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# Population Survey of the Texas Diamondback Terrapin in San Antonio Bay, Matagorda Bay, and Sabine Lake: Preliminary Results



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# Diamondback Terrapin (*Malaclemys terrapin*)



- Range: New England to Florida and Texas
- Diet: hard-bodied invertebrates (*Littorina* spp.)
- Multi-clutch (1-3 clutches; 4-22 eggs per clutch) (Brennessel 2006)
- 7 subspecies (Ernst and Lovich 2009)



# Texas Diamondback Terrapin (*Malaclemys terrapin littoralis*)

- W. Louisiana to Baffin Bay
- Status unknown
- Deep carapace, terminal knobs on median keel



# General Texas Life History

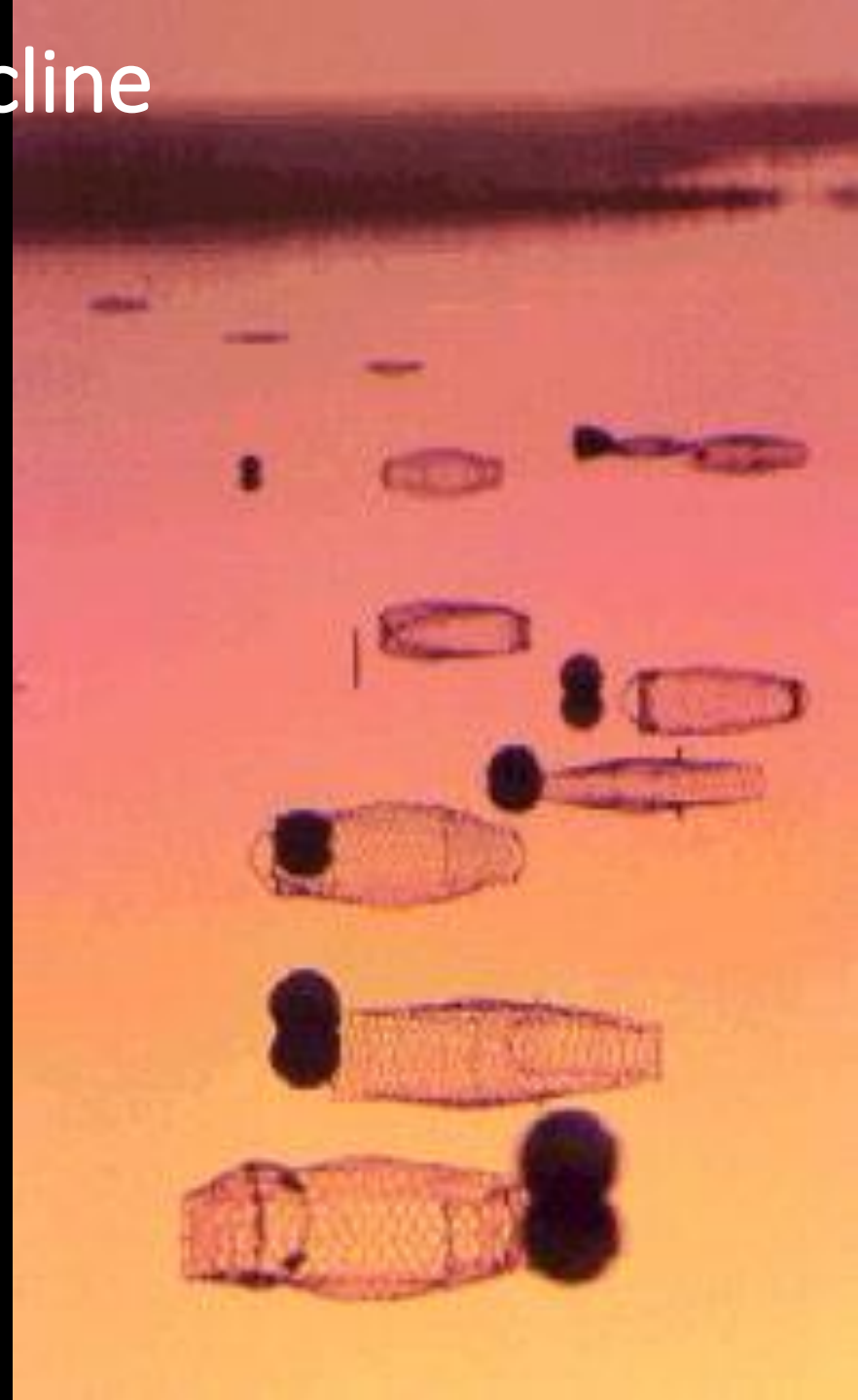


- Seasonal brumation: mud or creek bottom
- Active late February-early November
  - Breeding: March-April
  - Nesting: April – May
- Hatching: temperature dependent (60-73 days)
- Mature males
  - Average 9 cm
  - 3-7 years old
- Mature females
  - Average 12.2-17.6 cm
  - ~6-13 years old



# Factors Responsible for Decline

- Historical targeted harvest
- Bycatch (other fisheries)
  - 1940s: wire crab trap developed
  - Use expanded through bay systems
  - Present: used exclusively in the Texas Blue Crab fishery
- Loss of critical shell substrate through commercial shell dredging
  - Used for nesting
- Accelerated coastal development in 1940's-1970's
  - Large losses of coastal wetlands
  - Destruction of nesting beaches





# Concerns in Texas

- Population status unknown
  - Mixed information
  - Lack of long-term monitoring
  - Lack of standardized methods
- Thought to be sensitive to local extirpations
- Commercial crab fishery – bycatch
- Habitat loss
- Vessel collisions





# Need for Coast-wide Assessment

- Previous data collected in:

- Nueces Bay
- Galveston Bay
- E. Matagorda Bay

- Data Lacking:

- Aransas Bay
- Copano
- Corpus Christi
- San Antonio
- Matagorda
- Sabine Lake



- Recent studies in Sabine indicate large marsh population on LA side (Selman and Baccigalopi 2012)
- NEED information from biologists, naturalists etc.
- Old “newspaper” accounts especially helpful



# Current Research

- Population Distribution - San Antonio Bay, Matagorda Bay and Sabine Lake
- Funded by TPWD Grant (2 year study)
- Goal – Using literature (gray and published) and new field data attempt to update information on:
  - Distribution
  - Density
  - Demographics

# Objectives

- Compile historical database for distribution and sightings along the Texas coast
- Perform field searches in historically known and previously undocumented areas along Texas coast through Sabine Lake, Matagorda Bay, and San Antonio Bay
- Compile modern database for distribution and sightings along the Texas coast



# Site Selection

## San Antonio Bay 1

### ArcGIS Modeling

- Randomized locations

### Clusters of sites within bay systems

- Sabine: 60 sites; 7 clusters
- Matagorda: 100 sites; 14 clusters
- San Antonio: 100 sites; 9 clusters

### Randomly selected site visits

Included “suitable” and “non-suitable sites”



# Methods

- Perform field searches in historically known and previously undocumented areas along Texas coast through Sabine Lake, Matagorda Bay, and San Antonio Bay
  - Modified crab traps
  - Head count surveys
  - Walking transect surveys





# Field Survey Results

- 4 sites fully sampled within Aransas NWR
  - 2 Matagorda Island
  - 0 terrapin observed with any sampling method
- Within San Antonio Bay
  - 8 sites fully sampled
  - 0 terrapin observed with any sampling method
- Matagorda Bay and Sabine Lake
  - Terrapin captured at 5 of 24 sites sampled ( $n = 24$ )



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# Methods

- Compile modern database for distribution and sightings along the Texas coast
  - Online questionnaire
  - Agency officials, fisherman, crabbers, charter captains, eco-tourism representatives, etc.
  - Open from April-August
  - 8 major bay systems
  - Clickable map for location identification
  - Estimated # terrapins observed
  - Season observed

# Survey Results

- 200+ individuals sent link to survey
  - 75% responded (n = 158)
  - 36% completed surveys (n = 76)
- 155 terrapin sightings recorded
  - 6 of 8 bay systems with confirmed sightings
  - > 1700 estimated terrapin reported





# Survey Results - Seasonality

- Most often observed in summer (40.7% of responses)
  - Most active time of year (nesting/mating)
  - Humans also more active
- Spring = 28.3% of responses
- Fall = 16.4% of responses
- Least often observed in winter (5.8% of responses)
  - Period of brumation

# HAVE YOU SEEN ME?



The Environmental Institute of Houston (EIH) is researching Texas Diamondback Terrapins, in cooperation with Texas Parks and Wildlife and the US Fish and Wildlife Service. If you have seen one of these turtles, please call our main office at 281-283-3950 or email [eih@uhcl.edu](mailto:eih@uhcl.edu) with the following information:

- Date and time
- Location (GPS coordinates if possible)
- Any photographs you may have
- Your name/contact information



- Recreational fisherman report
- "Have You Seen Me?" fliers



Please do not pick up or disturb any of the terrapins you may see. Thank you!

For more information about this and other projects, please visit our website:

<http://prtl.uhcl.edu/portal/page/portal/EIH/research>



University  
of Houston  
Clear Lake



# Summary

- Compile historical database for distribution and sightings along the Texas coast
- Perform field searches in historically known and previously undocumented areas along Texas coast through Sabine Lake, Matagorda Bay, and San Antonio Bay
  - No terrapin found in Aransas NWR
- Compile modern database for distribution and sightings along the Texas coast
  - Large response pool
  - Terrapin observed in all mid-upper coast bay systems

# Acknowledgements

- Texas Parks and Wildlife Department
- Aransas National Wildlife Refuge
- JD Murpree Wildlife Management Area
- Texas Point National Wildlife Refuge
- Louisiana Department of Wildlife Fisheries
- Various landowners
- Survey responders
- Graduate student and local volunteers



Thank You!

