 cm therefore needs at least 150 × 75 cm, and the largest females of 38 cm need 200 × 100 cm. The dimensions in the specification box, 200 × 100 × 70 cm, give a water section of 150 × 100 cm with 40 cm of water (about 600 litres), a land area of 50 × 100 cm and a 30 cm rim above the water. Bigger is always better. A small tank does not limit growth, but gives an animal that suffers.

Set up for an adult animal from the start. Water is heavy: 600 litres weighs 600 kg, so place the set-up on a floor that can bear it, preferably on the ground floor or in a basement. Provide plenty of hides underwater, for example by logs and plants. The land area must be large enough for the whole animal to climb completely out of the water. Build it as a beach or shelf with a

rough ramp, and place a large, flat stone as the basking spot, because stone conducts heat evenly. The lamp and UVB sit directly above the basking spot, and the rim around the land area must be at least 25 cm high. A female needs a box of soil or sand as a nesting site.

The water is cleaned by a powerful filter, preferably an external canister filter, rated for at least 2-3 times the water volume. Preferably keep only one animal. The set-up must be completely escape-proof. An outdoor pond in summer is only responsible if it is enclosed with a fence that goes at least 30 cm into the ground and mesh over the top. Do not use fine mesh, which cuts out much of the sun's UVB. The species is an active swimmer and needs room to swim all the way round.

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

TEMPERATURE

For *Pseudemys nelsoni* the surface of the basking spot should be about 40 °C, measured with an infrared thermometer a couple of hours after the lamps are switched on, and the air above it 30-32 °C. Heat with halogen lamps in deep domes with ceramic fittings; two lamps give a larger and more even basking spot than one. The heat lamp must sit at the same distance from the basking spot as the UVB tube.

The water should be 21-31 °C for adults; young under a year need 24-29 °C and slightly larger juveniles 23-24 °C. Adults tolerate cooler water than the small ones, because they retain heat better after a spell on the basking spot. Set the water heater to the lowest temperature, so that a gradient forms in the tank. The heater must have a plastic guard so that the animal cannot burn itself, and an automatic cut-off. Measure the water with a digital thermometer by dipping the probe in, and do not leave it lying in the tank.

At night the lamps are switched off, and for adults the water heater can also be switched off, so that the water cools a little. At night 20-24 °C is suitable. The species is active all year in the wild and should not brumate. Keep it at an even warmth all year round.

HUMIDITY AND WATER

Pseudemys nelsoni lives in the water, so air humidity is not decisive; 50-80 % in the room is suitable. What matters is the cleanliness of the water.

The animal defecates in the water, so the water quickly becomes dirty, and dirty water is a health risk for both the animal and you. Use a powerful filter and change part of the water every 1-2 weeks; the filter alone is not enough. Remove uneaten food and debris with a fish net after feeding. Because the species eats a lot of greens, the water is under extra load from plant matter and faeces.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

Pseudemys nelsoni lives in the water, so it must be deep, clean and warm. The water must be at least twice as deep as the carapace is wide, and 30-45 cm suits adults. The temperature is 21-31 °C for adults (see Temperature). The species prefers still water, so the current from the filter should be weak and even. Use fresh water.

The filter must filter both mechanically and biologically. The mechanical part removes uneaten food and faeces; the biological part, with sponge or ceramic rings, houses beneficial bacteria that convert toxic nitrogenous waste. The bacteria need flowing water. A filter rated for fish is often too weak, so choose one rated for at least 2-3 times the water volume. Undergravel filters, small internal filters and hang-on filters are not suitable for an adult animal.

Clean the filter at least once a month. Rinse the filter media in water from the tank, not from the tap, so that the bacteria are preserved, and never use soap or chemicals. Unplug with dry hands before touching the filter, and put all electrical equipment near the water on a residual-current device (RCD).

LIGHTING AND UVB

UVB is a necessity. *Pseudemys nelsoni* is diurnal, basks a great deal and belongs to Ferguson zone 3. The UV index at the surface of the basking spot should be 3.0-4.0 and lower elsewhere in the set-up, so that the animal can choose. Use a T5 HO tube with a reflector that covers 50-75 % of the length of the set-up and sits above the basking spot.

The distance from the tube to the animal's back is 28-33 cm for a tube with 5-6 % UVB and 43-53 cm for a tube with 10-12 % UVB. Never hang the tube closer than 25 cm to the basking spot, because then the radiation does not cover the animal evenly. Plastic and glass block UVB completely, and mesh blocks some, so there must be nothing between the tube and the animal. UVB tubes lose strength and must be replaced regularly.

Supplement with a powerful daylight lamp of about 6,400 K. The light must be on for 11-13 hours a day, shortest in winter and longest in summer. Never use coloured light, not even at night, because the animal's eyes are very sensitive to colour.

FEEDING

Pseudemys nelsoni is a distinctly herbivorous species. Apart from the very small young, which also take small insects, in the wild it eats only aquatic plants such as vallisneria, waterweed, duckweed and arrowhead, as well as algae. The turtle eats in the water, so throw the food into the tank.

The feeding plan is borrowed from *T. scripta* but should lean even more towards greens. Young under 1 year can get up to half of the diet as animal food, while adults should have mostly greens and only a little animal food. Greens are given every day and pellets 2-3 times a week. Animal food is given at most 1-2 times a week, to adults preferably less often. Aquatic plants in the tank are a good part of the diet. A portion of greens is about the size of the shell, and a portion of pellets about the size of the head.

Greens: duckweed, waterweed, water lettuce, water hyacinth, dandelion, clover, chickweed, leaf lettuce, endive, kale, chard and turnip tops. Fruit is an occasional treat. Never give avocado, onion, tomato, citrus fruit, mushrooms, rhubarb or hot pepper. Animal food: earthworms, mealworms, cockroaches, crickets, shrimp and krill, and farmed snails; whole animals are better than pieces. Wash plants from the wild and use only those that have not been sprayed and are reliably identified.

The animal gets calcium via pellets and a cuttlebone in the tank, so that it can regulate its own calcium intake. Always remove the hard plastic backing first, and replace the cuttlebone every 1-2 months.

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

BEHAVIOUR AND HANDLING

P. nelsoni is diurnal and basks in large groups. It is shy and slides from the basking spot into the water at the slightest disturbance, but gets used to fixed routines. It does not like being handled and should only be lifted when necessary. If the animal has to be lifted, take it from underneath with the palm and hold the shell with both hands so that body and legs are supported. The animal can scratch with its claws and bite with its sharp beak. Wash hands thoroughly before and after, and do not let children under 5 handle the animal.

In the wild the animals live in groups without defending territories, but males may bite each other, and males are rough with females during the mating season. In captivity the animal does best alone. Several animals together require a tank at least 50 % larger, more basking spots and hides, and can lead to bites and fights over the basking spot.

Breeding

SEXUAL MATURITY AND SEXING

The male has long claws on the forelegs and a long, thick tail, while the female grows larger and has a higher shell. Males become sexually mature at 19-23 cm and females at 28-29 cm. Males develop sexual characteristics after about 3 years and females after 6-8 years, but actual sexual maturity often comes later, because it follows size more than age.

MATING

Mating takes place in the water in spring and summer, mainly from April to July. The male swims over the female; small males vibrate their long foreclaws in front of her head, while larger males may instead bite the female and drag her along. Males also gape and bite at each other in the contest for females. A female kept with a male must be able to get away from him.

EGG-LAYING AND CLUTCHES

The female lays 3-6 clutches from May to August, most in June and July, with 7-26 eggs in each, on average about 14. She digs the nest in well-drained soil near the water; in the wild she also lays in nest mounds built by alligators. A female must always have a box of soil or sand on the land area, even when kept alone, so that she has somewhere to dig.

INCUBATION

The eggs of *Pseudemys nelsoni* hatch after 45-60 days at a constant 25-30 °C, but can take up to 80 days. Sex is determined by the incubation temperature: above about 28.5 °C most young become females, below it most become males.

Read more: Incubating eggs

REARING THE YOUNG

The young fend for themselves from hatching; the parents look after neither eggs nor young. Young measure 29-35 mm and weigh 6-10 g. They need water at 24-29 °C around the clock, plenty of hides and a basking spot they can climb onto easily. They get more animal food than adults and greens every day (see Food). If several young are kept together, they must be the same size, and all must get food.

Health and common mistakes

Turtles hide illness, so watch for changes. Weigh and measure the animal 1-2 times a month, and keep a weekly log of weight, appetite and behaviour. Sudden weight loss is often the first sign of illness.

Typical problems and husbandry mistakes: - Dirty water, if the filter is too weak or the water is not changed. - Calcium deficiency and diseases of bone and shell from too little UVB or calcium. Provide UVB and a cuttlebone without plastic backing. - Swallowed plastic from cuttlebone or furnishings. - A tank too small for an animal that grows large, in which it cannot swim or hide. - Draughts or air that is too cold, which can cause respiratory infections.

All reptiles can be symptom-free carriers of Salmonella and infect humans. Wash hands before and after contact with the animal, the water and the equipment, and do not let children under 5 handle the animal. After a bite, rinse the wound under running water for about five minutes and clean it with mild soap; see a doctor for deep, bleeding or inflamed wounds.

See a vet with experience in reptiles if the animal loses weight, does not eat, has an open mouth or seems lethargic.

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.