Integrated Tracking of Aquatic Animals in the Gulf of Mexico (ITAG) Conference May 23-25, 2017, Florida Fish and Wildlife Conservation Commission, St. Petersburg, FL

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Executive Summary

The 2017 iTAG conference was the third iTAG meeting to bring together members of the integrated Tracking of Aquatic Animals in the Gulf of Mexico Network at the Florida Fish and Wildlife Conservation Commission (FWC), Florida Fish and Wildlife Research Institute in St. Petersburg, FL. The conference was organized by a steering committee of individuals from throughout the Gulf of Mexico and from federal, state and academic institutions. The meeting was sponsored by VEMCO, LOTEK wireless, and SECOORA. Participation was based on those scientists either conducting or interested in conducting acoustic telemetry in the Gulf of Mexico and open to all who expressed an interest in being part of this meeting when canvassed in December 2016. The names and affiliations of the 69 people who attended the meeting are given in Appendix 1.

The overarching objective of the meeting was to bring together leaders in telemetry at the global, national, and regional scale to discuss ways that the now established iTAG network (iTAG-n) can facilitate integrative tracking and its application to effective resource management. Acoustic telemetry is increasingly being used in aquatic environments, leading to opportunities to develop value-added products predicated on collaborations and data sharing among research groups. A second objective was to discuss how best to increase iTAG-n infrastructure to effectively assess fish migrations over multiple spatial scales (including Cuba and Mexico) leading to unexpected discoveries and greater understanding of within-population movement syndromes (Abrahms et al. 2017). To draw on the group's knowledge to address these opportunities, discussion groups were held on: effective data-sharing, moving telemetry to ever deeper water, building the capacity for large marine ecosystem (and multi-basin) scale tracking, and understanding how habitat context affects movement ecology through cross site comparisons. Lastly, the meeting provided an excellent forum to gain feedback on the

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Abrahms, B., D. P. Seidel, E. Dougherty, E. L. Hazen, S. J. Bograd, A. M. Wilson, J. Weldon McNutt, D. P. Costa, S. Blake, J. S. Brashares, and W. M. Getz. 2017. Suite of simple metrics reveals common movement syndromes across vertebrate taxa. Mov Ecol **5**:12.

functionality of two important network tools which had been identified in previous meetings and made available prior to the meeting: the iTAG interactive map of receiver arrays in the Gulf https://tinyurl.com/z4tcj45 and the orphan data exchange https://tinyurl.com/ya2jf5pj. iTAG members also suggested a number of short-term action items they would like to see in the future, including: continued efforts to make the orphan data exchange more user friendly, a github to centralize analytical code, additional meetings and workshops/trainings, a directory of PIs and their expertise, a newsletter, and a forum based website where iTAG members can share information and host a FAQ page.

Integrative tracking and database management

The meeting began with a series of invited presentations to address integrative tracking at multiple scales, including international and national, as well as telemetry research (or interest in starting telemetry research) throughout the Gulf, from Cuba to Mexico. The first talk was a collaborative effort by Dr. Susan Lowerre-Barbieri (chair of iTAG), Dr Fred Whoriskey (executive director of the Ocean Tracking Network, OTN) and Bill Woodward (executive director of the Animal Tracking Network, ATN). Dr. Lowerre-Barbieri gave a brief introduction highlighting movement ecology and its importance to natural resource management and the need to move beyond observational studies to understanding movement drivers.

Dr. Fred Whoriskey (OTN) gave an overview of Canada's efforts toward a global aquatic animal tracking network. OTN is a collaborative, globally-linked infrastructure platform and research network begun in 2008. They have 1,648 receivers deployed and approximately 20,000 additional compatible receivers are deployed independently world-wide. Their mission is to provide information that leads to evidence based decision making, training the next generation of scientists, and assisting stakeholders to increase research capacity. They provide a globally-shared data warehouse, analysis and visualization tools. In 2014 OTN/FWRI developed a partnership, with OTN providing ~200 receivers which function as iTAG core arrays. These arrays are overseen by Dr. Lowerre-Barbieri and collaborators, Dr. Will Patterson and Dr Jay Rooker. Dr. Whoriskey summarized recent growth of OTN and how OTN and iTAG can collaborate in the future. Dr. Whoriskey concluded with an overview of OTN's current funding structure for the next five years and on-going efforts to revise their strategic plan.

Dr. Bill Woodward (ATN) presented the vision for developing a U.S. Animal Telemetry Network (ATN) and progress-to-date. The ATN national plan has an Ocean Observing Committee task team, has developed a strategic plan, and an implementation plan was completed in 2016. They are working to develop alliances amongst federal, industry, academic, state, local, tribal and non-federal organizations to coordinate aquatic animal telemetry infrastructure and operations. ATN seeks to help regional telemetry networks like iTAG to maintain their on-going efforts, and to build upon existing efforts with guidance from their ATN steering group. They are developing a centralized data assembly center to be located at Stanford, which will house

satellite and acoustic tracking data collected from throughout the nation's waters. They are developing SECOORA and MARACOOS data nodes to draw on ACT and FACT regional networks to provide data to this data center. The ATN steering committee held their first meeting June 5-6, 2017.

Dr. Lowerre-Barbieri (iTAG) concluded with an overview of integrative tracking in the Gulf, including efforts in Mississippi and by The Nature Conservancy and deliverables from the iTAG network (iTAG-n) and iTAG research (iTAG-r) components. iTAG-n has 85 members from three countries, and > 1000 tags and > 2000 receivers deployed and with the orphan data exchange, members can now track their fish across more than 35 arrays deployed throughout the Gulf. Core arrays which Lowerre-Barbieri's lab oversees include a series of lines to monitor the migratory pathway along the Keys reef edge, as well as receivers deployed at wrecks and at the seamounts. These receivers (n=69) detected ~79 orphans, including Bluefin tuna and White sharks and indicated seasonal patterns in migrations. Similarly, the array deployed at Madison Swanson MPA (n=35 receivers) on the West Florida Shelf detected ~100 orphans, including several animals which migrated from the Atlantic, for the first time connecting acoustic tracking between the Atlantic and the Gulf. iTAG-r is focused on a cross site study to assess habitat context on red snapper movements, with Dr. Lowerre-Barbieri leading the study in Madison Swanson, Dr. Will Patterson leading the effort in the northern Gulf and Dr. Jay Rooker in the western Gulf.

Dr. Jorge Angulo Valdes (University of Havana) gave a presentation on Cuban fisheries and potential for developing collaborative telemetry research. He candidly spoke about the bureaucratic processes in Cuba that make U.S.- Cuba science collaborations difficult, and suggested best practices for handling them.

Brett Falterman (Louisiana Department of Wildlife and Fisheries) presented on the work he has been leading on Yellowfin Tuna using multiple tag types. He showed an alternative method of PSAT attachment he has developed, which greatly increased retention. He also presented key results from their internal archive tag efforts and that some fish eject internal tags.

Dr. Greg Stunz Texas (A&M), summarized telemetry research in Texas waters by Texas A&M Galveston (including research lead by Dr. Jay Rooker and Dr. Dave Wells) and that lead by Dr. Stunz lab on a wide range of species inshore and offshore, including: spotted seatrout, red drum, southern flounder, bull sharks, lionfish, grouper, black drum, and red snapper.

Dr. Aaron Adams (Bonefish & Tarpon Trust) discussed the importance of regional connectivity in conserving important sport fishes. Dr. Adams not only discussed the importance of tracking adults with telemetry, but integrating results with other tracking methods to understand the spatial distribution of the full life cycle.

Dr. Ross Boucek and Dr. Joy Young (FWC/FWRI) gave a collaborative talk on data sharing practices in iTAG and FACT. Dr. Boucek summarized research opportunities associated with the increased use of acoustic telemetry. He summarized the iTAG data exchange policies and their intent, which is to incentivize collaboration between all array and tag owners. Dr. Young, the FACT data manager, presented a history of the FACT network and how the network emerged from grassroots processes. She then discussed how FACT is now partnering with OTN to develop the SECOORA data node.

Using iTAG to build increased capacity

Breakout discussion groups were held over lunch to crowd source ideas for how iTAG can help facilitate acoustic telemetry research in the Gulf on the following topics: data sharing, deep-water telemetry, building LME & multi-basin tracking capacity, and cross-site comparisons. Summaries of these discussions follow and group members are listed in Appendix 1.

Developing policies that promote and reward data-sharing (Lead: Sarah Burnsed). All detections are comprised of a tagged fish swimming within range of a receiver, resulting in telemetry data coming from researchers tagging fish and those maintaining an array, which detects the fish. Early studies using passive acoustic telemetry typically had relatively small arrays, there were far fewer tagged fish in the water, and the same researcher was the tagger and the array owner. As the use of this technology has grown, there is great potential to increase the spatial scale over which tagged fish can be monitored through telemetry networks and data sharing. However, for many scientists barriers to data sharing continue due to potential violation of intellectual property rights of the data owner, fear of loss of control over unpublished data, fear of being scooped by others, and lack of incentives and rewards to share data (Nguyen et al. 2017). A key concern in this group was the term 'intellectual property' in the data exchange agreement. Based on this, the agreement has been revised to read: *Orphan tag adoptions can only occur through the efforts of both the tag owner and the array owner through a mutually respectful exchange in which both parties feel their respective contribution as either the tag owner or array owner is protected. To foster this sense of security, either party must receive consent from the other prior to developing a research product (i.e., proposals, peer reviewed manuscripts, and press releases) using the orphan detection data. As part of that process, tag and array owners must resolve the degree of acknowledgement or co-authorship in resulting research products. Furthermore, we ask that all research products resulting from tag data obtained through the "adoption of orphans" acknowledge the iTAG data exchange. Please contact iTAG for specifics on how to acknowledge.*

Nguyen, V. M., J. L. Brooks, N. Young, R. J. Lennox, N. Haddaway, F. G. Whoriskey, R. Harcourt, and S. J. Cooke. 2017. To share or not to share in the emerging era of big data: perspectives from fish telemetry researchers on data sharing. Canadian Journal of Fisheries and Aquatic Sciences:1-15.)

Many in the group had used the orphan data exchange and spoke highly of it and what it added to their research capabilities. A suggestion was made to add a field for the date range associated with the data in orphan uploads. FACT members shared how the iTAG data exchange differs from FACT's data management and raised concerns about data standardization and data exchange between the networks. Data standardization is very important and will be needed if and when the iTAG network develops a data node. However, the current orphan data exchange was developed to be as simple and easy as possible and by-passes the need for data standardization as: (1) array owners upload the tag information for tags detected in their arrays which aren't their study animals and (2) the tag owners look through uploaded orphans for their tags and then request data from the array owner. The intent is for it to help foster collaborations between the tag owner and array owner as they are the only two entities which will see the full data set and only for adopted tags.

iTAG as a platform for integrative science (Lead: Susan Lowerre-Barbieri) For iTAG to meet its full potential there is a need to increase scientist connectivity through excellent and frequent communication and a strategic plan to help facilitate telemetry research in Cuba and Mexico. Current iTAG social media outlets are not reaching everyone, with many researchers not using social media (only 33% of the discussion group having seen the iTAG facebook or twitter pages). These outlets are currently targeting those telemetry scientists and collaborating fishermen who already use these platforms to highlight iTAG member's research and orphan adoptions. However, to reach all iTAG members, a newsletter such as that from ROFFS Roffer's Ocean Fishing Forecasting Service was suggested as being more effective. A listserv was also suggested as an excellent way to advertise iTAG and facilitate communication.

This group included Mexican and Cuban scientists who provided excellent suggestions on how iTAG could help foster telemetry research in these countries. Suggestions included: funding for international students to attend US workshops or for scientific short-term exchanges as well as identifying key researchers in Cuba and Mexico to help disseminate information on iTAG to colleagues. It was noted that the FAO Jeff project has 7 million dollars (U.S.) in funding for research in Mexico and that a project assessing Kingfish migrating across the Texas/Mexico border might be worth pursuing, increasing iTAG infrastructure and covering another important migratory pathway. Another suggestion to facilitate large scale understanding of fish migration is to develop working groups of scientists studying the same species drawing on researchers from iTAG, FACT, and ACT regions.

Technology needs was another key topic addressed by this group. Drifters placed in the Gulf Stream and the Florida Straights were discussed as a platform for data collection. Other technologies discussed were wiring receivers to boats, such that the receiver would communicate with the GPS to record detections, time stamps and location of detections. The system would be independent of anglers and have the potential to develop a similar process to

the Audubon Christmas Bird Count. Other technologies included gathering data without having to pull the receiver. As technology improves and advances, other points brought up were renting equipment from VEMCO. It was suggested iTAG, as a science organization, has the ability to foster new technology development through: (1) reaching out to other industries working in the aquatic environment who may already have solutions to some of our problems; (2) crowd sourcing our membership to prioritize technology needs; (3) helping to create a new technology market; and (4) considering developing an iTAG innovation challenge to solve a key problem. To begin to operationalize these ideas, a volunteer to survey the membership on technology needs was requested. Beth Bower (FAU, PhD candidate) stepped forward to take on this task.

Lastly, this group addressed the need to move beyond observational studies to integrate environmental and other data types to understand movement drivers. Habitat, environmental, and oceanographic data is increasingly accessible and seascape analysis has been conducted at small spatial scales. However, much of the large scale data is surface based. It would be helpful to have a synthesis workshop which brings together the right people with the skill sets and expertise needed to help move this process forward.

Conducting Telemetry in Deepwater Environments (Lead: Joel Bickford) Deep-water telemetry comes with some challenging logistical problems not seen in more common estuarine and coastal projects. Three topics were addressed in this discussion group, the challenges of tagging and deploying gear in deep water and specific challenges associated with monitoring oil rigs. Best practices for tagging fish collected from deeper waters were discussed and preliminary list includes: (1) choosing to tag only fish that are not bleeding or gut hooked; (2) minimize the amount of time that the fish is on the surface; (3) keep running water flowing over the gills while the fish is on the surface; and (4) release the fish with a descending device coupled with cameras (multiple when possible) is the best way to assess health as well as the possible "fate" of the fish and can help reduce predation, or at the very least, document it; and (5) consideration should be given to the actual size of the tag implanted if there are concerns with ejection as seen in yellowfin tuna. Ideas suggested to increase the success of deep water receiver deployment and recovery included: (1) use the highest quality gear when possible and be aware of galvanic corrosion when using dissimilar metals which are touching underwater (aluminum and stainless steel = bad for long deployments); (2) stainless steel cable is preferred to moor systems to the bottom however plastic coated galvanized steel as well as rope have been tested (or deployed); (3) use chafing gear such as thimbles and other guards at points of contact where gear can wear down over time and it is a good idea to use a swivel to help minimize twist in the cable or rope which can ultimately lead to a retrieval failure; (4) surface floats that are cylindrical are preferred in areas where wave action and current cause moorings to move or walk from the deployed location. The use of hard plastic trawl floats is ideal for

subsurface floats or with VR2ARs as they are relatively inexpensive as well as durable and usually have deep depth ratings. As a backup incase the surface or subsurface float gets lost, a trawl line that extends out from the anchor weight along the bottom in a known direction for 50-100m can be used to find the system with a weighted grapple hook; (5) if using anchors (i.e., weight) rather than augers to hold the system in place, a boat anchor that is chained to the weight will help prevent the system from dragging or walking; (6) the object used as an anchor will depend on cost and mobility, examples include: elevator weights, steel plates, concrete blocks, brake rotors, but it is important to evaluate the specific gravity of the material to obtain the desired weight underwater. For example, 100 pounds of steel weighs about 87 pounds underwater whereas 100 pounds of concrete can weigh as little as 56 pounds underwater depending on the mix.
Acoustic receivers have been successfully deployed on oil rigs in the Gulf. Attachment has been done by bolting the receiver to an anode on the rig as well using cable to hang the receiver from a horizontal beam. It was noted that in the past, some oil rig bosses may not allow receivers on their rigs and that developing a personal relationship with the rig boss can help alleviate concerns. Noise from the oil rig itself or some of its instruments, such as ADCPs, may affect detection probabilities and representatives from both Vemco and Lotek recommended range testing. iTAG leadership is working with Ruth Perry from Shell Oil to develop range tests.

Cross-site comparisons of species behaviors. (Lead: Ross Boucek) The overall objective of this working group was to discuss ways in which iTAG can better facilitate cross ecosystem comparative telemetry studies. Again, effective and frequent communication was highlighted as needed to better understand what other researchers in iTAG do. We discussed ways of making iTAG member research and researcher profiles easier to access, through a website that may have researchers organized by species studied, or by questions asked. Another suggestion for improved communication was to call or skype, and reduce communications via email. A newsletter was also suggested for researchers in iTAG to get to know one and other. The group discussed following the same format for newsletters as the Florida Chapter of the American Fisheries Society newsletter, known as the Shellcracker. It was also suggested that iTAG symposiums at the South Eastern division of AFS on the years that iTAG meetings do not occur, would help to maintain connectivity among researchers.

Apart from providing mechanisms to better connect researchers, the group discussed how to better integrate students and early career scientists into cross site comparison collaborations through short scientific stays at collaborator's labs. The graduate student would then be immersed in that labs culture and research for a brief period of time. This exercise would build trust among both research groups as well as function as a catalyst for cross site work. Other discussions involved developing a funding support structure for students and early career scientists to attend meetings. For this support structure, funds could be generated via charging

registration fees or a raffle event that is similar to FL AFS. Another group mentioned asking VEMCO to help with a student support program. Discussion about iTAG developing rules to follow in these cross site collaborations were discussed. However, there was agreement that data analyses and authorship would most likely be self-selecting.

Telemetry projects in the Gulf of Mexico and adjacent waters

Jennifer Rehage (Florida International University): presented a new conceptual framework for integrating the movement data we are collecting at unprecedented levels of spatial temporal resolution back into ecological theory

Krystan Wilkinson (Mote Marine and University of Florida): gave an overview of Gulf Sturgeon telemetry work in the Northern Gulf, reviewing recent survival models using telemetry to estimate mortality and population sizes and sharing a data visualization app she has developed.

Beth Bowers (Florida Atlantic University): presented on her PhD research which includes exciting new observations of telemetered black tip sharks being detected in latitudes higher than they have been documented before.

Dr. Chad Lembke (University of South Florida): presented results on a collaborative project to assess the efficacy of gliders to monitor fish. Results were compared between a glider deployed with a receiver, recording device and echo sounder to traditionally deployed receivers and recorders set up along the pipeline.

Dr. Kim Bassos-Hull (Mote): gave an overview of her tracking efforts for Spotted Eagle Rays, and the logistical challenges her group has faced in deploying receivers in high current passes.

Cody Eggenberger (Florida International University): presented results from an OTN subsidized array which forms part of his master's research examining how fine scale habitat use of two estuarine species varies with different levels of primary productivity.

Dr. Michael Dance (Texas A&M): presented on the effects of species and internal versus external tag attachment on detection ranges, with implications for VPS studies.

Dani Morley (FWRI) Presented emerging methods for telemetry data analysis using examples from ten years of telemetry studies in the Keys.

Building network capacity

A panel discussion was held with the panel made up of representatives from regional and global networks, leading vendors, and IT (FWRI staff who developed the orphan data exchange). Much of this discussion was focused on concerns addressed in data sharing (above) and the iTAG agreement stating that detections are intellectual property of both the tag owner and the array owner. iTAG leadership clarified that the specific words could be changed but the intent is to equally value taggers and array owners and that for any research product there must be mutual agreement reached by both parties. Dr. Joy Young from the neighboring regional network, FACT, share their policy which is: 'if a research organization or researcher cannot state certain conclusions but for the detection data provided by another organization, we strongly suggest the parties involved reach an agreement on authorship before publication'.

Dr. Fred Whoriskey explained that OTN states that orphan detections are not possible without the tagger and the array owner. The intent of all three agreements are similar and we felt it was an easy fix to modify the iTAG terms to reflect the intent with different words. In addition it was mentioned that authorship rules for a given journal will help clarify any potential concerns that co-authorship will be mandated for people who do not significantly contribute to a paper.

Data sharing concerns also voiced included: (1) the potential illegality of publishing on detections of endangered species, if a researcher is not the tag owner who received a permit to tag the fish; and (2) concern over making public exact tagging locations, as tagging location may be predicated on confidentiality, such as anglers revealing private fishing locations for tagging and research. It was clarified that the iTAG orphan data exchange requests very basic meta-data (only a general descriptor of tagging location such as "off Tampa Bay"), thus this becomes an important discussion for tag owner and array owner to have when sharing the full detection data.

Additional suggestions for improving the data exchange included: (1) featuring a fully automated data sharing platform, where researchers *a priori* upload all their tags and meta-data which would automatically be matched to uploaded orphan tags from other arrays, generating an automated email to both parties notifying them of the connection. The iTAG community was in agreement that this upgrade would be beneficial; (2) adding date fields to identify the time frame associated with the orphan data. This was met with mixed feelings, as it would add an additional step for orphan uploads and all detection data exchanged will include dates; and (3) potential use of the VEMCO VUE software to filter out spurious detections prior to uploading orphans. Again, consensus was to not follow this path, as single

detections can be real but can only be assessed by the tag owner within the context of where and when the fish had been detected elsewhere. The question was also raised as to whether there are any definitive indicators of false detections due to collisions, such as unexpected code spaces, but there does not appear to be a universal indicator.

Membership engagement:

Sarah Burnsed and Dr. Greg Stunz moderated the final group discussion. This discussion included all participants and focused on how members could contribute to growing iTAG to provide the value-added capacities they had identified. Burnsed emphasized that iTAG is built on the notion of a community, and as such, there is the hope that iTAG members will contribute to the growth and progression of this community at many levels. Volunteers include: (1) Beth Bowers (FAU) leading the survey to identify technological needs; (2) Krystan Wilkinson (Mote) volunteered to organize a platform for sharing statistical and program code for telemetry observations. And, last Jessica Carol (FWRI), volunteered to lead the development of the newsletter.

Concluding remarks: Dr. Lowerre-Barbieri made concluding remarks thanking everyone for their participation and sharing the following quote, “Synergy is better than my way or your way. It’s our way.”

Appendix 1

Full Name	Affiliation	Break out group
Alejandro Acosta	FWC/FWRI	Data Sharing
Aaron Adams	Bonefish & Tarpon Trust	LME tracking capacity
Jorge Angulo Valdes	University of Florida	LME tracking capacity
Ximena Arvizu Torres		LME tracking capacity
Brittany Barbara	FWC/FWRI	Deep-water telemetry
Luiz Barbieri	FWC/FWRI	LME tracking capacity
Kim Bassos-Hull	Mote Marine Laboratory	LME tracking capacity
Joel Bickford	FWC/FWRI	Deep-water telemetry
Ross Boucek	FWC/FWRI	Cross-site comparisons
Beth Bowers	Florida Atlantic University	LME tracking capacity
Adam Brame	National Marine Fisheries Service	Data Sharing
Sarah Burnsed	FWC/FWRI	Data Sharing
Jessica Carroll	FWC/FWRI	Deep-water telemetry
Judd Curtis	Texas A&M University-Corpus Christi	Deep-water telemetry
Michael Dance	Texas A&M	LME tracking capacity
Breanna DeGroot	Florida Atlantic University-Harbor Branch	Cross-site comparisons
Cody Eggenberger	Florida International University	Data Sharing
Robert Ellis	FWC/FWRI	Cross-site comparisons
Brett Falterman	Louisiana Dept. of Wildlife and Fisheries	Deep-water telemetry
Libby Fetherston	FIO	LME tracking capacity
Kerry Flaherty Walia	FWC/FWRI	LME tracking capacity
Tom Frazer	University of Florida	Deep-water telemetry
David Fries	IHMC	LME tracking capacity
Jayne Gardiner	New College of Florida	Data Sharing
Bill Gil	GMGMC-SSC	LME tracking capacity
Paul Grammer	University of Southern Mississippi - CFRD	Deep-water telemetry
Lukas Heath	New College of Florida	Deep-water telemetry
Kadie Heinle	Mote Marine Laboratory	Data Sharing
Andy Herndon	NOAA/NMFS	Cross-site comparisons
John Hunt	FWC/FWRI	Deep-water telemetry
Donna Kehoe	Lotek Wireless Inc.	Deep-water telemetry
Denise King	Vemco	Deep-water telemetry
Jim Locascio	Mote Marine Lab	Deep-water telemetry
Christopher Lapniewski	GCRL Center for Fisheries Research and Development	Cross-site comparisons
Chad Lembke	clembke@usf.edu	Deep-water telemetry
Sue Lowerre-Barbieri	FWC/FWRI	LME tracking capacity

Behzad Mamoudi	FWC/FWRI	Data Sharing
Danielle Morley	FWC/FWRI	Cross-site comparisons
Patrick O'Donnell	Rookery Bay National Estuarine Research Reserve	Cross-site comparisons
Ruth Perry	Shell Oil Company	Deep-water telemetry
Clay Porch	NOAA/NMFS	LME tracking capacity
Gregg Poulakis	FWC/FWRI	Cross-site comparisons
Melissa Price	USGS Wetland and Aquatic Research Center	LME tracking capacity
Caleb Purtlebaugh	FWC/FWRI	Deep-water telemetry
Mike Randall	USGS Wetland and Aquatic Research Center	Deep-water telemetry
Jennifer Rehage	Florida International University	Cross-site comparisons
Jared Ritch	FWC/FWRI	Cross-site comparisons
Mitchell Roffer	Roffer's Ocean Fishing Forecasting Service, Inc.	LME tracking capacity
Jay Rooker	Texas A&M University	Deep-water telemetry
Jason Rueter	NOAA Fisheries	Data Sharing
Rolando Santos	Florida International University	Cross-site comparisons
Rachel Scharer	FWC/FWRI	Data Sharing
Mitchell Sisak	Lotek Wireless Inc	Deep-water telemetry
Stephanie Smedbol	Vemco	Data Sharing
Hayden Staley	FWC/FWRI	Data Sharing
Philip Stevens	FWC/FWRI	Cross-site comparisons
Greg Stunz	Harte Research Inst., Texas A&M University	LME tracking capacity
Ted Switzer	FWC/FWRI	LME tracking capacity
Alexis Trotter	FWC/FWRI	Cross-site comparisons
Natasha Viadero	Florida International University	Cross-site comparisons
Abbey Wakely	SECOORA	Data Sharing
Jeff Whitty	FWC/FWRI	LME tracking capacity
Fred Whoriskey	Dalhousie University	Data Sharing
Tonya Wiley	Haven Worth Consulting	Data Sharing
Krystan Wilkinson	Sarasota Dolphin Research Program/UF	Data Sharing
Jamie Williams	FWC/FWRI	Deep-water telemetry
Bill Woodward	Integrated Ocean Observing System	LME tracking capacity
Joy Young	FWC/FWRI/FACT	Data Sharing
Katie Zarada	University of Florida	LME tracking capacity