



PROTECTING LIVING TREASURES IN OUR BACKYARD

NEWS FROM THE FIELD

CONSERVATION BEYOND THE ZOO

HIGHLIGHTS IN THIS ISSUE

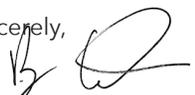
Letter from the Director



In early March, as I write this, New England wildlife is already in full spring mode. Red-winged blackbirds and killdeer were calling this morning; the buds on male pussy willow shrubs were swollen, and the snow surface was alive with newly emerged winter stoneflies. It feels like a good time to reflect on our department's recent history.

In five years as a part of Zoo New England, our staff and budget have roughly tripled in accordance with our expanded conservation work. The Blanding's turtle population at Great Meadows NWR has approximately quadrupled since 2003, eastern spadefoots have bred successfully at a Cape Cod site where we helped Mass Audubon reintroduce them, and we recently found clear evidence that marbled salamanders have bred at our own reintroduction project in the Middlesex Fells. New England blazing stars bloom at several of our reintroduction sites, supporting monarch butterflies and other native pollinators. Above all, we have become an integral part of the curriculum at many area schools, where more than 2,000 students annually help us make a difference by headstarting rare turtles and salamanders.

This spring we're looking forward to new developments in our department, including welcoming Peter Zahler as our new Director of Field Conservation (see "Exciting Changes...", page 2). In my new role as Associate Director of Field Conservation, working alongside Emilie Wilder as Associate Director of Conservation Engagement, I am excited to see what our newly expanded department can accomplish in our next five years. In the nearer term, my blood always quickens at this time of year as nearly every day brings seasonal "firsts." Wishing you all a wonderful spring, and please join us in the local wilds.

Sincerely,

Bryan Windmiller, Associate Director of Field Conservation



Welcoming Our New Director of Field Conservation

The Field Conservation Department is expanding as we welcome Peter Zahler as Director of Field Conservation. Bryan Windmiller will now be Assoc. Director of Field Conservation and Emilie Wilder will be Assoc. Director of Conservation Engagement.

Learn more about Peter on Page 2.



First Box Turtle Nests in NH

In a big win for Eastern box turtles, we protected the first ever nest of this charismatic yet cryptic species.

Learn more about our efforts on page 3.

WANT TO SHOW YOUR SUPPORT FOR CONSERVATION AT ZOO NEW ENGLAND?



Limited time offer: FREE Zoo New England Conservation License Plate
Thanks to donations from private individuals, we are able to waive the initial registration fee for Zoo New England's conservation license plates! We have worked with the RMV to create a special plate available to all Massachusetts drivers, featuring beautiful artwork of a silverback gorilla! All proceeds from the plate will directly support Zoo New England's field conservation programs, enabling us to further our conservation impact by saving species both locally and globally.
To learn more or to apply, visit zoonewengland.org/licenseplate or scan the QR code.





Exciting Changes in Field Conservation are Afoot in 2023!

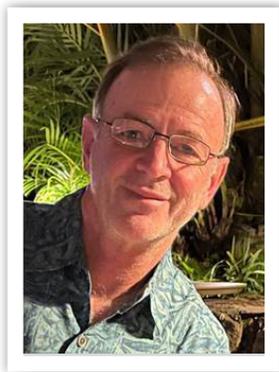
FIELD CONSERVATION TURNS FIVE

Our Field Conservation Department just celebrated a big milestone: we turned five! Those of you who have followed us since the beginning – when we were first a tiny independent non-profit called Grassroots Wildlife Conservation – will recognize how far we've come. Five years ago GWC merged with Zoo New England to become their Field Conservation Department. What started as just an idea in GWC founder Bryan Windmiller's mind has blossomed into a full-fledged team, with eight year-round staff active in over a dozen rare species conservation projects, both here in New England and abroad. **Thank you for being with us on this journey. Check out what we've been up to this past year, and what we have planned for 2023, in the pages of this newsletter.**

A NEW ORGANIZATIONAL STRUCTURE

After more than ten years at the helm of ZNE's Field Conservation Department and Grassroots Wildlife Conservation (which he founded), FCD Director Bryan Windmiller will be transitioning to the role of Associate Director of Field Conservation this spring in order to get back to the fieldwork and research that have always been his passions. Meanwhile, FCD Program Manager Emilie Wilder has been promoted to the role of Associate Director of Conservation Engagement. Both of these changes, along with the addition of a new Director of Field Conservation, will allow us to conserve more species in more places, and increase our ability to engage more people in conservation.

WELCOMING PETER ZAHLER AS DIRECTOR OF FIELD CONSERVATION



Peter comes to ZNE from the Woodland Park Zoo in Seattle, where he was the Vice President of Conservation Initiatives. In that role, Peter authored the zoo's wildlife conservation strategy, drafted the AZA Position Paper on Climate Change, and played a leading role in helping connect zoo visitors with the conservation work being done beyond the zoo, which makes him an excellent match for Zoo New England's Field Conservation Department.

Peter also brings a wealth of international conservation experience to the table. In addition to supporting more than 30 different international partnerships at the Woodland Park Zoo, Peter spent 23 years working for the Wildlife Conservation Society, serving as country director for a number of field programs, regional director for Asia, director of training and capacity building, and senior conservation advisor for wildlife health, among other positions. Peter's skill at identifying, supporting, and coordinating international conservation programs will be a boon to ZNE's own international partnerships. "I'm delighted to be joining Zoo New England," Peter said, "The great work the team has been doing has already made the zoo a force in conservation, both regionally and internationally. I'm really looking forward to digging in and supporting and growing the program."

UPDATES TO OUR CONSERVATION SOCIETY MEMBERSHIP PROGRAM

Starting in spring of 2023, membership in Zoo New England's Conservation Society will no longer require an annual fee. Our goal in starting the Conservation Society in 2021 was always to connect as many people as possible to the work being done to protect native wildlife at ZNE. With a few years' experience under our belts, we can see that the best way to accomplish that is to open the Society up to as many new members as possible. All the same nature walks, informative lectures, volunteer opportunities, and outreach programs are still being offered to members. The only difference will be now, it's all free!

COME MEET OUR WHOLE TEAM, HEAR ABOUT UPCOMING PROJECTS, AND LEARN HOW YOU CAN GET INVOLVED IN OUR CONSERVATION WORK AT THE FIELD SEASON KICK-OFF EVENT APRIL 16TH FROM 2 - 3 PM AT STONE ZOO.

SEE BACK PAGE FOR DETAILS.

Finding Box Turtles on the Edge



SEEK AND YOU WILL FIND?

Eastern box turtles are a relatively common sight in the southeastern US, but here in New England, especially as you go farther north, they are few and far between. In fact, many biologists were skeptical that there were any remaining box turtle populations in northern Massachusetts, let alone New Hampshire or Maine. The few that had been observed over the years were assumed to be relict individuals or lost pets.

Many species have disappeared from our landscapes, but sometimes it turns out that we just weren't looking hard enough. Thanks in large part to the tireless efforts of our Field Conservationist Julie Lisk, we've been able to demonstrate that small, yet significant, box turtle populations still exist in northern Mass, and, in partnership with New Hampshire Fish & Game we've also been able to help document a significant population there. "Little did I know that a chance encounter with a single box turtle crossing the road near my home would blossom into a project full of exciting discoveries," reflected Julie.

Though *New England* is in our name, historically all of our zoo conservation efforts have been in Massachusetts or abroad. This past year we forayed into New Hampshire to help NHFG find any box turtle nests and protect the hatchlings that emerged. Box turtles are endangered in New Hampshire, so documenting reproduction and protecting hatchlings there is critical to maintaining (and restoring) the population there.

THE SEARCH PAYS OFF

The box turtle population that we have uncovered in New Hampshire is scattered across three sites, requiring long hikes between likely nesting areas. Monitoring

the seven known females among the three sites is a daunting task, but Julie is never one to shy away from a challenge, at least if it involves helping box turtles. After 21 consecutive nights of searching, Julie found one of the females in a nesting area, along with a second, unmarked female. "This particular location is a 45 minute walk up several rather steep hills. When I saw the two turtles I was ecstatic, but with dusk falling, keeping track of two turtles (especially one without a transmitter) was going to be a challenge. And since I'd gotten so used to not finding any turtles, I hadn't even brought my nest protection supplies," she explained. Thankfully, her husband, Tom Murray, is nearly as tireless and dedicated as she is, and trekked out to help.

By nightfall, one of the turtles, named "Bunker," was digging a nest and by 10:30PM had finished laying eggs (a relatively early finish for a box turtle): the first nest was finally found and protected!

The second turtle, still unnamed, was proving much less accommodating. She abandoned her nesting attempt that night and sauntered back under the cover of shrubbery.

THE SEARCH CONTINUES

Julie returned the next evening to check on the new female, and found her out in nesting habitat again. Any excitement was short-lived: this turtle would prove to have the most challenging of nests to document and protect, requiring ten consecutive nights of monitoring. "Her problem quickly became obvious," Julie said. "The nesting habitat was horrible due to ledge and rocky soil. Every night, she would dig in multiple locations only to be thwarted by hitting rocks." By the fifth evening, it was difficult to know who was more frustrated, the turtle or the biologist. "In an attempt to assist her, we removed the rocks from an area of approximately six square feet and replaced it with soil from the adjacent forest. We placed her on the rock-free soil, but she wouldn't have it."

"Finally, on the tenth evening we decided to take a big chance. We observed the box

turtle dig here and there, and eventually it seemed like she might settle into digging for a while. It was now late evening, and the mosquitoes were in full force. For the first few hours, we checked on her progress every ½ hour, and if we saw her trying to remove a rock, we did it for her surreptitiously. Once a turtle begins to deposit eggs, she's in it for the long haul, but before that, the turtle can be spooked off her nest. However, as we removed rocks, the hole became too deep and the turtle was literally dangling into the hole by her front limbs. To solve this problem, we added small bits of soil into the nesting cavity, lightly firming it down as we did so. The entire time the box turtle paid us no mind. Finally, we saw her lay the first egg! Success!"

It took several more hours for the turtle to deposit a total of eight eggs and carefully cover the nest. It was 4:30AM by the time she was putting the finishing touches on her nest, carefully patting the soil in place, with Julie and Tom observing valiantly from the sidelines. "After placing a protective screen on the prized nest, I mentioned to Tom laughing that if we stayed another ½ hour, we could see the sunrise," Julie recalled. It would be hard to find anyone more dedicated to box turtles.

Twelve hatchlings emerged from the two nests, and are currently being headstarted by Julie and volunteers. In 21 months, they will be released back to their natal area with radio transmitters, allowing us to monitor their growth and movement, and hopefully help restore and augment this population of box turtles at the northern limit of their range.





Blanding's Turtle Project Grows by Leaps and Bounds

EXPANDING A SUCCESSFUL MODEL

We have been working with Blanding's turtles in Massachusetts since 2003, when now-FCD Associate Director Bryan Windmiller first became interested in these turtles that lived near his home in Concord, MA. Since then, we have captured and marked dozens of adult Blanding's turtles and released over 1000 headstarted hatchlings across seven sites throughout Massachusetts.

Over the past year, through funding from the Yawkey Foundation, we have expanded our Blanding's turtle conservation into Lowell-Dracut-Tyngsboro State Forest. Blanding's turtles were known to occur here, but little was known about the population. Our goal is to document the population status and use the successful conservation strategies we have developed over the years to help Blanding's turtles in a new part of the state. The site's location, partially within the City of Lowell, has also enabled us to work with several Lowell elementary schools, allowing students in Lowell to participate in a hands-on, STEM-focused conservation project right in their own community.

HITTING THE GROUND RUNNING

Our team surveyed the site and chose promising locations for traps. During 2021, we were able to capture 14 individuals and began tracking a subset of those. This year we added another 19 unique individuals,

bringing the total known population to 33. Of those 33, we are currently radiotracking 10 adult females and 6 wild juvenile turtles throughout the state forest. The presence of wild juveniles is a sign that this population is likely a healthy one with successful wild reproduction and recruitment (the maturing of young turtles into the pool of breeding adults).

We were able to conduct nest surveys this year for the first time and were highly successful, protecting six Blanding's turtle nests. All the nests we were able to locate and protect this year were in a Dracut neighborhood abutting the state forest. Interestingly, one of the females traveled over a mile from her home wetland to nest in this neighborhood despite seemingly suitable nesting habitat much closer to her usual range. We still aren't sure what makes this neighborhood so appealing to the turtles, but as we continue to study this population, we hope to learn more about how turtles choose their nesting sites.

A COMMUNITY EFFORT

Local residents were very engaged and excited about our work and were also quite surprised to learn that rare turtles were nesting in their neighborhood. Neighborhood kids often followed us throughout the month of June to help us look for nesting turtles, alert the locals, and learn about our conservation efforts. As part

of our initial community outreach efforts, we sent out postcards to all the abutting neighborhoods to inform them of our upcoming turtle nest survey work. As a result of this outreach, five new female Blanding's turtles were reported by residents, all of which were found either in yards or on the street. These five were all outfitted with radios, and we were able to locate more nests and collect more data that may otherwise have been missed. Residents were also very receptive in allowing us to protect nests in their yards. Most residents got to witness a turtle laying eggs on their property, and for all nests allowed to hatch on-site, the residents also got to see the hatchlings firsthand. In addition, these residents volunteered to water the nests as they would their lawn or garden during the extreme drought. Having these community connections will be crucial to ensuring we are able to successfully continue our conservation efforts around the state forest.

We also formed an important partnership with Lowell Parks and Conservation Trust (LPCT). LPCT has an excellent team of dedicated volunteers who assisted our nesting survey effort and nest checks for emerging hatchlings. With the help of LPCT staff and volunteers, all hatchlings were marked, measured, and maintained in good health. Some of those hatchlings have now been brought to local schools in

the Lowell area as part of ZNE's HATCH program. This year, we are headstarting a total of 40 hatchlings from this field site. This is particularly exciting because many of the Lowell students come from underserved populations with limited access to nature education opportunities. It's our hope that the HATCH program can forge the same connections between the students and the animals that share their town as it has in several other towns and cities across the Commonwealth.

The population at LDT seems to be robust, with much to teach us. Our plan is to continue our trapping, nest survey, and community outreach efforts in future years to gain a better understanding of this understudied population. The lessons learned in Lowell-Dracut-Tyngsboro State Forest can hopefully be applied to managing other rare turtle populations living in close proximity to urban areas.

>>For more information about Lowell Parks and Conservation Trust and the great work they are doing to create community through conservation in Lowell, visit www.lowelllandtrust.org



Lowell kindergartners observe two Blanding's hatchlings during their after-school program. These turtles are among the first to hatch in Lowell and become part of the HATCH program in Lowell Public Schools in partnership with the Lowell Parks & Conservation Trust.

CONSERVATION SOCIETY VOLUNTEER SPOTLIGHT



Bob Rauseo and Burt Batcheller holding up the first clutch of eggs.

Just like there are keystone species in ecosystems, there are keystone people in every conservation project. These are the folks who know everyone, are passionate about the project, and serve as stable "keystones" for larger teams. In Andover, MA, our "keystone people" are **Bob Rauseo** and **Burt Batcheller**. Bob and Burt are both Wardens for AVIS (the Andover Village Improvement Society), and both have gone above and beyond the call of duty to help us study and protect rare turtles in their town.

In 2021, Burt discovered a previously-unmarked wood turtle and an eastern box turtle both on Andover conservation land.

The Andover Conservation Commission generously stepped up to provide Burt and Bob with their own radio telemetry receivers and radios for the turtles, which allowed the two intrepid volunteers to track the turtles on their own after a quick training session with ZNE staff. Burt and Bob have both logged countless hours of field time keeping track of these turtles, including long evening waits with a stubborn female wood turtle who "false started" repeatedly in digging her 2022 nest. Their persistence paid off on June 8th, when the female finally laid her eggs. Burt & Bob then protected the nest, which produced seven healthy babies who are currently being headstarted.

Partners like Bob and Burt allow us to greatly expand our reach and capacity when our staff are spread most thin, like during nesting season. Thanks to them and other Andover volunteers, turtles have a brighter future in their town.

Together, we can make a difference for wildlife conservation. You may not have as much time (and energy!) as Burt and Bob, but all of us can help the living treasures around us, even just by making space for wildlife in our yards.



Bob and Burt installing a protective screen over the wood turtle nest.



The wood turtle hatchlings, just as they began to emerge from their eggs.



All seven turtles are currently being headstarted and will be released back to the site this summer.

United in Our Passion for Turtles

Zoo New England and BFREE Collaborate on Turtle Conservation in the US and Belize

Even as we're "swamped" with turtle conservation projects here in New England, we have also supported a turtle conservation project in Belize for the past four years, through our partnership with the Belize Foundation for Research and Environmental Education (BFREE). BFREE is the only facility in the world successfully captive-breeding the Central American river turtle (*Dermatemys mawii*), known locally as the hicatee and among the 25 most endangered turtle species in the world.

This past spring, ZNE staff Bryan Windmiller and Emilie Wilder traveled down to Belize to assist with BFREE's annual turtle health assessment, lending our expertise and person-hours to help power through the weeklong effort. "We had been scheduled to visit Belize back in spring 2020, but we all know how that turned out," explained Emilie. "We've found that visiting our international partners is critical to building relationships, and allows us to learn from each other and share expertise, not just be a funder. It's hard to beat sweating in the mud together as a team-building exercise!"

While in Belize, Bryan and Emilie met BFREE staff, and invited two of them

(Facility Manager Tom Pop and Wildlife Fellow Jonathan Dubon) to come to Massachusetts over the summer to help us with our turtle field work. Jonathan and Tom accompanied our staff tracking rare turtles in Massachusetts and gave a presentation about Hicatees at Franklin Park. We enjoyed swapping fieldwork stories, turtle tracking and trapping strategies, and natural history observations with these two fantastic naturalists.

Just as Bryan and Emilie had been thrilled and amazed to see Hicatee and other Belizean wildlife (such as howler monkeys)

during their time in Belize, Tom and Jonathan were enthralled by our wildlife, especially the snapping turtle they caught one day. Even our ubiquitous gray squirrels were a surprising treat for them, and a good reminder that all wildlife is special when we open our perspective.

This coming year, Bryan and Emilie will be helping BFREE work on a Species Recovery Plan for Hicatee, and will remain involved in their ongoing rewilding efforts.



Bryan and Emilie with a Hicatee during their visits to Belize, along with Tom and Jonathan with their snapping turtle caught right here in Massachusetts. New experiences make for happy turtle biologists all around!



Cuban Almiquí Project - Rare Opportunity for a Rare Mammal



As a counterpoint to our long-standing relationship with BFREE, the Cuban Solenodon project is one of our newer partnerships. With scientific support from Durrell Wildlife Conservation Trust, ZNE is providing the sole funding for this important project with one of the rarest mammals in the world. Solenodons (called almiquí in their native Cuba) resemble shrews, but these omnivorous creatures can exceed a foot and a half in length and have a venomous bite.

Unfortunately, the almiquí of Cuba have become extremely rare, so much so that they were declared extinct in 1970 before being rediscovered a few years later. Now, small numbers of almiquí still roam the most mountainous and inaccessible parts of the island. Cuban biologist Norvis Hernandez is one of the foremost authorities on the almiquí and their habits. This summer, Norvis hosted two of Durrell's mammalogists, Roz Kennerley and Sam Turvey, and they shared their experiences tracking almiquí and learning about their habitat, threats, and conservation needs.

One of the most reliable signs of almiquí presence is a "nose poke" - a hole in a rotting log or other soft surface into which the almiquí pushed its long snout to forage for insects. Preliminary investigations suggest that feral dogs may have been a significant factor in the almiquí's decline; the animals have disappeared from nearly all parts of the island where feral dogs occur. One recent report of an almiquí sighting by a local farmer came after the animal was killed by a dog near his farm. ZNE staff plan to visit Cuba ourselves this year and help explore the secret world of the almiquí.

Planting for Rare Plants and Pollinators

Honeybees and butterflies are some of the best-known pollinators, but there are many insects that fulfill this important role, including moths, bumblebees, sweat bees, digger bees, hover flies, and an incredible diversity of other insects. Many of New England's rarest moth and butterfly species are specialists that depend on just a few (or even just one!) plant species to successfully complete their life cycles.

The **orange sallow moth** (*Pyrrhia aurantiago*) is one such rare moth, and its caterpillars can only grow and develop in the seed pods of **false-foxgloves** (*Aureolaria pedicularia* and *A. flava*). The false-foxgloves, in turn, are what we call "hemiparasitic" plants: they can photosynthesize to make energy, but they also depend on the roots of other plants (specifically, oak trees) for nutrients. Thus, we have a rare moth that depends on an uncommon plant that depends on yet another plant.

This delicate ecological relationship is easily disrupted by human activities, but human effort can also reverse the damage.

Our team has now documented evidence of orange sallow moths on false-foxglove plants in Boston, where it had not been seen since 1988. We gathered seed pods from the false-foxglove plants and will be planting them at selected sites in 2023. In a similar vein, we gathered seeds of **New Jersey tea** (*Ceanothus americanus*) for the aptly-named specialist moth **New Jersey tea inchworm** (*Apodrepanulatrix liberaria*) as well as **wild lupine** (*Lupinus perennis*) and **yellow wild-indigo** (*Baptisia tinctoria*) for the dainty and elegant **frosted elfin butterfly** (*Callophrys irus*).

Special plants for specialized insects are critical for rehabilitating populations of rare species, but what about the broader ecosystem? This year, ZNE's Field Conservation staff planted hundreds of rare **New England blazing stars** (*Liatris novae-angliae*) at multiple field sites. This vibrant wildflower is a favorite nectar plant of monarch butterflies and a variety of native bees. These and other native wildflowers are being grown by our partners at the Arnold Arboretum for planting in 2023.



An orange sallow moth caterpillar on the seed head of its host plant: the fern-leaf false foxglove.

INTERESTED IN PLANTING FOR POLLINATORS IN YOUR YARD?

Spring is a great time to order seeds and plants for your garden. Don't just buy a generic wildflower mix at your local garden center, though. Make sure you're buying a mix with species native to our regions - these plants will provide the most benefit to our local bees, butterflies, birds, and other native species.

>> YOU CAN FIND EXCELLENT IDEAS AND RESOURCES FOR NATIVE PLANTS AT WWW.GROWNATIVEMASS.ORG

Marvelous Marbled Salamanders: Hard Work and a Dream



Marbled salamanders could once be found in the Middlesex Fells reservation that borders the Stone Zoo in Stoneham. The salamanders disappeared from the Fells about 90 years ago as increasing urbanization took its toll on the landscape.

Our dream has been to return marbled salamanders to the Middlesex Fells, but easier said than done! Unlike most of our amphibians, marbled salamanders lay their eggs in autumn. Their cold-hardy larvae then spend the winter growing in cold temporary pools. ZNE staff carefully collect and transport these larvae from icy pools

where they are more abundant in western Massachusetts every winter, after which they enter the care of John Berkholtz, our Senior Field Conservationist. Drawing on his many years of experience as a zoo keeper, John husbands the baby salamanders in specially-designed tanks. Every day, John provides the growing babies with wild-caught water fleas as well as blackworms and brine shrimp for food and ensures that the water chemistry and temperature remain perfect for these sensitive creatures. He then reduces the water level to provide dry land when they start to metamorphose into air-breathing juveniles.

To date, we have released over 300 juvenile salamanders at the Fells since 2016, but we have no way of tracking their fates after release. As with so many conservation projects, though, patience and perseverance are essential. This winter, a member of **Earthwise Aware**, a local conservation group that regularly surveys the Fells, was doing a biodiversity survey

there, and while looking at fairy shrimp in one of the pools noticed a small, black form in the water. It was the larva of a marbled salamander! Wild larvae mean that not only did some of our released juveniles survive, they have also reached reproductive maturity and at least two of them managed to find each other and breed. While we expect that the actual number of marbled salamanders now living free at the Fells is still very small, evidence of successful reproduction means that our efforts have started to pay off. By continuing to support this vulnerable population, we hope to get it to the point where there are enough salamanders to be self-sustaining.





NEW ENGLAND

1 Franklin Park Road
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PLACE
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WE HOPE YOU'LL JOIN US
ON APRIL 16TH
FOR OUR FIELD SEASON KICK-OFF



Zoo New England's mission is to inspire people to protect and sustain the natural world for future generations by creating fun and engaging experiences that integrate wildlife and conservation programs, research, and education.

Join Us.

www.zoonewengland.org

ZOO NEW ENGLAND'S CONSERVATION SOCIETY Field Season Kick-Off

2 - 3 PM - SUNDAY, APRIL 16, 2023

AT STONE ZOO

Excited about all the conservation projects in this newsletter?

Join us for our second annual field season kick-off event!

Learn about what we have planned this year, talk with our biologists, meet some cute animals, and find out how you can help protect our living treasures.

Learn more and register online. Space is limited so act fast.

bit.ly/ConservationSocietyEvents

