



PARC
PARTNERS
IN
AMPHIBIAN AND REPTILE CONSERVATION

2011 ANNUAL REPORT





ACKNOWLEDGMENTS

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Page 2-3 background: southeastern pond (John White)

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INTRODUCTION

PARC MISSION

To conserve amphibians, reptiles and their habitats as integral parts of our ecosystem and culture through proactive and coordinated public/private partnerships.



Partners in Amphibian and Reptile Conservation (PARC) was established in 1999 to address the widespread declines, extinctions, and range reductions of amphibians and reptiles, with a focus on conservation of taxa and habitats in North America. Amphibians and reptiles are affected by a broad range of human activities, both as incidental effects of habitat alteration, overexploitation, and due to the perception that these animals are either dangerous or of little environmental or economic value. However, PARC members understand that these taxa are important parts of our natural and cultural heritage. Worldwide, approximately half of turtle species and one-third of amphibian species are considered as ‘threatened’ with extinction. Conservation of these animals has never been more important.

PARC is:

- An inclusive partnership created to help connect and complement local, regional, and national herpetofaunal conservation efforts.
- A network of like-minded citizens, professionals, and organizations dedicated to herpetofaunal conservation and representing science and education, species conservation and land management, industry and commerce, state and federal government, conservation societies, pet and field hobbyists, and the general public.
- An entity that coordinates and provides recommendations and guidelines based on sound science and consensus among scientists.
- The only partnership to address the conservation of all amphibians and reptiles.

PARC is not:

- A funding or government agency.
- A policy-making or advocacy entity.

2011 - YEAR OF THE TURTLE

IN 2011 *PARC designated and celebrated the Year of the Turtle*, an outreach and awareness campaign to address turtle conservation threats and needs, and to highlight opportunities for public involvement. Many of the 'Year of the Turtle' efforts from our regions and state and federal partners are detailed later in this Annual Report. Read more in the pages that follow.

Why did we initiate this event? Today, there is a race in progress — a race to extinction, and turtles, unfortunately, are emerging in the lead, ahead of birds, mammals, and even amphibians. Nearly 50% of turtle species are identified as threatened with extinction. The majority of turtle threats are human-caused, which also means that we can work together to address turtle conservation issues and to help ensure the continued survival of these important animals. It's not too late for our turtle heritage to be salvaged. The U.S. has more endemic turtle species than anywhere on our planet, making it a true turtle biodiversity hotspot. Our careful stewardship can preserve the rare species and help keep 'common species common.'

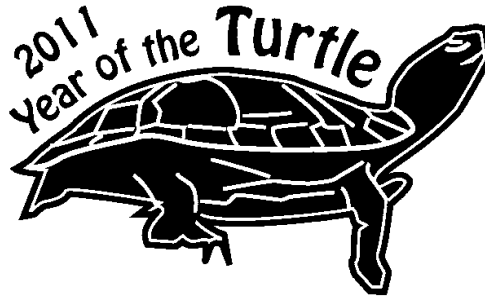
In order to work towards this goal, turtle conservation groups, in partnership with Partners in Amphibian and Reptile Conservation [PARC explained previously], designated 2011 as the Year of the Turtle. When the Year of the Turtle campaign was initiated in 2010, five partners joined PARC to form the Year of the Turtle Planning Team. Through outreach efforts with researchers, educators, natural resource managers, and the public, the Year of the Turtle campaign has been focused on increasing involvement in

local, national, and international turtle issues. The Year of the Turtle Planning Team developed the goal that citizens, natural resource managers, scientists, and the pet, food and related industries can work together to address issues and to help ensure long-term survival of turtle species and popula-

tions. PARC would like to express special thanks to: Dede Olson and Ross Kiester for developing the 'State of the Turtle' report; David Dimitrie and Kathryn Ronnenberg for coordinating the production of the monthly newsletters and calendar pages; David Dimitrie, Joshua Ream, and Ross Kiester for developing and implementing the photo contest; JD Willson for managing the Year of

the Turtle web page; John White for developing a flip-card web page of the most threatened turtles in the world and a YouTube video to announce the year-long campaign; Dede Olson for coordinating the ongoing USA Turtle Mapping Project; David Dimitrie for managing the turtle email address; and Valorie Titus for managing our turtle Facebook and Twitter accounts.

Over the course of the year, a total of 55 partners joined the list of YoT collaborating partners — each providing valuable assistance in the Year of the Turtle campaign to reach the public on the important issues surrounding turtles and their conservation. These partners played an important role in promoting the Year of the Turtle, both across North America and the world. In total, 18 international partners joined the Year of the Turtle collaborating partners, representing such countries as Columbia, Bangladesh, Spain, and Germany. An additional 36 partners from across North America



Kelly Christiansen submitted the winning logo for PARC's Year of the Turtle Logo Contest

"Samantha Bankston has always been a turtle enthusiast. She chose to paint a slider because the image is very common in south Louisiana," explained her teacher Mrs. Mandy Conly of Copper Mill Elementary School. Samantha and her classmates of Mrs. Conly's fifth grade class were highlighted in June's Year of the Turtle News Education Spotlight



joined the ranks of collaborating partners throughout the year, including representation from 30 U.S. states.

Throughout the year, awareness of the issues surrounding turtles was raised through press releases, a logo-design contest, a photo contest, and related events. A website (www.YearoftheTurtle.org) was developed to facilitate this information and to provide outreach to both a professional and public audience. A monthly electronic newsletter – the Year of the Turtle News – also was produced to highlight these efforts. In addition, reports, including the State of the Turtle and a revised Top 25+ Turtles in Trouble report, were developed and made available to the public.

An Indication of our Reach

Tracking of Year of the Turtle web statistics began in February 2011 following the launch of the newly designed PARC website. Between February and mid-November, nearly 13% of visitors to the PARC website were directed there via Year of the Turtle web pages, amounting to a total of approximately 13,660 unique visitors to Year of the Turtle web pages over this time period. In total, over 22,000 views were made of Year of the Turtle web pages. Also, 60% of all downloads from the PARC website were Year of the Turtle items - monthly newsletters (29.3%), monthly calendars (23.8%), and the Year of the Turtle screensaver (6.9%). Over 500 entries were submitted throughout 2011 as part of the monthly online calendar photo contest, representing species from all across North America, as well as the Galapagos Islands, the Netherlands, Argentina, Bolivia, and elsewhere around the world. The State of the Turtle report was translated into Spanish and French, and abstracted versions of the report appeared in the journal *Amphibians and Reptiles* produced by the



Missouri Western State University Herpetologist Dr. Mark Mills and Missouri Department of Conservation Naturalist Shelly Cox discussing turtle conservation during a September talk entitled 'It's Turtle Time! 2011 is the Year of the Turtle in St. Joseph Missouri

International Reptile Conservation Foundation, and the Finnish journal *Herpetomania*. Furthermore, over 300 individuals subscribed to The Year of the Turtle News, and close to 800 individual Facebook members joined the Year of the Turtle page on the social media network.

Featured Year of the Turtle Products and Projects

The Year of the Turtle News featured diverse stories of research and outreach, interviews with turtle biologists, and ways the public could become involved in turtle conservation efforts. Newsletter articles and contributions were developed by prominent turtle biologists in the academic, state, federal, and private sectors as well as conservation organizations, local nature centers, citizen scientists, and the general public. From newsletter stories titled Turtles a “Class Act” at Copper Mill Elementary School to the design of a free Western Pond Turtle Brochure and an artwork design of a Diamondback Terrapin from findings from along the beaches of the Chesapeake Bay, the Year of the Turtle campaign reached a broader audience across the world due to these contributions – all assisting in promoting an understanding of the question “Why turtles and why now?” As one Year of the Turtle partner noted, he was “amazed at the width of Year of the Turtle pick-up within the community. One of the picture-of-the-month choices was a tortoise photographed in Africa and submitted by a Dutchman. PARC’s Year of the Turtle campaign has broadened and solidified the community of turtle people and increased turtle awareness in the broader herpetological and environmental communities.”

Further details on the Year of the Turtle campaign, including downloadable files of all the Year of the Turtle News issues, monthly calendar pages, and other Year of the Turtle products can be found at www.YearoftheTurtle.org.



February YOT photo contest winner
Painted Turtle (*Chrysemys picta*)

2010 PARC AWARDS

IN 2011 PARC initiated two awards: the *Visionary Leader Award* and the *Alison Haskell Award for Excellence in Herpetofaunal Conservation*.

Visionary Leader Award:

This award recognizes an individual in North America who exemplifies extraordinary leadership, vision, and commitment, specifically to PARC, in a manner that has carried PARC to new heights and has significantly forwarded the PARC mission. The first-ever recipient of the PARC Visionary Leader Award is **J. Whitfield “Whit” Gibbons**, an Emeritus Professor at the University of Georgia and Head of the Environmental Outreach and Education Program at the Savannah River Ecology Laboratory.

Dr. Gibbons has devoted much of his life to herpetological research and conservation, and was a significant player in the founding and development of PARC and into its first decade. J. Whitfield “Whit” Gibbons has been tremendously successful in developing students, >40 undergraduates and 45 graduates, and into driven professionals who go on to secure academic, state, and federal jobs, and many have become leaders in conservation science. He valued applied research before it was popular and while doing so, served as a powerful role model to undergraduates and Ph.D. students alike. Whit has developed and fostered expansive environmental outreach programs centered on amphibian and reptile ecology and conservation. His outreach programs have included 100s of lectures and

workshops, >1000 newspaper and magazine articles, educational videos and television productions, and 21 books focusing on herpetology and conservation. Whit is a natural leader and has an innate ability to enthusiastically bring people together, to approach them within the context of their training and position, and to not belittle their perspective or



Dr. J. Whitfield “Whit” Gibbons, PARC co-founder, winner of the 2011 PARC Visionary Leader Award

absence of facts. He also has that far-reaching knowledge to put current issues into historical perspective through personal stories and often exciting field experiences with herps. It is not uncommon to find Whit with a cigar in one hand, and a snake in the other. PARC congratulates Whit Gibbons, our first PARC Visionary Leader.

Alison Haskell Award for Excellence in Herpetofaunal Conservation:

This Award is presented annually by PARC, in memory of Alison Haskell (1956 – 2006), to recognize an individual in North America whose work exemplifies extraordinary commitment to herpetofaunal conservation, as did Alison.

Our first-ever Alison Haskell Excellence in Herpetofaunal Conservation Award winner is **Alvin R. “Al” Breisch**.

Al was the Amphibian and Reptile Specialist with the New York State Department of Environmental Conservation for 26 years until he retired in 2009. He is a current National Co-Chair of PARC, and was a founding member of Northeast PARC. Al Breisch has fostered herpetofaunal conservation for his entire adult life, through his

chosen career with the state of New York, as well as in his participation in multiple groups such as PARC, partnerships with universities and other organizations such as The Nature Conservancy and the Wildlife Conservation Society, mentorship of students of all ages, and leadership in numerous efforts to conserve multiple species of herpetofauna within New York and across the country. From 1980 to his retirement in 2009, Al was a dedicated and well-respected Senior Wildlife Biologist with the New York State Dept of Environmental Conservation. He



Alvin R. “Al” Breisch, winner of the 2011 PARC Alison Haskell Award for Excellence in Herpetofaunal Conservation Award



Eastern box turtle
Courtesy of John White

served as the Amphibian and Reptile Specialist for the Endangered Species Unit from 1983-2009. In that capacity, Al led state-wide efforts for all aspects of herpetofaunal conservation through research, monitoring, regulatory review, teaching and law enforcement. Some of his many accomplishments include:

- Serving as Project Director of the New York Amphibian and Reptile Atlas Project;
- Serving as a member of a multi-state team to prepare a Timber Rattlesnake Conservation Action Plan for the U.S. Fish and Wildlife Service (USFWS);
- Designing and conducting habitat use studies of bog turtles and separately with Blanding's turtles;
- Coordinating New York State's efforts to document distribution and population status of rare and endangered herpetofauna; and
- Assisting the Albany County Office of Natural Resource Conservation with planning and design of New York's first amphibian tunnels, constructed in 1999.

Al may be best known for his role as Mentor. He has provided technical assistance to NYDEC staff, students, faculty, and independent contractors with their field studies of various amphibians and reptiles from throughout the Northeast to Mexico and to the West Indies. He has taught at SUNY-Cobleskill and has been an invited speaker to numerous colleges and university classes. He has served as thesis advisor and on graduate student committees at the State University of New York at Albany, SUNY Environmental Science and Forestry, and Bard College. He has led countless school groups, 4-H clubs, scouts, college classes, as well as his two daughters and now his grandchildren, on field trips to show them the natural world, particularly the herpetofauna he loves. Conservationists young and old, local and nationally known, and from numerous agencies and organizations, have enjoyed working with, and being inspired by Al's dedication, expertise, gentle nature, and quiet wit. In his retirement Al continues to oversee several projects including the NYS Amphibian and Reptile Atlas, and on many a rainy night, he can be found near the amphibian tunnels built near his home monitoring their effectiveness. PARC congratulates our "unsung hero" Al Breisch as our first-ever Alison Haskell Award winner.

2011 PARC PRODUCTS AND PROJECTS

Updated PARC Website:

PARC's website (www.parcplace.org) was reconstructed in 2011. The goal of the update was to improve the format to enable easier viewing, and to provide greater website growth capability through improved internal website structure. Since the update went into effect in February, website analytics have been tracked and we can now see the extent of our informational outreach. For example, from May through September 2011, 49,000 unique visitors logged onto the website, with 80,000 visits total and 240,000 page views. Over these 5 months, 57% of the website visitors were from the U.S., 20% were from unknown locations, and 23% were international visitors.

Since February, new web pages have been added to parplace under the Resources link, including: 1) a "Climate Change and Herps" page that features a downloadable brochure and a showcase of engineering innovations to help with field herpetofauna conservation; and 2) a page on "Relocation, Reintroduction, Translocation, and Headstarting (RRTH)" that includes a newly updated list of RRTH projects on various amphibians and reptiles throughout the U.S.

Representation at Conferences:

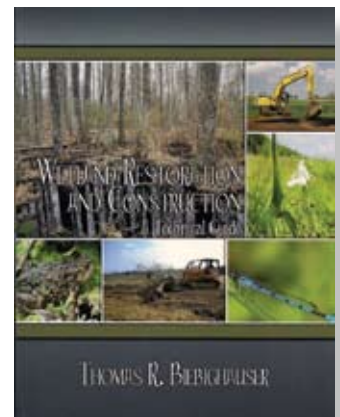
In addition to PARC representation at various conferences by our vendor table, such as the annual Joint Meeting of Ichthyologists and Herpetologists (JMIH, this year, in Minneapolis, MN), PARC representatives give presentations and sponsored conference symposia. In 2011, National Co-Chairs Dede Olson and Al Breisch each gave a talk at an annual conference, one on the west coast and one on the east coast, on the effectiveness of PARC's expanding partnership model. PARC co-sponsored the Ranavirus Symposium at JMIH, the coordination of which was led by Southwest PARC Disease Task Team member Dr. Matt Gray (Univ. TN). A result of that symposium was the inauguration of the International Ranavirus Consortium, and a website (<http://fwf.ag.utk.edu/mgray/ranavirus/2011Ranavirus.htm>) with symposium products. Development of a Ranavirus Reporting System similar to Bd-Maps currently is underway, with Dr. Amanda Duffus (Gordon College, GA) leading the determination of the database structure with input from the international Consortium.



FIGURE 1: Coverage and overlap of the regionally-based PARC Habitat Management Guidelines

Wetland Restoration and Construction, A Technical Guide:

This book was published in 2011 in partnership with the Wetland Trust, the Upper Susquehanna Coalition, and the Center for Wetlands and Stream Restoration, and PARC. The author, Thomas Biebighauser, shares proven practices used to restore over 1,400 wetlands in 18 states and two Canadian provinces, answering questions asked by thousands of professionals and landowners who have attended the hands-on wetland restoration workshops he has instructed across North America. Clear, logical, step-by-step instructions explain how to design and establish natural-appearing and functioning wetlands for wildlife, fish, cleaning runoff, recharging groundwater, and reducing flooding. Over 650 detailed color drawings and photographs illustrate highly effective and inexpensive techniques for restoring wetlands. Whether your aim is to carry out a complicated mitigation project or to simply help wildlife, this book will expertly guide you through the steps required to build a successful wetland.

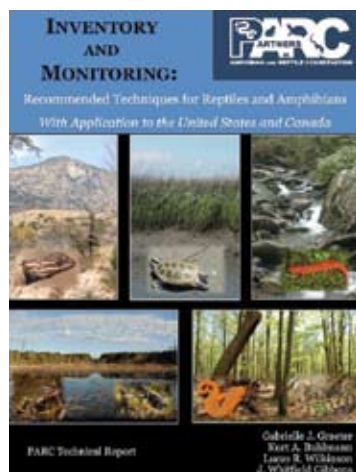


Habitat Management Guidelines (HMG):

During 2011, PARC continued its work to complete its flagship, five-volume HMG series that will cover the continental U.S. and parts of Canada. Specifically, PARC made progress in the development of the Midwest and Southwest regional guidelines, with the Midwest being finalized and going to print in early 2012. Each volume in the series covers a regional geographic area that is largely based on ecoregions (Figure 1). The Southwest volume is expected to be completed in late 2012, thus completing the entire series.

Inventory and Monitoring Techniques Book:

PARC's newest technical publication; – Inventory and Monitoring: Recommended Techniques for Reptiles and Amphibians with Application to the U.S. and Canada – has been sent to the publisher. Final publication is expected in early 2012. The objective of this handbook is to provide land managers and landowners with information about reptiles and amphibians and the qualitative and quantitative techniques that can be used to obtain information on diversity, distribution, and abundance of these animals. It is user-friendly, addresses both reptiles and amphibians, and provides specific recommendations on techniques that may be used for each species.



Priority Areas for Amphibian and Reptile Conservation (PARCA):

Identifying priority habitat areas for amphibians and reptiles increasingly is important, particularly in the face of climate change, growing human populations, and urban, commercial, and energy-related development. To this end, PARC finalized criteria and an implementation plan for designating Priority Amphibian and Reptile Conservation Areas (PARCAs). Prepared by the PARC Important Herp Areas National Task Team, the criteria and plan completed an exhaustive final technical review in 2011. PARC expects to make the PARCA product available in 2012. PARC members were awarded two grants in 2011 from the South Atlantic and North Atlantic Landscape Conservation Cooperatives to do assessment of PARCAs, with attention to the impacts of climate change in these regions.



Roads Task Team:

The National Roads Task Team was created to partner with transportation entities to help develop and consolidate solutions and conservation strategies to address passage, connectivity, collision, and other transportation-related issues for amphibians and reptiles. In July 2011, Johns Hopkins University Press awarded the editors, Kimberly A. Andrews, Priya Nanjappa, and Seth P.D. Riley, a contract to produce a planning manual to provide guidance to transportation professionals regarding the state-of-our-knowledge in maintaining ecosystem connectivity and minimizing road impacts for small animals, including herpetofauna, small mammals, and other small vertebrates. PARC expects the manuscript to be finalized in 2012, with final editing, layout, and publication in 2013-14.

Regulations Synthesis:

The Association of Fish and Wildlife Agencies has compiled amphibian and reptile regulations for every state in the U.S. This synthesis was completed in December 2011 and will be available online in early 2012. It is expected to be a useful resource for herpetofaunal enthusiasts, biologists, and law enforcement alike. PARC's State Agency Coordinator, Priya Nanjappa, was a key force in completing this synthesis!



Priya Nanjappa is the Amphibian & Reptile Coordinator for the Association of Fish & Wildlife Agencies, and serves as National PARC State Agencies Coordinator. See also page 24

FUTURE CAMPAIGNS

In 2012, PARC will be raising awareness for lizards, much as we did for turtles in 2011. Please participate in this upcoming event. The “2012 – Year of the Lizard” campaign launches in earnest in January, but we have been busy doing pre-planning.

- The winning logo from our logo contest is above. Congratulations to Todd Long, graphic designer from Tennessee!
- This logo and some of our other logo submissions are available on merchandise for sale (buttons, mugs, t-shirts etc.), as a fundraiser for herpetofaunal conservation. Go to: <http://www.cafepress.com/parcstore>
- A photo contest has begun, with a winning photo to be chosen each month in 2012. The photos will be displayed monthly on a free downloadable calendar page. Submit photos to: yearofthelizard@gmail.com. Check for your monthly calendar pages at www.yearofthelizard.org
- A 12-month calendar has been assembled by Larry Jones, as a fundraiser, along with mugs, buttons, and other YOL items, for herpetofaunal conservation. They are available now at: <http://www.cafepress.com/parcstore>



Todd Long submitted the winning logo for PARC's Year of the Lizard Logo Contest

- A newsletter will be produced every other month next year, starting in January. We will highlight species, projects, issues and conservation concerns relative to lizards. Our initial focus is to raise awareness for lizard conservation in North America, but we will showcase species and issues from around the world. Please send your articles,

artwork, project summaries, etc. to: yearofthelizard@gmail.com

- The “State of the Lizard” report is available online: www.yearofthelizard.org. We now seek translators to help produce this report into other languages for further outreach.
- We are now seeking partners for lizard conservation! Partnerships are informal collaborations. Partners can share in our lizard conservation products, be linked to our website (and we'd like to link to your website), and be announced in our newsletter. Please contact yearofthelizard@gmail.com if you would like further information about partnerships.

Thanks to all the members of the Year of Lizard Planning Team: David Pilliod (U.S. Geological Survey, ID), Denim Jochimsen (ID Univ.), Larry Jones (U.S. Forest Service, AZ), Ester Nelson (U.S. Forest Service, NM), Jason Jones (Utah Div. Wild. Resources), Brian Aucone (Denver Zoo), Leland Pierce (NM Dept. Game and Fish), Chris Titus (NE PARC), Denise Parsons (NV Univ.), ML Robinson (NV Univ.), David Wojnowski (North TX Univ.), Kathryn Ronnenberg (U.S. Forest Service, OR), Valorie Titus (Bronx Zoo, NY), Tom Giermakowski (NM Univ.), Brian Aucone (Denver Zoo), David Dimitrie (McKinleyville, CA), Teal Richards-Dimitrie (Towson Univ., MD; McKinleyville, CA), Denise Parsons (NV Univ.), Dede Olson (PARC Nat'l Co-Chair; U.S. Forest Service, OR), Al Breisch (PARC Nat'l Co-Chair; Albany, NY), Priya Nanjappa (PARC State Agencies Coordinator; Assoc. Fish & Wildl. Agencies), Terry Riley (PARC Federal Agencies Coordinator; National Park Service).

And, by the way, “2013 – Year of the Snake” is coming up next. Please contact Dede Olson (dedeolson@fs.fed.us) if you want to be included in planning, which will start in just a few months!



JOINT NATIONAL STEERING COMMITTEE

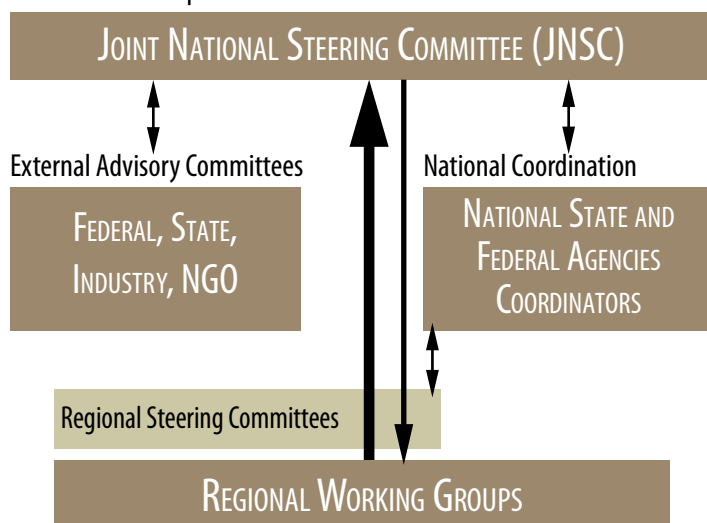
PARC's Joint National Steering Committee (JNSC) is the decision-making body of PARC, ensuring implementation of PARC's mission. The JNSC utilizes monthly conference calls, e-mails and an annual in-person meeting to identify priorities and actions. The JNSC also works to provide effective communication and coordination among its partners, task teams, and PARC's regional working groups.

In 2011, the JNSC was led by the national PARC Co-Chairs (Dede Olson and Al Breisch), and the State and Federal Agency National Coordinators (Priya Nanjappa, Terry Riley). Topics discussed by the JNSC in 2011 included:

- 1) Regional Working Group annual meetings and activities;
- 2) Implementation of the 2011 Year-of-the-Turtle campaign, including a photo contest, and monthly newsletters and calendars;
- 3) Completion of the PARC website redesign;
- 4) Establishing PARC liaisons and subsequent working relationships with each of the U.S. Department of the Interior's Landscape Conservation Cooperatives to incorporate herpetofaunal conservation into their planning and science funding activities;
- 5) Working with the Department of Defense (DoD) to develop a new DoD PARC initiative and completing a DoD PARC Strategic Plan;

PARC'S ORGANIZATIONAL STRUCTURE

Internal Leadership



2011 Co-Chairs

Dede Olson (US Forest Service, Oregon),
Al Breisch (Retired, former New York State
wildlife biologist)

- 6) Completed update of the PARC website, including new pages on Climate Change and an updated RRTH (Relocation, Reintroduction, Translocation, and Headstarting) list of projects;
- 7) Presentation of the first Alison Haskell Award for Excellence in Herpetofaunal Conservation;
- 8) Development of criteria and presentation of the first Visionary Leader Award;
- 9) Co-sponsorship of the Ranavirus Symposium at the Joint Meetings of Ichthyologists and Herpetologists in July in Minneapolis, MN;
- 10) Initial planning for the 2012 Year-of-the-Lizard campaign (logo contest, newsletter, photo contest, State-of-the-Turtle report and calendar);
- 11) Initial planning for a symposium on herpetofaunal conservation success stories to be held at the World Congress of Herpetology, August 2012, British Columbia, Canada (thanks to Larry Jones for coordinating this effort);
- 12) Initial planning for two symposia proposals (energy development and herpetofauna; vipers [to align with 2013 – Year of the Snake]) for the 2013 Joint Meetings of Ichthyologists and Herpetologists, Albuquerque, NM.
- 13) State regulations synthesis and climate change vulnerability analysis coordinated by the Association of Fish and Wildlife Agencies;
- 14) Revision of the PARC Operations Manual;
- 15) Revision of the PARC Strategic Plan; and
- 16) Plans for increased engagement in the future on Farm Bill programs and related state technical committees.

The JNSC also worked closely with the Amphibian and Reptile Conservancy (formerly Friends of PARC) to communicate funding requests for support of various symposia and workshops, and to support the coordination of the 2011 Year of the Turtle and 2012 Year of the Lizard activities and products.

PARC REGIONAL WORKING GROUP ACTIVITIES



PARC regional working group boundaries

PARC's Regional Working Groups are the foundation of the partnership, and they are where the on-the-ground issues are translated into actions and products.



Midwest Regional Working Group (www.mwparc.org)

MWPARC held its Annual Meeting at the Wilderness Lodge Resort, Lesterville, Missouri, from 5-7 August, 2011. It was attended by 47 participants from across the U.S., representing a wide range of professions from MO (23), IL (5), OH (5), IN (4), MN (3), MD (1), IA (1), AR (1), NE (1), SC (1), CO (2), students (6), state agencies (14), academia (13), federal agencies (5), zoos and museums (3), private consultants (1), hobbyists (3), and organizations (2). The meeting focused on Successful Training for Conservation of Midwestern Amphibians and Reptiles and featured a keynote address by Dr. Kurt Buhlmann, who presented information on habitat restoration, reintroductions, and other ideas for recovering our herpetofauna with specific case examples on turtles.

Included in the program were 11 invited talks focused mainly on training events by speakers for managers and citizen science projects. Speakers shared their knowledge and expertise related to how they conduct trainings and use volunteers to collect data. Attendees previewed a draft copy of the Midwest PARC HMG (Habitat Management Guidelines) by Bruce Kingsbury and Joanna Gibson. Presentations were provided on commercial turtle harvest projects occurring in the Midwest (MO and IA), National PARC, and updates from MW PARC working groups/task teams. Five poster presentations focused on amphibian and reptile topics. Numerous MW PARC states provided brief summaries of amphibian and reptile conservation efforts occurring within their states.

Numerous participants attended the Friday afternoon (5th August 2011) field trip on the surrounding land (Ozark forested hills and Black River floodplain) owned by Wilderness Lodge. Even with the drought conditions



2011 Co-Chairs

Rich King (Incoming, University of Northern Illinois),
Kent Bekker (Outgoing, Toledo Zoo, Ohio), and
Bruce Kingsbury (Incoming, University of Indiana)

that had been occurring, 18 species (60 individuals) were observed.

Most of Sunday morning's session focused on breakout teams to synthesize the meeting theme information and how to move forward with action items. Two task teams were created; one team will focus on workshop training, especially management training, while the other team will focus more on how to get involved with amphibian and reptile management on private lands by working closely with NRCS and other private land conservation organizations. Task teams will be developing specific objectives and timetables for completion in the coming months. We will monitor task team progress during our monthly advisory board conference calls.

T-shirts and the silent auction resulted in more than \$1,300 for MW PARC! Also, a special thanks to the Saint Louis Zoo, U.S. Fish & Wildlife Service-Columbia, MO, and Missouri Department of Conservation for generously helping to support this meeting. The formal meeting ended with announcements of co-chair and advisory board election results. Bruce Kingsbury was elected co-chair, joining Rich King (elected at the 2010 meeting). Jeff Briggler, Katy Greenwald, Erica Hoaglund, Chris Smith, and Carrie Zelman were elected to the advisory board, joining Kent Bekker (past co-chair), Bob Brodman, Trisha Crabill, Bill Flanagan, Greg Lipps, Alison Sacerdote, and Kristin Stanford.



Kurt Buhlmann photographing a western slimy salamander
Photo courtesy of Jeff Briggler

Northeast Regional Working Group (www.northeastparc.org)

NEPARC had a productive year. The annual meeting was held August 17-18, 2011 at Arlington Echo Outdoor Education Center in Millersville, MD. Approximately 120 people attended the meeting. The keynote speaker was Dr. Brian Gratwicke, Director Amphibian and Reptile Conservation project, Smithsonian National Zoological Park, who spoke on the “Panama Amphibian Rescue”. Scott Angus was elected to a 2-year term as co-chair (replacing Mary Beth Kolozsvary). This was the second year NEPARC solicited abstract submissions to help determine speakers for the meeting. The process worked well and we will continue that in the future. Several of the NEPARC’s active working

2011 Co-Chairs

Valorie Titus (Bronx Zoo and Wildlife Conservation Society),
Mary Beth Kolozsvary (Outgoing, New York State Museum)
and Scott Angus (Incoming, Amy S. Greene
Environmental Consultants, Inc.)

groups met at the meeting to work on current initiatives and prioritize next steps.

NEPARC was represented at several meetings including the PARC Joint National Steering Committee (JNSC) meeting held at the North American Wildlife and Natural Resources Conference, Kansas City, Missouri (attended by Mary Beth Kolozsvary, co-chair). Valorie Titus (co-chair) attended The Wildlife Society Annual Meeting at the Hilton Waikoloa Village in Hawaii where she ran a PARC booth to increase partnerships within the wildlife community

Existing working groups have been very productive, while a few new groups have been formed. Groups concerning Appalachian salamanders and timber rattlesnakes were formed to address conservation issues. Groups, such as our Land Use Guidelines, Emerging Diseases, Snake Education, and Wood Turtle Conservation, all met at our annual meeting and should soon keep our Editorial Board busy with some fantastic products in the upcoming months.



Box turtle - Photo courtesy of Valorie Titus



Bog turtle - Photo courtesy of Valorie Titus



Northwest Regional Working Group (www.nwparc.org)

NWPARC, the Society for Northwestern Vertebrate Biology (SNVB), and the WA chapter of The Wildlife Society held a joint Annual Meeting in Gig Harbor, WA in March 2011 (lead – Elke Wind). NW PARC hosted a well-attended Amphibian Inventory and Monitoring Techniques Workshop and an Amphibian Disease Symposium. Workshop trainers included David Pilliod, John Cossel, Lisa Hallock, Char Corkran, and Elke Wind. The symposium had many well-known speakers in the field of amphibian diseases: Roland Knapp, Jason Hoverman, Susan Brady, Andy Blaustein, and Dede Olson.

Two new task teams were created during group discussions at the annual meeting: Headstarting/Reintroductions in PNW & U.S. and World Congress of Herpetology Year of the Lizard symposium session. The Idaho Chapter of NW PARC held a meeting with the Idaho Chapter of The Wildlife Society on March 29, 2011 in Idaho Falls. The meeting brought biologists and natural resource managers together to discuss amphibian and reptile conservation issues around the state.

NW PARC collaborated with BC Frogwatch, Ministry of Environment, Ministry of Transportation and Infrastructure, the Association of Wetland Stewards for Clayoquot and Barkley Sounds, and the Biology Department of Vancouver Island University to co-host a two-day workshop titled Herpetofauna and Roads Workshop held in Nanaimo, BC on February 22-23, 2011 (lead – Co-Chair Elke Wind, consultant). The main objective of this workshop was to bring scientists, environmental managers, and engineers together to discuss the impacts of roads on herpetofauna and mitigative measures that can be taken to reduce those impacts. A follow-up workshop summary product is being completed and a BC Roads Working Group is being initiated.

Members of NW PARC's Training Task Team initiated work on an amphibian and reptile friendly farming and ranching pamphlet in 2010 which went to press in 2011 (lead – Kris Kendell, Alberta Conservation Association). The objective was to use the listed Northern Leopard Frog in Alberta as a focal species to highlight issues and the use of environmentally friendly practices. The team consulted with PARC members in Montana and Idaho to make the material applicable to as many states and provinces as possible.

NW PARC's Communications Task Team has been very active at maintaining and updating the website (<http://www.nwparc.org/>) and distributing the e-newsletter.

In 2011, Betsy Howell agreed to serve as NW PARC's first Treasurer.

2011 Co-Chairs

Elke Wind (E. Wind Consultants, British Columbia, Canada)
and David Pilliod (U.S. Geological Survey, Idaho)



David Pilliod (co-chair NW PARC; left) and John Cossell (Northwest Nazarene University, ID; right) instruct attendees of the Amphibian Inventory and Monitoring Techniques Workshop on the use of electrofishing as a technique for surveying stream amphibians

Photo courtesy of Elke Wind



Western Pond Turtle, (*Actinemys marmorata*)

Photo courtesy of Oregon Zoo

Southeast Regional Working Group (www.separc.org)

SEPARC had a very fruitful year in 2011. The year started out with a well-attended and productive annual meeting held in Lake Tiak-O'Khata Mississippi on February 17-20. The meeting featured a fantastic keynote address by Dr. Kurt Buhlman, who kicked off the year of the turtle with a riveting presentation on turtle conservation in the southeast and around the globe. They also had several oral and poster presentations from a wide variety of SE PARC members, and a number of workshops (including Eastern Diamondback conservation planning and radio telemetry and home range analyses).

SE PARC's task teams have had a busy 2011 and have continued producing quality data products available on their website (separc.org). In particular, SE PARC's Disease, Pathogens, and Parasites of Herpetofauna working group had a very productive year. To date, their efforts have produced 10 informative data sheets, with many more on the way! SE PARC is also happy to announce the creation of two new working groups, the Gopher/Crawfish frog working group and a working group aimed at identifying Priority Amphibian and Reptile Conservation Areas (PARCAs) in the Southeast. This working group is being led by the current co-chairs of SE PARC and is a collaborative effort between SE PARC, The Orianne Society, and the South Atlantic Landscape Conservation Cooperative (SALCC). Keep an eye out for new data products from

2011 Co-Chairs

Chris Jenkins (The Orianne Society),
Gabrielle Graeter (Outgoing, North Carolina
Wildlife Resources Commission),
JJ Apodaca (Incoming, Florida State University)



A Cayman Islands Loggerhead Turtle
Photo courtesy of Janet Blumenthal



Eastern River Cooter, (*Pseudemys concinna concinna*)
Photo courtesy of J.D. Wilson

these working groups in 2012-13.

SE PARC also has placed an emphasis on revamping their presence online in 2011. As a result, SE PARC has a brand new website (separc.org), a new blog (separc.wordpress.com), and is now active on Facebook, Twitter, and LinkedIn. SE PARC currently is planning their annual meeting for 2012, which will be held on February 16-19, 2012 at Fall Creek Falls State Park within east Tennessee's Southern Cumberland Plateau. With this meeting, SE PARC will be welcoming new members from the Caribbean by hosting a special symposium on herpetofaunal conservation throughout the Caribbean Sea.

Southwest Regional Working Group (www.swparc.org)

SWPARC held its annual meeting on August 10-11 in Tucson, Arizona, in conjunction with the Current Research on Herpetology of the Sonoran Desert conference. The meeting had two themes: Conservation and Management of Arid-Land Reptiles and Amphibians and Year of the Turtle, Southwestern Style. Cecil Schwalbe gave the keynote address: A Kid in the Candy Store: Herpin' the American Southwest. In total, 19 papers and 4 posters were presented to the 75 participants in attendance during this two day event. Following the meeting, a total of five field workshops were held in Sabino Canyon, Huachucas, and the Pajaritos. Dozens of Arizona-specialty species were observed, including Gila Monsters (three in one day!), an Arizona Coralsnake, Ridge-nosed Rattlesnakes, Banded Rock Rattlesnakes, Tiger Rattlesnakes, Giant Spotted Whiptails, Sonoran (Morafka's) Desert Tortoises, Mountain Skinks, Madrean Alligator Lizards, and a Sonoran Mountain Kingsnake. During the meeting, three new working groups were formed: Outreach to Native American tribes, 2012 Year of the Lizard, and renewable energy focus group. The last two working groups will form the theme for the 2012 meeting in Las Vegas, Nevada.

Working Group Accomplishments: The Priority-Species Working Group refined a list of ranking criteria that was intended to provide a quantitative assessment of the priority species for conservation or research in the Southwest that could be used by management agencies and others. This list consists of about 400+ species that occur in the Southwest was sent out to all of SW PARC for ranking in fall 2010. The first round of rankings yielded 25 responses. Although,



Arizona Mud Turtle, Pima County
Photo courtesy of Randy Babb

2011 Co-Chairs

Larry Jones (U.S. Forest Service, Arizona)
Brian Aucone (Outgoing, Denver Zoo), and Jason Jones
(Incoming, Utah Division of Wildlife)

not all species were ranked, there was a good enough sample size for a number of species that were ranked. Approximately 20 species clearly were priority species.

The SW PARC Outreach-to-Enthusiasts Working Group completed a letter to be sent to herp enthusiast and citizen scientist groups throughout the southwest. The letter is designed to introduce these groups to SW PARC and encourage their participation at our 2012 annual meeting. An outreach database has been created containing all the groups identified, point contacts, and contact information. Additionally, working group members attended herp expos throughout the year and provided information on joining PARC, links to regulations, and contact information for partnering agencies states.

The Outreach-to-Mexico Working Group partnered with the U.S. Forest Service to provide a grant for one Mexican herpetologist to attend the 2011 SW PARC annual meeting. Alejandra Calvo Fonseca and co-author, Eduardo Soto-Montoya, received the award and presented their paper entitled Promoting Flat-tailed Horned Lizard conservation through community involvement in the Upper Gulf of California and Colorado River Delta Biosphere Reserve (E. Soto-Montoya, A. Calvo Fonseca, and O. Hinojosa Huerta). Additionally, the group compiled a list of Mexican herpetologists that we can reach out to with invitations to SW PARC meetings.

In 2011, SW PARC agreed to take over biomonitor training for the Flat-tailed Horned Lizard (FTHL), *Phrynosoma mcallii*, in coordination with California Department of Fish and Game (CDFG) and Arizona Game and Fish Department (AZGFD), and the FTHL Interagency Coordinating Committee (ICC). Training took place May 11-13, 2011 in El Centro, California and was conducted by SW PARC members Brian Aucone, Jorge Chavez, David Wojnowski and Danny Martin. A total of 97 trainees participated and were certified as biomonitors for this species. SW PARC will continue to conduct this annual training in 2012.

The FTHL is a small horned lizard that inhabits the low Sonoran deserts of southeastern California, southwestern



Desert tortoise, (*Gopherus agassizii*)

Arizona, and northwestern México. Much of the species' historic habitat in the U.S. has been lost due to agricultural and residential development. A Conservation Agreement was signed by several federal and state agencies in 1997 to implement the FTHL Range-wide Management Strategy (RMS). The RMS is a long-term plan of action among signatory agencies to ensure persistence of the species. It continues to be implemented by the signatory agencies throughout the Management Areas, and other areas of flat-tailed horned lizard habitat. The RMS requires that surveyors and biomonitors for the FTHL be approved by CDFG and AZGFD.

In collaboration with the U.S. Forest Service, SW PARC began work on the Aquatic Escape Ramp Project. This project is U.S. Forest Service (USFS) funded, with FY12 implementation and in-kind contribution from PARC and Bat Conservation International. The project is specifically designed to promote in the Region an "all lands" approach to "Clean Water and Safe Drinking" at stock ponds, holding tanks, trail head corrals and is the first step to enhancing terrestrial and aquatic ecosystems. The Watering Facility Escape Ramp Project will deliver to the Forests prototype escape ramps and literature explaining their ecological value, cost effective ways to build ramps with volunteers and installation instructions. The intent is for resource managers to gain valuable insight of existing water supplies and the tools necessary for developing new or improved water systems. The message is to emphasize the responsibility of resource managers to promote this activity on public lands

while showing the potential to collaborate with private lands. This project is aligned with the Forest Service's Region 5 Ecological Restoration Leadership Intent to "enhance terrestrial and aquatic ecosystems", "deliver clean water", "expand and develop partnerships", "increase conservation education, interpretation and volunteer programs to promote understanding and support for restoration actions and increase understanding of the value of healthy watersheds and the ecosystem services that they deliver." This innovative collaboration meets multiple objectives within Forest Land and Resource Management Plans and is in coordination with Dan Teater (USFS), Linda Angerer (USFS), Dan Taylor (Bat Conservation International), Terry Riley (PARC), Anne Yost (USFS), and Kary Schlick (USFS and SW PARC). The Aquatic Escape Ramp Project is a product of Water for Wildlife a partner with the USFS; more information can be found online at www.batcon.org/pdfs/water/bciwaterforwildlife.pdf.

Ongoing projects in 2011 include a "Caution Turtle Crossing" sign and the Habitat Management Guideline (HMG). Working groups were held with USFS Region 5 to finalize the turtle crossing signs. This partnership with SW PARC will increase awareness of Western Pond Turtle populations in that area. Finally, the SW PARC Habitat Management Guidelines are nearing completion with the first round of edits under way. Look for the HMG to surface early in 2012! The 2012 SW PARC annual meeting will be held in Las Vegas, NV and is tentatively scheduled for October 17-20.



Clockwise from top left: eastern box turtle (© Glinn dreamstime.com) / red-eared slider (© Gluke dreamstime.com) / green sea turtle (© Gator Dreamstime.com)

PARC FEDERAL AGENCY PARTNER ACTIVITIES

Federal Agencies Steering Committee

The PARC Federal Agencies Steering Committee (FASC) met on March in Kansas City, MO to discuss issues and concerns regarding amphibians and reptiles on federal lands or under federal protection. The FASC also began conducting a 90-minutes regularly-scheduled conference call on the first Thursday of each month. During the annual meeting and conference calls, the FASC discussed such issues as:

- 1) Renewal of the PARC 2001 Federal Agencies Memorandum of Understanding;
- 2) Negotiating interagency agreements between the National Park Service and each of PARC federal agency partners to provide funding for the Federal Agencies' Coordinator position, PARC publications and other PARC support.
- 3) Identifying federal agency priorities and potential performance measures around herpetofauna conservation activities;
- 4) Establishing a herp communications network to distribute information from PARC throughout the administrative units of each federal agency partner.
- 5) Establishment of PARC liaisons via the JNSC and subsequent working relationships with each of the U.S. Department of the Interior's Landscape Conservation Cooperatives to help integrate herpetofaunal conservation into their priorities and activities;
- 6) Working with the Department of Defense (DoD) to develop a new DoD PARC initiative, including completing a DoD PARC strategic plan, finalizing an amphibian chytrid fungus sampling study on military installations;
- 7) Plans for increased engagement in the future on Farm Bill programs; and
- 8) Plans for increased engagement in the future on impacts of utility-scale energy developments on herpetofauna.



Terry Riley
is the PARC
National Federal
Agencies
Coordinator

2011 Co-Chairs

Rick Bennett (USFWS) and David Schmid
(USDA Forest Service)

Department of Defense – PARC (DoD PARC) Initiative

In 2009, the DoD Legacy Resource Management Program funded the development of a strategic plan for the newly emerging DoD Partners in Amphibian and Reptile Conservation (PARC) Program (hereafter DoD PARC). DoD PARC is a coalition of DoD professionals that support the conservation and management of amphibians and reptiles on DoD lands in support of the military mission. The group includes people within the DoD community who share common goals and utilize existing partnerships and resources. The overall objective of the DoD PARC Strategic Plan is to better integrate amphibian and reptile conservation and management on the DoD landscape. The development of the strategic plan involved the major conservation stakeholders: DoD, one of the largest stakeholders in the protection and conservation of threatened and endangered species in the U.S., PARC, and other federal agencies, including the U.S. Fish and Wildlife Service, Bureau of Land Management, and U.S. Forest Service. With the comprehensive resources that PARC and these agencies bring to bear, it is anticipated that DoD will be more capable and efficient in addressing amphibian and reptile conservation issues while simultaneously supporting military readiness.

To develop the DoD PARC strategic plan, two workshops were held in 2010, one on the east coast and another in the western U.S. These workshops gathered essential DoD staff and other natural resource experts to develop the Strategic Plan. Data gathered at the two workshops were used to produce a plan outline. Writing of the plan began in the fall of 2010 by a team of over a dozen professionals representing all military services and the PARC Federal and State National Coordinators. The first draft of the plan was completed in winter 2010 and the DoD Conservation Committee was provided a copy for review and comment. In May 2011, the Office of the Secretary of Defense sent the revised plan to the DoD services for their review. Comments were received in July 2011 and have been incorporated into the document. The DoD services will conduct a second review of the Strategic Plan in fall 2011. A final version is anticipated in 2012. A DoD PARC logo is being developed, and should be finalized by late 2011.

A DoD PARC strategic plan implementation workshop was held at the Sustaining Military Readiness conference in July 2011. At the workshop, there were discussions of the organizational structure of the program, working groups and a demonstration of a newly developed DoD PARC amphibian and reptile database. The leaders of the workshop gathered vital information from the group regarding the completion of the strategic plan in addition to defining short and long-term goals of the program. Once completed, the final DoD PARC Strategic Plan will be made widely available. Doing so will allow DoD natural resource staff and land managers to integrate the broad herpetological expertise of the PARC network with specific management actions, activities, and/or capacity-building opportunities on DoD installations. The Plan will provide a comprehensive view of reptile and amphibian conservation needs on DoD administered lands. This combination of guidance and expertise will help ensure that military readiness is not adversely impacted as a result of degrading ecosystem health (amphibian and reptile population die-offs, declines, or extirpations). In this time of disappearing natural resources, habitats, and species, the defenders of our great nation have the opportunity to further defend herpetofauna. DoD PARC is proud to support our nation's military while also protecting amphibians and reptiles.

Department of Defense Amphibian Chytrid Fungus Sampling

The amphibian disease chytridiomycosis (caused by the fungus *Batrachochytrium dendrobatidis*, or Bd) has been a major factor contributing to many amphibian population declines and extinctions. This pathogen can be found from below sea level to the highest elevations where amphibians occur. Bd is now widespread throughout many geographic regions and is known to occur in native amphibian populations on every continent except Antarctica (where there are no amphibians); therefore, this infection may be considered global. In 2009 and 2010, the authors received funding from the DoD Legacy Resource Management Program to conduct a study of the presence of Bd on DoD lands. In 2009, fifteen installations were sampled from west to east along U.S. Highway 66 from California into central Illinois, and continuing eastward from there to the Atlantic Seaboard along Route 64. The results of this investigation were published in the Public Library of Science (PLOS) in 2011 (Lannoo et al. 2011). This work also was

featured in the U.S. Fish and Wildlife Service Endangered Species Bulletin and the Natural Resource Legacy Program newsletter (Natural Selections), both in 2011.

An additional 15 DoD installations were sampled along three north-south transects in 2011. The three transects were: East Coast (Maine to Florida along Interstate 95), Mid-U.S. (Illinois to Alabama along Interstate 65), West Coast (Washington to California along Interstate 5). The data collected from this investigation currently are being analyzed. With the completion of these two projects, we anticipate answers or insight to the following questions:

- What DoD sites surveyed showed Bd presence?
- What were the infection rates at the surveyed sites?
- Is there a temporal pattern to the presence of Bd?
- Is there a spatial pattern to the presence of Bd?
- What species showed positive for Bd?
- Is a particular species more susceptible to Bd fungus?
- Do all Bd-positive amphibians show signs of the disease?

The results of the 2009 investigation showed that Bd was detected at 13 of the 15 installations (Lannoo et al. 2011; PLoS One 6(7): e22211). Bd was not detected at two sites, Camp Navajo in Arizona and Fort Sill in Oklahoma. In total, and from all bases, and during all visits, 1,306 amphibians were sampled for this project, 217 (16.6%) swabs tested positive for Bd. Half of the species surveyed (15/30) tested positive for Bd.



Southern leopard frog, (*Lithobates sphenoccephalus*)
Photo courtesy of J.D. Wilson

Forest Service Amphibian and Reptile Conservation and Management (Fiscal Year 2011)

Biologists within the Forest Service's Rocky Mountain Region inventoried potential habitat for sensitive species such as the northern leopard frog and wood frog presence. They maintained the Boreal Toad Center of Excellence, which includes information on breeding sites, threats, and trends. They developed a pilot monitoring program based on sound, repeatable techniques and provided training on amphibian life history.

The Pacific Southwest Region supported outreach and educational material, showcased projects that benefit turtles on lands administered by the Forest Service. They also initiated a project with many of their partners entitled the Water for Wildlife - Escape Ramps Project.

The Pacific Northwest Region created an online bibliography on the effects of fish stocking relative to amphibians with NW PARC. They commenced wetlands surveys across forests that included chytrid testing of amphibians, and they conducted Oregon Spotted Frog surveys and completed Site Management Plans to protect and manage breeding sites. Using radio transmitters, they studied the winter hibernacula of the northern pacific rattlesnake. The region also hosted the annual Western Pond Turtle Working Group meeting.

The Southern Region of the Forest Service listed and mapped reptile and amphibian species of conservation concern in the South, identifying the factors that contribute to their imperilment. These two groups comprise 71% of the terrestrial vertebrates at risk. The forests in the region also mapped geographic patterns of herpetofauna species richness across 5 physiographic regions in the South (179 amphibians, 196 reptiles). They also populated the Ecological Sustainability Evaluation (ESE) application (a conservation planning tool used for forest planning) with amphibian and reptile species' life history and occurrence data from 13 southern states. Forests in the Southern Region also collaborated with multiple partners to reintroduce the eastern indigo snake into its native range, estimated gopher tortoise habitat suitability on private lands in Alabama, and collected box turtle DNA for use in eastern databases to determine origin for illegal pet trade confiscation (Kentucky, Tennessee). They assessed salamander risk to climate change in montane environments (Arkansas), population parameters of alligators, and amphibian use of artificial ponds (Oklahoma), and studied phylogeography of the many-ribbed salamander and Ouachita dusky salamander. The Southern forests also designated over 1100 acres of critical habitat for the frosted flatwoods salamander (South Carolina), collaborated in multi-year monitoring efforts with



Mohave Desert Tortoise
Photo courtesy of Sally R. Butts

the North American Amphibian Monitoring Program, and restored wetlands for the Carolina gopher frog and several pond-breeding herpetofauna.

The Northeast and Midwest regions are in the process of developing an Herpetofauna Conservation Framework.

Bureau of Land Management and U.S. Geological Survey

The Bureau of Land Management (BLM) Nevada Ely District office began a landscape-level climate change modeling effort in 2011 in cooperation with USGS. The project cooperators are modeling different climate-change scenarios for the threatened Mojave Desert tortoise (*Gopherus agassizii*).

USGS currently is working with several sources to identify the most suitable climate forecast derivatives to be used in the future climate scenario modeling. Additionally, the model will extend the newly-developed Mojave Desert tortoise habitat suitability model into the Sonoran Desert.

Bureau of Land Management and Montana State University

The spiny softshell turtle is a Montana Species of Concern and a BLM-designated Sensitive Species. The Montana populations of this species have been isolated from the rest of the species range since the Pleistocene era, and may be genetically distinct. The Montana population is further isolated by construction of several large dams on the Missouri River. A study was initiated by the BLM in 2009 to identify key or critical habitat components within the Upper Missouri River, between Morony Dam, upstream, and the mouth of the Musselshell River, downstream.

In 2009, more than 50 turtles were fitted with radio transmitters. From 2009 to 2011, over 900 relocations of radioed spiny softshell turtles were made and habitat data were collected at over 400 of these relocations. In addition to a number of findings on the ecology of this species in Montana, Montana State University graduate student Brian



Spiny Softshell Turtle
Photo courtesy of Brian Tornabene

Tornabene and his advisor, Bob Bramblet, found some turtles moved as much as 40 river-miles in two weeks, and some moved as little as less than one mile in two weeks. Most turtles had a home range of approximately 2 to 4 river-miles. In 2010, only two nests were found, but in 2011, about 20 nests were found at nine different locations throughout the study area. Nesting began around the second week of July and was completely finished by the first week of August. In addition, they determined that hibernating turtles were found in areas approximately 2-meters deep, with moderate current velocity and approximately 14 meters from shore. Turtles appeared to use the same locations to overwinter across years, and some turtles appeared to have a fidelity to hibernation sites across years.

Natural Resources Conservation Service and U.S. Geological Survey

The Iowa Natural Resources Conservation Service (NRCS) gives special consideration to the Wetlands Reserve Program (WRP) applications from private landowners that include protections for T&E species. Thirty-nine WRP applications received by NRCS in fiscal year 2011 received special-consideration points for proposals to restore habitat for state-listed Eastern massasauga rattlesnake, wood turtle, Blanding's turtle, common musk turtle, copperbelly water snake, and diamond-back water snake. NRCS biologists in Iowa also developed standard engineering designs for hibernacula, nesting mounds, and basking structures for reptiles (Figure 2).

Iowa NRCS biologist Jennifer Anderson-Cruz serves on the MW PARC Blanding's Turtle Home Range Working Group. The objective of this group is to produce a synthesis of the existing data on home range size, movements of adult

females and males, and habitat use of adults and juveniles. The synthesis will be made into a manager / conservationist friendly format by MW PARC to make presentations about the need for protection of both the wetland and terrestrial components of Blanding's turtle core areas. Depending on the quantity and quality of data compiled, the following could result: 1) a PARC document aimed at conservation and management of Blanding's turtle, or 2) a multi-authored paper for publication.

The Iowa NRCS and the USGS Amphibian Research and Monitoring Initiative (ARMI) are collaborating on a multi-year study of amphibian and bird use of WRP and the Conservation Reserve Program (CRP) through NRCS's Conservation Effects and Assessment Program (CEAP). The study includes a predictive component based on enrollment/re-enrollment trends in WRP and CRP and its effect on these taxa in Iowa. The goal is to predict and target areas for program enrollment that will maximize benefits for birds and amphibians in a highly manipulated and modified agricultural landscape.

HIBERNACULUM - WOODY DEBRIS DESIGN

Adapted from a design produced by the Iowa Department of Natural Resources

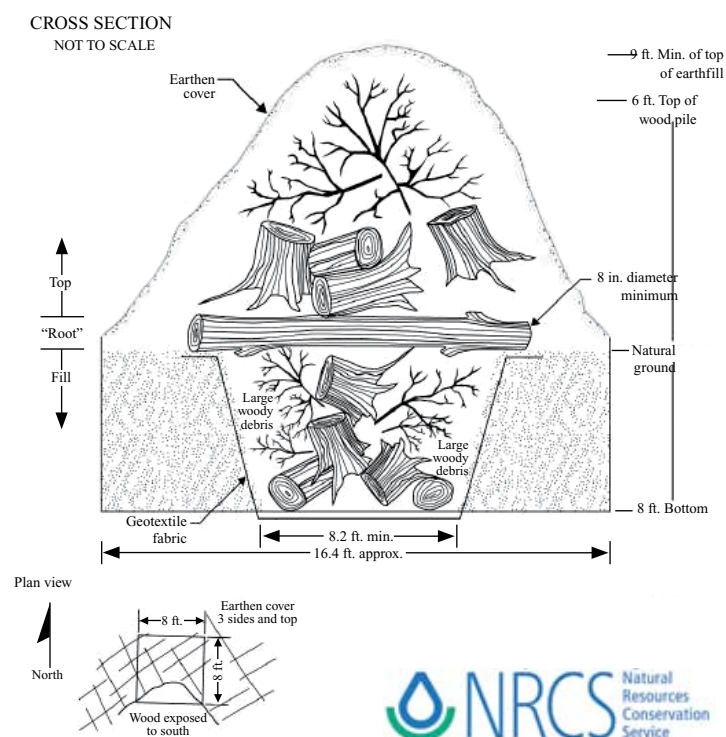


FIGURE 2: Hibernaculum design by biologists with the Iowa Department of Natural Resources and USDA's Natural Resources Conservation Service

PARC STATE FISH & WILDLIFE AGENCY PARTNER ACTIVITIES

Association of Fish and Wildlife Agencies' Amphibian & Reptile Subcommittee

The Amphibian and Reptile Subcommittee, reporting the Wildlife Resource Policy Committee of the Association of Fish and Wildlife Agencies (AFWA), was initiated in 2008, and serves as the States' advisory committee to PARC. The Subcommittee is staffed by the AFWA Amphibian and Reptile Coordinator, Priya Nanjappa, who also serves as the National State Agencies' Coordinator on behalf of the states to PARC, the counterpart to the PARC Federal Agencies' Coordinator.

The Subcommittee continues to be led by the Chair, **Ed Carter**, Director of the Tennessee Wildlife Resources Agency, and Vice-chair, **Eric Gardner**, Nongame and Endangered Wildlife Program Chief of the Arizona Game and Fish Department. The Subcommittee met in both March and September 2011 and discussed issues ranging from hot button native herpetofauna and particularly turtle regulations, to recent upticks in threatened and endangered species petitions for listing under the Endangered Species Act.

Spinoff workshops and efforts continue to occur following the Subcommittee's November 2009 national regulatory summit (in partnership with the AFWA Law Enforcement Committee), and the September 2010, USFWS-led (and Subcommittee endorsed) workshop, Conservation and Trade Management of Freshwater and Terrestrial Turtles in the United States. One of these efforts was a special workshop that the Subcommittee held in partnership with the USFWS International Affairs Program as part of 2011 Year of the Turtle activities to address high levels of trade in United States turtle species to overseas food and commercial markets. This workshop occurred at the March 2011 North American Wildlife and Natural Resources Conference and was attended by nearly 50 attendees including 21 state fish and wildlife agency representatives from 15 states, seven (7) of which were state fish and wildlife agency directors; 10 members of the USFWS Directorate, including then nominee and since confirmed Director, Dan Ashe, and then Acting Director, Rowan Gould; as well as 17 additional federal and NGO members. Another Subcommittee-supported effort that occurred in November 2011, which was led by the USFWS International Affairs Program, was a preliminary workshop to begin to establish best management practices (BMPs) for turtle farming. The Subcommittee looks forward to continuing this strong partnership with the USFWS International Affairs Program with respect to conservation, wise-use regulation, and attention to trade concerns in 2012. Subcommittee members and state partners helped to provide

2011 Chair and Vice-chair

Ed Carter (TN Wildlife Resources Agency) and
Eric Gardner (AZ Game & Fish Department)

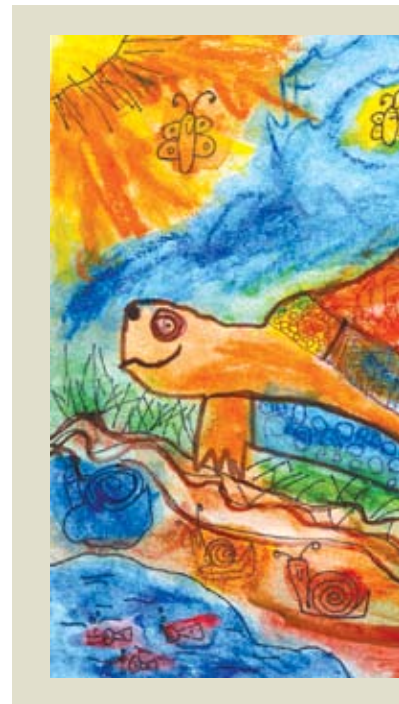
final edits to the national report, *State of the Union: Legal Authority over the Use of Native Amphibians in the United States*. This expanded and revised report was completed in December 2011 with input and review from all 49 continental states and the District of Columbia, and will be posted online in early 2012. Subcommittee member **Polly Conrad**, former reptile biologist for the state of Nevada and a former SW PARC Co-chair, remained a key player in assisting with the compilation of these regulations for the report. Recommendations for model regulatory approaches in the context of the North American Model for Wildlife Management were drafted and reviewed by AFWA leadership in 2011, and will be revised and released in 2012.

Several states participated or shared their turtle research and conservation efforts in the August and September 2011 issues of the Year of the Turtle News. Below are some highlights from efforts that occurred in Connecticut, Missouri, and Washington.

Connecticut Department of Environmental Protection

The Connecticut Wildlife Division has been participating in PARC's Year of the Turtle celebration by informing Connecticut (CT) residents about the state's native turtles through monthly press releases, a Year of the Turtle Web page (www.ct.gov/dep/yearofturtle), a CT Turtles portable display, articles and turtle species profiles in issues of our bimonthly magazine, *Connecticut Wildlife*, a children's art contest, and other related events. The monthly press releases have been very well received by the media and turtles have garnered more press coverage than usual.

The Turtle Art Contest for Kids was the Wildlife Division's first attempt at holding an art contest. The contest was open to children from kindergarten through 5th grade, who were



asked to submit original artwork of a turtle species native to Connecticut. We received over 220 entries, mostly from Connecticut residents but also from Florida, California, New York, Illinois, North Carolina, and even Malaysia. The entries were judged in three categories: K-1st grade, 2nd-3rd grade, and 4th-5th grade. Prizes were donated by the Connecticut Science Center and the Friends of Sessions Woods.

The Wildlife Division held a Turtle Day on June 26 at our Sessions Woods Conservation Education Center in Burlington. Turtle Day was a huge success! This FREE event was attended by approximately 270 people who listened to informative talks about turtles (CT Turtles, the Eastern Box Turtle, Sea Turtles and the Marine Animal Stranding Program) and had the opportunity to see live turtles and tortoises. Children could participate in various turtle crafts, get a turtle face painting, listen to turtle stories, and learn about turtles. All of the artwork submitted for the Turtle Art Contest was displayed, including the winning entries. Awards and prizes for the art contest were presented to the winners during Turtle Day. This event was sponsored by the Friends of Sessions Woods.

The Wildlife Division developed a portable display on Connecticut's Turtles. It has been traveling to various conservation events, including a Turtle Day at the Mystic Aquarium in Mystic, Connecticut. When not traveling, the display is set up in the Exhibit Room at the Sessions Woods Conservation Education Center.



Julia Stamp's Wood Turtle won 1st Place in the kindergarten/1st grade category of the Connecticut Wildlife Division Turtle Art Contest



Common Snapping Turtle, (*Chelydra serpentina*)
Photo courtesy of John White

Missouri Department of Conservation

A domestic market and a nearly insatiable foreign market for turtle meat, shells, pets, and other products are driving commercial turtle collection in numerous states including Missouri. The specific effects of this collecting activity on the populations of the three species that can be legally harvested in the channels of the Missouri River, Mississippi River, and St. Francis River border waters with Arkansas are not currently known. The Missouri Department of Conservation has initiated a project to address this gap: Effects of Commercial Harvest on Turtle Demographics (Common Snapping Turtle, *Chelydra serpentina*; Spiny Softshell, *Apalone spinifer*; and Smooth Softshell, *Apalone mutica*) in the Missouri River. Models based on studies of other turtle populations suggest that the demographic characteristics of turtle populations (high egg and hatchling mortality, delayed maturity, long-lived adults, and other factors) make them unsuitable for sustained commercial harvesting.

With studies of turtle populations documenting adult survival rates from 88 to 97 percent, a relatively low number of individuals harvested may reduce annual survival of adults by 10 percent and, thus, be unsustainable. This and the other studies also predict that the recovery time for depleted populations would be extremely long, even after the causes of the additional mortality have diminished or been eliminated. Due to these concerns, some states have recently initiated bans or placed greater restrictions on commercial harvesting of freshwater turtles.



Spiny softshell turtle, immature (*Apalone spinifera*)
Karan A. Rawlins / UGA / bugwood.org

Current Missouri commercial harvest regulations restrict harvest to the river channels of the Missouri and Mississippi Rivers and the portion of the St. Francis River along the shared Missouri-Arkansas border. Without information on the percentage of turtles that may be taken by commercial methods in Missouri, managers have little information to use when deciding whether current harvest is or is not sustainable and whether existing regulations should be modified. The purpose of this study is to document the effects of commercial harvesting on populations of Common Snapping Turtles, Spiny Softshells, and Smooth Softshells in Missouri.

The study will address the following management needs:

1. To determine population characteristics of these three species of turtles including abundance, age, and sex structure on harvested populations in the Missouri River and un-harvested populations on the Osage and Gasconade Rivers.
2. To determine the impact of commercial harvesting on the population abundance, size structure, and sex ratio on the harvested populations.
3. To determine the percentage of the population (all stages) that can be legally harvested without reducing population size.
4. To determine if source of origin for the turtle species can be distinguished by use of isotope signatures.

Washington Department of Fish and Wildlife

The historic range of the Western Pond Turtle (*Actinemys marmorata*) spans the western edge of North America from the southern portion of Puget Sound to Baja Mexico. Their preferred habitats are ponds, lakes and wetlands as well as slow-moving rivers and streams. Ideal settings contain high-quality upland habitats, featuring sunny meadows for nesting and brushy forests for terrestrial overwintering. Unfortunately, these habitats are also very attractive and useful to people. A variety of impacts including wetland loss, road construction, non-native plant introductions, non-native American Bullfrog (*Lithobates catesbeianus*) invasion, fire suppression, dam construction, and overhunting, led to severe declines. These detriments, combined with the species' late sexual maturity (≥ 10 years) and naturally low reproductive rate, left Washington's Western Pond Turtles in danger of extirpation from the state.

The situation became so severe that in 1991 there were only about 150 pond turtles alive in Washington and no young animals could be located. Subsequently, the species was listed as Endangered in the state of Washington and a cooperative recovery effort was initiated. Through the Washington State Department of Fish and Wildlife's Head-Start Program, wild turtle hatchlings and eggs are collected from their breeding areas and delivered to cooperating zoos. The Woodland Park Zoo in Seattle and the Oregon Zoo in Portland then raise the young turtles until they are about 10 months old. At this point the turtles are large enough to avoid predation by non-native bullfrogs and they are released back into the wild.

The summer of 2011 marks the 21st year of the Head-Start Program. To date, more than 1500 turtles have been released into six sites that are held in public ownership and subject to habitat enhancement efforts. Reproduction has been documented at four of the six sites, and bullfrog control helps assure that some of these young reach maturity. Habitat shortages and predators are still concerns, but today's Western Pond Turtles have a strong foothold in Washington State.



Amphibian and Reptile Conservancy Activities

The Amphibian and Reptile Conservancy (ARC), formerly known as Friends of PARC, is a not-for-profit organization established in 2009 to support herpetofaunal conservation and the mission of PARC. 2011 was a year of important milestones in ARC's young history of conservation and service. In support of PARC and the larger conservation community, ARC provided a number of ongoing services such as grant and funds management (Figure 3). Recipients of these services included four of PARC's five regional working groups, the California-Nevada Amphibian Population Task Force, and the Amphibian Conservation Seed Grant Program (sponsored by Conservation International/IUCN Amphibian Specialist Group and USGS, in partnership with ARC) which in 2011 supported four U.S. and six International amphibian research or conservation projects. Other grants and agreements administered by ARC include several DoD Legacy grants that supported DoD-PARC conservation efforts (Figure 4).

In 2011, ARC continued its legacy of co-sponsoring and supporting various conservation tools and symposia or workshops. Conservation publications that ARC provided support toward included the PARC Inventory and Monitoring Manual, PARC Midwest Habitat Management Guidelines (HMG), PARC Southwest HMG, a new book on the Western Pond Turtle, a book on the Frogs of the U.S. and Canada, and the publication of this PARC 2011 Annual Report.

Amphibian and reptile symposia and workshops that ARC co-sponsored in 2011 included a Flat-tailed Horned Lizard Biomonitoring and Training Workshop hosted by SW PARC, the PARC booth at the annual Joint Meeting of Ichthyologists and Herpetologists, and an International Ranavirus Symposium.

ARC also contributed funding and funds management toward: two new PARC conservation awards - the Alison Haskell Award for Excellence in Herpetofaunal Conservation, and the PARC Visionary Leader Award; financial support for a PARC Year of the Turtle intern; and support of the PARC Website re-design.

Currently volunteer-staffed by seven officers, including our Legal Counsel, Jeff Kibbey, and managed by a board of three directors, ARC is supported by revenues from book royalties, product sales, and generous donations from partners and the general public.



Western pond turtle,
(*Clemmys marmorata*)
Courtesy Oregon Dept.
of Fish and Wildlife

ARC FUNDS BALANCES, DECEMBER 31, 2011

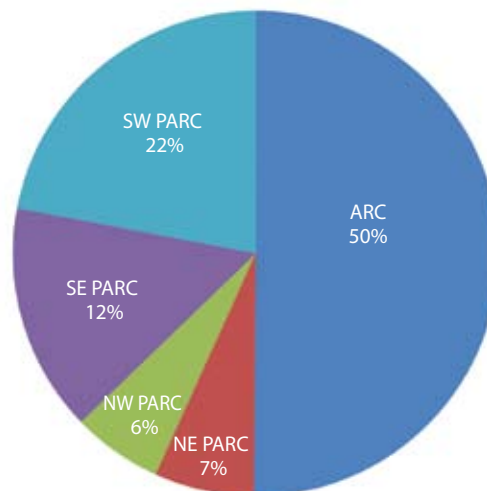


FIGURE 3: ARC manages funds for four of the five PARC regions and holds or manages its own and other funds as well. The balance of all funds held or managed by ARC at the end of calendar year 2011 totaled \$108,586.

ARC FUNDS BALANCES, DECEMBER 31, 2011

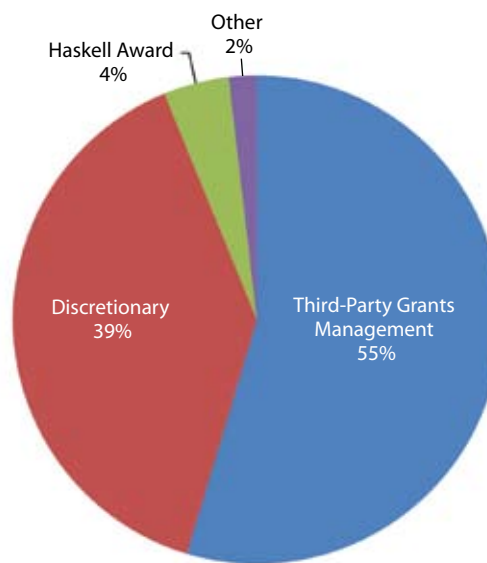


FIGURE 4: Among the funds that ARC holds and manages, the majority of these are grant funds that ARC manages for third parties. Discretionary funds are used toward operating expenses, such as accounting and postage and shipping, and toward other discretionary uses such as support for partner activities. The balance of funds held or managed by ARC at the end of calendar year 2011, excluding funds held for the PARC regions, totaled \$56,895.



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