Dedicated to Turtle & Tortoise Conservation, Preservation, and Education Since 1964

California Turtle & Tortoise Club

the Tortuga Gazette

Volume 57, Number 2 • March/April 2021

The recently discovered female *Rafetus swinhoei*, caught and released in Viet Nam. Photo by WCS Viet Nam.

featured species

Swinhoe's softshell turtle, *Rafetus swinhoei* (Gray, 1973)

World's Most Endangered Turtle Gets Some Good News In 2020

▶ Scientists release genetic results confirming a female turtle captured in October 2020 in Viet Nam is definitively the near extinct Swinhoe's softshell turtle (*Rafetus swinhoei*) – also known as the Yangtze giant softshell turtle and Hoan Kiem turtle.

▶ Discovery means at least one male and one female are now known to exist.

▶ Viet Nam Government leading this effort to prevent extinction of the Swinhoe's softshell turtle, along with ATP/IMC, WCS and other partners.

Ha Noi, Viet Nam — 18 December 2020 — The Ha Noi Department of Agriculture and Rural Development, in collaboration with the Asian Turtle Program (ATP) of Indo-Myanmar Conservation (IMC) and the Wildlife Conservation Society (WCS) have made dramatic progress to possibly prevent the extinction of Swinhoe's softshell turtle (*Rafetus swinhoei*) also known as the Yangtze giant softshell turtle or Hoan Kiem turtle. At a workshop here today, scientists revealed that genetic testing has confirmed a female turtle captured on October 22, 2020

article continues on page 2 ▶

CONTENTS

World's Most Endangered Turtle Gets Some Good News In 2020 – WCS news release	1
Mike's Turtle Net Picks by Michael J. Connor, Ph.D. Turtle Excluder Devices	6
Feds to be Sued for Weakening Sea Turtle Protection	7
The Turtle's Garden: Desert Honeysuckle (*Anisacanthus thurberi*)	8
Desert Tortoise Preserve Committee Seeks Volunteers by Ron Berger	10
U.C. Exotics Teams Treats 61-Year-Old Tortoise	12
First Expedition to Monitor the Giant Tortoise Population of Alcedo Volcano Begins	13

in Dong Mo Lake is definitively a Swinhoe's softshell turtle.

This confirmation means there is now one known male Swinhoe's softshell turtle at Suzhou Zoo in China; and now the female captured in October 2020 in Dong Mo lake, Ha Noi, Viet Nam. Authorities believe there is at least one more of these turtles in Dong Mo Lake and another in nearby Xuan Khanh Lake. Conservationists hope to capture and determine the sex of the other turtles in both Dong Mo and Xuan Khanh Lakes this coming spring. Ultimately, conservationists aim to ensure at least one male and female are given a chance to breed to ensure this species can return from the brink of extinction.

"This is the best news of the year, and quite possibly the last decade, for global turtle conservation."

Nguyen Huy Dang, Deputy Director of Ha Noi Department of Agriculture and Rural Development, said: "This is a very important mission and it needs to be done effectively. We have been seeking advice and consultation from the Ha Noi People's Committee to promulgate guiding documents and collaboration with international organization to execute our development and conservation plan of *Rafetus swinhoei*. The department of Ha Noi Fisheries continues to implement the Plan #200 from the Ha Noi People's Committee to revive and preserve the Swinhoe's softshell turtle, a rare, precious and endangered species in the red book of Viet Nam and in the world."

Timothy McCormack, Program Director of the ATP/IMC, said: "It is so important that we are taking these steps, confirming the sex of the identified animals, and in the case of the animal in Xuan Khanh Lake, confirming the species, as currently this has only been based on Environmental DNA. Once we know the sex of the animals in Vietnam, we can make a clear plan on the next steps. Hopefully we have a male and a female, in which case breeding and recovery of the species becomes a real possibility. At the same time our surveys in other areas of Vietnam suggest other animals might still survive in the wild, we need to be looking at bringing these together as part of the broader conservation plan for the species."

Said WCS Viet Nam Country Director Hoang Bich Thuy: "In a year full of bad news and sadness across the globe, the discovery of this female can offer all some hope that this species will be given another chance to survive. Over hunting and habitat destruction have contributed to the demise of this species. In Viet Nam, with the leadership of the government, we are determined to take responsibility to give this species another chance."

Said Andrew Walde, Chief Operating Officer of the Turtle Survival Alliance, a technical advisor on this project, "This is the best news of the year, and quite possibly the last

article continues on page 3 ▶

Yangtze giant softshell turtle found in Dong Mô Lake, Hà Noi, Viet Nam. **Photo © 2011 by Phuongcacanh at Vietnamese Wikipedia**

decade, for global turtle conservation. As the most endangered turtle on Earth, a tremendous amount of energy and resources have been dedicated to the preservation of Swinhoe's softshell turtle. Following the loss of the only known female at the time in 2019, the confirmation of this wild specimen as female is a cause for celebration for all those who have worked tirelessly to see this turtle species survive. We commend the dedication and leadership of the Vietnam Government, Ha Noi DARD, and our colleagues at ATP and WCS. We look forward to continuing to provide technical expertise to the project in 2021, and continued successes."

Previous to this discovery, there had been a major effort to breed the remaining two known remaining members of the species. Then, the last known female Swinhoe's softshell turtle died on April 13, 2019, during recovery from anesthesia after an artificial insemination procedure in Suzhou, China. The male and female turtles, which had failed to produce offspring naturally since they were brought together in 2008, were determined to be healthy for the procedure, and similar anesthesia procedures had previously been performed without incident. When the female died, the hope for the species turned to the possibility of additional turtles in two different lakes in Viet Nam, Dong Mo Lake and Xuan Khanh Lake.

Since early 2019, with technical support from the ATP/IMC and WCS, Ha Noi Fisheries Department had organized various consultations and review meetings to develop a technical approach for the discovery and capture; conduct more surveys of Dong Mo Lake; and select trapping locations. The plan was delayed due to COVID-19 lockdowns in Viet Nam, preventing international team members, including veterinary teams and turtle experts, travelling to Viet Nam due to travel restrictions.

In September 2020, a team went back into the field; including local fishers, the Ha Noi Fisheries Department and the ATP/IMC and WCS personnel. They spent weeks putting out a series of nets in the 1,400- hectare lake (about 3,459 acres) to create a fenced-in 90 hectares (about 222 acres) capture zone. On October 22, 2020, an animal was seen next to the net fence and a quick-thinking team member was able to capture the animal with the help of a local fisherman.

A temporary holding pond had already been prepared on a small island in the lake and a veterinary team from ATP/IMC and WCS arrived in a matter of hours, along with an international veterinarian working for Four Paws Viet (A bear rescue center) with ultrasound equipment to allow the animal to be clearly sexed. With the close coordination and technical support from the capture and animal care teams, on October 23, 2020, a health check was done, samples were taken, an ultrasound was performed, a microchip was inserted, swabs and blood samples were taken and a physical check was recorded. The animal weighed in at 86 kilograms (189.5 pounds) and 1 meter (3.2 feet) in length. To everyone's great relief, she was healthy, strong and keen to get back in the lake where she was released on the same day.

And today at the Ha Noi workshop, the genetic results from the tests confirmed this turtle

article concludes on page 4 ▶

Ranges of the Yangtze giant softshell turtle in China and Viet Nam (purple-shaded areas). **Image © 2017 by Bookworm8899**

was a female Swinhoe's softshell turtle (*Rafetus swinhoei*). This forensic exam was done by the Institute of Ecology and Biological Resources of the Vietnam Academy of Science and Technology and the independent gene analysis was done by the Department of Natural Resources and Conservation, the Central Institute for Natural Resources and Environmental Studies, Viet Nam National University (VNU CRES) in Ha Noi. The Ha Noi Department of Agriculture and Rural Development on behalf of Ha Noi People's Committee, co-hosted the workshop to update on the process of implementing the conservation plan of the *Rafetus swinhoei* (Hoan Kiem Turtle) during 2018 – 2020 period in Ha Noi. Representatives from technical and managerial agencies, conservationists, reporters and journalists of media agencies attended the event.

With sightings of a second animal with an estimated weight of 130kg in Dong Mo Lake, additional work started in November 2020 with the capture team, which then did simulation exercises on different trapping methods. It is hoped the second animal can be captured and confirmed at the lake in spring 2021 when the water level is at the lowest. Teams are hopeful this second animal may be a male *Rafetus swinhoei*, giving even more hope that the world's rarest species can mate and produce off spring in either a semi-wild area or captivity in Viet Nam.

The Viet Nam Government is leading the effort and partnerships to save this species. The partners conducting this work thank the following: Forest Protection Department (FPD), Viet Nam Forest Administration, Fisheries Department, the Biodiversity Conservation Agency (BCA) of the Ministry of Natural Resources and Environment (MoNRE), Finance department, Natural Resources and Environment department, Planning and Investment department, Science and Technology, Tourism, Culture and Sport, Ba Vi district People's Committee, Son Tay town People's Committee, the Institute of Ecology and Biological Resources of the Vietnam Academy of Science and Technology, the Central Institute for Natural Resources and Environmental Studies, Viet Nam National University (VNU CRES), and the Ha Noi Department of Agriculture and Rural Development.

Additional support for this work came from: Alan and Patricia Koval Foundation, Auckland Zoo, Birdlife International, British Chelonia Group (BCG), Browse Poster UK, Central Institute for Natural Resources and Environmental Studies, Viet Nam National University (VNU CRES), Cleveland Metroparks Zoo and Cleveland Zoological Society, Columbus Zoo and Aquarium, Critical Ecosystem Partnership Fund (CEPF), Education for Nature (ENV), Global Wildlife Conservation (GWC), IUCN, Island Foundation, Mohamed bin Zayed Species Conservation Fund (MBZ), Ocean Park Conservation Foundation, Hong Kong (OPCFHK), Panaphil and Uphill Foundations, Turtle Conservation Fund (TCF), Turtle Survival Alliance (TSA), George Garretson Wade Charitable Trust, Washington State University, Wildlife Conservation Society Canada (WCS Canada), Zoological Society of London (ZSL), as well as a number of private donors who have supported efforts to save the *Rafetus swinhoei*.

Copyright © 2015. Wildlife Conservation Society. All rights reserved. Reprinted within the guidelines of the WCS Terms of Use.

Rafetus swinhoei Facts

Common names:
- Swinhoe's softshell turtle
- Yangtze giant softshell turtle
- Red River giant softshell turtle
- Shanghai softshell turtle
- Hoan Kiem turtle

Chelonian family
Trionychidae (softshell turtles)

Formal description by
John Edward Gray in 1873

Carapace length
100 centimeters (39 inches)

Weight
120 kilograms (255 pounds)

ZOO MED IS A PROUD SPONSOR OF THE TSA

ZOOMED.COM

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

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/turtlenet-picks/turtlenetpicks.html**

Red Cliffs Reserve Habitat Acquisition...
Utah Division of Wildlife Resources announced that escrow has closed on 53 acres of desert tortoise critical habitat within Red Cliffs Desert Reserve; 23 acres were donated and the other 30 acres purchased.

...Meanwhile, Plans for a Building a Highway Through Red Cliffs Move Forward
Just before the inauguration, Federal agencies signed off on a 4 lane highway through the best desert tortoise habitat on Red Cliffs Reserve.

Alcedo Volcano Supports Healthy Population of Giant Tortoises
Alcedo Volcano in the northern part of Isabela Island the local tortoise population (*Chelonoidis vandenburghi*) exceeded all expectations, with 4,723 individual tortoises located and marked.

Longleat Pancakes
Longleat Safari Park are celebrating the success of their pancake tortoise breeding program, with five newborns in the past year.

Expansive Phylogenetic Study Clarifies Turtle Evolution
A major new genetic study shows that turtle species diversity is strongly associated with historical climate shifts.

Eastern Box Turtles in North Carolina
Major study used citizen scientists to determine the state-wide population characteristics and long-term trends for eastern box turtles in North Carolina.

Head-started Southern River Turtles Released in Cambodia
Cambodia releases head-started Southern river turtles (*Batagur affinis*) – known locally as Royal Turtles – hatched from eggs harvested from the wild.

Snapping Turtles Vocalize During Hatching
Cool video of a student project evaluating the energetic benefits of hatching common snapping turtle vocalizing in the nest.

Loggerheads Put Distance Between Clutches
Although they return to their natal beaches to nest, female loggerhead sea turtles cleverly lay their clutches well apart from each other to increase the odds of their hatchlings surviving.

Explorer's Club Honors Indian Sea Turtle Conservationist
Supraja Dharini, founder of the Chennai-based TREE Foundation, has been named one of 'The Explorers Club 50' for her work on the Olive Ridley sea turtle.

Record Numbers of Cold-stunned Sea Turtles From Texas Freeze
Rehabbers have begun releasing some 9,000 surviving cold-stunned sea turtles picked up off the Texas coast after the recent freeze.

African Sea Turtle Newsletter
Read the latest issue.

Marine Turtle Newsletter
Read the latest issue.

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>**

CTTC On Facebook
For breaking news updates visit and "like" us on Facebook!

Turtle Excluder Devices

Turtle excluder devices, commonly called TEDs, promote sea turtle conservation by addressing interactions between sea turtles and trawl fishing gear. These devices are made of metal bars and mesh that fit inside the neck of a trawl net. While shrimp pass between the bars to the back of the net, turtles and other larger animals bump against the metal grid and escape through a flap in the mesh.

All sea turtles found in U.S. waters are listed under the Endangered Species Act as either threatened or endangered. By the late 1970s, incidental bycatch of sea turtles in shrimp trawling gear in the southeastern United States was determined to be a major threat to the survival of sea turtle populations. Our Harvesting Systems Unit, with assistance from the commercial shrimping industry, initiated research to develop solutions to this problem. The result of over a decade of gear development, and subsequent evaluation, was the turtle excluder device.

The modern TED is a simple grid made of metal bars that is fit into a trawl net. Small animals, such as shrimp, pass through the grid into the mesh bag at the end of the trawl and are caught. When larger animals like sea turtles enter the trawl net, they are redirected by the TED and are able to exit through an opening either at the top or bottom of the net. Current TED designs have been determined to be 97 percent effective in excluding turtles from shrimp trawls. NOAA Fisheries gear experts continue to work with the shrimp fishing industry to develop new and effective ways to reduce bycatch.

Today, many shrimp trawlers operating in the U.S. waters of the Gulf of Mexico and South Atlantic are required by federal law to equip their trawls with a TED.

— Information from the NOAA Fisheries website

Feds to Be Sued for Weakening Sea Turtle Protections

Fisheries Service Scales Back Plans to Protect Sea Turtles From Shrimp Nets

St. Petersburg, Florida — 11 January 2021 — Conservation groups issued a formal notice today of their intent to sue the National Marine Fisheries Service for drastically weakening rules that prevent sea turtles from dying in shrimp trawl nets.

The Trump administration's final rule reversed course on a proposed rule about turtle excluder devices in shrimp trawl fisheries in the Gulf of Mexico and South Atlantic, reducing the measure's effectiveness by more than 50%. The weakened rule exempts turtle excluder devices on vessels smaller than 40 feet, which will result in an estimated 1,300 preventable sea turtle deaths from smaller vessels each year.

"A shrimp cocktail is not worth the life of a sea turtle," said Jaclyn Lopez, Florida director of the Center for Biological Diversity. "We have to do more to protect these extraordinary creatures before it's too late. Devices to exclude sea turtles from shrimp nets just make sense."

There are only seven species of sea turtles in the world, and all sea turtles found in U.S. waters are protected by the Endangered Species Act. In total five endangered and threatened sea turtle species are harmed by this rule, which becomes effective in April.

Conservative estimates suggest that, on average, shrimp trawlers routinely kill and discard about three pounds of unintended "bycatch" for every pound of shrimp they haul in. The bycatch includes thousands of sea turtles that drown every year along the Gulf and Atlantic coasts while being dragged to their deaths in shrimp nets.

Loggerhead turtle, *Caretta caretta*, escaping a net equipped with a turtle excluder device. Photo by NOAA and provided for media use.

"The Fisheries Service's new rule ignores and exacerbates the reckless killings of some of the most endangered sea turtles on Earth," said Jane Davenport, a senior attorney at Defenders of Wildlife. "Now more than ever, we need to implement the proven technology of turtle excluder devices for all vessels and enable shrimp trawling to coexist with these amazing animals before it's too late."

For decades turtle excluder devices have been required for large segments of the U.S. shrimp fleet, but certain gear types have been exempt, resulting in approximately 3,000 preventable sea turtle deaths each year.

"We know that these devices work to keep sea turtles from dying in shrimp nets," said Earthjustice attorney Chris Eaton. "It is a proven solution that has stopped needless carnage in many places across the globe, and it will work here as well."

"These new regulations are irresponsible and must be improved. There is no excuse to let sea turtles suffer an excruciating death drowning in shrimp nets when there is a simple device to let them escape," said Turtle Island Restoration Network Gulf Program Director Joanie Steinhaus.

Today's notice gives the agency 60 days to address the violations alleged in the letter before the groups file a lawsuit. The conservation groups — the Center for Biological Diversity, Defenders of Wildlife and Turtle Island Restoration Network — are represented by attorneys with Earthjustice.

— Center for Biological Diversity press release

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

Anisacanthus thurberi
Desert Honeysuckle

A Thurber's desert honeysuckle blossom photographed in a canyon in Coronado National Park, Pima County, Arizona. **Photo © 2019 by Belinda Lo**

Endemic to the Sonoran Desert in southern Arizona and New Mexico as well as the Sonoran Desert in northern Mexico, *Anisacanthus thurberi* is a medium-sized shrub that grows in "rocky canyon bottoms and gravelly or sandy washes from 2,000–5,000 feet (610–1524 meters)" of elevation (Claverie et. al).

Known by several common names, including Thurber's desert honeysuckle, desert honeysuckle, and buckbrush, *A. thurberi* is a member of the Acanthaceae family, a large and diverse group of plants native to many parts of the world.

Desert honeysuckle is sometimes called *chuparosa*, as is another shrub, *Justicia californica,* also known as Mexican honeysuckle. *Chuparosa* is a colloquial term meaning "hummingbird" or "hummingbird bush." Both *A. thurberi* and *J. californica* have tubular flowers that secrete an abundance of nectar, attracting hummingbirds as well as other pollinators.

A yellow-orange desert honeysuckle blossom photographed in Madera Canyon, Arizona. **Photo © 2014 by John Doyen**

Description

Typically growing 3 to 7 feet (0.9 to 2 meters) tall with an equal spread, the new stems of desert honeysuckle have an upright growth habit, tending to sprawl as they age. Its strong woody branches are covered with pale-colored bark that exfoliates as it ages, and the branches have no thorns (Turner, et. al, 1995).

Borne in opposite pairs or in clusters, the 1.5– to 2–inch (3.8– to 5–centimeter) leaves of *A. thurberi* are light green, lanceolate, and taper gently toward the tip. The foliage is typically covered with short hairs. The shrub is "mostly evergreen" (Brenzel, ed, 2012) although it may be drought-deciduous in severe drought or cold-deciduous in extreme cold.

The flowers of desert honeysuckle, up to 2–inches (5–centimeters) in length, may be yellow-orange, orange, or red-orange in color and tubular in shape. Blossoms are composed of four petals that recurve when fully opened. Two prominent stamens (male plant parts) extend well beyond the petals, as does the long white style (extension of the ovary).

In habitat, flowering occurs in late winter and spring, peaking in April and May, and continues lightly throughout summer. Rainfall typically triggers flowering in habitat, so *A. thurberi* may bloom again in fall (October – November) in response to the arrival of rain (Growing Anisacanthus thurberi: Thurber's Desert Honeysuckle). See the section of this article on 'Cultivation' for watering recommendations in the garden.

A small inconspicuous fruit forms after the flower matures. Known in botany as a capsule, the fruit is flattened and oblong in shape and typically holds four seeds. As the capsule dries, the seeds push against its walls. When the seeds are fully formed and the capsule walls are completely

article concludes on page 9 ▶

dried out, the capsule explodes and flings its seeds several meters (± 10 feet) from the parent plant (Plagens, 2007).

Cultivation

Being a native of the higher elevations in the Sonoran Desert, *A. thurberi* is both heat- and drought-tolerant and thrives in full sun. In milder climates, full sun is best for flower production, although the shrub will tolerate some light shade. In habitat it often grows in the shade of small cliffs and trees (Growing Anisacanthus thurberi: Thurber's Desert Honeysuckle).

For the best growth in a garden setting, desert honeysuckle requires well-drained soil that is sandy in texture, low in organic matter, and slightly acidic to alkaline in pH (6.5 to 8.5).

In addition to requiring well-drained sandy soil, *A. thurberi* requires light to moderate watering in order to produce an abundance of blossoms. While it will survive on very little water, the shrub will improve in appearance with supplemental irrigation throughout the **dry** season. Horticulturists recommend deep soakings at two- to three-week intervals in summer, allowing the soil to dry out completely in between soaks (Brenzel, ed., 2012).

An Elada checkerspot, *Texola elada*, a very small butterfly often observed on or near desert honeysuckle. Its caterpillars feed on the leaves of the shrub. **Photo © 2008 by Anne Toal**

A low-maintenance shrub that grows at a moderate rate and produces a small amount of litter, *A. thurberi* will look best with some carefully timed pruning. At the very least, the oldest branches of the shrub should be removed at the end of the growing season (Growing Anisacanthus thurberi: Thurber's Desert Honeysuckle). Additionally, some horticulturists recommend cutting desert honeysuckle to the ground each winter before new growth begins to encourage fresh new growth (Brenzel, ed., 2012).

Pollinators and Browsers

With flowers that are attractive to a variety of pollinators, desert honeysuckle makes a contribution to the sustenance and the vegetation of the Sonoran Desert and its inhabitants. Hummingbirds require large quantities of nectar to live, and they carry pollen from plant to plant, aiding in the reproduction of the species they favor. Pollinators such as butterflies, bees, and other insects also visit desert honeysuckle.

Leaves, flower buds, and flowers on a desert honeysuckle photographed at the Chihuahuan Desert Garden on the University of Texas El Paso campus. **Photo © 2012 by Wynn Anderson**

Various mammals and butterfly larvae feed on parts of desert honeysuckle.

References

Anisacanthus thurberi, Desert Honeysuckle. https://www.americansouthwest.net/plants/wildflowers/anisacanthus-thurberi.html

Brenzel, ed., K. N. (2012). Sunset Western Garden Book. Time Home Entertainment.

Claverie, F., Allen-Cantu, J., McNelis, P., & Mount, A. Anisacanthus thurberi. https://npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=anisacanthus-thurberi-anisacanthus

Growing Anisacanthus thurberi: Thurber's Desert Honeysuckle. https://gardenoracle.com/images/anisacanthus-thurberi.html

Plagens, M. J. (2007). Desert Honeysuckle — Anisacanthus thurberi. http://arizonensis.org/sonoran/fieldguide/plantae/anisacanthus.html

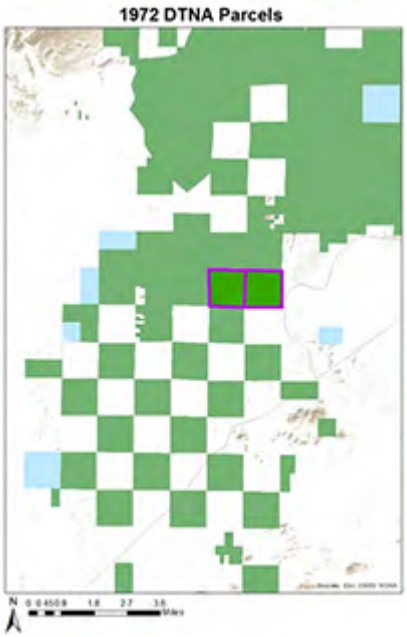
Turner, R. M., Bowers, J. E., & Burgess, T. L. (1995). Sonoran Desert Plants. University of Arizona Press.

A male Mexican yellow, *Eurema mexicana*, a butterfly closely associated with the desert honeysuckle. The larvae of the Mexican yellow feed on the leaves of the shrub. The butterfly is often seen on or near desert honeysuckle. Photo by Megan McCarty. Public domain.

Desert Tortoise Preserve Committee Seeks Volunteers

By Ron Berger, President of the Desert Tortoise Preserve Committee

The Desert Tortoise Pre-serve Committee (DTPC) was founded in 1974 to promote the welfare of the Desert Tortoise in its native wild state in the southwestern U.S., to establish one or more preserves where habitats and ecosystems will support it, and to provide and disseminate information, education and research regarding ecosystems critical to the Desert Tortoise and associated plant and animal species. These have grown to include the Mohave Ground Squirrel, the Barstow Woolly Sunflower and the Burrowing Owl.

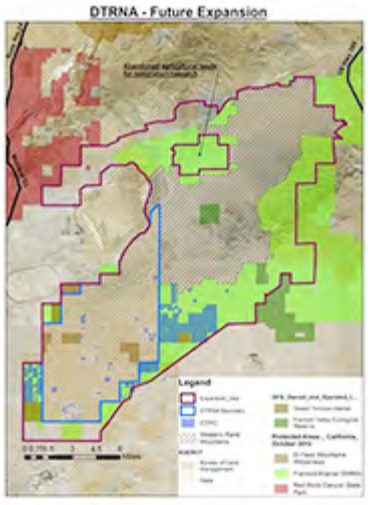


The two parcels outlined in purple are what the DTRNA looked like in 1972.

Our mission also includes developing and implementing programs for the preserves, and fostering and publicizing the uses of these preserves for recreation, research, education and conservation.

We are very proud of the work we have accomplished, chief among which is the creation of and the building of the Natural Area, a place where the tortoise is protected by our fencing, signing, and monitoring. In 1972, the Natural Area was comprised of 1,280 acres. By 1992, it had expanded to 25,568 acres, and by 2020, to 29,991 acres.

In this article, I'd like to discuss a few major issues we face in protecting the tortoise. Climate change represents a challenge. Therefore, in 2015, DTPC established a goal of working with our friends at the Bureau of Land Management, CA Department of Fish and Wildlife, donors and others to expand the Natural Area to include connecting corridors to cooler areas for tortoises, Mohave ground squirrels, and other threatened or endangered species. Below, you can see the existing Natural Area, shown bounded by the blue line, and where we are headed, which is the area within the purple line.



To accomplish this objective, we have mounted an ambitious fundraising program which is raising the funds needed to acquire, fence, protect and manage the expanding Natural Area. We are a large land owner and land manager and steward, but we are a small, cash-poor organization. However, thanks to the generosity of our board, our members and friends, we have grown our permanent endowment from a modest $5,000 in 2015 to today, when our permanent endowment stands at $426,887, or a bit over 14% of our goal! Our goal is to grow the permanent endowment to $3 million and higher. At roughly $3 million, even at 3% interest; the endowment would deliver about $100K annually, covering a substantial portion of our annual operating budget.

Equally as important a contribution you could make to this organization and the important work that we do, would be to join us, become a member or a volunteer, or to refer or sponsor 3, 4, 5 or more friends that are not yet members. We need new blood – and whatever you can do to get the word out is very welcome and most appreciated. And we sure could use younger members.

In addition to raising capital, we are regularly reaching out to private land owners who own properties in the 'expansion area', to see if they might donate their lands to us.

Another vitally important activity for DTPC is to survey Natural Area lands for Off-Highway Vehicle (OHV) incursions, to monitor the property for fence breaks, dam-

article concludes on page 11 ▶

Author Ron Berger.

age, and increasingly to locate and remove invasive species. These species, left unchecked, would potentially overrun and kill off the native species on which the tortoise rely for sustenance, ultimately starving the tortoise and other area inhabitants. Therefore, in late November, we were awarded an OHV/ Department of Parks grant of $126,180 to monitor, survey and restore 4,600 acres adjacent to the Natural Area, to repair damaged fences, and to post educational signage directing OHV riders to alternate legal routes outside Natural Area. Work on this ambitious project is underway already.

You are likely well aware of the explosive growth in raven populations, particularly in the California desert, and of the impact this has had on desert tortoise populations. Let's be abundantly clear — our opinion is that ravens may be and quite likely are the single most prolific killers of JUVENILE desert tortoises.

In order to work on reducing the overabundance and overpredation of ravens, the DTPC formed The Coalition for a Balanced Environment (CBE) in late 2015. Its primary goal is to accelerate raven management and control efforts in the California desert to preserve the diminished desert tortoise population.

The CBE works to build awareness of the issues, and to accelerate enforcement of existing local raven management ordinances. CBE's objectives are: to reduce human subsidies associated with raven population growth, accelerate raven management and control, and advocate for changes in federal and state laws to permit active raven population control measures. In 2017, we received a letter of support from then Lieutenant Governor, now Governor Gavin Newsom.

Although the DTPC imagined, conceived, funded and launched the CBE, we seek other organizations to join our effort. If you know of an organization with an interest in joining us, please ask them to contact me. This year, I have been focused on developing a

Volunteers taking a photo break on National Public Lands Day at DTRNA.

working Executive Board of Directors for CBE. The Executive Director of the Mojave Desert Land Trust, Mr. Geary Hurd and the Director of Conservation Engagement and Learning at the Living Desert and Zoo, Mr. James Danoff-Burg, have both agreed to join this board.

18 other concerned organizations have already joined the CBE coalition. These include the Nature Conservancy, the Turtle Conservancy, the Desert Tortoise Conservancy, the Desert Tortoise Council, the Mojave Desert Land Trust, Transition Habitat Conservancy, Defenders of Wildlife, and the Living Desert Zoo and Gardens.

In 2020, despite the challenges posed by Covid–19, we joined with the Desert Tortoise Council and Defenders of Wildlife in petitioning the Fish & Game Commission of the State of California (CDFW) on March 11th, to change the status of the Mojave Desert Tortoise from threatened to endangered.

We helped write the 49 page filing, and were rewarded when, on October 14th, 2020, the commission voted unanimously that the desert tortoise may warrant listing as endangered, thus requiring the department to undertake a 12 month evaluation before the commission can make a final decision on changing the listing status.

There are seemingly endless 'action' items we simply must accomplish and most of these require volunteers. Even during these Covid–19 times, there are plenty of opportunities for you to work on your own, 100% distanced from everyone else, and accomplish important tasks while enjoying the beauty of the desert.

So, please, if you have any spare time at all, email or call our DTPC Executive Administrator, Sophia Osho, at 442–294–4258 or send an email to dtpc@tortoise-tracks.org

UC Exotic Team Treats 61-Year-Old Tortoise by the My Vet Candy staff

Mohave, a 61-year-old desert tortoise, was recently brought to the UC Davis veterinary hospital for a recurrence of bladder stones – an issue he was previously treated for in 2014. A few weeks ago, his caretakers noticed that his urates (component of a reptile's urine) were thick and pasty. Shortly thereafter, Mohave prolapsed his cloaca (common exit for the urinary and gastrointestinal tract); most likely due to straining to eliminate the pasty urates.

"We took some radiographs and saw some distinct white shapes within his coelomic (abdominal) cavity," said Dr. Juliana Sorem, head veterinarian at Wildcare, a wildlife hospital and nature education center in San Rafael, and Mohave's home since 2003. "We compared the images with the radiographs taken at his last routine physical and didn't see these objects on them. Given his clinical signs and the radiographic images, I was fairly certain the stones had recurred."

Dr. Sorem, a 2006 graduate of the UC Davis School of Veterinary Medicine, knew WildCare's in-house clinic was not equipped for major surgical procedures, but she knew just where to take Mohave.

"Because UC Davis was able to successfully remove his previous bladder stones without having to cut his shell, we decided to pursue treatment there again," said Dr. Sorem. "I particularly wanted to have the surgery done at UC Davis because of their extensive experience with exotics surgery and anesthesia."

The hospital's Companion Exotic Animal Medicine and Surgery Service is the largest center in California that treats exotic companion animals, and its clinicians have published research on Mohave's condition.

Faculty member Dr. David Guzman and resident Dr. Sarah Ozawa were able to remove the stones via an endoscopic-assisted procedure. This minimally invasive technique allows the clinicians to access the bladder through the skin and muscles of the prefemoral fossa in front of the hind limb instead of having to cut through the plastron (shell). Due to Mohave's regular care and annual check-ups, the stones were caught early enough to be removed in this fashion.

"After his previous bout with bladder stones, we started taking annual radiographs to look for new stones, in the hope that we might find them while they were still small," Dr. Sorem said.

Dr. Guzman warns that if stones go unchecked for too long, they may grow so large that it could be complicated or impossible to be removed through a minimally invasive approach.

"If we have to enter through the plastron, it's very invasive," said Dr. Guzman. "It takes a long time to heal, and sometimes it fails to heal properly. So, Mohave's case is a great example of the importance of annual check-ups for any animal."

Wildcare's wildlife hospital annually treats and (ideally) releases nearly 4,000 wild animals. Those that are deemed unfit to return to the wild become part of the center's Wildlife Ambassador Program. Currently, there are 22 animal ambassadors that help children and adults understand and appreciate wildlife.

Mohave has been an ambassador for 16 years, after being found wandering the streets of Mendocino, a coastal town a few hours north of San Francisco – obviously, not a natural environment for a desert tortoise.

"Because he was found so far away from his natural environment, we believe he may have been taken from the desert and made someone's pet," said Alison Hermance, director of communications and marketing at Wildcare. "Desert tortoises are a threatened species, and as such, are not allowed to be returned to the wild; while in captivity they may have been exposed to pathogens or other things that may harm the existing wild population."

Hermance states that Wildcare's educational programs emphasize the importance of leaving wildlife in their natural environments.

"Fortunately, Mohave has taken well to his life at Wildcare," said Hermance. "He makes for a great ambassador and educator. Everyone just loves to see him."

At 61, Mohave still has plenty of living to do. In the wild, desert tortoises can live upwards of 80 years. In captivity, that

life expectancy can be even longer.

Dr. Sorem states that Mohave is recovering well, although his appetite is not back to normal yet.

"Fortunately, his care team at UC Davis anticipated this and implanted a feeding tube while he was under anesthesia for his surgery," said Dr. Sorem. "He has begun to show an interest in eating some of his favorite foods – dandelions, green beans, peas and strawberries, so we are hoping that the feeding tube can be removed soon."

At a re-check appointment this week, Mohave continued to show signs of improvement, although his feeding tube will remain for the time being.

Originally published on MyVetCandy.com on 19 September (no year given). Reprinted with permission from the staff.

Mojave desert tortoise. Public domain.

Galápagos Conservancy News

First Expedition to Monitor the Giant Tortoise Population of Alcedo Volcano Begins

18 January 2021 — Park rangers and scientists from the Galápagos National Park Directorate and Galápagos Conservancy carried out the first intensive population monitoring of the giant tortoises of Alcedo volcano, in the northern region of Isabela Island, between January 17 and 24 as part of the Giant Tortoise Restoration Initiative (GTRI). The goal of this expedition is to conduct a census of the giant tortoise species *Chelonoidis vandenburghi*, which is listed as "Vulnerable" by the IUCN Red List of Threatened Species, and estimate the overall conservation status of the region following various successful restoration measures that have been implemented over the years.

As part of the monitoring plan, the research teams will take counts and obtain data such as distribution, sex, age, nests and hatched tortoises (at this time), among others. They will also note the possible presence of invasive species such as cats and fire ants, as well as threatened species such as the Galápagos tree fern.

Danny Rueda, director of the Galápagos National Park, stated: "Knowing the population status of the largest natural herbivore on Alcedo will allow us to better understand the process of ecological restoration in this area following the eradication of feral goats, which among other damages, caused the presumed extinction of the tree fern, a threatened endemic plant that was present at the site."

Washington Tapia, director of the GTRI, explained that this action will take place in an area of approximately 200 square kilometers (77 square miles) and will consist of eight groups of three people distributed in the north, south and east areas of the volcano, where more than 90% of the tortoise population is concentrated. The teams use a mark-recapture method to estimate the population with 95% accuracy.

This expedition has been developed with strict management of COVID-19 security protocols, such as PCR tests of the research team and crew of the Sierra Negra boat and the use of a masks and social distancing, in addition to complying with the field protocols of the Galápagos National Park.

— Galápagos Conservancy press release

The large seahorse-shaped island in this image is Isabela Island in the Galápagos Islands as photographed from the International Space Station. Alcedo volcano is the site of the first GTRI expedition to conduct a census of the *Chelonoidis vandenburghi* population.

One of the Expedition 38 crew members aboard the International Space Station used a 180mm lens to photograph this oblique image featuring the Galápagos Islands or Islas Galápagos, distributed on either side of the Equator in the eastern Pacific Ocean. An archipelago of volcanic islands, the island group's official name is Archipíelago de Colon. Image by National Aeronautics and Space Administration. Public domain.

Meetings and Programs

Click on your Chapter's website link for the latest program information. Programs may be scheduled after newsletter publication.

Chino Valley
19 March; 16 April

Foothill
26 March; 23 April

High Desert
8 March; 12 April

Inland Empire
4 March; 2 April

Kern County
8 March; 12 April

Low Desert
5 April

Orange County
12 March; 9 April

Ridgecrest
8 March; 12 April

Santa Barbara-Ventura
Contact the chapter for meeting information.

Santa Clarita
20 March

TOOSLO (San Luis Obispo)
19 January; 16 April

TTCS (Long Beach)
20 March; 17 April

Valley
19 March; 16 April

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 Non-native Turtles and Tortoises.

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**.

The *Tortuga Gazette* (ISSN 1073-1334) is owned by the California Turtle & Tortoise Club Executive Board, which is incorporated in the State of California as a Not-for-Profit Corporation and is tax-exempt under IRS code 501(c)(3).

All material is copyright © CTTC unless otherwise attributed. CTTC policy permits reproduction of articles by other not-for-profit groups and educational institutions when permission is requested. Permission is granted on a case-by-case basis and CTTC must be cited as the source of the material.

Views expressed in the *Tortuga Gazette* are those of the contributors and not necessarily those of the Editor or the California Turtle & Tortoise Club.

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 2371, San Bernardino, CA 92406-2371

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: P O Box 15953, Long Beach, CA 90815

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

Tortuga Gazette
California Turtle & Tortoise Club
Post Office Box 7300
Van Nuys, California 91409-7300

Is your email address changing?

Update your email address through your MailChimp account by clicking the "Update Your Preferences" link on your newsletter notice. Or send your changes and corrections to tgdistribution@tortoise.org