Navy Marine Species Monitoring: Data Management

OVERVIEW

- HDR's Role in MSM Data Management
- MSM Data Management Plan
- MSM Electronic Data Deliverables
- Data Standardization
- Types of Monitoring Data
- Data Deliverable Procedures

Navy Marine Species Monitoring: HDR's Role

- Implement Navy-directed data management protocols, achieve consistency across training ranges
- Serve as a resource for our teaming partners to facilitate MSM data collection, standardization and dissemination
- Archive copies of visual, acoustic and telemetry datasets collected by our teaming partners
- Conduct in-house monitoring surveys (primarily visual) and standardize, disseminate and archive these data

Navy Marine Species Monitoring: 2014 Data Management Plan

- First draft prepared in 2010, revised version 2014
- Outlines flow of data through acquisition, processing, dissemination, archiving
- DMP is a living document, reflects the evolution of MSM data collection and management procedures
- In 2014 Navy issued revised guidance for electronic data deliverables
  - Environmental Information Management System (EIMS)
  - OBIS-SEAMAP

Navy Marine Species Monitoring: 2014 Data Management Plan

- Newly incorporated survey methodologies (e.g. shore-based theodolite surveys)
- Expanded section on PAM tools to include towed, fixed, drifting, diving, and animal-borne receiving systems and recording devices
- Expanded section on geospatial data processing
- Newly developed *MSM Data Standard*

Navy Marine Species Monitoring: Data Standardization

- MSM data is collected by a variety of researchers, using multiple visual survey platforms (vessel, aerial, shore-based), following a range of survey protocols
- *Standardization* of multiple data types provides a common vocabulary for data collectors and analysis, and allows large datasets to be compiled for analysis and interpretation

Marine Species Monitoring Data Standard

Vessel	Aerial	Shore-Based	Standardized Header	Format	Units	Definition
X	X	X	AltitudeM	number	meters	The altitude of the observation platform (plane, vessel bridge, etc) above sea level
X	X	X	Areakm2	number	km2	The area in km2 over which the survey took place
	X		AspectSlope	number	degrees	Bathymetric slope aspect at location of animal
		X	AnimalSpeed	number	knots	A calculation based on multiple resights, calculating the distance travelled by the time elapsed between sighting events
X	X	X	Bearing	Alpha-numeric	degrees; 1'oclock to 12 o'clock	Relative bearing from the platform to the sighting, where the front of the platform is zero degrees. Formats include clock face, degrees, etc.
X	X	X	BearingAbs	number	degrees	True (not magnetic) bearing to sighting. Calculated from relative bearing and platform bearing.

Navy Marine Species Monitoring: Data Types

- Visual (aerial, vessel, shore-based)
- Tagging/telemetry
- Biopsy
- Photo/Video
- Acoustic (sonobuoy, towed array, moored hydrophones, acoustic gliders)

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Obtain Visual Survey Data

- Receive data collected by HDR or teaming partner in tabular format (sightings, effort, environmental data plus metadata)
- Check for completeness, accuracy
- Ask for clarification from data collector/PI if needed

Process and Standardize

- Match existing source data headers to corresponding to Navy data standard headers
- Cross-check standardized tabular data with original source data for accuracy
- Plot sightings/effort to identify errors, outliers
- Author metadata

Distribute

- Upload source data and geodatabase files to EIMS (DoD)
- Navy provides data to Navy Marine Species Density Database
- Upload sightings data to OBIS-SEAMAP (Public)

Archive

- Data is housed on a secure (firewalled and password protected) HDR central server facility
- Each HDR office in addition has its own file server which provides data storage redundancy