Florida Diamondback Terrapin Working Group

Regional Meeting, 4 February 2006 (1:00-5:00 pm)

Mote Marine Laboratory (Sarasota, Florida)

Meeting Minutes

In attendance: Benjamin Atkinson, Joe Butler, David Cook, Dana J. Ehret, Jimi Gragg, Kristen Hart, George L. Heinrich, Kevin Kemp, Keith Laakkonen, Chris Lechowicz, Brian Mealey, Zach Mullin, Tony Tucker, Sharon Tyson, and Tim Walsh (see contact info below)

1:00 pm: Welcome (Dr. Tony Tucker, Mote Marine Laboratory)

Welcome and opening remarks (George L. Heinrich, Regional Representative, Florida Diamondback Terrapin Working Group)

1:15 pm: Update on the progress of the national Diamondback Terrapin Working Group (Dr. Joseph A. Butler, Co-Chair, Diamondback Terrapin Working Group)

DTWG website is up and running

Brian Mealey is the new DTWG treasurer

Articles of Incorporation and Bylaws have been completed and are in the process of being signed

DTWG logo is still needed

Other regional meetings:

Northeast: meeting to be held in mid-April at New England Aquarium

Mid-Atlantic: no information

Southeast: took lead on developing DTWG listserv, lots of very active members, meeting by states; Georgia meeting is 8 March 2006 at Jekyll Island Conference Center; South Carolina moving to eliminate all commercial take

Gulf Coast: had planned for December 2005 meeting, but venue was blown away by Hurricane Katrina; now in process of rescheduling

Willem Roosenburg is working on scheduling the triennial meeting to be held in Maryland in August 2007.

1:30 pm: Presentations on Florida terrapin research and conservation projects

Everglades Terrapins: Ecological and Genetic Profiles of Diamondbacks from Big Sable Creek, Florida

Dr. Kristen M. Hart (U.S. Geological Survey)

Diamondback terrapins (*Malaclemys terrapin*) are distributed along the U.S. east coast from Massachusetts to Texas in brackish water habitats. Until now, no clear population definition had been established for this continuously distributed species, so effective conservation efforts to mitigate population-level threats have not been realized. To determine ecologically and evolutionarily relevant management units, I used molecular techniques (i.e., microsatellite DNA) to test the hypotheses that *M. terrapin* comprise one single, homogeneous population and that male and female terrapins disperse equally. To estimate adult survival rate, capture probability, and abundance for mangrove terrapins, I conducted a mark-recapture study in the Big Sable Creek (BSC) complex of the Florida Everglades and analyzed individual encounter histories. Results indicate that *M. terrapin* throughout their range exist as at least six distinct metapopulations or regional management units (MUs). These MUs do not coincide with previous morphologically-based subspecies designations. As well, males act as dispersers of genetic material, facilitating gene flow among subpopulations. I also established the first adult survival rate ($\varphi = 0.79$) and population estimate (mean N = 1545 individuals) for mangrove terrapins, and I determined that their distribution within Big Sable Creek lies largely in unsurveyed habitat.

Continuing Investigations of the Distribution and Abundance of Mangrove Terrapins *(Malaclemys terrapin rhizophorarum)* in the Florida Keys

Benjamin K. Atkinson (The Wetlands Institute and Chelonian Research Institute) and Dr. Roger C. Wood (The Wetlands Institute and Richard Stockton College)

Mangrove terrapins *(Malaclemys terrapin rhizophorarum)* were first described by H.W. Fowler in 1906 on the basis of a single adult female discovered on the island of Boca Grande (now part of Key West National Wildlife Refuge) in the southwestern most Florida Keys. No further scientific studies were undertaken until the early 1980s, when a comprehensive survey of islands in the lower Florida Keys provided the first reliable information about the distribution and abundance of mangrove terrapins in the area. Hundreds of terrapins were marked during the surveys of the early 1980s, especially at the eastern end of Barracouta Key, which supported the densest population in the lower Keys. Intermittent fieldwork has since continued on a very irregular basis. The region took a direct hit by Hurricane George in 1998, and subsequent brief surveys indicate that the population may have been substantially reduced. In March of 2005 a team from the Wetlands Institute returned to the lower Keys to revisit islands where populations had previously been discovered. The purpose was to investigate two questions: 1) has the population of mangrove terrapins in the lower Keys been significantly altered since the early 1980s; and 2) could marked individuals from the early 1980s be recovered, thus establishing (potentially) the best longevity data for any population of diamondback terrapins rangewide? The results of this survey work will be used in conjunction with longevity data for terrapins currently being developed at the Wetlands Institute on the basis of skeletochronology.

Skeletochronological Analysis of a Northern Diamondback Terrapin Population on the Cape May Peninsula in Southern New Jersey

Benjamin K. Atkinson (The Wetlands Institute and Chelonian Research Institute) and Dana J. Ehret (University of Florida)

Counting growth rings on scutes is a typical technique used to age turtles since it is a non-invasive, non-destructive practice. However, there are numerous problems with this method, including the deposition of multiple annuli per year, and their tendency to wear smooth over time. In recent years, skeletochronology has become an alternative method for determining age estimates in turtles and other reptiles. Skeletochronology involves cutting a thin-section of bone (typically from the humerus or femur) and observing the presence of periosteal layers, especially lines of arrested growth (LAGs). LAGs reflect times of minimal or no growth and appear as dark rings within the bone. Their counterparts, marks of skeletal growth (MSGs) appear as wider, light bands and are records of rapid or steady growth. The northern diamondback terrapin, *Malaclemys terrapin terrapin*, is a subspecies that experiences dramatic seasonal change, hibernating for several months of each year, depositing both MSGs and LAGs. Therefore, this subspecies is ideally suited for analysis. Skeletochronology provides a clearer picture of the life history of diamondback terrapins and can ultimately contribute to their conservation.

The Effectiveness of Bycatch Reduction Devices on Crab Pots at Reducing Capture and Mortality of Diamondback Terrapins (*Malaclemys terrapin*) in Florida

Dr. Joseph A. Butler (University of North Florida) and George L. Heinrich (Heinrich Ecological Services)

Diamondback terrapins (*Malaclemys terrapin*) drown in blue crab (*Callinectes sapidus*) pots throughout their range. The objectives of this study were to: 1) test if bycatch mortality of diamondback terrapins in commercial crab pots is reduced by using bycatch reduction devices; 2) determine if bycatch reduction devices affect crab catch in Florida by comparing sex, size, and number of blue crabs captured in standard crab pots with those captured in pots equipped with bycatch reduction devices; and 3) formulate recommendations to the Florida Fish and Wildlife Conservation Commission for regulations that reduce terrapin bycatch mortality in Florida waters. We fished 15 standard crab pots (controls) and 15 crab pots with bycatch reduction devices (experimentals) for 10-day periods at two sites per year from 2002 through 2005. Study sites were located in eight Florida counties with one sample period per county. Pots were checked daily and baited on alternate days. We determined sex of all captured terrapins and blue crabs and took measurements of each that would allow us to evaluate if bycatch reduction devices affected the size of either species. Thirty-seven terrapins were caught in control pots and four in experimentals. Several were small enough that they would not have been prevented from entering either pot treatment, but we found that 73.2% of the terrapins in this study could have been prevented from entering crab pots with functional bycatch reduction devices. There were no significant differences between the sex, measurements, or number of legal-sized crabs captured in control and experimental pots at any of the study sites. We recommend that the Florida Fish and Wildlife Conservation Commission devise and adopt regulations that require the use of 4.5 x 12 cm bycatch reduction devices on all commercial and recreational crab pots in Florida without delay.

Raccoon Removal and Terrapin Nest Success

Eric Munscher and Zach Mullin (University of North Florida)

no abstract submitted

Status of the East Central Florida Aquatic Preserves Diamondback Terrapin Project

Sharon Tyson (Florida Department of Environmental Protection)

Land and boat-based surveys are being conducted by the East Central Florida Aquatic Preserves office to determine the status of known populations of diamondback terrapins along shorelines and islands of the Indian River Lagoon. The study will assess the status of populations documented during a distribution, behavior, and mark-recapture study that was conducted between 1992 and 1999. Initial surveys during summer and fall of 2005 have demonstrated reduced numbers and no presence of diamondback terrapins where previously common. A cooperative network of commercial crab and net fishermen are identifying areas of concentrated populations. Expanding the scope of the survey area to areas outside Brevard County is planned as well as soft-release of captive terrapins. Public outreach efforts are being undertaken including ghost crab pot cleanups and workshops.

Proposed Florida Fish and Wildlife Conservation Commission's Diamondback Terrapin Conservation Issue Team

David G. Cook (Florida Fish and Wildlife Conservation Commission)

Butler and Heinrich have completed their research on bycatch reduction devices (BRDs) in crab pots in 8 Florida counties. Their results demonstrate the effectiveness of BRDs in reducing terrapin mortality without compromising crab-catching effectiveness. The manuscript describing the work is expected to be published soon, and recommends that the Florida Fish and Wildlife Conservation Commission (FWC) implement a rule change to require BRDs in crab pots used in Florida. The FWC recently adopted the protocol of initiating "issue teams" to address issues expected to result in an agency position or rule change. The Florida Diamondback Terrapin Working Group meeting seems to be an appropriate forum to explore the establishment of an FWC issue team involving terrapins. It would be especially helpful to discuss: a) how crab pot mortality ranks among other threats to terrapin conservation in Florida; and b) whether the scope of an issue team should be limited to the emerging BRD issue or address a broader suite of subjects.

3:30 pm: Break

3:45 pm: Setting a course of direction for the Florida DTWG (facilitated by George L. Heinrich)

1) review of potential short and long-term projects identified at the 2005 regional meeting

2) selection and development of a specific project or projects

a) develop a brochure or flier on terrapins and DTWG: Kevin Kemp offered to work on a national DTWG brochure; Dana Ehret offered already existing info; George L. Heinrich offered to provide input (this is a national level project requiring direction from officers)

b) prepare a letter to NWR, USGS, NPS, and NOAA introducing DTWG: this is a national level project requiring action to be taken by officers

c) prepare a letter of support to aquatic preserves expressing need to consider terrapins in management efforts: draft to be prepared by Sharon Tyson

3) identification of project leader(s)

no project leaders identified at this time

4:45 pm: Wrap-up including decision on next meeting host, location and date

next meeting: Saturday, 10 February 2007 at U.S. Geological Survey (St. Petersburg; local host: Kristen Hart)

Closing remarks (Dr. Tony Tucker, Mote Marine Laboratory)

5:00 pm: Meeting adjourned

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