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CALIFORNIA TURTLE & TORTOISE CLUB

The Tortuga Gazette

Volume 61, Number 5 • September/October 2025

A subadult Yellow-headed Sideneck Turtle, *Podocnemis unifilis*, photographed in habitat in Guyana, South America. Photo © 2019 by David Thomas

featured species

Yellow-headed Sideneck Turtle, *Podocnemis unifilis* (Troschel, 1848)

The Yellow-spotted Amazon River Turtle by M. A. Cohen

Endemic to the Amazon, Essequibo, and Orinoco River basins in South America, the yellow-headed sideneck, *Podocnemis unifilis*, is one of the seven living species of *Podocnemis* turtles. These sideneck turtles belong to the Podocnemididae chelonian family that has three genera and seven species in South America and one in Madagascar (Eisemberg et al., 2017). The "podocs" are among the largest freshwater turtles currently living.

The gigantic, extinct genus *Stupendemys,* a member of the Podocnemididae family, is the most massive freshwater sideneck turtle known to science. Its carapace length exceeded 6.5 feet (2 meters). Researchers have found *Stupendemys* fossils in northern South America that date back to the middle Miocene and early Pliocene epochs, 13 to 5 million years ago.

Known to biologists as the Pleurodira, sideneck (or side-necked) turtles are a Testudine suborder native to Southern Hemisphere freshwater ecosystems on the continents of Africa, Australia, and South America. Pleurodira cannot retract their heads directly within their shells for protection like the Cryptodira, the hidden-necked turtles. Instead, the Pleurodira bend their heads horizontally, tucking them under the overhang of their carapace marginals as a defense against threats, although such protection is somewhat limited.

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A hatchling yellow-headed sideneck turtle. Photo © 2022 by Joaquin Valdivia

Scientifically described by German zoologist Franz Hermann Troschel (1810-1882) in 1848, the yellow-headed sideneck turtle is among the largest semi-aquatic, freshwater species inhabiting neotropical river basins in Latin America.

Description

A freshwater species of considerable size, female yellow-headed sidenecks are typically much larger than males with an oval carapace reaching a length up to 18.3 inches (46.5 centimeters) at maturity. In contrast, males grow up to 13.2 in (33.5 cm) long.

The hatchling *P. unifilis* typically has a prominent medial keel on its rounded carapace as it emerges from its egg. The keel becomes a low, flattened mound as the turtle grows. The juvenile's carapace is brown to green-gray with a narrow cream-yellow border on the marginal scutes. As the turtle ages, its carapace becomes olive to gray to brown, and the yellow border on the marginals disappears.

The plastron of the hatchling is buff-gray and becomes gray as the turtle matures. It may develop darker blotches on the plastral scutes later in life (Pritchard & Trebbeau, 1984).

The elongated head of the species has a prominent snout. Its jaws are dark brown or black and may be marked with a wide cream or yellow transverse stripe. Its tympanum (the membrane over the ear) is wider than its orbit (eye socket) [Podocnemis unifilis, n.d.].

The skin on the head, limbs, and tail of *P. unifilis* is gray to olive-brown, and its toes feature heavy webbing. Yellow markings on its head give the species its common names. Its head markings are bright yellow at hatching and during its juvenile years. These markings fade in males with maturity; in females, they disappear.

Yellow-headed sidenecks usually have one or two barbels on their chins. Barbels are small fleshy filaments that occur on the heads of many species of aquatic vertebrates. Biologists surmise that the barbels serve to attract prey to the turtle's mouth area. Orinoco River populations have a single chin barbel, while Amazonian River populations have two (Podocnemis unifilis, n.d.).

The hatchling emerges from its egg fully developed, mobile, and capable of foraging on its own a few days later. Biologists use the term precocial to describe this type of independent behavior.

Close-up of the head of *P. unifilis* showing the two barbels on its chin, indicating it belongs to an Amazonian population. Photo © 2011 by Ruben Undheim

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Range and Habitat

P. unifilis inhabits the tropical lowlands of the Amazon, Essequibo, and Orinoco Rivers, occupying riparian ecosystems in Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname, and Venezuela. Yellow-headed sidenecks "are occasional accidental visitors to [the island of] Trinidad, probably from the flooding Orinoco River" (Constantine, 2016).

The head of an adult male yellow-headed sideneck photographed in Brazil. Photo © 2019 by Tomaz Nascimento de Melo

The species prefers the calm waterways of lakes, ponds, backwater streams, floodplain pools, swamps, lagoons, and oxbows along major rivers and their tributaries.

During the flood season, *P. unifilis* migrates into flooded forest areas, floodplain ponds, swamps, and lagoons. The flooding season of heavy rainfall can last from December through May, during which some rivers rise as much as 30 feet (9 meters), causing rivers to overflow their banks and flood adjacent land areas. As much as 79 inches (2,000 millimeters) of rain may fall during the flooding season.

When water levels subside during the drying season, the species migrates back to riverbeds, large lakes, and other calm, permanent bodies of water.

Diet

As an omnivore, *P. unifilis* consumes both plant and animal food items depending on various factors such as age, sex, location, and season. The species is an opportunistic feeder, which means that the composition of its diet depends on "resource availability." Their diets include fallen tree fruits, roots, seeds, floating and submerged aquatic plants, fish, carrion, and small invertebrates such as crickets, mollusks, and worms.

P. unifilis ingests mostly vegetable matter during the season of high water when it migrates to swamps, lagoons, and forest floodplains. As with many other semi-aquatic turtle species, yellow-headed sidenecks are primarily carnivorous as juveniles and tend toward herbivory as adults (Eisemberg et al., 2017).

P. unifilis also practices a form of filter-feeding called neustophagia, during which the turtle skims the water's surface to take in small, particulate food items that form the film on the surface.

A juvenile *P. unifilis* photographed in Ecuador. Photo © 2024 by Bill Levine

Reproduction

The cycle of reproduction in *P. unifilis* and the annual flooding of its Latin American waterways are related. Females nest and oviposit during the dry season to avoid the flooding of their nests, which leads to the destruction of the eggs. The timing of the dry season varies with the geographic location of the turtles' habitat.

Typically, the female lays one clutch in a single season, but occasionally two or more clutches are produced at about 10-day

A yellow-headed sideneck basking on a giant water lily (*Victoria amazonica*). The giant water lily pad can grow to 6 feet (1.8 meters) in diameter, and its blossom is the size of a dinner plate. This image was captured in Brazil. Photo © 2021 by Leonardo Merçon

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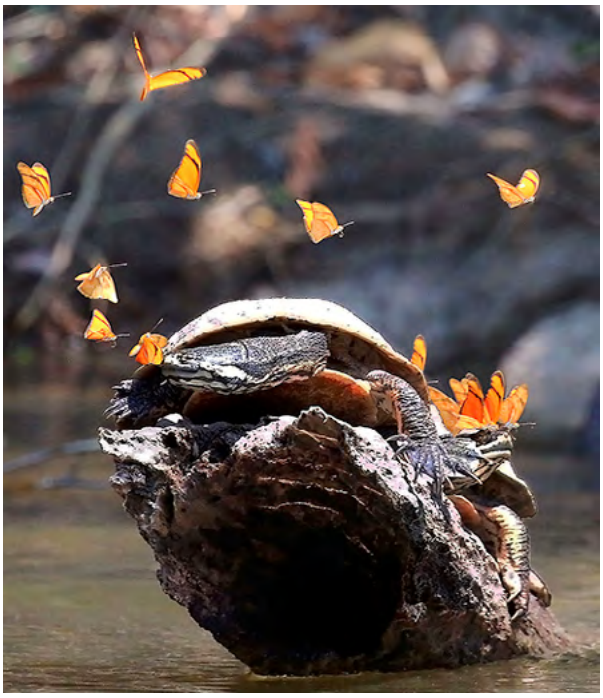
intervals. Clutch size varies considerably, ranging from 6 to 52 eggs per clutch. The body size of the female *P. unifilis* corresponds to the size of the clutch; that is, larger females produce larger clutches.

Incubation occurs for 60 to 90 days, and the eggs exhibit temperature-dependent sex determination, a type of environmental sex determination in which the incubation temperature in the nest determines whether the hatchlings are male or female. In laboratory research, incubation temperatures above 89.6° F (32° C) produce 90 to 100% females, while nest temperatures of 82.4 to 87.8° F (28 to 31° C) yield 80% males (Podocnemis unifilis, n.d.).



Basking yellow-headed sidenecks and a visiting flock of Julia butterflies (*Dryas iulia titio*) photographed in Brazil. The butterflies drink the turtles' tears because the typical butterfly diet of flower nectar lacks salt (sodium), a nutrient essential to life. **Photo © 2015 by Charles J. Sharp, Sharp Photography**

Yellow-headed sidenecks usually live solitary lives; however, they sometimes gather in groups to bask on fallen trees and rocks in their water bodies. Females often congregate to lay their eggs communally on suitable sandy or loamy river banks, similar to the communal nesting events sometimes seen in species of marine turtles. Females may also lay their eggs in floating mats of vegetation and other organic matter drifting in their water bodies. Around 80% of yellow-headed sideneck nesting occurs at night (Podocnemis unifilis, n.d.).

Butterflies and Turtle Tears

Researchers have observed an unusual phenomenon in Amazon ecosystems: Several species of butterflies routinely drink the tears of yellow-headed sidenecks and other semi-aquatic turtle species. This activity has not been observed anywhere else in the world.

A small group of yellow-headed sidenecks basks in Brazil while butterflies drink their tears. **Photo © 2019 by Peter Zivkov**

The turtles consume sodium through their omnivorous diet. They produce tears to moisten and protect their eyes from windblown irritants.

Sodium is an important mineral that is scant in the western Amazon, according to researcher Phil Torres, "lower in sodium than many places on Earth, because it is more than 1,000 miles (1,600 kilometers) from the Atlantic Ocean, a prime source of salt, and is cut off from windblown mineral particles to the west by the Andes Mountains" (Main, 2013).

Butterflies do not appear to harm the turtles because the insects only take a minuscule amount of liquid. Besides sodium, the butterflies may be getting other minerals plus amino acids, essential to the formation of proteins. The butterflies' tear-drinking activity temporarily obstructs the turtles' vision.

Bees also attempt to drink the turtles' tears, but the bees appear to annoy the turtles, perhaps due to their buzzing wings, Torres observes.

Behavior

Yellow-headed sidenecks are diurnal, meaning they are most active during daylight, specifically from mid-morning throughout the afternoon, followed by a period of sleeping or other inactivity.

Scientists describe the species as semi-aquatic, meaning that it lives partly in the water, and partly out of it. For much of their time out of water, they are basking on fallen tree trunks or rocks within the water body to thermoregulate.

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Females likely reach maturity and begin to breed at 12 inches (30 centimeters) of carapace length.

Threats

Natural predators of eggs, juveniles, and adult turtles include birds, mammals, large fish, frogs, and snakes. According to Fidenci, "in Latin America, *P. unifilis* is highly exploited." Indigenous people use the yellow-headed sidenecks for food, eating the meat and the eggs of the turtle, and they have done so for centuries. Local markets sell turtle meat and eggs, and poaching has increased of late (Fidenci, 2001).

While *P. unifilis* is widely distributed throughout its range, its populations are increasingly fragmented due to human activities such as deforestation, agriculture, and industrial and residential development. Climate change, often called climate chaos, is a serious concern, as it is altering the rainfall patterns that have historically prevailed.

Conservation Measures

In 1996, the scientists at the International Union for the Conservation of Nature (IUCN) assessed *P. unifilis* as "Vulnerable" to extinction on its Red List of Threatened Species. Data such as population sizes and trends are unavailable. The IUCN notes that the species assessment "needs updating" since the last status evaluation was 29 years ago (1996).

The Convention on International Trade in Endangered Species lists the species in Appendix II, affording it some protection from international trade threats to the species' survival.

Concerned citizens in communities within the range of *P. unifilis* are assisting conservationists in their work to rescue eggs. The species' eggs/embryos can resist short-term submersion in water for up to two days during heavy rainfall that occurs out of the typical rain season. Local residents have rescued submerged eggs and transported them to a conservation center for incubation. Over 60% of the eggs yielded live hatchlings. When their yolk scars healed, the hatchlings left the conservation center for release into their original nesting areas (Norris et al., 2020). Ω

Yellow-headed sidenecks of various sizes and ages basking in Peru. Photo © 2018 by Ted Henderson

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A CRITICALLY ENDANGERED TORTOISE ENJOYS ZOO MED GRASSLAND TORTOISE FOOD

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

Cancer is Extremely Rare in Turtles, Finds a New Study

University of Nottingham press release

Nottingham, United Kingdom—9 July 2025—A new study, led by experts at the University of Nottingham, provides the strongest evidence to date that cancer is extremely rare in turtles, a finding that could offer valuable clues for preventing or fighting cancer in humans.

While previous research had hinted that cancer might be uncommon in turtles, the new analysis, published in *BioScience*, shows that only about 1% of individuals are affected, far less than in mammals or birds. The study was led by Dr Ylenia Chiari from the School of Life Sciences at the University of Nottingham, alongside Dr Scott Glaberman from the University of Birmingham, in collaboration with a team of researchers from zoos across the US, UK, and Europe.

The team analysed medical records and necropsies (autopsies) from hundreds of zoo turtles, including individuals from Chester Zoo in the UK.

The work was only possible thanks to a global network of zoos that have spent decades keeping detailed records and collaborating to support science, highlighting the vital role zoos can play in discovery research. The findings were striking not only for the low number of cancer cases, but also because, when tumours did appear, they almost never spread.

Some turtle species grow to tremendous size. Galapagos and Aldabra giant tortoises, for example, can weigh hundreds of kilograms. Turtles are also known for their long lifespans, and many are centenarians. One radiated tortoise at Chester Zoo named Burt was born in 1945 and may live to over 100, while some Galapagos and Aldabra giant tortoises have lived beyond 150 years.

Species that are both large and long-lived are expected to face higher cancer risk, since more cells mean more opportunities for something to go wrong. But turtles seem to defy this pattern.

> *Turtles, especially iconic species like Galápagos and Aldabra giant tortoises, are famous for living long lives and growing to tremendous sizes. You'd expect that to mean more cancer, but our study, which combines decades of zoo records with previous research, shows how incredibly rare cancer is in these animals. It highlights turtles as an untapped model for understanding cancer resistance and healthy aging, and it shows the vital role zoos play in advancing science through collaboration.*
>
> — Dr Ylenia Chiari, School of Life Sciences

Why are turtles so resistant to cancer? Their secret may lie in strong defences against cell damage, slow metabolism that reduces cellular stress, and unique genes that protect against cancer. Turtles could offer valuable clues for preventing or treating cancer in humans and are a promising model for studying healthy aging and cancer resistance.

Dr Scott Glaberman added: "Biodiversity has so much to teach us about how the world works. While fascinating in their own right, extreme species like giant tortoises may have already solved many of the problems humans face, including those related to aging and cancer. That makes biodiversity doubly worthy of protection."

Dr Helena Turner, Research Officer at Chester Zoo, said: "This research underscores the immense value of zoo-based science. At Chester Zoo, we've long been committed to detailed health monitoring and the long-term care of our animals. It's fantastic to see these efforts not only contribute to advancing scientific knowledge around cancer resistance but also support vital conservation work to protect these remarkable species that may hold keys to medical breakthroughs benefiting both wildlife and humans."

Several species of turtles are classified as Endangered or Critically Endangered according to the IUCN Red List, due to different threats including pressure from climate change, habitat loss, and illegal pet trade.

Many of the zoos that contributed data to the study, including Chester Zoo, are involved in conservation breeding programmes that aim to pull species like these back from extinction. Ω

To read the original study, click this link:
Do Turtles Get Cancer?

Thanks to Yolanda Keh and Karen Berry for submission of this press release.

USGS Captive Desert Tortoise Project

By Erica Shafer

The U.S. Geological Survey (USGS) is conducting a research project on captive desert tortoises. They are looking for **captive** Mojave desert tortoises (*Gopherus agassizii*) in California, 17 years of age or older, whose exact age is known. USGS wants blood samples from these tortoises to determine if age can be distinguished from DNA methylation levels.

The information USGS gathers could play a key role in the success of the *G. agassizii* species and the more participants in the project the better.

For more information, and to take the quiz to see if your tortoise(s) qualify for this project, please visit this link:

U.S.G.S. Captive Desert Tortoise Study

When a Tortoise Leads the Way, Life Follows

Galápagos Conservancy news release

On Española, one of the most remote and emblematic islands in the Galápagos, more than 2,300 giant tortoises are once again walking across ground they had once lost. With every step, they are rewriting the story of an ecosystem that came close to collapse. Their presence benefits birds like the Galápagos albatross, other reptiles, and endemic plants, showing how the return of a single species can trigger a chain reaction of ecological recovery of an entire ecosystem. This article explores how one iconic species is clearing the way for many others to thrive.

For decades, Española was an ecosystem shaped by what was missing. The island's giant tortoises (*Chelonoidis hoodensis*), which once shaped its landscape with every step, had nearly disappeared. Their population had been decimated by intensive hunting in the 18th and 19th centuries, and their ecological role was disrupted by invasive species like feral goats, which destroyed the plant community—tortoises' source of food, water and shade. With the tortoises went more than just a species: the very dynamics that sustained life on the island were thrown off balance.

Then in the 1970's the goats were removed. With no tortoises or goats, woody vegetation grew unchecked. Open spaces vanished. Natural pathways were lost. What may have seemed like a change in plant cover was, in fact, an ecological crisis. Because in the Galápagos, no species exists in isolation. When one falls, others begin to falter.

Thanks to a decades-long effort led by the Galápagos National Park Directorate with support in the last two decades from Galápagos Conservancy, Española Island is now witnessing an exemplary restoration. More than 2,300 tortoises have been reintroduced to the island through captive breeding and a carefully managed repatriation plan. With every slow, powerful step—as they move and feed—the tortoises open corridors through dense vegetation, control overgrowth, and disperse seeds. Their very presence is reactivating the ecological processes that allow life to return to the island.

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Where a Tortoise Steps, Others Find Refuge

What tortoises do naturally —walking and foraging—has become a force for restoration. Their movement reshapes the landscape. Their diet manages plant overgrowth. And their quiet, steady presence is helping rebalance the island's ecological dynamics.

This shift has especially benefited the waved albatross (*Phoebastria irrorata*), a species that depends on open terrain to land, nest, and take flight. For years, dense thickets limited access to nesting sites, putting their reproductive cycle at risk. Now, thanks to the clearings created by tortoises, the albatross is reclaiming the space it needs to survive.

Open spaces also benefit Española's lava lizard (*Microlophus delanonis*), which now finds better conditions for hunting and thermoregulation. Even endemic plant species such as *Opuntia megasperma* var. *orientalis*, are beginning to regenerate, supported by the seed dispersal carried out by tortoises.

Restoring one species has reactivated an entire ecological network.

The Science That Sees the Connections

None of this is accidental. Every step in this process has been carefully planned and is being monitored by scientists from Galápagos Conservancy and rangers from the Galápagos National Park Directorate. Each expedition maps the distribution of tortoises, tracks changes in vegetation, and documents the return of other species. Science is confirming what nature is already showing us: restoration works when it is guided with patience and commitment.

Chelonoidis niger ssp. *hoodensis*, the "saddleback" subspecies of Galápagos giant tortoise endemic to Española Island. **Photo © 2021 by Jorge Carrión Tacuri**

"As we bring back a species like the tortoise, we're not just aiding its recovery. We're opening doors for many other forms of life that depend on the landscape it shapes," says Dr. Jorge Carrión, Director of Conservation at Galápagos Conservancy.

Dr. James Gibbs, Vice President of Science and Conservation at Galápagos Conservancy, has dedicated more than four decades to studying giant tortoises and albatrosses in the Galápagos. He explains that "watching how tortoises are helping to reopen nesting areas for albatrosses is one of the clearest demonstrations of how restoration works in practice. It is ecology in motion."

A Future That Needs Our Hands

Despite the progress, Española's ecological recovery remains fragile. What took decades to regain could be lost in a few years without constant monitoring, active presence, and sustained commitment. The island collapsed once before when it lost its tortoises. If it were to happen again, the consequences would be just more severe.

Because restoration is slow, but loss is fast; in conservation, setbacks always arrive before victories.

Today, Española is more than a site of recovery. It is proof that one species can spark the rebirth of many. It reminds us that conservation is not a symbolic act, but an urgent responsibility.

Because when a tortoise leads the way, life follows.

Not just as a survivor, but as a true ecosystem engineer—shaping the landscape, creating opportunities for other species, and guiding the path to a more resilient future for the entire island. Ω

— This news release was originally published online on 12 May 2025.

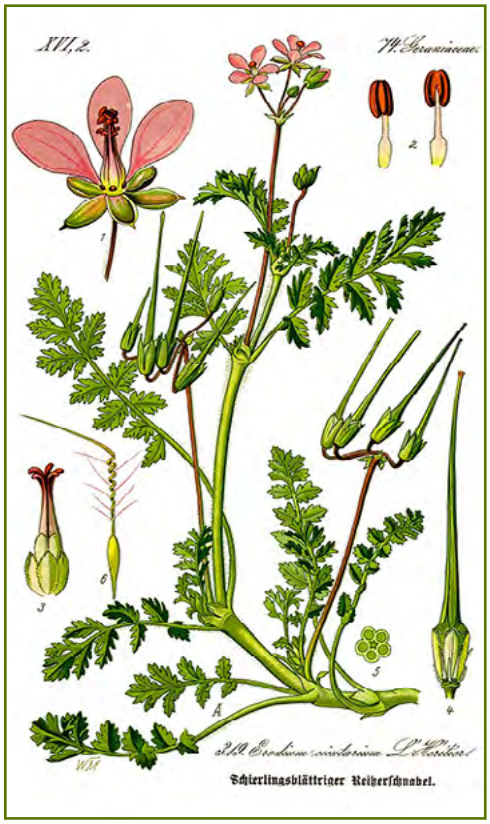
the Turtle's Garden
planting for chelonians
by M A Cohen

Erodium cicutarium
Redstem Filaree; Stork's Bill

Redstem filaree blossoms and buds photographed in Placer County, CA. Photo © 2004 by Steve Matson

Some gardeners believe that a weed is just a plant out of place. While this viewpoint may seem overly naïve or optimistic, there are ***some*** uninvited plants that appear in the garden which may be well worth cultivating. Redstem filaree is such a plant despite its reputation for being weedy and/or invasive.

Redstem filaree (*Erodium cicutarium*), a member of Geraniaceae, the geranium family, has several additional common names, including cutleaf filaree, common stork's bill, crane's bill, heron's bill, pinweed, and pinclover.



A botanical rendering of redstem filaree (*Erodium cicutarium*) from *Flora von Deutschland, Österreich und der Schweiz* published in 1885. Public domain.

E. cicutarium, native to temperate Asia, North Africa, and Europe, has become naturalized in many areas worldwide, growing in habitats ranging from desert zones to riparian areas.

Introduced "accidentally" by European explorers and missionaries to North America in the 18th century, redstem filaree now occurs in natural deserts, semi-deserts, and grasslands in the United States. It also frequently grows in disturbed areas such as roadsides, fields, pastures, rangelands, vineyards, lawns, and other cultivated places.

Description

An herbaceous, winter-growing annual, and sometimes a biennial in warm-weather regions, redstem filaree is a ground-hugging or low-growing upright plant that forms a basal rosette of finely cut leaves and a deep taproot. Its stems vary in length from 3 inches to 2 feet (8 to 61 centimeters).

The stems and leaves of *E. cicutarium* are covered with fine hairs, and the leaves are medium-green, often tinted red at their edges. Bearing groups of 2 to 10 flowers that botanists call an inflorescence, each *E. cicutarium* flower has five tiny petals that are pink to lavender and occasionally white. Blossoms appear any time from February to November, depending on the climate in which the plant grows.

Following flowering, a fruit capsule forms that contains the developing seeds. The tip of the fruit resembles the bill of a stork or a heron, hence the common names. The fruit splits apart into five individual seeds when it is ripe. Each dried, fuzzy, single-seeded fruit, known to botanists as an achene, has a long, attached 'tail' called an awn.

Redstem filaree has two methods of seed dispersal that promote its success in a variety of habitats. These seed-dispersal techniques are **explosive dispersal** and **self-burial dispersal**.

Explosive dispersal of *E. cicutarium* seeds involves the storage of energy as the fruit dehydrates. As it dries out, the awn coils tightly. This coiling action causes the

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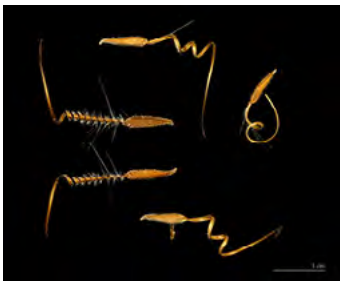
achene and awn to launch outward and travel some distance from the parent plant.

Self-burial dispersal of redstem filaree seeds involves the awn that coils as it dehydrates. As the plant completes its life cycle and dries out, individual seeds drop to the ground and may attach to the feathers, fur, or feet of passing animals. Seeds may be blown by the wind or carried away by water. If the active tissues in the coiled awn encounter soil and enough moisture, they will proceed to uncoil and recoil alternately. With sufficient moisture, this coiling action drills the achene into the soil.

◀ Unripe fruits of *E. cicutarium*. **Photo © 2017 by John Doyen**



▼ Ripened achenes (fuzzy dried fruits containing a single seed) and their coiled awns. **Photo © 2017 by Didier Descouens**

Both explosive and self-burial seed dispersal work toward the plant's successful propagation by taking advantage of favorable conditions when the seed is mature and ready for germination.

Cultivation

Redstem filaree grows best with at least six hours of full sun per day. It is adaptable to many soil types, temperatures, and climatic conditions. It requires a modest amount of water when becoming established in the garden and is drought-tolerant thereafter.

Each *E. cicutarium* plant may produce 2,000 to 10,000 seeds during its short lifetime. Propagation by seeds is a straightforward process, involving sowing the seeds in spring or fall and watering them sparingly. Fertilizer is not usually required. Pruning to remove dead or damaged stems is all that is necessary for maintaining plant health.

Edibility

While it is often an introduced species, *E. cicutarium* is an important food source for a variety of wildlife wherever it grows. It provides seasonal forage for many species, including cattle, horses, sheep, goats, game animals, and kangaroo rats. Its seeds are collected and eaten by songbirds, game birds, and harvester ants. Ranchers sometimes plant redstem filaree in their pastures as a forage for livestock.

Wild desert tortoises seek out the leaves, flowers, and fruit (immature and mature stages) of redstem filaree for their many nutritional qualities, according to a study conducted by Olav Oftedal and his research team in the Mojave Desert.

E. cicutarium has a comparatively high potassium excretion potential (PEP), which is essential for tortoise health because a high concentration of potassium is toxic to tortoises. Redstem filaree typically contains approximately 10% protein and has a low potassium content. Particularly when rainfall is sparse or absent, consuming high-PEP plants is crucial for maintaining a balance between the need for protein and moisture and the need to excrete toxic potassium.

Redstem filaree photographed in Chile, South America. **Photo © 2021 by Juergen Schrenk**

People who enjoy foraging for wild foods collect redstem filaree and eat the tender young leaves raw, steamed, or boiled as a potherb. Foragers describe the flavor of the leaves as "peppery," like parsley. When unripe, fruits are tender and enjoyable to eat, but aged fruits are inedible and sharp-tipped. Ω

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Chapter Meeting Schedule: September/October 2025

Check your chapter website for program information.

Chino Valley
September 19; October 17

Foothill
September 26; October 24

High Desert
September 8; October 13

Inland Empire
September 5; October 3

Kern County
September 8; October 13

Low Desert
Meeting information to be announced.

Orange County
September 5; October 3

Ridgecrest
September 8; October 13

Santa Barbara-Ventura
Meeting information to be announced.

Santa Clarita
Meeting information to be announced.

TOOSLO (San Luis Obispo)
September 23

TTCS (Long Beach)
September 20; October 18

Valley
September 19; October 17

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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.

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