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A Travancore tortoise. *Indotestudo travancorica*, photographed in the Aalliyar Reserve Forest, located in the State of Tamil Nadu in South India. **Photo © 2015 by Harikrishnan S.**

featured species

Travancore tortoise, *Indotestudo travancorica* (Boulenger 1907)

The Travancore Tortoise of the Western Ghats by M. A. Cohen

One of eight global World Heritage Sites designated by the United Nations Educational, Scientific and Cultural Organization, the Western Ghats is a chain of mountains that runs parallel to the west coast of peninsular India. Biologists studying the Western Ghats know it as a biodiversity hotspot in southwestern India that "contain(s) more than 30 per cent of all plant, fish, herpetofauna, bird, and mammal species found in India" (Western Ghats Region [2007]).

For those unfamiliar with the word, "herpetofauna" is a zoological term referring to the reptiles and amphibians of a

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given region. One of the herpetofauna species that is endemic to the Western Ghats, the Travancore tortoise (*Indotestudo travancorica*), one of three recognized species in the genus *Indotestudo*.

George Albert Boulenger (1858–1937), a Belgian-British zoologist and botanist, scientifically described and named the Travancore tortoise (*I. travancorica*) in 1907. Its common name refers to the Travancore royal family that ruled the region to which it is native from 1729 until 1949. Soon thereafter the territory became the modern Indian state of Kerala.

The other two members of the *Indotestudo* genus are Forsten's tortoise (*I. forsteni)*, and the elongated tortoise (*I. elongata*). In the chelonian community some disagreement exists because, while some researchers use the species name *travancoria*, others contend that the Travancore tortoise is best classified as a member of the species *I. forsteni*.

Some scientists believe that Forsten's tortoise is an introduced Travancore tortoise that has genetically evolved. Molecular variation studies of the *Indotestudo* complex are ongoing and are may well settle the argument by confirming the relationship of these currently recognized species (McDougal and Castellano, 1996).

Juvenile Travancore tortoise. Photo by Sandeep Das. Public domain.

Chelonian researchers describe all three *Indotestudo* species as "Asian forest tortoises." The Travancore tortoise is native to southwestern India, Forsten's tortoise occurs on the Indonesian islands of Sulawesi and Halmahera, and the elongated tortoise occurs in various nations in Southeast Asia. Some researchers believe it is endemic to northeastern India, but this is open to dispute.

Because it is not well-studied in habitat, comparatively little is known about the Travancore tortoise in the wild. Chelonian scientists conducting studies of the species in habitat find it to be a challenging study subject because the tortoise is elusive by nature, superbly camouflaged in habitat, and has an excellent sense of hearing (Lenin, 2020).

Although it is fairly rare in captivity, much of what is currently known about the tortoise, particularly about its reproductive activities, is based on observations of captive animals.

There are no recognized subspecies of the Travancore tortoise.

Description

While *I. travancorica* resembles *I. elongata* to a remarkable degree, the two species are **not** sympatric, that is, they do not occur in the same geographical area. The Travancore tortoise occurs only in southwestern

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India, however, the elongated tortoise is primarily native to Southeast Asia and possibly occurs only in northeastern India. Therefore the geographic location of a given individual is a reliable indicator of its species.

Indotestudo travancorica photographed in habitat in the Anamalai Wildlife Reserve. **Photo © 2020 by Daniel V. Raju**

A member of the Testudinidae family of tortoises, the Travancore tortoise is a medium- to large-sized species growing to a carapace length of 13 inches (33 centimeters) with an elongated, moderately flattened shape. The coloration of the carapace, typically brown scutes with irregular black blotches, provides camouflage that enables the tortoises to blend well with the leaf litter (the decomposing leaves) on the forest floors in their ecosystems. The hatchling emerges from its egg with a carapace that is brown and nearly spherical in shape.

The species' plastron coloration is similar to that of the carapace: each scute is brown marked with a large, irregular black patch.

The head of *I. travancorica* is cream or pale yellow with the skin around the eyes and snout tinged with pink in both male and female tortoises. A deeper pink coloration appears on the head of adult males during courtship and mating. The head of the female also shows a slightly more pink tint. Local researcher Madhuri Ramesh observes that during mating season males develop large pink circles around their eyes that look "like badly applied make up" (Lenin, 2020).

Displaying moderate sexual dimorphism, the species' male has a plastron that is noticeably more concave than that of the female. His "tail ends in a claw-like, curved spur". The female's plastron is comparatively flat, and her tail terminates in a small, conical, keratinized tip (Mital, 2020).

Range and Habitat

Native to the Western Ghats mountain range, the Travancore tortoise ranges through the Indian states of Karnataka, Kerala, and Tamil Nadu in southwestern India at elevations of 328 to 3,281 feet (100 to 1,000 meters) above sea level. The type locality is near Trivandrum, Travancore Hills, (Mital, 2020).

According to Madhuri Ramesh, *I. travancorica* prefers the microhabitats near "brook beds, stream banks, and swamps" (Lenin, 2020) in "evergreen, semi-evergreen, moist deciduous and bamboo forests" within its range. It also inhabits teak and rubber plantations (Mital, 2020). Using cover types such as lantana shrubs, bamboo thickets, underneath grasses, fallen logs, lianas, inside tree holes, rock holes, and termite hill burrows makes detection of tortoises for study difficult (Vasudevan, et al., 2010).

Although the species is sometimes described as diurnal (active in daytime) rather than nocturnal (active at night), the Travancore tortoise is in actuality crepuscular, that is, it emerges from hiding at twilight to forage in the "dull light" of late afternoon which offers some protection from predation (Lenin, 2020).

Reproduction

Most chelonian species are subject to environmental, also known as temperature-dependent, sex determination. The simplified definition of the term is that the temperature in the nest during the incubation of the eggs determines whether the eggs develop as males, females or a combination of both.

Conversely, a few chelonian species produce their young by combining male and female gametes, a process known in biology as sexual reproduction. This is the means by which the offspring of *I. travancorica* develop.

Mating typically occurs during the monsoon season from

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November to January, but probably takes place at other times as well. Reported clutch sizes vary from one to six eggs, laid in forest leaf litter or in shallow depressions on the soil surface (McDougal and Castellano, 1996).

Travancore tortoise photographed near the village of Kakkabe in the Western Ghats mountains of Karnataka, India. **Photo © 2020 by Manoj Christopher**

Foods and Feeding

Frequently described as herbivorous, *I. travancorica* is actually an omnivore, consuming a variety of food items. Some 45% of the species' diet consists of the leaves and fallen fruits of herbaceous trees and shrubs, as well as grasses, mushrooms, and young bamboo shoots.

In addition, the Travancore tortoise consumes animal fare such as insects, millipedes, molluscs (snails and slugs), worms, and occasionally scavenged carrion.

After analyzing fecal samples from the species, researchers found substantial numbers of intact seeds, thus surmising that the Travancore tortoise plays a role in seed dispersal of grasses and herbaceous plants within its range.

Threats

According to local residents, the greatest threats to the Travancore tortoise are forest fires and subsistence hunting for food by local tribes in portions of its range (Kanagavel & Raghavan, 2012). Furthermore, habitat alteration, fragmentation, and destruction pose serious threats to tortoise populations from hydroelectric reservoirs, logging operations, and crop agriculture (Mital, 2020).

Conservation

Although it was once termed a common species within its range, researchers now describe its population trend as decreasing, primarily due to the aforementioned subsistence hunting combined with various other threats.

National and international legal protection measures and designations have been implemented with regard to *I. travancorica*. The Wildlife Protection Act, enacted in India in 1972, lists the Travancore tortoise as Schedule IV, affording the species a moderate amount of protection. Listed as 'Vulnerable' by the IUCN Redlist of Threatened Species, the Asian Turtle Working Group notes that the 1992 evaluation "needs updating."

The Convention on International Trade in Endangered Species lists the Travancore tortoises as Appendix II, meaning that it may be traded internationally if accompanied by the appropriate permits.

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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

BLM Withdraws Decision Allowing Grazing in California Area Protected for Desert Tortoises — Center for Biological Diversity press release

San Francisco, California—15 September 2021—An appeal by environmental groups forced the U.S. Bureau of Land Management late Tuesday to withdraw its decision allowing cattle grazing on public lands near California's Mojave Desert. The area had been deemed permanently off limits to grazing under an earlier agreement to protect the federally threatened desert tortoise and other sensitive plants and animals.

"It's shocking that we were forced to file an appeal to enforce a permanent retirement of grazing privileges," said Ileene Anderson, a senior scientist at the Center for Biological Diversity. "The BLM was right to withdraw this unlawful decision. The plants and animals that depend on the fragile Mojave Desert for their survival need protection now more than ever."

The appeal, filed in late August by the Western Watersheds Project, Center for Biological Diversity and Wilderness Watch, challenged the decision to allow cattle to cross a public lands grazing allotment on the Mojave Desert side of the southern Sierra Nevada mountains — a biodiverse area where the arid desert meets the rugged Sierras. An industrial-scale solar developer had purchased and retired the grazing privileges to mitigate potential harm to sensitive species, including federally protected Mojave desert tortoises, from solar developments elsewhere in the desert.

Mojave desert tortoise, *Gopherus agassizii*. Photo courtesy of the United States Fish and Wildlife Service. Public domain.

"This grazing-trailing permit threw into question the durability of conservation agreements on public lands," said Laura Cunningham, California director at Western Watersheds Project. "The imperiled desert tortoise needs all the help it can get as the species continues its decline. Closing grazing allotments for conservation purposes is one good way to improve habitat for this keystone species of the California desert."

Tuesday's BLM action prevents any cattle grazing or trailing on the permanently retired allotment and protects these sensitive lands, including BLM-designated areas of critical environmental concern and California Desert national conservation lands.

The Kawaiisu Tribe identified several traditional resource-gathering sites, ceremonial locations and religious places within the area. The West Mojave endemic plant Kelso Creek monkeyflower (*Erythranthe shevockii*) has nearly its entire range within the area of critical environmental concern. Herds of cattle, and associated new water troughs on existing roads, would harm the Bright Star Wilderness Area on the arid lower slopes of the southern Sierra Nevada mountains.

"I'm often asked whether I believe in global warming. I now just reply with the question: Do you believe in gravity?"

— Neil deGrasse Tyson (b. 1958), American astrophysicist

Lawsuit Targets Federal OK of Off-Road Routes, Grazing Threatening Imperiled Species in California Deserts

San Francisco, California—16 September 2021—Environmental groups sued the Interior Department, U.S. Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service today for authorizing damaging activities in the California Desert Conservation Area, including a vast network of off-road vehicle routes in the West Mojave Desert. The routes are driving desert tortoises and other threatened and endangered species closer to extinction and destroying these protected public lands.

"The fragile plants and animals rely on federal officials to protect them from grazing, off-road vehicles and other damage to their homes in these beautiful deserts," said Ileene Anderson, a senior scientist at the Center for Biological Diversity (CBD). "It's heartbreaking to see our public lands torn up by a massive network of dirt routes that fragment habitat and destroy sensitive desert ecosystems while the agencies do nothing to stop it. We're hopeful a judge will force federal officials to do their jobs and safeguard these rare, vulnerable wildlife that depend on California's deserts to survive."

Today's complaint — filed by the Center for Biological Diversity, Desert Survivors, Sierra Club, California Native Plant Society, Defenders of Wildlife and Desert Tortoise Council — says the federal agencies failed to adequately consider potential environmental damage beforeapproving the West Mojave Route Network Project and plan amendments in 2019.

Headshot of *Gopherus agassizi*, the Mojave desert tortoise. Photo by Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service. Public domain.

The agencies also failed to protect endangered and threatened species and their habitats and ignored federal laws requiring that damage to public lands from off-road vehicle routes be minimized.

"Changes in management are necessary to prevent further declines in the critically endangered desert tortoise," said Terry Frewin of the Sierra Club. "The BLM's abdication of legal requirements and Fish and Wildlife Service's failure to use the best available science have set up an unnecessary crisis for these species already teetering on the brink of extinction."

The lawsuit also challenges the Fish and Wildlife Service's biological opinion for the West Mojave Route Network Project and plan amendments, which are replete with inaccuracies and ignore important scientific information. For example, the biological opinion ignores the severe ongoing declines in density and abundance of desert tortoise populations and doesn't consider ways to help the tortoise recover and thrive.

"The BLM and U.S. Fish and Wildlife Service must formally recognize the rapidly declining status of the desert tortoise in the West Mojave and proactively protect residual populations, not provide for more unrestricted recreational vehicle opportunities in fragile desert tortoise habitats," said Ed LaRue of the Desert Tortoise Council.

In March 2020 the Desert Tortoise Council, Defenders of Wildlife and the Desert Tortoise Preserve Committee submitted a petition to the California Fish and Game Commission to upgrade the Mojave desert tortoises state listing from threatened to endangered status. The commission is scheduled to vote on the petition in October.

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Wild Mojave desert tortoise, *Gopherus agassizii*, photographed in Joshua Tree National Park by Renata Harrison of the National Park Service. Public domain.

Under the West Mojave plan, the BLM approved more than 6,000 miles of dirt routes for off-road vehicle use (approximately one-quarter of the way around the Earth's circumference) across 3 million acres. The desert tortoise population has now declined to unsustainable levels in the western Mojave Desert, in large part because of direct and indirect impacts from off-road vehicles.

"Public agencies need to be held accountable for their management decisions, especially when those decisions impact already sensitive ecosystems and species on the brink of extinction," said Nick Jensen, conservation program director for the California Native Plant Society. "The BLM's land management actions in the western Mojave could mean the difference between losing imperiled species like the Lane Mountain milk vetch forever or preserving them for generations to come. We hope that the BLM does right by the species and habitats under its care."

Off-road vehicle use and cattle grazing allowed under the West Mojave plan and the new plan amendments threaten other critically endangered plants and animals, including two rare plants (the Lane Mountain milk-vetch and triple-ribbed milk-vetch), three birds (the least Bell's vireo, southwestern willow flycatcher and yellow-billed cuckoo) and the arroyo toad.

Plan amendments adopted as part of the 2019 decision cover the entire California Desert Conservation Area, and could harm other listed species including the Peninsular bighorn sheep, a critically endangered marsh bird called the Yuma Ridgway's rail, and one of the world's most critically endangered mammals — the endangered Amargosa vole.

"The BLM and FWS have put threatened desert tortoises in a precarious situation. With 95% of the species' population lost since congressional establishment of the California Desert Conservation Area in 1976, tortoise populations are so small they can't sustain themselves and are on a path to extinction, especially in the West Mojave," said Jeff Aardahl, senior California representative with Defenders of Wildlife. "Yet the BLM approved increased off-road vehicle use and continued livestock grazing, and the FWS granted BLM authorization to kill up to eight desert tortoises annually for the next five years due to being crushed by off-highway vehicle use on public lands."

The groups filing today's lawsuit are represented by the Stanford Environmental Law Clinic and the Center for Biological Diversity.

— Center for Biological Diversity press release

Wishing our Members, Readers, and their Families a Joyous Holiday Season and a Safe and Healthy New Year

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FOR SALE: Radiated tortoise hatched November 2020. $1100^{.00}$, CA residents only. Burmese Star Tortoises hatched January 2021. $750^{.00}$. Send email to **degatti@sbcglobal.net**

Thank you, Abigail DeSesa

The *Tortuga Gazette* team would like to express our gratitude to Abigail DeSesa for her many years of service as the Distribution Manager of the newsletter mailing list. Throughout her tenure Abigail has been a conscientious, dependable, efficient, and enthusiastic member of the *Gazette* team.

The California Turtle & Tortoise Club owes Abigail its deep appreciation for her diligence and proficiency as Distribution Manager. While we sincerely regret her departure, we wish her every success as she moves on to her future projects and endeavors.

Victory! California Protects Leatherback Sea Turtles as Endangered

Sacramento, California — 14 October 2021 — The California Fish and Game Commission unanimously voted today to protect leatherback sea turtles (*Dermochelys coriacea*) as endangered under the state's Endangered Species Act. The commission acted on the recommendation of the California Department of Fish and Wildlife (CDFW), which is concerned by the turtles' dramatic decline in state waters.

"Leatherbacks that forage for jellyfish off the California coast will now receive greater protection in our state from entanglement in fishing gear, giving them a better chance at survival," said Todd Steiner, executive director of Turtle Island Restoration Network. "We are hopeful this action will put these ancient, gentle giants on a path to recovery."

Scientists estimate that leatherback sea turtles have declined in abundance off California by 5.6% annually over nearly 30 years. An estimated 50 Pacific leatherbacks now forage in California waters annually, as compared to 178 Pacific leatherbacks during the years 1990–2003. Whale-watching trips observed three leatherback sea turtles in August 2020 in Monterey Bay.

"California's action will make an outsized difference for leatherback sea turtles, even in the face of global threats like the loss of nesting beaches," said Catherine Kilduff, an attorney at the Center for Biological Diversity. "Protecting the state's ocean to save leatherbacks benefits not only sea turtles, but whales and people too. The California Endangered Species Act will ensure that leatherbacks' decline gets the attention it deserves during this global biodiversity crisis."

Protecting leatherbacks under the California Endangered Species Act would make them a state conservation priority. Despite the lack of regular monitoring of state fisheries, leatherback sea turtles have been found tangled in commercial rock crab gear (in 2019) and Dungeness crab gear (in 2015 and 2016).

In June 2020 the CDFW determined that increased protections may be warranted and began the status review. The action came in response to a petition from Turtle Island Restoration Network and the Center for Biological Diversity.

A federal review of leatherback sea turtle science last year concluded that West Pacific leatherbacks, one of seven distinct populations of leatherback sea turtles worldwide, face a high extinction risk. The National Marine Fisheries Service and U.S. Fish and Wildlife Service found that all seven leatherback sea turtle populations remain endangered and denied a petition by the commercial fishing industry to relax some protections.

In 2013, the California legislature designated the Pacific leatherback sea turtle as the state marine reptile and October 15 as California's official Pacific Leatherback Sea Turtle Conservation Day.

—Turtle Island Restoration Network press release

Dr. Shailendra Singh Honored with the 16th Annual Behler Turtle Conservation Award — Turtle Survival Alliance news release written by Jordan Gray

Charleston, South Carolina — 31 August 2021 —The Turtle Survival Alliance, IUCN/SSC Tortoise and Freshwater Turtle Specialist Group, Turtle Conservancy, and Turtle Conservation Fund today announced Dr. Shailendra (Shai) Singh of India as the recipient of the 16th Annual Behler Turtle Conservation Award. This "Nobel Prize" of turtle conservation honors excellence, outstanding contributions, and leadership in the international turtle conservation and biology communities.

In 2008, Shai was named to lead the Turtle Survival Alliance (TSA) / Wildlife Conservation Society (WCS) India turtle program. In the 13 years since, he has expanded the TSA India Program to include research, conservation, assurance colony building, community engagement, and outreach as well as developing alternative livelihoods, working to convert poachers, and creating wildlife trafficking response programs. Working in four priority Indian turtle conservation areas, the program now protects 18 of India's 29 turtle and tortoise species, several of them regarded as Critically Endangered. For some species, such as the Red-crowned Roofed Turtle (*Batagur kachuga*), Northern River Terrapin (*Batagur baska*), and Black Softshell Turtle (*Nilssonia nigricans*), Dr. Singh and his team's efforts are the last hope for their wild survival in the country.

"In just 15 years, there are few individuals that have made such monumental contributions to turtle conservation as Shailendra Singh. He and his team's efforts now span much of India, impacting well over half of its turtle and tortoise species, many of which are among the most endangered turtles on the planet," said Rick Hudson, President of Turtle Survival Alliance. "While it may take decades to witness the full impact of Shai's commitment, his name and legacy have become synonymous with Indian turtle conservation."

Dr. Singh's rapid rise to the forefront of Indian turtle conservation began in 2005 when a program in its infancy—then a collaboration between TSA and Madras Crocodile Bank Trust and Centre for Herpetology—hired the recent Master of Science graduate to perform research on crocodilians and turtles. There, Shai began the Chambal River turtle conservation program, which focused on restoring the dwindling population of Red-crowned Roofed Turtle in its last remaining stronghold, the National Chambal Sanctuary. Building on this program, Shai went on to receive his PhD, studying the reproductive ecology of the Red-crowned and Three-striped (*Batagur dhongoka*) roofed turtles in the Chambal. In recognition of his accomplishments, in 2008, he became the first Indian to be named a Conservation Hero by the Disney Conservation Fund. Dr. Singh was named Director of the TSA India Program in the same year.

"I am greatly honored and humbled to receive the Behler Turtle Conservation Award. Never did I imagine that a fascination with a small Indian Tent Turtle in my youth would evolve to leading the most comprehensive country program of the Turtle Survival Alliance," said Shailendra Singh, Director of TSA India Program. "None of what I have accomplished though would be possible without the dedication and support of staff and volunteers, professional and peer advisors, and generous donors and collaborators, past and present. This award embodies all that they have given toward ensuring a wild future for turtles in India."

The Behler Turtle Conservation Award was established in 2006 to recognize outstanding achievements, contributions, and leadership excellence in international turtle conservation and biology. The award honors and commemorates the memory and legacy of the late John L. Behler, former Curator of Herpetology at the Bronx Zoo, Wildlife Conservation Society, New York. The annual awardee is determined through a broad-based nomination and selection process overseen by the Behler Award Committee. The Behler Turtle Conservation Award carries an honorarium of $5000

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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**

Feds Considering More Big Solar in Desert Tortoise Habitat
Bureau of Land Management is considering turning over another 26,000 acres of Nevada's Mojave Desert to industrial solar.

Feds Tasked for Ignoring Desert Tortoise Conservation Needs
Richard Spotts opines that agency officials who should know better have put the needs of developers and speculators above desert tortoise conservation in facilitating approval of the Northern Corridor Highway through supposedly "protected" habitat in Red Cliffs National Conservation Area.

Giants of the Galápagos
The London Zoo opened its new giant tortoise habitat with a tortoise walkover.

Aldabra Tortoise Kills and Consumes a Noddy Tern
Video footage of a giant tortoise on Fregate Island chasing down an injured Noddy. (The article is pay-walled but the video is open access.)

Head-starting Western Pond Turtles
Oregon Zoo takes in 23 locally hatched Western Pond turtles.

Rough-footed Mud Turtle Conservation in the US
The rarely seen rough-footed mud turtle, *Kinosternon hirtipes*, is one of the rarest US turtles.

Depressed Turtles in Trouble
Poaching is threatening the Arakan forest turtle, *Heosemys depressa*, in western Myanmar.

Outbreak of Turtle Bunyavirus in Florida
Turtle bunyavirus (TBV) is infecting and killing wild cooters, softshell turtles, yellow-bellied sliders and red-eared sliders.

California Lists Leatherback Sea Turtles as Endangered
California has added the leatherback sea turtle to the state's endangered species list.

Loggerhead Sea Turtles Moving North?
Nine loggerhead sea turtles hatched on a beach in Jesolo near Venice marking the northernmost hatching known for this species.

Loggerheads Are Also Going West!
The most western Mediterranean nesting of a loggerhead sea turtle was recorded in 2020 on a public beach in Malaga, Spain.

Barnacles Surf Turtle Shells
Biologists find that barnacles attached to sea turtle shells are not immobile after all and videotape them moving up to 8 centimeters per year.

New NOAA Oil Spill Response Guidance
The National Oceanic and Atmospheric Administration has released Oil and Sea Turtles, a new oil spill response guidance document.

African Sea Turtle Newsletter
Latest issue now available.

Wildlife Videos
Relax and watch some fantastic, award-winning shorts at the 22nd Annual San Diego Undersea Film Exhibition.

CTTC's Turtle And Tortoise Listserve
To talk 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**>.

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and is widely considered the "Nobel Prize" of turtle conservation and biology.

The Behler Turtle Conservation Award is co-presented by the Turtle Survival Alliance, IUCN/SSC Tortoise and Freshwater Turtle Specialist Group, Turtle Conservancy, and the Turtle Conservation Fund, and is co-sponsored by Re:wild, Wildlife Conservation Society, Chelonian Research Foundation, Surprise Spring Foundation, Andrew Sabin Family Foundation, George Meyer and Maria Semple, Brett Stearns, and Deborah Behler.

The northern river terrapin, *Batagur baska*. **Photo © 2004 by animoy**

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

Centaurea cyanus
Cornflower, Bachelor's Button

Cornflower blossom, *Centaurea cyanus*. **Photo © 2019 by Zoya Akulova**

A member of one of the world's largest plant families, *Centaurea cyanus* belongs to the Asteraceae or Compositae, the aster or daisy family. Commonly known as the cornflower, bachelor's button, or bluebottle, among other common names, *C. cyanus* is an herbaceous flowering annual.

The term "annual" in horticulture refers to a plant that completes its life cycle, growing vegetatively and flowering, in a single growing season. Popular in cottage gardens and containers, the cornflower is used as a cut flower, and it also has edible and medicinal properties.

A plant originating in what is now Europe, the species has history dating back to ancient Greek civilization. The English-language common name 'cornflower' refers to the fact that, prior to the widespread use of herbicides, the species often grew wild in agricultural fields of corn, rye, wheat, barley, etc. (Rai, 2012).

In folklore, a young man wore a cornflower blossom in his lapel as a symbol of love for his beloved, hence the common name 'bachelor's button.' However, according to the lore, if the flower faded quickly, this was an indication that affection was not returned (Rai, 2012).

Centaurea portrait: a close-up of the cornflower florets, the small flowers comprising the composite cornflower blossom. **Photo © 2018 by Terry Lucas**

While the cornflower is endemic to the temperate climates in Europe, it has now naturalized along roadsides and in fields, and it also grows in garden settings in many parts of the world.

Description

A slender flowering annual with an erect growth habit, the cornflower plant reaches a mature height of 12 to 36 inches (30 to 90 centimeters) with a spread of 6 inches to 12 inches (15 to 30 centimeters).

Bearing composite flowerheads comprised of small flowers known in botany as florets, the original (species) cornflower blossom is blue in color that are borne on tall, thin stalks. Flowers are typically 1.5 inches (3.8 centimeters) across. Botanists have bred *C. cyanus* cultivars with blossoms in colors ranging from white to shades of blue, lavender, pink, red, and maroon. Blooming season typically occurs from late spring to late summer (Centaurea cyanus [Cornflower], 2021).

Medium green to silver gray in color, the lance-shaped cornflower leaves are 2 to 3 inches (5 to 8 centimeters) in length and 1 inch (2.5 centimeters) in

article concludes on page 13 ▶

Ripened fruit of the cornflower plant.
Photo 2013 by SergeyBogatov R

width with sparse to moderate woolly hairs. If given enough room, approximately 12 inches (30 centimeters), *C. cyanus* will form branches (NC Cooperative Extension Service).

The cornflower bears small fruits less than 1 inch (2.5 centimeters) in both width and length described as "finely hairy, straw-colored at maturity with a tuft of short, stiff, light brown bristles at the tip" (NC Cooperative Extension Service).

Cultivation

Provided its basic needs are met, the cornflower is low maintenance and easy to grow. Although it will grow in partial shade, two to six hours a day, the species prefers full sun for six or more hours a day (NC Cooperative Extension Service).

Even though its growth habit is initially columnar and upright, the taller varieties of cornflower tend to flop over as they mature unless they have some type of support. Purchased wire or wooden supports or seasoned prunings from trees and shrubs will serve well as supports.

Tolerating a variety of soil textures, including those that are nutritionally poor, *C. centaurea* must have good drainage for healthy growth. Even though the cornflower puts up with poor soil, it does best in a soil with ample humus, that is, organic matter. While it will tolerate some drought, moist conditions promote the best appearance in the cornflower.

Deadheading, the consistent removal of spent flowers, prolongs the flowering of the plant. *C. centaurea* reseeds freely, so deadheading is recommended to keep it from wearing out its welcome. On the other hand,

A trio of cornflower blossoms in a variety of colors. Photo by Hepion. Public domain.

birds use its seeds for food, so allowing some spent flowers to go to seed is desirable for feeding the wildlife (NC Cooperative Extension Service).

Widely used in cottage gardens, *C. cyanus* is also recommended for meadow plantings, flower beds and borders, containers, and it is often included in so-called "wildflower" seed mixes. The cornflower is an excellent cut flower in floral arrangements, and it retains its color when prepared as a dried flower.

Cornflower and Wildlife

Attractive to pollinators, beneficial insects, and other species of wildlife, the cornflower provides food and pollen to many types of insects and birds.

Cornflower nectar is quite high in sugar, and hummingbirds will frequent the blossoms to fulfill their nearly insatiable need for high quality nectar. Bees, butterflies, moths, true flies, and other pollinators often visit blooming cornflowers, as do ladybugs and other beneficial insects. Various birds, especially finches, feed on the seeds that develop inside the fruit of the plant.

Edibility

Both the young shoots and the flowers of *C. cyanus* are considered edible and are used in human cuisine. The petals of the florets, described as having a "slightly spicy, clove-like flavour with a subtle sweetness," can be used raw or cooked in salads and as a vegetable and a garnish. Flowerbuds contain vitamins B and C, calcium, and other nutrients (Edible Wild Food, 2021).

References

Centaurea cyanus (Cornflower). (2021). https://www.gardenia.net/plant/centaurea-cyanus-cornflower

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Ian Brown and Albert the Tortoise Take on the Sofa Cushion Challenge

By Carrie Hernandez

Albert the Greek tortoise and Ian Brown the author.

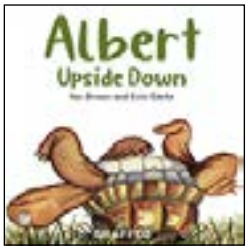
Ian Brown, London-based author of the "Albert the Tortoise" children's picture book series, published by Graffeg, recently took a sofa dive. All the coins found were donated to the Valley Chapter of the California Turtle and Tortoise Club's "Sick and Injured Tortoise Fund." Afterwards, Brown made a video explaining the Sofa Cushion Challenge (ScC), showed the fruits of his own search and then challenged all his fans to do the same. To view his video, please click the following link: **https://www.youtube.com/watch?v=umHMzZCYSQU**

Originally proposed by a member of the Valley Chapter of the California Turtle and Tortoise Club (CTTC), the ScC is a way to raise funds for the many sick and injured tortoises that are surrendered to the chapter. Once treated and recuperated, these tortoises are adopted out to new homes as are countless other healthy surrendered animals each year. You can learn more about CTTC's turtle and tortoise adoption program **here**

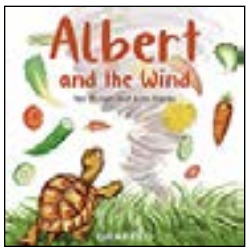
Albert the Tortoise is now a Sofa Cushion Challenge ambassador. In fact, though, there are two Alberts. One is a picture book character. The other is an actual Greek tortoise, also named Albert, who was rescued by Brown's wife over 50 years ago. "She found him abandoned near her family home as a little girl," Brown said. "He lived there until about 12 years ago when we took him on."

Brown's books, illustrated by Eoin Clarke, feature picture-book Albert getting into scrapes and being helped by his friends who must learn to work together if they are to save the day.

Book 1, titled *ALBERT UPSIDE DOWN,* was released earlier this year to five-star reviews and a host of high-profile testimonials.



Book 2, *ALBERT AND THE WIND,* has just been published.



These books are available in UK bookstores as well as internationally online.

"I've always written," Brown said. "For 30 years I wrote for TV. But all the while, I was trying to get different books published. After my mum died, I did a lot of walking and thinking. One day the idea about Albert hit me. He does genuinely sometimes go upside down and sometimes on blustery days his food blows away.

"I was already working with Eoin Clarke on an animation project. He agreed to do some images for Albert. After a few more years of pitching and fine-tunings, the publishers at Graffeg took the books and Albert on."

Brown was formerly a journalist and is now a TV writer and producer. His body of work includes The South Bank Show, This Is Your Life, Top Gear, and more. He has written or produced for Harrison Ford, Pierce Brosnan, Simon Cowell, George Lucas, Liam Neeson, Martin Scorsese, Jamie Oliver, Homer Simpson and YouTubers Joe Sugg and Caspar Lee among others. Nevertheless, the *ALBERT THE TORTOISE* series is his first foray into writing picture books for children.

Links to visit

Albert's website:
AlbertTortoise.com

Sold by Book Depository:
Albert Upside Down
Albert and the Wind
Real Albert 2022 calendar

Sofa Cushion Challenge

Sick and Injured Turtle/Tortoise Fund Donations:
GoFundMe

Galápagos Conservancy News

Outrage at Massacre of Giant Tortoises in Galápagos — *Galápagos Conservancy press release*

13 October 2021 — Galápagos Conservancy has received news of the shocking discovery of the remains of 15 tortoises slaughtered in the wild in southern Isabela Island. The tortoises were found by rangers of the Galápagos National Park Directorate on patrol in a remote area of Sierra Negra Volcano. Most of the tortoises encountered had been killed at an undetermined time, but two were freshly killed.

The disturbing news follows on another report this year of 185 small tortoises found on March 29, 2021, in a suitcase at the Baltra Island airport being trafficked to the mainland for sale, as well as earlier reports: in 2018, 123 juvenile tortoises were stolen from the Giant Tortoise Breeding Center on Isabela Island, and in 2017, 29 were taken from the same facility, some of which were later recovered in Piura, Perú. Together, these events could be evidence that Galápagos is becoming increasingly ensnared in the global wildlife trade, which takes a particularly heavy toll on turtle and tortoise species around the world.

That tortoises are still killed and trafficked from the Galápagos comes as a surprise to many. The highly imperiled state of tortoises today on southern Isabela Island, caused by the historic destruction of tortoise populations by whalers and early colonists, has been difficult to reverse because poaching continues. While only a few local residents still kill tortoises, local demand for tortoise meat and other tortoise products has escalated. With few tortoises remaining on the primary volcano affected – Sierra Negra, which once hosted the largest of all populations in Galápagos – this ongoing killing poses a major threat to the species' continued existence.

Over the last decade, Galápagos Conservancy has been dedicated to providing critical resources and assistance as requested by local authorities trying to bring a halt to the network of local hunters and buyers of tortoises, tortoise meat, and other tortoise products for local consumption or global export.

The Galápagos National Park Directorate, together with Galápagos Conservancy and the residents of Galápagos, have achieved a remarkable history of success in protecting and restoring tortoise populations throughout the Archipelago. However, these latest discoveries show that it is more urgent than ever to end the killing and trafficking of Giant Tortoises before they undermine the long-term trajectory of tortoise recovery. Galápagos Conservancy is stepping up our efforts to support the Galápagos National Park Directorate to find those responsible and end this despicable activity, forever.

Climate Change Killed 14% of the World's Coral Reefs in the Last Decade

6 October 2021 — According to a new report, 14% of the world's coral was lost in the past decade (2009–2018) due to warming sea surface waters caused by climate change.

As a result of warmer water temperature, corals were subject to "bleach," a process that occurs when the algae that live in coral are expelled. These beneficial algae provide coral they live in with food, as well as its beautiful color.

Corals are more than just beautiful to look at. The new report estimated the decline of coral reefs threatens millions of people who rely on them for food, jobs and protection. Coral are also behind $2.7 trillion a year in goods and services, including $36 billion in tourism.

Sometimes bleached coral recovers and these underwater ecosystems have bounced back in the past, leaving some hope for the future. According to the scientists, this means the world can still rescue much of the planet's coral if it steps in fast enough to curb emissions.

"We are running out of time: we can reverse losses, but we have to act now," said Inger Andersen, the head of the United Nations Environment Program.

— Turtle Island Restoration Network news release

For more information, click **Coral Reef Study**

November/December Meeting Schedule

Chino Valley
19 November; 10 December. In-person meetings at the Chino Girl Scout House.

Foothill
Contact the chapter for meeting information.

High Desert
8 November; 13 December. In-person meetings at Hillcrest Medical Building in Victorville until further notice.

Inland Empire
5 November; 3 December. Hybrid meetings in-person and via Zoom.

Kern County
8 November; 13 December via Zoom.

Low Desert
Paused in-person meetings until it is safe to gather.

Orange County
5 November; 3 December. In-person meetings at the First Christian Church of Orange.

Ridgecrest
8 November; 13 December. In-person meetings outdoors at the Maturango Museum.

Santa Barbara-Ventura
Contact the chapter for meeting information.

Santa Clarita
Meeting information to be announced.

TOOSLO (San Luis Obispo)
Paused activities due to pandemic restrictions.

TTCS (Long Beach)
20 November; 18 December. In-person meetings at St. Gregory's Episcopal Church.

Valley
19 November; [24 December ?] via Zoom.

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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19th century Japanese porcelain Sencha teapot in the form of a long-tailed turtle. Public domain.

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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 Chapter Mailing Addresses

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

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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: P O Box 15953, Long Beach, CA 90815

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