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A Northern Red-bellied Cooter, *Pseudemys rubriventris*, basking in Massachusetts. Photo © 2023 by jim_sweeney

featured species

Northern Red-bellied Cooter, *Pseudemys rubriventris* (LeConte, 1830)

The Northernmost Red-bellied Cooter by M. A. Cohen

Cooters, turtles belonging to the genus *Pseudemys*, are sizable freshwater turtles that are indigenous to the eastern United States. They are included in the Emydidae family of basking semi-aquatic turtles. Comprising approximately one-half of all living turtles, the 25 genera in the Emydidae are most closely related to the Testudinidae, the chelonian family of tortoises.

Except for the North American box turtles, emydids inhabit freshwater and occasionally brackish-water ecosystems within their range. Box turtles in the genus *Terrapene* also belong to the Emydidae family and occur in primarily terrestrial habitats.

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The Northern or American Red-bellied Cooter is one of three *Pseudemys* species with "red-bellied" as part of its common name: the Florida red-bellied turtle, *P. nelsoni*, the Alabama red-bellied turtle, *P. alabamensis*, and the northern red-bellied cooter, *P. rubriventris*.

The common name red-bellied refers to the color of the turtle's plastron, which is red, orange, or sometimes yellow. The scientific name *rubriventris* derives from two Latin word roots: *rubri–,* meaning "red," and *ventr–*, "underside" or "belly."

The term cooter derives from *kuta*, a word for "turtle" brought to North America by enslaved people from what is now the Republic of Mali in West Africa.

The American naturalist John Eatton LeConte (1784-1860) scientifically described the species in 1830. Throughout his career, LeConte described and named 22 species and subspecies of chelonians native to the southeastern United States.

Description

The red-bellied cooter is a large semi-aquatic turtle, reaching an average carapace length of 10.2 to 12.5 inches (26 to 32 centimeters) at maturity (Clark, 2004). Researchers have occasionally documented individuals as long as 15.75 in (40 cm).

A juvenile red-bellied cooter photographed in Maryland. **Photo © 2020 by Dan Treadwell**

The carapace (upper shell) of *P. rubriventris* has an olive-brown, dark brown, or black background with red or orange vertical markings on the pleural scutes, the large plates between the dorsal and marginal scutes.

The carapace shape is oval and somewhat flattened. The carapace texture is smooth in youth, while the adult carapace has a surface texture described as rugose, which is defined as having narrow corrugations.

Differences in form or appearance between the male and female of a species are known in biology as sexual dimorphism. The northern red-bellied cooter has several such characteristics. For example, the plastron (lower shell) coloration differs in *P. rubriventris*. The male typically has a pink plastron mottled with gray, while the female has a red or yellow plastron with gray markings along the seams.

Other differences within northern red-bellied cooters include females being larger than males. Females average 13.3 in. (33.7 cm) in carapace length, and males, 12.3 in (31.2 cm) [Graham, 1991]. Males have longer, straight foreclaws and longer, thicker tails than females.

The skin of the head, limbs, and tail is black with narrow striping that is bright yellow at hatching and tends to fade to ivory as the turtle matures. A distinguishing stripe on the upper head joins the thin lines above the eyes at the snout to form the prefrontal arrow characteristic of *P. rubriventris* (Northern red-bellied cooter, n.d.).

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The jaws of *P. rubriventris* are unusual in that both have serrated edges. The upper jaw has a notched, tooth-like cusp at the center of its beak, and the lower jaw has a single, central triangular projection pointing upward.

Juvenile northern red-bellied cooters are more brightly colored than adults. Hatchlings have vivid green carapaces with yellow markings that change as the turtle ages, their bright green carapaces darkening to brown or black, and their yellow patterning turning red.

Males may become melanistic as they mature, meaning their tissue coloration darkens due to the production of melanin, the family of brown or black pigments.

A close-up of the head of an adult northern red-bellied cooter. Notice the serrated, cusped upper jaw of its beak.
Photo © 2025 by danicamwm

Range and Habitat

Indigenous to the freshwater, riverine habitats of the Atlantic Coastal Plain and the inland valleys from New Jersey south to North Carolina, the range of *P. rubriventris* runs east to the Potomac River and west to the West Virginia panhandle.

A geographically isolated population of red-bellied cooters, once thought to be a subspecies, exists in southeastern Massachusetts, and a small, introduced population occurs on Long Island in New York state.

Adult northern red-bellied cooters occur in large, slow-moving, deep-water habitats such as canals, creeks, lakes, marshes, ponds, and rivers. They sometimes inhabit brackish-water ecosystems where their rivers meet the sea.

Juveniles of the species tend to favor more sheltered areas of standing waters within marshes, ponds, rivers, and creeks.

The species prefers a body of water with a soft, silted substrate, which is important because it typically brumates by digging itself into the muddy bottom of its water body. Cooters favor abundant aquatic vegetation for hiding and foraging and submerged logs and rocks for basking.

Northern red-bellied cooters sometimes live in blackwater swamps, the tannin-stained, slow-moving bodies of water that occur in heavily forested areas. Tannin is the yellowish-brown color resulting from the decomposition of plant materials.

Northern red-bellied cooters communally basking at the water's edge in Virginia.
Photo © 2024 by Ty Smith

Natural History

P. rubriventris is a diurnal species, meaning the turtles are most active during the daytime, particularly at dawn and dusk. They are generally active from March or April through October. They spend most of their time basking, foraging, and, during breeding season, seeking mates.

They often bask in groups and, being a shy, wary species, will swiftly seek the safety of their underwater shelters when sensing any threat.

Both males and females reach maturity around 7 to 11 years of age. Nesting season occurs from May through July when females typically lay one or two clutches of 4 to 22 eggs each. The eggs are subject to temperature-dependent sex determination, meaning the temperature within the nest during incubation determines the

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sex of the hatchlings. Incubation typically lasts 10 to 15 weeks, and hatchlings emerge from the nest in August through October. The hatchlings from clutches laid late in the season overwinter in the nest rather than emerge later than October, and they will emerge the following spring.

Adult northern red-bellied cooters are herbivorous, consuming a variety of aquatic plant species, while juveniles are more omnivorous in their diets and take small animal prey as well as plants.

Threats

Given the many areas within its range that are heavily subject to industrial expansion and riverside residential development, many of the threats to the northern red-bellied cooter populations are anthropogenic (caused by human activity). These threats include habitat degradation and loss, pollution of wetlands and waterways, fragmentation of populations, and human exploitation for food and the pet trade.

P. rubriventris has various natural predators depending on its size. As a hatchling and juvenile, its predators include large fish, bullfrogs, and turtles, avians such as herons and crows, and mammals like foxes, opossums, raccoons, and shrews. Humans are the primary predators of adult northern red-bellied cooters.

Conservation

The International Union for the Conservation of Nature lists *P. rubriventris* as "Near Threatened" in its 2010 assessment. It states that this evaluation "needs updating."

Some local populations of *P. rubriventris* in protected areas appear stable. The Massachusetts populations have attained legal protection through the federal Endangered Species Act.

MA Headstarting Project

As mentioned, a disjunct population of northern red-bellied cooters lives in large ponds in southeastern Massachusetts.

For over 40 years, MassWildlife's Headstart Program has partnered with local museums, nonprofit organizations, and schools in a project to foster northern red-bellied cooter hatchlings until they reach a size that better equips them to survive in the wild.

Hatchlings in the wild are tiny, with an average carapace length of 1.2 in (3.3 cm)and a weight averaging 0.2 ounce (8.5 grams). Wild hatchlings rarely survive their first year.

Researchers collect eggs laid in the wild in late spring and early summer, carefully recording the locations of their ponds. Partnering entities foster the hatchlings for about one year until they reach an average weight of 5.9 oz (167 gm). MassWildlife then prepares the headstarted juveniles for release by weighing, measuring, and PIT-tagging them for tracking purposes.

In May of each year, researchers release groups of head-started juveniles into the Massachusetts ponds where their eggs were originally collected. Survivorship is as high as 90 to 98% for the headstarted turtles (Macdonald, 2022). Ω

An adult female northern red-bellied cooter basking in Virginia. Photo © 2024 by Patrick Murphy

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The Radiated Tortoise *(Astrochelys radiata)* is the 6th rarest tortoise in the world, and the heroes at Turtle Survival Alliance (TSA) are fighting for its future. As a non-profit, the TSA relies on support from the community. Zoo Med has pledged to donate pallets of their Natural Grassland Tortoise Food to TSA's Madagascar location 3 times a year. This food prevents shell and spinal growth deformities by matching the nutrient profile and high fiber content of a wild tortoise diet.

Join Zoo Med in supporting the TSA's conservation efforts; visit their website to learn more and how to contribute: turtlesurvival.org

TSA
turtle survival alliance

Four Critically Endangered Galápagos Tortoises Hatch at Philadelphia Zoo, First Successful Hatching of this Species in Zoo's History

Philadelphia Zoo is overjoyed to announce the hatching of four critically endangered Western Santa Cruz Galápagos tortoises for the first time in the Zoo's 150+ year history.

Philadelphia, Pennsylvania—3 April 2025—The hatchlings' parents, female Mommy and male Abrazzo, are the Zoo's two oldest residents, each estimated to be around 100 years old. Additionally, Mommy is considered one of the most genetically valuable Galápagos tortoises in the Association of Zoos and Aquariums (AZA) Species Survival Plan (SSP). She is also the oldest first-time mom of her species. The hatchlings, currently behind-the-scenes inside the Reptile and Amphibian House, are eating and growing appropriately, weighing between 70-80 grams (about the weight of a chicken egg). The first one hatched on February 27 and the animal care team is still monitoring eggs that could hatch in the coming weeks. The hatchlings will make their public debut on Wednesday, April 23, which is the 93rd anniversary of Mommy's arrival at the Zoo. Stay tuned for details on their debut and for the chance to help the Zoo name them!

The babies are part of the AZA SSP breeding program to ensure the survival of this species and maintain a genetically diverse population. Western Santa Cruz Galápagos tortoises (*Chelonoidis niger* subspecies *porteri*) are listed as critically endangered by the International Union for Conservation of Nature (IUCN) with threats including human-wildlife conflict, the introduction of invasive species, and habitat loss. The last clutch of Western Santa Cruz Galápagos tortoises to hatch in an AZA accredited zoo was in 2019 at Riverbanks Zoo and Garden in South Carolina. Other zoos with breeding pairs of this species include San Diego Zoo, Zoo Miami and Honolulu Zoo.

Western Santa Cruz Giant Tortoise, *Chelonoidis niger* ssp. *porteri*, photographed in habitat on Santa Cruz Island, Galápagos. **Photo © 2021 by antonellamena**

History in the Making

"This is a significant milestone in the history of Philadelphia Zoo, and we couldn't be more excited to share this news with our city, region, and the world," says Philadelphia Zoo President & CEO Dr. Jo-Elle Mogerman. "Mommy arrived at the Zoo in 1932, meaning anyone that has visited the Zoo for the last 92 years has likely seen her. Philadelphia Zoo's vision is that those hatchlings will be a part of a thriving population of Galápagos tortoises on our healthy planet 100 years from now."

"As an AZA accredited institution, we take great responsibility participating in the Galápagos Tortoise Species Survival Plan, and are thrilled for this successful pairing of Mommy and Abrazzo," says Vice President of Animal Well-Being and Conservation Rachel Metz. "At one point, each of the Galápagos Islands had its

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own unique Galápagos tortoise, but sadly, several of them are now extinct. These hatchlings not only protect the species from extinction, but serve as important ambassadors to inspire guests to save wildlife and wild places."

Mommy the Western Santa Cruz Galápagos tortoise arrived at Philadelphia Zoo in 1932. The Zoo's oldest resident, she is estimated to be around 100 years old.

"This is a monumental achievement for our animal care team that worked diligently to provide the right conditions for Mommy to lay her eggs and for the eggs to incubate and successfully hatch," says Director of Herpetology and Birds Lauren Augustine. "This successful outcome comes from years of hard work studying animal behavior and providing top-level care. Until now, Mommy's genes were not represented in the AZA population, making these offspring extremely important in the protection of this species."

"The Galápagos Tortoise SSP program is thrilled to help Philadelphia Zoo welcome Mommy's offspring," said Galápagos Tortoise SSP Coordinator and Studbook Keeper Ashley Ortega at Gladys Porter Zoo in Texas. "This feat is even more incredible considering that Mommy is the oldest first-time producing female of her species in any U.S. zoo. Prior to the hatchlings, there were only 44 individual Western Santa Cruz Giant tortoises in all U.S. zoos combined, so these newest additions represent a new genetic lineage and some much-needed help to the species' population. We are excited to learn more about how we can replicate this success at other accredited zoos since the team in Philly has accomplished something that was seemingly impossible."

About the Zoo's Galápagos Tortoises

In December 2020, Abrazzo came to the Zoo on an SSP breeding recommendation from Riverbanks Zoo and Garden in South Carolina. On Giving ZOO Day 2021, the Zoo community made donations to purchase new substrate (nesting material like sand and soil) that Mommy would be able to lay her eggs in. In 2022, the animal care team worked jointly with the Zoo's conservation education team to study the giant tortoises and create an ethogram* of Abrazzo's behaviors to see how he spent his time. Since 2023, Mommy has laid a total of four clutches of eggs. Three prior clutches did not result in viable eggs. The hatchlings came from a clutch she laid in November 2024.

Female tortoises typically lay 2-20 white, hard-shelled, spherical eggs about the size of billiard balls in a hole they dig. After Mommy laid her 16 eggs in November 2024, the reptile and amphibian team dug them up to incubate eight as male and eight as female. The sex of Galápagos tortoise hatchlings is determined by the incubation temperature. Temperatures below 82.4°F produce males and above 85.1°F produce females. Eggs hatch after four to eight months. The baby tortoises that have hatched were incubated as female.

The hatchlings are currently behind-the-scenes inside the Reptile and Amphibian House; they are set to make their public debut on April 23, which is the 93rd anniversary of Mommy's arrival at the Zoo.

Galápagos tortoises can be found on the Galápagos Islands in the Pacific Ocean off the coast of Ecuador. They are the largest living species of tortoise; males can grow to be 500 pounds while females average around 250 pounds. They are cold-blooded animals and spend one to two hours basking in the sun before spending another eight to nine hours grazing and relaxing. Scientists estimate they can live between 100-200 years old. There are currently 13 living species that are native to seven of the islands.

Philadelphia Zoo is home to three adult Galápagos tortoises, male Abrazzo, females Mommy and Little Girl, and four hatchlings. Guests can visit the hatchlings inside the Reptile and Amphibian House starting April 23. The hatchlings will remain at the Zoo for at least five years. The Zoo will work with the AZA SSP to determine when and if the hatchlings will move to different facilities. The Zoo is also home to two giant Aldabra tortoises, Wilma and Betty. Ω

—Philadelphia Zoo press release

* **Ethogram:** The term **ethology** refers to the scientific study of animal behavior. An **ethogram** is a list of specific behaviors that a particular animal engages in and typically includes the time of day or night at which the behavior occurs.

The types of behavior included in an ethogram will vary depending on the species of animal being studied. Generally speaking, the ethogram will include behaviors such as exploring, foraging, drinking, eliminating, vocalizing, socializing, grooming, aggressively interacting, resting, and sleeping.

Rehabilitated sea turtles from New England Aquarium surviving years after release back into the ocean

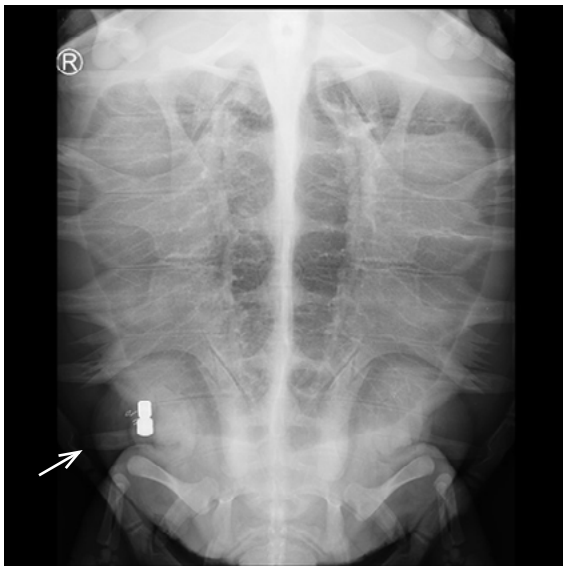
Acoustic tagging data shows loggerhead sea turtles returning annually to Cape Cod

Boston, Massachusetts—4 March 2025—Loggerhead sea turtles (*Caretta caretta*) that were rehabilitated at the New England Aquarium and released back into the ocean in 2021 and 2022 are still alive and showing a surprising affinity for New England habitats, according to data transmitted from surgically implanted acoustic tags. This research fills a critical data gap on the survival and movements of rehabilitated sea turtles over several years.

The New England Aquarium has been engaged in sea turtle rescue, rehabilitation, and research for more than 30 years. Its Sea Turtle Hospital in Quincy, MA, is a world-class facility that has successfully rehabilitated thousands of sea turtles and returned them to the ocean. In 2021, Aquarium scientists and veterinarians were granted a federal permit to surgically implant acoustic transmitters in loggerhead sea turtles that had been successfully rehabilitated after stranding in Massachusetts. The internal transmitters can last for three to seven years, providing valuable long-term information on where the turtles swim, feed, and travel.

A rehabilitated loggerhead turtle with a satellite tracker affixed to its carapace being released in August of 2021 from the New England Aquarium's Sea Turtle Hospital in Massachusetts. Photo courtesy of Pam Snyder, New England Aquarium. Used with permission.

While satellite tag data has shown that the vast majority of the Aquarium's turtles are surviving in the wild and exhibiting behavior typical of their species, the data has been time-limited to around six months to a year. The latest data from the loggerhead sea turtles that were acoustic tagged in 2021 and 2022 shows that the turtles are not only still alive, but some have returned annually to feeding habitats along the East Coast, including Massachusetts.



Radiograph (x-ray) of a sea turtle's plastron showing an implanted acoustic transmitter that allows scientists to track rehabilitated sea turtles as they travel in the wild. Photo courtesy of Pam Snyder, New England Aquarium. Used with permission.

"These acoustic transmitters are telling us that rehabilitated sea turtles can survive beyond that first year, and they are showing up in well-established feeding areas. That gives us confidence in their ability to reintegrate into the wild population," said Dr. Kara Dodge, research scientist in the Aquarium's Anderson Cabot Center for Ocean Life. "We're also finding that some turtles are returning to New England waters in the summer and fall, which was surprising and tells us this area may be more important for loggerheads than we previously thought."

Researchers use acoustic telemetry to collect information about the movements of ocean animals. The transmitters are electronic tags that broadcast a series of "pings" into the surrounding water. These transmitters ping listening stations like an E-ZPass system when an animal passes by. Surgically implanted acoustic tags are valuable because of their longevity and inability to be shed. Almost all externally attached devices on turtles, such as satellite tags, are shed before they reach their full battery life—sometimes just days or weeks.

"It's a little like Christmas morning every time we receive a new set of data," said Dr. Charles Innis, a senior scientist and veterinarian at the Aquarium who pioneered the internal acoustic tagging procedure for sea turtles.

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To date, acoustic receivers from Massachusetts down to Florida have detected the released turtles almost 6,000 times. The latest data showed many of the acoustic tagged loggerheads are returning to New England waters—Cape Cod in particular—one year and even two years later.

Data was derived from New England Aquarium acoustic receiver arrays and institutions participating in data sharing networks from Massachusetts to Florida.

Dr. Dodge and Dr. Innis are now interested in learning if Kemp's ridley and green sea turtles are also returning to New England or if this behavior is specific to loggerheads. Historically, state and federal regulators seek out data on sea turtle habitat use for proactive ocean planning and management around human activities in the ocean.

"If we continue to gather data for larger numbers of turtles in New England waters, we will likely have a better understanding of when they are typically present and where they spend their time, both of which may inform future protective measures," Dr. Innis said.

"We're helping build a knowledge base about sea turtles off the New England coast, which ultimately can help establish effective conservation policies," said Dr. Dodge.

The team is expecting to receive data from some of the transmitters through 2032. As they continue their work, the scientists are seeking permission to use the acoustic tagging method on other turtle species, which could provide important information on these aquatic species that are rarely seen and poorly understood. Ω

—New England Aquarium press release

Legal Agreement Sets Deadlines to Protect Bog Turtle, Roughhead Shiner

Asheville, North Carolina—8 April 2025— The Center for Biological Diversity (CBD) and the U.S. Fish and Wildlife Service reached an agreement today that requires the agency to make decisions on protecting two imperiled southern species under the Endangered Species Act (ESA). The Service must decide whether to protect southern bog turtles and roughhead shiners by October 2028.

"These tiny turtles and rare fish will go extinct without endangered species protections, but this agreement tosses them a lifeline," said Will Harlan, southeast director at the CBD. "The powerful protections of the ESA are these animals' best bet for surviving."

Bog turtles are North America's smallest turtles, measuring about the length of a crayon. They're one of the world's most threatened turtles, as their southern population has declined by 50% since 2000—and fewer than 2,000 individual southern bog turtles are left.

In response to the CBD's petition the Service announced in October 2022 that southern bog turtles may warrant protection under the ESA. The agency was required to decide more than a year ago whether to officially list the turtles.

Bog turtles live in mountain wetlands that are being drained for development. Only 500 acres of mountain bog habitat remain across the turtles' entire southern range, and many of the bog turtles' remaining wetlands have recently lost federal and state protections. Only 14 viable sites are left across the turtles' range in Virginia, North Carolina, South Carolina, Tennessee and Georgia.

Today's agreement also finalizes a date for determining protections for roughhead shiners — olive minnows named for the bumps on their head. They're found only in the upper James River watershed in western Virginia, where they're being displaced by invasive fish.

The shiner was first identified as threatened 50 years ago and was put on a waiting list for ESA protection in 1994. The CBD petitioned for protection for the fish in 2022, and in March 2023 the Service announced that the species may warrant protections. A decision on whether to list the shiner was due two years ago.

"Protecting turtles and fish is also good for people because our drinking water depends on clean rivers and wetlands where these species live," said Harlan. "The Southeast is experiencing a freshwater extinction crisis and these imperiled animals can't get protections soon enough."

The southeastern United States is a global hotspot of diversity for fish, turtles and other freshwater species. More than 40% of the country's fish and turtles are at risk of extinction, primarily because of habitat loss and development, pollution, poaching, invasive species and climate change. Ω

—Center for Biological Diversity press release

the Turtle's Garden
planting for chelonians
by M A Cohen

Edible Succulents

Sedum species, Stonecrop

The *Sedum* genus is a sizable group of succulent perennials belonging to the Crassulaceae, the stonecrop or orpine family of plants. Members of the genus are native to North America, Central and South America, Europe, Asia, North Africa, and the Mediterranean.

Succulent plants are, by definition, plants with specialized cells that enable them to store water in their leaves, stems, and roots. This ability allows succulent plants to withstand drought conditions by releasing stored water for maintenance and growth during dry periods.

The pronunciation of the genus name and one of the common names is see-dum. The name *Sedum* derives from the Latin *sedeo,* meaning "to sit," and refers to the growth habit of "many of the sedums species to sit [on] and sprawl over rocks" (Sedum (Roseroot, Sedum, Stonecrop), n.d.).

Sedum oregonense, the Oregon or Cream Stonecrop, in full bloom photographed in habitat in Jackson County, Oregon. **Photo © 2003 by Dianne Fristrom**

There are over 300 species of *Sedum* worldwide, some of which taxonomists recently reclassified as members of the genus *Hylotelephium* while other species remain in the *Sedum* genus. In this column, we will use the original name *Sedum* to refer to this entire group of succulents.

Common names of the *Sedum*/*Hylotelephium* group include sedum, orpine, stonecrop, and roseroot. Plant breeders have developed many *Sedum* cultivars (cultivated varieties) which we can recognize by their English-language names enclosed in single quotation marks.

Red-leaved Sky Stonecrop, *S. caeruleum*, photographed blooming in habitat in Tunisia, North Africa. **Photo © 2022 by simben**

Description

Sedums are easy to grow, versatile in their uses, require minimal maintenance, and become drought-tolerant once established. The array of leaf and flower colors within the *Sedum* species is extensive.

Two basic forms or shapes occur among the sedums: (1) small-scale, sprawling, ground-hugging types and (2) larger, upright, clumping types. Ground cover sedums grow 3 to 12 inches (13 to 30 centimeters) tall and spread up to 24 in. (60 cm). Upright, clumping types grow up to 24 in. (60 cm) tall and spread up to 36 in. (91 cm) [Hagen, 2018].

Leaf shapes, sizes, and colors vary considerably within the *Sedum* group. All types of *Sedum* leaves are thick and fleshy, allowing them to store water and release it slowly to support the growth and maintenance of the plant.

Flower colors range from white through pastels of pink and yellow to deeper shades of burgundy and purple, depending on the variety. Four- to six-petaled, star-shaped blossoms appear from

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Leaves and flowers of *Sedum* 'Autumn Joy', a very popular large-scale, upright-growing cultivar. Photo © 2022 by Volodymyr Vlasenko

spring through fall, and the plant may bloom year-round in warm weather areas.

Cultivation

Because the *Sedum* species are succulent plants capable of storing water in their tissues, excellent drainage is essential in landscape settings and containers. If drainage is poor, a sedum will succumb to root rot.

When drainage is slow, improve the soil's ability to drain before planting any succulent. Enhance soil drainage by adding coarse soil amendments like sand and organic matter such as compost, mixing in amendments thoroughly prior to planting.

Sedum rubrotinctum 'Aurora', the jelly-bean plant or pork-and-beans. Photo © 2015 by Zoya Akulova

During establishment in the garden, which usually occurs in one growing season, provide regular watering. Once the succulent is established, water sparingly. Depending on your location, some succulents will do well with the natural rainfall alone.

Fertilizer is usually unnecessary for a succulent in the landscape because the plant is likely to draw enough nourishment from the soil to maintain good health. If the succulent lives in a container, the plant may require limited fertilizer during the growing season to promote healthy growth.

Outdoors, two to six hours of full sun each day are necessary for the best growth. Sedums will tolerate some shade if they receive sufficient full sun. Without enough sun, the plant's growth will be elongated or "rangy"

Many Sedums will grow indoors with abundant bright light through windows or from plant-growth lights, a coarse potting soil mix, a planter with drainage, and the correct watering regimen.

Propagation

Leaf cuttings and division are easy methods for propagating Sedums. **Cuttings:** stem cuttings use a four- to six-inch portion of the plant stem with one or more leaves. Let the cutting dry out–form a callus–on the cut end before placing it in planting soil. A new plant will even grow from a single healthy leaf by placing the stem end of the leaf in soil and watering it carefully so it stays upright.

Division: a Sedum produces offsets (side shoots). Division involves carefully digging out the new plant–leaves and roots–and replanting it elsewhere in the garden or in a container.

Pollinators

Sedums attract several species of pollinators, including bees, butterflies, and songbirds. Ω

Palmer's sedum, *S. palmeri*, in full bloom. Photo © 2025 by Victor Alonso Hernández González

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Turtle & Tortoise Show

Saturday, May 3, 2025
10:00 am to 4:00 pm

at

First Christian Church of Orange
1130 East Walnut
Orange, CA

Live Turtles & Tortoises!

Husbandry and Adoption Information
Turtle-Related Goods for Sale
Live Turtles and Tortoises

California Turtle & Tortoise Club, Orange County Chapter

www.tortoise.org/orange county facebook.com/cttc.oc

The California Turtle & Tortoise Club CHINO VALLEY CHAPTER

TURTLE AND TORTOISE SHOW IN CHINO

SATURDAY, MAY 17, 2025
10:00am to 3:00pm

ADMISSION $2.00

**** LIVE EXHIBITS - EDUCATIONAL MATERIAL & DISPLAYS****
ADOPTION INFORMATION

CHINO GIRL SCOUT HOUSE
5007 Center Street, Chino, CA 91710
Come support our Chapter, fee supports our turtle care and vet expenses

From the 60 freeway exit Central Ave. and go south to Riverside Drive then go right. Take Riverside Drive to Third Street (1st signal) and turn right. The Girl Scout House in on the corner of Third and Center Streets

E-MAIL: jlcalif2@aol.com OR CALL LYNDA AT 909/263-4629 FOR MORE SHOW INFORMATION

California Turtle & Tortoise Club

CTTC Valley Chapter
Turtle & Tortoise Show
Saturday, May 17, 2025
11:00 AM ~ 3:00 PM
Woodland Hills Christian Church
5920 Shoup Avenue, Woodland Hills, CA 91367

- Live turtles and tortoises
- Information about
  - adoptions
  - turtle/tortoise care
  - conservation
- Tortuga Gift Shop
- Raffle
- 'Ask the Vet' booth

For more information, contact:
Karen Berry — theflyingturtle1953@gmail.com
Cristina Perovich — cribetti@gmail.com

ADMISSION FEES

Adults	$3.00	Children under 5	FREE
Seniors 60+	2.00	Active Military & Veterans	FREE
Children 6+	2.00	First Responders	FREE

In honor of Armed Services Day, we are offering free admission to our active military, veterans, and first responders.

Sponsored by CTTC Valley Chapter, P.O. Box 7364, Van Nuys, CA 91409-7364.
CTTC is a not for profit 501(c)(3) organization. https://www.tortoise.org/valley

KERN COUNTY CHAPTER ANNUAL SHOW

17 MAY 2025 from 9 AM to 3 PM
C.A.L.M. Zoo
10500 Alfred Harrel Hwy
Bakersfield, CA 93306

Mojave desert tortoise, *Gopherus agassizii*, photographed in Kern County, CA. Photo © 2023 by Kevin Chen

World's largest turtle inspires international research

Experts from the United States, Australia and Aotearoa[1] are taking flight from Whakatāne[2] to learn more about Critically Endangered leatherback turtles.

20 March 2025—Their research involves a series of flights following gridlines to visually record numbers of leatherback turtles (*Dermochelys coriacea*) and estimate distribution to help inform conservation strategies.

A diving leatherback turtle. Photo © 2022 by azure27014

The research is funded through the Department of Conservation (DOC) Marine Conservation Services Programme and is a first for New Zealand. DOC is leading the study locally, alongside Upwell Turtles (USA), and with support and expertise from the National Institute of Water and Atmospheric Research (New Zealand), Monash University (Australia), and Moss Landing Marine Laboratories (USA).

International collaboration is essential to these research and conservation efforts because the West Pacific leatherback population being studied migrates huge distances across the entire Pacific Ocean.

DOC Senior Marine Science Advisor, Dr Karen Middlemiss, says leatherbacks are like the tuatara[3] of the sea.

"They are as ancient as dinosaurs and their existence is under threat.

"The Western Pacific leatherback population has declined by more than 80 percent in the past 40 years and is at risk of extinction," says Karen.

Leatherbacks are seen off the east coast of New Zealand in summer and spring when the weather is warmer.

"Some of the population migrate here after nesting to forage on jellyfish and salps, but we don't have a lot of information about them while they're here.

"The Upwell team are world leaders in monitoring leatherback turtles and we are excited to be working together and benefiting from their knowledge and experience," says Karen.

Dr George Shillinger, Executive Director of Upwell Turtles, says leatherbacks are among the most highly migratory and transboundary marine species on the planet.

"Effective conservation requires international collaboration from nesting beaches all the way to distant foraging habitats. We are thrilled to have New Zealand contributing to our global understanding and conservation of this ancient turtle species."

"It's also exciting for our team to be experiencing New Zealand's marine biodiversity. It's a hotspot for so many species, we've seen beaked whales, baleen whales, ocean sunfish, and many different dolphins and toothed whales," says George.

Leatherbacks face many threats across their habitats, including unintentional capture by fisheries, the harvesting of adult turtles and eggs, plastic pollution, nesting beach habitat loss, climate change, and vessel strike.

The public can contribute to protecting leatherbacks and other marine animals by preventing plastics and pollution reaching the sea.

No marine turtles nest on beaches in New Zealand. Any turtle on the beach should be reported immediately to 0800 DOC HOT (0800 362 468). Ω

—New Zealand Department of Conservation media release

[1] **Aotearoa**: the word for New Zealand in the language of the indigenous Maori people.

[2] **Whakatāne**: a town on the North Island of New Zealand.

[3] **Tuatara**: a "living fossil" reptile native to New Zealand that resembles a lizard.

The **Pacific Leatherback Turtle, *Dermochelys coriacea,*** is the Official Marine Reptile of the State of California, recognized in 2012. Each year, California celebrates Pacific Leatherback Conservation Day on October 15th.

Chapter Meeting Schedule: May/June 2025

Check your chapter website for program information.

Chino Valley
May 16; May 17: Annual Turtle & Tortoise Show; June 20

Foothill
May 23; June 27

High Desert
May 12; June 9

Inland Empire
May 2; June 6

Kern County
May 12; May 17: Annual Turtle & Tortoise Show; June 9

Low Desert
Meeting information to be announced.

Orange County
May 2; May 3: Annual Turtle & Tortoise Show; June 6

Ridgecrest
May 12; June 9

Santa Barbara-Ventura
Meeting information to be announced.

Santa Clarita
Meeting information to be announced.

TOOSLO (San Luis Obispo)
May 27

TTCS (Long Beach)
May 17; June 21

Valley
May 16; May 17: Annual Turtle & Tortoise Show; June 20

The California Turtle & Tortoise Club (CTTC) is a non-profit 501(c)(3) corporation. Contributions are tax deductible to the full extent of the law. Please pay by USA funds only (US bank check, money order, or International Postal Order).

Membership in the CTTC and subscriptions to the *Tortuga Gazette* are handled through the CTTC Chapters. The Chapters also manage membership renewals (see postal addresses to the right).

Many members choose to join a nearby Chapter to participate in Chapter meetings and other activities. Print membership forms from the CTTC website.

Your Chapter and your renewal date (month/year) are displayed on your newsletter notification. Mail your new or renewal membership/subscription to the Chapter of your choice.

Membership fees

- Student membership 15^{00}
- Individual membership 25^{00}
- Family membership 35^{00}
- Life membership 500^{00}

California Turtle & Tortoise Club: a Society Dedicated to Turtle & Tortoise Preservation, Conservation and Education since 1964. Promoting and Facilitating the Care, Rehoming, and Adoption of Native and Nonnative Turtles and Tortoises.

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CTTC Memberships and Renewals

Each chapter handles its own memberships/renewals.

There are three options for membership renewal:

1. Send a check to the mailing address of your chapter. In the panel below, you will find the current membership fees and the mailing addresses for each chapter.
2. Renew your membership in person at your chapter's meeting.
3. Some chapters have PayPal accounts that enable their members to renew memberships online.

CTTC Chapter Mailing Addresses

Chino Valley Chapter: P.O. Box 1753, Chino, CA 91708-1753

Foothill Chapter: P.O. Box 51002, Pasadena, CA 91115-1002

High Desert Chapter: P.O. Box 163, Victorville, CA 92393

Inland Empire Chapter: P.O. Box 7205, Redlands, CA 92375

Kern County Chapter: P.O. Box 81772, Bakersfield, CA 93380-1772

Low Desert Chapter: P.O. Box 4156, Palm Desert, CA 92261

Orange County Chapter: P.O. Box 11124, Santa Ana, CA 92711

Ridgecrest Chapter: P.O. Box 1272, Ridgecrest, CA 93555

Santa Barbara-Ventura Chapter: P.O. Box 3086, Camarillo, CA 93011-3086

Santa Clarita Chapter: P.O. Box 4012, Castaic, CA 91310

TOOSLO Chapter: P.O. Box 763, Grover Beach, CA 93483

Turtle & Tortoise Care Society Chapter: PO Box 15952, Long Beach, CA 90815

Valley Chapter: P.O. Box 7364, Van Nuys, CA 91409-7364

Tortuga Gazette
California Turtle & Tortoise Club
P.O. Box 7300
Van Nuys, California 91409-7300

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