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Spotted turtle, *Clemmys guttata*. Photo © 2000 by Bernard DuPont. Source: Creative Commons; license: CC-BY-SA-2.0.

featured species

Spotted turtle, *Clemmys guttata* (Schneider, 1792)
The Singular *Clemmys* Turtle

by M. A. Cohen

The last remaining member of the genus *Clemmys,* the spotted turtle is threatened throughout its range. Prior to 1994, the genus *Clemmys* also included the Western pond turtle, now known as *Actinemys marmorata*, the wood turtle, now known as *Glyptemys insculpta*, and the bog turtle, now known as *Glyptemys muhlenbergii*. Based on DNA evidence, chelonian biologists reassigned these three species to their current genera, leaving the spotted turtle as the solitary species in the genus *Clemmys*.

Officially described by the German naturalist Johann G. Schneider (1750-1822) in 1792, the spotted turtle is a very small, semiaquatic species that is indigenous to North America. The species' scientific name, *Clemmys guttata*, derives from the Greek root word *klemmy*s, meaning a tortoise, and the Latin root word *gutta*, meaning a drop or a spot.

Description

With a maximum straight-line carapace length of 5.6 inches (14.25 centimeters), the spotted turtle generally grows to 4.5 inches (11.4 centimeters) in length.

The distinctively patterned carapace of *C. guttata* is bluish-black, brownish-black, or pure black marked by small round yellow spots, which "are transparent 'windows' in the scutes overlaying deposits of yellow pigment" that may fade with age, leaving older spotted turtles without carapacial spots (Ernst and Lovich, 2009). The moderately flattened carapace is smooth and lacks both keels and serrated marginal scutes (Ernst and Lovich, 2009).

The plastron of the spotted turtle is yellow to yellow-orange in color with a dark blotch on each plastral scute. Age-related melanism (darkening) of the plastron may occur, resulting in older individuals with entirely black plastrons.

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The head of *C. guttata* is black with a pattern of small, round, yellow dots and a notched upper jaw. There is usually a large yellow or orange blotch on each side the turtle's head. On the upper surfaces of its limbs, neck, and tail, the skin of the species is black or gray with scattered small, round, yellow dots, while the lower surface of its limbs, neck and tail "can be orange, pink, or salmon-red" (Ernst and Lovich, 2009).

Spotted turtle, *Clemmys guttata*, basking near carnivorous pitcher plants. Photo © 2009 by Ontley. Source: Wikimedia Commons; license: CC-BY-SA-4.0.

There are no recognized subspecies of *C. guttata*. Moreover, very little geographic variation exists from one population to another with regard to physical appearance.

Sexual Dimorphism

Defined as representing two forms based on the sexes of the individuals, sexual dimorphism is evident in *C. guttata*, accordingly, differences in several physical characteristics readily distinguish the male from the female spotted turtle.

Aside from having longer, thicker tails than those of the females, male spotted turtles are slightly smaller overall at maturity, with a maximum carapace length of 4.8 inches (12.2 centimeters). The males display a tan, brown, or black chin, brown eyes, and a moderately concave plastron (Ernst and Lovich, 2009).

In comparison, female spotted turtles are larger than the males, with a maximum carapace length of 5.6 inches (14.25 centimeters). The females display a yellow chin, orange eyes, and a flat or slightly convex plastron (Ernst and Lovich, 2009).

Range and Habitat

Ranging from southern Ontario in Canada to southern Florida in the United States, the spotted turtle occurs from "Maine southward along the Atlantic Coastal Plain and Piedmont to...Florida and westward... through New York, Pennsylvania, central Ohio, northern Indiana, and Michigan to northeastern Illinois" (Ernst and Lovich, 2009).

Inhabiting a narrow variety of ecosystems within its fragmented range, *C. guttata* prefers wetlands with shallow water bodies such as bogs, marshes, pools, small streams, swamps, and wet meadows with clean, clear water, a soft bottom, and submerged vegetation.

Diet

The spotted turtle being an omnivore, it ingests a variety of food items that are usually consumed in the water. Green algae, aquatic grasses, water lily seeds, wild cranberries, and other aquatic plants form the plant portion of the diet.

Ingesting many types of invertebrate food items, *C. guttata* consumes ants, aquatic insects (both adults and larvae), beetles, beetle grubs, butterfly and moth larvae, crickets, crustaceans, grasshoppers, millipedes, slugs, snails, spiders, and worms.

Vertebrate foods include fish, frogs, salamanders, and toads. The species prefers live foods but will also eat carrion (Ernst and Lovich, 2009).

Seasonal Activity Cycle

A species that is primarily diurnal (active during the day), the spotted turtle has "one of the shortest annual activity cycles in North America," according to Ernst and Lovich. The species spends daylight hours occu-

pied with foraging and basking, and nighttime submerged at the bottom of its water body (Department of Environmental Conservation, n.d.).

In March or April, the spotted turtle typically emerges from its winter dormancy and remains active through September, October, or November, depending on geographical factors such as latitude.

The activity level of the spotted turtle, which is most active during the cooler periods of its seasonal cycle, declines as the air temperature rises, and it enters a state of aestivation (summer dormancy) when the temperature reaches 86°F (30°C).

The species often aestivates in the water in mammal burrows or lodges, or at the bottom of a pool with slowly moving water. The turtle may travel to an upland location to aestivate in a terrestrial burrow or under vegetation (Ernst and Lovich, 2009).

Most mating activity occurs while spotted turtles are most active during the March-to-May mating season, but they may also mate at any time during the active cycle.

Winter dormancy typically begins in early to mid-autumn, with *C. guttata* retreating into underwater hibernacula such as muskrat burrows. Biologists have documented spotted turtles brumating singly or communally with their own species as well as with other turtle species such as bog turtles (*Glyptemys mulhenbergii*). Spotted turtles also brumate on land in burrows with air temperatures that are significantly warmer than the air temperature outside the burrow (Ernst and Lovich, 2009).

Reproduction

Estimates of the age of reproductive maturity in the species range from seven and 15 years. *C. guttata* begins its annual mating season shortly after emergence from brumation. The height of the mating season is March to May, when most mating occurs in shallow breeding pools. Following mating season, nesting season occurs from May to July (Ernst and Lovich, 2009).

Seeking favored nesting spots with good drainage in full sunlight, most females leave the breeding pools by late May and journey overland, often returning to the same nesting location year after year. Generally nesting at night, females lay one to three clutches of eggs per season comprising two to seven eggs per clutch.

Spotted turtle, *Clemmys guttata*, photographed at the Louisville Zoo, Louisville, Kentucky. Photo © 2013 by Ltshears. Source: Creative Commons; license: CC-BY-SA 3.0.

Incubation takes some 44 to 83 days, with higher temperatures resulting in faster development (Animal Diversity Web, n.d.). Hatchlings generally emerge from their nests in August and September, but sometimes overwinter within their nests.

Temperature-dependent sex determination (TSD) is the mechanism through which a hatchling's sex is regulated by the temperature of the nest during the period of incubation. The TSD pattern known as "TSD-1a" affects the development of spotted turtle hatchlings. At incubation temperatures between 72.5 and 80.6°F (22.5 and 27°C), the spotted turtle hatchlings are predominantly male, while at an incubation temperature of 86°F (30°C), the hatchlings are 100% female (Ernst and Lovich, 2009).

Threats

Many natural predators exploit the eggs, juveniles, and adults of the *C. guttata species*. Avian predators include crows, large wading birds, and bald eagles. Recorded reptile predators include water snakes and common snapping turtles. Many mammals utilize the species as a food resource, including raccoons, foxes, feral dogs, feral cats, muskrats, and skunks (Ernst and Lovich, 2009).

Putting the future of the spotted turtle at risk, environmental threats include habitat degradation, fragmentation, and loss, collection for the pet trade, invasive plants adversely affecting wetlands, mortality resulting from road traffic and agricultural equipment, and subsidized predators near developed areas (van Dijk, 2011).

Conservation

In Canada, *C. guttata* is legally protected in the provinces of Quebec and Ontario, as well as within several states in the United States (van Dijk, 2011). The IUCN Red List designates the species as "Endangered."

In 2013 *C. guttata* was listed as CITES II by the Convention on International Trade in Endangered Species, affording it some international legal protection. ♧

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Texas to Propose Ending Unlimited Commercial Wild Turtle Trapping

—Nationwide Efforts to Ban Unsustainable Reptile Collection Gain Momentum— *Center for Biological Diversity press release*

Austin, Texas—15 November 2017—In response to a petition filed by the Center for Biological Diversity and several Texas-based conservation organizations, the Texas Parks and Wildlife Department on Tuesday agreed to propose a rule ending unlimited commercial trapping of the state's wild turtles.

"We're so grateful these badly needed protections for Texas' rare, native turtles are moving forward," said Jenny Loda, a Center attorney and biologist who works to protect vulnerable reptiles and amphibians. "A few for-profit collectors shouldn't be allowed to put the state's turtles at risk of extinction. We're hopeful the Texas Parks and Wildlife Commission will do the right thing and ban this harmful turtle trade."

Texas is the latest in a list of states to ban or propose ending commercial reptile collection.

Under current Texas law, unlimited collection of four native, freshwater turtle species is allowed on private property: common snapping turtles, red-eared sliders, smooth softshells and spiny softshells.

Texas modified its regulations in 2007 to protect freshwater turtles from collection on its public lands and waters. But this only resulted in protections for turtles in 2.2 percent of the water bodies in Texas. Recent studies concluded that current turtle collection in Texas is likely not sustainable.

The Parks and Wildlife Department's response to the conservation organizations' petition came in a letter to the Texas Parks and Wildlife Commissioners. In it, the department's executive director, Carter Smith, wrote that a review of the petition, along with scientific literature and the department's own data, led to the conclusion that "there is sufficient scientific justification at this time to proceed to rulemaking to end the unlimited commercial collection of freshwater turtles."

The department's letter says turtles are "[a]mong the nongame species of greatest concern" and are "highly sensitive to population alterations." Department staff plans to propose a rulemaking at a future commission meeting.

Texas spiny softshell turtle, *Apalone spinifera*. Photo by Gary M. Stolz, USFWS. Public domain.

"This is great news for Texas's freshwater turtles and for all of us who care about the health of the state's rivers," said Tom Goynes, president of the Texas Rivers Protection Association. "Commercial trapping is devastating to turtle populations that are already suffering from multiple other threats, including habitat loss, water pollution and vehicular collisions."

Millions of turtles classified as wild-caught are exported from the United States every year to supply food and medicinal markets in Asia. Because turtles bioaccumulate toxins from prey and burrow in contaminated sediment, turtle meat is often laced with mercury, PCBs and pesticides, posing a health risk. Adult turtles are also taken from the wild to breed hatchlings for the international pet trade.

"The future of Texas turtles is now in the hands of the Department of Parks and Wildlife and wildlife commissioners," said Loda. "We're pleased the department is taking this step toward restricting commercial turtle collection. We urge the commission to fully and finally protect these animals as an invaluable part of state ecosystems."

The petition that spurred Tuesday's action was submitted earlier this year by the Center for Biological Diversity, Sierra Club's Lone Star Chapter, Texas Rivers Protection Association and Texas Snake Initiative.

Background

As part of a campaign to protect turtles in the United States, the Center for Biological Diversity has been petitioning states that allow unrestricted commercial turtle collection to improve their regulations. Last month, the Missouri Department of Conservation proposed a ban on unlimited commercial collection of the state's wild freshwater turtles. In September, Nevada created a statewide ban on the destructive commercial collection of all reptiles, and New York halted all commercial terrapin turtle harvesting.

Before that, in March, Iowa adopted new regulations setting closed seasons and possession limits for commercial turtle trappers. In 2012 Georgia approved state rules regulating the commercial collection of turtles, and Alabama completely banned commercial collection. And in 2009 Florida responded by banning almost all commercial collection of freshwater turtles from public and private waters.

Texas is in a regional hotspot for commercial turtle collectors. If the state created closed seasons and bag limits within its borders, adjacent states would likely follow its example; the region would be better equipped to protect its turtle populations by making clear to turtle traders that trade is strictly regulated and enforced.

The Center recently petitioned for a ban on unlimited commercial trapping in Arkansas, Louisiana and Oklahoma, three states that share a border with Texas. ♧

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

Portulaca grandiflora (Moss Rose)

Closeup of moss rose (*Portulaca grandiflora*) flowers and leaves. Photo © 2010 by Biswarup Ganguly. Source: Creative Commons; license CC-BY-3.0.

With plump leaves and stems that have a spongy internal structure, moss rose is, botanically speaking, a semisucculent plant species. When using this term, botanists refer to the ability of the species to store some amount of moisture in its tissues. Because of this ability, moss rose is quite drought- and heat-resistant and thrives in sunny, arid soils, making it well-suited for southwestern regions of the United States.

Description

Also known as rose moss and sun rose, moss rose is an annual species, meaning it completes its life cycle in a single growing season. The plant provides a profusion of vibrant, multicolored blossoms, and self-sows, promoting the development of the next generation of moss rose in the garden. While all varieties self-sow, some hybrids will "fail to come true from seed," i.e., the hybrid will revert to its parent plants' characteristics rather than reproduce its hybrid appearance.

Depending on the authority consulted, there are 40 to 100+ species in the genus *Portulaca*, annual, biennial, and perennial members of the Portulacaceae family. Thriving in temperate climates worldwide, many species are native to South America, including *P. grandiflora*, which is native to Argentina, Brazil, and Uruguay (Griep, n.d.).

With its trailing growth habit, moss rose is an excellent ground cover for an area without foot traffic. Reaching up to six inches tall and up to 18 inches in spread, moss rose is a suitable ground cover for borders, parking strips, gently sloping banks, rock gardens, and the like. Other growing options include containers such as hanging baskets and tall, freestanding containers.

The reddish stems of moss rose hold medium- to dark-green, cylinder-shaped leaves to 1 inch (2.5 centimeters) in length. Resembling small roses, *Portulaca* flowers are 1 to 3 inches (2.5 to 7.6 centimeters) in diameter, and offer colors ranging from white and cream through bright pastels to cerise and purple (Christman, 2003). In addition to single colors, flowers also occur in bicolors and tricolors, and in single- and double-flowering forms.

Flowering occurs from late spring through fall in mild climates. Opening in bright sunlight, flowers typically close by mid-afternoon and remain closed on cloudy days. A few hybrids remain open until late afternoon (Brenzel, 2012).

Close-up of a moss rose blossom in a pink/white bicolor, double-flowering form. Photo © 2010 by Ton Rulkens. Source: Creative Commons; license CC-BY-SA-2.0.

Culture

Tolerant of a wide variety of garden conditions, moss rose grows well in average to poor soils, provided the soil drains properly and the exposure offers full sun.

Even though the plant is tolerant of dry conditions, light watering is necessary, and moderate watering may be needed for a more vigorous appearance during the hottest weather. Timely pruning promotes a neater, more compact plant.

Fertilizer is unnecessary; in fact, it may promote vegetative growth at the expense of flowering. Pests and diseases are rarely an issue when the plant is grown correctly.

While *P. grandiflora* tolerates intense heat, it will not tolerate frost, and the first fall frost will generally kill off moss rose.

As mentioned, moss rose will self-sow, which can be desirable or unwelcome, depending on the situation. Deadheading, the removal of spent flowers, is one way to discourage invasiveness by trimming the flowers before they set seed. Or, prevent the plant from becoming invasive by removing its seedlings soon after they sprout.

Edibility

When consulting reliable sources listing databases of edible

and toxic plants, some contradictory information emerges regarding moss rose. A few databases geared toward mammals (cats, dogs, and horses) list *P. grandiflora* as toxic. Conversely, other databases focusing on animals in general list moss rose as a safe (non-toxic) plant.

Many websites aimed at tortoise keepers indicate that *P. grandiflora* is safe for planting in tortoise enclosures. Some keepers even report intentionally feeding their tortoises the flowers and leaves of moss rose, which the tortoises eagerly consume with no ill effects.

As with any unfamiliar landscaping plant or food item, it is advisable to introduce a small amount of it into the enclosure and observe the reaction of the tortoise to it. ♧

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Moss rose display at the Annual Flower Show in Kolkata, India. Photo © 2013 by Biswarup Ganguly. Source: Creative Commons; license CC BY 3.0.

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**

Peter Pritchard Awarded Archie Carr Medal | This year's winners of the prestigious Archie F. Carr Medal are his former students Peter Pritchard and Karen Bjorndal. Congratulations from CTTC to both!

Long Beach Sea Turtle Release | A rehabilitated green sea turtle was released close to where it was found at the mouth of the San Gabriel River in Long Beach.

What To Do If You Find a Stranded Sea Turtle | This article on "what to do if you find a stranded sea turtle in Oregon" also applies to California. Be sure to check out the maps at the end that show turtle movements off California.

El Salvador Sea Turtle Die-off | As many as 300 to 400 deceased sea turtles were found off the coast of El Salvador in Jiquilisco Bay. The cause is as yet unknown but may be due to a red tide.

Down-Under Lizards Feasting On Turtle Eggs | Now that introduced European foxes have been controlled, yellow necked goannas – truly magnificent Australian monitor lizards – are taking first dibs at eggs in Loggerhead sea turtle nests.

Turtle Conservancy Turtles & Tortoises Evacuated | Tortoises and turtles from the Ojai Turtle Conservancy forced to evacuate ahead of the Thomas Fire are enjoying a relaxing vacation at their refuge in Atascadero City Hall basement.

Bolson Tortoise Habitat Protected | The privately-owned 43,243 acre Rancho San Ignacio in northern Mexico has been acquired by Rainforest Trust, Habio, A.C., and the Turtle Conservancy as a preserve to protect the Bolson tortoise, the largest and rarest species of *Gopherus*.

Evolution of Shell Shape in Galapagos Tortoises | New research comparing the abilities of domed and saddle-backed giant tortoises to right themselves when overturned finds that having a saddle-backed shell helps tortoises right themselves in rocky terrain.

Surveying Aldabra Tortoises | Seychelles Islands Foundation researchers have added distance sampling to the monitoring methods used to track giant tortoises on the Aldabra atoll.

Columbia's Dahl's Toad-headed Turtle in Dire Straits | The rare Dahl's Toad-headed Turtle, *Mesoclemmys dahli*, is threatened with extinction due to alarmingly small and fragmented populations and high levels of inbreeding.

Rhode Island Spotted Turtles at Risk | New survey indicates that spotted turtles are in trouble in Rhode Island.

Alligator Snapping Turtle Found in Illinois | Researchers found the first wild alligator snapping turtle seen in Illinois since 1984 while looking for a released head-started one!

Snapping Turtles Threatened By Harvesting | Research shows commercial harvest of snapping turtles is causing population declines.

Hibernating Painted Turtles Use Cloacal Respiration | That turtles can exchange gases across their cloacal mucosa is not new but that didn't stop the media from having a field day touting how "butt-breathing" helps painted turtles survive Canadian winters!

Turtle Associated Salmonella Outbreak | The Centers for Disease Control reported an additional 29 cases of *Salmonella agbeni* infection in people linked to contact with pet turtles, bringing the total to 66 cases from 18 states. Of 53 people with available information, 23 have been hospitalized. No deaths have been reported.

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The illegal turtle trade: Why scientists keep secrets

by Jacqueline Litzgus, Professor, Department of Biology, Laurentian University, Greater Sudbury, Ontario, Canada

"Spotted Turtles concentrate at breeding sites in the spring making them an easy target for poachers." *Clemmys guttata*. Public domain photograph.

I could tell you where I work, but then I'd have to kill you.

OK, not really; that seems extreme. But I might blindfold you if I took you there. Now you're wondering what kind of work could justify such secrecy.

I bet you aren't thinking "turtles."

Turtles are in trouble. Some researchers have even used the term "crisis" to describe their plight. This turtle decline is a global issue, affecting freshwater turtles, tortoises and sea turtles. Two-thirds of turtle species are at risk of extinction.

After more than 200 million years of plodding around the globe unchallenged and anatomically unchanged, turtles could now be facing their final lap.

We're their biggest threat. Turtles are crushed by cars and buried alive by bulldozers. Their habitats are whittled away by our insatiable appetite for big box stores and waterfront condos.

Their otherwise formidable shells were not designed to withstand these human assaults, because humans weren't a threat when this turtle armour was first making its appearance in evolutionary time.

The World Wildlife Fund Living Planet Report asserts that populations of vertebrate animals have decreased in abundance by 58 per cent in the past 50 years. Over-exploitation, second only to habitat loss and degradation, is a major threat to animal populations.

Turtles are not excused from such exploitation, which includes unsustainable harvesting and bycatch during other resource extraction activities such as fishing. Turtles and tortoises are eaten with religious zeal, their eggs and body parts consumed under false promises of improved health, greater longevity and a better sex life.

Many species are collected for the pet trade. Their generally passive demeanour and amazing beauty have contributed to turtle declines, as these traits are highly valued in pets.

The reproductive adults collected from the wild for the pet trade are essentially dead, as far as the population is concerned. Take one from its habitat and the potential for future babies is gone. No babies means, eventually, no population.

Turtles are bet-hedgers. Once an individual gets past the dicey egg and juvenile stages, it is essentially immortal — barring encounters with any human threats. Individual turtles can live for decades, some for more than a century.

But the persistence of the population relies on adult females. A female's reproductive lifespan is unencumbered by menopause; in fact, she gets better with age. Older females produce bigger and better clutches of eggs. But those eggs and juveniles are tasty morsels for numerous predators — most don't make it to adulthood, although they do contribute to food webs in an important way.

Captive wood turtle, Glyptemys insculpta. Public domain photograph.

But that's OK. As long as the adult females survive, they can hedge their bets by producing clutches of eggs every year, banking on a payoff in a good year, so that each female replaces herself and the population continues on according to natural processes.

So that's why I can't tell you where I work. You see, you might be a turtle poacher. I trust no one, and I want my turtles to remain safe and sound in the wild.

Two of the species that my research group works on, Spotted Turtles (*Clemmys guttata*) and Wood Turtles (*Glyptemys insculpta*), are listed as endangered in Ontario, and are highly sought after by the pet trade.

One of the Wood Turtle populations in Ontario was hit by a suspected poaching event in the 1990s. I say "suspected" because no one has yet been able to prove it.

Here's the story: 70 per cent of the turtles disappeared in a blink of time, and we didn't find their bodies. The evidence suggested that their vanishing was not due to a mass predation event or a disease outbreak.

Word on the street is that some of those turtles are still alive in a basement in Ottawa, where they are being used to pump out offspring to be sold in the pet trade.

What remains of that Ontario population has been subjected to

intensive and expensive management for 15 years in an attempt to bring it back from the brink of its projected extinction.

So how did the alleged poacher find out about the population? Good question, but hard to answer. Research began at the site in the late 1980s. The scientists thought their data reports would be safe in their desk drawers and bookshelves. But then came the internet and the digital age, and it became easier for the general public access to such documents.

The turtle trade has been compared to the gun and drug trades; it is that networked, clandestine and lucrative. Young, purportedly captive-bred Wood Turtles sell for hundreds of dollars a piece on the internet. Adults are hard to find for sale. They are often the wild-caught individuals and kept as breeders.

Within just a few years, two turtles can become dozens, and can net a poacher thousands of dollars in the legal trade.

I recently attended a scientific conference focused, not surprisingly, on turtles. Even in this situation, surrounded by like-minded scientists and conservation professionals, my students and I keep our study site information under our hats.

Good thing. As I listened to other conference presenters reveal too much, I learned that there was, in fact, a previously convicted turtle poacher attending the conference. My MO of secrecy was unfortunately justified.

You just never know what lengths unscrupulous people will go to, so it's best not to make things easy for them, especially when turtles already face a host of other harder-to-control threats.

So, I could tell you where our research sites are located, but then, of course, I'd have to kill you. ♧

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Scrubbing the GPS Data from Digital Photographs by M. A. Cohen

As the preceding article makes abundantly clear, the localities of sensitive wildlife habitats must be safeguarded in order to protect the imperiled species that inhabit those ecosystems.

There is growing awareness among wildlife biologists, conservationists, researchers, and photographers of the necessity to protect sensitive ecosystems by removing the global positioning system (GPS) data embedded in their digital photographs, a process commonly called "scrubbing the GPS data."

What is EXIF Metadata?

An abbreviation for Exchangeable Image File, EXIF is the format for the metadata that is automatically embedded in any JPEG, RAW or TIFF image captured using a current camera phone or digital camera with GPS capabilities. In addition to the date and time of the image capture, and technical data such as aperture, shutter speed and focal length, photographs geotagged using GPS data include the exact location (longitude and latitude) at which the image was captured.

The implications of public access to such information are chilling. Using the EXIF metadata from a digital photograph, a tech-savvy wildlife poacher could potentially decimate a study site or a pristine habitat. The necessity of removing the GPS data about an ecologically sensitive site and species from any publicly available image is obvious.

There is a prevailing view that most "major" social media sites remove the EXIF metadata before posting users' images to protect their privacy. However, given the lack of transparency with many of these sites, taking responsibility for removing the EXIF files prior to submitting images for posting is a sensible precaution.

Of course, images intended for posting on personal, educational, and other types of websites should be scrubbed of EXIF files as well.

How to Access the GPS Data of your Photos

If the GPS data (location services) settings on a smartphone or camera are enabled, that information will be automatically added to the EXIF metadata of a photograph.

The procedure one uses to access the EXIF data will vary depending on a number of factors, including the device being used to capture the image, and the hardware and software being used to process the image.

Most operating systems have a built-in capability for displaying EXIF data embedded in images. Often a simple right-click on the image opens a context menu from which one can choose "Get Info" (on MacOS) or "Properties" (on Windows) to access the these data.

Software such as Adobe Photoshop (part of the Adobe Creative Cloud subscription) and GIMP (the best free alternative to Photoshop) allow one to save or to discard EXIF data by checking or unchecking a box. In addition, there are a number of free EXIF tag "cleaners" and "removers" available for download from the Internet.

For more information on this important issue, click on the links in the next section. ♧

References

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Your Tortoise as a Winter Roommate

text and photographs by Karen Berry

Your tortoise was treated for a respiratory infection early in the "season." Your wallet just took a big hit for surgery to remove a bladder stone. For some reason, the old guy or girl just didn't eat or drink enough, and you don't think he or she is adequately prepared for brumation. You just adopted a tortoise from CTTC, or obtained it from another source, and don't know its medical history.

Or, it's the middle of January, raining cats and dogs, and your tortoise woke up from brumation and WON'T go back to sleep. Your non-brumating tortoise will be stuck in its house because of really bad weather, with no place to exercise. You aren't packing up to head for Florida, so now what...???

There are going to be times like those mentioned above when your tortoise may need to be kept awake over the winter, or the weather is such that being outdoors isn't practical for your non-brumating species of tortoise.

This will also apply to box turtles or other predominantly land dwellers. If you have to keep a normally outdoor pond turtle indoors for medical reasons, you may need to utilize some of this equipment, and provide a place for the turtle to be in water, if that is OK for your situation. Watch that the electronics are not too close to the water, for obvious reasons. A heater designed for in-water use is a much better choice, and if you need one, select an appropriate UV light, as well.

Tortoises and turtles cannot regulate their body temperature, but rely on the sun or other external heat source to keep warm. In a sense, they are always "room temperature." That is why tortoises live in burrows in the wild, where the temperature is stable, provides relief from the desert heat, and protection from the cold and wet weather during brumation.

There are a few things you should keep on hand for the occasions when your tortoise needs to be inside. One is going to be some patience, as having your tortoise as a roommate over the winter can be challenging, especially if more than one tortoise needs to be kept inside.

You will need to make sure the tortoise drinks enough water, or gets a soak once or twice a week to ensure it does not become dehydrated from the heat of the lamp, or from the lowered humidity inside the house.

Your tortoise may already like being in the house, having learned how to open the slider screen, figured out how to come through the dog door, or otherwise follows you inside. You don't want him, or her, to "get too used to it." If the outdoor temperature is over 70°F (21°C), your tortoise can usually go outside during the day, unless the medical reason for being inside negates being in dirt, rocks, on the grass, or California is having a real winter, and we have Noah on speed dial to call and borrow his Ark. If we could house break them, they'd be the perfect pet, not just the already wonderful ones they are.

First you need a heat lamp.

The lamp hood into which the bulb goes needs to have a ceramic base. The inexpensive work lights, with the plastic base containing the switch, cannot handle the heat generated by the ceramic bulb, burn out easily, and could be a fire hazard. There are ones specifically designed for use with heat emitters, have a ceramic or porcelain base, and are a little more expensive than the work lights.

Some companies indicate that the warranty for their heat emitters is void if the bulb is not used with the same brand lamp hood. Most come with clamps, but make sure it's a secure clamp so that the lamp cannot fall and start a fire. The clamp, however, places the lamp and the heat emitter at an angle from the tortoise and may not heat it efficiently, as it spreads the heat at an outward angle instead of downward. When purchasing a lamp hood, look for one that has a hanging loop in addition to a clamp.

Use the ceramic heat emitters that don't give off any light. They are much less annoying to you, especially at night, and seem to provide greater warmth. They can be expensive, but get a good quality one, and don't skimp to save money. A 100 Watt emitter should be sufficient for most tortoise warming needs. The bulbs usually last quite a while, especially if only used for the occasional indoor living situation. The heat source should be approximately 18" above the tortoise to prevent burns overheating, and dehydration, but should be checked regularly and the height adjusted as necessary.

"Brooder lamp" with ceramic base and clamp shown hanging from and clamped to a lamp stand.

Zoo Med Laboratories lamp with ceramic base and clamp shown clamped to a tortoise table.

The last item is very helpful, not always necessary, but will often provide a more stable manner of heating your tortoise, and is needed for some of the UVA/UVB lights, which need to project down onto the tortoise/turtle. A lamp stand enables you to easily adjust the distance from the lamp to the tortoise to prevent the overheating and dehydration mentioned above, plus the length of extension and swing of the arm. It keeps the lamp hanging over the box or wherever the tortoise is being kept, and can prevent other pets, kids, or adults from accidentally knocking the heat lamp off where it's been clamped.

Lamp stand

Reptile lamp stand sold by Zoo Med Laboratories.

The stands come in two sizes, the larger one being taller and heavier, which is useful with tortoises. They are often black metal, with a rectangular base, adjustable height, and an adjustable swing arm with a hook for hanging the lamp. It's also helpful to clamp the lamp onto the swing arm for extra stability. This also allows you to turn the lamp hood to the angle you need without pulling it off the arm in the process.

Next is a heat emitter.

100W ceramic heat emitter

Lamp hood with 60W heat emitter installed

The stand should be anchored by the box or other receptacle in which the tortoise sleeps at night, or if used in an open "heating station" location so the tortoise can sit under it in the exercise or other area, then the base needs to be weighted with something sufficiently heavy that the tortoise can't knock off the base while positioning itself under the lamp. Or, the base should be turned backwards away from the lamp and put under the edge of a solid piece of furniture so it can't be tipped over by the tortoise, other pets, or "clumsy" humans.

The most convenient thing (for us) to use for a tortoise "bed" while it has to be inside is a sturdy cardboard box. Make sure there is plenty of room for the tortoise to turn around, and not feel like it's "trapped."

If your tortoise has never been in a box, you can get one that has an open front, and the tortoise can easily walk out when he or she feels the need, or cut a flap into one of the sides that can be pushed back into place at night. Just make sure the box isn't on something you don't want ruined.

The one pictured comes from Costco, is super economical, meaning "free," and easily replaced when needed. There are ventilation holes in a lot of the larger boxes, but that is easily remedied with duct tape on both sides of each hole, except the hand holes, which make it much easier to move the box, with or without the tortoise inside.

Regardless of whether or not the surface on which the box is sitting is "easy clean," it's a good idea to put an older bath rug with a rubber backing (or a color you don't use or like anymore), or something else under it. That will keep a cold floor from leaching warmth from the box, and urine from escaping from the box, and soaking into what is hopefully not your favorite area rug.

Where is your tortoise going to sleep while it is inside.....?

Easily acquired and disposable "bed" for a tortoise fitted with accessories.

Line the bottom of the box with either a folded plastic garbage bag (which slides around a lot), or you can use the dog "pee pads" that you can get at a pet store. They are plastic on the bottom and have a soft absorbent material for the top layer

that soaks up the urine and keeps your box nicer longer. Then place a folded OLD bath towel on top of the "liner," and you are ready to go. Have a bath towel handy to place over the box at night to keep it dark for the tortoise to sleep, to keep out drafts, and, if you have cut a flap in the box, make sure the towel goes all the way to the floor.

If you need to heat the tortoise overnight as well as during the day because of illness, swing the arm of the stand over to one corner, and make sure the lamp is a few inches above and not touching the towel.

For some reason, a lot of tortoises seem to like something soft to sit on. Have a supply of old towels on hand, as they are going to get soiled, and wet from urination. Or, shop a thrift store or outlet store for inexpensive bath towels or ones on sale, and have those on hand strictly for tortoise use. Get colors you would never use in your own bathrooms.

For rainy and really cold days, have somewhere that is "easy clean up" for the tortoise to get some exercise and a location where you will feed the tortoise. A "feeding station" is as simple as a corner or other spot where you put down a folded towel, large enough so the dish and the tortoise are not directly on the floor, and *voilá*...ready to go. The towel will catch what the tortoise shoves off the plate or doesn't eat, and you can fold the entire thing up, take it outside to shake off the remaining food particles, and fold it up for next meal.

Make sure the area where the tortoise is staying can be brightly lit during the day; otherwise he or she will be looking for a dark place to go to sleep. It's hard for them to disobey Mother Nature, but a nice bright room during the day will help.

While it can be a challenge to keeping things orderly and anywhere near normal while your shelled roommate motors around the area you've set up, enjoy the tortoise's company at this time of year, take heart in that it's not an annual occurrence, and take him or her to have a picture taken with Santa. ♧

Special thanks to Karen Berry of the CTTC Valley Chapter for making this care sheet available for publication in the *Tortuga Gazette*.

Burmese Star Tortoise Makes Meteoric Comeback

YANGON, MYANMAR—11 OCTOBER 2017—The Burmese star tortoise (*Geochelone platynota*), a medium-sized tortoise found only in Myanmar's central dry zone, has been brought back from the brink of extinction thanks to an aggressive captive-breeding effort spearheaded by a team of conservationists and government partners.

Efforts to restore the tortoise are described in the latest issue of the peer-reviewed journal *Herpetological Review*.

The tortoises now number over 14,000 individuals, up from an estimated population of just a few hundred animals in the early 2000s. Burgeoning demand from wildlife markets in southern China beginning in the mid-1990s virtually wiped out the tortoise in a matter of years until viable populations could no longer be found, and the species was considered ecologically extinct.

In 2004, The Nature and Wildlife Conservation Division of the Myanmar Ministry of Natural Resources and Environmental Conservation in collaboration with the Wildlife Conservation Society (WCS)/Turtle Survival Alliance (TSA) Myanmar Program established three "assurance colonies" to hedge against the extinction of wild populations. The three colonies began with an estimated 175 individuals, mostly confiscated from illegal wildlife traffickers.

The colonies were sited at facilities within existing wildlife sanctuaries. After the colonies were established, conservationists had to determine the species' husbandry requirements including diet, feeding, reproduction, and hatchling care. Herpetologists from WCS's Bronx Zoo helped design the breeding centers as well as provide husbandry expertise. In addition, veterinarians and molecular scientists from the Bronx Zoo conducted health screenings of the captive population to determine what diseases might be present (no major diseases of concern were discovered). Bronx Zoo vets continue to consult with WCS Myanmar vets on various health cases, confirming diagnoses and recommending treatment options.

Approximately 750 animals have been released into wild areas of the sanctuaries, and the long term objective of restoring viable populations in every protected area in the central dry zone is now biologically attainable. However, political and social challenges need to be resolved before large-scale reintroduction takes place to ensure the tortoises are not taken by poachers.

Said lead author Steven Platt, a herpetologist with WCS's Myanmar Program: "This is the modern day equivalent of saving the bison from extinction. A team of conservationists spearheaded an aggressive captive breeding effort, and have brought an animal back from the brink to where it now has the potential to be reintroduced into the wild in large numbers."

Said Andrew Walde, Chief Operating Officer of Turtle Survival Alliance: "The Myanmar WCS/TSA partnership is a model chelonian conservation success story. If you had told me more than 10 years ago when the project started that we would have more than 10,000 Burmese Star tortoises, and that we would have returned nearly a thousand to the wild, I wouldn't have believed it. It is success stories like this that make all the hard work worth it." ♧

—Wildlife Conservation Society press release

Meetings and Programs

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

Cen-Val
11 January; 8 February

Chino Valley
19 January; 16 February

Foothill
26 January; 23 February

High Desert
8 January; 12 February

Inland Empire
5 January; 2 February

Kern County
8 January; 12 February

Low Desert
5 February

Orange County
12 January; 9 February

Ridgecrest
8 January; 12 February

Santa Barbara-Ventura
Contact the chapter for meeting information.

Santa Clarita
20 January

Silicon Valley
19 January; 16 February

TOOSLO (San Luis Obispo)
10 January; 14 February

TTCS (Long Beach)
19 January: Tom Roach on Raising Hatchlings;
16 February: Ed LaRue on Desert Tortoises

Valley
19 January; 16 February

Executive Board
13 January. Meetings take place at the Los Angeles County Arboretum, Arcadia, CA.

Classified Advertisements

Classified advertisements run for one issue at 5^{00} for up to four lines, or 30^{00} for ¼ page. Ads are accepted at the discretion of the Editor. 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**.

FOR SALE: Hatchlings to one-year-old red foot tortoises. Raised outside everyday and fed mostly natural diet. Call Linda at (626) 836-0399 or email laccturtle@earthlink.net (1)

FOR SALE: Redfoots, Russians, Marginateds, Hermann's, Graecas, Elongateds, Forsteniis, Leopards, Reeves and Boxes—all breeding adults. Reeves, Box and Russian hatchlings. Call 805-481-5222. (1)

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

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**

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

Rare and Endangered Turtles/Tortoises (From Turtle Conservancy) in the Basement of City Hall *—City of Atascadero, CA press release*

Atascadero, California—12 December 2017—Just who were the highly unusual and completely unexpected guests to arrive in Atascadero recently? And, when an out of control wildland fire threatens, where do you go with hundreds of rare and endangered turtles and tortoises? Well, Atascadero, of course! Where else would you take them but to Atascadero's Historic City Hall basement!

With wildland fires raging across Ventura and Los Angeles counties, thousands of residents and visitors were evacuated. The largest of these fires, the Thomas Fire, had burned over 200,000 acres,spanned over 200 square miles in Ventura County, and at one point had surrounded the community of Ojai. Most of the Ojai Valley was under a mandatory evacuation order.

Galápagos tortoise. Public domain photograph.

When the Thomas Fire threatened the Turtle Conservancy facility in Ojai, hundreds of rare and endangered specimens from over 30 species of tortoises and turtles had to be quickly evacuated to avoid catastrophe, including ploughshare tortoises, baby snake-necked turtles, radiated tortoises, golden coin turtles and a nearly 400-pound Galapagos tortoise, which took five strong men to load up. A caravan of fully loaded trucks headed northbound on 101 to Atascadero, and the unusual guests were made safely welcome at City Hall.

The Conservancy was able to evacuate the bulk of the animals from the sanctuary, including the most endangered species, but a few remained in ponds that they couldn't get to in time. Several Conservancy employees stayed with the turtles against evacuation orders in hopes to protect them.

Why Atascadero? The Charles Paddock Zoo in Atascadero is well known among fellow American Zoological Association (AZA) accredited facilities as being committed to conservation and in aiding in the long-term research and propagation of turtle and tortoise species through the zoo's Turtle Lab, designed specifically for that purpose in the hopes of helping save these animals from extinction.

The Turtle Conservancy is dedicated to protecting threatened turtles and tortoises and their habitats worldwide, and to promoting their appreciation by people everywhere. The Conservancy preserves critical ecosystems and wild lands. Their conservation breeding program includes 35 species of turtles and tortoises, 14 of which are on the "Top 40 Most Endangered" list, according to the International Union for Conservation of Nature's Tortoise and Freshwater Turtle Specialist Group.

Turtle Conservancy Chief Operating Officer, Dr. Paul Gibbons and Charles Paddock Zoo Director Alan Baker have a long professional association through the AZA and mutual interest in protecting and preserving all species of turtles and tortoises. When confronted with a "turtle evac" emergency, Dr. Gibbons reached out to Director Baker for assistance. Working with City Manager Rachelle Rickard, the City of Atascadero was able to provide a temporary secure and safe haven for the animals.

As soon as the imminent fire danger near the Conservancy facility had passed, the mandatory evacuation orders had been lifted and the City's very unusual guests were able to return home, they were all loaded back onto trucks from their warm and secure temporary housing here at Historic City Hall to make the trek home again. City Manager Rachelle Rickard says that the City of Atascadero "was very proud to be able to assist in the rescue efforts and to provide a temporary home for the turtles. We were happy that these unusual guests were able to call Atascadero "home", even for a short while."

Visitors to the Charles Paddock Zoo can enjoy the zoo's collection of endangered turtles on exhibit including Radiated Tortoises, Spider Tortoises and Big Headed Turtles. The zoo is extremely proud to be home to six rare Radiated Tortoises, which are considered to be one of the world's most beautiful tortoises and are endangered, mainly due to poaching and destruction of their habitat.

Over 200 animals call the Charles Paddock Zoo home.

Here's some video taken by CIty staff of several of the Galapagos Tortoises being loaded up for their return trip from CIty Hall back to their home in Ojai:
https://youtu.be/_DjR68SIGtY

Click **Turtle Conservancy** to learn more about the work of the conservation organization.

Click **Charles Patton Zoo** to learn more about the Zoo.

2018 California Turtle & Tortoise Club Directory

Executive Board
General Information:
CTTCEBOfficers@tortoise.org
Chair: Abigail DeSesa
Vice-chair: Dave Zantiny
Secretary: Richard Roosman
Treasurer: Robyn Kohr
Meeting: quarterly (January, April, July and October) at 11 AM the Los Angles County Arboretum, 301 No. Baldwin Avenue, Arcadia, CA 91007

Cen-Val Chapter
President/vice president: **Robert Scott**
Treasurer: **Diana Gatti**
Meeting: Second Thursday, 7:00 PM at Fresno Unified School District, Del Mar Elementary School, 4122 N. Del Mar Avenue, Fresno, CA 93704 (no meeting in July or August, as school is closed)

Chino Valley Chapter
President: **Jim Misiak**
Vice president: **David Bowman**
Secretary/treasurer/adoptions:
Lynda Misiak
Meeting: Third Friday, 7:30 PM at Chino Girl Scout House, 5007 Center Street, Chino, CA 91710

Foothill Chapter
President: **Robin Robb**
Vice president: **Joanna Bolt**
Secretary: **Mardy Graves**
Treasurer/membership: **Jeanette Lea**
Adoptions: Linda Crawford
Meeting: Fourth Friday, 7:30 PM at Los Angeles County Arboretum, 301 No. Baldwin Avenue, Arcadia, CA 91007

High Desert Chapter
President/adoptions: **Dave Zantiny**
Secretary/adoptions: **Mary Dutro**
Meeting: Second Monday, 7:00 PM at Sterling Inn Regency Room, 17738 Francesca Road, Victorville, CA 92395

Inland Empire Chapter
President: **Monica Dirac**
Vice president: **Richard Roosman**
Secretary: **Vendy Martin**
Treasurer: **Robyn Kohr**
Meeting: First Friday, 7:30 PM at "The Ark" Church of the Nazarenes in the Fellowship Hall in Young Hall, 1307 East Citrus Avenue, Redlands, CA 92374

Kern County Chapter
President: **Heather Ponek**
Vice president/membership:
Javier Gonzalez
Secretary: **Gina Mattson**
Adoptions: **Lawrence Rushing**
Meeting: Second Monday, 6:30 PM at St. Philip of the Apostle Church, St. Ann's Room (east side of church), 7100 Stockdale Hwy (on the north side, between Ashe and Gosford), Bakersfield, CA 93309

Low Desert Chapter
General Information: **Tony Vaninetti**
Secretary: **Marlies Dietrich**
Adoptions: **Bill Powers**
Meeting: First Monday of every even-numbered month 7:00 PM at The Living Desert Reserve, 47-900 Portola, Palm Desert, CA 92260-6156

Orange County Chapter
General Information:
orangecounty@tortoise. org
President: Traci Fields
Secretary: Stephanie Roberts
Treasurer/membership: Robin Robb
Meeting: Second Friday, 7:30 PM at Grand Street Center (First Presbyterian Church), 146 N. Grand Street, Orange, CA 92866

Ridgecrest Chapter
President: **Robert Parker**
Vice president: **Sue Parker**
Adoptions: **Montynne Yates**
Meeting: Second Monday, 7:30 PM at Maturango Museum,100 East Las Flores Ave., Ridgecrest, CA 93555

Santa Barbara-Ventura Chapter
President: **Don Williams**
Adoptions: **Wes Shipway**
Meeting: Contact the Chapter for meeting information.

Santa Clarita Chapter
President: **George Ordway**
Secretary: **Jennifer Fields**
Treasurer/membership/adoptions:
Abigail DeSesa
Meeting: Third Saturday of odd-numbered months at 6:30 PM at Valencia United Methodist Church, 25718 McBean Pkwy, Valencia, California 91355

Silicon Valley Chapter
President: **Gilbert Castro**
Vice president: **Lesa Montoya**
Secretary: **Lisa Wong**
Treasurer: **Dorothy Castro**
Meeting: Third Friday, 7:00 PM at San Jose Masonic Center, 2500 Masonic Drive, San Jose, CA. 95125

TOOSLO (San Luis Obispo) Chapter
President: **Brandon Froelicher**
Vice president: **Brian Kusko**
Secretary: **Lisa Winn**
Treasurer: **Kimberly LaMar**
Adoptions: **Bob Thomas**
Meeting: Second Wednesday, 7:00 PM at PG&E Community Center, 6588 Ontario Road, San Luis Obispo, CA 94505

Turtle & Tortoise Care Society (Long Beach) Chapter
President: **Richard Roosman**
Secretary/Membership:
Anita De Leon
Treasurer: **John Wong**
Meeting: Third Friday, 7:30 PM at University Baptist Church, 3434 Chatwin, Long Beach, CA 90808-2613

Valley Chapter
President: **Bob Hazard**
Treasurer: **Karen Berry**
Adoptions: **Valley Adoption Team**
Meeting: Third Friday, 7:30 PM at Woodland Hills Christian Church, 5920 Shoup Ave., Woodland Hills 91367-3327

NOTE: The postal mailing addresses for each Chapter are listed on the last page of this newsletter.

TIRN Statement on Recommendation to Allow Commercial Fishing in America's Marine National Monuments

5 DECEMBER 2017—In response to Secretary of Interior Zinke's recommendations to President Trump to allow commercial fishing in the Northeast Canyons and Seamounts, Rose Atoll and Pacific Remote Islands Marine National Monuments, Turtle Island Restoration Network, a leading ocean conservation organization, condemns this reversal of public lands protections.

"Allowing commercial fishing back into protected marine areas is advancing the clock on extinction," said Peter Fugazzotto, Strategic Programs Director. "Our marine national monuments – 65 million acres – are already under constant threat by plastic trash, nonnative species, and the effects of climate change. If Trump implements these recommendations, we may rocket forward on the path to lose the sea turtles, the whales, and the diversity of the oceans which sustains all life on Earth."

The monuments at risk are critically important habitat for a wide array of marine species.

***Pacific Remote Islands Marine National Monument (55.6 million acres)*:** Some corals at the monument are up to 5,000 years old. Home to sea turtles, dolphins, whales, pearl oysters, giant clams, coconut crabs, large groupers, sharks, humphead wrasses, and bumphead parrotfishes.

***Northeast Canyons and Seamounts Marine National Monument (3.1 million acres)*:** The canyons and seamounts provide habitat for protected species such as endangered sperm, fin, and sei whales and Kemp's ridley turtles.

***Rose Atoll Marine National Monument (8.6 million acres)*:** Important nesting sites for the threatened green and endangered hawksbill turtles in American Samoa.

Commercial fishing practices are extremely detrimental to marine habitat and marine species. These marine national monuments were created and expanded to prohibit commercial fisheries, thus providing important protected areas for endangered migratory species like the Pacific leatherback sea turtle.

For the Pacific leatherback sea turtle, populations continue to decline due to death and injury when they get captured in commercial fishing gear, such as longlines and drift gillnets.

The inevitable result of these rollbacks will be a return to coral reef destruction, overfishing and lethal bycatch of threatened and endangered species that occurred prior to each marine national monument designation.

—Turtle Island Restoration Network press release

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.

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}**

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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 9271

Ridgecrest Chapter: P. O. Box 1272, Ridgecrest, CA 9355

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

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

Silicon Valley Chapter: P.O. Box 64135, Sunnyvale, CA 94088-4135.

TOOSLO Chapter: P.O. Box 14222, San Luis Obispo, CA 93406

Turtle & Tortoise Care Society Chapter: P.O. Box 15965, Long Beach, CA 90815-0965

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

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