

www.YearoftheTurtle.org

# Year of the Turtle News

No. 11

November 2011

Basking in the Wonder of Turtles

## Highway Construction Translocation Study Leads Down a Different Road: Ranavirus

by Scott Farnsworth,  
Towson University

A large six-lane toll road was being constructed in central Maryland, approximately 16 kilometers north of Washington, DC, and the project included trying to mitigate the impacts on wildlife including Eastern Box Turtles (*Terrapene carolina carolina*). This provided an excellent opportunity to study the efficacy of the methods that were being used for mitigation as well as being able to examine a particular type of translocation. When I started working on this project in 2008, I knew that it was likely that some of the study animals would die from the construction activities. We also expected that translocated turtles might have higher mortality rates due to the wide variety of problems



One of the study animals with a radio transmitter glued to the side of its shell.

associated with translocations. What we didn't expect is the number of dead turtles that we saw. It became a regular occurrence to find a shell or carcass, and many days we found more than one.

The dead turtles we were finding

included both our study animals and also other resident turtles that were found incidentally during the study. They showed no signs of predation or of being crushed by construction or other vehicles. They were often

*Box Turtle Ranavirus continues on p. 5*

Inside:	page
Year of the Turtle Partners	2
Turtles in the News	3
Ask the Experts	3
Citizen Science Projects	4
Mercury & Sea Turtle Nesting	7
Desert Tortoise Education	8
Diamondback Terrapin Education	9
Interview with Peter Paul Van Dijk	10
Raleigh Aquatic Turtle Adoption	11
Helping Baja Sea Turtles	12
Upcoming Meetings	13
Turtle Talk!	14

## Ranavirus Infection in Aquatic Turtles

by Debra L. Miller and Matthew J. Gray, Center for Wildlife Health, University of Tennessee, Knoxville, TN USA

The more we learn about ranaviruses, the more worrisome they become. Ranaviruses can be deadly to many taxa including reptiles, amphibians, and fish, and it appears that interclass transmission is possible. Currently, researchers are investigating the susceptibility of aquatic chelonians to ranaviruses and the parameters necessary for transmission from one class to the next. For chelonians, ranaviruses are

probably best known to affect box turtles and other primarily terrestrial turtles, with numerous mortality events reported. However, aquatic turtles also can be affected, but their susceptibility to ranaviruses remains unclear.

The lesions associated with ranaviral disease can be severe in turtles. In terrestrial turtles, ranaviral lesions primarily include necrosis

*Aquatic Turtle Ranavirus continues on p. 5*

“Behold the turtle. He makes progress when his neck is out.” — James Bryant Conant (1893-1978), educator and scientist

## Get Your November Calendar



One of these things is not like the others... James Stuart photographed this lineup of six Western Painted Turtles and one Big Bend Slider on a spring day in New Mexico. Download this month's Year of the Turtle Calendar to get a better look at this month's winner and runner-up by downloading your calendar at [parcplace.org/images/stories/YOT/YearoftheTurtleCalendarNovember.pdf](http://parcplace.org/images/stories/YOT/YearoftheTurtleCalendarNovember.pdf)

There's one more month to enter the 2011 Calendar Photo Contest! We are accepting entries until December 15. Give us your best shot! For more information and for entry details, please visit [www.parcplace.org/news-a-events/224.html](http://www.parcplace.org/news-a-events/224.html).

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## Submit Your Turtle Art, Stories, and Poetry

Do you have turtle art, stories, or poetry that could be highlighted during the Year of the Turtle? There's still time to submit your turtle art (in jpg, tiff, or pdf format) or copies of your stories and poems via email to [yearoftheturtle2011@gmail.com](mailto:yearoftheturtle2011@gmail.com)! We are looking for submissions to include in the December issue of the newsletter as well as in final Year of the Turtle materials and outreach efforts, and we want your work to be part of it!

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## Year of the Turtle Collaborating Partners

The Year of the Turtle Planning Team is pleased to welcome the following organizations to our growing list of collaborating partners:



The New York Department of Environmental Conservation's Bureau of Wildlife is responsible for managing all the wildlife species in the State of New York. The Bureau had its origin in the Fisheries, Game and Forest Commission established by an act of the legislature April 25, 1895, at a time when many wildlife populations were threatened. Today the Bureau of Wildlife is involved in the restoration, recovery and range expansion of several amphibians and reptiles, including state endangered bog and mud turtles, and state threatened Blanding's Turtle (*Emydoidea blandingii*), in order to stabilize and enhance populations for the enjoyment of future New Yorkers.

[www.dec.ny.gov/animals/277.html](http://www.dec.ny.gov/animals/277.html)

The Spanish Herpetological Association (AHE) has 25 years of expertise in conservation and research of Spanish amphibians and reptiles. AHE has developed a herpetological information server (SIARE; <http://siare.herpetologica.es>) that is a system for detecting and monitoring the loss of biodiversity in Spanish herpetofauna. Another current project is the coordination of the Spanish marine turtles tagging program ([www.herpetologica.es/programas/programa-de-marcado-de-tortugas-marinas](http://www.herpetologica.es/programas/programa-de-marcado-de-tortugas-marinas)). AHE will coordinate the tagging program, and also the training courses for the tagging staff.

[www.herpetologica.es](http://www.herpetologica.es)



Our full list of partners can be found at <http://parcplace.org/news-a-events/year-of-the-turtle/237.html>. If you are interested in contributing to the Year of the Turtle efforts, please send an email to [yearoftheturtle2011@gmail.com](mailto:yearoftheturtle2011@gmail.com) with a brief description of your organization and its efforts.

## Turtles in the News

Some 100,000 turtles, including the critically endangered Northern River Terrapin and the Black Soft-shell Turtle, are sacrificed as part of the Hindu celebration of Kali Puja which started recently in Bangladesh. Held once a year, and corresponding with the festival Diwali, sacrifices of turtles are made to Kali, the Hindu goddess of power, demonstrating the fine line that is often present between traditions and turtle conservation. **Warning: this story contains graphic images.** Read more at [www.dailymail.co.uk/news/article-2054278/100-000-turtles-sacrificed-ritual-slaughter-celebrate-Hindu-festival.html#ixzz1c67wbOqs](http://www.dailymail.co.uk/news/article-2054278/100-000-turtles-sacrificed-ritual-slaughter-celebrate-Hindu-festival.html#ixzz1c67wbOqs).

World Wildlife Fund and James Cook University researchers are teaming up to investigate a deadly virus that is affecting marine turtles off the coast of Queensland, Australia. Researchers will monitor electronically

tagged turtles to help find the answers to this mysterious virus. Find out more on the research at [www.abc.net.au/news/2011-10-20/scientists-research-deadly-turtle-herpes/3580424](http://www.abc.net.au/news/2011-10-20/scientists-research-deadly-turtle-herpes/3580424).

Bob Prescott, director of Massachusetts' Audubon's Wellfleet Bay Wildlife Sanctuary, will be presenting a three-part seminar, "Celebrating the Year of the Turtle," at the Wellfleet Library starting on November 3, and continuing on November 10 and 17. The series, which kicks off with a presentation on Box turtles, will educate participants on the species that inhabit Cape Cod, Massachusetts, and the efforts to preserve them. Read more on the upcoming series and on several Northeastern US turtle species at [www.wickedlocal.com/truro/news/environment/x1769239937/Lecture-series-celebrates-Year-](http://www.wickedlocal.com/truro/news/environment/x1769239937/Lecture-series-celebrates-Year-of-the-Turtle-at-Wellfleet-Library#axzz1cKLEjMhT)

[of-the-Turtle-at-Wellfleet-Library#axzz1cKLEjMhT](http://www.wickedlocal.com/truro/news/environment/x1769239937/Lecture-series-celebrates-Year-of-the-Turtle-at-Wellfleet-Library#axzz1cKLEjMhT).

Nesting numbers for Leatherbacks and Green Sea Turtles in Florida have continued to improve this year, while numbers have stabilized for Loggerheads, according to counts conducted by the Florida Wildlife Commission (FWC). Blair Witherington, research institute scientist at FWC, attributes these numbers "at least in part to major conservation efforts over the past few decades." Get the full story from The Palm Beach Post News at [www.palmbeachpost.com/news/sea-turtle-nesting-numbers-have-biologists-encouraged-1905968.html](http://www.palmbeachpost.com/news/sea-turtle-nesting-numbers-have-biologists-encouraged-1905968.html).

If you have items you would like to contribute to Turtles in the News, please send them for consideration to [yearoftheturtle2011@gmail.com](mailto:yearoftheturtle2011@gmail.com).

## Ask the Experts!

Why don't we take unwanted pet Red-eared Sliders and release them back into the wild in the states that they are native to? I am sure you would have to do health checks to make sure that we are not releasing sick ones that could threaten healthy wild populations but isn't there some alternative for all these misplaced pets? Can't local Fish and Wildlife organizations collect them and ship them to the states they are native to and then have the Fish and Wildlife agencies there release them?

Joanne Cloud  
Vancouver, Washington

Joanne,

The concept of collecting unwanted pet Red-eared Sliders and shipping them back to native habitat is certainly a most compassionate way of disposing of these unwanted individuals. There are, however a number of concerns about this:

1. There is a possibility / risk that such animals bring 'exotic' diseases—pathogens or parasites picked up in different areas outside their native range—into a native population at the site of release. (See the articles on Ranavirus in this issue of Year of the Turtle News.)

2. Many of the pet turtles being produced on farms are not 'pure-bred' Red-eared Sliders, *Trachemys scripta elegans* (TSE), but are 50/50 hybrids with *Trachemys scripta scripta* or back-crosses of hybrids with any kind of genetic mix-up (crosses are exempt from the European Union ban on TSE, so are intentionally produced in volumes on farms). Releasing such animals into native populations would amount to genetic pollution of the native population.

3. The process would be expensive (vet checks, staff handling time, shipping costs of large turtles according to humane transport rules, etc.) and entirely funded by either the government, taxpayer, and/or charitable organizations.

Peter Paul van Dijk  
Deputy Chair, International Union for the Conservation of Nature (IUCN)  
Tortoise and Freshwater Turtle Specialist Group

Do you have questions about turtle biology or turtle conservation issues, but you can't quite seem to find the answers? There is still time to submit your turtle questions via email ([yearoftheturtle2011@gmail.com](mailto:yearoftheturtle2011@gmail.com)) to our panel of experts for the December newsletter! Please include your name and location in your email message.

# November's Featured Citizen Science Programs

Get involved in a citizen science (volunteer) program in your neighborhood, community, or elsewhere!

Citizen science places volunteers of all backgrounds and ages in partnerships with organizations and scientists to collect important biological data. This month we continue to highlight sea turtle citizen science programs, including ways you can become involved in Florida as well as Kenya, Africa! A full list of all our US and international turtle citizen science programs can be found at [www.yearoftheturtle.org](http://www.yearoftheturtle.org). We thank everyone who has contributed information on their citizen science programs to the Year of the Turtle thus far. Are you involved with a turtle citizen program or have information on a specific project that you would like to share? Please send information on your citizen science programs to [yearoftheturtle2011@gmail.com](mailto:yearoftheturtle2011@gmail.com) and make sure your project helps us get more citizens involved in turtle science!

## Sea Turtle Volunteer Patrol

This program was set up to involve volunteers from Manatee and Sarasota counties, Florida and has been in existence for the past 29 years. The program covers approximately 35 miles of beach in total. Volunteers are asked to walk a one-mile-long stretch of beach one or two days a week from May 1 to October 1. The volunteers look for signs of nesting and hatching activity every morning. There is a yearly one-day training session, usually in April, which every volunteer must attend to be able to participate.

To become a sea turtle patrol volunteer, e-mail [turtles@mote.org](mailto:turtles@mote.org) with your contact information and they will let you know when the next training session is.

For other volunteer opportunities, contact the volunteer office at [volunteer@mote.org](mailto:volunteer@mote.org)



## Watamu Turtle Programme, Kenya

The Watamu Turtle Programme offers a variety of opportunities through the United Nations Biosphere Reserve's Watamu Marine Park located in Kenya. Volunteer opportunities usually last 4-8 weeks (extensions available) and cover conservation and research, education and awareness, and community development. Conservation and research include beach patrols, nest excavations, net releases and rehabilitation, among other tasks. Education and awareness includes producing signs, assisting at the Local Ocean Marine Centre, and helping with "Awareness Days." Community development consists of working on ideas for alternative income to help fishing communities with unsustainable marine resource exploitation, working on local crafts, and creating awareness in recycling and composting.

### Contact Information

Volunteer Turtle Program Coordinator

Email: [Victoria.mcneil@workingabroad.com](mailto:Victoria.mcneil@workingabroad.com)

<http://www.workingabroad.com/page/180/watamu-turtles-kenya.htm>

facebook

Follow all of the Year of the Turtle news and happenings on Facebook (<http://www.facebook.com/pages/yearoftheturtle2011>)

and Twitter (<http://twitter.com/YearOfTheTurtle>).



*Box Turtle Ranavirus continued from p. 1*

located within the heart of the stream valley park, nowhere near the construction or other roads. Another clue that something else was going on was that we were finding them in the summer rather than over the winter as reported in many other translocation studies. We were also finding live turtles that were showing signs of disease. These signs included swollen eyes with discharge around the eyes, discharge around the mouth and nares, yellowish or black plaques in the mouth, and some animals exhibited gaping behavior as well as acting lethargic. However, there were times we would locate an animal showing no obvious signs of disease, and just a couple of days later it was dead.

We had heard that other turtles in Maryland were found dead and that a Ranavirus had been isolated and implicated for those mortalities.



*Symptoms in box turtles include yellowish plaques in the mouth. This turtle died one day after the examination and was sent to the USGS National Wildlife Health Center, where it tested positive for ranavirus.*

Since the mortalities were occurring in the middle of the summer, when we found a dead turtle it was often too decomposed to send in for necropsy, but we were able to send in eight over the past three years. Of those, six tested positive for Ranavirus. We also had die offs in two consecutive years of larval amphibians in the two main wetland areas located within our study site. The first year we were

able to confirm Ranavirus in those amphibians as well.

The level of mortality we have seen in this population is alarming, as survival is well below that necessary to maintain a viable population. This concern is not isolated to our site, as Ranavirus has been implicated in box turtle mortalities at three other sites just in Maryland, including a population of box turtles that are in an outdoor, open exhibit at the Baltimore Zoo. And it is likely that this is occurring in many more places but is going undetected because of the speed of the disease and the narrow time-frame during which a carcass is suitable for necropsy. There is a lot of great work being done to investigate Ranavirus, but there is a lot that we still need to know, especially about the long-term population-level implications for a species of turtle that most people think is in little danger of extinction.

*Aquatic Turtle Ranavirus continued from p. 1*



*Hemorrhages and edema present in a post-hatchling Red-eared Slider.*

of the oral cavity and internal organs (usually respiratory tract and gastrointestinal tract), but also may include ocular and nasal discharges. In aquatic turtles, lesions primarily include hemorrhages and ulcerations, with the latter frequently occurring in the gastrointestinal tract. Few species of aquatic turtles have been experimentally challenged with

ranaviruses in the laboratory. In these experiments, primary infection and death have been documented. In zoological facilities (aquaria), aquatic turtles that have died and tested positive for ranaviruses often have concurrent infection with secondary, opportunistic parasites or pathogens. In these cases, the role of the ranaviral infection in the

death of the animal can be unclear. Thus, there is a need to conduct controlled laboratory experiments to understand the impact of ranaviruses



*Intestinal ulcers in an adult softshell turtle.*

on various turtle species. These data are necessary to develop management protocols. For example, if in some turtle species ranaviruses simply make the turtles more susceptible to secondary invaders, then aquarium personnel will need to incorporate treatment for the secondary invaders into their husbandry regimes. Such vigilance in captive populations will remain necessary until a treatment or preventative for ranaviral infections is found.

In a pond system, the possibility of interclass transmission in poikilotherms is frightening as one vertebrate class could serve as a reservoir for another. This could be especially devastating to highly susceptible species, especially if their numbers are already critically low.

A few scientists have recently begun to survey for ranaviruses in aquatic turtles and are generating often-surprising results. These data will allow us to realize the prevalence of ranaviruses, especially when multiple classes are tested during surveillance. One important consideration is the role of humans in global distribution of ranaviruses. Ranaviruses can be transmitted on animals that are transported from one system to the next (e.g., animals taken from a pond in one state and released in a pond in another state, animals used as fishing bait) as well as on equipment (e.g., boots, nets). Thus, it is important for all of us to take precautions to avoid spreading this pathogen. Precautions can include using disposable gloves to handle animals, refraining from

transporting animals from one watershed to another, and disinfecting boots and equipment when moving from one watershed to the next.

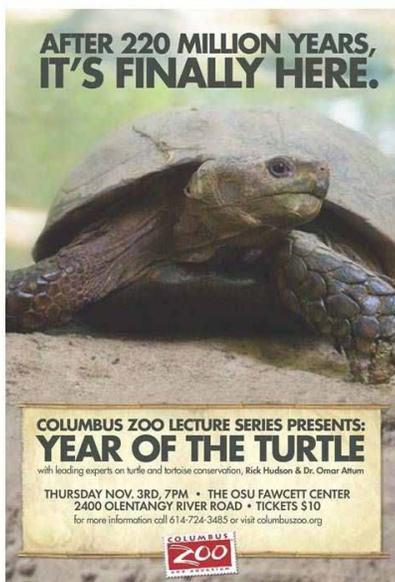
We know so little about ranaviruses in the various amphibian species but we know even less about them in turtles. At the recent First International Symposium on Ranaviruses, scientists from around the world joined forces and formed the Global Ranavirus Consortium (GRC). The GRC is composed of scientists who are investigating all aspects of ranaviruses and within all three affected classes (amphibians, fish, and turtles). The GRC holds to the ideal that by working together, we can achieve more. We like that way of thinking!

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## 2012 Year of the Lizard is Coming! Announcing a Monthly Calendar Photo Contest

In 2012, PARC will launch our Year of the Lizard awareness campaign to raise the profile of lizard conservation needs. As part of this campaign, we are pleased to announce a monthly Calendar Photo Contest! Similar to our 2011 Year of the Turtle Calendar Photo Contest, we are seeking close-up, digital photos of lizards, preferably in their natural habitats or within an educational or conservation context. One winner and runner-up will be selected each month to be featured as part of the Year of the Lizard online (printable) calendar. More details are **coming soon**, so be sure to begin getting your lizard photos ready to enter!

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### Columbus Zoo Year of the Turtle Lecture Nov. 3

The Columbus Zoo and Aquarium is presenting a Year of the Turtle lecture on Thursday, November 3rd from 7:00-10:00 PM (doors open at 6:30 PM) at the Ohio State University Fawcett Center, 2400 Olentangy River Road, Columbus, OH 43210. Speakers at the event will be Rick Hudson (president of the Turtle Survival Alliance) and Dr. Omar Attum (Egyptian Tortoise Conservation Project). Staff members from the Reptile Department and Animal Encounters will also be on-hand with displays and live turtles and tortoises. A reception will be held following the presentations.

Tickets are \$10 and the proceeds will benefit the Zoo's Turtle Conservation Fund. Space is limited and tickets can be purchased in advance at [www.columbuszoo.org](http://www.columbuszoo.org). For more information, visit the Zoo's website or call (614) 724-3485.

# Does mercury or maternal health impact leatherback sea turtle nest success?

by Debra Miller, Justin Perrault, Jeanette Wyneken\*

Leatherback Sea Turtles (*Dermochelys coriacea*) are the largest of the sea turtles, growing to over 7 feet (> 2m) in length, yet at hatching, they will easily fit in the palm of an adult human hand. Pollutants from anthropogenic sources are among the threats marine turtles face and the pollutant of concern to us is mercury. Mercury enters the ocean through industrial sources and natural geologic processes and accumulates within body tissues progressively up the food chain. Within the body, selenium may be used to detoxify mercury in the liver through the formation of mercury-selenium complexes. In some species, it has been demonstrated that as mercury concentrations rise in the body tissues, selenium concentrations may become exhausted, resulting in selenium deficiency. In birds and reptiles, mercury and selenium may be transferred from females to their offspring via the yolk.

We have been conducting a large-scale study to investigate mercury and selenium levels in Leatherback nesting females and their hatchlings. The goal of this study is to gain insight into the possible role that mercury might play in affecting hatching success. Concurrently, we are collecting basic blood parameters to be used by diagnosticians and biologists for population studies and baselines for comparisons in rehabilitation of stranded or injured turtles.

*\*Center for Wildlife Health, University of Tennessee, Knoxville, TN (Miller, formerly from UGA, Veterinary Diagnostic and Investigational Laboratory, Tifton, GA)*

*Department of Biological Sciences, Florida Atlantic University, Boca Raton, FL (Perrault, Wyneken)*



*An adult Leatherback Sea Turtle alongside a hatchling, to show the size difference.*

Blood mercury and selenium concentrations have been documented in nesting leatherbacks from Gabon and French Guiana but, to date, no levels have been surveyed in hatchling sea turtles. Further, there is minimal research aiding our understanding of maternal transfer of selenium and mercury in sea turtles. A significant positive correlation has been observed between egg content (yolk and albumen) and maternal selenium; however, as hatchlings develop in ovo, mercury and selenium concentrations may increase as a result of water and gas exchange between the egg and the nest environment.

Therefore, the environment, as well as maternal input, may contribute to mercury and selenium loads in hatchlings. The source(s) of mercury and selenium in leatherbacks have not been documented, but we hypothesize that they accumulate from both water and their prey (jellyfish), but not in the nest.

Our study shows that maternal health status impacts hatching success of their respective nests. Several blood values from nesting leatherback females have been found to be correlated with hatching success. For example, a blood parameter that is generally associated with chronic disease was higher in females who had fewer eggs successfully hatching from their nest. This was the first documentation of a relationship between hatching success and maternal health in sea turtles!

This study continues to be rich in exciting discoveries and innovative approaches. To date, many veterinary and biology students have gained valuable experience on this study and we hope to continue it in the future. Most importantly, we hope to build upon the valuable information we have gained to help manage this amazing species!



*Justin (a Ph.D. student) measuring a hatchling.*

# One Desert, One Tortoise, One Chance:

## The Desert Tortoise Information and Youth Education Program *by Kyle Pong*



The Desert Tortoise (*Gopherus agassizii*) is one of four tortoise species found in the United States. It can be found in four states – California, Nevada, Arizona and Utah. Recent research has proven genetic, physiological and behavioral differences between the Sonoran and Mojave populations of the desert tortoise leading to a split between the two species, the Mojave (*Gopherus agassizii*) and the Sonoran (*Gopherus morafkai*). While both populations struggle to survive, the Mojave population is recognized as threatened by the United States Fish and Wildlife.

Efforts to save this species can start with educating the public in addition to the recovery plan written by the federal government. Education opportunities provide some of the best ways to encourage today's youth to join in and take a role in the

conservation of the desert tortoise. The Living Desert and Desert Managers Group have partnered to create and support the Desert Tortoise Information and Youth Education Program (DTIYEP). The DTIYEP provides students in nine southern California counties the opportunity to learn about the desert tortoise in their classrooms.

The first opportunity available is the Tortoise Trunks. Tortoise trunks are fully equipped containers that can be sent to your school. All trunks contain detailed lesson plans and all the materials needed to teach those lessons. The curriculum has been aligned to California state standards. Currently trunks are available for grades 3-4 and grades 5-6, with a K-2 grade trunk becoming available early next year.



The second opportunity is the Mojave Maxine Emergence Contest. The Mojave Max contest was started by Clark County,

Nevada in an effort to find a fun way to educate the public about desert tortoises. Since then it has expanded to Southern California's Mojave Maxine contest which is open to all K-12 students in the nine southern California counties. Students can submit the time and date that they think Mojave Maxine, the tortoise, will emerge from her burrow signifying the start of spring. The east coast has their Punxsutawney Phil's and we have our Mojave Maxine and

Max. California students can enter by going online to [www.deserttortoise.gov](http://www.deserttortoise.gov) or [www.LivingDesert.org](http://www.LivingDesert.org). One entry is allowed per student. Winners in each county will receive gift cards for themselves and their sponsoring adult, a visit from a desert tortoise and spokesperson, T-shirts for their entire class and more! Students who live in Clark County, Nevada, can enter at [www.mojavemax.com](http://www.mojavemax.com). The contest begins November 1st, so get your entries in!

For more information about these opportunities please contact [kpong@livingdesert.org](mailto:kpong@livingdesert.org) or 760-346-5694 x2116.



*Juvenile desert tortoise.*





# An Interview with Peter Paul van Dijk

By Thomas Leuteritz, U.S. Fish and Wildlife Service



Peter Paul with a Snapping Turtle.

Peter Paul van Dijk is the Deputy Chair of the International Union for the Conservation of Nature (IUCN) Tortoise and Freshwater Turtle Specialist Group. He was interviewed by Thomas Leuteritz of the U.S. Fish and Wildlife Service on September 27, 2011.

*How did you become interested in studying turtles and at what age did your interest in these shelled reptiles start?*

Well, I started like so many other people with a hatchling Red-eared Slider at the age of 6 or 7, which died very quickly. That was it for a while. I kept tropical fish in aquaria and so on for a long time, and then a couple of years later somebody in a department store somehow handed me a bucket with 4 adult Red-eared Sliders, and that led to big tanks and a big collection of turtles in captivity. That ended up with a situation with a greenhouse in the garden and 18 different species and 50 individuals and breeding them and whatever. That was fun but a lot of work and a lot of challenges. After my Bachelor's degree I had an opportunity to travel around in Asia, started doing some field surveys in Thailand, and basically decided that

I couldn't combine field work with keeping captive collections, so in the end I placed all the captive animals elsewhere. I can barely imagine life without turtles. Peter Pritchard put it best when he said "all children love turtles and some people don't grow up" [laugh].

*In your opinion what is the biggest conservation issue facing turtles given the myriad threats out there today?*

I would say that there are actually two threat categories, sometimes acting in parallel, sometimes separate. One is that turtles are targets of collection and exploitation themselves - very specific collection for the pet trade in the west, but also very much so for consumption in developing countries and other countries in the east. In recent decades, with the globalization of the world and commerce, it has become very realistic to exploit turtle populations in one country or continent and ship them to another country or continent. The targeted exploitation really has driven populations into extinction or at least severe depletion as part of the whole "empty forest syndrome". Separately, habitat impacts and habitat issues are the other threat to turtles, where the turtles are just unintended victims of fragmentation of habitats with roads, buildings and infrastructure, of conversions of lands, forests and wetlands to agriculture, but also the extensive modifications we do to freshwater systems, particularly rivers, reservoirs, and other modifications to the hydrological cycle. That affects a lot of turtle species very profoundly.

*Given 2011 has been designated the Year of the Turtle, how can people be*

*made aware of importance of turtles and the role they play in our ecosystems?*

We are still trying to understand the full role of turtles in the ecosystem. We know that some species in some situations are quite important in keeping habitats sanitary, clean by scavenging, they disperse seeds, but also they are important in the human cultural and esthetic landscape, just their very presence is important in certain cultures and to numerous people who enjoy watching turtles or other things to do with turtles.

*What are ways the public can help in the conservation of turtles?*

First and foremost I would say do no harm. Avoid them when they cross the road. Carefully release them if they get caught up in nets or fishing lines. Beyond that, volunteer to assist with turtle conservation projects or just habitat maintenance projects in your area where turtles occur. Assist in turtle-friendly ways - help build tunnels and fences along roads. There are many ways and often it is a matter of working with local environmental groups, conservation groups and find out what the local needs are.

*What guidance on turtle conservation do you have for policy and decision makers?*

The important thing to consider when conserving turtles is that they are so unique. They are slow but they are long lived. They really need to survive to persist in their populations. Once you have lost a turtle population it will take ages, decades if not centuries, for it to recover - so preventing losses is even more important for turtles than any other group of animals I can think of.

*What is your favorite turtle or group of turtles? What is it about these turtles that you find interesting or appealing?*

I don't really have a favorite turtle or group of turtles. Every one of them is fascinating in its own right. It's always a discovery what they do, how they live, what are the features that make their particular habitat or lifestyle interesting. What I find fascinating is the diversity of habitats and situations where turtles can live and thrive – from marine situations to high deserts and everything in between except polar areas. I find it fascinating just to see as many different turtle species in the wild as possible.

*What advice would you give young people (or adults) who love turtles and want to work with them?*

Keep working with them. Keep focusing on them. There is always something you can do - something you can do to help turtles, something you can do to learn more about them. Read things, surf the internet, but above all go out in the field and look for turtles. Just admire them, don't disturb them, just admire them, just keep watching them, keep reinforcing your enthusiasm and the wonder about these wonderful animals.

*Thank you very much.*

My pleasure!



## Raleigh Aquatic Turtle Adoption: One Eighth Grader's Venture to Help Many Turtles



*Molly alongside her backyard pond.*

In 2006, Molly Paul's family adopted two Red-eared Sliders. Molly learned that Red-eared Sliders are a type of pet which can often become unwanted once they reach adult size and age, and many owners release them into natural areas where they do not naturally occur – often to the detriment of native turtles and the habitats they depend on. Thus, Molly created Raleigh Aquatic Turtle Adoption (RATA). RATA works to re-home many unwanted pet turtles in one of three ways: by keeping them in RATA's 3,000 gallon pond, by adopting them to school classrooms, or by adopting them out to new families. While RATA frequently works with Red-eared Sliders, Eastern Painted Turtles and Yellow-bellied Sliders are other turtles that are assisted most often.

In celebration of RATA's fifth anniversary this year (coinciding with the Year of the Turtle!), Molly began fundraising efforts to protect native turtle habitat in North Carolina. She

started selling turtle-shaped soaps and is donating all proceeds to Hemlock Bluffs Nature Preserve in Cary, North Carolina. She started this effort in spring, has held two events, and has raised \$500 for Hemlock Bluffs. Her soaps are also for sale in the Hemlock Bluffs gift shop, and she is currently making more soaps for upcoming holiday gift orders. Soaps are also donated to the North Carolina Science Museum gift shop, with all proceeds from sales going to support the Museum's efforts.

Molly Paul is an eighth grade student, a volunteer at Hemlock Bluffs, and a Junior Curator at the North Carolina Museum of Natural Sciences. You can learn more about RATA and Molly at her website, [www.raleighaquaticturtleadoption.com](http://www.raleighaquaticturtleadoption.com).



*Molly selling some of her soaps at her school's fall festival to raise awareness about responsible turtle ownership.*

*Left: Molly tends to a musk turtle.*

# Helping Baja California's Sea Turtles

By Rich Nauman



Historically, Baja California supported a commercial fishery for sea turtles, and turtle meat has long been a traditional food in local communities. In 1990, in response to rapidly declining populations, the Mexican government banned all take of turtle sand eggs. However, threats remain including habitat loss due to development, poaching of eggs, and death due to entanglement in commercial fishing gear. Populations of all species are reduced from past levels, and Leatherback Sea Turtle populations have reached critical levels.

Together, the Mexican states of Baja California and Baja California Sur form the world's second longest peninsula. The diverse coastal and open-water habitats along the peninsula's over 2500 km of shoreline are inhabited by five of the world's seven sea turtle species.

The southern half of the peninsula's Pacific Coast is dominated by long sandy beaches and an extensive system of bays, wetlands, channels,



tidal flats, and mangrove forests. The largest of these coastal wetlands, Magdalena Bay, extends for over 140 miles of mangrove-lined channels, tidal flats, and large open bays. Magdalena Bay and two other large coastal bays, San Ignacio and Ojo de Liebre, are well known for the gray whales that gather every winter in the warm, sheltered waters to mate and calve. While well known for gray whales, these coastal systems provide important foraging habitats for Loggerhead (*Caretta caretta*) and Green Sea Turtles (*Chelonia mydas*). The complex bay systems are largely undeveloped, support small human populations, and maintain most of their ecological integrity.



Near the tip of the peninsula, the cool Pacific currents meet the warm waters of the Gulf of California and miles of sandy beach provide nesting habitat for Olive Ridley Sea Turtles (*Lepidochelys olivacea*) and the Green Sea Turtle. The extremely rare and increasingly endangered Leatherback Turtle (*Dermochelys coriacea*) nests at three locations in the southernmost portions of the peninsula. On the Gulf of California, Cabo Pulmo National Park is home to the most northerly coral reef in the eastern Pacific and habitat for Hawksbill Turtles. Farther

north the warm productive waters of the Gulf of California provide forging habitats for many turtles and nesting beaches for expanding populations of Olive Riddleys.

Communities, scientists, students, and others are working throughout the peninsula to protect and restore sea turtle populations. The Grupo Tortugero de las Californias hosts an annual meeting the last weekend in January that brings together community members from throughout Alta California, the Baja California Peninsula, and the Pacific Coast of mainland Mexico. People from Hawaii, Japan, India, Australia and other parts of the world come to participate and learn from the success of nearly 15 years of work.

In addition to the annual meeting, Group Tortugero coordinates a community based monitoring program. The lagoons of the remote Pacific Coast near the community of Punta Abreojos typically have the highest abundance of turtles: from 2000-2010 the monitoring site at Abreojos captured 862 turtles, with 140 individuals marked. Monitoring programs are run by local community members using standardized methods to monitor turtle populations and raise community awareness.





Baja California has long been a destination for naturalists and ecological researchers. In May 2011, Loreto, Baja California Sur was host to the meeting Applying Science to the Conservation and Management of Natural Resources on the Baja California Peninsula and the Gulf of California where over 300 scientists, NGO leaders, and key government representatives gathered. In 2008, the community of Loreto hosted the 28th International Sea Turtle Symposium in conjunction with the 10th annual meeting of Grupo Tortugero.

Community events around the peninsula celebrate turtles. In October, Puerto López Mateos, a small town

on Magdalena Bay, hosted the 8th annual “Festival de la Tortuga Amarilla” in celebration of the large numbers of Loggerhead Turtles that cross the Pacific to feed on the abundant pelagic red crabs found in the waters offshore. Additionally, small-scale sea turtle-based tourism is a fast-growing source of income for community members with few alternatives to commercial fishing or poaching. SeeTurtles is a successful program started in Magdalena Bay that supports turtle conservation through ecotourism.

The strong and growing network of community members, researchers, students, and fishers that has developed throughout the Baja California Peninsula and stretches from the coasts of Asia to the beaches of mainland Mexico has demonstrated a powerful and effective method of species conservation that is succeeding in helping turtle populations recover.

### Resources

Group Tortugero de las Californias  
[www.grupotortugero.org](http://www.grupotortugero.org)

Conservation Science Symposium  
<http://conservationscience.com.mx/>

See Turtles  
[www.seeturtles.org](http://www.seeturtles.org)

## Upcoming Meetings and Events

**Year of the Turtle Lecture**,  
 November 3, 7:00-10:00 pm,  
 presented by Columbus Zoo and  
 Aquarium, at Ohio State University’s  
 Fawcett Center, Columbus, OH (see  
 p. 4 for announcement)

**The Wildlife Society 18th Annual  
 Meeting**, November 11-13,  
 Waikoloa, Hawaii

**Sea Turtle and Marine Mammal  
 Strandings Field School**,  
 MassAudubon’s Wellfleet Bay  
 Wildlife Sanctuary, November 11-  
 13, Wellfleet, Massachusetts

**Modeling Patterns and Dynamics  
 of Species Occurrence Workshop**,  
 November 28 - December 2,  
 Patuxent Wildlife Research Center,  
 Laurel, Maryland

**International Congress for  
 Conservation Biology**, Society for  
 Conservation Biology, December  
 5-9, Auckland, New Zealand.

**Looking Ahead to 2012:**

**World Congress of Herpetology 7**,  
 August 8-14, 2012, Vancouver, British  
 Columbia, Canada.

**10th Annual Symposium on the  
 Conservation and Biology of  
 Tortoises and Freshwater Turtles**,  
 August 16-19, 2012, Tucson, Arizona.

### Subscribe Now!

Don’t miss the final edition of the *Year of the Turtle News*! If you have not already, subscribe to the monthly electronic newsletter by submitting an email with the subject “subscribe” to [yearoftheturtle2011@gmail.com](mailto:yearoftheturtle2011@gmail.com).

## Turtle Talk!



Missouri Western State University Herpetologist Dr. Mark Mills and Missouri Department of Conservation Naturalist Shelly Cox discussing turtle conservation. Photo by Cindy Benson.

On September 13, the Biology Department at Missouri Western State University (MWSU), the Missouri Department of Conservation (MDC), and the Midland Empire Audubon Society sponsored a free public presentation, "It's Turtle Time! 2011 is the Year of the Turtle," in the outdoor amphitheater behind MDC's Northwest Regional Office in St. Joseph, Missouri.



Cox showing the audience a Spiny Softshell turtle. The public was invited to come down after the presentation to ask questions and touch this and other turtles. Photo by Cindy Benson.

MWSU herpetologist Dr. Mark Mills and MDC Naturalist Shelly Cox gave a presentation to 130 people of all ages highlighting turtles and turtle conservation to celebrate PARC's Year of the Turtle. The presentation was followed by an informal question and answer period with the opportunity to see and touch five native species (Common Snapping Turtle, *Chelydra serpentina*; Spiny Softshell, *Apalone spinifera*; Box Turtle, *Terrapene carolina*; Red-eared Slider, *Trachemys scripta*; and Painted Turtle, *Chrysemys picta*) and one Russian Tortoise, *Agrionemys (Testudo) horsfieldii*.

During the hour-long presentation, Mills and Cox discussed turtle biology and ecology, turtle conservation, ongoing turtle studies at MWSU, and Missouri's rich native turtle fauna. A Year of the Turtle handout, containing information from the PARC website and other sources, was made available, along with various turtle-related publications from the Missouri Department of Conservation. Mills and Cox both have extensive experience in environmental education, and Mills has a team of undergraduate students who are involved in turtle studies in nine campus ponds.



Dr. Mills holding up a Common Snapper so those in the back of the amphitheater could see. Photo by Cindy Benson.



Approximately 130 people of all ages attended this outdoor presentation. Photo by Cindy Benson.