# US Animal Telemetry Network
# Steering Group Meeting SG-1

**June 5-6, 2017**
**Consortium for Ocean Leadership, Washington, DC**
**Meeting Minutes**

## I. ATN Introduction (M. Weise, B. Woodward, S. Hayes)

M. Weise provided a brief history of the ATN and the IOOS PO from 2009 to 2013. The idea of the a national animal telemetry network and data assembly center (DAC) was introduced at a community workshop in Santa Cruz in 2010, which led to a series of ATN demonstration projects to identify the needs and gaps to initiate the network. The projects were funded via the IOOS PO, ONR, and NAVOCEANO and focused on data interoperability tools, metadata standards for acoustic tags, and the initiation of the data assembly center. In 2014, a white paper, *Meeting our Nation's Needs for Biological and Environmental Monitoring: Strategic Plan and Recommendations for a National Animal Telemetry (ATN) through US IOOS*, was released and gave way to the creation of an Integrated Ocean Observing Committee (IOOC) Task Team. The ATN Task Team was set up to adopt the ATN Strategic Plan and Recommendations and to develop an implementation plan, which was approved and released by the White House Office of Science and Technology Policy at the end of 2016.

The Animal Telemetry Network was created to provide a mechanism to facilitate and empower an alliance among federal, industry, academic, state, local, tribal, and non-federal organizations to coordinate aquatic animal telemetry infrastructure and operations. The top priority of the ATN is to facilitate and support baseline observations of the aquatic species movements and behaviors, and coordinate, support, maintain, and enhance existing national animal telemetry infrastructure and capabilities. The ATN will maximize the benefit of existing of investments by providing a mechanism for sustained operations and consistent delivery of animal telemetry data by applying consistent international data standards and best practices across the United States and in conjunction with international ocean observing systems.

B. Woodward discussed the responsibilities of the ATN Coordinator within the auspices of the US IOOS.

- In coordination with the SG, lead the ongoing development of the overall ATN
- In coordination with the U.S. IOOS PO, support ATN implementation and pursue opportunities to advance ATN objectives
- Develop the annual operating plan and budget materials
- Support the SG and the interagency funding mechanisms
- Coordinate and ensure regular communication with the U.S. IOOS RAs and regional experts
- Serve as a liaison between all parties involved in the ATN, including the U.S. IOOS PO, U.S. IOOS, RAs, SG, Federal agencies, and regional experts
- Ensure that the ATN activities are integrated with other ocean observing activities
- Track network performance metrics and report the results to the SG and to U.S. IOOS PO leadership
- In coordination with the U.S. IOOS PO, supervise the DAC O&M, which may be contracted to a third party
- Support data coordination and training
- Support outreach to the stakeholders and users

## II. Review of SG Terms of Reference (B. Woodward, M. Weise)

B. Woodward and M. Weise provided an overview of the IOOC ATN Steering Group Task Team and the terms of reference (ToR) developed for the SG. The Task Team was created to support the transition of the ATN from the planning phase to the operational phase and become an integrated component of the IOOS enterprise. The major objectives of the team were to:

- Constitute the ATN Steering Group (SG) as outlined in the ATN Implementation Plan (Completed)
- Improve coordination, support, maintenance and enhancement of existing ATN infrastructure and capability particularly in the RAs, and with regard to the development of the ATN Data Assembly Center (DAC). (Completed)
- Identify sustainable funding measures for the ATN system and governance infrastructure. (Completed)

The structure and governance of the Steering Group is outlined in the terms of reference. A major aspect of the structure involves the inclusion of both federal and non-federal members while maintaining compliance with the Federal Advisory Committee Act (FACA). The ToR explicitly defines the terms of voting and non-voting members within the SG. Voting memberships are limited to representatives of the federal agencies that are providing funds for the ATN (only one rep per agency unless agreed by the SG voting membership). Voting members will participate in the SG meetings where they must do so as individuals and ***no consensus advice or recommendations*** resulting from group deliberation or interaction is expected from them, and all SG decisions will be made by these voting members meeting separately. Non-federal/non-voting members will ***not be asked for consensus or participation in decision-making***. The responsibilities of the voting members include:

- Annual budget review/approval
- Identify and implement priorities and objectives
- Identify resource requirements
- Develop funding pathways
- Advise NC on Implementation issues
- Approving SG membership.

Non-voting membership will include federal and non-federal representatives and will provide information, feedback, and participate in discussions on:

- Ensuring adherence to ATN scientific and operational objectives
- Reviewing annual operating plan, priorities, and objectives
- Identifying long-term strategies to meet goals and objectives
- Successful implementation of Data Management Plan
- Ensuring coordination between ATN and IOOS.

Communications and reporting mechanisms are also defined within the ToR. The SG through its Chairperson and in coordination with the Network Coordinator will provide updates three times a year on its activities to the IOOS PO for the first two years and bi-annually thereafter. The SG Chairperson and the ATN Network Coordinator will ensure that SG meeting notes are made public and posted on the ATN website.

***DISCUSSION:***

*S. Simmons asked what the requirements were for updating the SG. B. Woodward confirmed that the ATN ToR does not have reporting requirements to the SG but that the "From the ATN Wheelhouse" monthly update report*

*distribution list will be widened to include the SG. Also, the voting members established that any subcommittees created within the SG will report back to the full membership three times a year. The SG can update the ToR as needed with any changes approved by voting members.*

## III. Election of SG Chairperson

According to the ToR, SG meetings will be chaired by a Chairperson who will be drawn from the federal membership and selected by the voting members**.** The voting members nominated and elected **Bill Woodward** to be the chairperson and to serve a term of one year. While the 1-yr term is not defined in the Tor it was suggested and approved by the SG, and available for renewal. The Chairperson has the following responsibilities:

- Set the agenda for each Steering Group meeting in collaboration with the Network Coordinator.
- Ensure that agendas and supporting materials are delivered to members and panel participants in advance of meetings with the support of the Network Coordinator and IOOS PO staff.
- Make the purpose of each meeting clear to participants and explain the agenda at the beginning of each meeting, and remind them that no consensus advice is being sought at any meeting.
- Ensure meetings are scheduled in a timely manner to address SG responsibilities.
- Organize and execute SG meetings and communications.
- Document SG activities and brief the IOOC as needed in coordination with the Network Coordinator and IOOS Program Office.
- Direct any sub-committees and report their progress to the SG membership.

***DISCUSSION:***

*Voting members of SG noted that a co-chair will be elected at a later date if necessary.*

## IV. Member Presentations

Federal Members provided:

- Summary of Agency tagging activity and purpose
- Your priorities Re: animal telemetry
- How ATN can help you
- Your Agency contribution – Existing & Potential

Non-Federal Members provided:

- Summary of your animal telemetry activities
- How ATN can help your telemetry efforts

*B. Houtman (NSF):*

B. Houtman discussed NSF's position with animal telemetry activities and how NSF and ATN could assist efforts of each. NSF is in the position to accept proposals pertaining to animal telemetry activities and through evaluation in the merit review process select the best science to receive support. There is a strong interest in data management and B. Houtman noted that proposals tend to succeed with well thought out data management plans (similar to the ATN DAC).

***DISCUSSION:***

*B. Houtman noted that NSF is also interested in overall ocean science data on international scales. M. Weise acknowledged the NSF funded work in the Antarctic and asked if the tag data from the studies there would be important to the DAC. B. Houtman agreed that the data could be incorporated into the DAC.*

*M. Ogburn (Smithsonian Environmental Research Center):*

M. Ogburn discussed the work within the Fish and Invertebrate Ecology laboratory of applying movement ecology to aquatic conservation and management. The Movement of Life Initiative is a global partnership in movement ecology to:

- Conserve and manage animal movement as a critical process for biodiversity and ecosystem health
- Develop science, technology, analytical tools, and models
- Build capacity for movement research.

The lab has developed movement studies in the following topics:

- Responses of anadromous fish to dam removal
- Fisheries management
- Fish and crustacean utilization of restored oyster reefs
- Habitat use and trophic interactions of invasive fish
- Impacts of climate change on migration and habitat use

The movement research methods utilized are traditional tags and biogeochemical tracers, individual-based models, PIT telemetry and imaging sonar, and acoustic and satellite telemetry. Three major projects/areas are being focused on currently: CBIBS, Patuxent River, and Rhode River. The anticipated outcomes of these projects include:

- Identifying essential habitats
- Documenting migratory connectivity
- Exploring the diversity of migratory behaviors
- Supporting fisheries management, coastal resource planning processes and conservation
- Expanding telemetry capacity: maintain acoustic receiver arrays, contributed receivers to CBIBS, MATOS Steering Committee.

*W. Turner (NASA):*

W. Turner noted that NASA works very similarly to NSF in supporting science-based proposals. NASA is investing a fair amount in biodiversity data, particularly focused on biogeochemistry with increasing interest in biology. Similar to NSF, data is a big draw for NASA. Open, publically funded data is the arena they would like to move into. W. Turner noted that NASA can assist the integration of ATN data with environmental data at a km scale through the emerging COVERAGE (**C**EOS **O**cean **V**ariables **E**nabling **R**esearch and **A**pplications for **GE**O) and stressed the importance of ease of access and standardization of all ocean data.

*D. Smith (USACE):*

D. Smith discussed the current telemetry activities conducted by the Corps which are mostly acoustic telemetry. Many nation-wide projects, such as the mitigation of dredging efforts, and salmon telemetry

efforts in the Northwest ($52M of work) have been implemented. The corps applied studies are generally relatively small in their spatial scale. Mitigation data is being linked to animal telemetry data with physical models for scenario-type analysis. A significant issue the COE is struggling with is being able to access the data collected by the multiple telemetry studies that they fund. D. Smith agreed to provide a briefing on these activities at the next SG meeting.

***DISCUSSION:***

*D. Smith noted that most data collections are third party, but would like to see ATN involved with the scenario analysis. M. Weise raised the issues of where to place the data because the ATN is already facing issues with the costs associated with formatting and maintaining data. D. Smith acknowledged that "common language" evolution from the SG could help overall project proposals and data accessibility. B. Woodward suggested providing ATN briefings at different levels of the Corps to show the value of the data.*

*S. Simmons (MMC):*

S. Simmons discussed the MMC's position in animal telemetry activities and noted the MMC's role as a guiding/leading body. MMC has funded pilot projects collecting resting data and looking into the impacts of tags on marine mammals. Most funding is allocated to staff time and engagement. MMC is mostly interested in ecosystems, population distributions, and anthropogenic impacts, but also has concern in supporting data standards/standardization and identifying essential variables (BIO TT, GOOS EOVs). These biological variables are listed and are updated periodically; these communities are interested in examining how telemetry data can foster EOVs. S. Simmons noted the importance of sharing data and how ATN can aid overall data collections by feeding into larger, international data repositories, such as OBIS. It was also pointed out that ATN can help improve management and decision making within these international areas. Personally, S. Simmons acknowledged that MMC could aid ATN through staff time, bring in global input, and potentially small contributions.

*G. Skomal (Massachusetts Marine Fisheries):*

G. Skomal discussed the animal telemetry activities with the scope of the Massachusetts Marine Fisheries. Efforts are management-driven and utilize movement ecology in conjunction with environmental and telemetry data to track various fisheries. G. Skomal presented information on the activities surrounding a case study of white sharks. The organization notes the importance of being mindful of the public interest as most funding is private from areas such as Cape Cod. In tracking white sharks around the coastal areas, acoustic detections are utilized to observe individual movement—this information has shown to have a great deal of public interest and buy-in. Towns, along coastal areas, invest in receivers and engage with the organization to receive data. G. Skomal noted that the data he collects is generally of broad scale movements and could easily be incorporated into the ATN DAC.

***DISCUSSION:***

*SG members asked if the receivers were small band. G. Skomal responded that they were. SG members inquired if shark watches were being incorporated into the case study to increase public interest. G. Skomal clarified that shark watches were difficult to do and can be cost prohibitive, but there has been some seal watching. SG members asked how the team measured public interest. G. Skomal provided examples from private funding provided to the Atlantic White Shark Conservancy and the response to the*

*"Sharktivity" application which crashed upon initial release due to so many attempts to connect to it. SG members inquired after the data collected which pertained to other species. G. Skomal explained that the data was shared with regional telemetry organizations which as FACT and noted the importance of engagement and alliance building. SG members asked if the organisms were being double tagged. G. Skomal informed the SG that some were, but it depends on funding levels at the time of tagging.*

*R. Wells (Chicago Zoological Society's Sarasota Dolphin Research Program):*

R. Wells provided an overview of his program, evolution of tags utilized, examples of telemetry applications, and future direction of the program. Bottlenose dolphin research was initiated in 1970 in Sarasota Bay, Florida because it is a natural laboratory situation for telemetry development and application. The benefits of Sarasota Bay include:

- Strong site fidelity of dolphins facilitates close observational monitoring.
- Shallow, sheltered waters facilitate capture-release, health assessment.
- Lab facilities located within resident dolphin home range.
- Have the ability to intervene if problems become evident.

Electronic dolphin tags have evolved over the last two decades to a single pin design which are able to detach after the batteries have dies, show no adverse effects on the organisms, and have been successfully used on a variety of dolphin species. Small cetacean telemetry applications have allowed field metabolic rate studies, develop injury estimates after the Deepwater Horizon Oil Spill, and increase in monitoring cases involving rescues, disentanglements, strandings, and rehabilitation/releases. Tag evolutions have also allowed increases in multi-taxa collaborative efforts. Passive acoustics tags receivers have allowed observations of bull sharks, spotted eagle rays, and their interactions with dolphins in Sarasota Bay. The future direction of the program includes:

- Wiring the Bay for Sound: Hybrid Acoustic Array
- Land-based receivers for satellite-linked tags
- Developing Deepwater Dolphin Capture-Release Capabilities: Bottlenose and Atlantic Spotted Dolphins

*J. Young (FACT):*

J. Young provided an overview of the FACT (Florida Atlantic Cooperative Telemetry) Network and emphasized the importance of collaboration with IOOS RAs and other regional organizations. The FACT Network is a grassroots collaboration of scientists using acoustic telemetry to resolve the life history of fishes with a large emphasis on data sharing and community building. The network has an array of over 900 active receivers maintained by individual groups along the Atlantic coast, in the Bahamas, Caribbean, and core areas with gaps. Currently, the network has 3179 tags in the water, observing 67 species of marine organisms. FACT collaborates with other regional acoustic telemetry networks such as POST, SCATTN, GLATOS, ACT, MATOS, iTAG, and USCAN. Regional collaborations allow everyone to have a voice, consensus, and six degrees of separation.

J. Young provided an overview of data sharing within the FACT network. The types of data shared are based on need:

- Tagging metadata
    - Array owners: Identify tag owners from detection files
    - Array owners: Identify species detected within the array *internal reports only*

- Station metadata
    - Tag owners: Identify coordinates for detection from outside their array.
    - Array owners: Informs future receiver placement
- Intact Detection files (.csv or .vrl)
    - Tag owner: Locations of tagged animals outside their array
    - Receiver performance
- Receiver deployment and retrieval metadata (new)
    - Will accompany detection files
    - Basic QA/QC within the online data sharing system.

FACT network has developed a FACT node and in the future hopes to increase data standardization, ease of use, and compatibility. Collaboration with the ATN allows for direct and indirect mechanisms for funding and an increase in resources and coordination. A significant point mentioned by J. Young is the unsatisfactory difference between the length of a typical funding cycle (3 years) and the lifetime of a tag (4-10 years). The lifetime of a tag generally is much longer than the period of time a PI is funded for their study which works against maximizing the efficiency of research funding.

*K. Hart (USGS):*

K. Hart provided information on her work within USGS which is primarily with satellite tags. The focus of the work is on tracking nesting female sea turtles in water and on land. A multiple tool approach is utilized—the work is linked to MPAs and in collaboration with NOAA to increase number and efficacy of sanctuaries. K. Hart explained that they work with restoration project proposals and link collected telemetry data for success.

***DISCUSSION:***

*SG members asked how K. Hart's work was connected within the agency. K. Hart clarified that there was not much connection, but would like to have more open channels within different parts of the agency.*

*M. Weise (ONR):*

M. Weise discussed the animal telemetry applications and needs within the US Navy. Telemetry activities are regulated by the National Environmental Policy Act, Marine Mammal Protection Act, and the NMFS Letters of Authorization. The US Navy's Marine Resources investments ranges from basic research to applied monitoring. The Marine Mammals and Biology program enables the Navy to meet operational training and testing objectives in an environmentally responsible and legal manner through investing in basic (6.1) and applied (6.2) research and technology development to discover and understand the effects of sound exposure on marine mammals. Sensor and tag development within the US Navy utilizes applied research to support the invention and early technological development of new tagging capacity. The Living Marine Resources (LMR) program is a 6.4 applied RDTE program focused on Navy research needs affecting at-sea environmental compliance. The key points of the LMR mission are:

- Improve the best available science on the potential impacts to marine species from Navy activities
- Expand the technology and methods available to the Navy marine species monitoring program
- Customer and end user focused via the needs solicitation process, and the LMRAC

In Fleet Marine Species monitoring, the primary areas of focus include:

- Baseline Occurrence, habitat use, residency time, and behavior

M. Weise provided the benefits and priorities of the ATN in collaboration with ONR/Navy.

- Support r/t monitoring, baseline observations, effects monitoring of marine fish, turtles, birds, and mammals
- Centralized data repository/access /data products
- Compliance with E.O. - Public Access to Research Results (PARR), & agency data sharing policies
- Asset and tagging Inventory w/ web interface
- Cost effective data management across programs
- Support science through integration tag data with other IOOS observations
- Permanent archiving with NCEI*

*S. Hayes (NMFS):*

S. Hayes discussed the animal telemetry activities occurring within NMFS and how collaboration with the ATN will benefit both entities. NMFS is utilizing telemetry applications to track protected species such as salmon, sturgeon, cetaceans, pinnipeds, turtles, sharks, and cod. Challenges within NMFS telemetry applications are trying to make population-scale inference from data sets collected by different programs with different objectives and tag technologies. S. Hayes noted that a big benefit of a multi-agency funded ATN would be increased collaboration/coordinated tagging efforts, which would allow us to better design broader-scale studies to accomplish multiple objectives. The ATN can provide NMSF with:

- Research-to-Operation (R2X) transition
- One-Stop-Shop
    - Central/searchable repository of all telemetry data
    - Animals tracked while crossing regional/national boundaries easily
- Archival preservation through NCEI
- International data standards
- Compliance points for funders/permit managers- eg: Year 2 funding (or permitted research) contingent to uploading data in ATN DAC
- Funding opportunities (our big funders- BOEM, ONR- want this)
- Economy of scale

NMFS is still in the process of defining their relationship with ATN.

*J. Price (BOEM):*

J. Price provided an overview of the BOEM model and their work with animal telemetry. He noted, similar to other agencies, BOEM is mostly a funding source which focuses on environmental research programs which consider "Biodiversity as a proxy to ecosystem health." Internal proposals tend to have broad topic areas with emphasis on socio-economic impacts and acoustic data examining seismic survey operations. ATN will aid BOEM similar to how it would other agencies. BOEM will assist ATN with different types of data collections such as socio-economic data. J. Price noted that he would like to see BOEM increase buy-in and provide longer term funding. He also noted that that process would be aided with the creation of performance metrics for ATN.

## V. DAC Overview and Discussion (D. Thompson)

D. Thompson provided a brief history of the DAC and an overview of the major goals of the DAC. The current ATN DAC is a distributed system with data flowing into computers hosted at Stanford University and NOAA Southwest Fisheries Science Center (SWFSC). The website is hosted at NOAA facilities in Santa Cruz with the

database backend located at Stanford University's Hopkins Marine Station in Pacific Grove, CA. The DAC goals include

- Assist Primary Investigators; Use common algorithms for telemetry data management, centralize data storage, standardize data formats, improved status and management reporting.
- Provide access to improved tools to manage, analyze and share data, improve on data visualization offerings.
- Implement DOI. (Digital Object Identifier) of biologging data sets
- Enable Permanent Archiving at NCEI.
- Integration of tag environmental data with other IOOS observation data.
- Potential for larger data sets, allowing researchers access to more baseline data.
- Potential for big data products, for research "across species".
- Receive & Archive Satellite, Acoustic, Archival Data from Multiple Sources.
- As tags and tagging strategies improve, add new data products to the centralized repository.
- Establish IOOS data storage and sharing standards that enable multiple bodies to store data in one National data set
- Enable and Promote Data Availability and Sharing among the Global Community of Animal Tagging Operations and Oceanographic Researchers.
- Enhance and Expand Electronic Tag Data Products
- Expand our offerings to support Real-Time data flow of Tag Data

The DAC data flow system is described as follows:

- Archival based data is drawn from animal tracking deployments and datasets collected by tagging programs using implantable archival tags and pop-up archival tags that have been recovered.
- Satellite tags attached to marine animals report real-time data via the Argos satellite-based system then directly from CLS/Argos to Stanford University servers which then deliver geo-locations and data sets to the ATN DAC.
- Acoustic data are collected from archival receivers as well as via Iridium linked acoustic receivers mounted on stationary buoys and mobile platforms such as Wave Gliders.
- Pop-up satellite tags collect data while the tags are attached to an animal and are preprogrammed to release and float to the surface after a specified period of time. The DAC servers collect position as well as oceanographic and behavioral data.

D. Thompson provided a map of the DAC infrastructure.

- Hardware Hosting Architecture
    - Production machines are currently located at Stanford University HMS as well as the NOAA offices in Santa Cruz.
    - Machines located at the Stanford University main campus act as offsite backup and could act as primary servers in the event of a prolonged outage at the HMS.
    - We are also working to establish new back up hardware and repurpose old servers at HMS to have a secondary site located at the Marine Station, in the event of a hardware failure of the current production machines.
- Software Architecture
    - Web Site, hosted in Santa Cruz, retrieves data from the primary database at Hopkins but also acts as a backup destination for some of the data being displayed on the website.
    - The database environment is based on a current version of PostgreSQL/PostGIS. One goal related to maintaining a high availability installation will be to put a proxy in front of the database installation and have two instances of Postgres replicated and in-sync.
    - Programming, Algorithm Development; Perl, Python, R, Matlab

The current priorities of the DAC include:

- Software Development
    - Coding to support Wildlife Computers, real-time feeds are being retrieved and loaded into the system automatically. The code to support a range of Wildlife Computers tag data is currently being developed.
    - Developments are underway to support improved process flow through the system, from data sources, to end user notifications, quality control and support for expanded types of data retrieval.
    - New data attribution methodology is being applied, to improve and standardize the rules for attribution of data contributed by external data management groups and individual researchers.
    - New users and new types of tag devices are a focus of the development team,
- Improved website usability
    - New landing page to assist novice users.
    - Improved access to data for experienced users.
    - New website technologies being prototyped.
- Database Development
    - Backend database table refactoring to optimize database schema and to support generic table structures for all types of tag devices.
- Data Products
    - Oceanographic & Behavioral data. We have a wealth of data that needs improved visualization tools to facilitate research with our datasets.
- ATN DAC to NCEI.
- Data Attribution
    - Inclusion of DAC assets into the global DOI (Digital Object Identifier) framework is one path to providing appropriate attribution for use of specific datasets.

D. Thompson also provided a demonstration of the ATN DAC.

***DISCUSSION:***

*SG members asked if the DAC hosts any other types of environmental data. D. Thompson clarified that other types of data are hosted—a partnership with ERD allows for an overlay with some satellite data. SG members inquired how different IMOS data was from others. D. Thompson replied that it is not much different and pretty simplistic, but could be difficult for the DAC to digest and suggested defining a core set of data that would be vital to capture and share. SG members asked about the harmonizing of data and if all the nodes would be compatible when completed. D. Thompson noted that most telemetry networks are working toward data standardization and would hopefully be able to get there. The SG members noted the importance of taking in NCEI passive acoustic data and collaborating with OBIS—OBIS is currently working on methods to identify multiple data sets from a single identity. The members discussed the use of DOIs and successful methods of data attributions. During the demonstration, the SG members asked if the system has the capability to share/not share different data sets for a single species. D. Thompson clarified that it could not at the time, but it working to develop that functionality. SG members inquired if the display tracks were utilizing model or raw data. D. Thompson clarified that it was raw data, but that the tracks could be smoothed with filtering. S. Simmons noted that when initiating a new search on the map, not all of the previous marked data displayed can be cleared (ie buoy data).The SG stressed the importance of making the website more user friendly, increasing flexibility of*

*data sorting, being able to dissect data sets, adding more acoustic telemetry data, defining acoustics standards, and identifying what the function of the ATN is overall.*
*S. Simmons noted that there is a common problem aggregating data streams from different tags that are deployed on the same animal at the same time. She indicated that OBIS-ENV is developing a schema to deal with this problem and the DAC team should coordinate to use the same schema.*

*SG agreed that Data Attribution is a critical topic for the community, and recognized that the DOI approach is only one of several possible solutions to acknowledging the use of specific datasets.*

*There was a question that remains outstanding about what is status of data on DAC if the government receives a FOI request. Can data be unmasked using a FOI request. Bill suggested this would be a question for the NMFS General Counsel.*

**VI. Inventory of Assets and Data Sets (B. Woodward)**

B. Woodward briefed the SG about the inventory of telemetry assets and displayed the current iteration of the map. B. Woodward noted that the inventory is a work in progress and not complete. The map can be viewed here.

***DISCUSSION:***

*The SG noted the importance of defining the relevance of this if money was being directed for this. B. Woodward noted that if a program or individual has contributed data to the DAC, then could automatically be incorporated into the inventory.*

**VII. FY16 Activities and FY17 Plans (B. Woodward)**

B. Woodward updated the SG on the status of the ATN and plans for the upcoming years. The ATN Implementation Plan set out guiding phases to move the network into the operational phase. Phase 1 for 2016/2017 included the following tasks:

- Coordination
    - Network Coordinator Hire
    - Build alliance and engagements with existing US regional telemetry networks and programs
        - Community workshops/engagements have been held/are being planned with the following programs/regions:
            - ACT – MARACOOS
            - FACT – SECOORA
            - iTAG – (GCOOS)
            - USCAN – CARICOOS
            - GLATOS – GLOS
            - NOAA/Office of National Marine Sanctuaries
            - Atlantic White Shark Conservancy
            - Shark Research & Conservation Program (U. of Miami)
            - NOAA/Marine Mammals Lab
            - Coonamessett Farm Foundation
    - Build alliance and engagements with International Partners:
            - Ocean Tracking Network – Canada (IDMC)

        - IMOS/IMAS – Australia
- Governance Structure
    - Established ATN Steering Group
- Data Management System / Data Assembly Center
    - Initiate DAC (Operational January 2017)
    - Initiate Permanent NCEI Archiving Capability
    - Initiate Regional Acoustic Nodes linking with ATN DAC (SECOORA, MARACOOS)
    - Adopt ATN for BOEM/Navy telemetry studies
    - Direct all BOEM / Navy studies to submit data to ATN DAC
    - Asset/Effort Inventory Website (Who What, Where)

Phase 2 for 2017/2018/2019 has the following objectives:

- Develop Communications Plan
- Define & Fund Multi-Agency Collaborative Baseline Observations & Required Infrastructure
    - Regional ATN Workshops with Stakeholders & Telemetry Practitioners to ID Assets, effort, needs, gaps, and priorities
        - MARACOOS-MATOS (Feb 21-22, 2017)
        - SECOORA-CARICOOS (Mar 29-30, 2017)
        - *AOOS* (December 5-7, 2017)
        - *PACIOOS, GCOOS…….*
    - Establish observation priorities
    - Plan for sufficient funding tagging & infrastructure O & M
    - Determine ATN funding distribution across RAs
    - Establish integration & coordination IOOS assets

B. Woodward also provided an overview of the cost/time benefits to PIs from the data management assistance to the ATN.

- Data Archiving
    - Eliminating need/cost to create your own complex data storage system
    - Providing regulatory compliance with public availability (PARR)regulations
- Efficient Metadata Managing/Archiving/Sharing
    - Providing standardized metadata & reporting formats
    - Enabling easier deciphering of other PI's data
- Interoperability with other Telemetry Data Centers
    - Eliminating effort required to submit your data to multiple centers
- Efficient Sharing of your Data with Collaborators
- Streamlined Linking of Telemetry Data with a Wide Range of Environmental Covariates
- Availability of Tools for Mapping, Analysis, QA/QC & Visualization
- Simplified Data Discovery/Exploration

**VIII. Priority Setting and Funding (B. Woodward)**

B. Woodward opened the floor up to discussion on setting priorities and defining funding mechanisms as a body. He noted the importance of providing some near-term tangible support to the telemetry community to ensure their continued engagement with the ATN. This approach is a modification to the initial plan as outlined in the Implementation plan that included holding regional workshops followed by a plan for investment in telemetry activities. However, the workshops are taking longer to execute than initially

planned, so all agree that providing some level of near-term support is the best way forward. The group discussed the following possibilities of projects, products, and support for the community. Priorities were discussed with consideration of baseline costs, functionality, and those mostly likely to receive support. The following ideas were suggested:

- Providing funds to send data managers/"data diplomats" to regions needing assistance for keeping their regional node compliant with data collection methods and capabilities and/or working with PIs to format data for submission to the DAC.
- Funding acoustic arrays in 'critical' locations. Use satellite tags to help define where acoustic arrays/tags should be located. Providing a "shelved" stock of readily available satellite tags as a resource for the network. This is similar to what Randy/Mote Marine Labs do in preparation for stranding events. Buying tags via the ATN would reduce overhead costs for PIs and tagging community.
- Providing funds for Argos service for satellite tags that meet the research needs of multiple agencies
- Using the FACT Strategic Plan to help with priority setting
- Investing in a method, possibly including 'citizen science,' to enable relay of acoustic data in real-time to the community
- Acoustic Receiver Pool. As outlined in the Implementation Plan this pool could be used for rapid response to replace high priority receivers that die. This could be a loaner program.

The SG discussed the possibility of developing guidelines for SG funding decisions and priority setting. In the end, the group considered surveying the Regions PRIOR to their regional ATN workshop in order to identify needs, gaps, and priorities and assessing notes plus identifying common threads from previous workshops to help in the process. The suggestion was also made to create a template for all ATN Workshop Reports. J. Young suggested focusing on smaller groups within the regional communities to identify priorities.

## IX. Steering Group Task Teams

SG members discussed various areas within the scope of the ATN which would need special focus and expressed the importance of developing task teams to address them. The following task teams were suggested:

1. Acoustic Tag Data – incl. what can be collected and what should be displayed (G.Skomal, J. Young, S. Hayes, M. Ogburn, D. Thompson
2. Data Attribution incl. doing some DOI research (J. Young, R. Wells, S. Simmons)
3. DAC and Inventory Website Usability - is telemetry community getting what it needs/is it satisfied; what data products should the DAC provide to the community?
    - Satellite data use – marine mammals, turtles…. (K. Hart, M. Weise)
    - Acoustic data use (G. Skomal, J.Young, S. Hayes, M. Ogburn, D. Thompson)
    - Archival data use (S. Simmons)
4. Integration of multi-sensor data into the DAC – what data is available (already on the table), new tag types?, adding environmental covariates (M. Weise, B. Woodward, D. Thompson)

## X. Next Steps

The voting members came to the consensus to explore best methods to extract gaps, needs, and priorities of the regional networks to aid the ATN SG to identify a tangible product for the telemetry community.

B. Woodward set a tentative date for the next SG meeting for **November 8-9, 2017**. A decision will be made in the future whether this meeting will be "in-person" or "remote." The SG members will be allowed to send secondary representation if unable to attend the meeting themselves.

# Meeting Attendees

**Steering Group Members**

| | | |
|---|---|---|
| Hart, K. | USGS | kristen_hart@usgs.gov |
| Hayes, S. | NMFS | sean.hayes@noaa.gov |
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| Price, J. | BOEM | james.price@boem.gov |
| Simmons, S. | MMC | ssimmons@mmc.gov |
| Skomal, G. | MMF | gregory.skomal@state.ma.us |
| Smith, D. | USACE | David.L.Smith@erdc.dren.mil |
| Turner, W. | NASA | woody.turner@nasa.gov |
| Weise, M. | ONR | michael.j.weise@navy.mil |
| Wells, R. | CZS | rwells@mote.org |
| Woodward, B. | IOOS/ATN | bill.woodward@noaa.gov |
| Young, J. | FWRI | Joy.Young@myfwc.com |

**Others**

| | | |
|---|---|---|
| Canonico, G. | NOAA | gabrielle.canonico@noaa.gov |
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| Gray, T | CLS America, Inc. | tgray@clsamerica.com |
| Rome, N. | IOOC | nrome@oceanleadership.org |
| Thompson, D. | Stanford/ATN DAC | dbt@stanford.edu |

# Action Items

| # | Action Item | Point | Due Date |
|---|---|---|---|
| 1 | Provide monthly ATN updates to SG. | B. Woodward | Monthly |
| 2 | Explore the mechanism/value of connecting the PAM-NCEI activities with our ATN DAC-NCEI activities Using the Tethys database schema | J. Price / Weise | |
| 3 | Contribute examples of data attribution resolutions. | R. Wells | |
| | | | |
| 4 | Propose mechanism to examine priorities/needs/gaps across regions; create template for Workshop Reports | B. Woodward/SG Members | |
| 5 | Formally document Task Teams of the SG, identify tasks and implement the actions | B. Woodward/TT Members | |
| 6 | Seek agreement on the Asset Inventory data Fields | B. Woodward | |
| 7 | Determine whether data in a DAC is subject to the FOIA requirements | B. Woodward | |