



# OD34A-2491 iTAG: Integrating a Cloud Based, Collaborative Animal Tracking Network into the GCOOS data portal in the Gulf of Mexico

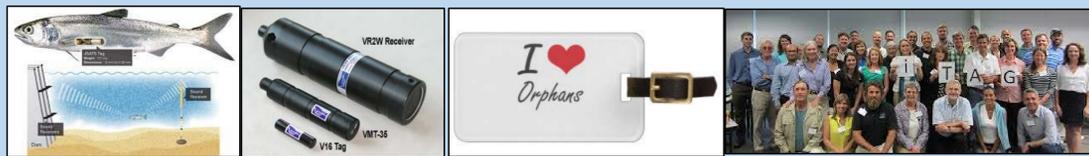


Barbara Kirkpatrick<sup>1</sup>, Robert Currier<sup>1</sup> and Chris Simoniello<sup>1</sup>

<sup>1</sup> Gulf of Mexico Coastal Ocean Observing System & Texas A and M University, College Station, TX Contact: Barb.Kirkpatrick@gcoos.org

## INTRODUCTION

The tagging and tracking of aquatic animals using acoustic telemetry hardware has traditionally been the purview of individual researchers that specialize in single species. Concerns over data privacy and unauthorized use of receiver arrays have prevented the construction of large-scale, multi-species, multi-institution, multi-researcher collaborative acoustic arrays.



## METHODS

We have developed a toolset to build the new portal using the Flask microframework, Python language, and Twitter bootstrap. The privacy policy has been praised for its granularity: principal investigators can choose between three levels of privacy for all data and hardware:

- Completely private viewable only by the PI
- Visible to iTAG members
- Visible to the general public



## DATA BASE

Maintaining schema-level compatibility with the proposed metadata convention for animal acoustic telemetry will allow iTAG to share data with other projects that adhere to this standard. At the time of publication, iTAG has implemented the receiver deployment (Figure 1) and tag release Schemas (Figure 2). All of the mandatory fields are included. Some optional fields are excluded and may be added at a later date.

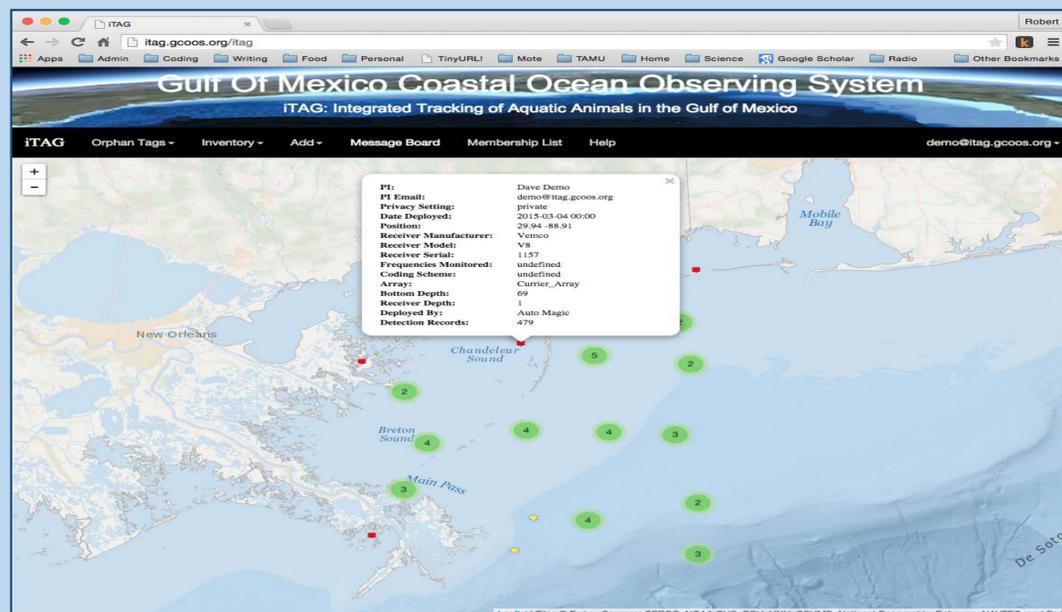


Figure 1. Receiver pop-up box displaying receiver attributes

Column	Type	Modifiers
id	integer	not null default nextval('tag_release_id_seq'::regclass)
pi_email	text	
pi_name	text	
release_project_reference	text	
datacenter_reference	text	
tag_device_id	text	
release_guid	text	
release_reference_id	text	
release_reference_type	text	
release_latitude	double precision	
release_longitude	double precision	
release_datetime_utc	timestamp with time zone	
expected_enddate	date	
tag_manufacturer	text	
tag_model	text	
tag_serial_number	text	
tag_frequency	text	
tag_coding_system	text	
transmitted_id	text	
transmitter_name	text	
transmitter_type	text	
tag_programming_id	text	
privacy	text	
the_geom	geometry	

Indexes:  
"tag\_serial" UNIQUE CONSTRAINT, btree (tag\_serial\_number)

Figure 2. Schema for tag release table



Figure 3. A happy iTAG PI seeing her tags in the orphan database

Reporting PI	Tag ID	Detections	Edit	Delete
susan.lowere-barbieri@myfwc.com	A69-1105-85	20	🔒	🗑️
susan.lowere-barbieri@myfwc.com	A69-1303-10483	283	🔒	🗑️
susan.lowere-barbieri@myfwc.com	A69-1105-181	21	🔒	🗑️
susan.lowere-barbieri@myfwc.com	A69-1105-179	20	🔒	🗑️
demo@itag.gcoos.org	A70-999-9999	12	🟢	🗑️

Figure 4. Orphan tag display for logged-in members

## DISCUSSION

The iTAG portal is now 'live' to the iTAG community. Feedback received to date indicates that with the proper design and security features, and an iterative cycle of feedback from potential members, constructing a collaborative acoustic tracking network system is possible. Initial usage will be limited to the entry and searching for 'orphan/mystery' tags (Figures 3 and 4), with the integration of historical array deployments and data following shortly thereafter. We have also been working with staff from the Ocean Tracking Network to allow for integration of the two systems. The database schema of iTAG is based on the marine metadata convention for acoustic telemetry. This will permit machine-to-machine data exchange between iTAG and OTN. The integration of animal telemetry data into the GCOOS portal will enable researchers to more readily understand observed animal response and habitat usage patterns in the context of the physiochemical environment in which species reside.

## ACKNOWLEDGEMENTS

Our thanks to the iTAG and OTN community and especially Sue Barbieri and Joel Bickford for their help on this project. Funding was provided by the US IOOS Program Office, grant #NA11NOS0120024