



2020 YEAR  
IN REVIEW

# FORGING PROACTIVE PARTNERSHIPS TO CONSERVE AMPHIBIANS, REPTILES, AND THE PLACES THEY LIVE.

- PARC'S MISSION

## ACKNOWLEDGEMENTS

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PARC IS GRATEFUL TO THESE AGENCIES AND ORGANIZATIONS FOR THEIR SUPPORT IN 2020:



## WHO IS PARC?

We are a diverse network of partners that includes representatives of government, industry, nongovernmental organizations (NGOs), zoos, and aquariums as well as private consultants, private citizens, and academics. We are driven by our shared dedication to the conservation of amphibians and reptiles (herpetofauna).

## WHAT'S IN THIS ANNUAL REPORT?

This report is a venue for celebrating PARC's 21st year. True to form, our members accumulated numerous accomplishments during 2020 that help advance our herpetofaunal conservation mission. In reviewing these achievements, you will find they are entwined with the strong thread of diverse partnerships that forms the foundation of PARC. To organize the varied activities highlighted in the ensuing pages, we have used the framework of our Strategic Plan, which focuses on three key areas: *Network Growth*, *Habitat Conservation*, and *Species Conservation*. Thanks to the diligent work of our members, we have made, and are continuing to make, significant strides within these areas.



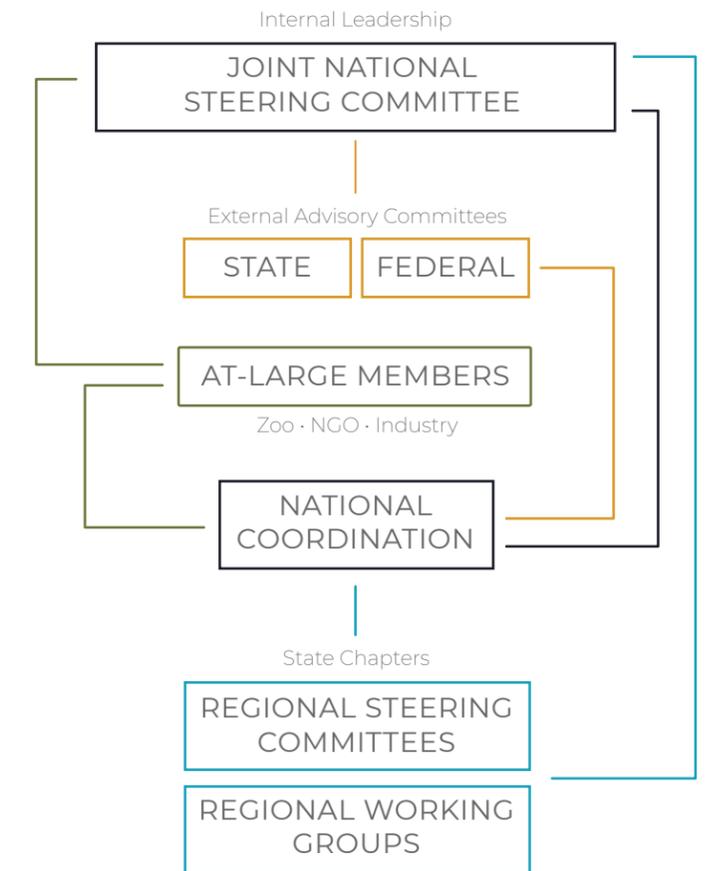
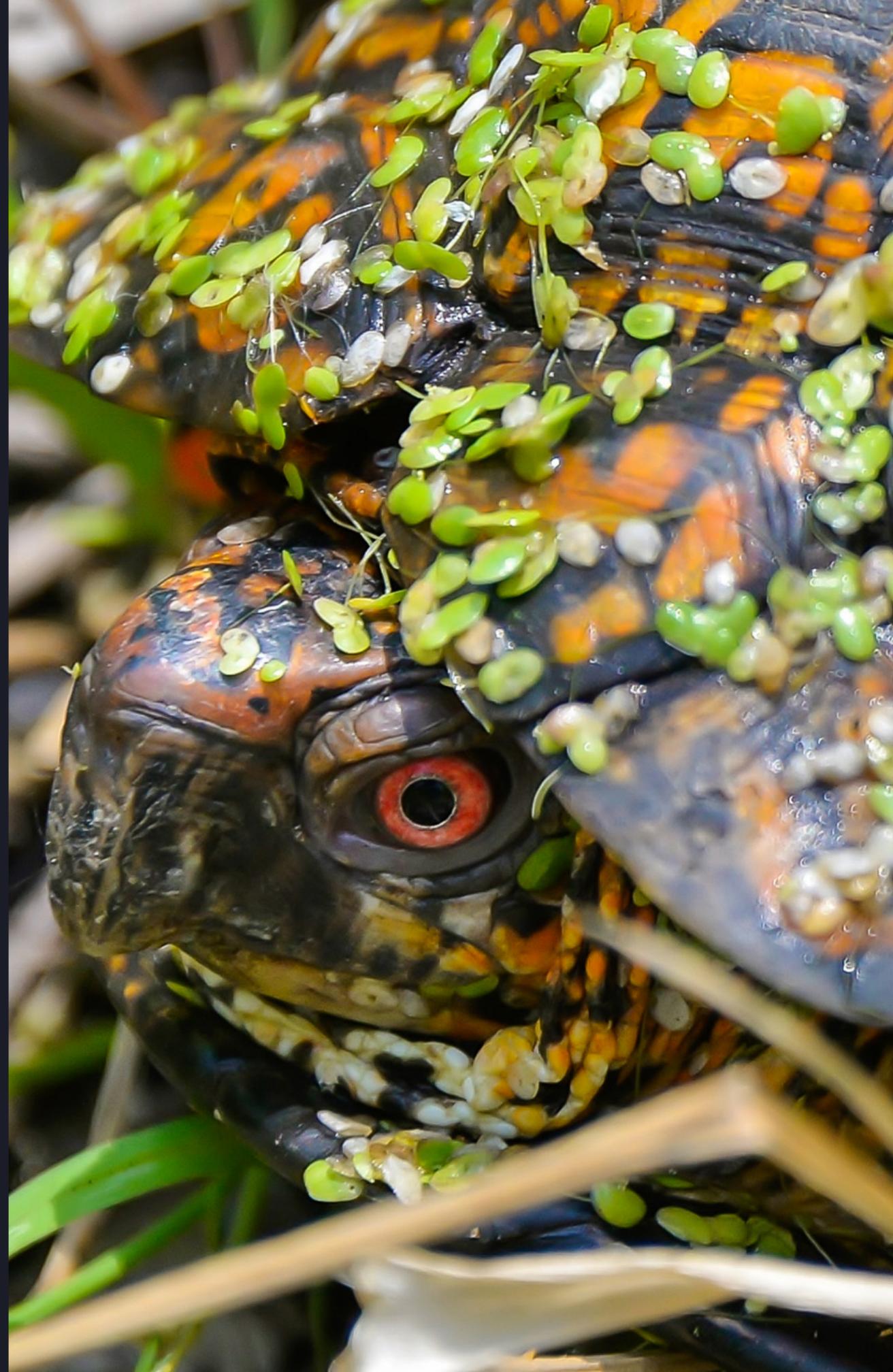
## GUIDE TO ACRONYMS & ABBREVIATIONS

If you're new to PARC, our use of acronyms can be a little confusing, so here's a handy quick reference guide to some of our most frequently used abbreviations:

- AFWA** – Association of Fish and Wildlife Agencies
- ARC** – Amphibian and Reptile Conservancy
- AZA** – Association of Zoos and Aquariums
- CAP** – Conservation Action Plan
- DEITT** – Diversity, Equity & Inclusion Task Team
- DoD** – Department of Defense
- DTT** – Disease Task Team
- FASC** – Federal Agencies Steering Committee
- IUCN** - International Union for Conservation of Nature
- JNSC** – Joint National Steering Committee
- NGO** – Nongovernmental organization
- NPS** - National Park Service
- PARCA** – Priority Amphibian and Reptile Conservation Area
- TNT** – Turtle Networking Team
- USFS** – United States Forest Service
- USFWS** – United States Fish and Wildlife Service
- USGS** – United States Geological Survey

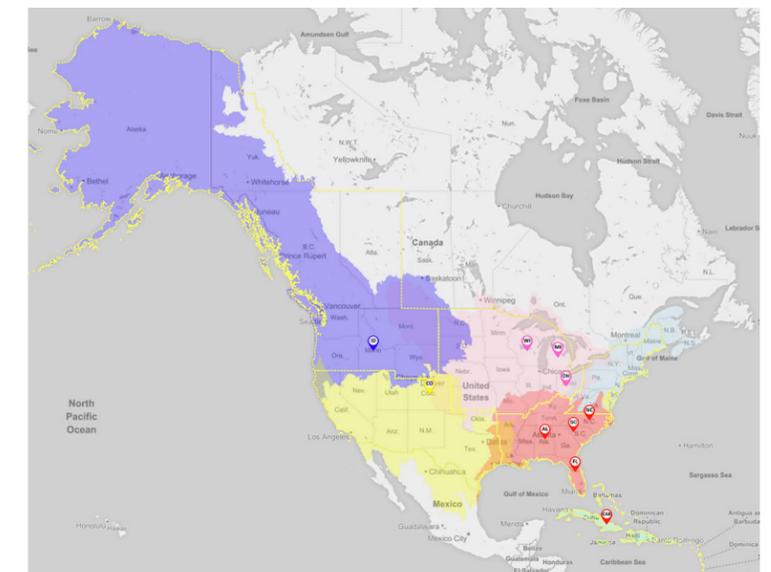
PARC Regions and State Chapters:

- MW PARC:** Midwest region
- OH PARC:** Ohio
- MI PARC:** Michigan
- WI PARC:** Wisconsin
- NE PARC:** Northeast region
- NW PARC:** Northwest region
- ID PARC:** Idaho
- SE PARC:** Southeast region
- ALA PARC:** Alabama
- CARIB PARC:** Caribbean
- NC PARC:** North Carolina
- SC PARC:** South Carolina
- SW PARC:** Southwest region
- CO PARC:** Colorado



PARC's organizational structure. Lines depict the general flow of communication.

Our membership extends from western Canada throughout the continental United States and into the Caribbean. Anyone with an interest in herpetofaunal conservation is welcome, regardless of experience or expertise.



PARC's regional and state working groups are our foundation, where on-the-ground issues are translated into actions and products. *Credit: Scott Hove*



Wearing a face mask didn't stop this SC PARC member from enjoying some outdoor time with a Red Cornsnake (*Pantherophis guttatus*) in Nemours Plantation, South Carolina. Credit: Jake Zadik

## PARC DURING THE PANDEMIC

The COVID-19 pandemic overshadowed many of the year's activities and created challenges across the conservation community. In the PARC network, we dealt with the cancellation of meetings and other in-person events and restrictions to field work. Despite these obstacles, our network rallied. We've learned and implemented new safety protocols to keep field workers safe, and we've become adept at hosting virtual events. Social distancing, although seemingly at odds with a network that thrives on interactions, has actually broadened our network in some regards. By using virtual venues for our events, for instance, we've been able to reach broader audiences and expand participation.

So, while the pandemic may have changed how we work, our commitment to herpetofaunal conservation remains strong, and we continue to draw upon the strength of our network to overcome challenges.

For this year's report, we asked PARC representatives to reflect on the year by answering the question, "How has the COVID-19 pandemic had a positive effect on your PARC activities?" The following is a selection of their responses. As these quotes show, PARC members found many silver linings within 2020.



“ WE ARE REFLECTING UPON OUR GOALS AND REFOCUSING EFFORTS ON THE THINGS THAT MATTER MOST—COMMUNITY, COLLABORATION, AND SHARING UPDATES WITH CONSERVATION PARTNERS. — SE PARC

”



Virtual meeting of the NC PARC Research, Inventory, Monitoring, and Management working group.. Credit: Jeff Hall

“ THE PANDEMIC HAS BROUGHT A GREATER SENSE OF COMMUNITY THROUGH DIFFERENT PARC PARTNERS. WE ARE ALL STRUGGLING THROUGH THIS TOGETHER! — SAVE THE SNAKES

”



“ WE ARE QUICKLY ADAPTING TO THINKING OUTSIDE OF THE BOX (TRADITIONALLY SPEAKING) AND REACHING OUT TO MORE PARTNERS IN OUR AREA THROUGH ZOOM 'BOXES'. — SW PARC

”



“ OUR WORKING GROUPS HAVE HELD #TELEHERPING VIRTUAL WORKSHOPS THAT HAVE ALLOWED ATTENDEES ACROSS THE COUNTRY TO PARTICIPATE, AND WE ADOPTED NOVEL FUNDRAISING STRATEGIES, INCLUDING SELLING SHIRTS ONLINE. — NE PARC

”

# SPOTLIGHT ON LEADERSHIP

The PARC network includes steering committees, task teams, working groups, and other leadership teams helping to coordinate activities across the national, regional, and state levels. We thank all individuals involved in our leadership teams for their ongoing, dedicated service to PARC.

Here, we highlight the members of our Executive Committee and JNSC as well as the Co-chairs of our national task teams and state chapters. Our list includes anyone who served during the calendar year of 2020. Asterisks (\*) denote individuals who joined during the year, while carets (^) denote individuals who left their leadership position during or at the end of 2020.

## Executive Committee



### Michelle Christman, National Federal Agencies Coordinator

Michelle is a Fish and Wildlife Biologist with the Natural Resource Program Center of the USFWS and serves as PARC's Federal Agencies Coordinator. Prior to taking on her current role, Michelle served as a National JNSC Co-chair and Co-chair of SW PARC. *Credit: June Christman*

### Alex Navarro, JNSC Sr. Co-chair

Alex works for The Nature Conservancy as a Conservation and Outreach Manager. He manages the research, stewardship, and education programs at Mashomack Preserve on Shelter Island, New York. His work is focused on climate change mitigation and adaptation, improving and protecting water quality, and providing equitable access to nature. *Credit: Sarah Bailey Navarro*



### Brian Zarate, JNSC Jr. Co-chair\*

Brian works for the New Jersey Division of Fish and Wildlife's Endangered and Nongame Species Program coordinating the state's reptile and amphibian conservation work and helping to lead a statewide wildlife habitat connectivity initiative called "Connecting Habitat Across New Jersey". Brian joined NE PARC's Steering Committee in 2011 and served in a variety of roles, including meeting planner, treasurer, working group Co-chair, and region Co-chair. *Credit: Jim Angley*

### Christopher Petersen, JNSC Ex-officio

Chris is a Senior Natural Resources Specialist at Naval Facilities Engineering Command Atlantic and the DoD PARC National Representative. He has served on the PARC JNSC/Executive Committee for the last three years, initially as a Co-chair and now in ex-officio status. *Credit: Hayden Bassett*



### Mark Mandica, DEITT representative\*

Mark Mandica is co-founder and Executive Director of the Amphibian Foundation and serves as the DEITT Representative for Executive Committee. Mark prioritizes inclusivity and engagement as vital components to creating lasting solutions to the global amphibian extinction crisis. *Credit: Amphibian Foundation*



## JNSC Representatives

### NW PARC Co-chairs

Katy Weil, Metro Parks and Nature^  
Laura Sprague, USFWS\*

### SW PARC Co-chairs

Cristina Jones, Arizona Game and Fish Department  
Joe Ehrenberger, Adaptation Environmental Services

### MW PARC Co-chairs

Bob Brodman, Buena Vista University^  
Jen Buchanan, Missouri Department of Conservation\*  
Melissa Youngquist, Shedd Aquarium\*

### NE PARC Co-chairs

Andrew Adams, Harford Community College  
Anne Stengle, Holyoke Community College^

### SE PARC Co-chairs

Todd Pierson, Kennesaw State University  
Vanessa Terrell, University of Georgia

### DoD PARC Representative

Dave McNaughton, Naval Facilities Engineering Systems Command Southwest

### NGO Representative

Michael Starkey, Save The Snakes

### Zoo Representative

Shelly Grow, AZA

### Industry Representative

Jessica Homyack, Weyerhaeuser^

### FASC Co-chairs

Michael Westphal, US Bureau of Land Management\*  
Jim Castle, US Army Corps of Engineers\*

### ARC Representatives

Jeff Holmes, ARC Executive Director  
JJ Apodaca, ARC Director of Conservation and Science

### AFWA Representative

Thomas Eason, AFWA Amphibian and Reptile Committee Vice-chair



DEITT Co-chairs David Muñoz and Neha Savant in Omaha, Nebraska for PARC's in-person meeting in March. *Credit: David Muñoz*



NC PARC Steering Committee members. *Credit: Jeff Hall*

## National Task Team Co-chairs

### DEITT

David Muñoz, Penn State University  
Neha Savant, The Nature Conservancy^  
Jen Lamb, St. Cloud State University\*

### DTT

Tracy Thompson, NPS  
Katie Haman, UPenn and Washington Department of Fish and Wildlife\*  
Matt Allender, University of Illinois^

### TNT

Cristina Jones, Arizona Game and Fish Department  
Noelle Rayman-Metcalf, USFWS

## State Chapter Co-chairs

### Alabama

Taylor Cook, Virginia Tech  
Andy Coleman, Urban Turtle Project/Talladega College

### Caribbean

Nicole Angeli, US Virgin Islands Department of Planning and Natural Resources  
Alberto Puente, University of Puerto Rico

### Colorado

Tim Warfel, Nova Inventa  
Andrew DuBois, Jefferson County Open Space

### Idaho

Charles Peterson, Idaho State University

### Michigan

Katherine Greenwald, Eastern Michigan University  
Melissa Sano, Potter Park Zoo

### North Carolina

Jeff Hall, North Carolina Wildlife Resources Commission  
Jerry Reynolds, North Carolina Museum of Natural Sciences

### Ohio

Matt Cross, The Toledo Zoo and Aquarium  
Nick Smeenk, Envirosience\*  
Greg Lipps, Ohio State University^

### South Carolina

Tess Moody, North Carolina State University^  
Jake Zadik, Brays Island Nature Center

### Wisconsin

Gary Casper, Great Lakes Ecological Services



# STRATEGIC AREA ONE

## — NETWORK GROWTH

*Our Goal: To strategically grow and enhance the PARC Network with partnerships that directly impact conservation actions.*

AFWA's Amphibian and Reptile Conservation Committee convened at the 110th AFWA annual meeting held virtually in September 2020. PARC coordinated with AFWA staff and Committee chairs on the development of the Committee agenda along with the agenda for AFWA's Law Enforcement Committee. PARC members and partners presented on PARC's role in addressing the illegal collection of turtles.

ALA PARC is creating more of an online presence and is exploring starting a blog, creating informative online content, and bringing back the Annual Herp Newsletter. They also hope to create grant opportunities in 2021 for students and educators.

DEITT successfully awarded the first round of the PARC Increasing Participation Award (PIPA) to support individuals attending annual PARC meetings. Five PIPAs were awarded this year (three SE PARC recipients, two NW PARC recipients). The awards consist of funding to attend the meeting and mentoring at the meeting. Awardees and mentors who

were able to attend enjoyed participating in the program. We look forward to next year when we can offer these awards for all remote or in-person meetings. Keep an eye out for the HerpetALLogy stickers being sold to help fund this professional development award!

DEITT participated in NE PARC's remote working group meeting held in lieu of an annual meeting. Task Team members Jessie Buckner and Michelle Christman created and facilitated a workshop on how to be an ally for justice and equity. Using this training as a starting point, DEITT looks forward to developing more training for PARC members and partners through online delivery platforms, with the goal of giving people the tools they need to create an inclusive herpetology community.

One of DEITT's major accomplishments this year was working with PARC's Executive Committee and the JNSC to commit to continued change within PARC and to create a message to all PARC members reflecting our organization's values of racial equity.



Austin Young with his award-winning poster at the annual meeting of the Idaho Chapter of The Wildlife Society in Moscow, Idaho. Credit: Charles R. Peterson



The ID PARC meeting, held in March in conjunction with the Idaho Chapter of The Wildlife Society in Moscow, Idaho, was attended by ~20 people from several agencies and universities. The meeting's topics included national and regional PARC updates, a tribute to the late Frank Lundburg (Idaho educator and conservationist), a preview of herpetofaunal presentations at The Wildlife Society meeting, Idaho Master Naturalist projects, the Idaho Amphibian and Reptile iNaturalist Project, and herpetofaunal news from around Idaho.

ID PARC member and Idaho State University undergraduate Austin Young won an award for his poster on "Digital Imaging of Amphibian and Reptile Specimens at the Idaho Museum of Natural History" at the annual meeting of the Idaho Chapter of The Wildlife Society in Moscow, Idaho.

The JNSC convened for monthly teleconferences over the last year and held an in-person meeting in Omaha, Nebraska in March. Throughout the year, we've progressed in a number of areas to improve and support our network. For instance, we released an onboarding document to better describe the roles and responsibilities for prospective participants in our leadership bodies. To facilitate inter-region coordination and planning of future projects, we developed a work plan template. The JNSC is also working to increase our incorporation of diversity, equity, and inclusion practices within our governing body and regions.

MW PARC established small gift cards as a means to reward volunteers who take a large role in participating in herpetofaunal conservation projects.

NC PARC transitioned many events originally planned for in-person venues to online platforms. Several working groups met virtually, and educational workshops were made available on topics such as frogs, salamanders, snakes, and box turtles. All of these online offerings were very well-attended, demonstrating that virtual platforms are an excellent way to reach larger audiences and holding these types of meetings is likely the path for the future.

NC Wildlife Resources Commission Law Enforcement Division Lieutenant Mark Cagle received the NC PARC Achievement Award



Lt. Mark Cagle receives the NC PARC Achievement Award. Credit: Jeff Hall



This sticker design was sold at the SE PARC meeting and will be sold at future PARC gatherings to support PIPA, our professional development award program. Credit: DEITT

This work is part of ongoing communications within PARC highlighting structural and cultural changes happening within the network to ensure everyone can thrive.

DTT presented the Team's accomplishments and available resources (e.g., Herpetofaunal Disease Alert System) to the AFWA Reptile and Amphibian Conservation Committee at its annual conference.

The FASC brought on two new Co-chairs: Jim Castle (US Army Corps of Engineers, Wildlife Biologist in the Walla Walla District, Tri Rivers Natural Resource Office in Burbank, Washington) and Mike Westphal (Wildlife Biology Program Lead with the US Bureau of Land Management, Central Coast Field Office, Marina, California). Jim and Mike have brought their enthusiasm for amphibian and reptile conservation by supporting broad coordination and communication among federal agencies and across multiple levels, from local to national.



Kathy Michell, recipient of NE PARC's Excellence in Herpetofaunal Conservation Award, holding a Wood Turtle (*Glyptemys insculpta*) in habitat that she helped to protect. Credit: Andy Adams



Charlotte Sornborger, recipient of NE PARC's Community Conservation Award, with a Diamond-backed Terrapin (*Malaclemys terrapin*) from a population study that she initiated in Rhode Island. Credit: Jeff Hall

from the NC PARC Steering Committee. The award was presented in recognition of outstanding contributions through law enforcement and education to the conservation and protection of North Carolina's reptiles and amphibians. Congratulations, Mark, on a well-deserved honor!

NE PARC presented its annual Excellence in Herpetofaunal Conservation award to Kathy Michell, a veteran wildlife rehabber who specializes in reptiles. She has saved and returned countless animals to the wild across two states and has trained hundreds of other rehabbers. Kathy is a trained field biologist who has collaborated with a number of organizations and conservation efforts, including the New York State Department of Environmental Conservation, USFWS, and the New York Herp Atlas. She has also played a major role in the maintenance and enhancement of critical herpetofaunal habitat in construction areas, all on a volunteer basis. Congratulations, Kathy!

NE PARC presented its Community Conservation Award, which recognizes stellar herpetofaunal conservation efforts on a local level, to Charlotte Sornborger. Charlotte pioneered a conservation effort to protect the only known (at the time) Diamond-backed Terrapin (*Malaclemys terrapin*) nesting site in Rhode Island, and she has, for the past 30 years, played a vital role in Rhode Island terrapin conservation by coordinating nest monitoring efforts, participating in multiple working groups, delivering environmental education programs and lectures, and tirelessly pushing for habitat preservation.

NE PARC is working to extend its networking potential to the general public by adding a part-time Social Media Coordinator to run NE PARC social media accounts, including Facebook, Instagram, and Twitter. Regular posts and engagements on these sites have highlighted herpetofaunal research efforts in the region, northeast species ecology and natural history, and fundraising efforts. There have also been "themed" months focusing on a particular species, group, or aspect of herpetofaunal conservation. After a year of these focused efforts, NE PARC has reached a larger audience, with the total amount of "Likes/Followers" doubling in size across the platforms. NE PARC aims to continue growing ever more in the next year.



## World Congress of Herpetology

We are continuing to grow the PARC network by engaging with other herpetofaunal conservation organizations, such as the World Congress of Herpetology (WCH).

In January 2020, a number of PARC herpetologists were among the ~1,000 delegates attending the 9th WCH meeting in Dunedin, New Zealand. PARC representation included presentations by several NW PARC members: Gwen Bury (Oregon State University) presented on predicted climate change effects on the range of the Southern Torrent Salamander (*Rhyacotriton variegatus*); Chuck Peterson (Idaho State University) presented on using crowd-sourced data for conservation (the Idaho Amphibian and Reptile iNaturalist Project); and Dede Olson (US Forest Service) presented on both riparian buffers in forest management and amphibian diseases. The next WCH meeting will be in Kuching, Malaysia in August 2024—time to plan ahead!

The WCH began publishing a bi-annual newsletter in 2020 and invited PARC to contribute. The publication presents a great opportunity to strengthen the relationship between our respective networks, and we're excited to be sharing our latest news. PARC's first contribution appears in the December issue of the WCH newsletter, which is available at <https://www.worldcongressofherpetology.org/newsletter-1>.

Courtney Dvorsky was the first recipient of OH PARC's grant offered in collaboration with the Ohio Biological Survey. Courtney's project was titled "Between a corn field and a suburb: How do changes in land use impact amphibians on exurban landscapes?" Additional details of the grant program can be found at <http://www.ohiobiologicalsurvey.org/projects/>.

In place of the annual meeting, OH PARC held a virtual seminar series that showcased herpetofaunal work within the state.

## SPOTLIGHT ON THE TURTLE NETWORKING TEAM

### Why a Turtle Team?

There are over 350 species of turtles worldwide, and nearly 60% are listed by the IUCN as Threatened. Similar to other wildlife declines, turtle declines are driven by multiple factors, including disease, habitat loss/alteration, and invasive species. Additionally, turtles face widespread human exploitation—there is high demand for turtles in the illicit global trade for pets, food, medicines, and other products. With their high mortality and slow reproduction, removing just a few turtles from the wild can be the difference between a population persisting and being lost. Yet some people take thousands. Thus, the illegal turtle trade has severe conservation implications. Confronting the challenges posed by this issue requires coordinated efforts among law enforcement and agency biologists as well as others with expertise in husbandry, genetics, disease, and public outreach.

The need for a national turtle team became clear during the 2018 Trilateral Trade and Enforcement Training Workshop. There, biologists and investigative and intelligence agents from Canada, Mexico, and the US shared information on 12 priority species and discussed how legal, sustainable trade could be facilitated to maintain viable wild populations. The workshop led to the Sustainable Trade in Turtles and Tortoises: Action Plan for North America, which outlines a set of recommended actions aimed at conserving these species.

Shortly after the 2018 workshop, the Collaborative to Combat the Illegal Trade in Turtles (CCITT) was independently formed as a grassroots working group to advance efforts to better understand, prevent, and eliminate the illegal collection and trade of North America's native turtles. The following year, PARC formed the TNT with the similar goal of facilitating action through partnerships to conserve native North American turtle populations.



### A Call to Action

Ahead of the 2020 World Turtle Day (23 May), the TNT, CCITT, AZA, and Wildlife Trafficking Association (WTA) circulated a Call to Action letter asking wildlife professionals to add their names in support of actions for establishing a united front against criminals trafficking in the nation's natural heritage, with the ultimate goal of protecting North American turtles:

- Coordinate state regulations to help address current conservation risks.
- Provide additional resources for wildlife law enforcement to prevent illegal collection and trafficking.
- Enhance public outreach that communicates the severity and scale of the crisis and works toward eliminating national and international demand for wild-collected turtles.
- Increase resources for emergency housing and care of confiscated turtles.
- Implement science-based planning to guide housing, care, and management outcomes for confiscated turtles.

The letter resulted in a total of 887 signatures, about 74% from self-reported conservation professionals. There were 32 endorsing organizations, including endorsements from national offices of major groups.



TNT Co-chairs Cristina Jones (left) and Noelle Rayman-Metcalf (right). Credit: George Andrejko; Noelle Rayman-Metcalf

### Merging for a Common Goal

After the Call to Action collaboration, the CCITT merged with PARC's TNT to reduce redundancy and share our collective expertise. Through this merger, we will continue to grow our network and harness its collective power as we create additional regional working groups to promote turtle conservation across North America.

The priority of this expanded TNT is to facilitate coordination and communication between law enforcement and turtle biologists, to work collaboratively to identify the scope and scale of this issue, to develop proactive approaches to reduce the impact, and to aid in the repatriation of confiscated turtles in North America.

“ PARC'S TNT IS THE IDEAL NETWORKING OPPORTUNITY TO LEVERAGE INNOVATIVE PARTNERSHIPS AND IDEAS TO ENSURE THE SURVIVAL OF NATIVE TURTLE SPECIES THROUGHOUT THEIR RANGES IN NORTH AMERICA. – CRISTINA JONES

”



Many of the 19 attendees of SC PARC's outing to Beidler Audubon Forest, South Carolina, in March. The highlight of the day was seeing wild Spotted Turtles (*Clemmys guttata*) while exploring the swamp from the boardwalk. Credit: Jake Zadik

### Welcome SC PARC!

We are happy to introduce **SC PARC** as our newest state chapter. Formerly known as the South Carolina Herpetological Society, the group officially transitioned into a PARC chapter in 2020, and it has been growing fast. The group added 49 new subscribers to its membership this year, reaching a total of over 300 members. We look forward to continued growth in amphibian and reptile conservation in South Carolina!

**SC PARC** hosted four outings this year to increase networking opportunities for members. The outings took place in the Lowcountry and the Sandhills of South Carolina. About 55 members were able to attend. Current outings are restricted because of the pandemic, but they still fill up in under an hour! SC PARC members are clearly hungry for activity and herping opportunities.

**SC PARC** hosted a 2-day virtual meeting in December with over 60 attendees tuning in to watch the presentations. Members from the South Carolina Department of Natural Resources provided updates on invasive species, alligator movement patterns, and new herpetofauna-related legislation in the state. Regional and partner organizations, including the Turtle Survival Alliance, Amphibian Foundation, SE PARC, and the Rattlesnake Conservancy, presented work being done around the broader southeast region. Researchers presented on topics such as surveying techniques, ecotoxicology, and genetics. You can view all of these great presentations at <http://www.scparc.org/2020-annual-meeting>.



Priya Nanjappa giving the keynote presentation at the 2020 SE PARC meeting in Nauvoo, Alabama. Credit: Vanessa Terrell



PARC Social Media Specialist, Meg Hussey. Credit: Meghan C. Hussey

**SE PARC** hosted >250 attendees during its annual meeting, which was held in February at Camp McDowell in Nauvoo, Alabama. The meeting's theme, "Putting the 'P' Back in PARC: Partnerships Allow for Real Collaborations", was supported by symposia focused on citizen science, private lands conservation, and population augmentation. Highlights of the meeting included an invited keynote presentation by Priya Nanjappa, awards given to the best presentations by young professionals and students, and the posthumous honoring of Joe Mitchell through the Conservation Hero Award—a recognition he initiated in 2010.

**SW PARC** and **CO PARC** are excited to partner with the Turtle Survival Alliance for a Virtual Networking Extravaganza in February 2021! With this virtual format, everyone is looking forward to connecting with partners who may not normally be able to attend. **SW PARC** is also moving forward with a variety of other activities to serve the region in 2021.

After the 2020 in-person meeting was cancelled, the **SW PARC** Steering Committee worked diligently behind the scenes to finalize the region's organizational structure and revise the 2020 meeting plans into 2021 plans.

To manage PARC's ramped-up social media activity on the national level, **Executive Committee** brought Meg Hussey onboard as our new Social Media Specialist! After graduating with her Master's degree in Environmental Science and Management from the University of Rhode Island in May 2019, she began working as NE PARC's Social Media Specialist in July 2019—a position she continues to hold while also helping us advance the social media presence of PARC's national chapter and our Task Teams. Since joining us in April, our follower count has increased by 200 people on both Facebook and Twitter!



Mike Adams, 2020 recipient of the Alison Haskell Award. Credit: Jennifer Rowe

### Michael Adams: 2020 Haskell Award Recipient

Congratulations to Michael J. Adams, 2020 recipient of the Alison Haskell Award for Excellence in Herpetofaunal Conservation!

The award, presented annually by PARC in memory of Alison Haskell, our first Federal Agencies Coordinator, recognizes individuals who exemplify extraordinary commitment to herpetofaunal conservation, as did Alison. This year, we recognize Mike's outstanding passion for, and dedication to, conservation of amphibians and reptiles through leadership, science, and collaboration.

Mike's efforts exemplify all of our Core Values (Collaboration; Proactive Approaches; Scientific Integrity; Value in All Biodiversity; and Maintaining Optimism) and fit our desire to acknowledge "unsung heroes" in herpetofaunal conservation. His work as National Coordinator for the USGS Amphibian Research and Monitoring Initiative (ARMI) has been recognized as the sustaining force behind this national program. Furthermore, Mike has a striking ability to connect people and science at multiple levels and to facilitate key partnerships while providing rigorous science to meet local, regional, national, and international management needs in the field of amphibian ecology and conservation. For example, as regional principal investigator for the Pacific Northwest, Mike works with partner agencies (e.g., USFWS, NPS, Bureau of Land Management, and state agencies) to coordinate and conduct field research to help inform amphibian conservation decisions. Mike's collaborative partnering has also contributed to the national DTT and an international salamander chytrid fungus Task Force, which directly support global conservation and management of herpetofauna. Thank you, Mike, for your continued work and dedication to amphibians and reptiles!





# STRATEGIC AREA TWO

## HABITAT CONSERVATION

*Our Goal: To identify, restore, and create important amphibian and reptile habitats and connectivity.*

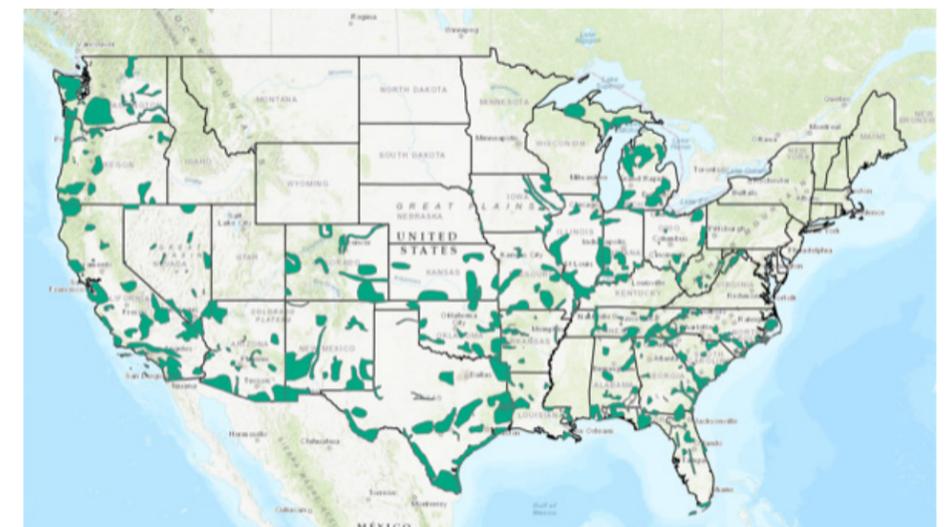
### The Latest on PARCAs

With habitat loss and fragmentation among the major threats to herpetofauna, PARC developed the PARCA project to increase public awareness and encourage landowners and conservation partners to take voluntary actions for the benefit of amphibians and reptiles. The process for identifying PARCAs is based on scientific criteria (e.g., species rarity, landscape integrity) and expert review. More details can be found at <http://parcplace.org/habitat/parcas/>.

Like everything in 2020, the effort to continue identifying PARCAs across the country was delayed. However, we were able to develop a

new online data portal, which will be hosted by ARC. This portal will be released in early 2021 and will serve as a way for our partners to view current PARCAs and to request underlying data. We are excited about this progress, as it will serve to engage more partners with PARCAs and enhance on-the-ground herpetological conservation.

Looking ahead, 2021 will be a big year for PARCAs, as ARC has secured funding to identify PARCAs in two more states, Utah and Mississippi. ARC will also be continuing to develop PARCA conservation programs in a select subset of PARCAs across the country, helping to facilitate new and continuing conservation efforts on the ground.



The current distribution of PARCAs across the continental United States. Credit: JJ Apodaca



A Green Salamander (*Aneides aeneus*), one of the species for which a CAP has been drafted through partnerships between SE PARC and higher education institutions.. Credit: Todd Pierson

### Conservation Action Plans

CAPs, also referred to as Best Management Practices documents, describe management practices intended to serve as guidelines that land managers can use to implement conservation and management actions that benefit a particular species. The completed CAPs are available for download at <https://parcplace.org/habitat/conservation-action-plans/>. During 2020, PARC partners continued making progress on the development of CAPs, and several new CAPs are expected to be released in 2021.

SE PARC piloted an initiative to help with drafting CAPs, under the leadership of Steering Committee members Katie Fraser and Rebecca McKee. The initiative integrated the drafting of CAPs into college courses focused on herpetology and conservation biology at the University of Georgia and Towson University, respectively. This effort brings awareness about species conservation to college students and gives motivated students experience with writing and authorship.

In 2021, PARC will be releasing a technical publication titled “The Timber Rattlesnake: Life History, Distribution, Status, and Conservation Action Plan”, more succinctly known as the TRCAP. This plan was developed by a team of more than 75 concerned rattlesnake biologists from federal and state agencies, universities, private institutions, and environmental consultancies, as well as private citizens. This plan includes chapters on: 1) biological and ecological requirements; 2) range-wide distribution and population status; 3) state and provincial

accounts with maps of specific state-level distribution, threats, and conservation needs; and 4) range-wide threats and conservation needs. The book is beautifully illustrated with over 250 photos, submitted by more than 80 photographers, showing the variety of color patterns exhibited by Timber Rattlesnakes (*Crotalus horridus*) as well as typical habitats used by the snakes. Although written as a guidance document for landowners, land managers, and environmental consultants, the information provided will also be of value to researchers working on the species’ distribution, life history, and conservation planning.

DoD PARC and the USFWS jointly developed CAPs for the Northern Red-bellied Cooter (*Pseudemys rubriventris*), Eastern Diamond-backed Rattlesnake (*Crotalus adamanteus*), and Western Pond Turtles (*Actinemys marmorata* and *Actinemys pallida*). These at-risk species have been petitioned for listing under the Endangered Species Act (ESA) and are confirmed present on dozens of military sites. The management practices described in the CAPs are intended to serve as guidelines that DoD resource managers can use to plan, prioritize, and implement conservation and management actions. The final reports can be downloaded from the DoD PARC website: <https://www.denix.osd.mil/dodparc/parc-resources/>.

Photo to the right: Timber Rattlesnake (*Crotalus horridus*) demonstrating ambush behavior. Credit: Chris Petersen



# STRATEGIC AREA THREE

## SPECIES CONSERVATION

*Our Goal: To support range-wide species conservation collaborative actions and complementary efforts.*

ALA PARC members assisted with turtle sampling for the Urban Turtle Project (UTP), a citizen science-based project started by ALA PARC Co-chair Andy Coleman in 2018. UTP's main goal has been studying turtles in the urban waterways of Birmingham, Alabama, but its scope is expanding. This year's sampling at Ponce de Leon Springs in the Florida panhandle marks the beginning of a long-term study of the turtle populations in the park's natural freshwater spring and associated creeks. This park is a popular summer destination, so the data will provide insight into how these turtles are affected by human impacts. Notably, one of the major species sampled so far is the Intermediate Musk Turtle (*Sternotherus intermedius*), which was only recently described. Read more about the UTP at <https://www.urbanturtleproject.org>.

To assist military personnel and natural resources managers with identifying venomous snakes while in the field, DoD PARC developed venomous snake ID cards for the 12 most common species of venomous snakes on military lands. The 4" x 2" cards

are printed on waterproof plastic, and the set is held together with a loose-leaf ring. These double-sided cards contain multiple pictures of each species, information about their colors and patterns, and a map of their range. Over 700 sets of ID cards have been printed and distributed. If you want to print a set of your own, the full file is here: [https://www.denix.osd.mil/dodparc/parc-resources/materials-for-installation-personnel/venomous-snake-identification-cards/Venomous%20Snake%20Cards\\_final-1.28.20\\_508.pdf](https://www.denix.osd.mil/dodparc/parc-resources/materials-for-installation-personnel/venomous-snake-identification-cards/Venomous%20Snake%20Cards_final-1.28.20_508.pdf).

In July 2020, DoD PARC released their second podcast on the YouTube channel "DoD PARC Podcast". This edition, titled "Venomous Snakes on DoD Lands", discusses which venomous snakes are on military lands, which species are most common, and on what military bases they have been confirmed present. Snake safety protocols, how to keep snakes away from military training and housing areas, and what to do if bitten by a venomous snake are also discussed. Check out the podcast, which has had over 270 views, at: <https://www.youtube.com/watch?v=Z6SYdZea7wI&feature=youtu.be>.





An adult Intermediate Musk Turtle (*Sternotherus intermedius*) sampled during the Urban Turtle Project's study in Florida's Ponce de Leon Springs State Park. This recently-described species is endemic to the Conecuh/Escambia and Choctawhatchee Rivers of Alabama and the Florida Panhandle. Credit: Andrew Coleman



DoD PARC venomous snake ID cards. Credit: Chris Petersen

DoD PARC developed an at-risk herpetofaunal species priority list for military lands within the continental US. The 11 species on the priority list have confirmed populations on DoD lands and are currently petitioned or under review for ESA listing by the USFWS. The list serves as an informational tool that senior DoD leadership and installation natural resource managers can use to prioritize proactive species and habitat conservation and management actions to help reverse decreasing population trends and/or prepare installations for potential listings.

Developed in 2020, the Commander's Guide to the Department of Defense Partners in Amphibian and Reptile Conservation Network describes why the DoD should care about these species, what its resource managers are doing to manage and conserve these animals, and



Sign marking a breeding site for the Frosted Flatwoods Salamander (*Ambystoma cingulatum*) at Townsend Bombing Range in southeastern Georgia. Credit: Chris Petersen

Eastern Diamond-backed Rattlesnake (*Crotalus adamanteus*). Credit: Paul Block



how these activities support and enhance readiness. It also highlights how DoD PARC supports the military mission, successes of DoD PARC, and how military commanders can support herpetofaunal management on their installations. Download the guide at <https://www.denix.osd.mil/dodparc/parc-resources/> or request hard copies from DoD PARC National Representatives.

The DTT received 10 reports of diseased or dying herpetofauna in 2020 through the Herpetofaunal Disease Alert System (HDAS), and one additional report was e-mailed directly to DTT members. The reports, which came from eight different US states and one Canadian province, were directed to the appropriate authorities, and DTT provided expert assistance in guiding some diagnostic testing. You can report suspected incidents of amphibian or reptile disease via HDAS by e-mailing [herp\\_disease\\_alert@parcplace.org](mailto:herp_disease_alert@parcplace.org). For more information, visit <https://parcplace.org/resources/parc-disease-task-team/>.

DTT members wrote two manuscripts on biosecurity and decontamination



Northern Red-bellied Cooter (*Pseudemys rubriventris*). Credit: Paul Block



**Commander's Guide to the Department of Defense Partners in Amphibian and Reptile Conservation Network**

What Every Commander Should Know About Amphibians and Reptiles on Military Lands



Cover of the DoD PARC Commander's Guide.

protocols. The first “Minimizing the Spread of Herpetofaunal Pathogens in Aquatic Habitats by Decontaminating Construction Equipment” by James Julian, Paula Henry, et al. was published in the September issue of Herpetological Review. The other, “Decontamination and Biosecurity Guidance for Field Sites at High Risk of Pathogen Translocation” by Dede Olson and Katie Haman, has been submitted to Herpetological Review. DTT also worked with PARC regions to review and develop amphibian and reptile disease fact sheets.

MW PARC is publishing a Field Guide to Amphibian Eggs and Larvae of the Western Great Lakes, authored by Gary Casper, Thomas Anton, and Ryne Rutherford. This waterproof, pocket-sized guide covers the identification of the eggs and larvae of all 23 species of frogs, toads, and salamanders in the western Great Lakes region. With new identification keys, descriptive species accounts, and color photographs of every life stage, this guide will be invaluable for wetland assessments and nature studies. Copies will be available via mail order in early 2021 from MW PARC ([www.mwparc.org](http://www.mwparc.org)) or the Wisconsin Wetlands Association ([www.wisconsinwetlands.org](http://www.wisconsinwetlands.org)). All proceeds support the missions of these organizations.

The past year was very productive for surveys and monitoring of rattlesnakes. In 2009, NC PARC developed a brochure called “Rattlesnake Sightings Wanted”, which was distributed at hunting and fishing expos. While only a few accounts trickled in over the previous years, 2020 brought over 100 sightings reported by the public during the spring and summer. These reports led to over 70 new locations for both Timber and Pygmy Rattlesnakes (*Crotalus horridus* and *Sistrurus miliarius*), as well as several new gestation sites.

NE PARC's most active working group, the Turtle Working Group, had an eventful year that sparked the creation of new outreach materials, including a brochure for urban and suburban landowners, a basking turtle research protocol, and a “turtles-in-trouble” poster, all of which are in progress and should be ready for distribution soon. The working group also held a successful virtual workshop in lieu of the annual meeting.

The *Bsal* Task Force has continued to meet virtually with NW PARC members Dede Olson, Laura Sprague (incoming Co-chair), Kathryn



Eggs are often the most conspicuous and easily encountered life history stage of many species of amphibians. Such is the case with these Spotted Salamander (*Ambystoma maculatum*) eggs. Credit: Gary Casper



Timber Rattlesnake (*Crotalus horridus*) at a gestation site in North Carolina. Credit: Jeff Hall

Ronnenberg, and Katie Hammond participating along with DTT members. Field monitoring in all states/provinces continued despite constraints caused by the pandemic.

Working with the Amphibian Specialist Group associated with the IUCN Species Survival Commission, NW PARC's Dede Olson contributed to three chapters (climate change; infectious diseases; surveys and monitoring) of the updated world Amphibian Conservation Action Plan (ACAP). Each chapter of the update reviews knowledge advances since the first ACAP was published in 2007 (<https://www.iucn-amphibians.org/resources/acap/>) and recognizes gaps warranting additional attention. Dede's contributions highlight advances from across PARC regions. For instance, her examples of US amphibian survey and monitoring programs include DoD PARC's inventory of 415 properties and the Idaho State Amphibian and Reptile iNaturalist Project (in development using crowdsourcing by ID PARC Co-chair Chuck Peterson) as well as the North American Amphibian Monitoring Program; the USGS Amphibian Research and Monitoring Initiative; the Amphibian Monitoring Program of the Greater Yellowstone system; and the Sierra



### Global Amphibian Assessment 2

The IUCN Red List is updating world amphibian species status (the Global Amphibian Assessment 2 [GAA2]; <https://www.iucn-amphibians.org/red-listing/global-amphibian-assessment-2/>), and PARC members are adding their expertise to this effort. The update entails reassessing the 6,260 species from the 2004 GAA plus assessing 1,700+ species described since then. These assessments influence national conservation priorities, including US state species of concern rankings. The update process is nearly complete for Canada, and significant progress was made for the US in 2020. Red List leaders are currently reaching out to amphibian species experts in many US regions to confirm that they have the latest information. Thanks in advance to the PARC membership for helping with this enormous task, especially assembly of monitoring data that may not be revealed by web search engines. Contact NW PARC's Dede Olson ([dede.olson@usda.gov](mailto:dede.olson@usda.gov)), a US liaison to the Red List team, if you have any questions.

OH PARC provided feedback to the Ohio Division of Wildlife concerning a proposal to change the status of American Bullfrogs (*Lithobates catesbeianus*) and Green Frogs (*Lithobates clamitans*), which would allow them to be sold and distributed by aquaculture facilities. This feedback included a letter of relevant facts, findings, and literature as well as testimony at a public hearing, with the goal of providing science-based information to the agency to support informed decisions.

Save The Snakes, one of PARC's NGO partners, uses its Save The Snakes Support Grant program to empower passionate, committed individuals with an early-stage snake conservation vision who focus on community-based conservation. In 2020, Save The Snakes awarded Support Grants to three individuals: Beatriz Nieto Ariza (Bolivia) for the project "Human-snake conflict in the Bolivian Amazon: Educating for coexistence"; Evan Quah (Malaysia) for the project "Assessing community perceptions and raising the profile of snakes through community education and outreach in a large natural wetland reserve in Malaysia"; and Katty Garzon (Mexico) for the project "Art-and-science education program for the conservation of snake and reduction of the human-snake conflict in the locality of Catemaco, State of Veracruz, Mexico." Learn more about their projects and the grant program at <http://savethesnakes.org/grants2020>.

SE PARC's Hellbender Task Team worked with Defenders of Wildlife to produce and print a poster to distribute at tubing/canoe outfitters, as well as national and state parks and forests, to inform recreationists of the harm caused to Hellbenders (*Cryptobranchus alleganiensis*) by moving rocks in streams and rivers. This great educational piece also provides information on how to contact government authorities on sighting of Hellbenders and/or their eggs throughout the Southeast.

SW PARC is working within the region and elsewhere in the west to support partners working to conserve native amphibians and reptiles by tackling invasive species like American Bullfrogs (*Lithobates catesbeianus*) and aquatic and terrestrial plants. This topic will be featured in the region's Virtual Networking Extravaganza in February 2021.



The 2020 Save The Snakes Support Grant recipients Beatriz Nieto Ariza (top left), Katty Garzon (top right), and Evan Quah (bottom). Credit: Save The Snakes



Hellbender (*Cryptobranchus alleganiensis*). Credit: Todd Pierson



# AMPHIBIAN WEEK 2020

We held our first annual celebration of Amphibian Week in June 2020!

## Why Amphibians?

Amphibian Week aims to promote the importance of amphibians and the partnerships formed to implement amphibian conservation actions to address the ongoing global amphibian crisis. Amphibians are the most threatened vertebrates on Earth—out of more than 8,000 species, 40% are threatened with extinction. This amphibian crisis results from many interacting factors, including habitat loss and degradation, pollution, disease, invasive species, use and trade, and climate change. Addressing these diverse threats requires diverse partnerships and collaborations.

## Activities

This year, the Amphibian Week Committee coordinated with a range of partners to plan a full schedule of informative and engaging activities, including:

- Matt Patterson (Stoneridge Art Studios) hosted a tutorial on painting a watercolor portrait of the critically endangered San Martin Fringe-limbed Treefrog (*Ecnomiohyla valancifer*).
- Dede Olson (NW PARC, USFS) gave a presentation, in conjunction with Misty Mitchell (Wonders of Wildlife), taking viewers on a journey through the life cycle of amphibians and their role in the environment. The event was hosted by Agents of Discovery.
- Nina McDonnell (UMass Boston) guided viewers through making their own “Amphibian Ally” t-shirts and bandanas, great conversation starters for spreading the word about amphibians.
- Allida Warn (Adventurous Art) led an interactive forum demonstrating how to fold an origami jumping frog. Customizable to resemble a variety of species, these frogs are a great way to teach about biodiversity and biomechanics.

You can find resources and additional information on Amphibian Week, including the latest on plans for the 2021 celebration, at <https://parcplace.org/species/amphibian-week/>.



Matt Patterson demonstrating background shading for the San Martin Fringe-limbed Treefrog (*Ecnomiohyla valancifer*) watercolor. Credit: Matt Patterson



The finished product of Nina McDonnell's “Amphibian Ally” t-shirt tutorial. Credit: Nina McDonnell



Testing Allida Warn's origami jumping frog in the wild. Credit: Allida Warn

## FASC Involvement

PARC's FASC fully supported the development of Amphibian Week, and agencies participated at multiple levels. FASC Co-chairs Mike Westphal and Jim Castle served on the Amphibian Week Planning Committee to help drive the overall direction of Amphibian Week as well as coordinated local activities to engage their communities during the festivities.

## Supporting Racial Justice

Inclusive conservation is a Core Value of PARC. This year, Amphibian Week's scheduled dates, 1–7 June, coincided with significant events related to racial justice in the US. Thus, in an effort to amplify Black voices and underrepresented groups in the conservation community, PARC pulled back on Amphibian Week's social media launch. We instead used our platforms to highlight discussions on inclusive, equitable access to nature, and we encouraged our followers to check out #BlackBirdersWeek and #BlackInNature, where Black herpetologists share their stories on Twitter.

## An International Celebration

The Amphibian Survival Alliance (ASA) was a crucial partner for bringing Amphibian Week into the global spotlight and broadening our audience:

- On all ASA social media platforms, engagement during Amphibian Week exceeded 100% of the weekly average engagement.
- The hashtag #AmphibianWeek was used in posts in English, Portuguese, Spanish, French, Czech, and Catalan. Users also adapted the hashtag to their languages, e.g., #SemanaDosAnfibios, #SemanaDeLosAnfibios.
- Twenty-three percent of all ASA partners engaged with Amphibian Week. There was more engagement in Latin America (Brazil, Ecuador, Chile, Mexico), Africa (Angola, South Africa), and continental Europe (Portugal, Italy) than in the US and UK, countries that usually dominate interactions on the ASA Facebook page.
- Engagement extended beyond existing ASA partners: several other institutions and individuals engaged in the Amphibian Week, and ASA identified new potential partners in multiple countries.

We are grateful to numerous partners for their help and support:

- Amphibian Survival Alliance
- ARC
- DoD PARC
- Jamie Voyles, University of Nevada, Reno
- Matt Patterson, Wildlife Artist
- Smithsonian's National Zoo and Conservation Biology Institute
- The Amphibian Foundation
- US Army Corps of Engineers
- US Bureau of Land Management
- USFWS
- USFS
- USGS, Amphibian Research and Monitoring Initiative
- NPS



A special thank you to Mikaela Oles of the USFWS and Mark Mandica and Lacey Avery of the Amphibian Foundation for their collaborative work in creating this Amphibian Week logo!

## LOOKING AHEAD TO NEXT YEAR

With all of the exciting things PARC partners accomplished in 2020, we can't wait to see what 2021 has in store! Here's a sneak peek at just a few of the things happening in the near future.

The joint TNT-SE PARC workshop on "Enhancing Cross-jurisdictional Partnerships to Confront the Illicit Turtle Trade in the Southeastern United States" will take place virtually from 24-25 February.

The TNT will hold a symposium on the illegal trade of North America's native turtles at the Northeast Fish and Wildlife Virtual Conference, 26-28 April.

The second annual celebration of Amphibian Week will take place 2-8 May.

Upcoming meetings of PARC regions and state chapters include:

- SW PARC and CO PARC are holding a joint "Annual Networking Extravaganza" virtually on 12-13 February. The Turtle Survival Alliance will host the event via Zoom.
- SE PARC's annual meeting will take place virtually from 25-27 February.
- NC PARC will have a virtual meeting in March; dates TBD.
- NE PARC will have a virtual meeting 10-13 August.
- MW PARC will have a virtual meeting in August; dates TBD.
- ALA PARC is planning a meeting for fall 2021; dates TBD.



## PHOTO CREDITS

|             |   |
|-------------|---|
| Cover       | Red Cornsnake ( <i>Pantherophis guttatus</i> )<br>Paul Block                                  |
| Page 4, 5   | Blue Ridge Two-lined Salamander ( <i>Eurycea wilderae</i> )<br>Kevin Stohlgren                |
| Page 6, 7   | Eastern Box Turtle ( <i>Terrapene carolina carolina</i> )<br>Paul Block                       |
| Page 8, 9   | Gopher Frog ( <i>Lithobates capito</i> )<br>Dirk Stevenson                                    |
|             | Common Garter Snake ( <i>Thamnophis sirtalis</i> )<br>Danny Martin                            |
|             | Eastern Fence Lizard ( <i>Sceloporus undulatus</i> )<br>Mundy Hackett                         |
| Page 12     | Queen Snake ( <i>Regina septemvittata</i> )<br>Seth Berry                                     |
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| Page 17     | Eastern Ratsnake ( <i>Pantherophis alleganiensis</i> )<br>Paul Block                          |
| Page 18     | Ornate Box Turtle ( <i>Terrapene ornate</i> )<br>Mary Kay Baum                                |
| Page 22, 23 | Milk Snake ( <i>Lampropeltis triangulum</i> )<br>Seth Berry                                   |
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| Page 24     | Eastern Newt ( <i>Notophthalmus viridescens</i> )<br>Chris Schiralli                          |
| Page 29     | Green Toad ( <i>Bufo debilis</i> )<br>John. D. Willson  |
| Page 34, 35 | Mole Salamander ( <i>Ambystoma talpoideum</i> )<br>Mundy Hackett                              |
|             | Wood Frog ( <i>Lithobates sylvatica</i> )<br>Jarrod Derr                                      |
|             | Pine Woods Snake ( <i>Rhadinaea flavilata</i> )<br>Mark Danaher                               |
| Page 38, 39 | Eastern Puerto Rican Crested Anole ( <i>Anolis cristatellus-ViequesIsland</i> )<br>Paul Block |

