Red-eared/Yellow-bellied Slider

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Natural History

Red-eared sliders (*Trachemys scripta elegans*) are semi aquatic turtles native throughout the US and Mexico. They are on the IUCN's list of "Top 100 Worst Invasive Species", having populations in non-native states and countries even as far as Australia. These invasive populations are extremely damaging to native turtle populations and cost local governments large amounts of money to manage. Their status as an invasive species is likely secondary to being the most traded turtle in the world. In the wild, red-eared sliders live in calm waters, often hauling out onto logs or rocks to bask. Be sure to check local laws to ensure owning a red-eared slider is legal in your state. The two other pond slider subspecies, the yellow-bellied slider (*Trachemys scripta scripta*) and the Cumberland slider (*Trachemys scripta troostii*) have very similar care requirements.

Characteristics and Behavior

Red-eared sliders (RES), like other semi aquatic turtles, used to rarely live to adulthood in the pet trade due to poor care. Newer information and education has made these turtles far hardier in captivity, but like other turtles, they are not the easiest to care for. RES tend to be fairly tame and even personable, but they are high maintenance animals that require a lot of space and are very long-lived. Water quality maintenance can be intimidating for novice keepers, making RES more suitable for intermediate keepers. It is important to note that sales of all turtles with a shell length under 4'' are banned in the US and that captive bred individuals are preferred over wild caught individuals.

Lifespan

20+ years, with more than 40 years reported

Adult Size

Up to 12 inches in length, with females larger than males

Housing

It is a myth that keeping a turtle in a small enclosure will prevent it from growing large. There are a few rules of thumb when looking at tank sizes for aquatic/semi-aquatic

turtles. One guideline is 10gal per every inch of shell size. That means a 10 inch turtle would need a 100gal aquarium. Another rule is 6'' of aquarium floor space per every inch of shell size. With this guideline, a 10 inch turtle would need 60'' of floor space. Whichever guideline is used should be looked at as a minimum. Bigger is better! Turtles produce large amounts of waste, making smaller tanks a risk for ammonia build up. They are also fairly active animals that like having space to swim around. When weather appropriate, outdoor housing in large tubs or ponds are excellent options. RES habitats should be furnished with plants (live or fake) to help them feel more secure. Wild RES eat a significant amount of aquatic plants, so they may munch on any plants they are provided. Rocks and other decor can also be added. For substrate, bare bottom tanks are preferred. If substrate is used, large gravel or pebbles not large enough to swallow can be used. Canister filters are recommended for RES.

Haul out areas are also needed for semi aquatic turtles. These are above water platforms where turtles can bask. This can be floating logs or platforms, large rocks or cinder blocks, or premade docks. Basking areas should be positioned under heat and UV lamps. The platform needs to be kept above the waterline so the turtle can fully pull itself out of the water.

Like other semi aquatic/aquatic animals, turtles need to have their tank cycled before they are added to the enclosure. To understand cycling, one needs to understand the nitrogen cycle. Decaying food, plant matter, waste, or organisms release ammonia in the water, which is extremely toxic to aquatic animals. The way to counteract this is to build up the “good” bacteria. Nitrifying bacteria convert ammonia to nitrites, then nitrites to nitrates, which are much less toxic than ammonia or nitrites. Nitrates are then kept at a reasonable level with water changes +/- live plants. Cycling needs to be done before the animal is added to ensure water parameters are safe for the animal. A 20-30% water change with dechlorinated water should be done weekly. The filter should never be scrubbed clean, as nitrifying bacteria live here as well. To clean out the filter, tank water can be run through to wash out any debris. Canister filters tend to work best for turtles. Other maintenance should be done based on brand recommendations.

Cycling: The tank should be completely set up prior to adding the animal, then dechlorinated water can be added (dechlorinators can be purchased at pet stores or online). The filter should be turned on, and live nitrifying bacteria should be added. Ammonia should then be added every day until an ammonia test kit reads 0 ammonia, 0 nitrite, and some nitrates. There are multiple sources of nitrifying bacteria and ammonia. Substrate can be added from an already cycled tank, or fish food, raw fish, or 100% ammonia. Both ammonia and nitrifying bacteria can be purchased from most pet stores

or online. Cycling can take weeks to months. Improper cycling is the cause of disease called “new tank syndrome”, where toxic compounds build up in the tank and cause disease. Cycling is also the reason that full water changes should never be done. If all of the water is removed, all of the “good” bacteria are removed as well.

pH: This is a measure of how acidic or basic the water is. 7.0 is neutral; lower is acidic, higher is basic. 7.4-7.8 is the optimal range for turtles.

Nitrate: This is the end product of the nitrogen cycle. Nitrates should be <80.

KH: This is the carbonate hardness or alkalinity, which measures the water’s ability to neutralize an acid. The name carbonate hardness comes from carbonate and bicarbonate, which are the primary components of alkalinity. This is important for stabilizing pH and providing energy for nitrifying bacteria. The KH for turtles should be ~80ppm.

GH: This is the general hardness, which measures hard minerals in water (i.e. calcium and magnesium). Turtles need a GH of 180-200ppm.

Salinity: This is the salt level in the water. Ideally, salinity should be 0.4-0.5%.

Ammonia and nitrites should be 0. Weekly-biweekly water tests should be done to ensure your turtle’s water parameters are within acceptable limits. Water testing kits can be bought at most pet stores or online.

Lighting

Like all chelonians, RES require UVB light to synthesize vitamin D3 in their skin. Vitamin D3 is needed for proper metabolism of calcium and prevention of metabolic bone disease. The ReptiSun T5 5.0 HO, Arcadia T5 12% Desert, or Arcadia T5 6% Forest are all acceptable choices, depending on where you set up your turtle’s basking spot. Arcadia provides a guide as to where to place your UVB fixture in relation to your chelonian’s basking spot. It is important to note that UVB cannot penetrate glass, so natural sunlight through a window will not be sufficient for a chelonian to synthesize vitamin D3. Allowing safe outdoor time is also an excellent source of UVB and visible light.

Sunlight is made of ultraviolet, near infrared (IR), mid IR, far IR, and visible light. It is our job as keepers to provide full spectrum lighting, which means as close to sunlight as

possible. Unfortunately there is not one source for all of these components, so we must provide multiple types of lighting. For visible light, LED or halide bulbs should be provided.

UVB is NOT optional for chelonians. Lack of proper UVB can lead to impaired skeletal, muscle, and immune function. Replace UVB bulbs every 6 months, as they can continue to give off light even when not producing UVB. Lights should be turned off at night to maintain normal day/night cycles. For this reason, red or black nightlights should not be used as they can disrupt normal day/night cycles.

Arcadia UVB guide: https://www.arcadiareptile.com/lighting/guide/

Heat

Unlike mammals, reptiles cannot internally regulate their temperature and rely on their environment to heat and cool themselves. Therefore, it is important that we provide captive reptiles with a temperature gradient so they can warm up or cool down as needed. Basking temperatures can be measured with a digital infrared thermometer. An aquarium thermometer should be used to monitor water temperature.

RES need a land basking spot of 90-95F and water temperatures maintained at 75-80F. All light emitting sources should be turned off at night. Sunlight is made of UV, near IR, mid IR, far IR, and visible light. Flood tungsten-halogen bulbs are the most efficient at producing near IR, which is the most abundant IR in sunlight, and they also produce significant mid IR and some far IR. Far IR is the least abundant in sunlight, but is most often produced in large amounts by sources like ceramic heat emitters, heat pads, and radiant heat panels. Tungsten-halogen bulbs should be the flood type to ensure a wide enough basking site. These heat producing bulbs can be found as reptile specific bulbs or at hardware stores. Avoid hot rocks as these can easily burn reptiles.

Feeding

RES are omnivores, with juveniles eating a higher portion of animal protein than adults. Wild turtles eat aquatic vegetation, roots, stems, leaves, fish, and other small aquatic animals. In captivity, variety is key to preventing nutritional deficiency and providing enrichment. It is unlikely that most owners would obtain a hatchling (shell length <4''), but these young turtles would need to be fed animal protein daily with small amounts of plant matter offered. Juveniles (~4-6'') should be fed animal protein every other day and plant matter daily. Adults (>6'') should be fed every 2-3 days. The composition of an adult's diet should be 60-75% plant matter, and remaining equal portions of commercial

turtle pellets and animal protein. As dietary deficiencies are very common in captive turtles, providing nutritionally balanced commercial pellets to turtles of all ages is important for maintaining calcium and vitamin A levels. Hatchlings and Juveniles should have food dusted with a calcium carbonate based calcium supplement daily, and adults once weekly. A multivitamin with vitamin A should also be provided weekly. A cuttlebone can also be provided for your turtle to increase calcium consumption and wear down their beak.

Animal protein: Earthworms, insects, snails, crayfish, bloodworms, freeze-dried shrimp or krill, and feeder fish (not goldfish). Occasional lean ground beef or pinky mice can be offered.

Leafy greens: Dandelion greens, turnip greens, spring mix, escarole, bok choy, mustard greens, radicchio, endive, carrot greens, collard greens, radish greens, alfalfa (plant, not sprouts), cabbage, romaine lettuce. Spinach should be fed in moderation as it contains oxalates, which can disrupt calcium absorption. It is a common mistake to feed only iceberg lettuce, or only one type of green. Be sure to provide a variety for your turtle. Water hyacinth, water lettuce, watercress, and duckweed are all options for turtles as well.

Veggies and herbs: Carrots, squash, sweet potatoes, broccoli, asparagus, basil, bell pepper, cucumber, zucchini, rosemary, celery, cilantro, okra. Avoid garlic, onion, rhubarb.

Fruit and other: Blueberries, mango, raspberries, grapes, pomegranate, grapes, melon, strawberries, apples without seeds, blackberries. Flowers like hibiscus, dandelions, and rose petals can also be offered. Avoid avocado.

Sexing

Males reach sexual maturity around 2-4 years (4’’) and females around 3-5 years (5’’). Males have very long nails and longer, thicker tails. A female’s cloaca is located closer to the shell than a male’s.

Zoonosis

RES were actually the first reptiles to have recorded transmission of *Salmonella* to a human. Always wash your hands after handling reptiles or items from their enclosure.

Health

RES may be prone to malnutrition (especially vitamin A deficiency), shell rot, nutritional-secondary hyperparathyroidism (metabolic bone disease), reproductive problems, water quality issues, and aural (ear) abscesses. Turtles tend to be less sensitive to water quality issues than fish but they can still be impacted by poor water quality, so it is recommended to regularly test your water with a commercial kit. Your turtle should be examined by your veterinarian every 6-12 months.

Sources and Further Reading:

- Acierno, M. J., Mitchell, M. A., Roundtree, M. K., & Zachariah, T. T. (2006). Effects of ultraviolet radiation on 25-hydroxyvitamin D3 synthesis in red-eared slider turtles (Trachemys scripta elegans). *American journal of veterinary research*, *67*(12), 2046-2049.
- Bouchard, S. S., & Bjorndal, K. A. (2006). Ontogenetic diet shifts and digestive constraints in the omnivorous freshwater turtle Trachemys scripta. *Physiological and Biochemical Zoology*, *79*(1), 150-158.
- Burger, J. (2009). Red-eared slider turtles (Trachemys scripta elegans). *Seattle: University of Washington*.
- ARAV Companion Reptile Series: Red Eared Slider
- https://reptifiles.com/red-eared-slider-care
- https://lafeber.com/vet/basic-information-red-eared-slider/
- https://www.reptilesmagazine.com/red-eared-slider-care-sheet/
- http://www.exoticpetvet.com/red-eared-slider-care.html
- https://azeah.com/tortoises-turtles/basic-care-red-eared-slider
- http://www.anapsid.org/reslider.html
- https://www.virginiaherpetologicalsociety.com/reptiles/turtles/red-eared-slider/red-eared_slider.php
- https://static1.squarespace.com/static/5706bdd507eaa0b8239942b7/t/58b731058419c2a168e44883/1488400646349/Aquatic_Turtle_Care-Aurora_Animal_Hospital.pdf
- Facebook: Advancing Herpetological Husbandry
- *The Arcadia Guide to Reptile and Amphibian Nutrition*
- *Mader's Reptile and Amphibian Medicine and Surgery*