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California Turtle & Tortoise Club

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A spiny softshell turtle, *Apalone spinifera*, photographed in habitat in Limestone County, Texas, USA. Note the prominent spiny projections on the leading edge of its carapace that give the species its common name. Photograph © 2016 by Clifton Ladd

featured species

Spiny Softshell Turtle, *Apalone spinifera* (Lesueur, 1827)

The Spiny Softshell Turtle and Its Subspecies by M. A. Cohen

The chelonian family of softshell turtles, the Trionychidae, comprises about 30 species and includes some of the world's largest freshwater and brackish water turtles. Members of the genus *Apalone* belong to the softshell turtle family. There are three species in the genus, *A. ferox* (the Florida softshell), *A. mutica* (the smooth softshell), and *A. spinifera*, the featured species in this newsletter.

Apalone spinifera is one of the most sizable freshwater turtles native to North America. The species occurs throughout the eastern and midwestern United States, extreme southern Canada, and northern Mexico. A subsequent section of this article will describe each of its six subspecies in more detail.

The genus term *Apalone* derives from the Greek word *apalos* meaning soft or tender. The species epithet *spinifera* comprises two Latin word roots, *spini-*, which means 'a spine,' and *fer-*, meaning 'to bear.'

Charles-Alexandre Lesueur (1778-1846), a naturalist and artist from France, scientifically described the spiny softshell turtle in 1827. Lesueur formally described the smooth softshell turtle, *Apalone mutica*, in the same year.

article continues on page 2 ▶

CONTENTS

The Spiny Softshell Turtle and Its Subspecies by M. A. Cohen	1
The Desert Tortoise Research Natural Area 50th Anniversary Celebration	6
Reflections: Past and Present by Dr. Kristin Berry	8
Event Announcements; Classified Advertisements	9
Mike's Turtle Net Picks By Michael J. Connor, Ph.D.	10
20 Royal Turtles Released into their Natural Habitat (in Cambodia)	11
Lawsuit Launched Over Denial of Endangered Species Protection to Gopher Tortoise	13
Meeting Schedule: May/June 2023	14

A hatchling spiny softshell turtle emerging from its egg. Image captured in Ingham County, Michigan, USA. Photo © 2014 by James H. Harding

General Description

The softshell turtle derives its common name from its unusual carapace covering, a thick, leathery hide instead of the keratinized scutes possessed by most other turtles. The carapace is keelless, circular, and flattened, the texture of the skin covering is rough like sandpaper, and its margins are pliable.

All spiny softshell subspecies are cryptically colored, meaning that they blend into their microenvironments.

Known as tubercles, the conical spiny projections on the anterior (leading) edge of the carapace distinguish the spiny softshell turtle from other *Apalone* species. Adult males tend to have more spines on the carapace than adult females.

The adult female *A. spinifera* is, on average, more than 1.6 times as large as the adult male, reaching a mature carapace length of 7 to 19 inches (18 to 48 centimeters). The male of the species attains a carapace length of 5 to 10 inches (13 to 25 centimeters) [Spiny Softshell Turtle, n.d.; Ernst and Lovich, 2009]. The tail of the male turtle is longer and thicker than the tail of the female.

The skin of the species' plastron is white or yellow, and the bones of the plastron are visible under its pale skin.

The head and limbs of the species are olive to gray and marked with dark spots or stripes. The neck of the spiny softshell is elongated, enabling the turtle to rest in shallow water and raise its snout above the surface water to breathe.

The snout of the spiny softshell is elongated and snorkel-like with large, C-shaped nostrils. Sharp jaws can deliver a painful bite. Its feet are heavily webbed, and each foot has three toes with strong, stout claws.

The carapace of hatchling spiny softshell turtles is tan to olive speckled with little black dots and ocelli (eye-shaped spots). The margin of its carapace is pale yellow. Some subspecies, including the Guadalupe spiny softshell and the Texas spiny softshell, have little white dots marking the carapace.

As they mature, male *A. spinifera* retain their juvenile coloration and markings. The carapace color of the female darkens as she ages and becomes mottled gray or brown (Daniel and Morningstar, 2019).

The skeletal components of the species' carapace and plastron are significantly reduced in size. The plastron of the spiny softshell is minimized, and its carapace has bony projections around its margin that contribute to its flexibility.

Range and Habitat

The spiny softshell is a riverine species occurring in highly oxygenated freshwater habitats like creeks, rivers, lakes, farm ponds, marshes, oxbows, reservoirs, streams, and some of the bays located in the

Spiny softshell skeleton on display at the Smithsonian National Museum of Natural History Note the reduced bone structure of the carapace and plastron. Photo © 2005 by David J. Stang

article continues on page 3 ▶

Great Lakes. The various subspecies inhabit regions of North America from southern Canada southward through the United States to northern Mexico.

Established, reproducing populations of spiny softshell turtles occur outside the species' native range in Arizona, California, Massachusetts, New Jersey, New Mexico, Nevada, Utah, and Hawaii. These introduced animals are likely the descendants of animals released from captivity (Daniel and Morningstar, 2019). Populations of the species occur in northeastern Mexico in Chihuahua, Coahuila, Tamaulipas, and Nuevo León, and elsewhere.

The species prefers large bodies of water with sandy, gravelly, or muddy bottoms and some vegetation (Bartholomew, 2008). Spiny softshell turtles also tolerate brackish (slightly salty) water ecosystems.

A. spinifera requires suitable basking areas in or very near the water in order to thermoregulate. When no basking spot is available, the turtle will bask by floating on the surface water.

Feeding

A spiny softshell turtle in a hunting position camouflaged by the sandy bottom of its waterbody. Photographed in Illinois, USA. **Photo © 2011 by Todd Pierson**

A primarily carnivorous turtle, *A. spinifera* consumes various food items, including aquatic insects and their larvae, clams, crayfish, earthworms, fishes, frogs, tadpoles, snails, and small snakes.

It ingests some vegetation, sometimes deliberately and also by accident. The spiny softshell consumes plant life, including acorns, leaves, and other plant material (Ernst and Lovich, 2009).

Behavior

A. spinifera rarely strays far from water and can remain submerged for extended periods (20 to 50 minutes) because of its ability to absorb oxygen from the water through its skin (Daniel and Morningstar, 2019; Ernst and Lovich, 2009).

The spiny softshell is a diurnal species that spends its days basking on logs, rocks, snags, sandbars, or riverbanks, foraging for food, and seeking mates. It hunts for prey under submerged stones, on the river bottom, and in aquatic vegetation.

The turtle also has a passive hunting technique: it conceals itself in the sand or mud at the bottom of the lake and leaves only its head exposed, waiting in this position to ambush unsuspecting prey that happens to swim by.

A. spinifera is typically active in most of its range from April through October. In the warm southern sections of its territory, the spiny softshell remains active throughout the year. In the cold northern portions of its range, the species may spend as long as six months of the year in dormancy, buried in the mud or sand on the bottom of its river or lake.

The spiny softshell is extremely wary and will seek shelter in response to any perceived disturbance. The species is quite aggressive, difficult to approach, dangerous to handle, and moves swiftly on land and water. It is quick to defend itself against threats by biting and scratching using its lengthy neck, sharp jaws, and stout claws.

Image © 2018 by Cephas

Reproduction

A. spinifera typically reaches reproductive age between 8 and 10 years and mates in mid to late spring. Estimates of clutch size vary from 3 to 39 eggs. Females nest as close to the water as possible, primarily in June and July (Ernst and Lovich, 2009).

Female spiny softshells may lay two clutches per season. Eggs incubate for around 80 days and usually hatch in August or September although, in the northern reaches of their range, hatchlings may overwinter in the nest and emerge the following spring (Bartholomew, 2008).

Subspecies

Biologists and taxonomists (classification specialists) recognize five to seven subspecies of spiny softshell turtles depending on the authority consulted. The differences between subspecies can be subtle, and sometimes geographical location is the only clue to a positive identification.

article continues on page 4 ▶

A Gulf Coast spiny softshell turtle photographed in Mississippi, USA. Photo © 2016 by Grover J. Brown

Gulf Coast spiny softshell turtle, *Apalone spinifera* subspecies (ssp.) *aspera*

The Gulf Coast spiny softshell inhabits south central North Carolina southward through South Carolina and westward through Alabama to Mississippi and southeastern Louisiana. Its range includes the Florida panhandle but not peninsular Florida.

Texas spiny softshell turtle, *Apalone spinifera* ssp. *emoryi*

A Texas spiny softshell turtle photographed in Texas. Photo © 2018 by Tim Guida

The Texas spiny softshell inhabits the Rio Grande and Pecos Rivers and their tributaries in Texas and New Mexico, the lower Rio Grande Valley in Texas, and northern Mexico. There are also established populations in parts of Arizona, California, New Mexico, Nevada, Utah, and Baja California. In California the subspecies was first introduced via the Colorado River, and its range extends as far north as the Coachella Valley in California (Texas Spiny Softshell-Apalone Spinifera Emoryi, n.d.).

Guadalupe spiny softshell turtle, *Apalone spinifera* ssp. *guadalupensis*

The Guadalupe spiny softshell, recognized as a separate species in 1962, occupies a comparatively small range that includes the Nueces and Gualalupe-San Antonio Rivers and their tributaries in south-central Texas.

Pallid spiny softshell turtle, *Apalone spinifera* ssp. *pallida*

The pallid spiny softshell turtle occurs west of the Mississippi River from central and western Louisiana westward to southern Oklahoma and the Texas panhandle, south of the Red River watershed in east Texas, and west and south in the Brazos River watershed.

A pallid spiny softshell turtle photographed in Texas. Photo © 2015 by Kala Murphy King

Northern or eastern spiny softshell turtle, *Apalone spinifera* ssp. *spinifera*

The northern or eastern spiny softshell turtle has the most extensive range of any *spinifera* subspecies. It occurs from Quebec and Ontario in southern Canada southward throughout much of the United States to the northeastern Mexican states of Coahuila, Chihuahua, Nuevo León, and Tamaulipas.

A northern spiny softshell turtle in profile. Photo © 2005 by salamaderdance

A Guadalupe spiny softshell turtle photographed in Texas. Photo © 2023 by Dylan Nguyen

At one time, spiny softshell turtles found west of the Mississippi River were known as Western spiny softshells, *A. s hartwegi*. However, this term is currently considered an inactive taxon (classification).

Threats

While they are generally considered stable, populations of spiny softshell are threatened by several anthropogenic (human-caused) activities. Habitat alteration, degradation, and destruction have rendered many ecosystems unlivable for the spiny softshell.

Agricultural and household chemicals that leach into waterways cause toxic pollution in environments that formerly supported populations of the species.

Foxes, raccoons, and skunks destroy spiny softshell nests to consume the eggs. Predatory fishes, herons, raccoons, and other turtles like the common snapping turtle (*Chelydra serpentina*) prey on hatchling and juvenile spiny softshells. People and alligators hunt *A. spinifera* for food in some areas (Batholomew, 2008; Ernst and Lovich, 2009).

Conservation

Because their populations are generally considered stable, *A. spinifera* subspecies have no listing protective listings under the En-

article continues on page 5 ▶

dangered Species Act or the IUCN Red List. CITES recently added *A. spinifera* to Appendix III. Some legal protection exists at the state level for subspecies inhabiting North Carolina, South Dakota, Vermont, and Virginia. Turtles living within protected areas such as parklands and nature preserves also receive some protection through the safety of their ecosystems.

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Spiny softshell turtle photographed in Alabama. Photo © 2005 by karenandphilip

Galápagos Conservancy News

Reviving the Española Tortoise: A Key Step in Galápagos Island's Ecological Restoration

Repatriation of Española giant tortoises. Photo by the Galápagos National Park Service.

11 April 2023—On March 28th, *Iniciativa Galápagos* [Galápagos Initiative] successfully repatriated 86 juvenile Española Giant Tortoises (*Chelonoidis hoodensis*) from the Fausto Llerena Breeding Center on Santa Cruz Island to a new site in central-southern Española Island. This is a crucial step in the ecological restoration of the island, led by Galápagos Conservancy and the Galápagos National Park Directorate (GNPD).

The repopulation of Española with tortoises helps to reestablish different ecological processes on the island, including the nesting of the endemic Waved Albatross [*Phoebastria irrorata*]. The tortoises' corpulent bodies and limitless appetites clear woody vegetation from areas that albatrosses use as runways to take off and land, which is vital for their nesting. The release of the juvenile tortoises will accelerate their dispersal throughout the habitable areas of the island, thus contributing to the maintenance of the island's health and ecological integrity.

The Española Giant Tortoise is one of the 15 endemic Giant Tortoise species of the Galápagos Islands. In 1960, the species was on the brink of extinction, with only 15 individuals remaining. However, the implementation of the captive breeding and rearing program has significantly recovered the population. The first release of *C. hoodensis* tortoises in Española took place in 1972, and in June 2021, reproductive adults were released after *Iniciativa Galápagos* scientists confirmed that approximately 3,000 tortoises currently inhabit the island, with very good natural reproduction. Approximately 250 offspring remain in captivity until they reach the appropriate age for repatriation.

Danny Rueda, Director of the Galápagos National Park, stated: "The conservation efforts implemented by the National Government in synergy with its strategic allies have been fundamental to carrying out successful ecological restoration programs such as this one. The work of this captive breeding program for more than six decades, combined with the management actions implemented on the island, gives us the reassurance that we have managed to save a species that would have otherwise gone extinct."

Giant Tortoises are the main herbivores in Galápagos and play a vital role as ecosystem engineers. Their contribution to maintaining the health and ecological integrity of the Islands is invaluable, which is why Galápagos Conservancy is dedicated to restoring Giant Tortoise populations across the Archipelago.

DTRNA 50th Anniversary Celebration

Text by Desert Tortoise Preserve Committee President Ron Berger
Photographs by Tom Astle Photography

On a beautiful, crisp sunny Saturday, March 25, 2023, a group of over 130 gathered at the site of the Desert Tortoise Research Natural Area (DTRNA) in California City, California. They were there to celebrate the 50th "Golden" Anniversary of the establishment of the preserve and to bask in the incredible accomplishment it truly has become.

Some 10 staff, management, and volunteers arrived from the Bureau of Land Management (BLM) Ridgecrest Field Office, and were joined by a dozen volunteers from the Desert Tortoise Preserve Committee (DTPC) in setting up a hundred chairs, tents, tables, a lectern, speakers and so forth. At a brisk 38 degrees many visitors began their day walking the nature trails.

By 10 AM, when DTPC President Ron Berger began a series of presentations, the temperature had climbed into the high 40's and was quite comfortable under the bright sun.

The crowd was treated to presentations by DTRNA and DTPC founder Dr. Kristin Berry, by Tom Bickauskas, Branch Manager of the Ridgecrest Field Office of the BLM, by Dr. Kristina Drake, Recovery Coordinator, Desert Tortoise Recovery Office, U. S. Fish and Wildlife Service, by Randy Banis, President of Friends of Jawbone, Ed LaRue of the Desert Tortoise Council, Sophia Markowska, Senior California Representative, Defenders of Wildlife, Robert Parker, President, Ridgecrest Chapter of the California Turtle and Tortoise Club, and more.

Ron Berger concluded his remarks by announcing that the DTPC Board, in honor of the event, was offering to match all contributions to the team's Permanent Endowment received in April up to $50,000.

A fun time was had by all.

▲ DTPC Board left to right: Ron Berger, President; Rachel Woodard, Secretary; Kristin Berry, Founder; Greg Lathrop, Finance Committee Chair; Larry Nelson, Director; Bob Wood, Retired Director; Roger Dale, Director; Jun Lee, Interim Executive Director.

▲ Dr. Kristin Berry, founder of the Desert Tortoise Preserve Committee and the Desert Tortoise Research Natural Area.

▲ Guests enjoying a walk on a DTRNA nature trail.

▲ Guests welcome one of the presenters at the event.

article continues on page 7 ▶

◀ Jun Lee (left), DTPC Interim Executive Director and Director of Land Acquisitions, and Ron Berger (right), president of DTPC. Mr. Lee holds a plaque that DTPC presented to U. S. Senator Dianne Feinstein in recognition of her invaluable contributions to California desert preservation.

▲ Tom Bickauskas, Branch Manager of the Ridgecrest Field Office of the Bureau of Land Management.

▲ Dr. Kristina Drake, Recovery Coordinator, Desert Tortoise Recovery Office, US Fish & Wildlife Service.

▲ Robert Parker, founding member and president of the California Turtle & Tortoise Club's Ridgecrest chapter. Mr. Parker brought several captive Mojave desert tortoises for display at the event.

▲ Sophia Markowska, Senior California Representative, Defenders of Wildlife.

▲ Randy Banis, President of Friends of Jawbone

▲ Inge Elmes, the Off-Highway Vehicle manager and Acting City Manager of California City, CA.

▲ Ed LaRue of the Desert Tortoise Council.

Reflections: Past and Present

Remarks presented by Dr. Kristin H. Berry at the
DTRNA 50th Anniversary Celebration on 25 March 2023

Dr. Kristin H. Berry. Photo by Tom Astle Photography.

In 1971, the Division of Highways (later Caltrans) asked me to help move tortoises from the path of construction for widening of Highway 58. They were not interested in fencing. To determine where to place the translocated tortoises, I reviewed land ownership patterns in the western Mojave Desert, where tortoises were then quite common. I was surprised and disappointed to learn that no area was free of sheep and cattle grazing, mining, and off-road vehicle recreation.

I followed by asking the major land administrator, the U.S. Bureau of Land Management (BLM), specifically Lou Boll, District Manager for this part of the desert and the State Director, J. R. Penny, to establish a preserve for the desert tortoise in the western Mojave Desert, free of livestock grazing, mining, and off-road use. With the support of academicians, non-profit organizations, and individual citizens, the BLM placed a desert tortoise preserve in a 1973 management plan for recreation vehicles.

After that success with the BLM, I started the Desert Tortoise Preserve Committee with several like-minded people and we continued to press forward with proposals for protective fencing, land acquisition of inholdings, and facilities for visitor enjoyment and education. That objective was met partially in 1980, with the formal Congressional designation of a fenced Desert Tortoise Research Natural Area, a place without sheep grazing, vehicle use, and mining.

This is truly a wonderful area, on the far western edge of the Mojave Desert, an area where desert meets the floras of the Sierra Nevada, southern Central Valley, Great Basin, northern and western Mojave, an area that will persist for a long time because of higher rainfall patterns compared with some other parts of critical habitat for the tortoise.

The DTRNA stands as a showcase for continuing government and non-profit partnerships and a success in conserving wildlife habitat, tortoises, and other species. It is also a showcase for studies and research, for students seeking masters and doctoral degrees, and post-doc research.

Here, several critical issues were identified and addressed: Tom Campbell identified hyper-predation of raven populations more than 40 years ago. Upper respiratory tract disease was first observed, and Drs. Elliot Jacobson and Mary Brown followed by identifying 2 species of *Mycoplasma*. The discovery of this disease set in motion the first research on health of desert tortoises and epidemiology of disease.

Dr. Ken Nagy, who is here today, and his students (Brian Henen, Chuck Peter Peterson, and Ian Wallis) accomplished remarkable work with Dr. Mary Christopher, research that set a pattern for turtles across the globe. Research comparing abundance of lizard, bird, small mammals, plants, and seed banks inside and outside the protective fence were undertaken by Dr. Matt Brooks, and preferences of tortoises for specific plant species by Dr. Bryan Jennings.

My publications and the papers of Matt Brooks have shown that fencing is essential in this part of the desert to protect wildlife habitat, tortoises, and other species from human activities. We found that densities of adults inside the Natural Area were on an improving trend compared with 2002, after the epidemic of upper respiratory tract disease, and that densities inside were 2.5 times higher than outside. Importantly, densities of adults were 2.3 to 5.5 times higher than in 16 of the 17 TCAs or critical habitat units within the geographic range.

I want to recognize Peter Woodman, who worked here 50 years ago and Tim Shields' efforts on the surveys beginning in 1979, Laura Stockton, whose most recent accomplishment was leadership on the new panels for the kiosk. For Jun Lee's long persistence of >30 years in management, real estate, and legal matters, Roger Dale for many years of service and for returning, Greg Lathrop for his foresight to establish an endowment, Ron Berger, who has served many years as President, and I could go on to tell you about Rachel Woodard, Larry Nelson, Steve and Marlene Ishii, Becky Jones, Ed LaRue, Jane McEwan, and so many others.

Some of the finest people I know are associated with the Committee and have provided support over the years. That could be said for BLM employees too. Each of us has gained immeasurably through the relationships and being here. Mercy Vaughan wrote last week that being a Naturalist in 1993 set her on a path to focus on global conservation efforts for chelonians.

Lastly this place helps to renew one's spirit, to see the beauties of the desert and the views. Here, regardless of time of year, is to think of improving tortoise populations, the paper Mary Logan, a former Preserve Manager, published on the Mohave ground squirrel, the outstanding work of Denise La Berteaux and her finding of the Barstow woolly sunflower, a

article continues on page 9 ▶

CTTC Valley Chapter

Turtle & Tortoise Show

Saturday, May 20, 2023

11:00 AM ~ 4:00 PM

Woodland Hills Christian Church
5920 Shoup Avenue, Woodland Hills, CA 91367

- Live turtles and tortoises
- Information on adoptions, care, and conservation
- Tortuga Gift Shop
- Raffle
- 'Ask the Vet' booth

For more information, contact:

Show Chair: Karen Berry
theflyingturtle1953@gmail.com

Co-Chair: 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

Turtle & Tortoise Show

Saturday, May 20, 2023

10:00 am to 3:00 pm

at

First Christian Church of Orange

1130 East Walnut

Orange, CA

Live Turtles & Tortoises!

Husbandry and Adoption Information
Turtle-Related Goods for Sale
Bring your turtle/tortoise to be microchipped ($25)

California Turtle & Tortoise Club, Orange County Chapter

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

Classified Advertisements

Classified advertisements run for one issue at $5[00] for up to four lines. Ads are accepted at the discretion of the Editor. Classified ads are available to members and subscribers only and are run as a service to our members. California Turtle & Tortoise Club is not responsible for merchandise placed for sale in the *Tortuga Gazette*.

Please make your check payable to the California Turtle & Tortoise Club.

Please send ad fee to: CTTC Tortuga Gazette, attn Treasurer, P. O. Box 7300, Van Nuys, CA 91409-7300. Mail fee with ad copy to the *Tortuga Gazette* mailing address; OR, mail fee to the postal address above, and email the ad copy to the Gazette Editor.

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FOR SALE: Young Leopard tortoises for sale. Approximate age is 6 months. $75[00] each. Contact Richard Roosman: richardinwalnutpark@msn.com

CTTC Kern County Chapter at the CALM Zoo on 20-21 May 2023

The Kern County Chapter of the California Turtle and Tortoise Club (KCTTC) will participate in a community-outreach event at the CALM Zoo in Bakersfield. It will take place on May 20 and 21. The chapter will bring live tortoises, and there will be information on tortoise care and adoption and KCTTC membership.

The California Living Museum Zoo, known locally as the CALM Zoo, is celebrating its 40th Birthday this year. According to its website, the Zoo is located "in the foothills above Bakersfield [and is] dedicated to showcasing California's native species and to the successful rehabilitation of wildlife." The address of the CALM Zoo is 10500 Alfred Harrell Hwy, Bakersfield, CA 93306.

For more information, send an email to the Kern County Chapter: KernCTTC@tortoise.org

species sought for so long by Mary Ann Henry, and yes Robert Henry, your mother was so close to locating it, but nevertheless provided some fine herbarium specimens on other species. I miss her very much.

It is also a time of reflecting on 50 years ago, when I could stand in one place and see 8 tortoises at a time and to hope that future generations may have similar experiences. It is a time to reflect on the accomplishments of many naturalists and scientists, the enduring support of the BLM, and the effects the DTRNA has had on us.

Mike's Turtle Net Picks by Michael J. Connor, Ph.D.

A varied selection of recent articles, stories and sites on the Web that some of you may find as interesting as I did.
This list is also posted at **tortoise.org/turtlenetpicks/turtlenetpicks.html**

Industrial Solar Energy Development Takes it Toll on Desert Tortoises

"Must we drive species to extinction when so many good alternatives are out there?"

Red Cliffs Raven Program

The Washington County Habitat Conservation Plan's conservation committee is going after ravens.

Gopher Tortoise Listing Suit

Conservation groups intend to sue the U.S. Fish and Wildlife Service over its decision not to list the imperiled gopher tortoise as endangered or threatened in Florida, Georgia, South Carolina and eastern Alabama.

Española Tortoise Release

The Galápagos National Park and Conservancy are releasing the last cohort of captive-bred *Chelonoidis hoodensis* on their home island.

Aldabra Tortoises Return to Jersey Zoo

Aldabra tortoises Biggie, Twiggy, Mike and Helen have emerged from quarantine after arriving from Bristol Zoo in November.

Box Turtle Trafficker Pleads Guilty

A Louisa, Virginia man pleaded guilty in federal court to trafficking eastern box turtles he illegally collected from the wild and sold on Facebook to buyers in California, Colorado, Florida, Maryland, New Jersey, Ohio, Texas and Wisconsin.

Return of the Southwestern Snake Necks

Interesting photographs of young southwestern snake neck turtles being returned to their pond at a state soccer center in Perth.

Moon Bathing (!) by Tropical Turtles

Cameras in 25 locations across Australia, Belize, Germany, India, Seychelles, Senegal, Trinidad and Tobago, the USA, and South Africa recorded 13 tropical turtle species basking in moonlight.

2023 SWOT Report

The 18th State of the World's Sea Turtles (SWOT) Report is available for free download.

Mass Nesting of Olive Ridley at Odisha, India

The mass-nesting of Olive Ridley turtles occurred at Odisha's Gahirmatha marine sanctuary between March 9 and 13 during which around 5,12,175 eggs were laid.

Field-based Adipose Tissue Quantification in Sea Turtles

Exciting, new high-tech "fat" measuring method to monitor how nutritional and health status link to environmental stress and disease in sea turtles.

Nearby Environment Influences Recreational Bycatch of Sea Turtles at Fishing Piers

Bycatch at fishing piers in the eastern Gulf of Mexico is a source of injury and potential mortality of sea turtles that can be minimized with more careful planning.

The Secret Life of Baby Sea Turtles

A new surveillance system to predict hatchling emergence, detect infertile nests, and remotely monitor sea turtle nest events.

CTTC's Turtle and Tortoise Listserve

To engage with other turtle and tortoise fans in a friendly atmosphere join CTTC's Turtle and Tortoise list or send an email to: <**CTTC-TurtleAndTortoise-list+subscribe@groups.io**>.

CTTC On Facebook

For breaking news updates follow CTTC on Facebook!

Southwestern Snake-necked turtle, *Chelodina oblonga*, photographed in habitat in Western Australia. Photo © 2013 by Grover J. Brown

20 Royal Turtles Released Into Their Natural Habitat

Wildlife Conservation Society press release

Sre Ambel, Cambodia—23 March 2023—The Wildlife Conservation Society (WCS), in collaboration with Mandai Nature and the Fisheries Administration (FiA) of the Ministry of Agriculture, Forestry, and Fisheries (MAFF), released 20 critically endangered Royal Turtles into the Sre Ambel River system in Koh Kong Province's Sre Ambel district.

As they are globally known, the Southern River Terrapins (*Batagur affinis*) were gathered from their nests along the Sre Ambel and Kampong Leu Rivers in Koh Kong and Preah Sihanouk provinces between 2006 and 2015. They were then sent to the Koh Kong Reptile Conservation Center, where they were cared for and prepared for life in the wild, according to WCS Landscape Project Manager Som Sitha.

The 20 turtles, consisting of 10 females and 10 males, are between 5 and 16 years old. Each turtle was implanted with a microchip, and an acoustic transmitter was attached to its marginal scute, allowing the conservation team to monitor and track their movements through the river system.

Mr. Ouk Vibol, Director of the Fisheries Conservation Department at the Fisheries Administration, said, "The collaboration between local authorities, communities, and the Wildlife Conservation Society (WCS) in their efforts to conserve our critically endangered turtles in natural water bodies." He added, "The Sre Ambel River System and its surrounding riparian forest are protected under Prakas No. 133, issued by the Ministry of Agriculture, Forestry, and Fisheries (MAFF) in 2019, which makes cutting, clearing, and grabbing of this habitat illegal. Mr. Vibol also called on local residents to avoid capturing and trading this important species.

As one of the long-standing supporters of this conservation project, Dr Sonja Luz, CEO of Mandai Nature, congratulated the WCS team on achieving yet another conservation milestone with the essential support of local authorities and communities. She said, "The ongoing releases of these Critically Endangered turtles into their native habitat demonstrates the importance of ex situ management in species protection and collaborative efforts between the various stakeholders. Together with strong involvement and commitment from various stakeholders, we are hopeful that the turtles' population can soon thrive in the wild."

The Royal Turtle, among the world's 25 most endangered tortoises and freshwater turtles, is listed as Critically Endangered on the IUCN Red List.* It was designated as Cambodia's National Reptile by a Royal Decree in 2005. The species was believed to be extinct until 2000, when a small population was rediscovered in the Sre Ambel River by the FiA and WCS.

Since then, WCS and FiA have been working together to protect the species from extinction through various conservation activities, including a nest protection program, head-starting of young turtles, law enforcement, research and monitoring, prevention of illegal trade, and outreach and livelihood support. The species, however, still faces significant threats, such as sand dredging, illegal fishing, overexploitation, and habitat loss due to land grabbing and forest clearance along waterways.

*According to the International Union for the Conservation of Nature, the Southern River Terrapin (*Batagur affinis*) is Critically Endangered because it is exploited for its flesh and its large eggs, and is threatened by habitat destruction, sand mining, and construction of hydropower plants.

A Buddhist monk assists with the release of an endangered Royal Turtle, *Batagur affinis*, into the Sre Ambel river system in Cambodia. Image provided for media use. Photo © 2023 by Wildlife Conservation Society

The turtle release is a component of the Royal Turtle Conservation project, supported by our long-term conservation partner Mandai Nature, the European Union's Partners Against Wildlife Crime, US Forest Service, US Fish and Wildlife Service, Rainforest Trust, United States Forest Service, Allan & Patricia Koval Foundation, USAID Feed the Future, and Turtle Survival Alliance. The project is implemented by WCS in partnership with the Fisheries Administration (FiA).

This release marks the culmination of over two decades of turtle nest protection, head-starting young turtles at the Koh Kong Reptile Conservation Centre, and community-based protection efforts in the Sre Ambel River, funded by the donors mentioned above. Since 2015, this is the seventh release of Royal Turtles into the Sre Ambel River system, bringing the total number of turtles reintroduced to the wild to 167.

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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

Lawsuit Launched Over Denial of Endangered Species Protection to Gopher Tortoise

Tortoise Threatened by Habitat Destruction, Fragmentation Across Southeast

St. Petersburg, Florida—22 March 2023—The Center for Biological Diversity and Nokuse Education, Inc. filed a formal notice today of their intent to sue the U.S. Fish and Wildlife Service for denying Endangered Species Act protections to the eastern population of gopher tortoises (*Gopherus polyphemus*). The decision left the beleaguered reptiles without lifesaving federal safeguards in Florida, Georgia, South Carolina and most of Alabama.

The Service denied protections in 2022 despite originally finding in 2011 that the tortoise warranted protections — and despite its own projections of staggering range-wide population declines over the next 80 years. By 2100 nearly three-quarters of the remaining gopher tortoise populations will be lost, the Service projects.

"Without lifesaving Endangered Species Act protection for our gopher tortoises, urban sprawl will keep driving them ever closer to extinction," said attorney Elise Bennett, Florida director at the Center. "That's bad news for the tortoise and for hundreds of other southeastern species who rely on them to thrive, from the threatened indigo snake to the wild and weird gopher tortoise shell moth."

Gopher tortoises have shovel-like front legs and strong, thick back legs

Gopher tortoise photographed in habitat in Florida. Photo © 2013 by Damon Tighe

that help them dig intricate burrows, which are relied upon by more than 360 other species. Gopher tortoise burrows are considered key features in the large, unfragmented upland ecosystems these communities of wild animals need to survive.

"We are committed to the conservation of the gopher tortoise, and to fulfill that commitment we must challenge the Fish and Wildlife Service's flawed protection decision," said Matthew Aresco, board member at Nokuse Education Inc. "Without stronger regulation and protection under the Endangered Species Act, gopher tortoise populations and their habitat will continue to decline."

Gopher tortoises have already lost 97% of the longleaf pine savannas they historically inhabited and continue to be severely threatened by habitat loss and fragmentation driven by urbanization. This limits food availability and options for burrow sites, which exposes them to being crushed in their burrows during construction, run over by cars or senselessly attacked by people. Tortoises are also threatened by disease, invasive species like fire ants, and climate change.

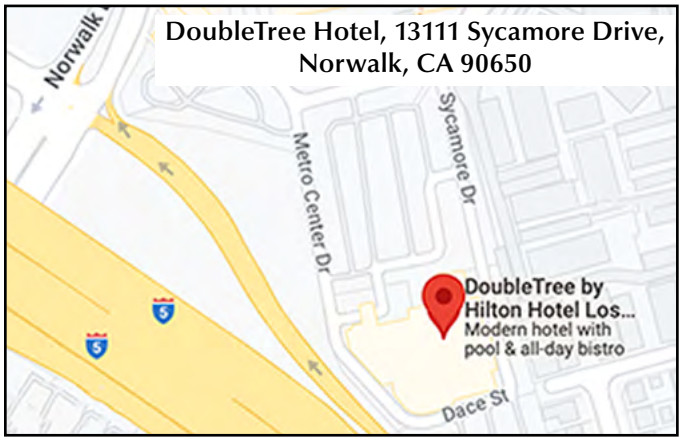
Some states have implemented limited protections for gopher tortoises, but those have not stopped or reversed the species' ongoing decline.

Florida requires that most tortoises be relocated out of the way of development, but the state does not protect tortoise habitat, meaning tortoises are being squeezed into increasingly smaller areas of available habitat. This reality, combined with booming development, has led to shortages of suitable places to put relocated tortoises.

Gopher tortoises in limited parts of Louisiana, Mississippi and western Alabama continue to be protected under the Endangered Species Act. Those in eastern Alabama, Florida, Georgia and South Carolina have been waiting for federal protection since 1982.

—Center for Biological Diversity press release

For more information about the gopher tortoise, visit this website: Gopher Tortoise Council



July and October 2023 CTTC EBoard Meetings

The next two hybrid meetings of the CTTC Executive Board, on July 8 and October 14, will be at the DoubleTree Hotel in Norwalk, CA due to construction at the Los Angeles Arboretum. The meetings will also be virtual via Zoom.

This will also be the location of the **CTTC 60th Anniversary Celebration** that will take place on **13 April 2024.**

The 60th Anniversary event is in the planning stages now. When details are finalized, they will be posted in this newsletter and on the tortoise.org website.

Meeting Schedule: May/June 2023

Click on your Chapter's website link for the latest program information which is posted as it becomes available.

Chino Valley
May 19; June 16

Foothill
May 12; June 9

High Desert
May 8; June 9

Inland Empire
May 5; June 2

Kern County
May 8; June 12

Low Desert
Meeting information to be announced.

Orange County
May 5; June 2

Ridgecrest
May 8; June 12

Santa Barbara-Ventura
Meeting information to be announced.

Santa Clarita
Meeting information to be announced.

TOOSLO (San Luis Obispo)
Contact the chapter for meeting information.

TTCS (Long Beach)
May 20; June 17

Valley
May 19; June 16

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

CTTC 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

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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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Memberships and Renewals

Each chapter handles its own memberships and 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.