

GULF OF MEXICO MARINE MAMMAL RESEARCH AND MONITORING MEETING



MEETING PROGRAM AND PROJECT DESCRIPTIONS

7-8 APRIL 2015

**ASTOR CROWNE PLAZA
NEW ORLEANS, LA**

GULF OF MEXICO MARINE MAMMAL RESEARCH AND MONITORING MEETING

7-8 APRIL 2015

**ASTOR CROWNE PLAZA
NEW ORLEANS, LOUISIANA**

WELCOME!

The marine mammal research and conservation community in the Gulf of Mexico is active and growing. This meeting provides an opportunity for members of the community to discuss recent research developments and ongoing research and monitoring needs.

In light of existing and potential funding opportunities in the Gulf, primarily stemming from the Deepwater Horizon oil spill, now is a good time to start developing a long-term strategy for addressing high priority marine mammal research and monitoring needs.

The objectives of the meeting are to:

- Provide an overview of marine mammal stocks and human activities
- Review marine mammal research and monitoring programs
- Identify potential funding sources/opportunities for marine mammal research and monitoring
- Identify high priority marine mammal information needs for the next 5-15 years
- Discuss options for collaborations to facilitate long-term planning, information sharing, and capacity building

The Steering Committee would like to thank all of the meeting presenters, session moderators, breakout group leaders, note-takers, sponsors, and participants that have contributed their time and efforts to make this meeting a success.

The information presented and ideas expressed at this meeting will help build a strong foundation for expanded marine mammal research and monitoring in the Gulf of Mexico to better conserve and protect marine mammals that are a part of this complex, diverse, and changing environment.

Tweet your observations about the meeting using #gulfinerinemammals!

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The organization of this meeting was a collaborative effort of the following Steering Committee.

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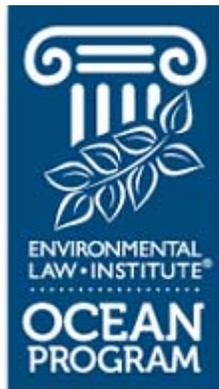
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AGENDA

Tuesday, 7 April 2015	
7:30-8:30 AM	Check-in / Continental Breakfast
8:30-10:00 AM	<p>Welcome and Introductions / Meeting Objectives and Outcomes</p> <p><i>Steering Committee</i></p> <p><i>Vicki Cornish, Marine Mammal Commission</i></p> <p><i>Frances Gulland, Marine Mammal Commission</i></p> <p>Overview of Marine Mammal Stocks and Human Activities</p> <p><i>Laura Engleby, National Marine Fisheries Service (NMFS) Southeast Regional Office</i></p> <p>Current Research and Monitoring Programs</p> <p>I. Abundance, Distribution, and Stock Structure</p> <p>Moderator: Keith Mullin, NMFS Pascagoula Laboratory</p> <p><i>Keith Mullin, NMFS Pascagoula Laboratory - "NMFS Research on Cetacean Abundance, Distribution and Stock Structure in the Gulf of Mexico"</i></p> <p><i>John Hildebrand, Scripps Institution of Oceanography - "Passive Acoustic Monitoring for Marine Mammals in the Gulf of Mexico"</i></p>
10:00-10:30 AM	Break
10:30-12:00 PM	<p>Current Research and Monitoring Programs (cont.)</p> <p>I. Abundance, Distribution, and Stock Structure (cont.)</p> <p><i>Bruce Mate, Oregon State University - "Sperm Whale Dive Behaviors Reveal Changes in Benthic Foraging Around Macondo Spill Site"</i></p> <p><i>Leslie Ward, Florida Wildlife Research Institute (FWRI) - "Monitoring Population Dynamics of the Florida Manatee"</i></p> <p>II. Health, Strandings, and Life History</p> <p>Moderator: Randy Wells, Chicago Zoological Society / Sarasota Dolphin Research Program</p> <p><i>Erin Fougères, NMFS Southeast Regional Office - "Overview of the Gulf of Mexico Marine Mammal Stranding Network"</i></p> <p><i>Jenny Litz, NMFS Southeast Fisheries Science Center - "Overview of Cetacean Stranding Data from the Gulf of Mexico, 2000 - 2014"</i></p> <p><i>Randy Wells, Chicago Zoological Society / Sarasota Dolphin Research Program - "Bottlenose Dolphin Research on Florida's West Coast: 4 Decades of Research, 5 Generations of Dolphins, and 3 Generations of Scientists"</i></p>

GULF OF MEXICO MARINE MAMMAL RESEARCH AND MONITORING MEETING

	<i>Lori Schwacke, NOAA National Ocean Service - "Bottlenose Dolphin Health Assessment Studies in the Gulf of Mexico"</i>
12:00-1:30 PM	Lunch (on your own)
1:30-3:00 PM	<p>Current Research and Monitoring Programs (cont.)</p> <p>III. Understanding Effects of Human Activities</p> <p>Moderator: Laura Engleby, NMFS Southeast Regional Office</p> <p><i>Teri Rowles, NMFS Office of Protected Resources - "Requirements for Epidemiological Studies to Understand Biological and Chemical Effects on Cetaceans"</i></p> <p><i>Chris Clark, Cornell University - "Variability in the Gulf of Mexico's Marine Acoustic Environment"</i></p> <p><i>Katie McHugh, Chicago Zoological Society / Sarasota Dolphin Research Program - "Recreational interactions - Growing Threats to Gulf Marine Mammals"</i></p> <p><i>Lance Garrison, NMFS Southeast Fisheries Science Center - "Commercial Fisheries and Marine Mammal Bycatch in the Gulf of Mexico"</i></p>
3:00-3:30 PM	Break / Poster Viewing
3:30-5:00 PM	<p>Priority Information Needs and Knowledge Gaps - Recent Assessments</p> <p>Moderator: Randy Reeves, Marine Mammal Commission</p> <p><i>Libby Fetherston, Ocean Conservancy - "Gulf of Mexico Long-Term Monitoring Programs Case Study: Assessment of Marine Mammal Monitoring Programs and Gap Analysis"</i></p> <p><i>Laura Engleby, NMFS Southeast Regional Office - "Summary of 2013 Gulf of Mexico Regional Workshops: Cooperative Conservation for Marine Mammals in the Gulf"</i></p> <p><i>Barb Kirkpatrick, Gulf of Mexico Coastal Ocean Observing System (GCOOS) - "GCOOS Build-out Plan and Marine Mammal Monitoring"</i></p> <p><i>Jennifer Bosyk, Bureau of Ocean and Energy Management (BOEM) - "Marine Mammal Monitoring for Geological and Geophysical Activities in the Gulf of Mexico"</i></p>
6:00-8:00 PM	<p>Evening Poster / Social Session</p> <p>Organizer: Tré Glenn, BOEM</p> <p><i>Scott Baker, Oregon State University - "Archiving and Accessing a 'DNA Register' for Individual Identification and Stock Structure of Sperm Whales in the Gulf of Mexico"</i></p> <p><i>Ruth Carmichael / Noel Wingers, Dauphin Island Sea Lab - Three posters:</i></p> <p><i>"Sighting Demographics of the West Indian manatee (Trichechus manatus) in Alabama and Mississippi waters"</i></p> <p><i>"Modeling West Indian Manatee Movements Informs Space Use Patterns and</i></p>

GULF OF MEXICO MARINE MAMMAL RESEARCH AND MONITORING MEETING

Phenology in the Northern Gulf of Mexico"

"Distribution of Stranded Bottlenose Dolphins (Tursiops truncatus) in Alabama Waters from 2004 – 2013"

Carolyn Cush, Chicago Zoological Society - "Gulf of Mexico Dolphin Identification System (GoMDIS) - A Collaborative Tool for Bottlenose Dolphin Conservation & Monitoring"

Kristi Fazioli, University of Houston-Clear Lake Environmental Institute of Houston - "An Apparent Increase in Bottlenose Dolphins in Upper Galveston Bay: City Slickers or Tourists?"

Kaitlin Frasier, Scripps Institution of Oceanography - "Long-term Passive Acoustic Monitoring of Dolphins in the Gulf of Mexico"

Aleta Hohn, NMFS Beaufort Lab - "Assigning Tursiops Strandings to Stock Using Stable Isotope Ratios"

Iain Kerr, Ocean Alliance - "Marine Mammal Toxicological Research and Education: Five summers in the Gulf of Mexico in Response to the Deepwater Horizon Disaster"

Ibiza Martinez-Serrano, Universidad Veracruzano - Two posters:

"Biological Monitoring Program Based on Indicator Species of Ecological Integrity in the National Park "Sistema Arrecifal Veracruzano" (Veracruz Reef System)"

"Use and Characterization of Habitat by the Antillean Manatee (Trichechus manatus manatus) in the South of Veracruz, Mexico"

Paula Moreno, USM Gulf Coast Research Laboratory - Two posters:

"Independent Advisory Team for Marine Mammal Assessment"

"Gulf Coast Research Laboratory: Marine Mammal Research"

Thomas Norris, Bio-Waves, Inc. - "Passive Listening, Active Mitigation: Passive Acoustic Monitoring and Mitigation of Oceanic Delphinids During Mid-Water Net Trawl Sampling on NOAA's R/V Pisces"

Nicole Phillips, University of Miami / NMFS Lafayette Laboratory - "A Method for Prioritizing Research on Common Bottlenose Dolphin Stocks through Evaluating Threats and Data Availability: Development and Application to Bay, Sound and Estuary Stocks in Texas"

Jonathan Pitchford, Institute for Marine Mammal Studies - "Predictive Spatial Modeling of Seasonal Bottlenose Dolphin (Tursiops truncatus) Distributions in the Mississippi Sound"

Steve Shippee, Marine Wildlife Response - "Can Simple Tackle Modifications and Use of Fish Descenders Decrease Harmful Fishery Interactions with Bottlenose Dolphins?"

Dan Slone, US Geological Survey - "USGS Manatee Research in the Gulf of Mexico: Movement and Habitat Use in the Northern GOM to Assist BOEM with Management of Coastal Resources"

Moby Solangi, Institute for Marine Mammal Studies - "Bottlenose Dolphin (Tursiops

GULF OF MEXICO MARINE MAMMAL RESEARCH AND MONITORING MEETING

	<p><i>truncatus) Stranding Response and Research"</i></p> <p><i>Raphaella Stimmelmayer, North Slope Borough (in absentia) - "Bile Collection Technique in Subsistence Harvested Beluga Whales (Delphinapterus leucas): Proof of Concept Study"</i></p>
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Wednesday, 8 April 2015	
7:30-8:30 AM	Continental Breakfast
8:30-10:00 AM	<p>Day One Highlights / Objectives for Day Two</p> <p><i>Vicki Cornish, Marine Mammal Commission</i></p> <p>Data Sharing as a Mechanism for Collaboration and Capacity Building</p> <p>Moderator: Stephanie Watson, GCOOS</p> <p><i>Sam Simmons, Marine Mammal Commission - "Data sharing 101 – The 5 W’s and Some Existing Opportunities to Share Marine Mammal Data"</i></p> <p><i>Jim Gibeaut, GRIIDC / Harte Research Institute - "GRIIDC: Establishing a Gulf of Mexico Data Cooperative"</i></p> <p>Developing a Monitoring Framework for the Gulf</p> <p>Moderator: Leslie Ward, FWC / FWRI</p> <p><i>Randy Wilson, U.S. Fish and Wildlife Service - "Towards a Gulf-wide Bird Monitoring Network: Identifying Objectives to Prioritize Action"</i></p>
10:00-10:30 AM	Break / Poster Viewing
10:30-12:00 PM	<p>Funding Opportunities in the Gulf</p> <p>Moderator: Kathryn Mengerink, Environmental Law Institute</p> <p><i>Jean Cowan, NOAA Restoration Center</i></p> <p><i>John Ettinger, RESTORE Act Ecosystem Restoration Council</i></p> <p><i>Roger Helm, U.S. Fish and Wildlife Service/ RESTORE Act Science Program</i></p> <p><i>Andy Shepard, Florida Institute of Oceanography / RESTORE Act Centers of Excellence / Gulf of Mexico Research Initiative (GOMRI)</i></p> <p><i>Jon Porthouse, National Fish and Wildlife Foundation Gulf Environmental Benefit Fund</i></p> <p><i>LaDon Swann, Auburn University / National Academy of Sciences Gulf Research Program (Advisory Board) / Ad-hoc research funders forum</i></p> <p><i>Rodney Cluck, BOEM Environmental Studies Program</i></p>

GULF OF MEXICO MARINE MAMMAL RESEARCH AND MONITORING MEETING

	<i>Gary Wolinsky, Chevron / Sound and Marine Life Joint Industry Program</i>
12:00-1:30 PM	Lunch (on your own)
1:30-3:00 PM	<p>Priority Information Needs and Knowledge Gaps</p> <p><i>(Break-out group discussions)</i></p> <p><i>Breakout Groups:</i></p> <p><i>I. Abundance and Distribution</i></p> <p><i>II. Stock Structure</i></p> <p><i>III. Strandings/Health Assessments/Life History</i></p> <p><i>IV. Understanding Effects of Human Activities - Sound</i></p> <p><i>V. Understanding Effects of Human Activities - Recreational Fishing and Tourism</i></p>
3:00-3:30 PM	Break
3:30-5:00 PM	<p>Alignment of Funding Opportunities with Information Needs and Knowledge Gaps</p> <p><i>Moderator: Kathryn Mengerink, ELI</i></p> <p><i>(Group discussion)</i></p> <hr/> <p>Options for Developing a Gulf-wide Marine Mammal Research and Monitoring Plan</p> <p><i>Vicki Cornish, Marine Mammal Commission</i></p> <p><i>Michael Tillman, Marine Mammal Commission</i></p> <p><i>(Group discussion)</i></p>

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GULF OF MEXICO MARINE MAMMAL RESEARCH AND MONITORING MEETING

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GULF OF MEXICO MARINE MAMMAL RESEARCH AND MONITORING MEETING

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GULF OF MEXICO MARINE MAMMAL RESEARCH AND MONITORING MEETING

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GULF OF MEXICO MARINE MAMMAL RESEARCH AND MONITORING MEETING

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PROJECT DESCRIPTIONS

The following section of the program contains descriptions of recent or current marine mammal research and monitoring projects in the Gulf of Mexico. The information was obtained from meeting registrants that identified themselves as Principal Investigators, as well as others that were not able to attend the meeting but completed the registration survey. For further information about the projects identified, please contact the Principal Investigators directly.

List of Principal Investigators and Project Titles:

Baker, C. Scott, Oregon State University, Marine Mammal Institute

- *Archiving and accessing a 'DNA register' for sperm whales in the Gulf of Mexico*

Barkaszi, Mary Jo, CSA Ocean Sciences

- *Pressure Wave Acoustic Study for Well Decommissioning in the Gulf of Mexico*

Biggs, Douglas, Texas A&M University

- *Sperm Whale Seismic Studies*

Brenner, Jorge, The Nature Conservancy

- *Mapping and conservation of marine migratory species in the Gulf of Mexico*

Carmichael, Ruth H., Dauphin Island Sea Lab

- *Proposed data collection plan to assess injury to West Indian manatees from the Deepwater Horizon Oil Spill outside of Florida*
- *Effects of oil contaminants on sentinel benthic and pelagic species in Mobile Bay*
- *A cooperative marine mammal stranding network for Alabama*

Engelhaupt, Dan, HDR

- *Phylogeography, Kinship, and Molecular Ecology of Sperm Whales*
- *Naval Surface Warfare Center Panama City Division - Training Range Marine Mammal Monitoring*

Fazioli, Kristi, University of Houston-Clear Lake (UHCL), Environmental Institute of Houston

- *Galveston Bay Dolphin Research and Conservation Program*
- *Ecology and Conservation of the Common Bottlenose Dolphin (*Tursiops truncatus*) in the Bay, Sound, Estuary and Near-shore Coastal Waters of Texas*

Gowans, Shannon, Eckerd College

- *Eckerd College Dolphin Project*

Grimes, D. Jay, University of Southern Mississippi, Gulf Coast Research Laboratory

- *A Bottlenose Dolphin Surveillance Team for Mississippi Sound*

Hildebrand, John, Scripps Institution of Oceanography

- *Passive Acoustic Monitoring for Marine Mammals in the Gulf of Mexico*

Hohn, Aleta, NOAA

- *Assigning Tursiops strandings to stock using stable isotope ratios*

Kerr, Iain, Ocean Alliance

- *Gulf of Mexico Odyssey Expeditions 2010 - 2014*

Jenny Litz, NOAA Fisheries, SEFSC

- *Gulf of Mexico Marine Mammal Stranding Network - data collection and important uses*

Martinez-Serrano, Ibiza, Universidad Veracruzana

- *Biological Monitoring Program based on indicator species of ecological integrity in the National Park "Sistema Arrecifal Veracruzano" (Veracruz Reef System)*
- *Use and characterization of habitat by the Antillean Manatee (*Trichechus manatus manatus*) in the south of Veracruz, Mexico*

Mate, Bruce R., Oregon State University, Marine Mammal Institute

- *Sperm Whale Seismic Study - satellite-monitored tagging project*
- *Sperm whale assessment during and after the DWH oil spill*

Moreno, Paula, Gulf Coast Research Laboratory, University of Southern Mississippi

- *Independent Advisory Team (IAT) for Marine Mammal Assessment and Development/Testing of a Tier System for Application to Potential Biological Removal*
- *Ecology, population dynamics and shrimp fishery interaction of Bottlenose dolphins in the Galveston Bay, Texas*

Morteo, Eduardo, Universidad Veracruzana

- *Trophic ecology of bottlenose dolphin-artisanal fisheries interactions in the coastal waters of Veracruz*

Mullin, Keith, NOAA NMFS

- *Developing Updated Abundance Estimates for Texas Bays using Photo ID Mark-Recapture*
- *Abundance and distribution of cetaceans in the Gulf of Mexico*

Norris, Thomas, Bio-Waves Inc.

- *Passive acoustic monitoring and mitigation of mid and deep water net tows to prevent dolphin entanglements*

Phillips, Nicole, University of Miami, Cooperative Institute for Marine and Atmospheric Studies / NOAA Fisheries

- *A method for prioritizing research on common bottlenose dolphin stocks through evaluating threats and data availability: development and application to bay, sound and estuary stocks in Texas*

Pitchford, Jonathan, IMMS

- *Predictive spatial modeling of seasonal bottlenose dolphin (*Tursiops truncatus*) distributions in the Mississippi Sound*

Powell, Jessica, NMFS Southeast Regional Office

- *Fifteen years later: An updated evaluation of the impacts and evolution of marine mammal tourism with a focus on human-dolphin interactions in Panama City, Florida*
- *Evaluating the Effectiveness of a Voluntary Program in Reducing Vessel Based Harassment in Key West, Florida, USA*

Reeves, Randall, Marine Mammal Commission

- *Insights from Whaling Logbooks on Cetaceans in the Gulf*

Schwacke, Lori, NOAA

- *DWH Natural Resource Damage Assessment Studies for Bay, Sound and Estuary Bottlenose Dolphins Following the Deepwater Horizon Oil Spill*

Shippee, Steve, Marine Wildlife Response

- *Testing Tackle Modifications and Fish Descender Tools for reducing dolphin depredation and scavenging of sport fish*
- *Can simple tackle modifications and use of fish descenders decrease harmful fishery interactions with bottlenose dolphins? (Poster abstract)*
- *Impacts of the 2010 Deep Water Horizon oil spill on estuarine bottlenose dolphins in the West Florida Panhandle*
- *Assessment of depredation by bottlenose dolphins (*Tursiops truncatus*) in the Northwest Florida and Alabama sport fishery*

Sidorovskaia, Natalia, University of Louisiana at Lafayette

- *Littoral Acoustic Demonstration Center - Gulf Ecological Monitoring and Modeling (LADC-GEMM)*

Simard, Peter, University of South Florida, College of Marine Science

- *Dolphin acoustic and visual surveys on the West Florida Shelf*

Slone, Daniel, USGS Southeast Ecological Science Center

- *Florida Manatee Movement and Habitat Use in the Northern Gulf of Mexico*
- *Analysis of existing USGS manatee telemetry data for the northern Gulf of Mexico*

Solangi, Moby Ph.D., IMMS

- *Abundance and site fidelity of dolphins in Mississippi Sound and adjacent waters*
- *Bottlenose stranding response and research*

Ward, Leslie, FWC / Fish & Wildlife Research Institute

- *Florida Marine Mammal Rescue, Carcass Salvage, Necropsy*
- *Manatee Aerial Surveys*
- *Photo-Identification and Genetic Monitoring of Florida Manatees*

Wells, Randall, Chicago Zoological Society

- *Sarasota Dolphin Research Program*
- *Gulf of Mexico Dolphin Identification System (GoMDIS)*
- *Tagging and tracking of bottlenose dolphins in the Northern Gulf of Mexico*

Whitehead, Heidi, Texas Marine Mammal Stranding Network

- *Enhancement of response, treatment and data collection from living and dead marine mammals stranded along the Texas coast*

Randy Wilson and John Tirpak, US Fish and Wildlife Service

- *Towards a Gulf-wide Bird Monitoring Network: Identifying Objectives to Prioritize Action*

Worthy, Graham, University of Central Florida

- *Impacts of the 2010 Deep Water Horizon Oil Spill on Estuarine Bottlenose Dolphin populations in the West Florida Panhandle*
- *Filling the gaps: Bottlenose dolphin population dynamics, structure, and connectivity in the Florida Panhandle*

PROJECT DESCRIPTIONS

(Listed By Author's Last Name)

Archiving and accessing a 'DNA register' for sperm whales in the Gulf of Mexico

Baker, C. Scott, Oregon State University, Marine Mammal Institute, 2030 SE Marine Science Dr, Newport, OR 97365, 541-272-0560, scott.baker@oregonstate.edu

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Project Description

A growing number of long-term studies of marine mammals and other marine megafauna (e.g., sharks, and turtles) are collecting spatially explicit records linked through individual identification to genetic samples, photo-identification and telemetry. These spatio-temporal records have been used to track the migration and life history parameters of individuals, to estimate the abundance and trends of populations by capture-recapture and, in the case of genetic markers, to infer close kinship (e.g., parent/offspring relationships) and define management units, or Distinct Population Segments. Here we describe progress with developing a 'register' of DNA profiles for sperm whales in the Gulf of Mexico, using biopsy samples and a standard set of genetic markers (e.g., mtDNA haplotypes, microsatellite genotypes and sex). These DNA profiles have now been used for individual identification and matching between investigators and across projects extending from the Sperm Whale Seismic Study (SWSS) and the Voyage of the Odyssey, to more recent project resulting from the Deepwater Horizon spill. We also describe progress with developing a cloud-based program, with distributed management, for archiving and accessing the spatially explicit records associated with DNA profiles. The database structure and tools provide for visual exploration of individual encounters and group occurrences of individual whales identified by DNA profiles, by photographs of natural marking (photo-ID), or from both sources of identity.

Keywords

DNA profiling, biopsy samples, computation, and photo-identification

Focal species

Sperm whale

Duration of Project

06/2015 – 06/2017

Focal habitats

Offshore/pelagic waters

Co-investigators

Bruce Mate, Oregon State University
Dan Engelhaupt, HDR, Inc.
Alana Alexander, University of Kansas

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Genetics/genomics
- Gulf oil spill effects
- Habitat use/distribution
- Life history
- Population dynamics

Pressure Wave Acoustic Study for Well Decommissioning in the Gulf of Mexico

Barkaszi, Mary Jo, CSA Ocean Sciences, 8502 SW Kansas Ave, Stuart, FL 33701, 772-219-3000, mbarkaszi@conshelf.com

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Project Description

Pressure wave measurements were taken at explosive well decommissioning events for data comparisons and enhancement of the ARA Underwater Calculator (UWC), which provides regulators with information for establishing safety zones for marine species during these events.

Keywords

Pressure Wave, Acoustic, Underwater Calculator, Explosive Removal of Offshore Structures (EROS)

Duration of Project

10/1/2014 - 11/1/2015

Co-investigators

Adam Frankle, MAI

Billy Poe, Explosive Services International

Tre Glen, (COR) BOEM

Focal species

All Gulf of Mexico marine mammals, and marine turtles

Focal habitats

Offshore/pelagic waters

Objectives

- Conservation and management
- Noise effects

Sperm Whale Seismic Studies

Biggs, Douglas, Texas A&M University, 979-219-4163, d-biggs@tamu.edu

Project Description

I was Chief Scientist for SWSS fieldwork (2001-2005).

Keywords

Sperm whales, habitat, controlled exposure experiments, partnership, government, academia industry

Duration of Project

2001 - 2007

Co-investigators

Peter Tyack (WHOI)

Bruce Mate (OSU)

Aaron Thode (SIO)

Focal species

Sperm whale

Focal habitats

Offshore/pelagic waters

Objectives

- Behavior/behavioral ecology
- Foraging/diet
- Genetics/genomics
- Habitat use/distribution
- Noise effects
- Population dynamics

Mapping and conservation of marine migratory species in the Gulf of Mexico

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Project Description

The Nature Conservancy is working on synthesizing existing scientific information into a report and series of maps (incl. GIS products) to increase the Conservancy and its network of partners' understanding of marine migratory species in the Gulf of Mexico, their ecological migration strategies, migratory corridors and stepping-stones used to migrate. Additionally the study will provide a series of research and conservation recommendations for future projects, including needs for coastal and marine habitat restoration. This project focuses in marine species of fish, sea turtles, marine mammals and birds, including estuarine, commercial, recreational, and highly migratory species. This project will be conducted at the Gulf of Mexico whole system scale. It will support the integration of a comprehensive view of the features, processes and areas used to migrate along the Gulf and into/outside the Gulf. This project intends to support a broad audience in the decision-making processes ranging from research needs, to commercial and recreational fishing industry to non-profit organizations and agencies working to conserve coastal and marine areas.

Keywords

Gulf of Mexico, Migratory species, Migrations, Corridors, and Conservation

Duration of Project

02/01/2014 - 03/01/2015

Co-investigators

Carly Voight, TNC
David Mehlman, TNC

Focal species

Manatee and Sperm whale

Focal habitats

Bays/sounds/estuaries, Nearshore/coastal waters, and Offshore/pelagic waters

Objectives

- Conservation and management
- Ecosystem modeling
- Fisheries interactions/gear research
- Habitat use/distribution
- Migration

Proposed data collection plan to assess injury to West Indian manatees from the Deepwater Horizon Oil Spill outside of Florida

Carmichael, Ruth H., Dauphin Island Sea Lab, 101 Bienville Blvd., Dauphin Island, AL 36528, 251-861-2141, rcarmichael@disl.org

Project Description

Aerial surveys from western Florida through eastern Louisiana to document locations of manatees and surface oil; collaboration with Sea to Shore Alliance and Florida Fish and Wildlife Conservation Commission

Keywords

Aerial survey, *Trichechus manatus*, NRDA, and oil spill

Duration of Project

05/01/2010 - 11/01/2010

Co-investigators

James Powell
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Focal species

Manatee

Focal habitats

Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Conservation and management
- Ecology
- Gulf oil spill effects
- Habitat use/distribution
- Life history

Effects of oil contaminants on sentinel benthic and pelagic species in Mobile Bay

Carmichael, Ruth H., Dauphin Island Sea Lab, 101 Bienville Blvd., Dauphin Island, AL 36528, 251-861-2141, rcarmichael@disl.org

Project Description

Effects of oil-derived substances on oysters and manatees; monitoring of tagged manatee distribution, movements, condition

Keywords

Trichechus manatus, Oil spill, and Telemetry

Duration of Project

07/01/2010 - 12/01/2010

Co-investigators

Anne Boettcher
Kyeong Park
Kristie Willett

Focal species

Manatee and eastern oysters

Focal habitats

Rivers/inland waters, Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Conservation and management
- Ecology
- Foraging/diet
- Habitat use/distribution
- Health and health assessment
- Life history

A cooperative marine mammal stranding network for Alabama

Carmichael, Ruth H., Dauphin Island Sea Lab, 101 Bienville Blvd., Dauphin Island, AL 36528, 251-861-2141, rcarmichael@disl.org

Project Description

Established equipment infrastructure for development of the AL Marine Mammal Stranding Network at DISL.

Keywords

Stranding, Bottlenose dolphin, and Manatee

Duration of Project

05/01/2011 - 03/01/2012

Co-investigators

Kelly Brinkman

Focal species

All Gulf of Mexico species

Focal habitats

Rivers/inland waters, Bays/sounds/estuaries, Nearshore/coastal waters, and Offshore/pelagic waters

Objectives

- Anatomy/taxonomy
- Conservation and management
- Cumulative effects
- Ecology
- Epidemiology
- Fisheries interactions/gear research
- Foraging/diet
- Genetics/genomics
- Gulf oil spill effects
- Health and health assessment
- Life history
- Strandings
- Toxicology

Phylogeography, Kinship, and Molecular Ecology of Sperm Whales

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Project Description

The molecular ecology for sperm whales (*Physeter macrocephalus*) in the northern Gulf of Mexico was investigated in detail using a suite of molecular markers. In addition, several genetic related aspects for the Mediterranean Sea, North Sea and the North Atlantic Ocean putative sperm whale populations were described. These analyses have provided new insights requiring proper management to ensure the survival of the northern Gulf of Mexico sperm whale stock in an area of increasing industrial activity.

Keywords

Sperm Whale Seismic Study, Sperm Whale, cetacean, microsatellite DNA, and mitochondrial DNA

Duration of Project

06/01/2000 - 04/01/2008

Co-investigators

A. Rus Hoelzel, University of Durham, England

Focal species

Sperm whale

Focal habitats

Offshore/pelagic waters

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Ecology
- Genetics/genomics

Naval Surface Warfare Center Panama City Division - Training Range Marine Mammal Monitoring
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Project Description

HDR working as a subcontractor to ARINC provided marine and biological resources monitoring and management services for the NSWC PCD. Marine species monitoring, evaluations, and/or assessments were conducted at various locations within the NSWC PCD's testing areas in the Gulf of Mexico as part of the Navy's requirements under their existing Letter of Authorizations. Specific tasks conducted under this contract included aerial and shipboard surveys; passive acoustic monitoring; behavioral studies; and management and coordination of complex projects during Navy training and testing exercises.

Keywords

Monitoring, dolphins, Navy, and aerial surveys

Duration of Project

04/01/2011 - 11/01/2014

Co-investigators

Jennifer Latusek-Nabholz

Focal species

All Gulf of Mexico marine mammal species

Focal habitats

Nearshore/coastal waters, and Offshore/pelagic waters

Objectives

- Behavior/behavioral ecology
- Habitat use/distribution
- Noise effects

Galveston Bay Dolphin Research and Conservation Program

Fazioli, Kristi, University of Houston-Clear Lake (UHCL), Environmental Institute of Houston, 2700 Bay Area Blvd., Box 540, Houston, TX 77058, 281-283-3792, fazioli@uhcl.edu

Project Description

Galveston Bay, Texas is one of the most industrialized estuaries in the United States. An urban watershed supporting over 4 million people and the second largest petro-chemical complex in the world concentrates its effects in the western portion of upper Galveston Bay. Heavy maritime traffic traverses the Houston Ship Channel and port facilities are undergoing significant expansions in concurrence with the deepening of the Panama Canal. Water quality in this region prior to 1970 was severely impaired and Galveston Bay was named one of the EPA's top 10 most polluted water bodies. Corrective measures have improved water quality and the region now shows declining trends for ammonia, phosphorus, and chlorophyll a. However, while these trends have created a better environment for biological life in the bay, concerns over elevated concentrations of pathogenic bacteria and chlorinated organic compounds persist. The Department of State Health Services (DSHS) has issued seafood consumption advisories throughout the Galveston Bay system and initiated total maximum daily load (TMDL) projects for PCBs and Dioxins in the Houston Ship Channel and upper Galveston Bay. Evidence from recent surveys suggests that a bottlenose dolphin (*Tursiops truncatus*) population regularly utilizes upper Galveston Bay and the Houston Ship Channel, an area previously thought to have very little dolphin activity following surveys conducted in 1990 by Texas A&M University at Galveston (TAMUG). Increased activity in this area may reflect the success of efforts to protect Galveston Bay and improve water quality over the past 30 years, however little is known about their habitat use, site fidelity or stock structure in the region. In fact, critical data gaps exist for all Texas bay, sound and estuary bottlenose dolphin stocks and managers consider Galveston Bay a high priority for research. Elevated exposure to contaminants in upper Galveston bay, combined with additional anthropogenic stressors such as habitat loss, harmful algal blooms, noise pollution and human and fisheries interactions, place these dolphins at high risk. The Galveston Bay Foundation (GBF) is partnering with the Environmental Institute of Houston at the University of Houston, Clear Lake (EIH-UHCL) to conduct research on this understudied population and is establishing the Galveston Bay Dolphin Research and Conservation Program (GDRCP). Through long-term photo-id monitoring, mark-recapture techniques and remote biopsy darting, this program aims to tackle fundamental questions pertaining to the population's ecology, health and behavior. Fin catalogs will be compared to historical sightings in the TAMUG fin database and other programs along the Texas coast and will be entered into the Gulf of Mexico Dolphin Identification System (GoMDIS). Analysis of skin and tissue samples will be completed in collaboration with management agencies and contribute to conservation goals for the region. Corresponding education and outreach programs will increase public awareness by promoting bottlenose dolphins as sentinels for Galveston Bay ecosystem health and sustainability.

Keywords

Galveston Bay, Stock Structure, Monitoring, Contaminants, and *Tursiops truncatus*

Duration of Project

08/01/2013 - Long-term monitoring

Co-investigators

Vanessa Mintzer, Galveston Bay Foundation

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Cumulative effects
- Ecology
- Ecosystem modeling
- Fisheries interactions/gear research
- Foraging/diet
- Genetics/genomics
- Habitat use/distribution
- Health and health assessment
- Life history
- Population dynamics
- Toxicology

Ecology and Conservation of the Common Bottlenose Dolphin (*Tursiops truncatus*) in the Bay, Sound, Estuary and Near-shore Coastal Waters of Texas

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Project Description

Recent stock assessment reports, publications and workshops have called for increased collaborative research and the use of a multidisciplinary approach to elucidate fine-scale stock delineation in Gulf of Mexico (GoM) bay, sound and estuarine (BSE), and coastal environments. In response to these recommendations, the Texas Dolphin Research Collaborative aims to establish a long-term monitoring program that will provide population distribution and abundance estimates, identify natural and human-generated risks and establish baseline health and life history parameters for Texas BSE and near-coastal bottlenose dolphins. By coordinating the efforts of a network of institutions and researchers, we can facilitate the use of a multidisciplinary approach to provide thorough analyses, efficient use of resources, and a reduction of duplicative efforts. Data compiled by participating institutions will be published and presented in a variety of scientific and popular venues to disseminate results and aid in management decisions. In the event of an environmental disturbance, such as an oil spill, the underlying logistical structure and availability of baseline data will improve response efforts and allow us to characterize effects on Texas populations. Long-term collaborative efforts, such as those led by the Sarasota Dolphin Research Program on the west coast of Florida, and those used to elucidate stock structure on the Atlantic Coast have yielded invaluable data on the life history of bottlenose dolphin communities, supporting the validity of this approach and providing a blueprint for success.

Contributing Researchers: University of Houston, Clear Lake - Environmental Institute of Houston - Kristi Fazioli, Dr. George Guillen Texas A&M University at Galveston - Dr. Bernd Würsig, Dr. Chris Marshall, Sarah Piwetz, Dara Orbach Texas Sealife Center - Dr. Tim Tristan, Will McGlaun Texas A&M University Corpus Christi - Dr. Andreas Fahlman, Danielle Kleinhenz, Linda Price-May.

Keywords

Tursiops truncatus, Texas, and stock structure

Focal habitats

Bays/sounds/estuaries, and Nearshore/coastal waters

Duration of Project

05/01/2015 - Long-Term Monitoring

Co-investigators

Tim Tristan, Texas Sealife Center
Bernd Wursig, Texas A&M University at Galveston
Andreas Fahlman, Texas A&M University Corpus Christi

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Cumulative effects
- Ecology
- Fisheries interactions/gear research
- Foraging/diet
- Genetics/genomics
- Habitat use/distribution
- Life history
- Population dynamics
- Toxicology

Focal species

Bottlenose dolphin

Eckerd College Dolphin Project

Gowans, Shannon, Eckerd College, 4200 54th Avenue South, St. Petersburg, FL 33711, 727-864-8388, gowanss@eckerd.edu

Website

www.eckerd.edu/academics/marinescience/research/dolphin.php

Project Description

The Eckerd College Dolphin Project has been collecting distribution and photo-identification data on bottlenose dolphins in the Tampa Bay region since 1993. The photo-id database has been integrated with the Sarasota Dolphin Research Program and is in the process of integration with GoMDIS. The project was lead by John Reynolds III until 2004 and I have been in charge since then. The focus of the project has been to conduct long term monitoring of the population using sighting surveys and photo-identification. Our study area includes the inshore waters of Boca Ciega Bay (the northern side of the mouth of Tampa Bay), the southwestern waters of Tampa Bay and Nearshore waters from Johns Pass to Egmont Key till about 5 nautical miles offshore. In recent years we have included both passive acoustic monitoring from moored hydrophones and towed hydrophones while following dolphin groups.

Keywords

Long-term monitoring, photo-identification, population structure, social organization, and bottlenose dolphins

Duration of Project

12/01/1993

Co-investigators

John Reynolds III, Mote Marine Laboratory

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Behavior/behavioral ecology
- Bioacoustics (hearing/communication)
- Conservation and management
- Ecology
- Ecosystem modeling
- Foraging/diet
- Habitat use/distribution
- Life history
- Noise effects
- Population dynamics

A Bottlenose Dolphin Surveillance Team for Mississippi Sound

Grimes, D. Jay, University of Southern Mississippi, Gulf Coast Research Laboratory, 300 Laurel Oak Drive, Ocean Springs, MS 39564, 228-818-8009, jay.grimes@usm.edu

Website

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Project Description

Culture-based and non-culture-based microbiomic surveys of bottlenose dolphin samples from Barataria and Sarasota Bays (samples collected by NOAA and provided to us for microbiomics).

Keywords

Microbiomics, bottlenose dolphins, viruses, bacteria

Duration of Project

08/25/2010 - 12/31/2014 (no cost ext to 12/15)

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries

Objectives

- Microbiomics

Passive Acoustic Monitoring for Marine Mammals in the Gulf of Mexico

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Website

www.cetus.ucsd.edu

Project Description

Deep-diving cetaceans are an important component of the Gulf of Mexico ecosystem. These long-lived animals, including sperm whales, dwarf and pygmy sperm whales, and at least three species of beaked whales, forage in offshore and deepwater habitat, with presence in the region of the Deepwater Horizon Oil Spill. Due to their extended and deep foraging dives, these species are difficult to study with visual surveys but are readily detected by passive acoustic monitoring. Long-term passive acoustic monitoring at three sites along the continental slope, provides records of cetacean presence during and following the oil spill. High-frequency Acoustic Recording Packages (HARPS) recorded wideband (10 Hz - 100 kHz) acoustic data beginning in May 2010. One recording site was located near the Deepwater Horizon site, one was located to the west of the spill near Green Canyon, and one was located to the south of the spill off the Florida Escarpment. Acoustic data was scanned for echolocation clicks and classified for deep-diving cetacean species. Using parameters for cetacean sound production and acoustic detection range, estimates were made of population density by species. Time-series are presented for deep-diving cetacean presence in the Gulf of Mexico from May 2010 to September 2013. Higher rates of sperm whale detections were found in the northern Gulf of Mexico than in the southern Gulf of Mexico, whereas, beaked whales were found at their highest densities in the southern Gulf of Mexico. Gervais' beaked whale was the dominant beaked whale species detected at the northern Gulf of Mexico sites whereas Cuvier's beaked whale was the most detected species at the southern site. The relationship between cetacean presence and environmental parameters help provide an understanding of the ecology of these species as well as potential impact of the oil spill. This work was supported by BP and NOAA and any opinions, findings, and conclusions or other recommendations expressed are those of the authors and do not necessarily reflect the views of BP and/or any State or Federal Natural Resource Trustee.

Keywords

Passive acoustic and cetaceans

Focal habitats

Offshore/pelagic waters

Duration of Project

05/01/2010 - present

Objectives

- Bioacoustics hearing/communication
- Conservation and management
- Ecology
- Ecosystem modeling
- Gulf oil spill effects
- Habitat use/distribution
- Noise effects

Focal species

All Gulf of Mexico marine mammals

Assigning *Tursiops* strandings to stock using stable isotope ratios

Hohn, Aleta, NOAA, 101 Pivers Island Rd, Beaufort, NC 28516, 252-728-8797, aleta.hohn@noaa.gov

Project Description

Stable isotopes ratios have demonstrated value for assigning dolphins to different habitats. This technique is being explored for discriminating between common bottlenose dolphins that primarily inhabit coastal vs. estuarine waters.

Keywords

Stable isotope ratios, stock identification

Duration of Project

01/01/2013 - 12/01/2015

Co-investigators

Len Thomas, The Centre for Research into Ecological and Environmental Modeling, St Andrews, UK
Todd Speakman and Eric Zolman, NOAA, NOS, NCCOS, Hollings Marine Laboratory
Jenny Litz, NOAA, NMFS, SEFSC, Miami Laboratory
Carrie Sinclair, NOAA, NMFS, SEFSC, Mississippi Laboratories

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries
Nearshore/coastal waters

Objectives

- Conservation and management
- Habitat use/distribution
- Strandings
- Stock identification

Gulf of Mexico Odyssey Expeditions 2010 - 2014

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Website

www.whale.org

Project Description

The goal of these expeditions was to try to monitor the toxicological effects of the Deepwater Horizon disaster on offshore populations of marine mammals. Over five summers, we collected 349 biopsy samples from 4 species of cetaceans and a considerable amount of accompanying meta data. We grew 182 whale cell lines at sea. We focused our efforts primarily in the deep water off the continental shelf logging over 20,000 miles at sea. As far east as St Petersburg Florida, as far west as Galveston Texas, and as far south as Key West Florida.

Keywords

Sperm whales, Brydes whales, cell cultures, and benign research techniques

Duration of Project

Summer 2010 - Fall 2014

Co-investigators

Dr. John Wise - University of Southern Maine

Focal species

Bryde's whale, Cuvier's beaked whale, Short-finned pilot whale, and Sperm whale

Focal habitats

Offshore/pelagic waters

Objectives

- Behavior/behavioral ecology
- Bioacoustics (hearing/communication)
- Conservation and management
- Cumulative effects
- Genetics/genomics
- Gulf oil spill effects
- Health and health assessment
- Noise effects
- Population dynamics
- Toxicology

Gulf of Mexico Marine Mammal Stranding Network - data collection and important uses

Jenny Litz, NOAA Fisheries, SEFSC, 75 Virginia Beach Dr, Miami, FL, 33149, 305-361-4224, jenny.litz@noaa.gov

Project Description

The marine mammal stranding network responds to an average of 375 cetacean strandings a year in the Gulf of Mexico (defined here as Monroe County through Texas, 15 year average 2000 - 2014). While 85% of those are bottlenose dolphins, at least 23 other species are represented in the data. Standardized stranding data collected by the SEUS marine mammal stranding network is critical for understanding long-term stranding trends and identifying unusual mortality events. In addition, data from marine mammal strandings provide valuable data that can be used to monitor human impacts on marine mammals, as well as, marine mammal health, distribution, and life history.

Keywords

Strandings, marine mammal health

Co-investigators

NOAA, NMFS
The Gulf of Mexico stranding network

Focal species

All Gulf of Mexico marine mammals

Focal habitats

All

Objectives

All

Biological Monitoring Program based on indicator species of ecological integrity in the National Park "Sistema Arrecifal Veracruzano" (Veracruz Reef System)

Martinez-Serrano, Ibiza, Universidad Veracruzana, Circ. Gonzalo Aguirre Beltran s/n, Zona Universitaria, Xalapa, Veracruz, Mexico 91090, 52-228-842-1748, ibimartinez@uv.mx

Website

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Project Description

Currently, the port of Veracruz, Mexico is under development to achieve an extension both in capacities and operations territory. Under these circumstances, the Mexican environmental authorities recommended an Environmental judge to watch that all construction operations will be developed under laws and with minimum impact to the environment. Furthermore, recommended an integral monitoring project. This project involves the study of three great marine vertebrates (sharks, sea turtles, and cetaceans) bioindicators and their ecology. We will address aspects such as distribution, density, use of area, migration patterns, and contaminants concentrations in order to know how the port operations will impact them and consequently to the entire environment, a very important reef such as the Veracruz Reef System.

Keywords

Elasmobranchs, Cetartiodactyles, Sea turtles, Port operations, and Behavioral ecology

Focal habitats

Bays/sounds/estuaries , and Nearshore/coastal waters

Duration of Project

04/01/2015 - 03/01/2018

Co-investigators

Emilio A. Suárez-Dominguez, Universidad Veracruzana
Mauricio Hoyos-Padilla, Pelagios-Kakunjá, A.C.

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Ecology
- Ecosystem modeling
- Fisheries interactions/gear research
- Habitat use/distribution
- Health and health assessment
- Population dynamics
- Toxicology

Focal species

Bottlenose dolphin, Rough-toothed dolphin, sea turtles, and sharks

Use and characterization of habitat by the Antillean Manatee (*Trichechus manatus manatus*) in the south of Veracruz, Mexico

Martinez-Serrano, Ibiza, Universidad Veracruzana, Circ. Gonzalo Aguirre Beltran s/n, Zona Universitaria, Xalapa, Veracruz, Mexico 91090, 52-228-842-1748, ibimartinez@uv.mx

Website

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Project Description

In Mexico, the Antillean manatee (*Trichechus manatus manatus*) distribution is restricted to the south of the country. In the central coast of the Gulf of Mexico, during the 90's decade, the species was declared extinct in the south of the Veracruz state, specifically in the Coatzacoalcos River, due to pollution, ships traffic and habitat loss. Since then, no systematic surveys were developed. This region is important because of the oil exploration and production, but also because still bears well conserved patches of habitat and clean tributaries. The main goal of this study was to assess systematically the distribution, density, and use of habitat and its characterization of the manatee in the Coatzacoalcos River.

Keywords

Use of habitat, Antillean manatee, and Behavioral ecology

Duration of Project

08/01/2015 - 07/01/2017

Focal species

Manatee

Focal habitats

Rivers/inland waters

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Ecology
- Ecosystem modeling
- Fisheries interactions/gear research
- Habitat use/distribution

Sperm Whale Seismic Study - satellite-monitored tagging project

Mate, Bruce R., Oregon State University Marine Mammal Institute, 2030 SE Marine Science Drive, Newport, OR 97365, 541-867-0202, bruce.mate@oregonstate.edu

Website

mmi.oregonstate.edu

Project Description

We tagged and tracked 58 sperm whales in the GoM to identify their seasonal presence, distribution, home ranges and genetic relationships.

Keywords

Argos, tracking, tagging, distribution

Duration of Project

04/01/2001 - 08/01/2005

Co-investigators

Doug Biggs, Texas A&M
Ann Jochens, Texas A&M
Dan Englehaupt, HDR

Focal species

Sperm whale

Focal habitats

Offshore/pelagic waters

Objectives

- Ecology
- Habitat use/distribution

Sperm whale assessment during and after the DWH oil spill

Mate, Bruce R., Oregon State University Marine Mammal Institute, 2030 SE Marine Science Drive, Newport, OR 97365, 541- 867-0202, bruce.mate@oregonstate.edu

Website

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Description

Sperm whales were tagged during the spill and annually for 3 years after the spill to look for possible effects from the spill.

Keywords

Sperm whale, foraging, distribution, tagging, tracking

Duration of Project

05/01/2010 - 12/01/2013

Co-investigators

Ladd Irvine, Oregon State University

Focal species

Sperm whale

Focal habitats

Offshore/pelagic waters

Objectives

- Cumulative effects
- Ecology
- Foraging/diet
- Gulf oil spill effects
- Habitat use/distribution

Independent Advisory Team (IAT) for Marine Mammal Assessment and Development/Testing of a Tier System for Application to Potential Biological Removal

Moreno, Paula, Gulf Coast Research Laboratory, University of Southern Mississippi, 703 East Beach Drive, Ocean Springs, MS 39564, 228-818-8013, Paula.Moreno@usm.edu

Website

scemfis.org/research.html

Project Description

The primary focus of the IAT is to examine sources of uncertainty (e.g., bias and precision) associated with estimates used for assessment of marine mammals (MM) in U.S. waters. Based on its review of literature, reports, data, and meetings with scientists and managers from NMFS and other entities, the IAT identifies research priorities and produces scientific recommendations to the Science Center for Marine Fisheries (SCeMFIS), a NSF Industry/University Cooperative Research Center. In addition, the IAT conducts research on issues related to MM assessment. In 2014 the IAT initiated a project entitled "Development and Testing of a Tier System for Application to Potential Biological Removal (PBR)". PBR is defined in the Marine Mammal Protection Act as "the maximum number of animals, not including natural mortalities that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population." PBR is calculated stock-by-stock, and is the basis for assessment and management of MM interactions in the U.S. To calculate PBR, three parameters are required: a minimum abundance estimate, a maximum theoretical or estimated net productivity rate, and a recovery factor. Data availability and level of uncertainty associated with some of these parameters, in particular abundance, may vary among stocks. The goal of this project is to develop a tier PBR system and test it using a Management Strategy Evaluation (MSE). A tier system would make better use of existing information by incorporating the best available information for each stock, which could mean drawing on more data than are currently used to set PBR for data-rich cases, and exploiting novel data sources and analytical approaches to set PBR for data-poor stocks. The MSE approach is widely used within the U.S. and elsewhere to evaluate the robustness of management strategies given scientific uncertainties. MSE involves three key steps: (a) development of a model, which represents the system being managed, (b) identification of candidate management strategies (in this case features of the proposed tier system such as how historical abundance estimates are weighted, how trends are estimated, and whether abundance data older than 8 years are used, and (c) evaluation, using simulation of the candidate management strategies. The PBR project is funded by the Western Pacific Fisheries Management Council. The IAT is made up of: Paula Moreno (Gulf Coast Research Laboratory, University of Southern Mississippi), André Punt (University of Washington), Randall Reeves (Okapi Wildlife Associates), and John Brandon (Greeneridge Sciences).

Keywords

Marine mammal, Stock assessment, Potential Biological Removal, and Management Strategy Evaluation

John Brandon, Greeneridge Sciences

Focal species

Applicable to several stocks

Duration of Project

08/01/2013 - Ongoing

Focal habitats

Applicable to several habitats

Co-investigators

André Punt, University of Washington
Randall Reeves, Okapi Wildlife Associates

Objectives

- Conservation and management
- Population dynamics

Ecology, population dynamics and shrimp fishery interaction of Bottlenose dolphins in the Galveston Bay, Texas

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Website

scemfis.org/research.html

Project Description

Systematic vessel surveys were conducted over nearly a decade in the Galveston Bay (GB) to collect data on abundance, distribution, residency patterns and behavior of bottlenose dolphins. Environmental (e.g., depth, turbidity, dissolved oxygen) and vessel traffic data were collected on fixed stations along transects and after dolphin sightings. Noteworthy findings include identification of sub-areas of the GB with high relative abundance of dolphins and foraging hotspots. In addition, we quantified the relative importance of feeding in association with shrimp vessels. Next, we plan to estimate abundance and residence patterns in the GB using mark-recapture techniques on dorsal fin images collected during these surveys. We also plan to use this photo-ID data to determine whether feeding in association with shrimpers in the GB is a widespread foraging behavior exhibited by resident and transient dolphins or restricted to certain individuals or social units. This multi-year study offers a unique opportunity to characterize population dynamics and foraging patterns of bottlenose dolphins in a large Gulf of Mexico estuary. In addition, this study provides a baseline of pre-oil spill conditions against which the results of post oil spill studies can be compared. Assuming no major change in the Galveston Bay environment, and considering that GB is located more than 500 km from the DWH wellhead, major changes in this bottlenose dolphin population would not be anticipated. However, noting that the GB is a very productive estuary supporting resident and transient dolphins, it might offer alternative habitat to those populations that may have been adversely impacted by the DWH event.

Keywords

Abundance, shrimp fishery interactions, photo-identification, habitat use, and pre-oil spill conditions

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Ecology
- Fisheries interactions/gear research
- Foraging/diet
- Gulf oil spill effects
- Habitat use/distribution
- Population dynamics

Trophic ecology of bottlenose dolphin-artisanal fisheries interactions in the coastal waters of Veracruz
Morteo , Eduardo, Universidad Veracruzana, Calle Dr. Luis Castelazo Ayala s/n, Km 2.5 Carr. Xalapa-Veracruz, Col. Industrial Animas, Xalapa, Veracruz, 91190 Mexico, 52-228-841-8910, eduardo.morteo@gmail.com

Website

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Project Description

Determination of diet is necessary to understand the response of species to the ecosystem variability, but also their contribution as a source of mortality for their prey. Feeding is a fundamental aspect in dolphin ecology but one of the most difficult to study in wild populations; thus little is known regarding this issue across the distribution of such species, including the Mexican coasts of the Gulf of Mexico. Coastal bottlenose dolphins (*Tursiops truncatus*) are known to feed upon fishing gear, and although this may be true for only a fraction of the populations, it may also be very frequent. The extent of these interactions as a source of food for such individuals is unknown, thus this project aims to determine temporal variations in the composition, trophic level, and quality of the diet in bottlenose dolphins within the central coast of the State of Veracruz, emphasizing the differences in individuals that regularly interact with artisanal fisheries.

Keywords

Trophic dynamics, Feeding ecology, Artisanal fisheries, Human-dolphin interactions, Gulf of Mexico

Focal habitats

Bays/sounds/estuaries , and Nearshore/coastal waters

Duration of Project

08/01/2014 - 12/01/2018

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Ecology
- Ecosystem modeling
- Energetics
- Epidemiology
- Fisheries interactions/gear research
- Foraging/diet
- Genetics/genomics
- Habitat use/distribution
- Health and health assessment
- Life history
- Population dynamics

Co-investigators

Fernando Elorriaga, CICIMAR/IPN, Ibiza
Martinez, Fac.Biol./UV, Luis Abarca, IIB/UV

Focal species

Bottlenose dolphin

Abundance and distribution of cetaceans in the Gulf of Mexico

*Mullin, Keith, NOAA NMFS, 3209 Frederic Street, Pascagoula, MS 39567, 228-549-1632,
Keith.D.Mullin@noaa.gov*

Project Description

Ship and aerial surveys to estimate abundance and define the spatial distribution of cetacean species in continental shelf and oceanic waters in the U.S. Gulf of Mexico. Additional objectives of the surveys were to define the habitat of each species and to collect biopsy samples to define stock structure.

Keywords

Abundance, density, spatial distribution, and cetaceans

Duration of Project

1990 - 2015

Co-investigators

Lance Garrison, NOAA NMFS
Patricia Rosel, NOAA NMFS

Focal species

All Gulf of Mexico marine mammals

Focal habitats

Nearshore/coastal waters, and Offshore/pelagic waters

Objectives

- Conservation and management
- Ecosystem modeling
- Genetics/genomics
- Gulf oil spill effects
- Habitat use/distribution

Developing Updated Abundance Estimates for Texas Bays using Photo ID Mark-Recapture

*Mullin, Keith, NOAA NMFS, 3209 Frederic Street, Pascagoula, MS 39567, 228-549-1632,
Keith.D.Mullin@noaa.gov*

Project Description

Abundance estimates for bottlenose dolphins in the Gulf of Mexico, including the Texas coast, are more than eight years old and considered insufficient for data and conservation management by the National Marine Fisheries Service (NMFS). The Texas Marine Mammal Stranding Network has investigated a number of bottlenose dolphin Unusual Mortality Events in recent years, as designated by the NMFS and as a result of insufficient data, we were not able to accurately define or estimate any potential impacts to the population. Updating these abundance estimates are important to understanding potential impacts of future mortalities and for conservation measures. In order to address these issues, we have started a multi-phase project to begin abundance estimates for central Texas coastal bays using photo-ID mark-recapture techniques that will provide updated baseline data for dolphins inhabiting these areas. The first phase completed was Galveston West Bay. The Photo-ID data can also potentially provide information on spatial and temporal patterns such as movement patterns, site fidelity, and seasonality of individual dolphins.

Key Words

Photo-ID, Abundance, Management, Texas

Co-investigators

Heidi Whitehead, Texas Marine Mammal Stranding Network
Errol Ronje, NOAA

Focal species

Bottlenose dolphin

Focal habitats

Bays, sounds, and estuaries

Objectives

- Conservation and management
- Habitat use/distribution
- Strandings

Passive acoustic monitoring and mitigation of mid and deep water net tows to prevent dolphin entanglements

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Websites

www.biowaves.net

www.biowaves.net/research/pisces-dolphin-mitigation

Project Description

In 2011 NOAA deployed their research vessel, Pisces, to sample mid-and deep-water species of marine life (i.e. fish and crustaceans). Net trawls were conducted to examine the meso and bathypelagic fauna. The net tows were conducted both during the day and night, at stations located both inside and outside of the oil spill zone. Unfortunately during one of the earlier research cruises, three spotted dolphins (*Stenella attenuata*) were incidentally caught and drowned in one of the net deployments. At night, a potentially hazardous situation existed for delphinid species (which often were attracted to nets because of concentration of prey inside), but could not be seen by the tow operators because of light conditions. Because of this, NOAA requested Bio-Waves to provide a passive acoustic system to mitigate the possibility of catching dolphins both during the day and night while net tows were being conducted. During the night, when visual observations were not possible, passive acoustic monitoring was the only effective method to detect dolphins in the area. During this research cruises, Bio-Waves acousticians monitored a towed hydrophone array for 30 minutes prior to deployment of nets, and if any dolphins were detected, the deployment of the net was delayed. If dolphins were not detected, the array was retrieved and the trawl net was deployed. During four 10-day cruises in which Bio-Waves conducted passive acoustic monitoring and mitigation, no additional dolphins were incidentally caught in nets. This demonstrated the success of passive acoustic monitoring and mitigation for this activity, with limited impact on the success of the overall research objective.

Keywords

Acoustics, Monitoring, Mitigation, dolphins, PAM

Focal habitats

Offshore/pelagic waters

Duration of Project

Summer 2011- Fall 2011

Objectives

- Behavior/behavioral
- Ecology
- Bioacoustics (hearing/communication)
- Conservation and management
- Fisheries interactions/gear research

Co-investigators

Ken Deslarzes, Geo-Marine

Focal species

Pantropical spotted dolphin

A method for prioritizing research on common bottlenose dolphin stocks through evaluating threats and data availability: development and application to bay, sound and estuary stocks in Texas

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Project Description

Thirty-one stocks of common bottlenose dolphins have been delimited in the bay, sound and estuary (BSE) environments in the Gulf of Mexico from the Florida Keys to the Texas-Mexico border. For many of the stocks, up-to-date information necessary for accurate assessment of their status is limited. We have developed a scoring system to objectively prioritize these stocks relative to one another for basic stock assessment research to aid the decision making process and allow resources to be directed where they would be the most effective for meeting research and management objectives. This Threat Assessment Priority Scoring System incorporates a Cumulative Threat Score from an assessment of the presence, severity and impact of 19 potential threats impacting a given stock area and a Data Assessment Score from an evaluation of the quality of available stock assessment data for a stock. Together, the Cumulative Threat Score and Data Assessment Score are used to determine whether a particular stock should be given low, medium or high priority for research. When this method was applied to the Texas common bottlenose dolphin BSE stocks, they all scored as a 'high priority' with medium levels of threats and virtually no data assessment available for each stock. Galveston Bay, Laguna Madre and Corpus Christi Bay had the highest cumulative threat scores while Sabine Lake had the lowest, although this low score is partially attributed to a lack of comprehensive information on the threats in this area. It is expected that future work will provide the scores and priority rankings for the remaining common bottlenose dolphin BSE stocks in the Gulf of Mexico.

Keywords

Common bottlenose dolphin, threat, bay sound estuary (BSE), prioritize, and Texas

Duration of Project

09/01/2012 - 12/01/2015

Co-investigators

Patricia Rosel, NOAA/SEFSC

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries

Objectives

- Conservation and management

Predictive spatial modeling of seasonal bottlenose dolphin (*Tursiops truncatus*) distributions in the Mississippi Sound

Pitchford, Jonathan, IMMS, 10801 Dolphin Lane, Gulfport, MS 39503, 228-896-9182, jpitchford@imms.org

Project Description

Spatial distribution models (SDMs) have been useful for improving management of species of concern in many areas. This study was designed to model the spatial distribution of bottlenose dolphins among seasons of the year in the Mississippi Sound (MS) within the northern Gulf of Mexico. Models were constructed by integrating presence locations of dolphins acquired from line-transect sampling from 2011 – 2013 with maps of environmental conditions for the region to generate a likelihood of dolphin occurrence for winter (January – March), spring (April – June), summer (July – September), and autumn (October – December) using maximum entropy. Models were successfully generated using the program MaxEnt and had high predictive capacity for all seasons (AUC > 0.8). Distinct seasonal shifts in spatial distribution were evident including increased predicted occurrence in deepwater habitats during the winter, limited predicted occurrence in the western MS Sound in winter and spring, widespread predicted occurrence over the entire region during summer, and a distinct westward shift of predicted occurrence in the autumn. The most important environmental predictors used in SDMs were distance to shore, salinity, and nitrates, but variable importance differed considerably among seasons. Geographic shifts in predicted occurrence likely reflect both direct effects of changing environmental conditions and subsequent changes in prey availability and foraging efficiency. Overall, seasonal models helped to identify preferred habitats for dolphins among seasons of the year that can be used to inform management of this protected species in the northern Gulf of Mexico.

Keywords

Bottlenose dolphin, distribution, GIS, estuary, and habitat mapping

Duration of Project

2011 - 2013

Co-investigators

Victoria Howard
Jamie Shelley
Moby Solangi

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries

Objectives

- Habitat use/distribution

Fifteen years later: An updated evaluation of the impacts and evolution of marine mammal tourism with a focus on human-dolphin interactions in Panama City, Florida

Powell, Jessica, NMFS Southeast Regional Office, 263 13th Ave S, St. Petersburg, FL 33701, 727-824-5312, jessica.powell@noaa.gov

Project Description

Marine mammal tourism has grown dramatically over the past 20 years resulting in exploitive tourism throughout U.S. waters and intensifying concerns about sustainability and health of marine mammal populations and individuals. This is particularly true in Panama City, Florida, where boat operators illegally feed wild bottlenose dolphins in order to condition them to approach vessels and swimmers. Our study repeats and updates previous work sponsored by the Marine Mammal Commission (MMC) conducted by Samuels et al. (2000 and 2003) and Samuels and Bejder (1998 and 2004) to (1) provide an updated literature review on the impacts of human activities on marine mammals, and (2) replicate the Panama City field study to evaluate the current status of “swim-with-dolphin” and other dolphin-human interactions. An updated literature review will be useful to MMC and NOAA’s National Marine Fisheries Service (NOAA NMFS) to help evaluate future management needs. In addition, a re-evaluation of the Panama City case study will provide an assessment of the long-term effects of tourism and provide important insights to managers and law enforcement officials who need to develop new strategies to address this hot-spot area where chronic feeding and harassment of wild dolphins takes place.

Keywords

Swim with dolphins, tourism impacts, feeding, and harassment

Duration of Project

06/01/2014 - 07/01/2015

Co-investigators

Laura Engleby
Trevor Spradlin

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Behavior/behavioral ecology
- Conservation and management

Evaluating the Effectiveness of a Voluntary Program in Reducing Vessel Based Harassment in Key West, Florida, USA

Powell, Jessica, 263 13th Ave S, St. Petersburg, FL 33701, 727-824-5312, jessica.powell@noaa.gov

Project Description

A resident population of common bottlenose dolphins (*Tursiops truncatus truncatus*) inhabits the coastal waters near Key West, Florida. During the summer, dolphins are routinely sighted in a 16 km² sand bottom area with clear, shallow water (1-6 m). This area is sheltered from wind and located less than 10 km northwest of several major harbors. The number of vessels conducting daily dolphin tours in this area increased from one operator in 1986 to 37 operators in 2004. To mitigate this potential increase for vessel-based harassment, a voluntary education program, Dolphin SMART, was developed with substantial tour operator involvement and was implemented in 2007. This program continues today. To evaluate the effectiveness of this program, behavioral studies were conducted prior to, during, and following implementation. Focal dolphin behavior was monitored and recorded across age and sex classes in three areas ('Tourism', 'Transit', and 'Remote') containing different levels of vessel traffic and tourism pressure. Results suggest that despite Dolphin SMART implementation, vessel interactions continue to significantly impact dolphin behavior. Dolphins observed within the 'Tourism' area traveled significantly more than animals observed in other areas ($p=0.02$). In the 'Tourism' area, there was a time-lagged (6 minute) impact of vessel presence on the number of dolphin groups ($p<0.05$), with the magnitude of vessel disturbance predicting group fission ($p<0.001$). There was also a time-lagged (9 minute) impact of the magnitude of vessel disturbance on group cohesion ($p<0.05$). In the 'Transit' area, a time-lagged (6 minute) effect of the magnitude of vessel disturbance was a significant predictor of changes in travel activity ($p<0.01$). No impacts of vessel disturbance were observed in the 'Remote' area. Harassment to dolphins still occurs near Key West despite the Dolphin SMART program, suggesting other mitigation measures are necessary to prevent further population or individual level impacts to the dolphins from tourism.

Keywords

Bottlenose dolphins, harassment, dolphin tours, and tourism

Duration of Project

05/01/2005 - 09/01/2011

Co-investigators

Laura Engleby

Nick Farmer

Focal species

Bottlenose dolphin

Focal habitats

Nearshore/coastal waters

Objectives

- Behavior/behavioral ecology
- Conservation and management

Insights from Whaling Logbooks on Cetaceans in the Gulf

Reeves, Randall, Marine Mammal Commission, 27 Chandler Lane, Hudson, Quebec J0P 1H0, Canada, 450-458-6685, rreeves@okapis.ca

Project Description

Extracted data from 18th and 19th C. American whaling logbooks, tabulated and mapped catches and sightings of all species. See paper in Gulf of Mexico Science 29(1) (2011).

Keywords

Sperm whale, Bryde's whale, pilot whale, whaling

Duration of Project

2009 - 2011

Co-investigators

Judy Lund

Tim Smith

Beth Josephson

Focal species

Bryde's whale, Short-finned pilot whale, and Sperm whale

Focal habitats

Offshore/pelagic waters

Objectives

- Conservation and management
- Ecology

DWH Natural Resource Damage Assessment Studies for Bay, Sound and Estuary Bottlenose Dolphins Following the Deepwater Horizon Oil Spill

Schwacke, Lori, NOAA, 331 Fort Johnson Road, Charleston, SC 29412, 843-725-4821, lori.schwacke@noaa.gov

Website

response.restoration.noaa.gov/about/media/study-shows-gulf-dolphins-poor-health-following-deepwater-horizon-oil-spill.html

Project Description

As part of the Natural Resource Damage Assessment (NRDA) following the Deepwater Horizon (DWH) oil spill, a series of studies including longitudinal photo-identification surveys, remote biopsy sampling, and capture-release health assessments, have been conducted for bottlenose dolphins in multiple Gulf of Mexico sites. While the most intensive efforts have been in Barataria Bay, Louisiana, a site which received some of the heaviest and most prolonged oiling, studies have also been conducted in Chandeleur Sound, Mississippi Sound, and St. Joseph Bay. In addition, Sarasota Bay has served as a reference site for the health assessment studies. The objective of the studies has been to investigate potential sub-lethal effects from the DWH oil spill and to estimate associated impacts on the dolphin stocks that were exposed to DWH oil. The studies have been conducted by a collaborative team including investigators from both NOAA offices (National Ocean Service [NOS] and National Marine Fisheries Service [NMFS]), as well as State agencies (Louisiana Department of Wildlife and Fisheries, Mississippi Department of Environmental Quality) and non-governmental organizations (National Marine Mammal Foundation, Chicago Zoological Society).

Keywords

Deepwater Horizon, oil spill, dolphin-health, toxicity

Focal habitats

Bays/sounds/estuaries, Nearshore/coastal waters

Duration of Project

05/01/2010 - 08/01/2015

Co-investigators

Teri Rowles, NMFS
Keith Mullin, NMFS
Patricia Rosel, NMFS
Mandy Tumlin, LDWF
Willie McKercher, MS DEQ

Objectives

- Conservation and management
- Cumulative effects
- Ecosystem modeling
- Epidemiology
- Genetics/genomics
- Gulf oil spill effects
- Health and health assessment
- Life history
- Population dynamics
- Reproductive biology
- Strandings
- Toxicology

Focal species

Bottlenose dolphin

Testing Tackle Modifications and Fish Descender Tools for reducing dolphin depredation and scavenging of sport fish

Shippee, Steve, Marine Wildlife Response, 1557 Hwy 98 West, Mary Esther, FL 32569, (850) 516-7934, shippee3@cox.net

Project Description

Several depredation mitigation devices (DMDs) designed for attachment to terminal fishing tackle have been suggested as deterrents to discourage dolphins from taking hooked fish. Descender tools may offer a means to reduce dolphins' scavenging on discarded fish that are being returned to the seafloor. We are conducting in-situ tests of the applicability and effectiveness of using these devices aboard recreational fishing vessels as a means to reduce dolphin interactions that might have long-term effectiveness if accepted by the sport angler.

Keywords

Depredation, scavenging, recreational fishing, and dolphin interactions

Duration of Project

08/01/2014 - 02/01/2016

Co-investigators

Steve Shippee, Marine Wildlife Response
Randall Wells, Chicago Zoological Society
Katie McHugh, Chicago Zoological Society

Focal species

Bottlenose dolphin

Focal habitats

Nearshore/coastal waters

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Fisheries interactions/gear research

Can simple tackle modifications and use of fish descenders decrease harmful fishery interactions with bottlenose dolphins? (*Poster abstract*)

Steve Shippee¹, Hannah Roth¹, Christina Toms^{1,2}, Chris Verlinde³, Tim Doran¹, Randy Wells⁴, and Katherine McHugh⁴

¹Marine Wildlife Response, Mary Esther, FL

²University of Central Florida, Orlando, FL

³Florida Sea Grant, IFAS/University of Florida, Milton, FL

⁴Sarasota Dolphin Research Project of Chicago Zoological Society, Sarasota, FL

Bottlenose dolphins interact frequently with recreational fishing at offshore reefs in the northern Gulf of Mexico resulting in potential harm to the animals and to fish stocks. Anglers complain that dolphins frequently depredate fish off hooks being reeled up from depth and scavenge on discarded fish that suffer from barotrauma and disorientation. Modified terminal tackle intended for bottom fishing rigs has been suggested as a method to reduce depredation, and fish descender tools are being promoted as a means to successfully return embolized reef fish to depth. We are conducting a study to measure the effectiveness of using these techniques to reduce dolphin interactions with recreational fishing and will evaluate: 1) tackle modifications (wires, shrouds, etc.) to deter depredation; 2) effectiveness of commercially available descender devices to mitigate dolphin scavenging of released fish; 3) applicability of using such devices in inshore fishing to alleviate dolphin interactions; and 4) acceptability of using these tools by sport anglers. The results of this study will benefit outreach efforts to encourage use of mitigation techniques that reduce dolphin interactions and enhance conservation of both dolphins and reef fish stocks.

Assessment of depredation by bottlenose dolphins (*Tursiops truncatus*) in the Northwest Florida and Alabama sport fishery

Shippee, Steve, Marine Wildlife Response, 1557 Hwy 98 West, Mary Esther, FL 32569, (850) 516-7934, shippee3@cox.net

Project Description

We recognized the need to gain an understanding of the dolphin community in this part of the Gulf Coast associated with fishery interactions (FI) and to answer questions about habitat use and foraging patterns. This study focused on observations of dolphins and FI on deep-sea trips and at fishing piers to define and characterize the extent of the problem. We were also interested in exploring potential mitigation strategies. Developing a partnership with the local stranding networks led to better monitoring for FI in stranded animals. The objectives were to: provide a general assessment of the scope of the FI problem with sport fishing (at deep-sea reefs and shoreline fishing piers) in the North Central Gulf Coast; determine the frequency of dolphin FI with sport fishing; differentiate between depredation and other forms of interactions; investigate possible relationships between FI and other variables; gauge economic impacts; seek mitigation techniques and solutions; and provide new tools and data for use by fisheries managers.

Keywords

Fishing interactions (FI), deep sea reefs, strandings, bottlenose dolphin, depredation

Duration of Project

04/01/2008 - 09/01/2010

Co-investigators

Randall Wells, Chicago Zoological Society

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Fisheries interactions/gear research
- Foraging/diet
- Habitat use/distribution
- Strandings

LITTORAL ACOUSTIC DEMONSTRATION CENTER- GULF ECOLOGICAL MONITORING and MODELING (LADC-GEMM)

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Websites

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Project Description

The three year BP/GOMRI sponsored LADC-GEMM consortium (2015-2017) will continue passive acoustic monitoring of changes in regional distribution and abundance of several strategic species of marine mammals (endangered sperm whales, beaked whales, and dolphins). The operational area of interest will cover a 50 mi radius around the Gulf of Mexico (GoM) 2010 oil spill site. The LADC-GEMM consortium members include the University of Louisiana at Lafayette, the University of New Orleans, the University of Southern Mississippi, and Oregon State University. The consortium's expertise and experimental capabilities are extended through collaboration with Proteus Technologies LLC, R2Sonic LLC, ASV Ltd., and Seiche Measurements Limited.

The regional abundance estimates obtained from the newly collected acoustic data will be compared to ones derived from baseline data collected by LADC before and right after the spill. The LADC-GEMM consortium is in a unique position among those conducting passive acoustic studies in the GoM given its access to data unavailable elsewhere. Prior to the 2010 oil spill, LADC had conducted six broadband passive acoustic surveys in the GoM. In 2007 LADC conducted a two-week visual and acoustic survey of marine mammal activity just 9 miles and 23 miles from the spill site, giving LADC a unique pre-spill baseline dataset of marine mammal activity and anthropogenic soundscapes near the oil spill site. Earlier surveys had also been conducted at sites 50 miles from the incident site. In September 2010, LADC returned to those same survey sites to repeat underwater acoustic recordings, gathering data to support the first and possibly only comparisons of pre- and post-spill estimates of the marine mammal populations in the vicinity of the event based on their acoustic activity.

The overall new project objectives are three-fold:

- 1) Establish a precedent of long-term ecosystem-centered passive acoustic monitoring (E-PAM) of the marine mammal recovery after the oil spill, based on previously collected baseline data, continued data collection utilizing advanced PAM technology, and development of population dynamics prediction models;
- 2) Design and test a new cost-effective PAM approach for near real-time detection, characterization, and monitoring of the impact of environmental changes of different magnitude and duration on deep diving GoM marine mammals by utilizing the integrated experimental capabilities of the consortium, which will include bottom-moored listening buoys, deep-diving Seagliders, and autonomous surface vehicles;
- 3) Develop an integrated acoustic data processing technique, which will allow in-depth understanding of the relations between observed/predicted abundance variations and underlying reasons decipherable from collected acoustic data, such as anthropogenic noise soundscapes, food supply, stock composition (adults versus calves, females versus males, etc.), and seasonal migrations.

GULF OF MEXICO MARINE MAMMAL RESEARCH AND MONITORING MEETING

The research outcomes will provide data on regional stock population health for several strategic species of marine mammals (endangered sperm whales, beaked whales, and dolphins) and will stipulate recommendations for needed mitigation efforts to improve various stock recoveries. The outcomes of the research will also aid in improving regulations, monitoring, and mitigation efforts for everyday industrial operations in the northern GoM.

Keywords

ecosystem passive acoustic monitoring, sperm whales, beaked whales, dolphins, marine mammal abundance, population model, population growth rate

Duration of Project

01/2015 – 12/2017

Co-investigators

George E. Ioup, University of New Orleans
Dave Mellinger, Oregon State University
ASV & Seiche Measurements

Focal species

Atlantic spotted dolphin
Blainville's beaked whale
Cuvier's beaked whale
Dwarf sperm whale
Gervais' beaked whale

Killer whale

Pantropical spotted dolphin

Risso's dolphin

Short-finned pilot whale

Sperm whale

Spinner dolphin

Striped dolphin

Focal habitats

Offshore/pelagic waters

Objectives

- Bioacoustics (hearing/communication)
- Ecology
- Ecosystem modeling
- Gulf oil spill effects
- Habitat use/distribution
- Noise effects
- Population dynamics

Dolphin acoustic and visual surveys on the West Florida Shelf

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727-348-5676, psimard@mail.usf.edu*

Project Description

I use both boat-based visual surveys and autonomous acoustic recorders to determine spatial and temporal patterns of dolphins on the West Florida Shelf. Species mainly limited to bottlenose dolphins and Atlantic spotted dolphins. Study area has changed over the duration of the study (since 2008) but is currently from Tampa Bay to Clearwater, out to the 30m isobath. I also use autonomous acoustic recorders to monitor bottlenose dolphins in an adjacent inshore location (Boca Ciega, Tampa Bay) in collaboration with the Eckerd College Dolphin Project (Shannon Gowans). Finally, my research also involves acoustic recordings using a boat-based towed hydrophone during focal group follows of dolphins.

Keywords

Acoustic, distribution, bottlenose dolphin, Atlantic spotted dolphin, and West Florida Shelf

Duration of Project

06/01/2008 - 12/01/2020

Co-investigators

David Mann, Loggerhead Instruments
Shannon Gowans, Eckerd College
Chris Stallings, University of South Florida

Focal species

All Gulf of Mexico marine mammals, Atlantic spotted dolphin, and Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries, Nearshore/coastal waters, and Offshore/pelagic waters

Objectives

- Behavior/behavioral ecology
- Bioacoustics (hearing/communication)
- Ecology
- Habitat use/distribution
- Noise effects

Florida Manatee Movement and Habitat Use in the Northern Gulf of Mexico

Slone, Daniel, USGS Southeast Ecological Science Center, 7920 NW 71st St, Gainesville, FL 32653, 352-264-3551, dslone@usgs.gov

Project Description

The overall goal of the project is to describe manatee movements and habitat use through the northern Gulf of Mexico to determine and aid in the management of manatee interactions with energy industry shipping and operations in the region. The area of interest for this study extends from the Suwannee River, Florida, west along the Gulf coast through Texas. Manatee distribution and habitat will be assessed through a comprehensive set of complementary research activities that together will provide information on spatial and temporal manatee use of the northern Gulf of Mexico, the health and disposition of individual manatees traversing the study area, and the extent and quality of the habitat that they may use. Several potential research actions involving multiple agencies and partners will be considered. Habitat characterization will begin with a survey of available data, especially from recent work that supported research following the 2010 Deepwater Horizon incident (REF). Areas of interest within the study area that do not have adequate data coverage will be targeted for aerial imagery interpretation, and field characterization. Temperature and salinity probes (Onset, Inc.) will be used to provide continuous logging of environmental parameters at selected sites to determine seasonal water temperature and salinity regimes across the study area. Photographs of manatees in the northern GOM will be compiled and matched to the Manatee Individual Photo-identification System (MIPS) database to document individual animal movements and fidelity, as well as prior sighting histories. Individual manatees will be captured for health assessments and radio tagging. Manatee captures typically involve nylon nets deployed by either land-based or open-water techniques on targeted manatees. Individual manatee health will be monitored, including temperature, respiration and pulse rate, and handling time will be kept to a minimum (less than one hour if possible). Assessed individuals will be released at or close to their original capture location. Additional data recorded upon capture will include morphometrics (total length and girths), sex and complete photographs consisting of scars or natural markings. During capture complete out-of-water monitoring and biological sampling will be performed by trained personnel under veterinary supervision. Captured manatees in the northern GOM will be tagged with GPS to record location, transmitter temperature, activity and dive periods, and other sensor data. Specific findings will include identification of habitat hotspots, site fidelity, characterization of large-scale moves or movement highways and characterization of foraging movements. With the addition of on-board readings from Time-Depth Recorders, or salinity and temperature sensors, the activity of manatees can be categorized into behavior types such as foraging, travelling, resting, drinking, or other types. Once a part of the underlying habitat has been described, the manatees' use of similar habitat can be used to predict locations of other similar habitat, which can then be verified through field sampling. This form of GIS interpretation, integrated with field sampling, will be used throughout the period of performance to create maps of functional habitat types, along with detailed assessments of the underlying habitat components (salinity, temperature, seagrass, wave activity, etc.) that contributes to manatee use (or lack of) the study area.

Keywords

Manatee, Habitat Use, Energy Industry, Movement, Seagrass

Duration of Project

6/2013 - 9/2017

Co-investigators

James Reid
Susan Butler
Robert Bonde

Focal species

Manatee

Focal Habitats

Nearshore/coastal waters
Bays/sounds/estuaries
Rivers/inland waters

Objectives

- Health and health assessment
- Habitat use/distribution
- Foraging/diet
- Ecosystem modeling
- Ecology
- Behavior/behavioral ecology
- Energy Industry interactions

Analysis of existing USGS manatee telemetry data for the northern Gulf of Mexico

Slone, Daniel, USGS Southeast Ecological Science Center, 7920 NW 71st St, Gainesville, FL 32653, 352-264-3551, dslone@usgs.gov

Project Description

We propose to compile and analyze existing manatee telemetry data to produce habitat use and travel corridor maps for Apalachicola Bay, Wakulla, and other panhandle areas. Maps will feature low-speed use of habitat features, such as resting and feeding, and higher-speed use of travel corridors. We will compare maps of manatee use patterns with those of Florida Wildlife Research Institute aerial survey distribution data to ascertain correlations. Discrepancies between data types would point to areas to focus on in future aerial survey work, or tagging operations for more detailed telemetry studies. With all data types, correlate manatee use with measured oil spill coverage on SAV and emergent (marsh) vegetation, to indicate possible areas of forage impact, or manatee exposure to oil contamination.

Keywords

Manatee
Seagrass
Deepwater Horizon
Gulf of Mexico

Duration of Project

3/2011 - 9/2012

Co-investigators

James Reid, USGS
Susan Butler, USGS
Ruth Carmichael, DISL

Focal species

Manatee

Focal Habitats

Nearshore/coastal waters
Bays/sounds/estuaries
Rivers/inland waters

Objectives

- Habitat use/distribution
- Gulf oil spill effects
- Ecosystem modeling
- Ecology

Louisiana Marine Mammal and Sea Turtle Rescue Program

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Website

www.auduboninstitute.com

Project Description

We are a rehabilitation facility, and also provide infrastructure and personnel for marine mammal necropsies.

Co-investigators

Dr. Elsburgh "Tres" Clarke

Dr. Robert MacLean

Focal species

All Gulf of Mexico marine mammals

Abundance and site fidelity of dolphins in Mississippi Sound and adjacent waters

Solangi, Moby Ph.D., IMMS, 10801 Dolphin Lane, Gulfport, MS 39503, 228-896-9182, solangim@aol.com

Website

www.imms.org

Project Description

The project is a multiyear study in the Mississippi Sound and adjacent waters to study population trends and site fidelity of bottlenose dolphins. This involves boat transect surveys and photo ID work.

Keywords

Population dynamics, site fidelity, and stock assessment

Duration of Project

2002 - continuing

Co-investigators

Dr. Jonathon Pitchford

Dr. Eric Pulis

Dr. Andy Coleman

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries

Objectives

- Anatomy/taxonomy
- Behavior/behavioral ecology
- Bioacoustics (hearing/communication)
- Cognition
- Conservation and management
- Cumulative effects
- Ecology
- Epidemiology
- Fisheries interactions/gear research
- Foraging/diet
- Genetics/genomics
- Gulf oil spill effects
- Habitat use/distribution
- Health and health assessment
- Life history
- Noise effects
- Parasitology
- Population dynamics
- Reproductive biology
- Strandings
- Toxicology

Bottlenose stranding response and research

Solangi, Moby Ph.D., IMMS, 10801 Dolphin Lane, Gulfport, MS 39503, 228-896-9182, solangim@aol.com

Website

www.imms.org

Project Description

Respond to sick, injured, and dead bottlenose dolphins. Conduct necropsies. Rehabilitate and release sick injured dolphins, evaluate cause and effect relationships for mortality

Keywords

Strandings, bottlenose dolphin, research, conservation, rehabilitation

Duration of Project

1984 - continuing

Co-investigators

Dr. Eric Pulis
Dr. Jonathon Pitchford
Dr. Delphin Shannon

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries

Objectives

- Anatomy/taxonomy
- Behavior/behavioral ecology
- Bioacoustics (hearing/communication)
- Cognition
- Conservation and management
- Cumulative effects
- Ecology
- Epidemiology
- Fisheries interactions/gear research
- Foraging/diet
- Genetics/genomics
- Gulf oil spill effects
- Habitat use/distribution
- Health and health assessment
- Life history
- Noise effects
- Parasitology
- Population dynamics
- Reproductive biology
- Strandings
- Toxicology

Correlation of the Broadband Spectral Characteristics of Bottlenose Dolphin Signatures with Dolphin Behavior in the Mississippi Sound

Stanic, Steve, USM / Southern Acoustics, stanic@cableone.net

Project Description

A series of acoustic measurements and visual observations were made of Bottlenose dolphins in the Mississippi Sound. A portable acoustic monitoring system recorded dolphin echolocation clicks, wideband burst pulses and narrowband frequency modulated whistles. The signal spectra were correlated with observations of dolphin behavior. The results showed that when these dolphins are diving and traveling, the primary signals are short echolocation clicks. During what appeared to be social interactions, the signals were more complex broadband amplitude modulated whistles. MTS/IEEE Proceedings of Oceans'09. Oct 2009.

Keywords

Acoustics, Spectral Signatures, and Behavior

Duration of Project

06/01/2008 - 06/01/2009

Co-investigators

Bob Brown
Mobashir Solangi
Ted Kennedy

Focal species

All Gulf of Mexico marine mammals and Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries and Nearshore/coastal waters

Objectives

- Behavior/behavioral ecology
- Bioacoustics (hearing/communication)
- Noise effects

Ambient Noise Measurements in the Mississippi Sound

Stanic, Steve, USM / Southern Acoustics, stanic@cableone.net

Project Description

During the spring, summer, and fall of 2004, underwater ambient noise measurements were conducted in the Mississippi Sound. The Naval Research Laboratory, Stennis Space Center (NRL – Stennis) and the Institute for Marine Mammal Studies (IMMS) collaborated in acquiring acoustic ambient noise data at eight (8) sites in the Mississippi Sound. The sites were chosen to represent sites of expected high anthropomorphic noise sources and a control site with few or no expected anthropomorphic noise sources. (Research supported by IMMS) J. Newcomb, S. Stanic, A. Cranford, D. Vanderpool, and M. Solangi, "Ambient Noise Measurements in the Mississippi Sound," NRL/MR/7185-08-9117, 2008.

Keywords

Acoustics, and Ambient Noise

Duration of Project

06/01/2007 - 07/01/2008

Co-investigators

L. Newcomb
M. Solangi
D. Vanderpool

Focal species

All Gulf of Mexico marine mammal species

Focal habitats

Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Bioacoustics (hearing/communication)
- Noise effects

Ambient noise measurements in and around the Gulfport Mississippi harbor and its potential influence on marine mammals

Stanic, Steve, USM / Southern Acoustics, stanic@cableone.net

Project Description

This report documents the results of a pilot study designed to determine the feasibility of monitoring bottlenose dolphin 24 hours a day, 7 days a week at the entrance to the Gulfport harbor. The primary task concentrated on the measurement, and analysis, of noise recorded in this area. These measurements also have the potential to correlate changes in ambient noise levels, with dolphin population numbers in these areas. It also documents the activity of dolphins during the evening and early morning hours. S. Stanic, R. Brown, E. Kennedy, D. Malley, and M. Solangi, "Ambient noise Measurements in and around the Gulfport Harbor and its Potential Influence on Marine Mammals," NRL/MR/ 184-07-9049, (2007).

Keywords

Acoustics, and Ambient Noise

Duration of Project

06/01/2007 - 07/01/2008

Co-investigators

Bob Brown
Ted Kennedy
Mobashir Solangi

Focal species

All Gulf of Mexico species

Focal habitats

Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Bioacoustics (hearing/communication)
- Noise effects

Florida Marine Mammal Rescue, Carcass Salvage, Necropsy

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leslie.ward@myfwc.com

Project Website

myfwc.com/research/manatee/

Project Description

The purposes of the FWC marine mammal (primarily manatees) carcass salvage and necropsy program are to characterize and record information to determine cause(s) of death and obtain information on morphology, life-history, and health. The statewide Florida program is a source of information used to determine and mitigate human-related causes of death and to investigate Unusual Mortality Events. FWC also receives calls from the public reporting marine mammals in distress. Field staff members respond to these calls and coordinate a network of personnel from various agencies and organizations to collaborate in conducting rescues and when necessary transport to rehabilitation facilities. FWC manages the Oceanaria Reimbursement Assistance Program for rescued, rehabilitated, and released Florida manatees. The Florida Legislature recently increased this program appropriation that helps support contracted and federally permitted manatee rehabilitation facilities in Florida in the care and treatment of sick, injured or orphaned Florida manatees.

Keywords

Stranding, necropsy, and rescue

Duration of Project

1985 - ongoing

Co-investigators

Martine de Wit, FWC

Andy Garrett, FWC

Kat Frisch, FWC

Focal species

All Gulf of Mexico marine mammals, Manatee, and stranded marine mammals along Florida coasts

Focal habitats

Rivers/inland waters, Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Anatomy/taxonomy
- Conservation and management
- Foraging/diet
- Genetics/genomics
- Health and health assessment
- Life history
- Strandings

Manatee Aerial Surveys

Ward, Leslie, FWC / Fish & Wildlife Research Institute, 100 SE 8th Ave. St. Petersburg, FL 33701, 727-502-4732,
leslie.ward@myfwc.com

Website

myfwc.com/research/manatee/projects/population-monitoring/

Project Description

FWC uses various survey designs to acquire information on manatee abundance, distribution, and habitat use.

Keywords

Aerial, survey, abundance, distribution, and habitat

Duration of Project

1985 - ongoing

Co-investigators

Julien Martin, USGS
Holly Edwards, FWC

Focal species

Manatee

Focal habitats

Rivers/inland waters, Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Ecology
- Gulf oil spill effects

Photo-Identification and Genetic Monitoring of Florida Manatees

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Website

myfwc.com/research/manatee/projects/photo-identification/

Project Description

Manatee photo-identification in the Southeast U.S. is a multi-agency effort that includes USGS, FWC, and Mote Marine Lab (MML). A concerted photo-identification effort has been in place for decades. More recently, efforts from various institutions including USGS, UF, FWC, and MML were made to expand and refine the array of genetic tools for the Florida manatee. Individual identification allows monitoring of survival rates in capture-recapture and capture-recapture-recovery studies.

Keywords

Photo-identification, population, monitoring, genetics, and survival rate

Duration of Project

1980s - ongoing

Co-investigator

Cathy Beck, USGS
Kari Rood, FWC
Mike Tringali, FWC

Focal species

Manatee

Focal habitats

Rivers/inland waters, Bays/sounds/estuaries, Nearshore/coastal waters

Objectives

- Conservation and management
- Genetics/genomics
- Life history
- Population dynamics

Sarasota Dolphin Research Program

*Wells, Randall, Chicago Zoological Society, c/o Mote Marine Lab, 1600 Ken Thompson Pkwy, Sarasota, FL 34242,
941-388-2705, rwells@mote.org*

Website

www.sarasotadolphin.org

Project Description

Long-term research on a resident population of bottlenose dolphins near Sarasota, Florida, initiated in 1970. Research examines biology, ecology, health and body condition, environmental contaminant concentrations, behavior and communication, natural history, life history, reproductive success, and human interactions. Research methods include photographic identification, health assessment, tagging and tracking, biopsy sampling, fish surveys, and focal animal behavioral observations. We also engage in the development and refinement of research techniques, such as telemetry. Research is focused in the multi-decadal, multi-generational, year-round resident Sarasota Bay dolphin community, which includes up to 5 concurrent generations of individuals up to 64 years of age, but also extends into surrounding bay, sound and estuary waters, as well as offshore in the Gulf of Mexico. The program also provides training opportunities in field and analytical techniques.

Keywords

Bottlenose dolphin, health assessment, tagging and tracking, photo-identification, and environmental contaminants

Duration of Project

10/01/1970 - ongoing

Co-investigators

Katherine McHugh
Jason Allen
Aaron Barleycorn

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Behavior/behavioral ecology
- Bioacoustics (hearing/communication)
- Conservation and management
- Cumulative effects
- Ecology
- Ecosystem modeling
- Energetics
- Epidemiology
- Fisheries interactions/gear research
- Foraging/diet
- Genetics/genomics
- Gulf oil spill effects
- Habitat use/distribution
- Health and health assessment
- Life history
- Noise effects
- Parasitology
- Population dynamics
- Reproductive biology
- Strandings
- Toxicology

Gulf of Mexico Dolphin Identification System (GoMDIS)

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Website

www.sarasotadolphin.org

Project Description

We manage the collaborative Gulf-wide bottlenose dolphin photo-identification catalog. PIs of photo-ID projects around the Gulf use GoMDIS as a repository for ID catalog images and accompanying metadata. Through an online interface, catalogs are accessible to all researchers who contribute images, to facilitate cross-site matches, and ensure that data are archived for future research.

Keywords

Bottlenose dolphin, photographic identification, ranging patterns, and site fidelity

Duration of Project

2011 - Ongoing

Co-investigators

Carolyn Cush, Chicago Zoological Society
Allison Honaker, Chicago Zoological Society
Jason Allen, Chicago Zoological Society

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries, Nearshore/coastal waters

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Ecology
- Gulf oil spill effects
- Habitat use/distribution
- Population dynamics

Tagging and tracking of bottlenose dolphins in the Northern Gulf of Mexico

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Website

www.sarasotadolphin.org

Project Description

As part of the NRDA investigation of the potential impacts of the Deepwater Horizon oil spill, the Sarasota Dolphin Research Program provided tagging and tracking services. Satellite-linked tags were attached to bottlenose dolphins in Barataria Bay in 2011, 2013, and 2014, and in the Mississippi Sound in 2013. Dolphins were tracked for up to 260 days each.

Keywords

Bottlenose dolphins, Satellite-linked tags, Tracking, Ranging patterns, Distribution and habitat use

Duration of Project

08/01/2011 - 04/01/2015

Co-investigators

Lori Schwacke, National Ocean Service
Teri Rowles, National Marine Fisheries Service
Eric Zolman, National Ocean Service

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Gulf oil spill effects
- Habitat use/distribution
- Population dynamics

Enhancement of response, treatment and data collection from living and dead marine mammals stranded along the Texas coast

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Website

www.tmmsn.org

Project Description

The Texas Marine Mammal Stranding Network responds to an average of 150 stranded or injured marine mammal reports and conducts surveys for stranded marine mammals. Live stranded cetaceans are either euthanized or returned to designated rehabilitation facilities for assessment, treatment and release or placement. With enhanced diagnostic capabilities, live strandings receive targeted treatment and aid in determining initial cause of stranding. Using techniques of necropsy and clinical laboratory testing samples are collected and evaluated for use in assessing the incidence or prevalence of human induced injury or mortality and detection of emerging diseases.

Keywords

Stranding, Rehabilitation, Necropsy, Disease

Co-investigators

Sarah Piwetz, Texas Marine Mammal Stranding Network
Dr. Richard Henderson, Texas Marine Mammal Stranding Network

Focal species

All Gulf of Mexico marine mammal species

Focal habitats

Texas coastal waters

Objectives

- Conservation and management
- Fisheries interactions/gear research
- Gulf oil spill effects
- Life history
- Strandings

Towards a Gulf-wide Bird Monitoring Network: Identifying Objectives to Prioritize Action

Randy Wilson¹, John Tirpak², and Melanie Driscoll³

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Project Description

Birds are a conspicuous and remarkable natural resource of the Gulf of Mexico. Hundreds of species and millions of individual birds are supported by barrier islands, beaches, marshes, near-shore and offshore waters and coastal forests. Although many avian monitoring projects have been implemented, scientist and conservationist lack a comprehensive and coordinated approach to monitoring avian resources across the northern Gulf of Mexico. To address this need, an ambitious plan is being developed by a small consortium of researchers, managers, coordinators, and administrators representing a subset of state and federal agencies, NGOs, universities, and partnerships across the northern Gulf of Mexico. This group has been working to define a vision and process for developing the role of bird monitoring in achieving integrated, efficient, and effective Gulf of Mexico management and recovery. To date we have identified the goals, objectives, and metrics of success for the program through a Structured Decision Making approach, and now have a mostly completed SDM decision tool by which we can judge the appropriateness of proposed monitoring packages. Specifically, this integrated monitoring program will serve multiple goals, including monitoring long term responses to anthropogenic and natural drivers, detecting unpredicted changes in status and trends, and detecting response to conservation and management actions. The monitoring plan is expected to be long term in nature, taxonomically diverse in scope, and to cover the Gulf of Mexico from freshwater to pelagic zones. The team anticipates using identified objectives to (1) facilitate communication regarding avian monitoring needs; (2) guide development of a comprehensive, coordinated monitoring strategy; and (3) utilize the objectives and value models to develop a prioritization tool to assist funding agencies.

Impacts of the 2010 Deep Water Horizon Oil Spill on Estuarine Bottlenose Dolphin Populations in the West Florida Panhandle

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Project Description

Our UCF team in partnership with staff of the Florida Fish and Wildlife Research Institute (FWRI) and the Sarasota Dolphin Research Program (SDRP) at Mote Marine Laboratory provided a rapid response study to evaluate the local bottlenose dolphin status in this region. We expanded on previous research that had been conducted in Choctawhatchee Bay to incorporate the Pensacola Bay segment of the area, and conducted a comprehensive Mark-Recapture effort over an 18 month period to create a photo-id catalog of individual dolphins for estimating dolphin abundance, habitat use, site fidelity, grand scale movement, and foraging patterns. In addition, we collected remote dart-biopsy samples from free-swimming dolphins inhabiting discrete segments of the habitat in order to elucidate foraging dynamics and genetic structure. Collections of putative prey species allowed analyses to be made of nutritional characteristics that would lead to a predictive model of diet composition of the apex predators (e.g. dolphins) and therefore potential food chain effects on their health.

Keywords

Dolphin abundance, northwestern Florida Panhandle, stable isotope, putative prey, Choctawhatchee Bay

Duration of Project

09/01/2010 - 12/31/2011

Co-investigators

Randall Wells, Chicago Zoological Society
Steve Shippee, Marine Wildlife Rescue

Focal species

Bottlenose dolphin

Focal habitats

Bays/sounds/estuaries, and Nearshore/coastal waters

Objectives

- Behavior/behavioral ecology
- Conservation and management
- Ecology
- Ecosystem modeling
- Foraging/diet
- Habitat use/distribution
- Strandings

Filling the gaps: Bottlenose dolphin population dynamics, structure, and connectivity in the Florida Panhandle

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Website

oceans4generations.wix.com/oceans4generations

Project Description

The Florida Panhandle coastline has been exposed to numerous anthropogenic and ecological threats in the past few decades (e.g., chemical spills, pollution, infectious disease, and red tide events), including the Deep Water Horizon oil spill. This dissertation research focuses on the historically disturbed yet understudied Pensacola Bay area and neighboring systems. Project goals include (1) estimating survival, seasonal abundance, site-fidelity and residency patterns of bottlenose dolphin in the Pensacola Bay system using photo-ID mark-recapture methods over three years; and (2) evaluating fine-scale population structure, genetic diversity, and connectivity of dolphins between inshore and coastal waters in the Florida Panhandle (i.e., between Pensacola Bay, Choctawhatchee Bay, and a coastal zone); We are also evaluating and preparing to report on an outbreak of skin lesions associated with a record-breaking flood event in 2014.

Keywords

Abundance, Residency, Population genetics, Population dynamics

Duration of Project

June 2013 - August 2016

Co-investigators

Christina Toms, University of Central Florida

Focal species

Bottlenose dolphins

Focal habitats

Bays/sounds/estuaries

Objectives

- Conservation and management
- Ecology
- Foraging/diet
- Genetics/genomics
- Population dynamics



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