

**NSDI Cooperative Agreements Program
Metadata Training & Outreach Project
Final Project Summary**

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Final Report

Organization: Florida Fish and Wildlife Conservation Commission, Fish and Wildlife
Research Institute

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Project Narrative

Coincident with this agreement, the Florida Fish and Wildlife Conservation Commission (FWC) was reorganized and the former Florida Marine Research Institute (FMRI) became the new Fish and Wildlife Research Institute (FWRI). Thus, FWRI not only includes marine research, but has been expanded to include freshwater fish and wildlife (*e.g.*, bears, panthers, and birds) research.

FWC has also implemented a "Data Inventory" project to identify all of its data holdings from the 1960s to present. This effort has brought the need for metadata within our agency to the forefront. Staff has worked diligently with numerous freshwater fish and wildlife researchers to introduce them to the concept of metadata. Over 700 records were collected as part of the Data Inventory project and preliminary metadata (*i.e.*, 11 fields, 7 of which are FGDC-compliant) were captured for each of these records. Table 1 details the Data Inventory records collected, by section/sub-section. These preliminary metadata records will form the foundation of FWC's metadata holdings. Complete FGDC-compliant metadata records will be developed for priority datasets.

In addition to expanding FWC metadata efforts, we worked with the following entities to advance/support their metadata efforts: University of Miami-Rosenstiel School of Marine and Atmospheric Science (RSMAS) Library, and University of South Florida (USF) – College of Marine Science. Collaboration was extended to Florida Department of Environmental Protection's (FDEP) Bureau of Emergency Response (BER) and the U.S. Coast Guard District Seven Marine Safety Office, via FDEP-BER, through the FWC-FWRI GIS efforts.

Table 1. Number of Data Inventory records collected by section/subsection.

FWRI Section	Subsection	Pre 2005 Metadata Records	Data Inventory
Ecosystem Assessment and Restoration	Fish and Wildlife Forensics	0	0
	Fish and Wildlife Health	3	22
	Habitat Research	12	18
	Harmful Algal Blooms Research	111	23
	Total	126	63
Freshwater Fisheries Research	Fisheries Biology	0	120
	Freshwater Resources Assessment	0	76
	Total	0	196
Information Science and Management	Center for Biostatistics and Modeling		
	Center for Spatial Analysis	491	215
	Information Access		
	Socioeconomic Assessment		
	Collections	1	18
	Total	492	233
Marine Fisheries Research	Fisheries Biology	31	66
	Fisheries Dependent Monitoring	3	10
	Fisheries Independent Monitoring	16	18
	Fisheries Stock Assessment	1	69
	Keys Fisheries Research	34	13
	Fisheries Stock Enhancement Research	10	8
	Total	85	184
Wildlife Research	Avian Research	0	14
	Terrestrial Mammal Research	0	11
	Marine Mammal Research	59	16
	Reptile and Amphibian Research	0	12
	Marine Turtle Research	5	0
	Total	64	53
	Total	1236	729

Metadata training and outreach assistance

The following narrative takes our goals for this project one-by-one, as identified in our proposal, and reports on our status. Table 2 provides a summary of our efforts.

- *Modify our training materials to remove references to FWC-FMRI required standards for all non-FMRI participants.*

The FMRI manual has been updated to reflect the move to FWC-FWRI. It was decided that by making a few modifications, the references to FWRI metadata records could be retained as examples to be used in training. Good examples of completed metadata records go a long way in explaining the types of information needed.

- *Add a section on the role and importance of NSDI to our training materials.*
A description of the NSDI has been added to the training manual. The importance of consistency across all data documentation is discussed during training sessions.
- *Visit RSMAS to meet with key personnel and scope out a process to identify datasets and responsible staff that will work with metadata. In this same visit, we will determine the class size, location and timeframe for the training session.*

During the initial visit, the FWRI metadata coordinator met with Roberta Rand, RSMAS head librarian, and two graduate students who would lead the metadata team in creating metadata records. A strategy was developed for contacting individual scientists and persuading them to participate in this effort. Spatial Metadata Management System (SMMS) software was installed on a library desktop computer, standards were discussed and manuals were given to the students. The consensus among participants was that we would stay in contact by phone and e-mail, and that further visits would be scheduled, if needed. Several weeks later, it was decided that a second SMMS software license was needed to facilitate data entry. Communication, via phone calls and e-mails, occurred as specific metadata questions surfaced. Issues were easily resolved in this manner. As the students became comfortable with metadata creation, regular phone calls and e-mail messages were sent to ensure that the process remained on track. Additional on-site visits were not needed during this grant period.

The following was provided by our RSMAS contact and describes our interaction from her perspective:

“We agreed to participate in FWRI’s efforts on Metadata Trainer and Outreach Assistance and the following list provides the progress and status of creation of Metadata records of RSMAS program:

Progress

Assistance for this project has so far exceeded our expectations. We had one formal workshop where everyone on board (at the time) was introduced and had the opportunity to set up a learning method that would meet their individual needs.

The staff is comprised of graduate students. What seems to work best for them is an interactive helpline. If someone has a question it is broadcast to all the students and trainer. A time is arranged whereby people can be online to chat back and forth.

Status

During the time of the project more than 30 metadata records were created. Many of the have digital data attached to them -- and several have promises of digital data yet to come. A major accomplishment from our perspective is that they were created in a standard format that provides the opportunity for publishing our scientific works - which ultimately visualizes the work at RSMAS worldwide. The records further provide more scientific information to the world for a better society. The students take the knowledge with them as they move on and hopefully this kind of thought process becomes part of their science, as well.

Strengths and weaknesses are the same. That is, we are dependent on the graduate students schedule. A workaround is to have more students on staff so the work continues as regularly as possible. A strength is the research is more readily interpreted since many of the students are doing similar work.

Many of the hard questions are yet to be answered. They include: how to sustain the project? Outside funding for a portion of the salaries and hardware - as well as some technical assistance - will be necessary. “

- *Visit with USF-Marine Science key personnel to determine the same items as those discussed with RSMAS staff. If it is beneficial, a joint training session will be held at FWC-FMRI, St. Petersburg, FL facility for both USF and RSMAS personnel.*

Vembu Subramaniam, our data contact at USF-College of Marine Science, is responsible for creating metadata for the Coastal Ocean Monitoring and Prediction System (COMPS). We decided to meet one-on-one for this training. SMMS software was installed on a desktop computer in his office and the FWRI metadata coordinator met with him, as needed.

The following was provided by the USF-College of Marine Science contact and describes our collaboration from his perspective:

Final Report on FWRI Metadata training and outreach assistance
University of South Florida College of Marine Science

“The University of South Florida has implemented a real-time Coastal Ocean Monitoring and Prediction System (COMPS) for the West Florida Shelf. COMPS consists of an array of instrumentation both along the coast and offshore, combined with numerical circulation models, and builds upon existing in-situ measurements and modeling programs funded by various state and federal agencies. Data and numerical products are disseminated in real-time to federal, state, and local management officials, as well as the general public, via the World Wide Web (<http://comps.marine.usf.edu>). We participated in the Florida Wildlife Research Institute (FWRI) efforts on Metadata Trainer and Outreach Assistance and the following provides the work carried out on the creation of Metadata records of USF COMPS real-time weather stations.

Work completed

- Florida Wildlife Research Institute (FWRI) provided a single user license for Spatial Metadata Management System (SMMS) software that is used to create FGDC content standard metadata.
 - Assistance was provided by FWRI Metadata coordinator to install the software at the University of South Florida, College of Marine Science computer. During the time of installation, assistance was also provided on how to use the SMMS software to create, edit, publish and manage the metadata.
 - COMPS and its associated coastal ocean monitoring program have 12 coastal sites and 6 offshore buoy sites that measures variety of meteorological and oceanographic parameters. An overall record that explains the COMPS program has been created. Individual records of each monitoring site also have been created that details the data collected at each site and its location.
 - Created USF metadata database was provided to FWRI metadata coordinator for review of the metadata records.
 - Updates/edits were carried out based on the input received from FWRI metadata coordinator.
 - The records will be published and FWRI Metadata coordinator will assist with the same.
 - Once the records get published, USF will continue to work FWRI metadata coordinator and maintain/update the records. “
- *Visit the Northeast, Northwest, North Central and South regions of FWC to meet with key personnel to introduce FWC-FWRI’s metadata standards and train them on the process and software.*

Rather than working with these groups by region, we found that it was advantageous to work with them by Division or Program. Progress was made for the following Divisions and Programs:

1. FWC-FWRI Wildlife

Two training sessions were completed with this group. The focus of the training was on metadata standards and the importance of data documentation. Immediately following the training, SMMS software was installed on 16 desktop computers, so that each of the scientists could start to create metadata records. The Wildlife group has provided

approximately 30 records so far. They began by populating the Data Inventory and are now in the process of documenting the records, as they are identified.

2. FWC-FWRI Freshwater Fish

Training was conducted on-site for staff in the Eustis office. Since this Division has staff in many locations across the state, we will look for opportunities to train these folks. Staff has identified a large number of Freshwater Fish projects (nearly 200) in the Data Inventory and have started to create FGDC/NBII-compliant metadata records.

3. FWC-FWRI Ecosystem Assessment and Restoration (EA&R)

Although, some of this group have been creating metadata for years, new members, resulting from the reorganization, required training on the metadata standards and creation process. Two staff from this program participated in the small group training, given for the Wildlife staff, in Gainesville. Other staff were trained individually.

4. FWC-FWRI Information, Science & Management (IS&M)

There is approximately twelve new staff, again the result of the reorganization, to this mostly-GIS group in our Tallahassee office. The FWRI metadata coordinator and the GIS data librarian traveled to Tallahassee to conduct a training session and install SMMS software on 12 desktop computers. The all-day training session focused on standards and metadata creation.

- *Maintain contact, via e-mail and telephone, to continue to respond to any questions, problems, or concerns that participants involved in the project might have.*
We continued to maintain contact, via e-mail and telephone, to respond to any questions, problems, or concerns that participants involved in this effort might have. Typically, a contact person for each group is established at the first meeting. Regular calls and e-mails (in both directions) help to keep everyone on track.
- *Conduct follow-up site visits for RSMAS. We anticipate up to three follow-up visits for RSMAS, as they are in most need of setting up standards and determining procedures that will work for them within the guidelines of FGDC standards.*
One visit was made to RSMAS. The group, headed up by Roberta Rand, head librarian, is very pleased with their progress. We received a weekly report on their metadata creation during the grant period.
- *Conduct one follow-up site visit for each of the other Divisions and organizations. It has been our experience that "out of sight" truly equates to "out of mind." It is essential to have a physical presence to remind participants of the importance of this effort and review any and all questions/concerns that they might have.*
Two visits have been made to the Wildlife lab in Gainesville. Follow-up visits to other areas are still in the planning stages.
- *Work with FWC-FWRI GIS staff to create and maintain metadata using FGDC and FWC-FWRI standards for the Coast Guard and Bureau of Emergency Response.*
We continue to work with our GIS section, Information and Science Management group to identify and document additional data.
- *Post all verified and approved metadata on the FWC clearinghouse, once it is established.*
After much consideration, it was decided that, for now, we would post our metadata to the NBII Clearinghouse.

Training - Training was conducted for small groups or on an individual basis. Both approaches can work well, and are dependent on the needs of the partner. For example, the Wildlife section is new to metadata, so it was necessary to meet with approximately 20 biologists to teach them about metadata, the standards, and the software to enter their records. Likewise, the FWC-FWRI Information Science and Management team, in Tallahassee, experienced a near-complete turnover of staff following the reorganization. Thus, the metadata coordinator and the GIS Data Librarian traveled to Tallahassee to install SMMS on each of the PCs and to conduct training on standards and metadata creation. Training is also being conducted at the individual level. This has worked very well and has been instrumental in developing a strong working relationship between the metadata coordinator and our partners. Our USF-College of Marine Science contact, located in a building nearby, regularly appears in our office seeking assistance. This friendly and open-door policy has clearly facilitated their success in developing metadata records. RSMAS staff, although remote to our facility, was clearly motivated to create metadata for all the scientists' data -- they just needed instruction, support and backing to get started.

Table 2. Summary of Training and Metadata Collection Efforts

Organization	# of Individuals Trained	# of New Metadata Records	Level of Proficiency	# and Character of Workshops
RSMAS	3	> 30	Above Average	1 – Small Group
USF – College of Marine Science	1	18	Excellent	Individual
FWC-FWRI Wildlife	20	30	Mixed (Average to Above Average)	2 – Small Group
FWC-FWRI Freshwater Fish	2	Nearly 200	Mixed (Average to Above Average)	1 – Small Group
FWC-FWRI Ecosystem Assessment & Restoration	5	5	Above Average	Individual (except for 2 staff trained with Wildlife group)
FWC-FWRI Information Science & Management	12	233	Above Average	1 – Small Group, All Day

Status of Metadata Service

Our metadata are being served in the following locations:

- ✓ NBII Metadata Clearinghouse <http://mercury.ornl.gov/nbii/>
- ✓ USF- College of Marine Science COMPS metadata <http://comps.marine.usf.edu>.
- ✓ FWRI's GIS metadata <http://ocean.floridamarine.org/mrgis/viewer.htm>

Over 750 metadata entries have resulted from this project. The breakdown is as follows:

- ✓ RSMAS -- 34 completed records;
- ✓ USF- College of Marine Science -- 18 completed records.
- ✓ FWC Data Inventory project -- over 700 records at the Data Inventory level have been identified, over 150 full metadata records have been created.

Issues: We have learned, through conversation with the librarian at RSMAS, that funding is a critical issue for them, if they are to continue the metadata effort. She has expressed that management does not recognize the importance of metadata. Thus, the support needed for a continuing program is not in place.

Next Steps

- The effort will continue long after the performance period, as we have given the participants the information and tools necessary to produce and maintain quality, FGDC/NBII-compliant metadata themselves. Additionally, we consider all participants to be our partners in this effort and will continue to assist them with their metadata questions and concerns, long after the project's end date.
- We are in the process of changing our metadata software. We have found that software that has to be installed/licensed on individual staff's desktops can be time consuming and expensive. The decision has been made to move our metadata system to a web-based tool. This should facilitate the entry of metadata records by staff throughout the state.
- The Data Inventory project identified a significant amount of data that now needs to be fully documented. Metadata are being promoted and supported at the highest levels within FWC. Clearly, we have lots of work ahead of us!
- Time is always an issue in the creation of metadata. Those who are tasked with creating metadata are usually very busy with field work. Metadata record creation and maintenance is just one of their many responsibilities.

Feedback on Cooperative Agreements Program

The program's strength is that it puts the people who need to set up a metadata program in touch with others who have the experience and knowledge to assist them. It builds community among those creating metadata. It provides funding to those who are willing to share the knowledge they have gained, but could not afford to offer the training without help.

The program has made a difference by bringing the importance of creating FGDC-compliant metadata to the attention of agencies and schools, who might not otherwise be aware of the requirements.

The assistance that we received centered on helping us determine how to promote our records to a Clearinghouse. Originally, we thought we wanted to host a node here at the Institute, but the more we looked into that option, the more complex it appeared. Vivian Hutchinson

provided valuable input that helped us make the decision to house our records on the NBII Clearinghouse. This has been a good decision for us. The assistance received from Terry Giles, in the promotion of our metadata to the NBII Clearinghouse, was terrific. This has been a learning process, which will continue.

There were no factors that we identified as being “missed.”

If we were to do this again, we would likely spend less time in exploring the node-hosting option and get right to creating the metadata records. In hindsight, it is likely that we over-estimated the amount of time that would be available to visit remote locations to perform training. Likewise, as previously described, we have found the client-based software requirement of SMMS to be cumbersome and expensive.