Assessing Marine Turtle Habitat and Movement Within an Important Marine Corridor, the Florida Current

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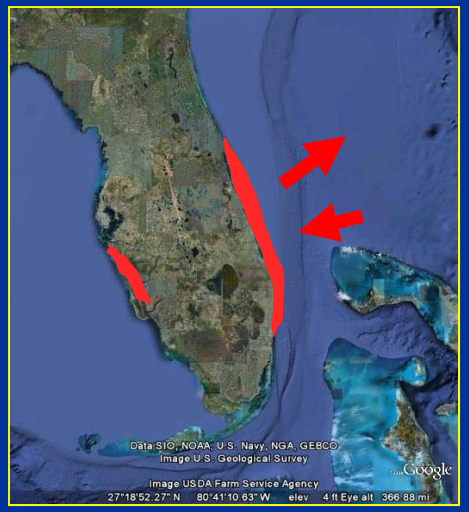
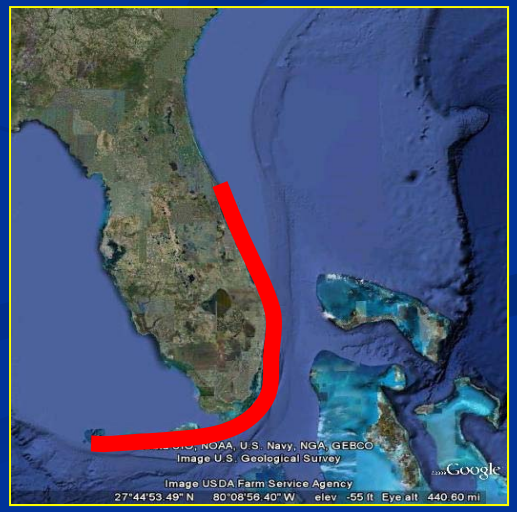
Sea Turtles in Florida

- 5 of 7 species in Florida & Southern Gulf Stream waters
- Migratory throughout life
- Florida coast serves as one of the world's largest nesting rookeries
- Nearshore waters are feeding grounds





Complex Life History

Sea Turtles as Protected Species

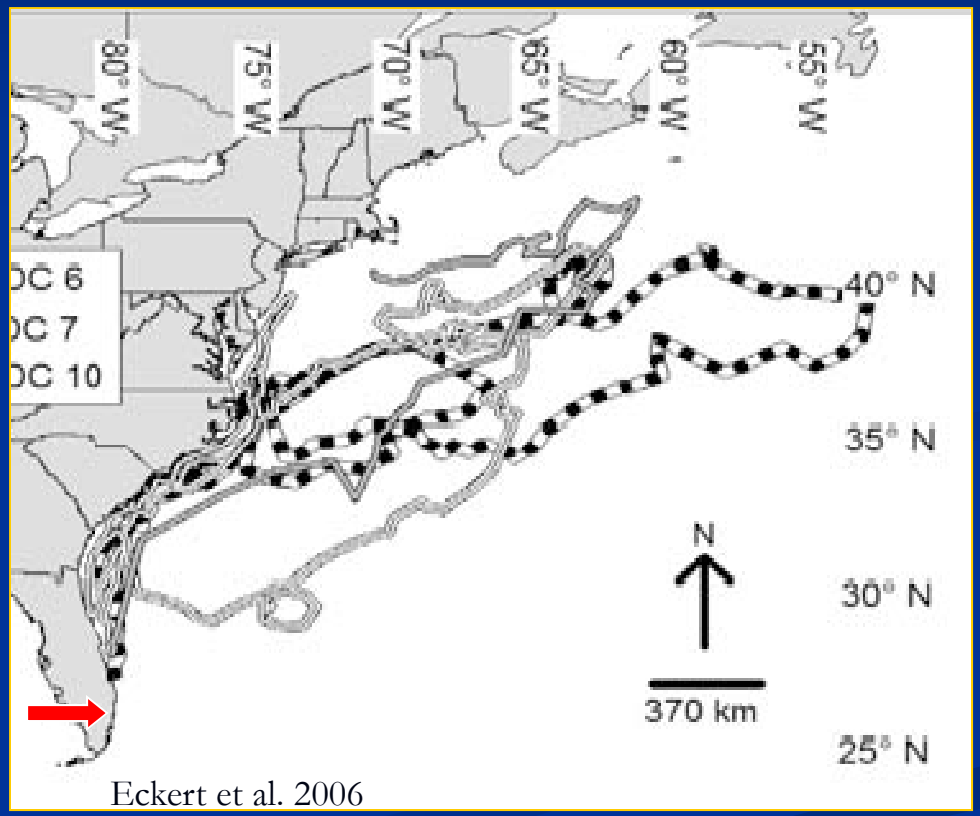
- Endangered Species Act
  - Magnuson-Stevens Fishery Conservation and Management Act - in water activities require a NOAA National Marine Fisheries Service (NMFS) Permit
  - Take – "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct."


Photo by M. Lamont


Photo by J. Perrault

Photo by D. Baron

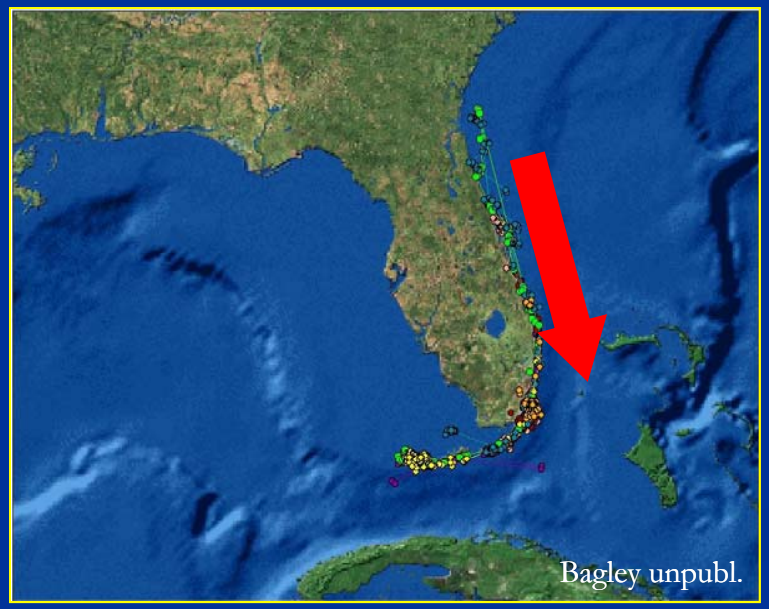
Migratory

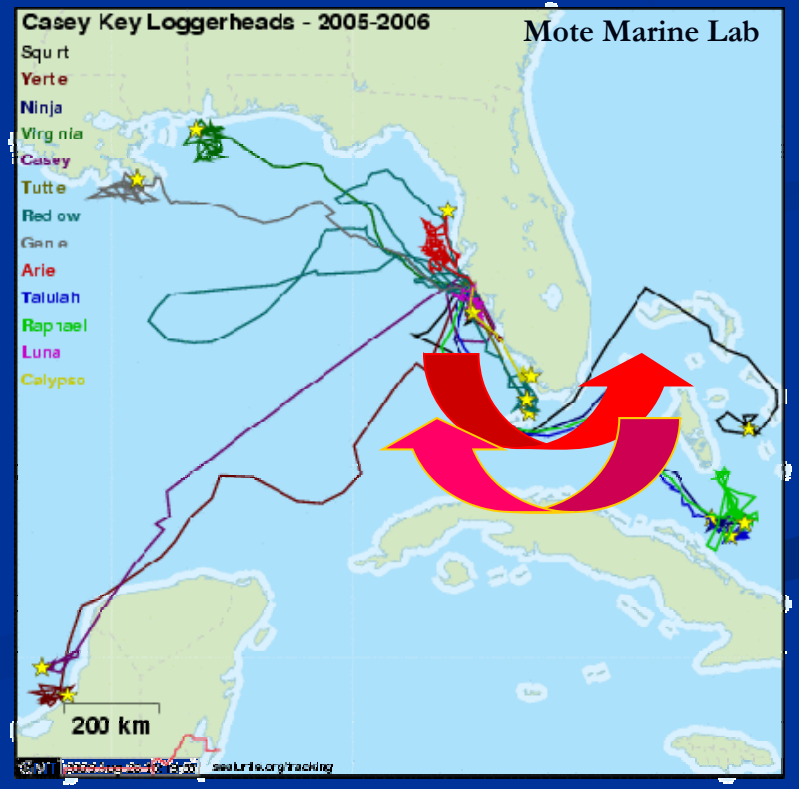


Eckert et al. 2006

Migratory Pathways

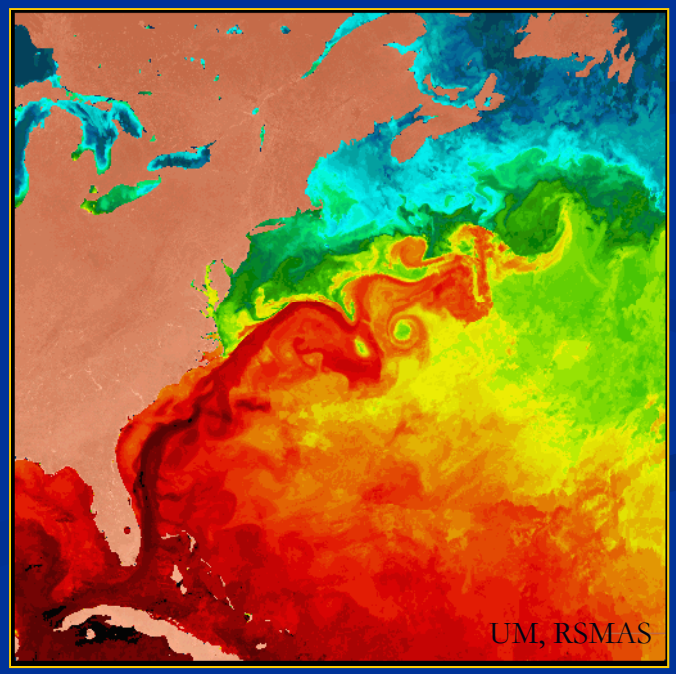
- Seasonal migration of juveniles
- Adults migrate to and from southwest Florida
- Migrate from Atlantic coast to Keys, Bahamas, southwest Florida
- Marine corridors





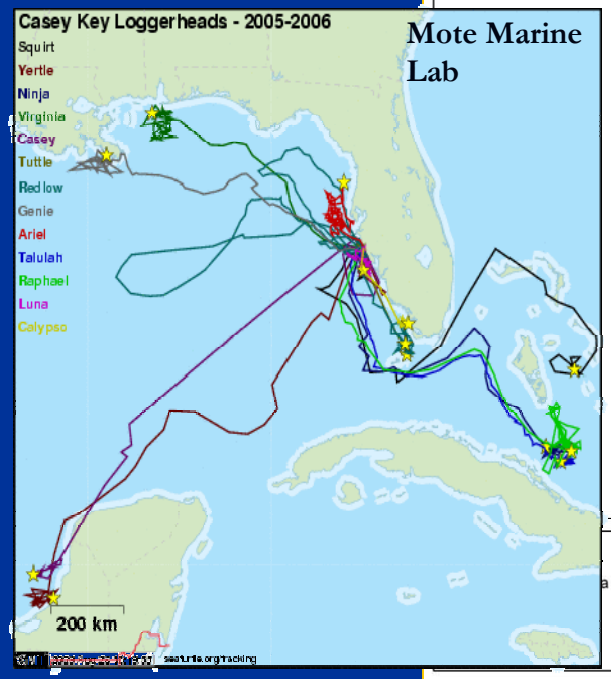
Turtles & Ocean Features

- Currents
  - Hatchling dispersal – Gulf Stream
  - Juvenile and adult migrations
- Important oceanic habitats for juveniles and adults
  - Gyres & eddies
  - Convergence zones
  - Frontal boundaries
- Temperature



Limited In-water Information

Photo by T. Tucker



Mote Marine Lab

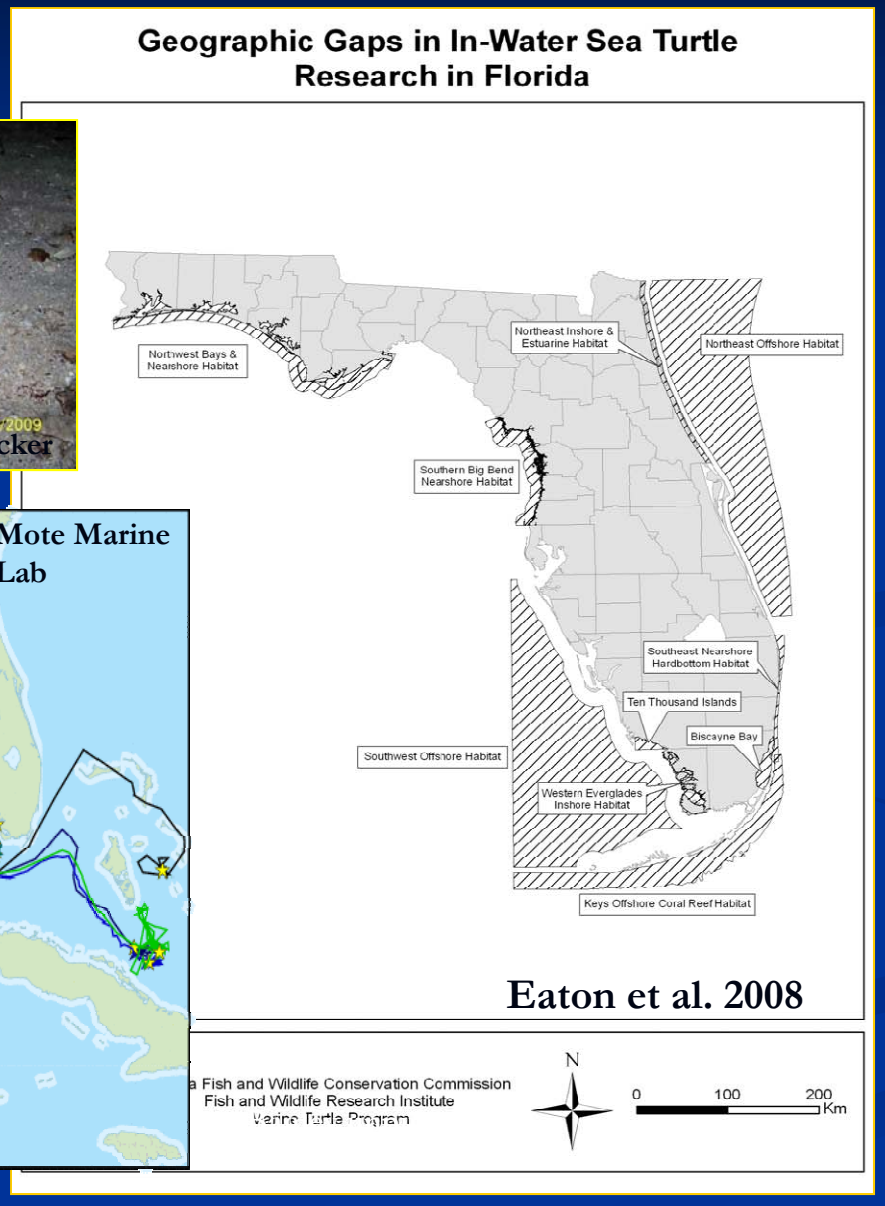


Photo by D. Baron

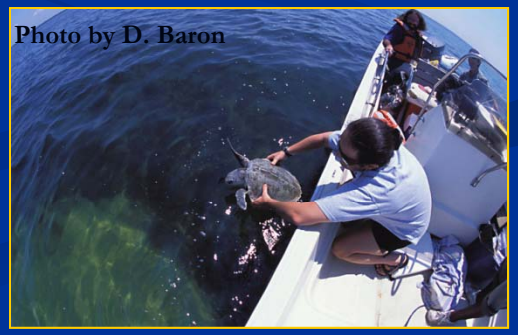
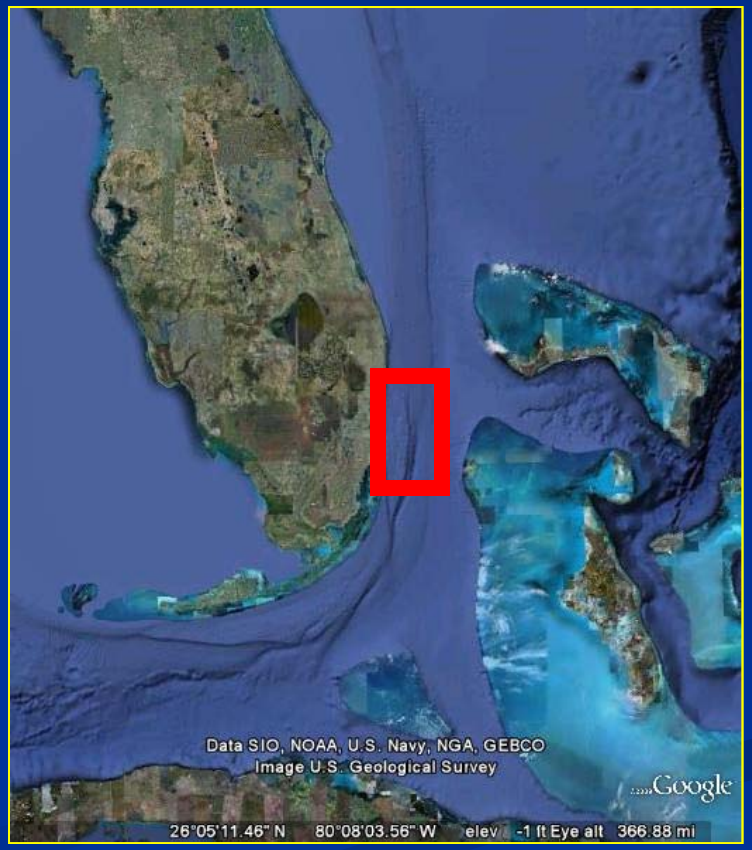


Photo by D. Baron

Turtles in the Florida Current

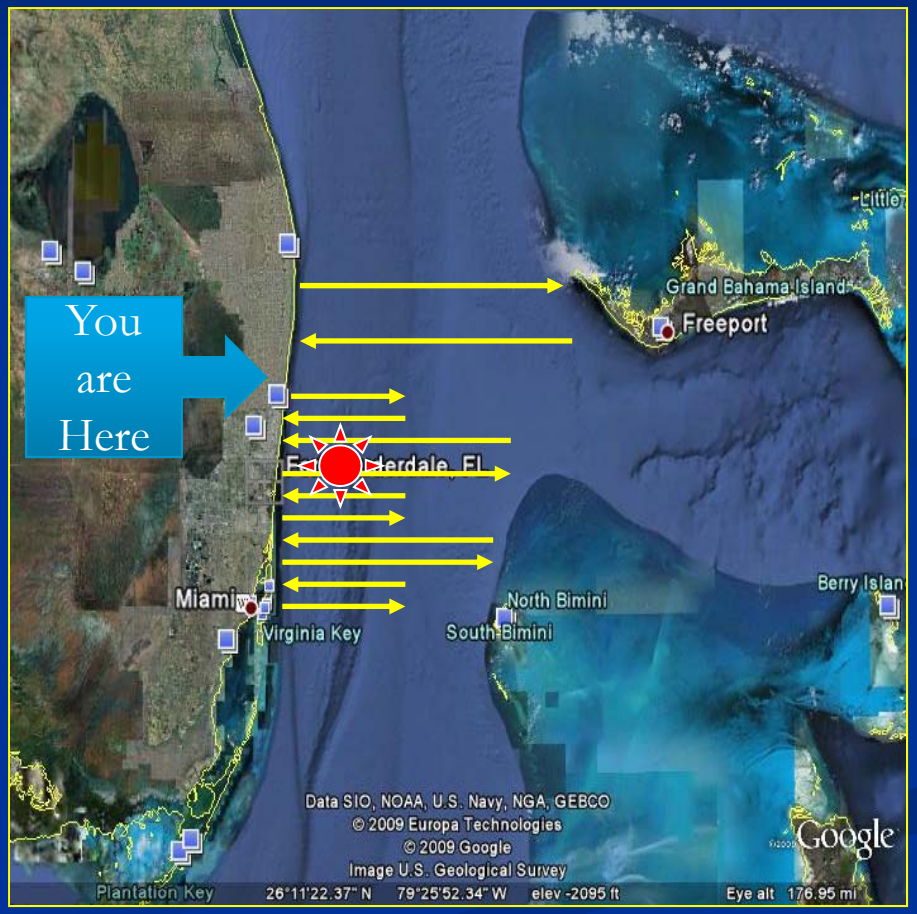
- How can ocean energy technologies avoid takes?
- Where are they?
- Who are they?
  - Species / size classes
- When are they there?
- What are they doing?



Objectives

- Baseline data
  - Assessing abundance and distribution of turtles prior to deployment of OET structures
- During deployment
  - Identify how structures/vessels affect turtle movement & migration
  - Determine downstream and upstream effects
- Evaluate potential long term effects
- Further our understanding of how marine turtles utilize the Florida Current
- Identify ways to minimize takes

Methods: Aerial Surveys



Detection Issues with Marine Animal Assessments

- Availability - Sea turtles spend most of their time underneath the surface
- Divers
  - up to 1200m
- Weather
  - changes visibility

- Apply correction factors & variance adjustments as defined by conditions during sampling

Co-Benefits to Turtle Conservation

- Information on surface currents, water column, and temperature
- Deployment of off-shore sensors
- Info on turtles in the Florida Current
- Further our understanding of how turtles using the Florida Current & Southern Gulf Stream
- Applications to other turtle habitats
- Development & access to new technology
- Enables evidence-based mitigation plans

Acknowledgements

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