Time-Animated Data: Acoustic Telemetry off the South Carolina and Georgia Coast

Tanner Arrington*
Erin Koch**
Mike Arendt**

South Carolina Department of Natural Resources
*Land, Water, & Conservation Division
**Marine Resources Division
Coastal Receiver Array (CRA) Project
Existing Receiver Array
Receiver Deployment Techniques

Surface-mounted
- currently 46 deployed

Seafloor-mounted
- currently 75 deployed
Collecting and Sharing the Data

- Downloading detection data from a receiver
- Distribution of researchers who have tagged animals
Species Detected

**Species Detected**

- **Sturgeon**
  - Atlantic Sturgeon
  - Shortnose Sturgeon

- **Sea Turtles**
  - Loggerhead Sea Turtle
  - Kemp's Ridley Sea Turtle

- **Other Finfish**
  - American Shad
  - Black Drum
  - Cobia
  - Goliath Grouper
  - Great Barracuda
  - King Mackerel
  - Red Drum
  - Southern Flounder
  - Striped Bass
  - Tarpon
  - Tripletail

- **Sharks and Rays:**
  - Prohibited take Species
    - Sand Tiger Shark
    - White Shark
  - Large Coastal Species
    - Blacktip Shark
    - Bull Shark
    - Lemon Shark
    - Spinner Shark
    - Tiger Shark
  - Small Coastal Species
    - Blacknose Shark
    - Bonnethead Shark
    - Finetooth Shark
  - Hammerheads
    - Scalloped Hammerhead
    - Great Hammerhead
  - Rays
    - Bluntnose Ray
    - Cownose Ray
    - Roughtail Ray

**Permit #15677**

**Permit #19621**

Species in **Bold** were used in Tagged Species Viewer
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Principal Investigator of the CRA project, Dr. Mike Arendt who challenged us to develop a tool to visualize the seasonal, spatial patterns of these species.

Tanner Arrington for lending his expertise to this project.

SCDNR Divers/Logistical Support

GADNR Divers/Logistical Support

Others:
-D. Fox, C. Hager, M. McCallister, P. Spies, J. Kramer, E. Reyier, M. Powers for their contributions to field deployment technique ideas and refinements
-The 38 researchers who tagged the >850 transmitters that we’ve detected thus far; ACT (L. Brown, D. Fox) and FACT (J. Young, E. Reyier) networks as well as Vemco (D. King) for vital assistance with identifying taggers and data sharing protocols

Funding NMFS Grants to States Program (Grant NA13NMF4720045)

CRA website http://www.dnr.sc.gov/marine/receiverstudy/index.html
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What’s required?

• ArcGIS Desktop
• ArcGIS Online or Portal
  • Ability to publish to Feature Layers
• In this case, ArcGIS JavaScript API
  • Not required, could use AGOL templates with Time Slider
Setup happens in ArcMap

- A record for EACH DATE and LOCATION.
- Don’t need a record if no tag days.
Enable time on this layer

Layer Time: Each feature has a single time field

Time Field: Date
Sample: 12/1/2013
Selected field is not indexed. Index the fields for better performance.

Field Format: [Date/Time]

Time Step Interval: 1 Months

Layer Time Extent: 12/1/2013 12:00:00 AM To: 5/1/2016 12:00:00 AM
Calculate

Data changes frequently so calculate time extent automatically.

Advanced settings

Time Zone: none

Values are adjusted for daylight savings

Time Offset: 0.00 Years

Display data cumulatively

Required!
Basically a definition query, automatically based on time period.
Publish Feature Layer from ArcMap
Enable Time in AGOL Feature Layer

Description
Testing of tagged marine species at receiver locations off of North Carolina coasts.

Layers
web_ani_Aug_2016

Access and Use Constraints
Viewing Time in AGOL
Viewing Time in AGOL
Developing Page w/ ArcGIS JavaScript API

Why use the JS API?
- Extend functionality
- Customize symbology
- Customize design
Initiating FeatureLayer is easy ^

TimeSlider is available in API (v 3.x)

Symbology – set ‘Renderer’

Dropdowns – html/JQuery

ArcGIS API for JavaScript
Thanks!

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And Erin Koch who invited me to help out with this challenging and fun project.

Animations page demo
dnr.sc.gov/marine/receiverstudy

Tanner Arrington – arringtont@dnr.sc.gov
Acknowledgements

SCDNR Divers/Logistical Support
A. Lytton, J. Evans, K. Spanik, K. Kolmos, S. Goldman, J. Schwenter, E. Waldrop,
Falk, M. Levisen, D. Cain, A. Scott, B. Frazier, L. Vinyard

GADNR Divers/Logistical Support
T. Blount, D. Franco, R. Harrell, B. Hilton, C. Kinstle, G. Meeks, J. Mericle,
J. Sellazzo, P. Medders, S. Woodward

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