





THE BIG TURTLE YEAR

**LOOKING FOR
WILD TURTLES
IN WILD PLACES**

By George L. Heinrich and Timothy J. Walsh

We like looking for wild turtles in wild places. From the time George was in elementary school catching Wood Turtles in southwestern Connecticut and Tim found his first pebble-sized Striped Mud Turtle at age 10 in a south Florida stream, we have both marveled at being in nature and searching for these fascinating reptiles. As children, little did we know that our time spent exploring our neighborhood woods would lead to rewarding careers in wildlife conservation. Now we are both officers with the Florida Turtle Conservation Trust, an organization working to conserve Florida's rich turtle diversity.

In 2017 we created the opportunity of a lifetime with the Trust's conservation education initiative: The Big Turtle Year, an ambitious plan to travel across the United States and back again trying to find as many species as we could. "Big Years" are common in the birder community but rare in herpetological circles. The project allowed us to join enthusiastic colleagues and other conservationists throughout the country, helping us and others learn about these important vertebrates and the people who study them.

The United States is the most turtle-rich country in the world with 62 species and 89 terminal taxa (species and subspecies), and the plight of many species here quietly goes unnoticed. Using the Turtle Taxonomy Working Group's 2014 checklist (the most current available at the start of the project), our target list included 59 species.

While we often hear about the precarious situations of species in other countries, many of our native turtles face dire threats of their own. When we set out to see how many species we could observe in a single year, our ultimate objective was to raise awareness regarding the rich diversity, ecology, status, and conservation of one of the most endangered groups of wildlife. Like most turtle species around the world, turtles in the United States are imperiled by a long list of threats (often working in synergy), including habitat loss and degradation, invasive plant and animal species, low water levels and quality, restricted geographic range, and poaching for the food and pet trade. Fifty-nine percent of the world's 349 turtle species are threatened with extinction. Luckily, despite the urgency of the situation, opportunities for conservation are plentiful and the fact that people like turtles makes them an excellent group for education and outreach efforts to enhance ecological stewardship, conservation, and environmental awareness.

We both liked turtles as kids, but now, many years later, we understand the important ecological roles they play. Some turtle species serve as indicators of environmental health, while others are classified as keystone species (those that play a vital ecological role in a given habitat), umbrella species (those whose conservation benefits the larger ecological community), or flagship species (iconic symbols of habitat conservation efforts). Perhaps one of the best examples of the ecological significance of turtles is the Gopher Tortoise, an imperiled species that occurs in a six-state range within the Southeastern Coastal Plain of the United States. Appropriately, the Gopher Tortoise was the first species we found on day one of The Big Turtle Year.

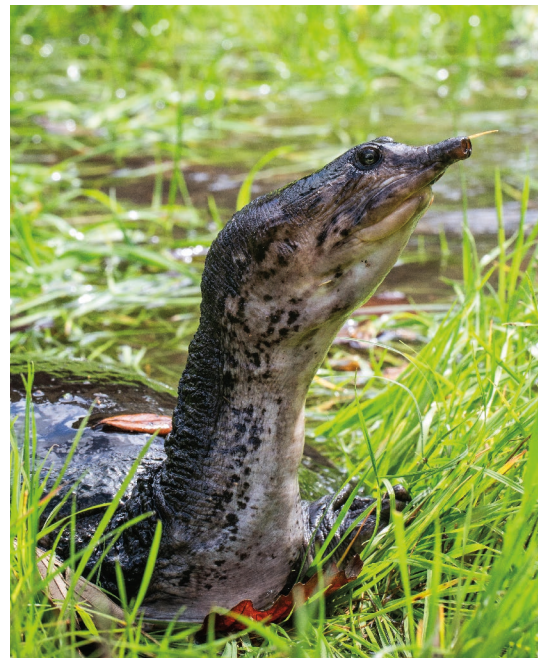
SOUTHEAST REGIONAL HIGHLIGHTS

The southeastern United States is the second most turtle-rich region in the world; only Southeast Asia has greater turtle diversity. Of the 57 species we observed over the course of the year, 29 reside in this region.

Our fieldwork began on New Year's Day at Boyd Hill Nature Preserve in St. Petersburg, Florida. A sea of concrete surrounds this 800-acre remnant of a forest, but the significant habitat diversity of the preserve still supports 10 native

Previous spread: Wood Turtle found in Sussex County, New Jersey.

Below: A Florida Softshell Turtle.



PREVIOUS SPREAD: JAMES LIU | LEFT: JAMES LIU | OPPOSITE: TIMOTHY J. WALSH



A basking male Barbour's Map Turtle. We first found the species in Baker County, Georgia, but this specimen was found in Jackson County, Florida.

THE BIG TURTLE YEAR SOUTHEAST REGION

№1 GOPHER TORTOISE (*Gopherus polyphemus*) **FOUND** January 1, 2017, Boyd Hill Nature Preserve (St. Petersburg, Florida)

№2 PENINSULA COOTER (*Pseudemys floridana peninsularis*) **FOUND** February 11, 2017, Boyd Hill Nature Preserve (St. Petersburg, Florida)

№3 FLORIDA SOFTSHELL TURTLE (*Apalone ferox*) **FOUND** February 11, 2017, Boyd Hill Nature Preserve (St. Petersburg, Florida)

№4 RED-EARED SLIDER (*Trachemys scripta elegans*) **FOUND** February 11, 2017, Boyd Hill Nature Preserve (St. Petersburg, Florida)

№5 FLORIDA RED-BELLIED COOTER (*Pseudemys nelsoni*) **FOUND** March 19, 2017, Ichetucknee Springs State Park (Columbia County, Florida)

№6 SUWANNEE COOTER (*Pseudemys concinna suwanniensis*) **FOUND** March 19, 2017, Ichetucknee Springs State Park (Columbia County, Florida)

№24 LOGGERHEAD MUSK TURTLE (*Sternotherus m. minor*) **FOUND** May 13, 2017, Rainbow River (Marion County, Florida)

№33 LOGGERHEAD SEA TURTLE (*Caretta caretta*) **FOUND** June 3, 2017, Jupiter Island (Martin County, Florida)

№34 GREEN SEA TURTLE (*Chelonia mydas*) **FOUND** June 3, 2017, Jupiter Island (Martin County, Florida)

№35 LEATHERBACK SEA TURTLE (*Dermochelys coriacea*) **FOUND** June 3, 2017, Jupiter Island (Martin County, Florida)

№36 ALABAMA MAP TURTLE (*Graptemys pulchra*) **FOUND** June 9, 2017, Bankhead National Forest (Winston County, Alabama)



George L. Heinrich with the first turtle of The Big Turtle Year, an adult female Gopher Tortoise at Boyd Hill Nature Preserve in St. Petersburg, Florida.

№37 FLATTENED MUSK TURTLE (*Sternotherus depressus*) **FOUND** June 9, 2017, Bankhead National Forest (Winston County, Alabama)

№38 SOUTHERN BLACK-KNOBBED MAP TURTLE (*Graptemys nigrinoda delticola*) **FOUND** June 10, 2017, Mobile County, Alabama

№39 ALABAMA RED-BELLIED COOTER (*Pseudemys alabamensis*) **FOUND** June 11, 2017, Five Rivers Delta Resource Center (Baldwin County, Alabama)

№40 PASCAGOULA MAP TURTLE (*Graptemys gibbonsi*) **FOUND** June 12, 2017, Chickasawhay River (Greene County, Mississippi)

№41 YELLOW-BLOTCHED MAP TURTLE (*Graptemys flavimaculata*) **FOUND** June 12, 2017, Chickasawhay River (Greene County, Mississippi)

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Top: A five-year-old Flattened Musk Turtle found in a shallow stream within the Bankhead National Forest in Winston County, Alabama.

Bottom: Chloe, a summer herpetology camp student, holding No. 43 for The Big Turtle Year, an adult female Striped Mud Turtle at Brooker Creek Preserve in Tarpon Springs, Florida.

turtle species (36 percent of the state's diversity) representing five families. On that first warm afternoon we found nine Gopher Tortoises, including a hatching. This reptile is likely the most important vertebrate in the upland ecosystems where it occurs and serves as a keystone, umbrella, and flagship species.

An ecosystem engineer, it creates an extensive burrow system that serves as a refuge from extreme temperatures, predation, and fire (a beneficial ecological process) for over 365 invertebrates and vertebrates, including state and federally listed species such as the Florida Mouse and Eastern Indigo Snake. The Gopher Tortoise eats a wide variety of plants and disperses seeds in its scat. If it were to disappear, many of the species that depend on it will perish, too. Because of the Gopher Tortoise's status as an umbrella species, habitat management efforts on its behalf are beneficial to the greater ecological community in which it lives. This iconic tortoise also serves as a flagship species for the conservation of upland ecosystems.

Long and wonderful days spent hiking, swimming, and boating in Alabama, Mississippi, and Georgia afforded welcome opportunities to document all nine of this region's map turtle species. Another highlight of our time here was the seemingly coordinated capture of two Flattened Musk Turtles by the two of us at precisely the same time. This Critically Endangered species with a highly restricted geographic range in north-central Alabama inhabits rock- and boulder-strewn creeks rich with crevices that provide refuge for the turtles. Accessing this habitat was possible only after a long hike traversing steep ravines, passing through knee-high poison ivy and thick briars.

Back in Florida, we were thrilled to observe nine Loggerhead Sea Turtles, four Green Sea Turtles, and two Leatherback Sea Turtles during a single June evening on a dark east-coast beach—a study site monitored by Florida Leatherbacks Inc., a non-profit research group. Months later, we would find another marine species, a lone subadult Hawksbill Sea Turtle, swimming above a coral reef off the coast of Islamorada in the Florida Keys.

Our yearlong quest ended in Florida (as it began), with the sighting of a Florida Chicken Turtle. Although we searched for this species in four states, it wasn't until the very end of December, with just three days to spare, that we found a basking male while road cruising at Fakahatchee Strand Preserve State Park in the southwestern part of the state. There was a great sense of relief when we finally found this common, yet secretive species.

**WHILE WE OFTEN HEAR ABOUT
THE PRECARIOUS SITUATIONS OF
SPECIES IN OTHER COUNTRIES,
MANY OF OUR NATIVE TURTLES
FACE DIRE THREATS OF THEIR OWN.**



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№ 42 ESCAMBIA MAP TURTLE (*Graptemys ernsti*) **FOUND** June 13, 2017, Sepulga River (Escambia County, Alabama)

№ 43 STRIPED MUD TURTLE (*Kinosternon baurii*) **FOUND** July 10, 2017, Brooker Creek Preserve (Tarpon Springs, Florida)

№ 44 SUWANNEE ALLIGATOR SNAPPING TURTLE (*Macrochelys suwanniensis*) **FOUND** September 27, 2017, Suwannee River Drainage in south-central Georgia

№ 48 RAZORBACK MUSK TURTLE (*Sternotherus carinatus*) **FOUND** October 20, 2017, Bogue Chitto River (Walthall County, Mississippi)

№ 49 PEARL RIVER MAP TURTLE (*Graptemys pearlensis*) **FOUND** October 20, 2017, Bogue Chitto River (Walthall County, Mississippi)

№ 50 RINGED MAP TURTLE (*Graptemys oculifera*) **FOUND** October 20, 2017, Bogue Chitto River (Walthall County, Mississippi)

Opposite: These Suwannee Cooters were found on the Santa Fe River, Florida, in March 2019.

Below: An adult male Ringed Map Turtle, No. 50 for The Big Turtle Year, observed in the Bogue Chitto River in southern Mississippi.

№ 51 OUACHITA MAP TURTLE (*Graptemys ouachitensis*) **FOUND** October 21, 2017, Big Black River (Warren County, Mississippi)

№ 52 MIDLAND SMOOTH SOFTSHELL TURTLE (*Apalone m. mutica*) **FOUND** October 21, 2017, Big Black River (Hinds County, Mississippi)

№ 53 EASTERN MUD TURTLE (*Kinosternon s. subrubrum*) **FOUND** October 21, 2017, Forrest County, Mississippi

№ 54 BARBOUR'S MAP TURTLE (*Graptemys barbouri*) **FOUND** November 3, 2017, Ichawaynochaway Creek, Jones Ecological Research Center (Baker County, Georgia)

№ 55 KEMP'S RIDLEY SEA TURTLE (*Lepidochelys kempii*) **FOUND** December 3, 2017, off the Gulf Coast north of Steinhatchee (Taylor County, Florida)

№ 56 HAWKSBILL SEA TURTLE (*Eretmochelys imbricata*) **FOUND** December 27, 2017, off the coast of Islamorada (Monroe County, Florida)

№ 57 FLORIDA CHICKEN TURTLE (*Deirochelys reticularia chrysea*) **FOUND** December 28, 2017, Fakahatchee Strand Preserve State Park (Collier County, Florida)





Top: Habitat destruction and collection for the pet trade threaten Spotted Turtles, an Endangered freshwater species found in shallow streams, marshes, wet meadows, and bogs.

Far left: Timothy J. Walsh holding a large male Wood Turtle in Sussex County, New Jersey.

Left: Jim Angley, an independent conservationist, measuring a Bog Turtle in Sussex County, New Jersey.

Opposite: A particularly attractive male Eastern Box Turtle, No. 25 for The Big Turtle Year, in Ocean County, New Jersey.

BOTTOM LEFT AND RIGHT: GEORGE L. HEINRICH | TOP: JAMES LIU



THE BIG TURTLE YEAR NORTHEAST REGION

№ 7 EASTERN PAINTED TURTLE

(*Chrysemys p. picta*) FOUND March 29, 2017, Binney Park (Old Greenwich, Connecticut)

№ 8 COMMON SNAPPING TURTLE

(*Chelydra serpentina*) FOUND March 29, 2017, Binney Park (Old Greenwich, Connecticut)

№ 9 SPOTTED TURTLE (*Clemmys guttata*)

FOUND March 30, 2017, Central Connecticut Valley (Middlesex County, Connecticut)

№ 25 EASTERN BOX TURTLE (*Terrapene c. carolina*) FOUND May 14, 2017, Colliers Mills Wildlife Management Area (Ocean County, New Jersey)

№ 26 NORTHERN DIAMONDBACK

TERRAPIN (*Malaclemys t. terrapin*) FOUND May 14, 2017, Great Bay Boulevard (Ocean County, New Jersey)

№ 27 BOG TURTLE (*Glyptemys mühlenbergii*) FOUND May 15, 2017, Sussex County, New Jersey

№ 28 WOOD TURTLE (*Glyptemys insculpta*)

FOUND May 15, 2017, Sussex County, New Jersey

№ 29 COMMON MAP TURTLE (*Graptemys*

geographica) FOUND May 15, 2017, Raritan River and D&R Canal (Somerset County, New Jersey)

№ 30 NORTHERN RED-BELLIED COOTER

(*Pseudemys rubriventris*) FOUND May 15, 2017, Raritan River and D&R Canal (Somerset County, New Jersey)

NORTHEAST REGIONAL HIGHLIGHTS

Having grown up in the Northeast when turtles were more abundant, George welcomed the opportunity to return and search for species that brought him great joy as a child. We found a Spotted Turtle in the Central Connecticut Valley, as well as 13 Bog Turtles and nine Wood Turtles in northern New Jersey. All three species are in high demand for the international pet trade, and poaching is a major threat. Consequently, we are keeping exact locality information for these and other vulnerable species observed confidential. One person (likely a poacher) actually contacted us requesting more detailed information about the location of a site in another region—needless to say, that was not shared. Reports of poaching events occur on a regular basis. Just recently, we learned of a confiscation of 209 Spotted Turtles in northern New York. Confiscations of this nature have become more common in recent years, an indication of the extent of the wildlife trade.

In southeastern Massachusetts, we had the opportunity to visit a disjunct relict population of the Northern Red-Bellied Cooter. This unique population is located more than 200 miles away from the nearest population in central New Jersey and behaves differently in regard to migration and inter-pond movements (these turtles move across land, while the nearest population migrates via waterways).



SOUTHWEST REGIONAL HIGHLIGHTS

We observed 17 species in this vast region, all in Texas, Arizona, and California. Texas alone produced 12 species during an eight-day, nearly 2,500-mile road trip that included a visit to a Mexican Plateau Mud Turtle site. Considered one of the rarest turtles in the United States, this species is mostly found in Mexico, and only a small population occurs just north of the border in a single county in the Big Bend region of the state. Of all the species that we targeted in Texas, this was the one that George was most excited to see in the wild. Management practices by private landowners (about 96 percent of the land in Texas is privately owned), water issues, and a very limited range are all significant threats to this species, which is listed as Threatened by the state of Texas. Little is known about the Mexican Plateau Mud Turtle in the United States, and increased field studies and conservation efforts are urgently needed.

In Arizona we were able to see two additional mud turtle species with limited geographic ranges in the United States and larger ranges in Mexico. We spent a day at an Arizona Mud Turtle site in the southeastern part of the state where American Turtle Observatory researchers are conducting a pilot project that involves trapping turtles in cattle ponds, marking them, collecting morphometric data, and radiotracking.

From there we headed west along the border to Organ Pipe Cactus National Monument, where we joined an annual survey for the Sonoyta Mud

Adult Sonoyta Mud Turtle at Quitobaquito Springs in Organ Pipe Cactus National Monument in Arizona.

THE BIG TURTLE YEAR SOUTHWEST REGION

№10 **MISSISSIPPI MAP TURTLE** (*Graptemys pseudogeographica kohnii*) **FOUND** April 23, 2017, Trinity River (Dallas County, Texas)

№11 **SABINE MAP TURTLE** (*Graptemys sabinensis*) **FOUND** April 23, 2017, Sabine River/Highway 69 (Wood County, Texas)

№12 **TEXAS COOTER** (*Pseudemys texana*) **FOUND** April 23, 2017, County Line BBQ (Austin, Texas)

№13 **TEXAS MAP TURTLE** (*Graptemys versa*) **FOUND** April 23, 2017, County Line BBQ (Austin, Texas)

№14 **COMMON MUSK TURTLE** (*Sternotherus odoratus*) **FOUND** April 23, 2017, County Line BBQ (Austin, Texas)

№15 **CAGLE'S MAP TURTLE** (*Graptemys caglei*) **FOUND** April 24, 2017, Palmetto State Park (Gonzales County, Texas)

№16 **PALLID SPINY SOFTSHELL TURTLE** (*Apalone spinifera pallida*) **FOUND** April 24, 2017, Harris County, Texas

№17 **ALLIGATOR SNAPPING TURTLE** (*Macrochelys temminckii*) **FOUND** April 25, 2017, Harris County, Texas

№18 **TEXAS TORTOISE** (*Gopherus berlandieri*) **FOUND** April 26, 2017, Hidalgo County, Texas

№19 **RIO GRANDE COOTER** (*Pseudemys gorzugi*) **FOUND** April 26, 2017, San Felipe Creek/Highway 90 East (Del Rio, Texas)

№20 **MEXICAN PLATEAU MUD TURTLE** (*Kinosternon hirtipes murrayi*) **FOUND** April 27, 2017, Presidio County, Texas

№21 **BIG BEND SLIDER** (*Trachemys gaigeae*) **FOUND** April 28, 2017, Big Bend Ranch State Park (Brewster County, Texas)



**№ 22 SOUTHERN WESTERN POND
TURTLE** (*Actinemys pallida*) **FOUND** May 6,
2017, Riverside County, California

№ 23 MOJAVE DESERT TORTOISE
(*Gopherus agassizii*) **FOUND** May 7, 2017,
Desert Tortoise Natural Area (California City,
California)

№ 45 ARIZONA MUD TURTLE (*Kinosternon
arizonense*) **FOUND** October 3, 2017, south-
ern Arizona

№ 46 SONOYTA MUD TURTLE (*Kinosternon
sonoriense longifemorale*) **FOUND** October
4, 2017, Quitobaquito Springs, Organ Pipe
Cactus National Monument (Arizona)

№ 47 SONORAN DESERT TORTOISE
(*Gopherus morafkai*) **FOUND** October 5, 2017,
north of Phoenix, Arizona



Turtle conducted by the National Park Service at Quitobaquito Springs. The most recent population estimate is 182 individuals, and we captured a total of 46 individuals on the day that we visited. This desert-adapted, geographically isolated subspecies is only known from this single US location, where a pair of springs feeds a half-acre pond and the drainage flows south into Mexico—there the subspecies occurs at four locations, including the Rio Sonoyta. Shortly after our visit, reports stated that the aquatic habitat on the Mexico side of the border was drying and the mud turtles were concentrated in small pools, making them vulnerable to predators and potential desiccation. Of note, the Sonoyta Mud Turtle was federally listed as

Endangered by the United States Fish and Wildlife Service on October 20, 2017. International management and conservation efforts are critical to the long-term survival of this subspecies.

Visiting these two mud turtle sites reinforced George's love for the borderlands, which is driven by a fondness for wild and scenic landscapes, rich culture, and flavorful Mexican food. As wildlife cares little for arbitrary geopolitical boundaries, the preservation of these open and undeveloped

Top: A Mojave Desert Tortoise at the Desert Tortoise Natural Area in California City, California.

Bottom: Southern Western Pond Turtle, California. At the time of The Big Turtle Year, it was known as the Western Pond Turtle (*Actinemys marmorata*).



POACHERS TARGET NATIVE TURTLES

Rescued animals find a home at
the Turtle Conservancy center

In a disturbing trend, illegal trafficking of North American turtles and tortoises to Asia has spiked in recent years. As the Turtle Conservancy continues to work around the world protecting turtles, we also are refocusing our domestic efforts to save once-common species now facing serious threats. Just last year, a poacher in Pennsylvania was discovered with more than 3,000 illegally collected Diamondback Terrapins, Wood and Spotted Turtles, as well as various species of box turtle, have become pet-trade staples overseas. The Turtle Conservancy has taken an active role assisting the US Fish and Wildlife Service with triage management of animals confiscated from the illicit wildlife trade. We have already taken in more than 100 animals over the past year and are prepared to accommodate more as law enforcement agencies continue to intercept poached turtles and tortoises.

—Maximilian Maurer

wildlands is critical to the conservation of many species, from little mud turtles to wide-ranging Jaguars. As for us, we prefer natural landscapes devoid of roads, homes, and walls.

At the time of our journey, Western Pond Turtles were the only freshwater turtle species native to California. It has since been split into two distinct species, *Actinemys marmorata* in the northern part of the state and *Actinemys pallida* in the south. We were able to observe the latter at two locations. Western Pond Turtle populations throughout their range are in serious decline and in need of continued strategic conservation efforts. Anthropogenic threats, including habitat loss, agricultural activities, overgrazing, and introduced predators have all impacted these Pacific Coast turtles. In addition, shell disease has become an issue in some regions, and lengthy droughts, which have already had a tremendous effect on these species, are of significant concern. US Fish and Wildlife is currently considering placing *Actinemys pallida* on the Endangered species list.

Three of the four tortoise species in the United States occur within this region. We joined other herpetologists to find a juvenile Texas Tortoise at the National Butterfly Center in the Lower Rio Grande Valley of southeastern Texas; a female Sonoran Desert Tortoise, which we found using radiotelemetry, sheltered in a relatively small cavern in caliche (an accumulation of calcium carbonate that forms on the soil of arid regions) north of Phoenix, Arizona; and adult Mojave Desert Tortoises at the Desert Tortoise Natural Area near California City. The latter location, which was established in 1979 and protects about 39.5 square miles of desert habitat, had long been on George's list of places to visit.

MIDWEST REGIONAL HIGHLIGHTS

The fact that we found only two species in this region that we could count for the project was a result of our successful fieldwork in the Northeast just a week earlier. These two regions share a number of species, and by the time we got to the Midwest, we only needed to find two species that occur there: Blanding's Turtle and the Ornate Box Turtle. Blanding's Turtles range from Nova Scotia to Nebraska, although several populations are disjunct. Considered imperiled (threats include habitat loss, road mortality, and collection for the international pet trade), they can be found in marshes, bogs, lakes, and small streams. Fieldwork at an undisclosed



location in southwestern Michigan netted observations of two adult Blanding's Turtles in a beautiful wetland habitat, as well as two Wood Turtles at a nearby picturesque streamside site.

A day trip with a small group of Chicago Herpetological Society members to the Thomson-Fulton Sand Prairie State Nature Preserve in western Illinois provided an opportunity to find three Ornate Box Turtles. The preserve, which is recovering from past cattle grazing, supports a wide diversity of vegetation, and was George's first visit to prairie habitat.

THE BIG TURTLE YEAR MIDWEST REGION

№31 BLANDING'S TURTLE

(*Emydoidea blandingii*) FOUND May 22, 2017, southwestern Michigan

№32 ORNATE BOX TURTLE

(*Terrapene o. ornata*) FOUND May 25, 2017, Thomson-Fulton Sand Prairie State Nature Preserve (Whiteside County, Illinois)

By the end of December, we had found 57 of our 59 target species and only missed the Apalachicola Alligator Snapping Turtle (*Macrochelys apalachicola*) and the Yellow Mud Turtle (*Kinosternon flavescens*). The Big Turtle Year required a dozen multi-day field trips and numerous daylong excursions, but you can do a scaled down version by limiting yourself to a specific state or region. That said, we hope other individuals who like turtles will attempt a national search of their own and break our record. Such an undertaking would now require searching for 62 species—taxonomy is ever changing. If you do accept the challenge, please remember never to share the locations of rare and vulnerable species.

We had a great time learning about the diversity, threats, and conservation needs of the species that we encountered throughout the year. We are most grateful to the dozens of donors who made this project possible and to everyone who joined us in the field. With the fieldwork phase of the project behind us, we are now conducting a nationwide lecture series and working on magazine articles and a book. Please visit the project website, which features a blog and complete list of project donors and partners (www.thebigturtleyear.org), and the Florida Turtle Conservation Trust's Facebook page for updates. Meanwhile, get outside and enjoy wild turtles. 🐢



Top: An adult Blanding's Turtle, No. 31 for The Big Turtle Year, in southwestern Michigan.

Right: The Ornate Box Turtle and other North American box turtle species have increasingly become targets of the illegal wildlife trade.