DTWG SUPPORTS TSA IN TIME OF CRISIS

Hurricane Juaquin formed near the Bahamas on September 28, 2015 and battered several of those islands through the next few days in early October. Once the storm turned north from the Bahamas, over 800 residences had been destroyed, and with other destruction, the storm caused an estimated $600 million in damages. Juaquin is the same storm that sank the El Faro cargo ship killing all 33 of its crew members.

While Hurricane Juaquin never landed on US shores, it caused massive flooding in several Southeastern states, including South Carolina where the Turtle Survival Center is located near Charleston. That area received 17.7 inches of rain between October 1 and 4, an amount that exceeded the threshold for a 1-in-1000 year event!

The center sustained major flooding which damaged their main building, which houses the service kitchen, staff offices, the veterinary clinic, and the hatchling rearing room. Drywall will need to be replaced as well as carpeting. Fortunately, no animals died at the facility as staff members moved the turtles and tortoises to safety.

DTWG was glad to respond to the Turtle Survival Alliance’s call for help and donated $1,000.00 to their cause. We hope the Center up and running again and serving their important mission of turtle conservation.

Learn more about damage at the Turtle Survival Center: http://goo.gl/tQBSoT

Save the Date! • October 14-16, 2016 • Biloxi, Mississippi
7th Symposium on the Ecology, Status, and Conservation of Diamondback Terrapins

Inside this issue:

DTWG Grant Recipients 3-6
New Terrapin Publications 6
Meet the Roosenburg Lab (MD) 7
Regional News 8
2016 Symposium Information 9
Membership Form 10
Call for Proposals—2016 Grants 11
DEDICATED TO DIAMONDBACK TERRAPIN RESEARCH, CONSERVATION, MANAGEMENT, AND EDUCATION

The Diamondback Terrapin Working Group was formed in 2004 by individuals from academic, scientific, regulatory and private institutions/organizations working to promote the conservation of the diamondback terrapin, the preservation of intact, wild terrapin populations and their associated ecosystems throughout their range. The Diamondback Terrapin Working Group is committed to and supports research, management, conservation, and education efforts with the above goals in mind.

OFFICERS AND REGIONAL REPRESENTATIVES

Senior Co-Chair
Mike Dorcas, Davidson College

Junior Co-Chair
Christina Mohrman, NOAA Environmental Cooperative Science Center

Secretary
Mary Hollinger, Freelance Biologist

Treasurer
Joe Butler, University of North Florida

Past Co-Chairs
Russell Burke, Hofstra University
Willem Roosenburg, Ohio University
Joe Butler, University of North Florida

Northeast Representatives
Barbara Brennessel, Wheaton College
Alex Kanonik, Queens College

Mid-Atlantic Representative
Randy Chambers, College of William and Mary
Stephanie Egger, Conserve Wildlife Foundation of NJ

Southeast Representatives
Brian Crawford, University of Georgia
Andrew Grosse, SC Department of Natural Resources

Florida Representatives
Ben Atkinson, University of Florida
Kristen Hart, USGS

Gulf Representatives
Tom Mohrman, The Nature Conservancy
Will Selman, LA Department of Wildlife and Fisheries

Terrapin Times is the biennial newsletter of the Diamondback Terrapin Working Group.
Editor Christina Mohrman

The Diamondback Terrapin Working Group (DTWG) is a 501(c)(3) non-profit organization.

CONNECT WITH US

@ www.dtwg.org

Find us on Facebook

Join the DTWG Listserv

Thanks! to our newsletter contributors:
Joe Butler, 2015 Grant Recipients, Willem Roosenburg, Rebecca Shoer, Stephanie Egger, and Brian Crawford.
Each year, the Diamondback Terrapin Working Group funds research and education projects involving conservation and management of terrapins. Below are stories from our 2015 grant recipients.

**DTWG GRANTS PROGRAM**

**Taylor Roberge**, University of Alabama at Birmingham — 2015 Grant Recipient

Evaluating the spatial and temporal variation in nesting beach microhabitat in Heron Bay, Alabama

Graduation Year: 2017

My research focuses on how nest environment influences the phenotype of hatchling turtles exhibiting temperature dependent sex determination. I apply the information from these studies to the diamondback terrapins to make evidence based conservation strategies.

**What is your favorite thing about working with terrapins?** Diamondback terrapins, with their unique biology and beautiful coloration, are great ambassadors for getting people excited about conservation and science.

Photo provided by Taylor Roberge

**Shantel Swierc**, Center for Coastal Studies, Texas A&M University Corpus Christi — 2015 Grant Recipient

Demographics, distribution, and genetic variation in the Texas diamondback terrapin (*Malaclemys terrapin littoralis*) within the Corpus Christi and Aransas Bay Systems

Graduation Year: 2016

This research will provide critical information on the population genetics and dynamics of the Texas diamondback terrapin (*Malaclemys terrapin littoralis*) within the Corpus Christi and Aransas Bay systems. I hope to be able to evaluate historic and ongoing population connectivity, overall population size from genetic estimates, and evaluate any potential for historic or recent bottleneck effects among the Texas populations. It will also provide updated information on previously studied populations in the area and may identify trends or changes in those populations, while also benefiting regulatory and conservation managers by providing their current distribution.

**My favorite thing about working with diamondback terrapins is the opportunity to educate the public about this fantastic species in their bays that they do not know about. Seeing people light up when they see us working on them, amazed at their personality, and giving them a reason to be more vigilant about disturbing the environment these terrapins live in, is the best reward you can receive.**

Photo provided by Shantel Swierc
2016 grant applications are due February 1, 2016— details on page 11!

Lindsey Ramirez, Center for Coastal Studies, Texas A&M University Corpus Christi — 2015 Grant Recipient

Graduation Year: 2016

Does elevated salinity induce a physiological response in Texas diamondback terrapin (*Malaclemys terrapin littoralis*)?

This study will determine the physiological effects of elevated salinity on stress hormone production in the Texas diamondback terrapin (*Malaclemys terrapin littoralis*) residing in the Nueces and Mission-Aransas Estuaries. Concentrations of hormones and blood chemistry will be used to measure salinity stress. The results of this study will provide baseline data for management practices for terrapin populations along the south Texas coast where little research has been conducted and will be beneficial for assessing freshwater inflow requirements to maintain healthy coastal ecosystems.

What is your favorite thing about working with diamondback terrapins? I love the fact that the terrapins have such an amazing personality and I am grateful that I get the opportunity to be an advocate (so to speak) for the Texas subspecies because little information is known about their populations and many people do not realize they even exist.

Photo provided by Lindsey Ramirez

Kimberly Lull, Margate Terrapin Rescue Project/Green Mountain College — 2015 Grant Recipient

Diamond-backed Terrapin Mortality on a Southern New Jersey Causeway: A Two-fold Approach to Conserving a Local Population

Graduation Year: 2016

I've been testing the efficacy of two different types of roadside barriers in reducing terrapin fatalities along a causeway in Southern New Jersey. I also have been combining my research with educational outreach by visiting local schools and teaching lessons regarding terrapin conservation. Additionally, I have been increasing public awareness by redesigning a local terrapin organization's website and operating their social media outlets for the past year.

What is your favorite thing about working with terrapins? I love being able to talk to others about diamondback terrapins and what makes them so unique. People really do want to help and be a part of conservation efforts. Diamondback terrapins are such beautiful creatures and being able to rescue them from roadways and watch them continue on their way is so rewarding.

Photo provided by Kimberly Lull
Janelle Johnson, College of Charleston, Grice Marine Laboratory — 2015 Grant Recipient

Observations of trap level interactions of the diamondback terrapin, *Malaclemys terrapin*, and blue crab, *Callinectes sapidus*, to determine optimal BRD design for the blue crab fishery in South Carolina

I am utilizing a controlled setting to make behavioral observations of diamondback terrapins and blue crabs associated with entry into commercial style crab traps outfitted with different BRD designs. Quantification of effort and ability to enter, as well as observations on how the animals interact with the entry funnel of a crab trap, will help determine the best BRD design for the South Carolina blue crab fishery.

What is your favorite thing about working with terrapins? Terrapins often appear inquisitive and playful; these are fascinating behavioral traits for a turtle. I am very thankful to be part of a project aimed at conservation of this species.

Photo provided by Janelle Johnson

Jordan Donini, Southeastern Louisiana University — 2015 Grant Recipient

Reproductive physiology of two populations of diamondback terrapins in the Gulf of Mexico

Graduation Year: 2016

I am investigating the seasonal reproductive cycles of terrapins in both Louisiana and south Florida using steroid hormone assays (Testosterone and Estradiol), protein assays (Vitellogenin), radiography, and ultrasongorphay to better understand difference in reproductive output across a latitudes while also investigating the cycles of south Florida terrapins outside of known reproductive periods.

What is your favorite thing about working with terrapins? Seeing the multitude of environments that they occupy and exploit is truly amazing to me!

Photo provided by Jordan Donini

Since 2009, the DTWG grants program has awarded over $14,000 to fund 26 projects, leading to 19 peer-reviewed publications and numerous graduate student theses and dissertations. The DTWG grants program is funded solely by your membership dues.
NEW TERRAPIN PUBLICATIONS


*DTWG Grant Recipient

---

**Cassandra Cook, College of William and Mary — 2015 Grant Recipient**

Graduation Year: 2016

**Potential threats to diamondback terrapin nesting success caused by the invasive reed Phragmites australis**

I am trying to determine the potential impacts of invasive *Phragmites* colonization of terrapin nesting beaches. To achieve this I am examining how *Phragmites* can influence 3 factors that are important to terrapin nest survival: incubating nest temperatures, risk of destruction by root growth into the nest chamber, and detection of nests by predators.

**What is your favorite thing about working with diamondback terrapins?** I love seeing the variation in terrapin coloration - even at one study site you see many different colors and patterns!

Photo provided by Cassandra Cook
Since beginning my work on terrapins, my students and I primarily have worked in two populations, one in the Patuxent River on the western shore of Chesapeake Bay. Here we worked from 1987, beginning as my dissertation research, and continued there until 2009. In 2002, I began work at a second site in Chesapeake Bay, the Poplar Island Environmental Restoration Project in Talbot County, Maryland. Our research continues on Poplar Island, testing how different conservation strategies may affect and improve terrapin populations throughout their range. In recent years, my lab has built a collaborative program with Shawn Kuchta, a molecular evolutionary geneticist at Ohio University, and we provide a rich and productive environment for graduate and undergraduate training with several students working on terrapins and other species.

Some of the most recent work on terrapins has applied some of the new computational techniques of genetic data. Paul Converse, a shared graduate student of Shawn Kuchta and I, has recently evaluated the genetic population structure in Chesapeake Bay.

Sarah Kitson, a MS student in my lab, is comparing performance metrics of spring and fall emerging hatchling terrapins from Poplar Island.

Alyana Tokash, an undergraduate in my lab, is currently studying egg and hatching size variation in both the long-term Patuxent and Poplar Island data sets.

The comparison of the mainland Patuxent River population and the more isolated Poplar Island population is fascinating: as the mainland population declined due mostly to anthropogenic impacts, the island population grew in the absence of nest predators.

I maintain an active field program that offers room and board to those wanting to learn terrapin biology and study techniques and I welcome collaborators with interesting ideas they would like to pursue in the context of long-term data sets. Finally, I am finishing the terrapin edited volume book with a completion date in 2016 and publication date of 2017.

Visit the Lab’s website: www.ohio.edu/people/roosenbu and their Facebook page: Roosenburg Lab at Ohio University

Willem Roosenburg is a Professor at Ohio University and a past DTWG Co-Chair.
**REGIONAL NEWS**

**NORTHEAST: COLD-STUNNED TERRAPIN MORTALITY**

By: Rebecca Shoer

Between March and June, 88 terrapins (55 live, 43 dead), were found washed in along the high tide line throughout Wellfleet Bay, Massachusetts. Individuals exhibited a range of ailments, some of which are typical to cold-stunning: lethargy, dehydration, bloody discharge from the eyes and ears, darkened plastrons, and rear leg weakness or paralysis. Live terrapins were sent to the Tufts Veterinary School Wildlife Clinic. These terrapins had low platelet counts, suggesting terrapins were emerging from brumation while temperatures in the bay were still dangerously low. Most troublingly, the majority of stunned terrapins were adult females. Females may emerge from brumation earlier than males to build up calcium levels for egg development. Though females emerged at the appropriate time of year, the weather and water temperatures were atypically cold. We cannot pinpoint the cause of this event, though we believe the record-breaking winter of 2014 played a role. Last winter was initially mild, until a sudden temperature drop resulted in one of the coldest and snowiest winters on record. This drop may have damaged terrapins in their hibernacula. The rear leg weakness remains a mystery, and live terrapins still in captivity have not recovered muscle usage.

**MID-ATLANTIC: TURTLE GARDENS FOR NESTING**

By: Stephanie Egger

The Conserve Wildlife Foundation of New Jersey and Marine Academy of Technology and Environmental Science received funding through the Barnegat Bay Partnership for the creation of "Turtle Gardens" for terrapins. Turtle Gardens provide alternative suitable habitat in areas where current habitat may experience erosion/flooding due to sea-level rise and as an effort to reduce road mortality in some cases. A pilot Turtle Garden was created at the Long Beach Island Arts and Science Foundation and was a success with five nests and high hatch success. Two more Turtle Gardens will be created before the 2016 season.

**SOUTHEAST: JEKYLL ISLAND CAUSEWAY PROJECT**

By: Brian Crawford

The University of Georgia (UGA) and Georgia Sea Turtle Center (GSTC) are continuing long-term monitoring and management of the terrapin population adjacent to the Jekyll Island Causeway. To date, the project has implemented hybrid barriers at road crossing hot spots to prevent females from entering the road while nesting and protect nests from predators. We have also implemented flashing warning signs to increase driver awareness around high tide each day of the summer nesting season when terrapins are most likely to be crossing the road. Our analysis shows that both strategies have reduced the occurrence of road mortality. We have also engaged local stakeholders, such as DNR, the Jekyll Island Authority, residents, and visitors, in a collaborative decision making process, led by UGA and GSTC researchers. We have jointly created objectives for management, brainstormed a list of strategies that are acceptable to the public, and are in the final stages of evaluating which options best meet our objectives for terrapins and patrons of Jekyll Island.
Save the Date!
7th Symposium on the Ecology, Status, and Conservation of Diamondback Terrapins

October 14-16, 2016
Biloxi, Mississippi
Local Host: Christina Mohrman
christina.mohrman@dmr.ms.gov · (228) 475-7047

Call for Abstracts and Registration Information Coming Soon

Tentative Agenda

Friday Afternoon—DTWG Business Meeting
Friday Evening—Welcome Social

Saturday—Plenary Speaker, Oral & Poster Presentations
Saturday Evening—Social and Reception

2016 Terrapin Conservation Award
Best Student Oral & Poster Presentation Awards
Silent Auction to Support DTWG Grants Program

Sunday—Oral Presentations, Group Discussion, Adjourn
Greetings to all members of the Diamondback Terrapin Working Group (DTWG)! It is time for your annual membership renewal. Since 2009, all DTWG membership dues have gone to fund research on terrapins. We usually receive proposals requesting over $20,000, and our grants committee selects the most promising ones for funding. In past years, we have funded projects as diverse as testing BRDs on crab pots, genetic diversity, skeletochronology, mark-recapture and home range studies, to name a few. Obviously, there is a need out there for these funds so please dig down and pay your dues.

We again intend to use all dues collected this year to fund grants, which we will award in spring 2016. We will announce grant proposal requirements and a deadline date for submission by the end of this year. Of course, the first requirement is that the awardees be members of DTWG. We anticipate collecting between $1000 and $2000 in dues and all that we collect will go to these awards. Also remember that membership comes with the privilege of using the Bibliography page on the DTWG website.

<table>
<thead>
<tr>
<th>Membership Type</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular Annual Membership</td>
<td>$25.00</td>
</tr>
<tr>
<td>Student Membership (Must be recommended by a university professor)</td>
<td>$10.00</td>
</tr>
<tr>
<td>Contributing Member</td>
<td>$40.00</td>
</tr>
<tr>
<td>Corporation or Society</td>
<td>$50.00</td>
</tr>
<tr>
<td>Sustaining Member</td>
<td>$75.00</td>
</tr>
<tr>
<td>Lifetime Membership (Names of Lifetime Members will be added to a list on the website)</td>
<td>$300.00</td>
</tr>
</tbody>
</table>

**OPTION 1: Renew/Join online and pay with PayPal (no separate check necessary)**

Visit our website at [www.dtwg.org](http://www.dtwg.org) and click the link at the top of the homepage

**OPTION 2: Renew/Join by mail and pay with a check**

Please send this form and your dues to: DTWG c/o Mary Hollinger – PO Box 965 – Huntingtown, MD 20639

Name and Affiliation ________________________________
Address __________________________________________
__________________________________________________
Office Phone ___________________________ Cell Phone ___________________________
Email ___________________________ Fax ___________________________
CALL FOR PROPOSALS — 2016 GRANTS

The Diamondback Terrapin Working Group (DTWG) is issuing a call for proposals for research/education involving conservation and management of diamondback terrapins.

Eligibility: Only proposals from DTWG members will be considered. A brief letter from the faculty mentor should accompany student proposals. To become a member visit our website at www.DTWG.org.

Format: Proposals should consist of a cover page with the authors’ contact information including phone and email information. The body should not exceed two pages (including literature cited), and authors must use 12 point font with 1 inch margins. A separate budget page should include a table with requested funds and total funds needed to complete the project and a budget justification that includes the availability and access to additional funds for your project.

Cover page – 1 page
- Name and contact information:
- Project title:
- Effective dates:
- Total project costs:
- Amount requested:

Body – 2 pages
- Introduction detailing significance of work
- Project Objectives or hypotheses
- Methods and Materials
- Timeline with metrics of success
- Literature cited

Budget – 1 page
- Table with total budget cost and amounts requested From DTWG
- Budget Justification

Deadline: February 1, 2016

Submission: Electronic submission, preferably as a .pdf file, to jbutler@unf.edu. Late submissions cannot be considered.

Funding Limitations: The DTWG will not fund salaries or travel to meetings to present papers. Highest priority will be given for proposals requesting essential material and supplies to initiate projects in regions with poorly known populations or projects with high conservation relevance. Because of the limited nature of our grant program, the DTWG will not fund indirect costs.

Awards: Funds will be awarded by May 1, 2016

Final Report: A detailed final report will be due to the DTWG by June 30, 2017.